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THE

GARDENER'S MAGAZINE,

AND

REGISTER

OF

RURAL AND DOMESTIC IMPROVEMENT:

COMPRISING

TREATISES ON LANDSCAPE GARDENING,
ARBORICULTURE, FLORICULTURE, HORTICULTURE,
AGRICULTURE, RURAL ARCHITECTURE,
GARDEN STRUCTURES,
PLANS OF GARDENS AND COUNTRY RESIDENCES,
SUBURBAN VILLAS, &c.

ALSO

LISTS OF NEW AND RARE PLANTS, FRUITS AND VEGETABLES.

CONDUCTED BY

J. C. LOUDON, F.L.S. H.S. &c.

AUTHOR OF THE ENCYCLOPÆDIAS OF GARDENING, OF AGRICULTURE, &c.

VOL. IV.

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PREFACE.

THE Contents of this Fourteenth Volume of the *Gardener's Magazine*, which serve at the same time instead of an Index, are arranged as follows: —

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LANDSCAPE-GARDENING AND GARDEN ARCHITECTURE.

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INCLUDED IN THE FLORICULTURAL AND BOTANICAL NOTICES RECORDED SINCE THE PREPARATION OF THE "SECOND ADDITIONAL SUPPLEMENT TO THE HORTUS BRITANNICUS."

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Those marked with a * are not registered in the last edition of the *Hortus Britannicus*, but have been introduced into Britain; those marked with a † have been already registered, either in the *Hortus Britannicus* or this Magazine, but with less perfect details; and those with a ‡ prefixed have not been introduced, or, if introduced, have since become extinct.

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GARDENER'S MAGAZINE,

JANUARY, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 10. THE CATERPILLAR OF THE APRICOT BUD.

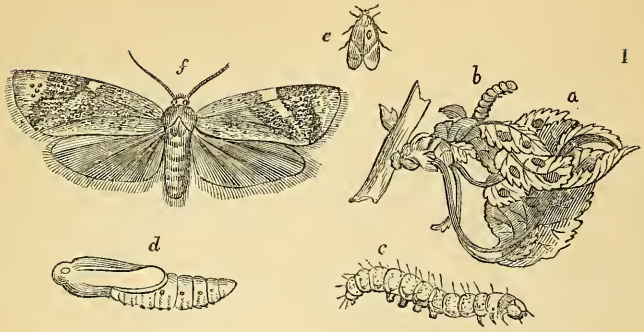
THE apricot, like the peach and nectarine, is infested with several distinct species of insects, which injure it in various degrees, and in different methods. There is a species of scale insect (Cóccidæ) which attaches itself to the young twigs; an aphis, which is also found in the same situation, and upon the young leaves, which it curls up and distorts; whilst those plants which are cultivated under glass are subject to the red spider (*A*carus telàrius), and to a small species of thrips. The two latter are, however, seldom found on out-of-door plants. The fruit attracts the little brown ant (*F*ormìca fúsca), which generally contrives to establish its colonies near the root, or under some stone or brick in the immediate vicinity; and which is very annoying to the cultivator, by attacking the fruit just as it is coming to a state to repay him for his labour. I have found it the most advisable plan, in order to get rid of these troublesome little creatures, to watch the time of the appearance of the winged individuals, which takes place at the end of the summer, and generally in a warm still afternoon. At such time, these winged individuals, which have, perhaps, been detained in the nest for several days for want of agreeable weather, sally forth in considerable numbers, and take wing. A great bustle is perceived among the wingless ants, the greatest anxiety appears to prevail; thus evidently betokening an important event in the community. This event is the pairing of the winged males and females, which takes place in the air; and hence it is evident that, by previously tracing the wingless individuals to their abode, and afterwards watching for the time of the departure of the winged specimens, the increase of the colony may be prevented by the easy destruction of the latter, which are by no means so active as the former. It is, however, still better to

disturb the nest just before the departure of the winged individuals, as it is then certain that pairing has not taken place. The wasp, also, together with the earwig and the blue-bottle fly, feast upon the ripe fruit.

There is, however, an insect which, judging from its effects in my father's garden, seems to me to be far more injurious to the apricot than any of the former, in consequence of its totally destroying the young fruit buds before the flowers have expanded, and thus cutting off all chance of a crop. Last spring, at the end of May and beginning of June (it would, of course, be earlier in an earlier season), I observed that a great many of the young buds, which were beginning to push out their leaves and flowers, were prevented from so doing by having the outer parts fastened together by fine threads; which, in some instances, completely prevented growth, whilst, in others, it was evident (especially a few days later, after a little warm rain) that the growth of the leaves was proceeding, although their extremities were still tied together, which caused the stems of the leaves to bend, and form a greater or less curve, according to the increased growth of the leaf. Within the retreat thus formed, and which generally enclosed the flower bud, an insect had taken up its abode; a small slender caterpillar, about half an inch long, which, at that time, had nearly assumed its full size, and was of a pale yellowish green colour; the extremity of the body being of a pale yellow; the head, very pale brownish yellow-coloured, and scaly, as well as the first and following segments of the body, which are of a semicircular form, with a black mark at each of the posterior angles; the eyes, the penultimate joint of the antennæ, and a spot on each side of the base of the head, black. The body is, in general, of a fleshy consistence, with transverse impressions near the articulations, and with lateral tubercles. A few short hairs, or, rather, slender bristles, are scattered over the body; the three segments after the head are furnished with as many pairs of articulated feet; the fourth and fifth segments are destitute of organs of locomotion; the four following segments have as many pairs of short prolegs, and a fifth pair of these organs is placed at the extremity of the body. This caterpillar is very active in its motions, writhing about from side to side, and twisting its body into various curves when disturbed: it also crawls both backwards and forwards, and will let itself down from a considerable height by a single thread attached to its mouth. Ordinarily, however, it keeps itself concealed within its green abode. Its presence may be easily detected by the withered and gnawed appearance of the leaflets, which, when dead, still cling together by many of the silken threads with which they are attached, and which are generally found about the twigs, with the withered petals of the adjacent

blossoms. If these, therefore, be disturbed, we perceive the little caterpillar endeavouring to make its escape; and thus we are enabled to trace the injury to its source, and destroy, with very little trouble, the cause of the mischief; for not only does the removal of the dead leaves and petals insure the destruction of the caterpillars, but the trees are thereby cleansed from a mass of dead rubbish; trifling, it is true, in each single patch, but amounting, on a large apricot tree, to a quantity sufficient, if left on the tree, to harbour various creatures, which may subsequently be injurious to the leaves or fruit; especially woodlice and earwigs. Cleanliness, not only in the animal, but also in the vegetable, world, is one of the surest means which can be adopted for extirpating obnoxious creatures of various kinds; and, doubtless, in plants, as well as in animals, the cleansing of a tree from its invaders not only insures the destruction of its parasites, but gives a healthy tone to its system; which is analogous, in plants, to the pleasing sensations which result from cleanliness in animals. Thus, in the instance of the apricot insects in question, by removing the rubbish from the tree, we not only destroy the parasite, but, in all probability, render the tree more healthy, and hence more likely to give a better crop the following year. We cannot too often inculcate this possibility of benefits resulting from our own exertions, and which the French have so well embodied in their expression, "*Aide-toi, le ciel t'aidera.*"

When the caterpillar has attained its full size, it has not far to go, nor is much labour requisite for the construction of its cocoon. It attaches the remnants of the leaves together slightly with threads; or, if it has previously made its way to a young fuller grown leaf, it rolls it partially up, fastening it with threads, and in the midst of this retreat it casts off its caterpillar skin, and becomes a shining brown chrysalis, very similar in its form to that of the moth of the rose tree, described in a previous article of my series. The back of the abdominal segments is furnished with five spines directed backwards, two rows being placed on each segment, and which are employed in pushing the chrysalis through the slender barriers of its cocoon, when the time has arrived for the bursting forth of the perfect insect. This takes place in the month of July; and at that period the moths may be seen flying about when the leaves are disturbed. On examining the folded up leaves, or the mass of rubbish in which the chrysalis state was passed, the chrysalis skin will be found half-protruded out of its former residence, in the same manner as is described in the proceedings of the rose moth, above referred to. The perfect insect belongs to the same order, section, and family (Tortrícidæ) as the last-named insect. It is the type of the



Genus Dítula *Stephens*, *Illustrations Brit. Ent.*, vol. iv. p. 83. (*Ditulos*, a Greek word, signifying the possession of a double gibbosity; in allusion to the long and bifid crest of the thorax.) Syn., Astàtia *Hübner*.

Species, Dítula angustioràna *Stephens*. Tórtrix angustioràna *Haworth*, *Lep. Brit.*, p. 429.

The narrow-winged Red-bar.

" Anterior wings oblong, narrow, obtuse, of a smoky testaceous hue, with an obscure, oblique, brownish streak or spot at the base, towards the inner margin; a waved broader streak of similar colour arising from a palish blotch on the costa, and reaching to the anal angle; beyond which, on the costa, is a short ustulated brown one, widest on the costa, and narrowing towards the hinder margin, which is faintly variegated with some palish lines: posterior wings dusky, or black.

" The male is smaller, of a deeper hue; sometimes blackish brown, with very dark, nearly black, markings.

" Extremely variable in size, and in the strength and intensity of its colours and markings." (*Stephens*, loc. cit.)

I have not succeeded in detecting the female in the act of depositing her eggs, nor in discovering them upon the tree; I have no doubt, however, that, as the moth is produced in July, and the caterpillars are not seen until the following spring, they are deposited in patches on the twigs, and that they are covered over with a glutinous coat, which hardens during the summer, and forms a protection, during the winter, to the eggs beneath, or to the young caterpillars, in case they should be hatched earlier, like those of the little ermine moth.

Fig. 1. represents a bunch of young leaves tied together by the threads of the caterpillar, which is seen at *b*, partly extended from amongst the leaves, of the natural size; *c*, the larva, magnified; *d*, the chrysalis, magnified; *e*, the moth; *f*, ditto magnified.

ART. II. *On the Vegetation of Dalmatia.* By BARON VON WELDEN, General in the Austrian Service, and late Governor of Dalmatia. Translated and communicated by Mrs. PALLISER.

[THE isolated position of Dalmatia renders this country so little known to the rest of the European world, that the following notice upon its botany, by General Welden, its late governor, may not be unacceptable to the English reader, more especially as nothing more recent has since appeared upon the subject. To the young gardener, it will be interesting in various points of view; but more especially in teaching such as propose to become botanical collectors, how to explore and describe the botany of any country. As facilities for travelling to and in foreign countries are increased, it will, in all probability, soon be considered a part of a first-rate gardener's education, to have been sent out as a botanical collector: indeed, even now, there are never fewer than from fifteen to twenty British gardeners travelling or residing in foreign countries, solely as collectors, either on account of private individuals, or of associations, or on their own account. The excellent article which now appears for the first time in an English dress will teach every gardener who reads it the invaluable art of observing, and also that of generalising on what he has seen. We hope, also, that it may induce some wealthy individual to send a collector to Dalmatia. At all events, one, we trust, will soon be sent to explore the Ionian Islands, in which there are, doubtless, many other interesting plants, besides the Cephalonian fir, lately introduced. — *Cond.*]

MY long residence in Dalmatia enables me to speak with confidence upon the aspect of the plants of that country, which I have carefully examined myself during every season of the year. With regard to the nature of the soil, which so much influences the character of vegetation, it is throughout calcareous, forming large clefts and basins, in which the water loses itself, again to appear in other places.

The mountainous formation of the higher regions is primitive floetz limestone, of a greyish colour, and compact in its nature: it is often mixed with red oxide of iron. The formation of the lower regions is a true yellowish white Jura chalk, which is abundantly mixed with hornstone, organic remains, nummulites, shells, and even with the skeletons of fishes, and with Crustàcea. The remains of plants are found in a bluish grey marly chalk, which passes also into sandstone. Where the primitive limestone predominates, the water disappears in the subterraneous caverns, which it has itself formed in these rocks, and only comes to light again in the marly or sandy masses of the valleys.

A mass, consisting of a friable marl, brown clay, and brown

coal, extends from the Promina, by Much and the Mosor, towards the Biocovo. Loam is found on the Turkish frontier of Imoschy, towards the Naventa: but the greater part of the lower regions is filled with a heavy red-coloured iron ochre. The only fertile soil of Dalmatia is near Dernis, Much, and Sign, and consists of a decomposed brown coal formation. The line of the mountains is from north to south; that of the few rivers of Dalmatia, the Zermagna, Kierka, Cettina, and Naventa, from east to west; that is (as would be naturally supposed), towards the sea. The principal mountain ridge separates itself, at the Turkish boundary, from the Velebit; which last stretches from the coast towards the canal of Morlachen, and acquires a height of from 4000 ft. to 5000 ft., forming an isolated mountain of 5668 ft. in the Dinara, from which the alps which run towards Bosnia receive their name. This ridge passes along the left bank of the Cettina to the Naventa, gradually losing its declivity, and dispersing itself into several small branches. From the Dinara, which is the highest point in Dalmatia, rises another chain of mountains, which, after forming a peak of 3609 ft., called the Promina, extends into the mountains of Swylaja, of which the most elevated point is 4743 ft. high. Through the valley near Much, this chain pursues a southerly course, and increases visibly in altitude, until it reaches the mouth of the Cettina, where it receives the appellation of the Mosor Mountains, the highest peak of which is 4206 ft. The Cettina has evidently forced itself a passage towards the sea; for the next ridge, which descends to the Naventa along the coast above Macareska, and is called the Biocovo, certainly was once united to the Mosor. Its highest summit is 5520 ft.; and it forms, with the Dinara, the most elevated point of vegetation in Dalmatia. Besides these mountain chains, the rest of the continent of Dalmatia consists of promontories, among which are the Buccovitza, the summit of which is 3102 ft; the Tartar-Hügeln, the greatest elevation of which is 1568 ft.; the Karban Mountains, of which the point Mount Kosiah is 2456 ft. high; and Sweti Jura, which lies behind Spalato, and is 2135 ft. The Dalmatian continent is also composed of large plains, most of them stony: the most considerable of these extends from Novigrod, over Nona and Zara, to the Kerka.

The second division of Dalmatia, that is to say, the islands, partakes more of a mountainous than of a level character: Brazza and Solta are lower, Lissa and Curzola contain higher mountains.

The lines of vegetation in Dalmatia are, therefore, to be drawn in the following manner:—1. From north to south; and here the limit is pointed out, between Trau and Sebenico, by a natural demarcation: it separates the southern flora from that of the north. The first contains plants which are also indigenous to the Greek islands and Apulia; the second approaches the flora

of Croatia and of Istria. The islands of Dalmatia belong to the first division: on a similar elevation to that of the continent, flourish several plants of the south, which are not found upon the main land; such, for instance, as *P*ùnica *G*ranàtum, *M*ýrtus commùnis, *V*ibúrnum *T*ìnus, &c. The precise limits between the north and the south are indicated by the *N*èrium Oleánder, which first appears near Salona; the line then passes along the islands, through Lesina and Lissa, which differ strikingly in their vegetation from the upper islands. 2. Other lines of demarcation may be traced from east to west, indicating the flora of the plains and that of the marshes, that of the stony hills and of the higher mountains, all of which present a remarkable difference: but, before we proceed to a closer analysis, it would be advisable to say a few words upon the nature of the climate, which exercises as much influence upon plants even as the soil itself. Dalmatia is about sixty German miles in length, and about two degrees in breadth. In many places there are barely a few miles between the mountains and the sea; and the climate, consequently, is not uniform, but varies according to the position of the country. Ragusa and Cattaro are by two or three degrees warmer than the country of Zara, in the vicinity of the Velebit. There is no true winter along the Dalmatian coast; for one or two degrees of cold, during a few days, can hardly be said to constitute a winter. But it is the winds which render the climate more severe; and among these are to be distinguished the Bora, which, passing along the canal of Morlachen, takes up the saline particles of the sea, and surrounds the plants with a white efflorescence, which is most prejudicial to vegetation. But such storms, though violent, do not frequently occur: they are mostly felt in November, at the end of which month the nominal winter of Dalmatia commences. But, even in December and January, crocus, ixia, and colchicum are found in bloom, as also *H*elléborus multífidus; and the pastures are greener than in August. Spring begins towards the end of February, which is generally the most severe month in the year. What I am saying now refers to the coast: in the mountains, the season is four weeks later. A great quantity of bulbous roots announce the opening spring, and each succeeding day in March presents new flowers. *I*ris tuberòsa, *N*arcíssus *Tazétta*, and *O*rnithógalum refléxum, appear along the hedges of evergreens, composed of *L*aúrus nóbilis, *P*istàcia *L*entíscus and *T*erebínthus; while *G*eràlium tuberòsum, Campánula cordàta, and *L*áthyrus inconspícuus show themselves, towards the end of March, among the corn. In the middle of April, the whole surface of the earth is swarming with flowers. One has not hands enough to collect every thing in so short a space of time; for the flowers fall almost as soon as they bloom, or they are devoured by the goats and sheep. The month of May is particu-

larly rich in the Orchídeæ and in flowering shrubs. June favours the Umbellíferæ and Compósitæ; and generally, towards the middle of the month, the temperature is already at 17° or 18°. No time, therefore, is to be lost in collecting; for, there being no rain, the heat, which, in July, rises to 25°, burns up every thing. From this period, until the end of August, no rain falls, except in the mountains; but, in compensation, there is a heavy dew almost every night, by which alone vegetation is preserved.

On the elevated mountains of the Velebit, the snow generally remains upon the ground until the end of April; but sometimes, on the Dinara and the Biocovo, it lies as late as May, and even until June. Storms are rarely experienced: it is only in February and March that they occur; never in the hot months. The temperature is variable. When the Bora arrives, it often rises from 10 to 15 degrees; but at other times the evenings are generally cool and damp. Clouds hang about the mountains. Along the coast and in the islands, the weather is serene, and I recollect no fogs. Snow seldom falls on the coast.

Under such peculiar circumstances, it is naturally to be expected that the vegetation should also bear an extraordinary character; and even those who are not botanists must be struck with the number of prickly shrubs and thorny plants which cover the surface of Dalmatia; and which, united with the stony nature of the soil, cause pain to the traveller at every step he takes. *Rh*ámnus, *Pa*liùrus, and *Rù*bus cæ`sius, with *Pù*nica *G*ranàtum, *Rò*sa spinosíssima, *Lý*cium europæ`um, *S*mìlax áspera, &c., growing together in hedges round the fields, oppose, even to the soldiers, an impenetrable barrier. Woe to him who ventures to scale these formidable ramparts: the destruction of his garments would prove the most trifling of the injuries he would have to sustain. On the road, the traveller meets with the rough and spiny *E*`chium pustulàtum, *S*pártium spinòsum, *A*cánthus spinosíssimus, Echìnops *Rìtro*, *A*spáragus acutifòlius, *B*uphthálmum spinòsum, *C*ápparis spinòsa, *O*nònis spinòsa, *Er*ýngium, Carl*ìna a*canthifòlia, *E*uphórb*ia* spinòsa, *J*úncus acùtus; *J*uníperus, three species; *C*áctus *O*púntia, *O*nósma stellulàtum, Serrátula arvénsis, Echinóphora spinòsa, *O*nopórdon illýricum, *C*entaurèa solstitiàlis, *C*árthamus lanàtus and tinctòrius, *S*cólymus hispánicus, Xánthium itálicum; which wound him at every step, and render (particularly in summer, when they dry up and harden) many districts quite impenetrable. In vain does the wearied traveller look around for a resting-place; he can only lie down upon a bed of thorns, rendered still more insupportable by myriads of insects.

Dalmatia contains no true alpine plants; but many of our subalpine flowers are found on the Velebit, the Dinara, and the Biocovo; such as *S*enècio *Dorónicum*, *A*chillèa Clavénn*æ*, *S*èdum stellàtum, *D*ràba lasiocárpa, *S*axífraga rotundifòlia and

repánda, *A*ndrósace villòsa, *Genti*à*na* vérna, Prímula spathulàta, &c. This last is the only one of its genus, although Prímula acaúlis grows so abundantly in the neighbouring province of Istria. It is a singular fact, that many plants which are generally found only upon mountains, here grow in the plains and near the coast; such as Campánula graminifòlia, *D*ictámnus álbus, Anthéricum Liliàgo, &c.; and, on the other hand, the plants which, in this country, grow only upon the mountains, and chiefly upon the Biocovo, are mostly those which are usually found upon the plains; as *A*'rctium Láppa, *Bérberis* vulgàris, *Be*tónica officinàlis, Campánula glomeràta, Carl*ìna* acaúlis, Convallària *P*olygónatum, *D*áphne *Mezèreum*, *F*àgus sylvática, *F*ráxinus excélsior, *L*ìnum cathárticum, Prenánthes muràlis, *S*piræ`a Filipéndula. Again, I have found other plants growing equally well upon the sea shore and upon the upper part of the Biocovo; as *Valeriàna* officinàlis, *I*llécebrum *s*erpyllifòlium, *T*rifòlium arvénse, &c.

With regard to the peculiarities of the flora of Dalmatia, it has not been yet sufficiently investigated, to come to any precise conclusion upon the subject. It approximates mostly to the flora of Greece; it also bears much resemblance with that of Istria, some with that of Croatia and Upper Italy, a little with that of Apulia, and scarcely any with that of Germany.

Up to the present time, the following plants have been found in Dalmatia, which have been discovered exclusively in this country:—*M*yrrhis coloràta, *H*elléborus multífidus, *C*ardámine marítima (found, however, also in the Island of Osero, near Istria), *C*hrysánthemum Turre*ànum*, *S*éseli tomentòsum, Farsèti*a* tríquetra, Berterò*a* procúmbens, *E*`chium petræ`um; Campánula pùmila, cordàta, and *s*erpyllifòlia; *H*edýsarum variegàtum, *G*àlium rupéstre, *A*spérula canéscens, *A*nchùsa micrócalyx, *C*erínthe purpùrea, *P*astinàca *s*elinöìdes, Medicàgo crassispìna, Diánthus ínteger and racemòsus; *S*tàchys frágilis, *men*thæ*fòlia*, subcrenàta, and spinulòsa; *T*rifòlium succínctum, mutábile, and dalmáticum; *H*ésperis glutinòsa, *C*entaurèa salonitàna, and *C*ýtisus Wélden*i*. *Genti*à*na* crispàta and flavéscens are only found on the highest points of the Biocovo; *C*erínthe purpùrea only on the Bocaya; Farsèti*a* tríquetra only near Clissa and Almissa; and *C*entaurèa salonitàna only near Salona. Among the newly discovered plants of Portenschlag and Visiani, are *H*edýsarum variegàtum, *T*rifòlium mutábile, and Silène Thomasì*ni*, which have only once been found. Professor Reichenbach unites Berterò*a* procúmbens of Portenschlag with Berterò*a* mutábilis, which is of frequent occurrence, but only flowers in September, a month in which Portenschlag was not in Dalmatia. With respect to the newest plants described by Visiani, I consider his *H*yoscỳamus vàrians to be synonymous with *H.* canariénsis: in-

deed, I am convinced of it by seeds from Portugal, which have been raised and have borne flowers. I cannot distinguish Andropògon pubéscens from A. hírtus of the Abruzzi: the first is more or less hairy, according to the dryness of the soil in which it grows. Aspérula canéscens I have never seen. Herniària rotundifòlia is nearly allied to H. hirsùta. *Anthríscus* Cerefòlium I have never found. *Ornithógalum* saxátile is identical with *Ornithógalum* gargánicum, if we except a larger and more vigorous growth, which difference may probably arise from the soil. Silène Thomasìni, Vesicària microcárpa, and *Saturèja* parviflòra, have never come under my observation. *Astrágalus* argénteus deserves to be strictly compared. I can discover no difference between *Láthyrus* stáns and *L.* inconspícuus *Spreng.*; nor between *Achillèa* argéntea and *A.* Clavénnæ. I have never found *Centaurèa* cuspidàta and punctàta, nor *Pìcris* laciniàta. But I do not mean, by these observations, to impugn any of those professors of botany and learned men who have so distinguished themselves in the science; I only mean to give my opinion, as is permitted to every one, and only wish that it should call forth more exact investigation, which cannot but prove conducive to the interests of science. Besides, Dalmatia, like all uncivilised countries, is but little known; and it may be safely concluded, that, as the flying excursions which botanists have lately made have offered so much novelty, probably half only of its botanical treasures have been discovered; and, as there is always something in flower at every season of the year, and the plants so quickly go out of bloom, a botanist should pass the whole year in Dalmatia, in order to make his researches. But, to give an idea of the richness and variety of the flora of this country, it may be sufficient to say, that, without moving from the spot where I found myself, I was able to collect twenty-one different species of plants, of which two only are found in Germany. It would require many years thoroughly to examine Dalmatia; but the obstacles which the country, as well as its inhabitants, opposes to the traveller, are immense. The whole of the frontier of Bosnia, as well as the Velebit and the Buccovitza, could only be visited with a strong military escort. It is almost impossible to set foot in the frontier of Monte Negro and the Cattarese district. It is more easy to see the coast; and the islands are the best to explore; yet even these are almost unknown. But what must the traveller resign himself to, who enters upon this undertaking! He must give up the idea of all shelter, food, or the slightest accommodation: not even water will he find, or bread, unless he carries it with him. To encounter such a journey, he must know the language and customs of the Morlachens, and furnish himself with the best introductions, and with an escort. Under these circumstances, Dalmatia will long remain

unknown, whatever trouble may have been bestowed upon its examination of late.

The history of these researches is briefly this: — During the time that Dalmatia was under the dominion of the Venetians, a few travellers visited the country to make here and there some researches; but among these are the celebrated names of Boccone, Donati, Wulfen, and Cyrillo, who vouchsafed to bestow their attention upon this country. But, since it has become an Austrian province, the government itself has paid the greatest attention to discovery; and, in 1802, sent there Messrs. Joseph Host and Von Schonus. In 1818, the emperor, himself a lover of botany, visited this country, and took with him in his suite Dr. Portenschlag and a gardener. From this epoch began a new active life in the botany of Dalmatia. It was the important discoveries made by Portenschlag, during his two months' residence, which first excited general attention to this country; but, unfortunately, he was prevented by death from publishing his work. A young Dalmatian, Doctor Von Visiani, attached to the botanical chair of Padua, at every return to his own country, investigated its flora, particularly that of the vicinity of his birthplace Sebenico; and found, I might say immediately at his own door, a dozen new plants. Several more extended journeys which he made, fixing his residence in the country, enabled him to publish, in the year 1826, his *Specimen Stirpium Dalmaticarum*, which, unfortunately, is not sufficiently known. It contains, together with his new discoveries, a survey of the country, and also the first catalogue of all the plants hitherto observed by him in Dalmatia. This was followed, in the year 1828, by his *Plantæ rariores in Dalmatia recens detectæ* (which is printed in the *Ratisbon Flora*, 1829, Ergänzungsbl., p. 1. to 24.): this contains 37 new plants. A second catalogue is published in the *Flora*, 1830, No. 4. At this time, chance united several Florentine priests in this country. Tomasini found himself first in the field at Cattaro, where he made many interesting discoveries, which Host subsequently collected. Neumayer, a diligent collector, has been for some time resident at Ragusa, of which he closely examines the environs.

Doctor Visiani, residing otherwise at Sebenico, is at this moment physician in Cattaro; Professor Pelter, at Spalato, is also a most active collector, and the environs of that country owe to him a multitude of new discoveries in plants, which hitherto had been little known. He will add to the encyclopædia-like work which he has prepared upon Dalmatia a botanical appendix, and a catalogue of all the plants which have as yet been found there; and he will be assis ed in his undertaking by all the botanists of the country.

At Zara are Professor Alschinger, and Rubrizius the com-

missioner of police, both assiduous collectors, who have diligently explored the environs. The first gives gratuitous lessons in botany, out of pure love to his favourite science. At Pago is the district physician, Dr. Cariboni. At Trau are M. Von Garagnini, a private individual, who occupies himself with the cultivation of forest plants; and Dr. Biasoletto, from Trieste, travelled through Dalmatia last spring, and made many interesting discoveries. For myself, I can assert that, during my long residence, and in frequent journeys through this interesting country, I have neglected no opportunity of gaining possession of every thing that could be useful to its flora, as far as my safety permitted me to visit places which had never before been trodden by any botanist; and I also carefully cultivate all the plants of interest in my garden, so that I am able to make more precise observations upon them. What I regret is, the total separation from all advancement of science in the rest of the world, in which I am compelled to live; for there are no means of procuring books in this wilderness, as there are no roads or stage coaches in this secluded corner of the earth, and sea communication is slow and insecure. I must mention another class of botanists whom the traveller should not neglect: these are the wild Morlachens themselves. Like all savages, they live in the open air, and are more attentive observers of nature than would be imagined. They give their own names to the plants; and, if rewarded for their exertions, they are active collectors. An old pandur in Macarsca, who had accompanied Portenschlag, in 1818, to the summit of the Biocovo, recollected, this summer, all the stations of the interesting plants collected by him, and knew where to find them again. It is sufficient to show to a Morlachen a dried specimen of a plant, or to give him a distinct description of it, and he is sure to procure it. Many collectors have employed this means of obtaining specimens with ease and safety, particularly in the Cattarese district, which can only be visited with a strong escort.

It has often happened to me, in my solitary wanderings, to find myself surrounded by obliging Morlachens, who, curious by disposition, no sooner guessed the object of my journey, than they offered me their services, and brought me their caps filled with flowers, locusts, butterflies, or spiders (the insects, to be sure, were in a deplorable condition); or they dug up living plants for me, or assisted me in finding lizards or serpents; and they were perfectly aware if they were venomous or not. But one must expect a host of questions; and these people, who are very superstitious, relate anecdotes of all the insects they have found; of people bitten by snakes, &c.; and one has great difficulty in ridding oneself of their company. The best means is to give them tobacco or gunpowder. Here, as indeed every

where, we find many plants which are confined to one peculiar locality, and others which are more universally distributed: some are restricted entirely to the inland districts, others bloom only along the coast. Universally, it is the tuberous and bulbous-rooted plants, the umbelliferous and syngenesious, which predominate. There are but few Leguminòsæ; and some genera of plants common with us are entirely wanting; such as *P*ediculàris, Sanícula, Swért*ia*, Erióphorum, Drósera, &c.; a deficiency which, perhaps, arises from the dryness of the climate, as these genera are mostly inhabitants of marshes. That the flora of Dalmatia has been only examined by degrees, the following will show: — Portenschlag found ten species of *C*entaurèa, to which Visiani added seven new; and I possess twenty-one in my herbarium. Portenschlag knew six *I*nulæ Visiani added three, and I possess eleven. Of Medicàgo, the former had seven species, Visiani added four, and I have twelve. Portenschlag had nine species of *T*rifòlium, Visiani fourteen, and at present twenty-eight are known. Equally remarkable are the *O*rchídeæ: Portenschlag knew three, Visiani did not find even one specimen, and I have altogether seventeen different species.

It now only remains to indicate the new discoveries which have been made, during the last year, by several excursions in Dalmatia. *A*rtemís*ia* naronitàna *Visiani* has been brought by Pelten from the Naranta, where he found it flowering in the month of September; Arenària grácilis *Waldst. et Kit.*, discovered by me upon the Biocovo, and which is quite new in Dalmatia; likewise *S*álvia oblìqua *Waldst. et Kit.*, from the heights near Karim; *O*phrys spéculum; *G*enísta flórida, discovered by Biasoletto at Pago; and also Velèz*ia* rígida, at Streteo, likewise new to the Dalmatian flora; Períploca græ'ca, and a very small *P*lantàgo (*P.* minùta *Mihi*), from the valley of the Narenta; also, *C*ýtisus frágrans *Welden*, *C.* Wélden*i* Visiani, which was discovered by me, last autumn, at the foot of the Biocovo, occupying large tracts, which, when it flowers, are filled with the intoxicating perfume which it exhales. The milk of the goats which browse upon this plant excites headach in those who drink it. This arborescent shrub has also another peculiarity, which is, that it bears leaves twice a year, the last of which are much smaller, and more pointed, than the first; and they remain green until late in the winter. *Gentiàna* crispàta and flavéscens *Visiani*, discovered by Professor Pelter on the Biocovo, where it flowers in September; *L*ílium chalcedónicum, which I brought last year from the Velebit; as well as *S*enècio *a*brotanifòlius, *A*ndrósace villòsa, *A*chillè*a* Clavénnæ, *M*éntha croática (new in Dalmatia); as also Campánula tenuifòlia *Waldst. et Kit.*, and divérgens, from the Karban Mountains;

Sempervìvum stellàtum, a *Bupleùrum*, and a *Euphórbia*, which I have from the Biocovo, and which appear to me unknown; *Astrágalus* Mü'ller*i* St. et Koch, from Karin, Euphràsia serótina *Waldst. et Kit.*, *Onobrỳchis* sphacelàta, *Myosòtis* ápula; *Orchis* símia, *sambùcina*, fúsca, pyramidàlis, and variegàta; *Ranúnculus* illýricus, from the Velebit; Scabiòsa acutifòlia *Reichb.*, *Saxífraga* repánda, *Verónica* arvénsis, &c.; likewise *Convólvulus Cneòrum*, from Lesina; *Anthýllis* Bárba Jòvis, near Comissa, and *Pancràtium* illýricum, both frequent near Lissa. Corrigìola littòralis and *Cardámine* græ'ca, from Curzola. These and many others are the fruit of recent researches, and show how rich the flora of this country is throughout the whole year; as, even in autumn, when every plant is out of flower in Germany, every thing here vegetates anew. Many plants flower a second time; and the month of September always offers a harvest of at least thirty to forty interesting species. The result of many experiments which I have made in their cultivation prove to me the obstacles opposed by the great heat and the deficiency of rain, even in the finest seasons, to the introduction of the useful or ornamental plants of Europe. It is only the mulberry, the robinias, all the *Rhús* tribe, *Acàcia* lophánta and farnesiàna, *Nèrium* spléndens, and some species of mallow, that succeed well. All the garden fruits, chestnuts, and nuts grow badly, or not at all: they either soon die, or they degenerate. Perhaps better results might have been obtained by experiments made in the more mountainous districts. Indigo, and all the cotton-bearing plants, as also the *Phórmium* tènax, succeed well here, when sufficient water can be procured for the first. The indigo, particularly when the season is not too dry, produces ripe seeds; a circumstance which prevents its cultivation in the more northern regions. Lately, I have put plants by chance in the worst ground, without watering them; and, nevertheless, they have thriven magnificently. It is a plant which requires the sea breezes, and a mild climate, and would therefore be well placed in this country. Vegetables succeed, for the most part, at every season of the year: the want of water is the only obstaclet o their cultivation. But I have remarked, with surprise, that plants accustomed from the seed to be watered with salt water (aqua grossa) thrive well: it protects them from the snails, and they only become a little hardier from its application. The cauliflowers are particularly fine; and there are vegetables in the open air during the whole year, mostly in the autumn, in consequence of the rain. There are some, such as salad, which may be planted two or three times a year. The flower tribe would also prosper here if cultivated. Except the tuberous-rooted pelargonium, I have preserved all the species of this beautiful family in the open air during the winter. The power of the soil and of the climate is extraordinary: every

branch put into the earth takes root; and acacias and robinias, raised from seed, were, the second year, nearly 5 ft. high.

The cultivation of the olive, the vine, and the mulberry appears to prosper in this climate; but they are only of the most inferior quality, whatever has been the trouble bestowed by government upon them. The wine hills about Sebenico, Almissa, Macarsca, and the islands, afford, without any care, fine powerful wines of all kinds and colours; but a fifth of the crop is annually spoiled from neglect of using proper measures to preserve it; and, from the same cause, there is scarcely any wine of more than a year old. It does not enter into the object of this article, to indicate the means of making Dalmatia once more the paradise which it appears to have been in the time that Diocletian would not exchange it for the most beautiful parts of Italy, and which, at present, its lovely climate, more than its inhabitants, qualify it to become once more.

I have fulfilled my task, if this little sketch should animate others to closer researches in this interesting country.

Zara in Dalmatia, December, 1829.

ART. III. *A slight Sketch of a Visit to Allanton, the Seat of the late Sir Henry Steuart, and now in Possession of his Daughter, Lady Macdonald Steuart.* By W. A. NESFIELD, Esq.

ON approaching Allanton from Lanark, the general surface of the country is undulating, with extensive young plantations, which are principally on the high grounds. Mature trees are but thinly scattered in hedgerows; so that, previously to modern improvement, this neighbourhood must have been very naked, and particularly uninteresting, since there are no bold features in the distances, although they are hilly. There are two approaches to Allanton: one from the west, on the Lanark road; and another from the east, on the Edinburgh and Ayr road. On the outside of the west lodge (which stands back in a recess several yards) appear the first specimens of transplanted trees. These, being open to the public road, give considerable interest to the entrance, and every candid person must admit the impression to be highly favourable: and he who is inclined to be sceptical as to the result of the practical, as well as the theoretical, knowledge of the late Sir Henry Steuart, should, before he ventures to pass an opinion, go and witness the living proofs of his success; and it is impossible that he can return otherwise than full of admiration and enthusiasm. Indeed, as to the planting generally, the extremely vigorous state of the trees absolutely sets criticism at defiance; although, relatively to picturesque arrangement, it cannot but be regretted that there are a few over-

sights. With regard to the disposition of the trees, which (with the exception of here and there a holly) are all deciduous, and indiscriminately mixed, they have evidently been planted thick at first, to produce immediate effect; which, from the nature of the place, must have been a desideratum: they are, consequently, now so much crowded, owing to the rapid progress they have made, as, in some places, almost to obliterate the original design. This, however, may easily be remedied, if taken in time; that is, before the trees are drawn up and spoiled.

After passing the west lodge gate, and following the approach towards the house, a degree of littleness is conveyed to the mind, in consequence of the extreme narrowness of the road, which is only 8 ft. wide; and, indeed, this is so striking, that it at first looks like a drive through a plantation; which idea is more confirmed by the closeness of the planting. On proceeding a short distance, however, open spaces present themselves, which gradually widen, till there are scattered groups of trees visible in the open park, which is intersected by a long sheet of water, having the appearance of a lake, narrowing into a river. Near the head of the former, there is a neat stone bridge, of three arches, leading to the house. The water is on two levels; that nearest the house being the higher. The fall, however (which is under the bridge), is fortunately rendered invisible from the approach, by a small mass of trees. Above the bridge, the water narrows, and indicates the character of a river, which has not been quite satisfactorily accomplished; because, although the channel makes a long bend in reality to the left, it does not *appear* to do so from the bridge, but seems to terminate not only too abruptly, but at too short a distance above the bridge itself; and, as first impressions are generally of importance, it would be better to prevent the query of "Why should there be a bridge at all, if the head of the water could so readily be circumambulated, without any apparent impediment?" Now, had a visible portion of water, however small, recalled the continuation of the river, the artificial character of the feature in question would not have been betrayed. On looking down the lake from the bridge, the general outline, though agreeable, might be improved; as the lines of opposite shores repeat each other too frequently, instead of having one or two bold points, with deep indentations. The smooth turf, also, bounds the water's edge with monotony; whereas a break of bank here and there, with shingle, or a few large scattered stones, with which the neighbourhood abounds, would have produced a better effect, by coming nearer to nature, which it professes to resemble. The house, which is Grecian Doric, without much architectural pretension, stands on a good site, many feet above the lake, and is

arrived at by a gradual ascent from the bridge. On the lawn in front of the house stand most of the largest trees, which Sir Henry Steuart first transplanted, and which are incredibly vigorous. To mention one in particular; a beech, which feathers to the ground in such a manner as to hide the trunk, is so unusually luxuriant, that it is evidently improved by having been removed; and, indeed, with very few exceptions, this observation applies to every tree in the park which has undergone the Steuart operation. The limes, horsechestnuts, and double thorns, surrounding the house, are worthy of particular notice and admiration. With regard to the general shape of the trees, they have unusually thick trunks, that is, in proportion to their height; with extremely spreading and well-balanced heads, and foliage of uncommon density. It also must not be omitted to observe, that, although the park lies very much open to the south-west, there is not a single tree to be seen out of the perpendicular, although they were placed upon their sites without props.

In viewing the scenery from the house, the park appears more extensive than it really is, owing to the judgment displayed in the general grouping of the trees: and the lake, which was excavated subsequently to the erection of the house, could not be better placed; as it is situated longitudinally, as viewed from the latter, and thus comes in very pleasing perspective. On walking round the water, the most interest is observable, as a picture, at its termination, and at its greatest width. Thus, on looking towards the north-east, opposite a small island, the eye is immediately conducted across the lake towards the bridge, which becomes a very conspicuous feature; because it is at the base of the hill upon which the house stands, and nearly under it, so that it architecturally unites the latter with the landscape most admirably. The shores, also, present an outline the very reverse of the view looking from the bridge; and thus is illustrated in a most satisfactory manner the artistical advantages of foreshortening. Unfortunately, however, as at many other places, a composition so accidentally complete is not made available with regard to the approach or any private drive, but must be sought after by the amateur of the picturesque. It certainly excels every other view about the place.

The excavated soil of the lake has served to raise the ground at its termination, which is thickly planted, and shuts out an adjoining high road.

The east lodge, like the west, is standing in a recess, only less deep. Here the trees are so thick as truly to form a feature of parallelism with the opposite hedge of the high road. The width of the approach road, however, is somewhat better, being 10 ft.

By way of conveying an idea of the magnitude of the transplanted trees, the dimensions, in feet, of a few of the largest, and of those which have been the longest planted, are given : —

	Height.	Circum. of Trunk 1 ft. from Ground	Years planted.	Remarks.
	Ft.	Ft. In.		
Horsechestnut -	35	4 3	8	
Horsechestnut -	30	5 0	8	Circumference of head 84 ft.
Lime - -	40	5 4	12	
Wild Cherry -	30	3 5	10	
Double-blossomed Thorn	18	2 0	12	
Quércus pedunculàta	24	4 9	14	
Beech - -	38	6 9	12	Circumference of head 129 ft., feathered to the base, and very round ; more fastigiate than the former, and, though taller, much less spreading.
Beech - -	40	7 3	12	
Larch - -	36	5 3	10	
Ash - - -	28	6 5	14	A most beautiful plant.
Ash - - -	26	4 7	8	Fine head.
Turkey Oak -	30	2 10	5	Foliage not so luxuriant as that of Quércus pedunculàta.
Birch - -	36	3 4	8	
Sycamore - -	32	4 0	8	
Mountain Ash -	18	3 6	8	

There are two horsechestnuts at the eastern extremity of the water, which Sir Henry Steuart experimentally planted contiguous to one another, taken from the same plantation, and originally corresponding in size : one from the interior, without previous preparation ; the other, from the outside, possessing the "protecting properties." They have now been 10 years removed, and the result is as follows : — Tree from the interior, 28 ft. high ; circumference of the trunk 2 ft. 10 in., and of the head 57 ft. Tree from the outside, 36 ft. high ; circumference of the trunk 4 ft. 3 in., and of the head 102 ft.

Finchley, Oct., 1837.

ART. IV. *A Series of Designs for laying out and planting Flower-Gardens, with Remarks on each by the* CONDUCTOR.

Design 6. By a FOREIGN GARDENER.

THIS design (*fig.* 2.) was sent to us, accompanied by an explanation in German, of which the following is a free translation.

"I HAVE taken the liberty to make an alteration in the direction of one of the walks, as shown in the original plan; and, therefore, I do not expect that you will award to me any premium. All I have to say for myself is, that I think I have shown a more artist-like disposition of the groups than is to be found in the plan on which you have called on young gardeners to exercise their talents. In Germany, we are not nearly so much attached to round clumps as the English gardeners appear to be; and, where we do introduce the English style of directing walks in curved lines, we endeavour as much as possible to avoid straight ones. This is the reason why I have altered the straight-lined walk on the right-hand side of the plan. Some of the groups I propose to be planted with flowering shrubs, and these are accordingly marked with tree-like forms: but the greater number I propose to be planted with perennial herbaceous plants, and with spring bulbs; the latter to be succeeded by autumn-flowering annuals.

"*London, May*, 1832. A GERMAN GARDENER."

OUR German correspondent has so entirely altered the walks, as exhibited in the original plan given in Vol. VII., that, as he himself observes, he has put himself altogether out of the pale of competition. We have engraved his plan entirely for the sake of pointing out some faults in it; because it is a maxim of ours, which every day convinces us more and more to be founded on truth, that instruction in matters of taste is more speedily, accurately, and effectually, conveyed by pointing out errors in faulty designs, and giving the reason why they are errors, than by merely presenting such as are comparatively faultless. The reason why this is the case may probably be, that the evils resulting from error are of a grosser kind, and require less cultivation and refinement of mind to be understood, than the different kinds of beautiful expression. The design before us (*fig.* 2. in p. 20, 21.) has the fault common to most of those which have preceded it, viz. want of connexion among the groups; nevertheless, this fault is not nearly so great in *fig.* 2. as it is in the design fig. 2. p. 178, 179. in Vol. XII.; which, from the groups being equally disposed in every part of the area, exhibits a total want of repose and effect: that is, every part has equal claims on the attention of the spectator; every where there are clumps, with spaces not materially different in extent between them. Whereas, in the design *fig.* 2. there are large plain spaces, which contrast with others where the groups are close together; and on which plain spaces the eye can repose after it has been excited by examining the groups. We give this explanation w h a view of conveying to the young gardener an idea of what is meant by repose and effect, which he will here see produced by contrast. He will also bear in mind, from what has been else-

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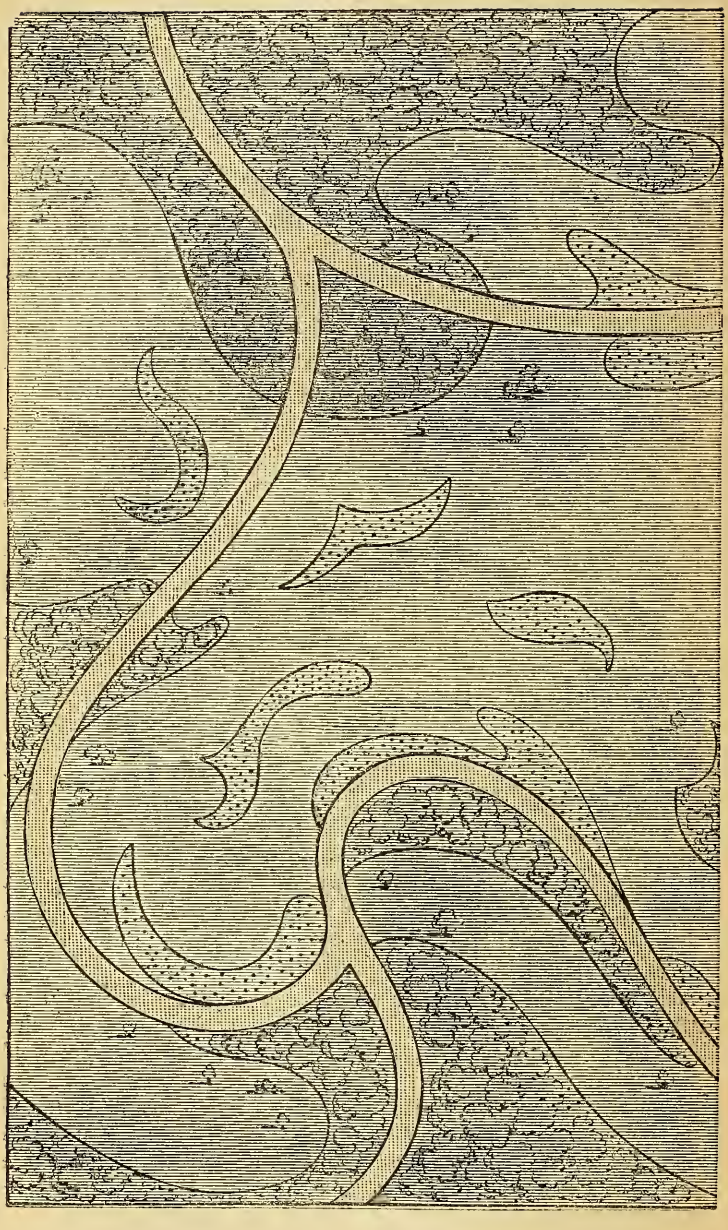

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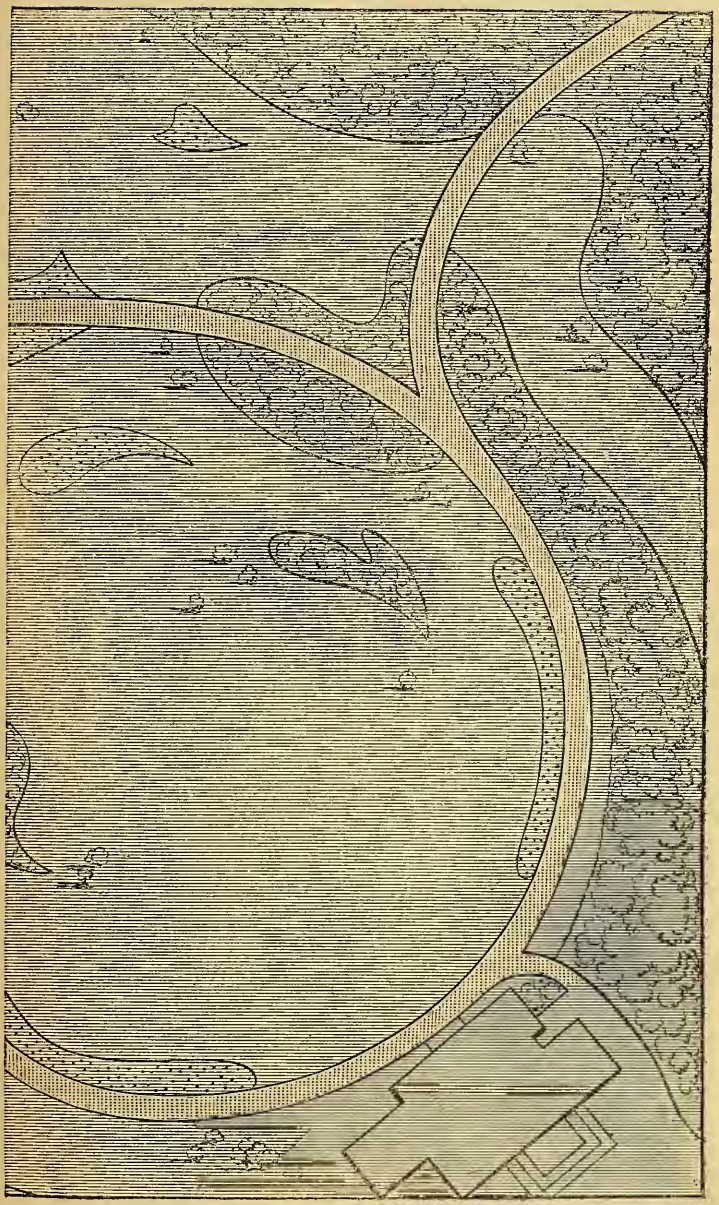

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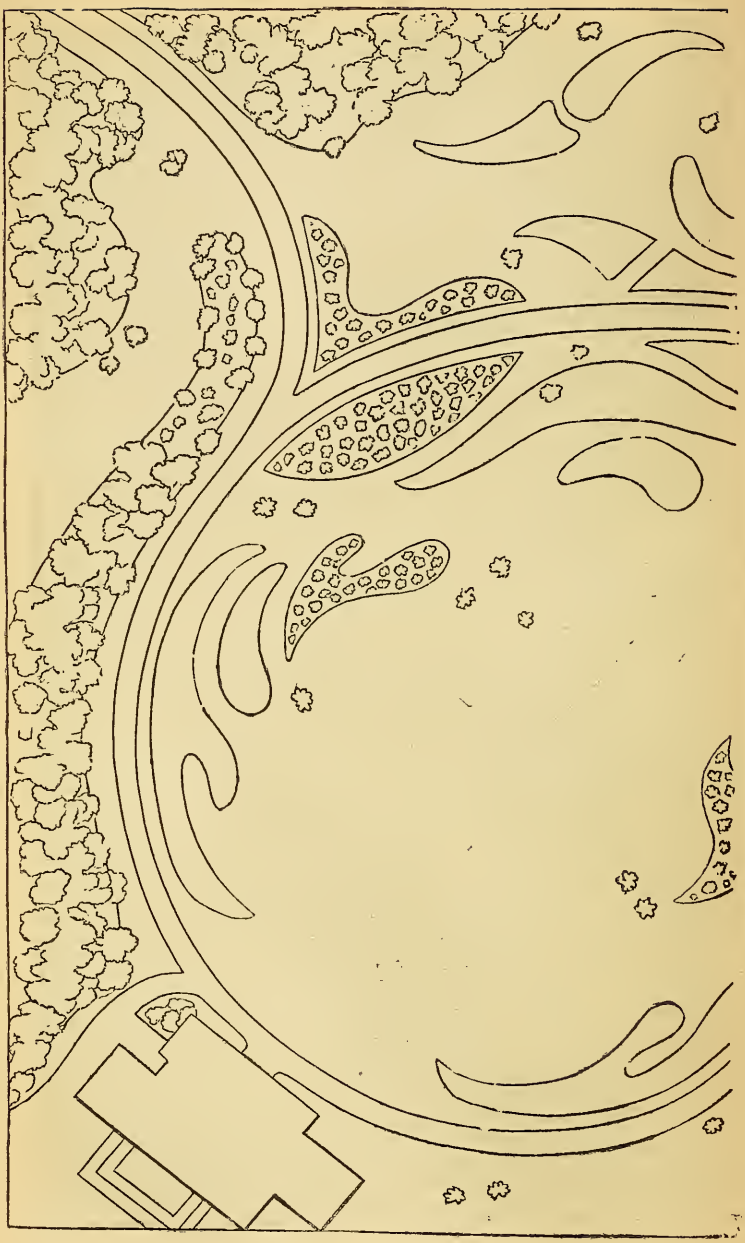

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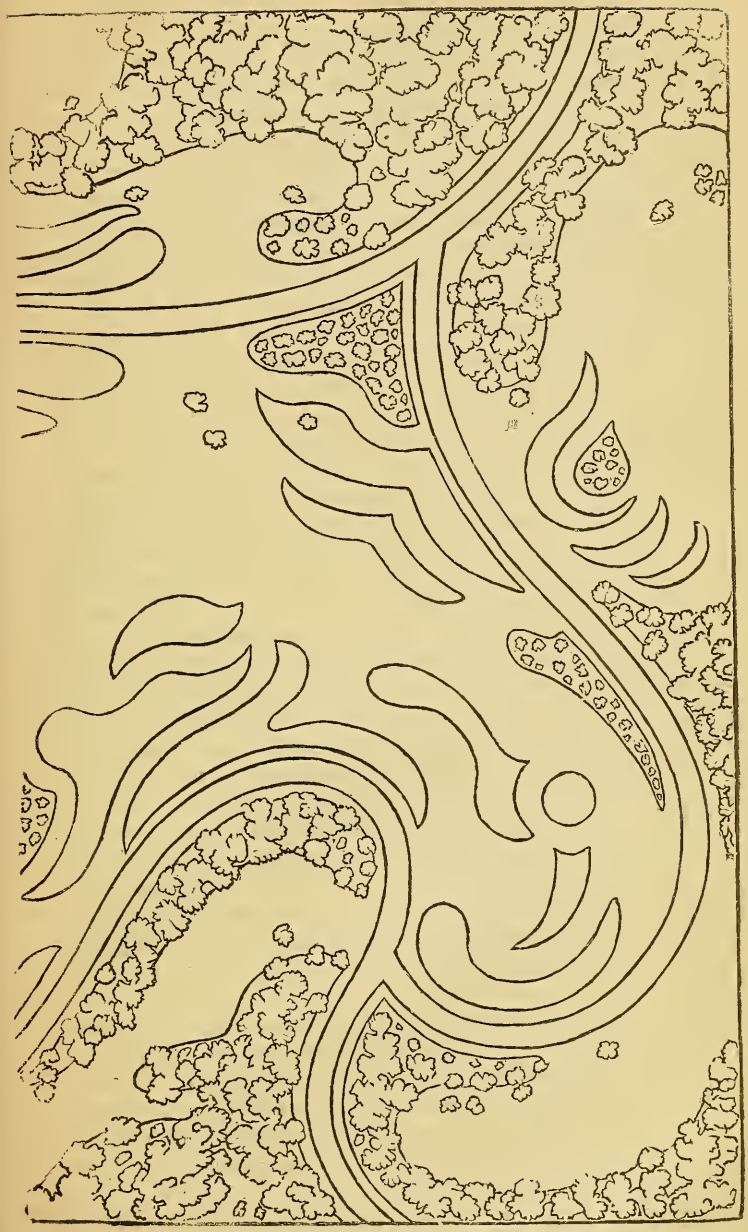

where stated, that a whole is produced by connecting things together, and displaying them in clusters or groups. The expression, or character, of these groups or wholes depends on the form of the individual groups, on the mode of connecting them together, on some of them being longer than others, &c. Here, then, are four distinct ideas for the young gardener to treasure up in his mind, and to endeavour to apply to objects of art and taste; and more especially to lawns and groups, or scattered trees and shrubs placed on them: — 1. Repose, produced by plain spaces; 2. Effect, produced by enriched places, contrasted with plain ones; 3. A whole, produced by the grouping or clustering of objects together; and, 4. Expression, or character, produced by the manner of grouping, and the kind of objects grouped.

In the design of our German correspondent there is a fault, which has not been committed in any of the preceding ones; that is, bringing the dug clumps adjoining the walks so close to them, that they can only be separated by lines of box. We have observed that this is a fault much oftener committed in small suburban gardens by amateurs, than in any other description of garden: we suppose, because the regular gardener knows the difference between a verge and an edging, which the amateur, probably, does not; and that, to look well, the verge ought to be of a sufficient breadth to admit of its being neatly mown by the scythe. For this purpose, 18 in. or 2 ft. is the very narrowest verge that will ever be found admissible, even in a small garden. A narrow verge has a meagre effect, and gives the idea of penury and want of space, like a narrow walk; but broad walks and broad verges convey ideas of ample space and great extent. As to introducing box edgings, or any other narrow edgings of plants, where there is a lawn like that indicated in the plan before us, the effect would be still worse than that produced by a narrow verge; not only because it is narrower, but from being composed of a different material. In short, box edgings and turf verges should never be used together in the same flower-garden; because they belong to two different styles of culture, and, in ornamental gardening, are just as incongruous as a mixture of the Gothic and Grecian styles is in architectural designs.

In *fig.* 3. in p. 22, 23., we have shown a margin 3 ft. broad, and have placed some additional groups on the turf, so as, by producing masses of shrubs and flowers, opposed to masses of naked lawn, something like force of effect might be produced, and at the same time the connexion, intricacy, and variety among the groups increased, so as to render them more expressive and interesting.

In the design *fig.* 4. in p. 26, 27., we have shown a margin to the walks 6 ft. in breadth; and the area in that

design is laid out as five distinct gardens, forming one grand American ground. One of these gardens (*a*) may be a hardy heathery; the outer bed being planted with the tall-growing kinds, and the two inner beds with dwarf sorts; the centre being a piece of water, surrounded by a border of Oxycóccus palústris. The garden *b* may be devoted to kalmias; *c*, to rhododendrons; *d*, to azaleas; and *e*, to miscellaneous *E*ricàceæ, requiring peat earth. The central parts of each of these five gardens are supposed to be on a lower level, by nearly 6 ft., than the level of the walks and their verges, and of the turf between the gardens, as indicated by the sectional line *ff*. The object of lowering the central part of each garden is, to increase the shade and moisture of the central bed, and bring it more under the eye of the spectators from the walks, or turf spaces, between the beds *g g*, the effect of which will be to give more effectually the idea of a whole to each garden.

The general surface of the space included by the surrounding walk is supposed to be perfectly open; beyond which, on every side, except behind the conservative wall, it is supposed to rise gradually, and in an irregular manner. This rising surface, to such an extent as to be seen from the broad terrace walk, may be planted with Coníferæ, so as to form a complete pinetum. The lowest-growing species and varieties of *J*uníperus, *A*bies, &c., should be placed next the walk; and the taller ones behind, in gradual succession, and at ample distances from one another, so as to form an amphitheatre of perpetual verdure, with ample glades of smooth lawn between the trees, so as to admit the eye far up the acclivity. In all hilly countries, there are frequent opportunities of forming such a garden in bottoms, and surrounding it by a pinetum planted on rising grounds: but, even on a perfectly flat surface, much might be done in this way, provided that surface admitted of thorough drainage. If the general surface of the garden were hollowed out 3 ft., and the interior part 2 ft. more, this would give a quantity of soil sufficient to raise a gradually sloping bank on three sides, 5 ft. or 6 ft. in height at the most distant part; which, when planted, would appear so much above the eye, as to have a very grand effect, especially if the bank were terminated in such a way as to give the idea of continuation behind the conservative wall. Nothing of this kind, however, should ever be attempted, except on soil which is naturally dry and good. In Kent, almost every where, and in many parts of Surrey, there are admirable situations for gardens and pinetums of this description, both on hilly surfaces and flat ones.

To those who prefer a rosarium to an American garden, nothing could be easier than to devote these five gardens to five sections of the genus *R*òsa: for example, one to China roses, one

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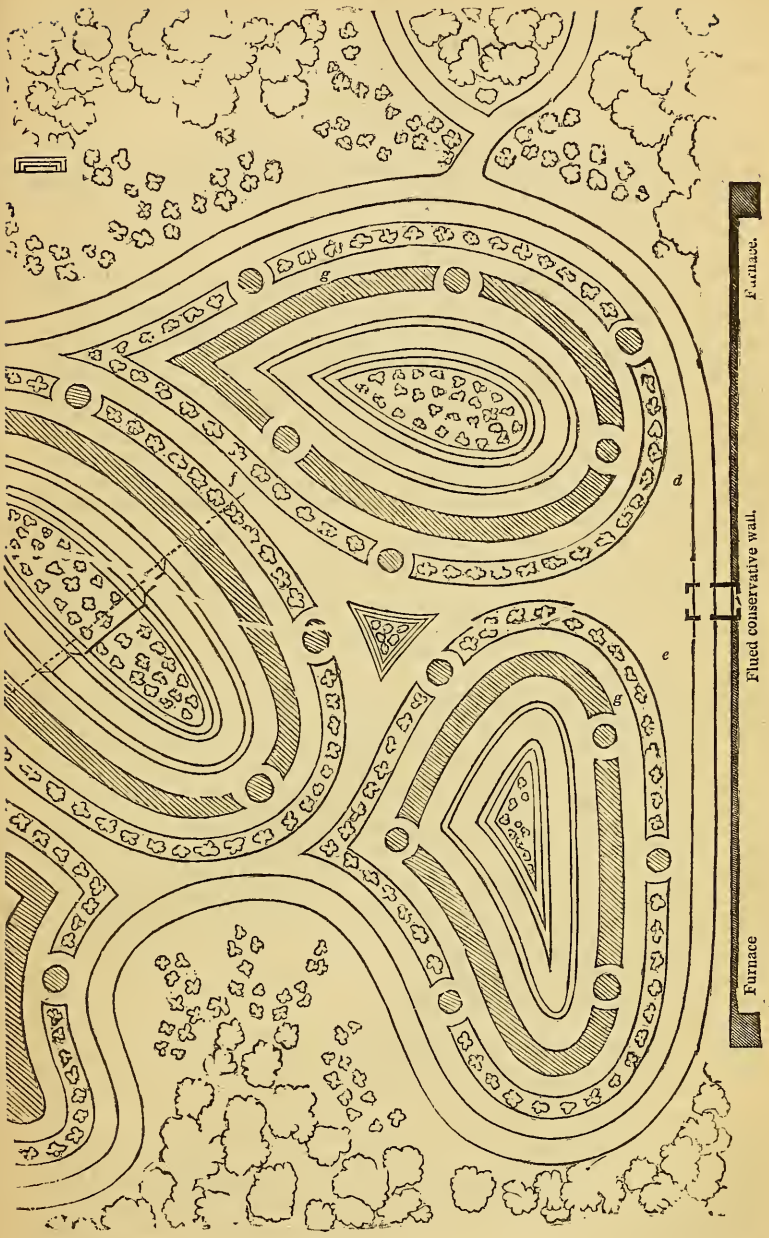

to moss roses, one to French roses, one to Scotch roses, and one to mixed roses; the outer bed in each garden being planted with standards or climbers, or both, of the kind of rose planted within.

ART. V. *Notice of the principal Pinetums and Collections of Abiétinæ in France.* Drawn up from Communications of various Correspondents.

THE number of what may be strictly called Pinetums in France (that is to say, of complete or very extensive collections of pines and firs, and especially of collections that are properly named) does not amount to more than three. These are, that of M. Ivoy of Bordeaux (a few leagues from that town); that of the late Dumont de Courset, at Courset, near Samer, about four leagues from Boulogne-sur-Mer; and that of Madame Adanson at Baleine, near Moulins, department of Allier. The collection of M. Vilmorin at Barres, although, perhaps, one of the most interesting in a scientific and arboricultural point of view, which exists in France, or even in Europe, is not a true pinetum; M. Vilmorin not being so anxious to form a complete collection, as to have the means of studying thoroughly the useful kinds of pines and firs, by a comparison of their different varieties, &c.

There are a number of interesting amateur collections, besides others which may be termed experimental forests (*forestières expérimentales*), containing frequently only a small number of species, but yet of great importance in a scientific point of view. Of this kind is the collection of M. Delamarre, at Harcourt, in Normandy (department of the Eure), near Brionne, on the road from Paris to Caen. The collection of M. Delamarre was bequeathed by him to the Royal Agricultural Society of Paris, which has committed the management of it to M. Michaux, conjointly with a commission of which M. Vilmorin is a member. The plantations, which contain upwards of 100 acres, are composed almost entirely of the *Pinus Pinaster* and *P. sylvestris*; and they may be considered of some importance, as it was from them that M. Delamarre derived all the practical views which he has published in his work entitled *Historique de la Création d'une Richesse Millionaire par la Culture des Pins;* Paris, 1827. The Agricultural Society intend to establish a true pinetum on these grounds next year; so that, in the end, the name of Harcourt will become celebrated for pines and firs. Other very interesting plantations are those in which only one species is cultivated: for example, the plantations of *P. Larício*, by the Count Lemarrois, near Contances; those of larch, by the Count de Rambuteau, prefect of the Seine, in the Côte d'Or, at some leagues' distance from Autun.

The following may be considered as a synoptical view of the pinetums and collections of *Abiétinæ* in France:—

1. *True Pinetums* (*Collections botaniques*).—Madame Aglaé Adanson, at Baleine, near Moulins, Allier; Dumont de Courset, at Courset, near Samer, Pas de Calais; M. Ivoy, at Bordeaux.

2. *Botanical Forests* (*Botanique forestière*).—M. Vilmorin, at Barres, near Nogent sur Vernisson, Loiret.

3. *Amateur Collections less complete than the Pinetums.*—Count de Montbron, at Chatellerault; Baron de Tschoudi, at Metz; Viscount Héricart de Thury, in the environs of Paris; M. Bobée, near Châteauneuf, Haute Loire; M. De Lorgeril, at Baumanoir, near Rennes; Marquis de la Boessière, at Malleville, near Ploermel; Baron de Morogues, at La Source, near Orleans; M. Mallet De Chilly, at Sologne, near Orleans; M. De la Giraudière, So-

logne, near Blois; M. Macarel, near Gien; M. Doublat, at Epinal; Viscount de Courval, and Count de Burnonville, in the environs of Paris; Count de Tristan, at Orleans. The late M. De Courson, near St. Briene; the late Du Hamel du Monceau, at Denainvilliers, at Monceau, and at Vrigny, near Pithiviers; and of M. De Malesherbes, at Malesherbes.

4. *Experimental Plantations* (*Plantations* (*non plus Collections*) *forestières expérimentales.*—M. Delamarre, at Harcourt; M. Marcellin Vétillard, at Mans; M. Bérard, sen., at Mans; M. Bataille de Mandelat, at Autun; M. Doulcet, La Fay, near Aubigny; and the government plantations in the forests of Fontainebleau, Compiègne, and Villers Cotterets, and in the Bois de Boulogne.

5. *Plantations of particular Species.*—*P*ìnus Larício, by M. Le Roy, at Boulogne-sur-Mer; and the Count Lemarrois. *P.* sylvéstris, by the Viscount Ruinard de Brimour at Rheims; and many others in Champagne. *L*àrix europæ'a, by the Count de Rambuteau. *P*ícea pectinàta, by M. De Candecoste, at Laigle; besides many other plantations in Normandy.

In the foregoing statement, no notice is taken of the *P*ìnus *P*ináster, which is cultivated on a large scale in the Maine and in the Landes de Bordeaux; of *P.* sylvéstris, the seeds of which are now beginning to be sown in many of the finer parts of the Maine. In Sologne on Seine, there are already extensive plantations, especially of *P. P*ináster, and a few of *P.* sylvéstris. In Champagne, also, there are a good many plantations of *P.* sylvéstris. In the south, there are a few isolated plantations of *P. P*ínea, and some forests containing trees of *P.* halepénsis, which is cultivated for its wood, as well as for its resinous products. There are also the natural forests of the Vosges, Haguenau, Jura, the Alps, the Pyrenees, and the mountains of Auvergne.—*Paris*, 1837.

In Belgium, there is a pinetum belonging to Baron de Serret, near Bruges, of which we hope that gentleman will enable us to give some account in an early number.

Art. VI. *A tabular View of the Species of Abiétinæ contained in the principal Pinetums and Collections of Abiétinæ in Great Britain, and on the Continent of Europe.*

The names of the pinetums are arranged, as nearly as could be ascertained, in the order in which they were commenced; and the species and varieties in the order in which they are described in the *Arboretum Britannicum*. The existence of a species or variety in any pinetum is indicated by its height in feet, according to measurements sent us in 1837; but, when the height is not exactly known, the existence of a species or variety in any pinetum or collection is indicated by a cross, thus +. When the species or variety is of doubtful existence in any collection, a point of interrogation is used; and when it is wanting, a cipher is introduced. A number of varieties are omitted, as being of little consequence, or as only occurring in one or two of the pinetums.

The dates assigned for the commencement of these arboretums may not in every instance be correct, but one object of this tabular view is to direct attention to these dates, in order that we may make them perfectly correct when we republish the tables in the *Arboretum Britannicum*.

The finest pinetum in England for large trees, and also one of the most complete in regard to species, is that at Dropmore; but, if we include *T*axàceæ and *C*upréssinæ in the idea of a pinetum, then by far the most complete collection of Coníferæ in Great Britain is that at Elvaston Castle, a list of the species and varieties in which we shall give in our next Number.

TABULAR VIEW OF THE PRINCIPAL PINETUMS IN EUROPE.

I. *Pi'nus*	Kew, Surrey. 1760.	Dropmore, Berkshire. 1796.	Hackney Arboretum, London. 1819.	Hort. Soc. Garden, London. 1823.	Belsay, Northumberland. 1825.	Flitwick, Bedfordshire. 1826.	Cheshunt, Hertfordshire. 1830.	Chatsworth, Derbyshire. 1835.	Carclew, Cornwall. 1835.	Chipstead, Kent. 1835.	Hendon Rectory, Middlesex. 1836.	Woburn Abbey, Bedfordshire. 1836.	Elvaston Castle, Derbyshire. 1834.	Royal Bot. Gard., Edinburgh. 1825.	Caledonian Hort. Soc. Gard., Edinburgh., 1826.	Lahill, Fifeshire. 1830.	Haddo House, Aberdeenshire. 1834.	Ballindalloch, Inverness shire. 1834.	Trinity College Bot. Gard., Dublin. 1808.	Glasnevin Bot. Gard., Dublin. 1797.	Jardin des Plantes, Paris. 1800.	Botanic Garden, Berlin. 1816.
1. sylvéstris	+	43	11	12	+	6	+	1	+	+	+	+	+	+	15	+	+	+	+	+	+	100
2. pumilio	+	14	4	7	+	4	?	2	8	0	+	+	+	?	2	0	+	+	+	+	+	10
Mùghus	+	+	+	4	+	2	0	+	0	4	+	+	+	?	?	+	+	+	+	0	0	8
3. Bansiàna	?	26	4	3	+	4	0	3	6	0	+	+	+	?	4	+	+	+	+	+	+	1
4. inops	+	25	5	5	+	4	0	4	11	4	+	+	+	?	3	+	+	+	+	+	+	18
5. mitis	+	+	0	6	0	2	16	5	6	0	3	0	+	?	4	+	+	+	+	+	+	1
6. púngens	0	23	2	8	0	+	0	+	0	0	+	+	+	?	0	+	+	+	+	+	+	1
7. Laricio	85	20	+	25	20	20	8	4	11	0	4	+	+	14	10	+	+	+	+	+	+	10
8. austrìaca	0	?	+	+	0	4	0	?	+	4	+	+	+	+	12	+	+	+	+	+	+	?
9. Pallasiàna	?	25	+	20	0	4	0	+	2	6	2	+	+	+	0	+	+	+	+	+	+	2
10. pyrenàica	0	+	0	2	+	3	0	+	2	+	0	+	+	+	0	+	+	+	+	+	+	0
11. resinòsa	0	18	5	4	+	3	6	+	14	8	+	+	+	?	6	+	+	+	+	+	+	18
12. *Pináster*	+	45	30	18	+	7	?	+	16	0	+	+	+	+	8	+	+	+	+	+	+	9
escarèna	0	16	0	10	+	0	7	+	9	0	+	+	+	+	0	+	+	+	+	+	+	0
Lemoniàna	0	0	0	3	+	0	0	+	7	0	+	+	+	+	0	+	+	+	+	+	+	0
13. *Pinea*	?	23	10	7	+	4	7	+	14	7	+	+	+	?	?	+	+	+	+	+	+	12
14. halepénsis	+	25	7	14	+	4	17	+	8	5	+	+	+	+	12	+	+	+	+	+	+	10
15. brùtia	0	+	5	2	+	2	0	+	3	0	+	+	+	+	0	+	+	+	+	+	+	0
16. *Tæ'da*	+	37	5	8	+	2	0	+	10	4	+	+	+	?	?	+	+	+	+	+	+	25
17. rígida	+	30	10	5	+	4	0	+	12	7	+	+	+	?	?	+	+	+	+	+	+	15
18. serótina	+	32	0	3	+	3	7	+	11	3	+	+	+	+	+	+	+	+	+	+	+	6
19. ponderòsa	+	9	5	2	+	6	7	+	9	4	+	+	+	+	+	+	+	+	+	+	+	1
20. Sabiniàna	+	+	2	5	+	4	0	+	+	4	+	+	+	+	0	+	+	+	+	+	+	0
21. Coúlteri	+	+	+	5	+	0	0	+	0	2	+	+	+	+	0	+	+	+	+	+	+	0
22. longifòlia	+	12	+	+	+	6	0	+	0	+	+	+	+	+	0	+	+	+	+	+	+	5
23. Gerardiàna	0	+	+	+	+	2	0	+	+	+	+	+	+	+	0	+	+	+	+	+	+	0
24. austràlis	+	15	4	+	+	3	0	+	+	2	+	+	+	+	5	+	+	+	+	+	+	6
25. canariénsis	0	16	+	+	+	2	0	+	+	0	+	+	+	+	0	+	+	+	+	+	+	15
26. sinénsis	0	0	0	0	+	+	0	0	+	+	0	+	+	+	0	+	+	+	+	+	+	0
27. insígnis	0	0	+	4	+	+	0	4	0	0	+	+	+	+	0	+	+	+	+	+	+	0
28. *Teocòte*	0	0	0	0	+	0	0	0	0	+	5	0	+	+	0	+	+	+	+	+	+	0
29. pátula	0	0	0	0	+	0	0	0	0	0	0	0	0	+	0	+	+	+	+	+	+	0

	1760.	1796.	1819.	1823.	1825.	1826.	1830.	1835.	1835.	1835.	1836.	1836.	1836.	1825.	1826.	1830.	1834.	1834.	1808.	1797.	1800.	1816.
30. Llaveàna	0	+	0	3	0	+	0	0	0	0	0	0	0	?	0	0	0	0	0	0	0	2
31. californiàna	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37. leiophylla	0	12	0	4	7	0	14	3	0	0	+	+	+	9	7	0	+	0	?	+	+	10
38. *Cembra*	0	29	3	25	+	+	?	10	6	0	2	+	+	19	19	0	?	+	?	+	+	30
39. Strobus	+	45	2	12	+	10	0	4	6	6	+	+	+	+	+	0	+	+	?	+	+	70
40. excelsa	0	10	+	0	+	4	0	5	3	4	2	+	+	4	0	0	0	0	+	0	0	+
41. Lambertiàna	0	4	2	0	0	2	0	0	0	0	+	0	0	0	0	0	0	0	0	0	0	2
42. monticola	0	0	0	+	0	+	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
II. ABIES																						
1. excelsa	+	42	+	25	+	5	+	2	9	6	3	0	0	+	12	+	+	+	+	+	+	+
2. alba	0	43	+	14	+	2	?	8	6	0	5	0	0	0	11	0	0	0	0	0	0	16
3. nigra	+	35	+	20	+	3	0	0	0	0	+	0	0	0	8	+	+	+	+	+	+	12
4. Smithiàna	+	5	+	10	+	+	0	2	5	0	+	+	+	3	6	0	+	+	+	+	+	+
5. Douglasii	+	18	+	10	10	6	9	16	14	0	4	+	+	8	14	14	0	0	0	0	0	0
6. Menziesii	0	+	+	3	+	+	0	2	0	0	+	+	+	+	0	?	0	0	0	0	0	0
7. canadensis	0	30	+	5	+	3	0	+	8	0	+	+	+	+	5	0	0	0	0	0	0	0
8. cephalonica	0	+	+	+	0	+	0	0	0	0	3	3	3	3	0	0	0	0	0	0	0	0
III. PICEA																						
1. pectinata	+	57	+	3	+	15	36	10	12	0	+	+	+	+	+	+	+	+	+	+	+	+
2. balsamea	+	13	+	10	+	6	?	14	0	2	+	+	+	+	+	+	+	+	+	+	+	+
3. *Picta*	0	2	+	3	+	3	0	3	0	7	0	0	0	0	3	0	0	0	0	0	0	0
4. Webbiàna	0	6	+	5	+	3	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
5. *Pindrow*	0	0	0	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. grandis	0	+	0	+	0	0	0	0	0	+	2	0	0	0	0	0	0	0	+	0	0	0
7. amabilis	0	+	0	+	0	0	0	0	+	0	0	0	0	0	0	0	0	0	0	0	0	0
8. nobilis	0	+	0	+	0	+	0	0	+	0	0	0	0	0	0	0	0	0	0	0	0	0
IV. LARIX																						
1. europæa	0	56	18	25	+	10	+	12	20	0	++	++	++	++	20	+	0	0	0	++	++	+
2. microcarpa	+	38	12	18	++	8	?	8	0	0	++	++	++	10	14	?	+	+	+	+	+	+
V. CEDRUS																						
1. Libani	++	40	12	12	++	3	+	12	6	0	+	+	+	+	5	+	+	+	+	++	+	+
2. *Deodara*		5	+	8		2	0	4	0	4	5	5	4	+	4	+	+	+	+	+	+	+
VI. ARAUCARIA																						
1. imbricata	+	8	+	6	5	3	3	+	0	3	+	+	+	3	3	0	0	0	+	+	0	3
2. brasiliana	+	12	+	5	0	7	4	+	0	0	6	+	+	+	0	0	0	0	0	0	0	15
3. excelsa	+	13	+	12	0	3	0	+	0	0	6	+	+	+	0	0	0	0	0	+	0	10
4. Cunninghàmii	+	10	+	8	0	+	0	0	0	0	6	+	+	+	0	0	0	0	0	0	0	5
VII. CUNNINGHAMIA																						
1. sinensis	+	17	6	7	0	2	0	+	0	0	4	+	+	4	3	0	0	0	+	+	0	13
VIII. DAMMARA																						
1. australis	?	5	++	0	0	0	0	0	0	0	0	0	0	?	0	0	0	0	0	0	0	+
2. orientalis	?	5		0	0	0	0	0	0	0	0	0	0	?	0	0	0	0	0	0	0	0

Besides the pinetums and collections shown in the above tabular view, there are others which would have been included in it, had there been room; and a number of collections, more or less complete, which deserve to be recorded, as illustrative of the present taste for the culture of the pine and fir tribe. All of these that we have been able to recollect at the moment are included in the following paragraphs: —

In England, besides the pinetums noticed in the tabular view, there are collections at Syon and Whitton Park, Middlesex; Pain's Hill and Claremont, Surrey; Redleaf and Deepdene, Kent; Bayfordbury, Hertfordshire; White Knights and Bear Wood, Berkshire; Wardour Castle and Boyton House, Wiltshire; Bicton, Devonshire; Croome, Warwickshire; Trentham, Staffordshire; Carlton Hall, Durham.

The English Nurseries which possess the best collections are those of Messrs. Loddiges, Hackney; Messrs. Whitley and Osborn, Fulham; Messrs. Lee, Hammersmith; Messrs. Brown, Slough; and Mr. Donald, Goldworth. The best assortment of pine and fir seeds for sale is kept by Mr. Charlwood, London.

In Scotland, the best collections not included in the tabular view are: at New Posso, Peebles-shire; Oxenford Castle, and Hopetoun House, near Edinburgh; and Methven Castle, Perthshire.

The Scotch Nurseries which contain the best collections are those of Messrs. Cunningham and Messrs. Lawson, Edinburgh; Messrs. Turnbull and Dickson, Perth; and Mr. Roy, Aberdeen. The best collection of pine and fir seeds is kept by Mr. Lawson of Edinburgh.

In France, there are various collections, which form the subject of a separate article.

The principal nurseries in France which contain collections of pines and firs are, those of M. Cels, M. Godefroy, and M. Soulange-Bodin, at or near Paris; and that of Messrs. Baumann at Bollwyller. The seedsman who keeps the most extensive collection of pine and fir seeds is M. Vilmorin, Paris.

In Belgium, the collection of the Baron de Serret, at Bruges.

In Germany, the principal collections, next to that in the Botanic Garden Berlin are: at Wörlitz, in Saxony; at Harbcke, in Hanover; at Brück on the Leytha, near Vienna; in the University Botanic Garden, Vienna; and in the Botanic Garden, Göttingen. The nursery in Germany in which there is the most complete collection is that of Messrs. Booth, Hamburg, who also keep the best assortment of pine and fir seeds.

In Russia, there are collections in the Imperial Botanic Garden, St. Petersburg; and in the Government Garden at Nikitka, in the Crimea.

In Denmark, there is a collection in the Royal Gardens, Rosenburg, Copenhagen.

In Sweden, in the Botanic Garden at Lund.

In Italy, in the Botanic Garden at Monza, near Milan.

Art. VII. *On propagating Trees and Shrubs by Extension.* By C. B.

All persons connected with horticulture are aware of the importance of propagating or growing plants by extension; and all are more or less acquainted with the different methods of doing so, viz. grafting, inarching, budding, layering, and increasing by cuttings: yet, were it to be asked why any of the above methods is adopted in preference to another, with regard to any particular plant, the only reply would be, that this usage was found to answer best. It is known from experience that

plants of the same genera require different modes to propagate them successfully; as in *Pópulus*, some are increased by cuttings, and others by layers; and, though they will all grow by layers, they will not all take freely by cuttings; plants belonging to the genus *Pyrus* are generally grafted; and those belonging to the genus *Prùnus* are generally budded, and so forth. I would wish to know if there is any thing discernible in the structure of plants, whereby it might be ascertained, on examining them, which mode of treatment they would most willingly yield to. That of growing by cuttings is the most simple way; and, if it followed that, in every case, as in *Pópulus*, layering was only a surer mode, then we might suppose that, as layering was superior to cuttings, so grafting was superior to layering, buddings superior to grafting, and inarching superior to the whole; and, hence, we might conclude, that inarching was the only true method, and all the others but used for dispatch or convenience. But it so happens that some plants may be grown or increased by one of the specified modes, and not by any of the others; and from this it appears that each method is primitive in itself, and that either may be the best with regard to particular plants. Is it not probable that there may be something in the structure of the pores, pith, bark, or buds, by which it might be discovered, at first sight of a plant, which of the above operations would be best adapted to it? Such a discovery would remove what is at present a great inconvenience: as things now stand, the only recourse with a new plant is to try it first one way, and then another, and thus find out the method at the expense of two or three years' lost time; and often, from not knowing the proper method at first, losing the plants altogether.

Should you be inclined to enter on this subject, the correspondence may be continued.

Edinburgh, Nov. 2. 1837.

[We think the subject a very interesting one, and shall be happy to hear from our correspondent upon it again. — *Cond.*]

Art. VIII. *Cursory Remarks on ornamental Planting.* By R. Glendinning.

As the season is now arrived when improvements by planting are carried on either in newly laid grounds, or in the improvements making to old ones, I have been induced to send you the following remarks on the subject. From experience, I can say, and truly, that there is no department of rural improvement generally so injudiciously executed as this, which frequently arises from a hasty and inconsiderate arrangement of the different trees and shrubs chosen for this purpose, arising from ignorance of the

forms and sizes which they will ultimately attain. The selection, also, very often betrays little forethought or reflection; and, consequently, the kinds planted are seldom in keeping with their distribution.

When trees and shrubs are disposed as appendages to houses, simply for ornament, they may include an endless, yet pleasing, variety; more so, indeed, than if their appropriation were for screens, or shelter, or for picturesque effect. In either or in every case, a more extensive and judicious choice might be made than that which we usually see, and much improvement might be effected in their distribution.

It is not my intention now to show what might be accomplished, in a given space, by the employment of a great number of species, having already done so in another article; but I only now mean to draw the attention of your readers to this subject, and append a few cursory observations. In these assemblages of trees and shrubs, an obvious error is the prevalence of one or two kinds only: this ought never to be, unless it were intended to produce such an aggregation for some specific object, and that object were so self-apparent, that no confusion might arise in the mind of any person accustomed to recognise order and taste, prevailing in such performances. To such a person, it will also be obviously conspicuous that, in the allocation of kinds in these shrubberies, little interest has been taken, or knowledge displayed, as to the form which the plants will assume at an advanced period of their growth. In the arrangement of such plantations, a paramount consideration should be, the form, as well as the size, that the plants will ultimately present; and care should be taken to place them at distances sufficient to permit them at a future day to display their several characters; at which time, also, they should group together in an interesting and artist-like manner, which alone can be accomplished by a well-matured plan of previous arrangement. When such a system of planting is pursued, the shrubbery, in its earlier years, will present a rather meagre appearance; and, to overcome this defect, it will be necessary to fill up the intermediate spaces with plants which will at once give greater density and shelter. The best shrub I know for this purpose is the common laurel; and the next best, the common kinds of rhododendron, which can now be purchased at a very reasonable rate by the hundred. Both the laurel and the rhododendron are easily transplanted, and they are not liable to be eaten by hares and rabbits, if afterwards removed to a wilder situation, where they may serve for ornament, or as a shelter for game.

When trees are introduced into such plantations, they will, of course, generally be kept in the background; although sometimes, for particular reasons, they will take a more prominent

position in the assemblage. Upright and conical-shaped trees will often be required as accompaniments to Grecian buildings; and there is none so desirable, from its erect form, for this purpose, as the new Lucombe oak, which is highly ornamental, and at the same time, from its rapid growth, is, besides, valuable as a timber tree. To break the round-headed and lumpish character which a great many shrubs assume, I would strongly insist on the judicious introduction of the upright cypress, and the Irish yew: either, when placed behind some dwarf round-headed shrubs, or boldly taking a leading and prominent position as advance-guard, will have an admirable effect; the latter (the Irish yew) more particularly, from its dark-green dense foliage. Pleasing variety will be produced by drooping evergreens; *Juníperus repánda* and *recúrva* will effect this. The escallonias, ribeses, and berberises will add much to the beauty of the shrubbery; and the two following favourites ought not to be forgotten: *Acàcia* dealbàta, for the extreme elegance of its foliage; and Cassín*ia rosmarinifòlia* [? leptophýlla *R. Br.*] for its abundance of white blossoms, which are powerfully scented like the hawthorn; and I find it hardy. For rare and valuable plants, the pines and araucarias should have a place. To a mind imbued with any feeling on this subject, the Coníferæ alone will afford much food for pleasing reflection.

These cursory hints are unnecessary to those of your readers who have studied this subject; but to the uninitiated they may be acceptable; and if so, I shall be amply compensated for the time they have occupied in committing them to paper.

Bicton Gardens, Nov. 1837.

[In addition to the remarks by Mr. Glendinning, we would remind our readers of what we have said in the preceding Volume on the necessity of planting all trees and shrubs of any size on a raised knoll, or protuberance, higher or lower, according to the depth to which the soil has been trenched; or, if the soil has not been dug or trenched, according to the depth to which the pit in which the tree or shrub is to be planted is dug. The object is, to keep the collar of the stem above the surface of the soil, so that, when the ground is finally settled, it may stand upon a knoll, or little hill, at least an inch or two above the surrounding surface; and thus the stem will rise from its roots like a column from its base, instead of the stem appearing like a post which had been driven into the ground. This is a point of very great importance for the health and effect of the plant, and one which has hitherto been scarcely ever attended to. — *Cond.*]

ART. IX. *Descriptive List of Varieties of Chrysánthemum originated in the Island of Jersey, and now in Flower in the Vauxhall Nursery.* By Messrs. CHANDLER and SONS.

HAVING been much struck with the beauty of these flowers, and the superiority of many of them to the old Chinese varieties, when we called at the Vauxhall Nursery in November last, we applied to Messrs. Chandler for a descriptive list, which they kindly sent us as below. The splendid display made by these flowers, and the length of time which they continue in bloom, added to the great facility and economy of their culture, recommend them to every person who has a garden, whether small or large. They are particularly well adapted for covering the dwarf walls which separate the front gardens of street and suburban houses. In such situations, they have a splendid appearance, keeping the wall covered with flowers till they are destroyed by frost. At such a season, flowers, in all gardens, are particularly desirable; but they are more so in the small gardens of towns, than in large gardens in the country; because, while the latter have abundance of evergreens and general scenery to compensate for the want of flowers in autumn, or the beginning of winter, the former, when they are without flowers, are, in a great measure, destitute of beauty.

No plant is more easily propagated than the chrysanthemum, or requires less care in its culture; and, in regard to temperature, it only requires placing under glass a short time before it comes into flower, or training against a wall.

"IN the following list, E. indicates early flowering, and L. late flowering.

Queen.	Light rose; flowers double, a little quilled. E.
Marquess.	Pale rose; flowers double, and in clusters. E.
Triumphant.	Pink and buff; flowers large. E.
Bícolor.	White and yellow; flowers small, very double; dwarf. E.
Chancellor.	White and pink; flowers large, quilled and incurved. L.
Formòsum.	White, with lemon-coloured centre; incurved. E.
Lùcidum.	White; incurved; flowers in clusters. E.
Enchantress.	Creamy white; flowers large and incurved. L.
Spectábile.	White; flowers large and quilled. E.
Gem.	White, with pink tips. E.
Vesta.	White; flowers round, with cupped petals. E.
Marchioness.	White; flowers large. E.
Coronet.	White; flowers round and in clusters. E.
Imperial.	French white; flowers large, incurved. E.
Eminent.	Light pink; incurved. L.
Compáctum.	White; flowers small, very double. L.
Goliath.	Yellowish white; flowers very large, incurved. E.
Conspícuum.	Crimson; flowers very large, semidouble. E.
Insígne.	Pink and red; flowers in clusters. E.
Magnet.	Yellow; flowers rather small, little quilled. E.
E'legans.	Lilac; flowers rather small, very regular. L.

Surprise.	Paper-white ; flowers large. E.
Invincible.	Creamy white ; flowers large and reflexed. L.
Mirábile.	White, with buff tint ; flowers rather small ; dwarf. E.
Diadem.	White ; flowers quilled. E.
Perspícuum.	Pink ; flowers quilled and large. L.
Angelina.	Straw-colour ; quilled. L.
Rosalind.	Pink ; quilled. E.
Calypso.	Dark rose ; flowers small. E.
Defiance.	Silvery white ; flowers quilled, incurved. L.
Decòra.	Rose ; flowers large. E.
Virginia.	White ; flowers finely quilled. E.
Flavéscens.	Lemon-colour ; flowers small, in clusters. E.
Eclipse.	Paper-white ; flowers incurved. L.
Adonis.	Pink ; flowers in clusters, a little quilled. E.
Pulchérrimum.	Rose, with white tips ; very double. L.
Victory.	White ; reflexed flat petals, large dwarf. E
Celestial.	Rosy-white ; flowers very double, dwarf.
Cleopatra.	Pink and buff ; flowers in clusters. E.
Unique.	Light pink ; flowers twisted and in clusters. E.
Glory.	Paper white ; flowers large, flat petals. L.
Grándis.	Flesh-colour ; large flat petals. E.
Empress.	Pink ; flowers large, tasseled. L.
Hero.	Rose ; flowers large. L.
Eímium.	Rose ; flowers rather small, round.
Aurántium.	Orange ; quilled. E.
Rival.	Light rose ; flowers incurved, semidouble. L.
Adventure.	Bright yellow ; flowers large. E.
Sulphùreum.	Pale yellow ; flowers in clusters. E.
Penelope.	Buff ; flowers round, semidouble. E.
Venus.	Light rose ; red eye, flowers small. E.
Diana.	White ; quilled. L.
Conqueror.	French white ; flowers large, flat petals. E.
King.	Pale rose ; flowers large, incurved. L.
Striàtum.	Light rose and red-striped. L.
Champion.	Lemon-colour ; flowers large, reflexed. L.
Countess.	Creamy white ; flowers large, semidouble. L.
Grandíssimum.	White ; incurved. L.
Perfection.	Lilac ; flowers large, incurved. L.
Aurora.	Purple ; flowers large and quilled. L.

" We have many more seedlings yet to bloom, but shall not be able to decide upon their merits till next season.

" *Vauxhall, Dec.* 5. 1837."

ART. X. *On forcing Cherries.* By W. LAWRENCE, Gardener to the Rev. Theophilus Williams, Hendon Rectory.

No kind of fruit can be forced at less expense, and in a shorter time, than the cherry; and yet, if we look round the forcing gardens of our nobility and gentry, we shall find cherry-houses of rare occurrence. There does not even seem to be a public demand for forced cherries; for the late Mr. Andrews of Vauxhall, after forcing cherries for several years, at last gave up the practice, and turned his cherry houses into vineries.

The art of forcing cherries is, however, carried on with great spirit in the Royal Gardens at Kew, and at Hampton Court; and, as I was some time under Mr. Padley, at the latter place, I propose to lay before your readers some account of his practice.

Forced cherries can be produced at an earlier season than any other stone fruit, and also in a shorter time. The very earliest crops forced at Hampton Court were ripened within three months from the time of commencing fires in the early houses; and the latest successional crop was generally ripened in eight weeks from the time of applying artificial heat to the late houses. When a regular supply of this fruit is required for the earliest period at which it can be ripened in a forcing-house (which is about the middle of March), till it ripens on the open walls, it is necessary either to have four forcing-houses, or to have two houses and a large stock of plants in pots. The trees in pots answer much better for early forcing, than those planted in the ground; because the entire plant is then under the command of the forcer, and it can be excited into vegetation much more effectually than if its roots were in the cold soil, and only its head exposed to the action of the warmth of the house. It is almost needless to observe, that strawberries and other articles may be forced in the same house as cherries.

Construction of the Houses.—These may be 30 ft. long, 14 ft. wide, 12 ft. high at the back, and 7 ft. high in front. The ends should be of glass, and both ends and front should be placed on brick walls 2 ft. high, supported by arches. The front sashes may either be hung on hinges at the tops, or at the sides, to open outwards; or they may be made to slide in grooves. The roof sashes should be in two lengths: the lower one to pull up, and the upper one to let down. As cherries require a great deal of air, and this often during wet weather, above the upper sashes there should be a projecting flashing of lead, to exclude the rain when the sashes are let down an inch or two. The houses at Hampton Court, when I was there, were heated by smoke flues; but the new system of heating by hot water is, without doubt, a preferable mode.

Kinds of Cherries for forcing, potting Plants, &c.—The May duke is decidedly the best cherry for forcing. The morello forces well, but requires more time to bring it to maturity; and, though it looks well in the dessert, is not so agreeable to eat. The plants for potting should have been three or four years grafted, and should be such as are well furnished with blossom buds. The soil used in potting may be loam, such as that in which melons are grown; to which one fifth part of thoroughly rotten dung may be added. Trees will do very well for forcing that have been forced before, provided they have been properly taken care of, and are well furnished with buds. The season for

potting is September and October, or any time before forcing; but the trees will do quite well for late forcing if they are not taken up and potted till they are just about to be put into the house. After potting, before setting the trees in the house, it is necessary to watch the operations of the sparrows, which are very apt to pick off the buds of cherries in the winter season, probably in search of the eggs or larvæ of insects. If the trees potted are standards, they may be set on the ground, or on a low stage; and, if they are dwarfs, upon a higher stage, so as, in either case, to bring their heads within 18 in. of the glass. They may be set so close together as that their heads may be within a few inches of touching each other.

Time of commencing to force. — For the first crop, Mr. Padley generally shut up the house, and began lighting fires, about the the middle of December. The thermometer, for the first fortnight, was kept at about 60° during the day, and 50° during the night; syringing the trees morning and evening with water that had stood some days in the house, and keeping constantly one or two of the sashes open a few inches at the end of the house next the fire, in order to moderate the temperature there. The second fortnight, the heat is allowed to rise to 60° during the night, and to 70° during sunshine, as before. The trees in pots should be watered, when they require it, at the root; but, for any that may be planted in the ground, the watering over head will be sufficient. When the trees come into bloom, the temperature must be lowered to 50° or even lower, both by night and day, except during sunshine, when the heat may be allowed to rise a few degrees higher. During all this time, air must be admitted more or less, both during mild nights and by day; but especially in the daytime and during sunshine. When fine wheather prevails at the time the trees are coming into bloom, a comparatively greater heat is required at night than during the day; because, if they are kept cool at night, the heat of the day is apt to expand the flowers before the stalks have grown to their natural length; and, if so, although all the flowers might set (which is not the case when they are short-stalked), it would be impossible for a full crop to swell off, as there would not be space enough for the cherries to expand. Watering must be withheld from the tops of the trees during the time they are in blossom, but given as required for their roots, and the floor kept moist by sprinkling it morning and evening. No water should be poured on the flues, because a powerful steaming at this season, would destroy the blossom.

Trees begun to be forced in the middle of December will come into blossom in the middle of January, set their fruit about the end of the month, and stone it about the middle of February.

After the leaves expand, it very often happens that a cater-

pillar, or some black fly, makes its appearance: these are sometimes scarcely to be met with in the daytime; but, on going into the house at night, the caterpillar will be found crawling on the leaves and eating them. Fumigation with tobacco, and hand-picking, are the only remedies for these insects. Ants sometimes make their appearance when the trees are in blossom; and, though they are not so injurious to the cherry as they are to the peach, yet still they ought to be destroyed by pouring tobacco-water into their nests. Till the ants' nests are destroyed, the insects may be prevented from getting at the blossoms by tying pieces of paper round the stems of the trees, and coating them over with a mixture of tar and grease: the paper should be of a coarse spongy kind, so as to absorb the tar and prevent it from running down the bark of the stem when the temperature of the house is high; or yarn may be used instead of paper. In either case, as soon as the tar becomes hard, the ants will walk over it, and, in that case, it must be renewed. When the trees are in blossom, it will facilitate the setting of the fruit if bees can be introduced; which may easily be done, by setting in a hive, or, what is preferable, by fixing a hive immediately in front of the lower part of one of the front sashes, and so as to touch it, and having an entrance for the bees at the back of the hive, as well as the usual one in front of it. Corresponding with this back entrance, a small hole may be cut in the bottom rail of the sash, and a stopper, or slide, fitted to it, through which the bees may be admitted to the cherry-house at pleasure.

When the fruit is fairly set, it should be thinned out with the grape-scissors; removing from one fourth to one third of the cherries, according to the vigour of the tree, and the number of fruit it has set. When once the fruit is set, it is not liable to be injured by cold, as in the case of peaches and grapes: on the contrary, I have turned cherry trees in pots out into the open garden, by way of experiment, after the fruit was set; and the frosts which damaged the leaves had no effect at all upon the fruit, except to retard its growth. After the fruit had begun to stone (which is generally about a fortnight after it is set), the trees should be watered freely at the roots; but in eight or ten days, when the kernel begins to harden, the quantity of water may be diminished. The temperature of the house, except in sunshine, should never exceed 60°, either by night or by day, from blossoming up to the time of stoning; but in three weeks after setting, when the stoning will generally be found completed, and the pulp of the fruit beginning to assume a pale red, the temperature may be raised to 70° at night, and even to 70° or 80° in the day during sunshine, and when abundance of air is given. After the fruit is ripe, water should be withheld till it is gathered.

It may not be useless to observe, that in every stage of the progress of the cherry in a forcing-house, the plants may be watered with liquid manure; which is found to strengthen their leaves and buds without injuring the flavour of the fruit.

Treatment of the Plants in Pots after they are taken out of the House.—Immediately after the crop is gathered, the trees should be taken to a cool rather shady situation, set on the ground, and the pots surrounded up to the rim with rotten tan, sawdust, or any similar materials, to keep them cool, and in an equable degree of moisture. If, on the other hand, a second crop of cherries should be wanted late in autumn, the soil in the pots should be allowed to be quite dry for a month; and, by afterwards watering it freely, and placing the trees in the house about the end of August, and treating them in the same manner as was done in early spring, they will ripen their fruit in October or November. Such trees, however, will not be again fit to force for two or three years to come; and they should, therefore, be turned out of the pots into the free soil, and allowed at least two years to recover themselves, when they may be again repotted and forced. While in the open ground, all the blossoms produced should be picked off as soon as they appear, to prevent them from weakening the trees. In the cherry, as in most trees that produce their blossom on the wood of the preceding year, or on spurs, the blossom buds expland first, and next the barren, or wood, buds. The latter continue growing till the petals of the flowers drop off, when they receive a check, and scarcely grow at all, till the fruit is set and begins to swell; after which they grow rapidly, and complete the shoots of the year, by the time the fruit is stoned.

To have a constant succession of cherries, from the middle of March till July, as soon as the trees of one house have come into blossom, those of the next should have artificial heat applied, and the temperature and management will be in every case the same as that which has been above described. It may be observed here, that cherry-houses, with the trees planted in the ground, are much less suitable, not only for early forcing, but for main and late crops, than cherry trees planted in pots. The cherry cannot, like the peach and the nectarine, be forced for a number of years together; and, hence, as a house in which the trees are planted in the ground must every three or four years have a season of rest, the house, during that season, having the sashes taken off, is in a great measure of no use.

Hendon, Middlesex, Oct. 1836.

ART. XI. *On the Cauliflower.* By A. FORSYTH.

FOR the earliest crop to supply the table on the 1st of June, mark out a bed 5 ft. wide, and, say, 50 ft. long (an area of nearly one pole); and let this be turfed all over with the grass side of the turves downwards; and over this lay about 1 in. of fine soil: if fresh from the common, so much the better; if not, that from the alleys may be used. Then sow the seeds in drills, half an inch deep, and 9 in. apart, running north and south: this done (say August 21.), as they advance, thin them out to about 2 in. apart in the rows, and earth them up from the alleys; when about 3 in. high, a part may be dug up, and planted under hand-glasses; say 50 hand-lights, and 4 plants under each, to have all the air, light, and sun that can be got, and as little frost as possible. At the approach of winter, the seed-bed is to have a double mat awning (of the same kind as that described in my article on Strawberries, Vol. XIII. p. 308., fig. 107.), to be used only in frosty weather, and during storms of rain. Here they will remain till the middle of March, when they may be well watered, dug up with a ball of turf to each, and replanted, not with the dibber, but in trenches, on dung, as directed for white cabbages, in lines 24 in. by 18 in. In the same sort of seed-bed, and under the same kind of protection, sow, say, 1 oz. of seed at Candlemas, and treat them as above till they are fit for transplantation. The last successional crop may be sowed in the open border about the middle of May; the culture of which, and of all the other crops, during fine weather, being the same as for cabbages, need not be enlarged upon. — *Isleworth, February*, 1837.

ART. XII. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, &c.

Maund's Botanic Garden, or Magazine of Hardy Flower Plants cultivated in Great Britain; in monthly numbers, each containing four coloured figures in one page; large paper 1*s.* 6*d.*, small 1*s.* Edited by B. Maund, Esq., F.L.S.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo, large paper, 2*s.* 6*d.*; small paper,

1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

Paxton's Magazine of Botany, and Register of Flowering Plants; in monthly numbers; large 8vo; 2*s.* 6*d.* each.

PAPAVERA'CEÆ.

1552. *PAPA'VER*
*gariepīnum *Burch. South African* ?◯| ◯| pr 4 jn R S. Africa ?1835 S co Bot. mag. 3623.

Leaves oblong-lanceolate; those of the root and lower part of the stem somewhat petiolate, pinnatifid; the segments distant, oblong-ovate: the margin every where toothed; the teeth bristle-pointed: upper leaves sessile, inciso-serrate, gradually smaller. It was discovered by Burchell, on the banks of the Gariep, in Southern Africa; and is remarkable for the strong spreading bristles which clothe the plant. Root annual, or, perhaps, biennial. (*Bot. Mag.*, Dec.)

Malvàceæ.

2014. *HIBI'SCUS* § xi. *Lagunària*
**lilácinus* Lindl. lilac-*flowered* ▲ ▭ or 6 ... L New Holland 1836 C p.l Bot. reg. 2009.

"A beautiful new hibiscus, obtained from seeds sent home from the Swan River by Sir James Stirling; and raised with his usual skill and success by Robert Mangles, Esq. Leaves flat and broad; involucellum scarcely any. It will doubtless be hardy in the summer, and will probably succeed better if planted in the open ground; but it will have to be protected in winter." (*Bot. Reg.*, Dec.)

Byttneriàceæ.

1994. DOMBE'YA
*cannābina *Hels. & Boj.* hemp ▲ ▭ or 10 mr. W Mauritius ... C s.p Bot. mag. 3619.

It has an arboreous stem, and is of rapid growth, with moderately spreading branches. Leaves on long petioles, cordate, and generally 3-lobed; serrated, very slightly downy beneath. This fine plant, which has so completely the habit of an astrapæa, that one can hardly think it ought to be separated generically, was sent to the Glasgow Botanic Garden from the Mauritius, many years ago, by the late C. Telfair, Esq. It is, however, not a native of that island, but of the provinces of Emirena and Be-tani-mena, in Madagascar. (*Bot. Mag.*, Dec.)

Leguminàceæ § Mimòseæ.

2837. *ACA'CIA* 24840 pubéscens (*Arb. Brit.*, p. 665.)

The *Acàcia* pubéscens is influenced by light in a very peculiar manner. Towards evening, or during gloomy weather, the primary petioles bend downwards, while the secondary petioles take a horizontal direction, approximating each other by their faces. (*The Botanist*, Dec.)

Rosàceæ.

1522. *RO'SA* 13447 lûtea (*Arb. Brit.*, p. 765.)
var. **Hŏgg'ii* D. Don Hogg's ▲ or 3 jn Y Amer. Gard. var. L r.m Swt. Br. fl.-gard. 410.

"An upright-branching shrub, with brownish purple branches,

armed with numerous, straight, spreading unequal prickles. Leaves pale green; petiole and rachis slender, filiform, sparingly hairy and glandular; leaflets elliptical, mucronulate, doubly and sharply serrated, membranous, glabrous and concave above, sparingly glandular beneath, ½ in. long. This variety was brought from New York, by Mr. James M'Nab, who received it from Mr. Thomas Hogg, nurseryman in that city, by whom the plant was raised from seeds of the single yellow rose; and it is known in the nurseries by the name of 'Hogg's Yellow American Rose.' It is a pretty variety; but it is surpassed in the fullness of its flowers, and in richness of colouring, by Williams's double yellow rose. It is of easy culture, flowers freely, and may be increased by layers, or by being budded on stocks of the sweet briar and dog rose." (*Swt. Brit. Fl.-Gard.*, Dec.)

1522. *RO'SA* 13470 indica
var. **Blairi* D. Don Blair's ❀ ⎵ or 5 jn R hybrid 1830 C p.l Swt. Br. fl.-gard. 405.

A tall strong-growing shrub, raised about seven years ago, by Mr. Blair, from the seeds of the yellow China, which has been fecundated by the pollen of the Tuscan rose. Its aspect is more robust than that of the other varieties of the China rose; and it is remarkable for the size of its leaves and flowers. The petals are yellow at the base, especially towards the centre of the flower; and are, besides, frequently furnished with a white stripe along the middle; a character also present in the common blush China rose. The blossoms are produced in abundance: they are very fragrant, and their colour is of a rich purple. It is a strong-growing kind, and there are few varieties more worthy of cultivation. It may be increased by cuttings, or budded on any of the common roses. There are plants at Mr. Clay's, Stamford Hill. (*Swt. Brit. Fl.-Gard.*, Nov.)

1515. *SPIRÆ'A*
**barbàta Wall* bearded ♃ △ or 4 jn W Nepal ?1835 D co Bot. reg. 2011.

This is beyond all comparison the handsomest herbaceous spiræa yet in our gardens; for to all the pure and brilliant whiteness of *S.* Filipéndula, it adds the graceful plume-like appearance of the American *S.* Arúncus. It was originally discovered in Nepal, Gossainsthan, and Kamaon, by Dr. Wallich; and has been since introduced into Europe from Japan by Dr. Von Sieboldt so that, like some other Himalayan plants, it ranges to the most eastern limits of Asia. It is, no doubt, perfectly hardy. The name bearded is applied in allusion to a cluster of long stiff hairs at the base of every petiole. The plant is figured from the garden of Wm. Harrison, Esq., of Cheshunt; and Messrs. Low and Co. of Clapton have plants for sale. (*Bot. Reg.*, Dec.)

Lobeliàceæ.

609. LOBE'LIA [reg. 2014.
**heterophýlla Lab.* various-leaved ♃ ⎵ pr 2 s B Van Diemen's Land 1837 D p.l Bot.

Raised from seeds received from Van Diemen's Land by Mr. William Shenton of Winchester. Mr. Veitch, of the Mount Radford Nursery, near Exeter, states, that "the plant had been hung up in the stove for more than a month, without the least soil, and without ceasing to flower;" a very singular fact, and quite new in plants of this description. It is much the handsomest of the herbaceous lobelias. The flowers are of a particularly clear rich blue, and so large as to produce a very rich and gay appearance, either when the plant is grown singly or in beds. The property of continuing to grow and flower after being gathered, renders it invaluable to those who grow flowers to decorate their sitting-rooms. (*Bot. Reg.*, Dec.)

Campanulàceæ.

607. CAMPA'NULA 5019 barbàta
var. 2 *cyànea *D. Don* dark-blue ♃ △ or 1 jl B ... 1836 R p.l Swt. Br. fl.-gard. 409.

The whole plant is clothed with short rough spreading hairs, but is not hoary. Leaves green, rough, and entire at the margins; radical ones numerous, spreading, oblong-spathulate, obtuse, even, 2—4 in. long; cauline ones sessile, lanceolate, erect, much smaller. Raised by Mr. Anderson of the Chelsea Botanic Garden, having come up accidentally in a pot of young plants of C. barbàta, from seeds received from the Imperial Botanic Garden at Vienna. It is distinguished from the ordinary shape of C. barbàta by its dark blue flowers; the usual colour of the species being a pale blue, and more rarely milk-white. The plant varies likewise in bearing one or more flowers on a stem. All the varieties of C. barbàta love a dry soil and sunny situation, and are especially adapted for the rockwork; but, as they are apt to suffer from the cold damps of winter, care should be taken to keep some of the plants in a pit or frame during that season. (*Swt. Brit. Fl.-Gard.*, Dec.)

Gesneràceæ.

1698. GE'SNER*A* 15330 Douglàs*ii* Lindl. [p.l Bot. mag. 3612.
var. †2-verticillàta *Hook.* whorled-*flowered* ♃ ⍁ or 2 ap R. and B Rio Janeiro 1826 R
Synonyme: G. verticillàta *Hook. Bot. Mag.*, t. 2776.

Philadelphàceæ.

1479. *P*HILADE'LPHUS.
*speciòsus *Schrad.* showy ♃ or 8 jn.jl W N. America ... L co Bot. reg. 2003.

"This beautiful genus, common as it is in our gardens, is but imperfectly known even to botanists; and to cultivators so little, that it is hardly possible to procure the species, as defined by Professor Schrader, with certainty from the nurseries, unless from Messrs. Loddiges. In one case, indeed, I have reason to believe that an American species has been palmed upon the public as Deútz*ia* grandiflòra." *P.* speciòsus is a hardy shrub, 8 ft. or 10 ft. high, and by no means stiff or formal, but with gently bending branches, loaded with snow-white flowers of the largest size, and scentless. It is among the least common of the genus, although much the handsomest. *P.* grandiflòrus *Bot. Reg.*, 570.,

P. verrucòsus *Schrad.*, is smaller flowered, more cream-coloured, and is a far more robust plant, but altogether inferior in beauty to *P.* speciòsus. The true *P.* grandiflòrus, and also *P.* latifòlius, Dr. Lindley has promised to figure afterwards. (*Bot. Reg.*, Nov.)

Solanàceæ.

482. BRUGMA'NSIA [of bot. iv. p. 241.
*Waymànii Paxt. Wayman's ♀ ⊠ or ? 2 my jn W.P S. America 1837 C l.p Paxt. mag.

Raised in Sir H. Digby's gardens at Minterne Magnel, by his gardener Mr. Wayman, from seeds imported from South America. The flowers have two distinct corollas; and in one specimen, besides the proper corolla, containing stamens and pistil, there were three more growing within each other, and surrounded by the proper calyx, and connected only at their base. Propagated freely from cuttings in sand, and in a little heat, under a glass. Messrs. Webber and Pierce, of whom plants may be obtained, have hitherto treated it in the greenhouse, but think it will flower in the open air in summer. (*Paxt. Mag. of Bot.*, Dec.)

Scrophularineæ.

1783. MI'MULUS 15900 lùteus [Swt. Br. fl.-gard. t. 406.
var. *Wilsoni D. Don *Miss* Wilson's ♃ △ pr ½ jl Y. spotted with P ... ? 1836 D p.l

A perennial herb, with opposite, rounded or ovate, acute, slightly wavy, leaves, about 1 in. long. It was raised at Miss Wilson's, Stanhard House, Stamford Hill, from seeds of *M.* lùteus. (*Swt. Brit. Fl.-Gard.*, Nov.)

Asclepiàdeæ.

PHILIBE'RTIA Kunth grâcilis *D. Don; Gard. Mag.*, xiii. p. 504.
Synonyme: P. grandiflòra *Hook. Bot. Mag.*, 3618.

*TWEE'DIA Hook. The Tweedia. (In honour of *Mr. Tweedie*, a botanical collector.) [gard. 407.
*cærùlea *D. Don* blue-*flowered* ♃ △ or 3 ... B Buenos Ayres ? 1836 C s.l Swt. Br. fl.-

The whole plant is densely clothed with downy white hairs. Leaves opposite, stalked, cordate-lanceolate, mucronulate, entire, even, ½ in. broad: posterior lobes rounded, connivent, frequently overlapping each other. It is a native of Buenos Ayres, and was first discovered by Mr. Tweedie. It is closely related to Sarcostémma; being principally distinguished by the absence of the exterior crown, by the form and length of the pollen gland, and by the presence of a tooth to each of the pedicels. It will doubtless prove nearly, if not quite, hardy; and young plants raised from cuttings are frequently erect, and blossom when scarcely 1 ft. high. There are plants in Mr. Gilan's nursery, Shacklewell Lane. (*Swt. Brit. Fl.-Gard.*, Nov.)

Polygàleæ.

2953. POLY'GALA 18230 *myrtifòlia*
†var. 2 grandiflòra *Hook.*
Synonyme: *P.* grandiflòra *Lodd. Bot. Cab.*, 1227., *H. B.* 18231.

"The Glasgow Botanic Garden is indebted for the possession of this handsome shrub to the Royal Gardens of Kew, where it was received from Southern Africa. It bears its lovely blossoms

in April and May; and they continue a long time in perfection, nestled among the yellow-green leaves of the young shoots, at the apex of the bunches." It is one of the most ornamental of green-house shrubs. (*Bot. Mag.*, Nov.)

Compósitæ.

2340. CINERA'RIA *t*ussilaginoïdes *G. M.* ix. 112. (*t*ussilaginifiòra *Paxt.*) [mag. of bot. vol. iv. p. 219
var. *Waterhousiàna Paxt. Waterhouse's ♃ ⊔ or 2 mr.jn R hybrid ?1835 C l.p Paxt

Raised by Mr. James Tate, gardener to John Waterhouse, Esq., of Wellhead, Halifax, after whom it was named, from seed produced between C. *t*ussilagiflòra and C. cruénta, resembling in its general appearance and mode of growth the former more than the latter; but it is of more humble growth, and the flowers are more numerous and splendid. (*Paxt. Mag. of Bot.*, Nov.)

*renifòlia *Meyer* kidney-leaved ♃ △ or ¾ jn Y Russia 1833 D r.m Maund bot. gard. 619.

"This is a species hitherto but little known: it is entered in the seed list of the Petersburg Botanic Garden, on the authority of Meyer; through which means it may probably have been introduced into this country. When cultivated so as to be shown in close masses, or on rockwork, this plant assumes a desirable gaiety. It may be increased slowly by division of the roots, or more abundantly by seeds." (*Maund. Bot. Gard.*, Nov.)

Asteràceæ or *Compósitæ.*

*CO'SMUS *Lindl.* The Cosmus. (From *kosmos*, beautiful; in allusion to the appearance of the species.)
*tenuifòlius *Lindl.* slender-leaved ○ pr 2 s.no R.Y Mexico ?1836 D co Bot. reg. 2007.

A beautiful annual Mexican plant, not unfrequently raised from imported seeds, but always flowering so late in the year, that it is unable to ripen its seed, and perishes. It is a most striking object, when its rich purple flowers are well contrasted with the bright fennel-like leaves. It differs from C. bipinnàtus in the leaves being still more finely cut, the outer leaflets of the involucrum less acuminate, and the fruit scabrous, with a longer beak, which, in the outer florets of the disk, has no aristæ. The only way to keep it in our gardens will be to raise it so early as to enable it to ripen its seeds before the close of the autumn. (*Bot. Reg.*, Dec.)

2294. CHRYSO'COMA
*squamàta *Lab.* scaly-*stalked* ♃ ⊔△ or 2 my Y N. S. Wales 1837 C co Bot. mag. 3625.

Leaves linear-oblong, 1 in. to 2 in. long, gradually passing upwards into small scales. It is a very pretty suffruticose perennial plant, a native of New South Wales and of Van Diemen's Land. (*Bot. Mag.*, Dec.)

Chenopòdeæ.

*BOUSSINGAU'LTIA H. B. & Kunth. The Boussingaultia. (Named in honour of *J. B. Boussingault*, a celebrated naturalist and South American traveller.) [mag. 3620.
**baselloïdes H. B. & Kunth.* Basella-like ♂ cu 2 jl.au W S. America ?1836 S co Bot.

The root is formed of oblong, fleshy, knotted, and, in their younger state, somewhat scaly, tubers, frequently of a large size, bearing a few fibres, and throwing up from one extremity a

rounded and branched stem, which turns from left to right, is quite glabrous, as is the whole plant, and somewhat woody at the base, the rest being herbaceous and green. The leaves are alternate, and jointed, as it were, upon the stem; cordate, acute, 1 in. to 4 in. long. It is a most desirable stove plant, growing rapidly, and bearing copious and graceful racemes of flowers, which are deliciously fragrant. Mr. Niven of the Glasnevin Botanic Garden observes that the great quantity of mucilage in the root is quite remarkable, and the bulk of roots produced altogether astonishing. He has had one root of not less than 4 lbs. At Glasnevin, indeed, it has stood the winter in the open air, at the bottom of a wall. (*Bot. Mag.*, Dec.)

Amaryllideæ.

*STENOME'SSON *Domb.* THE STENOMESSON. (From *stenos*, narrow, and *messos*, the middle; from the contraction of the flower below the middle.)
†cròceum *Red.* orange-*flowered* ♃ |△| or I my O Peru 1820 s.l Bot. mag. 3615.
Synonyme: Chrysiphiala cròcea *Hort. Brit.*, 7654.

Orchidàceæ.

2537. MAXILLA'RIA.
*pùmila *Hook.* dwarf £ ⍓ cu ½ ap.my P Demerara ?1835 D p.r.w Bot. mag. 3613.

Stems short, not exceeding 2 in. or 3 in. Leaf solitary, terminal, 1 in., scarcely more, in length. "Sent from Demerara to the Glasgow Botanic Garden by Mr. Inverarity, to whom we are indebted for many other choice orchideous plants." It is the smallest of the species known to Sir W. J. Hooker. (*Bot. Mag.*, Nov.)

*Henchmánni Hook. Henchmann's £ ⍓ cu 1 ap.my P Mexico ?1835 D p.r.w Bot. mag. 3614.

Imported from Mexico by Mr. Henchmann; "and I am anxious," says Sir W. J. Hooker, that "this very pretty species should bear the name of one who has distinguished himself by collecting, in climates most inimical to the human constitution, and introducing to our collections, so many fine species of this favourite family. It is certainly allied to, though as certainly distinct from, M. pùmila. It is four times the size of that individual, with more copious paper-coloured scales on the stems and pseudo-bulbs, and a much longer and more ligulate leaf." (*Bot. Mag.*, Nov.)

2540. ONCI'DIUM.
22679*a*. *deltòideum *Lindl.* triangular-*lipped* £ ⍓ or 1 o Y Peru ?1836 D p.r.w Bot. reg. 2006.

Discovered by Mr. Matthews in the province of Chacopoyas, in Peru. It is nearly related to O. divaricàtum from which its narrow leaves and differently formed labellum sufficiently separate it. (*Bot. Reg.*, Nov.)

CIRRHÆ'A. [Bot. reg. 2005.
*obtusàta *Lindl.* blunt-*petaled* £ ⍓ cu ¾ s Y. spotted with R Rio Janeiro ?1835 D p.r.w

This species of Cirrhæ'a appears distinct from any of the others yet described. It was sent to Dr. Lindley from Liverpool, in September, 1836, by Richard Harrison, Esq., who had received it from Mr. Moke of Rio de Janeiro: it had been collected

by that gentleman at Tejuca. It is a good deal like C. fúscolùtea. (*Bot. Reg.*, Nov.)

Orchidàceæ.

†2553. CATTLE'YA 22727 Loddigèsii var. Harrisòniæ
Synonyme: C. Harrisòniæ Paxt. Mag. of Bot., vol. iv. p. 247.

*ANŒCTOCHI'LUS *Blume.* THE ANŒCTOCHILUS. (From *anoiktos*, open, and *cheilos*, a lip; in allusion to the spreading apex of that organ.)
*setàceus *Blume* fringed-*flowered* ⅋ ⍓ cu ½ jn R.W.G Java 1836 D st.r.w Bot. reg. 2010.

This extremely curious plant is a native of damp shady places among stones, on the mountains of Java, and of similar situations in the woods of Ceylon, whence it was sent to the Duke of Northumberland. The beauty of the plant consists in the leaves, which are singularly painted with golden veins upon a brownish purple ground, as if, in the words of Rumphius, "some cunning painter had traced them over with unknown characters." It requires the same treatment as Goódyera, Spiránthes, and other terrestrial orchidaceous plants. (*Bot. Reg.*, Dec.)

Marantàceæ.

I. *CA'NNA*
32*a*. *Reevèsii* Lindl. Reeves's ⅋ ⍓ or 5 my Y China ? 1835 R r.m Bot. reg. t. 2004.

"A most beautiful species of *C*ánna, drawings of which were long since sent to England from China; and of which seeds have at length been procured by Mr. Reeves, to whom we owe so many of the finest Chinese plants now in the gardens of Europe. It is very near *C.* fláccida; so very near, that it may be doubted whether it is distinct." The plant is in the Horticultural Society's Garden. (*Bot. Reg.*, Nov.)

Hæmodoràceæ.

943. ANIGOZA'NTHUS Manglèsii [Bot. reg. 2012.
var. *angustifòlia *Lindl.* narrow-leaved ⅋ ⍙ or 3 my.s G.R New Holland ? 1836 D ch.l.p

Obtained from the Swan River, by Robert Mangles, Esq. It differs from the broad-leaved form of the species, in having very narrow leaves, and somewhat smaller flowers, which are either coloured reddish orange at the base, or are of one uniform green. It is easy to cultivate, if the soil contains a small portion of chalk mixed with loam and peat. (*Bot. Reg.*, Dec.)

Liliàceæ.

1016. *LI'LIUM.*
*speciòsum *Thunb.* showy ☿ △ spl. 2 au C Japan 1833 O p.l Bot. reg. t. 2000.
Synonymes: L. speciòsum *Thunb. Act. Linn.*, 3. p. 333.; *L.* supérbum *Thunb. Fl. Jap.*, 134.; *Kasbiako vulgò Konókho Juri* Kæmpf. Amœn., 871.; *L.* lancifòlium *Hort.*

"All the lilies previously seen in Europe, however beautiful they may be, are quite thrown into the shade by this most glorious species, for which we have to thank Dr. Van Sieboldt, who introduced it into Holland from Japan. Not only is it handsome beyond all we before knew in gardens, on account of the clear deep rose-colour of its flowers, which seem all rugged with rubies and garnets, and sparkling with crystal points; but it has the sweet fragrance of a petunia." It requires the same treatment as *L.* japónicum and longiflòrum, which flower beautifully every year,

if planted in good light loamy soil, in a glazed pit, where they are protected from wet and severe cold in winter." The plant is in Rollisson's Nursery, Tooting. (*Bot. Reg.*, Nov.)

REVIEWS.

ART. I. *A practical Treatise on Warming Buildings by Hot Water; and an Inquiry into the Laws of radiant and conducted Heat: to which are added, Remarks on Ventilation, and on the various Methods of distributing artificial Heat, and their Effects on Animal and Vegetable Physiology.* By Charles Hood, F.R.A.S. 8vo, pp. 216, and numerous Woodcuts. London.

" A NATURAL inclination for philosophical enquiries " first led Mr. Hood " to investigate the principles of the invention for heating buildings by the circulation of hot water; and the many favourable opportunities that have occurred for proving the accuracy of" his " theoretical views have encouraged" him " to persevere in the investigation." The result is the work before us, which is the only book, that we are aware of, exclusively devoted to the subject of heating by hot water. The author has treated the subject in a manner sufficiently popular to be generally understood; and, while he has been rigidly scientific on those points which required it, he has avoided, as much as possible, all abstruse algebraic calculations, or confined them to parts of the subject of less immediate importance to practical men.

The work consists of an Introduction, and twelve chapters. In the Introduction, it is stated that " the merits and principles of hot water, as a medium of conveying heat, being but partially understood, the object of the present treatise is to facilitate its application, and extend the sphere of its utility." A short sketch of the origin and history of this mode of heating is given, in which we regret to find that the first inventor, Bonnemain (see *Gard. Mag.*, vol. iv., for 1828), is not once mentioned. It is a singular fact, which we have noticed in some former volume of this Magazine, that the hot-houses in the Royal Botanic Garden of Paris were heated by hot water in Bonnemain's time, upwards of fifty years ago; and that the fact had been so completely forgotten by the French gardeners and engineers, that the government sent to England, in 1832, a deputation of professional men, to study the subject, in order to heat the hot-houses of the Paris Garden again by hot water. In Petersburg, also, during the time of the Empress Catherine, the immense conservatory built by Prince Potemkin, as a part of the Taurida Palace, was heated by hot water, which, Storck informs us, was circulated both above and under ground, in leaden pipes. In Petersburg, this mode of heating was given

up, when the Emperor Paul turned the conservatory into a stable for cavalry horses; and after his death, when it was restored to its original use, it was heated by German stoves. In France, in the Paris Garden, Bonnemain's plan was given up, because it was found that the pipes did not give out sufficient heat during weather of extraordinary severity. Had the idea occurred of increasing the number of the pipes, the mode of heating would probably have been retained; but at that time all France was occupied with political subjects; and the Revolution of 1789 threw Bonnemain and his plans into obscurity, from which neither seem ever to have recovered. Bonnemain was living on a very small pension in Paris in 1829, and, probably, is so still. (See Dr. Ure in *Arch. Mag.*, vol. v. p. 39.)

"The origin of the invention of employing hot water for diffusing artificial heat," says Mr. Hood, "appears to be hid in considerable obscurity. It is not improbable that, similar to many other discoveries, it has been evolved at various periods from the alembic of Time. It seems, in one instance at least, to have been used in France about sixty years since. After fading from recollection for a space of about forty years, it appears to have been reinvented by the Marquis de Chabannes, and subsequently by Mr. Bacon and Mr. Atkinson; and it was the latter who, undoubtedly, first gave to the apparatus the arrangement under which it is now generally used in its most simple form.

"Neither the capabilities of this method of warming, nor the various useful purposes to which it is applicable, are at present fully appreciated. There are no buildings, however large, to which it cannot be advantageously adapted, nor any that present insurmountable difficulties in its practical application. It is an invention only yet in its infancy, but which gives promise of a maturity that will confer the greatest advantages, where its employment is the most extensive." (p. 5.)

Chap. I. Of the Cause of Circulation of the Water, and its Consequences. Here the author shows that Mr. Tredgold's explanation of the cause of the circulation of the water (viz. its expansion by heat) is erroneous; and that the true cause is gravitation. It is due to the memory of Mr. Tredgold to state, that it is very doubtful whether the part alluded to in his *Treatise on the Steam-Engine* was written by him. If our memory serves us right, it was published after his death.

Chap. II. On the Application of the Principles. Chap. III. Of the proportionate Sizes of various Parts of the Apparatus. Chap. IV. Of the Permanence of Temperature, depending on the Form and Size of the Boiler and Pipes. Chap. V. Of the Size and Construction of Furnaces. Chap. VI. On the Laws of Heat. Chap. VII. Experiments in cooling. Chap. VIII. On the Application of the Laws of Heat to determine the proper Size of an Apparatus for heating any Description of Building.

Chap. IX. On peculiar Modifications of the Hot-water Apparatus. After describing Kewley's siphon principle (p. 127. to 132.), the author says, "This form of the apparatus answers the intended purpose extremely well, and has been extensively em-

ployed in practice; and it exhibits not only a considerable knowledge of the principles of science, but also great ingenuity in their application." (p. 133.) The high-pressure hot-water apparatus of Mr. Perkins is described at length, and the great danger attending its use pointed out; with, however, a redeeming paragraph at the end. We quote the following, as well for the sake of gardeners as of general readers: —

"183. In consequence of the intense heat of these pipes, it is sometimes found that rooms which are heated by them have the same disagreeable and unwholesome smell which results from the use of hot-air stoves and flues. In reality, the cause is the same in both cases; for it arises partly from the decomposition of the particles of animal and vegetable matter that continually float in the air, and partly from a change which atmospheric air undergoes by passing over intensely heated metallic surfaces.* From some experiments recorded in the *Philosophical Transactions* of the Royal Society, made with a view of ascertaining the effect produced on the animal economy by breathing air which has passed through heated media, it appears that the air which has been heated by metallic surfaces of a high temperature must needs be exceedingly unwholesome. A curious circumstance is related in reference to these experiments, which is illustrative of this fact: —

"'A quantity of air, which had been made to pass through red-hot iron and brass tubes, was collected in a glass receiver, and allowed to cool. A large cat was then plunged into this factitious air, and immediately she fell into convulsions, which, in a minute, appeared to leave her without any signs of life. She was, however, quickly taken out, and placed in the fresh air, when, after some time, she began to move her eyes, and, after giving two or three hideous squalls, appeared slowly to recover. But on any person approaching her, she made the most violent efforts her exhausted strength would allow to fly at them, insomuch that in a short time no one could approach her. In about half an hour she recovered, and then became as tame as before.'

"184. The high temperature of these pipes, and the intensity at which the heat is radiated from them, has sometimes been urged as an objection against this invention, when applied to horticultural purposes; because any plants which are placed within a certain distance of them are destroyed. Although, no doubt, this effect really takes place, it can be easily avoided with proper care; for, as radiated heat decreases in intensity *as the square of the distance*, it only requires that the plants should be placed farther off from these pipes than from those which are of a lower temperature. In comparing the effect of two different pipes, if one be *four* times the heat of the other (deducting the temperature of the air in both cases), the plants must be placed *twice* as far off from the one as from the other, in order to receive the same intensity of heat from each. The only inconvenience, therefore, is the loss of room, which, in some cases, may not be of much importance. But a more serious objection, by far, appears to lie in the inequality of temperature which any building heated by these pipes must have, in consequence of their being so very much hotter in one part than in another. This difference of temperature between various parts of the same apparatus has already been stated to amount, in some cases, to as much as 200° or 300°; varying, of course, with the length of pipe through which the water passes. From what has been stated in Chapter IV., it will also be observed that, owing to the smallness of these pipes, this kind of apparatus cools so rapidly when the fire slackens in

"* The exact nature of this change which the air undergoes has not been ascertained; but, whatever be the chemical alteration which occurs, a physical change undoubtedly takes place, by which its electrical condition is altered.

intensity, that the heat of a building which is warmed in this manner will be materially affected by the least alteration in the force of the fire, instead of maintaining that permanence of temperature which is so peculiarly the characteristic of the hot-water apparatus with large pipes.

" 185. These inconveniences and objections against the apparatus, however, are of but secondary importance in comparison with the question which exists respecting its security. But, as there are no means of regulating the temperature in hermetically sealed pipes, so there can be none for limiting the pressure which they sustain; and it is only by methods far too refined for general use, that the real amount of the expansive force can be ascertained. An apparatus which, to all appearance, therefore, is perfectly safe at any given time of inspection, may, in a few minutes afterwards, have the pressure so much increased by adventitious circumstances, as to render it extremely dangerous, particularly if its management be confided to unskilful hands; and each day that it is used must add to its insecurity, in consequence of the pipes which form the coil continually becoming thinner by the action of the fire.

" 186. This invention undoubtedly exhibits great ingenuity; and, could it be rendered safe, and its temperature be kept within a moderate limit, it would be an acquisition in many cases, in consequence of its facile mode of adaptation. Its safety would, perhaps, be best accomplished by placing a valve in the expansion-pipe, which, from its large size, would be less likely to fail of performance than one which was inserted in the smaller pipe. If this valve were so contrived as to press with a weight of 135 lb. per square inch, the temperature of the pipes would not exceed 350° in any part: the pressure would then be nine atmospheres, which is a limit more than sufficient for any working apparatus, where safety is a matter of importance.

Chap. x. Summary of the Subject, and General Remarks. Chap. xi. Ventilation. Chap. xii. Hot-Air Stoves.

There are few gardeners who have not occasion either to erect a hot-water apparatus, or to manage one; and all such will find Mr. Hood's *Treatise* of real use. The more it is studied, the more will appear the merits of Mr. Kewley's system. As a slight improvement on the details of this system, it is suggested by Mr. Hood that the return end of the siphon, instead of being continued down through the hot water in the boiler nearly to its bottom, should be continued down the outside of the boiler, and entered horizontally at its bottom. The object is to increase the difference of weight between the returning column in the siphon and the ascending column (which is the grand cause of the much greater rapidity of the motion of the water in Kewley's apparatus than in any other), by preventing the former from receiving any degree of heat before it reaches the bottom of the boiler. It occurs to us that, perhaps, this might be effected by a water-tight case round that part of the returning leg of the siphon which is immersed in the boiler. If this case were of such dimensions as to preserve an inch of dry air all round the siphon, and was open to the atmosphere at the top, an inch or two above the water, very little heat would be conducted from the hot water in the boiler to the cold water in the siphon. Whether the circulation, by this means, would be much accelerated, will often depend on the temperature of the water in the boiler. If a stove were to be kept up to the temperature of 70° or 80°, the water

in the boiler will require to be heated to 150°, and then there might be some advantage in adopting a casing; though this, in general, will depend not so much on the absolute degree of heat produced, either in the boiler or the house to be heated, as on the relative difference between the temperature of the water in the two legs of the siphon.

ART. II. *Elements of practical Agriculture; comprehending the Cultivation of Plants, the Husbandry of the Domestic Animals, and the Economy of the Farm.* By David Low, Esq., F.R.S.E., Professor of Agriculture in the University of Edinburgh. Second Edition. 8vo, pp. 719, and numerous Engravings. London.

IN this second edition of a work of universally acknowledged merit, the author has embraced the opportunity of making "a few amendments in minor points, and certain corrections in the accounts given of the varieties or breeds of domestic animals."

The following quotation ought to be instructive to English proprietors: —

"It has been objected to some of the calculations contained in this Work, that the rate of labour assumed will not apply to a great part of England. This objection is good in the case of various districts of very stiff aluminous or alumino-calcareous soils in the south-eastern counties of England, where more than the labour of two horses may be required for ordinary tillage; but it certainly does not apply to the greater part of the land of this country. The system of agriculture here explained, in so far as it regards the methods of farm labour, has been long established in the north of England, and over all the better districts of Scotland. In the county of Northumberland, where a system of cultivation is pursued which may serve as a model to every part of this kingdom, the stiffest soils are managed by two-horse teams. While I must admit, then, the exceptions which exist in the case of certain tracts of country, as the London clay, the weald clay, and other very tenacious soils, I maintain that the system of farm labour here described is capable of being reduced to practice over nearly nine tenths of England: and to the whole of Ireland it is applicable in its minutest details. The greatest obstacle to the progress of agricultural improvement is the prejudice of habit. Throughout all England, there is a multitude of agriculturists surpassed by none in the world for intelligence and spirit; and many things in the agriculture of the country are deserving of the highest praise; but it cannot be concealed, that, in the simplifying and economising of labour, there is much to be learned and effected. It is in this respect that the methods of English tillage, and especially in the southern counties, admit of the greatest improvement. By a more efficient application of the means of labour, a wide field of beneficial improvement is open over a great part of this rich and beautiful country; and one of the most useful services that can be rendered to the farmers of many of the finest districts of England is, to show them how the operations of the field can be more cheaply performed. It is undeniable, that, in the parts of this kingdom which are the least favoured by nature, the art of tillage has become more perfect by being rendered more simple; and the result is shown in the greater revenue derived from land under all the disadvantages of a colder, moister, and more changeable climate. The agriculturists in the south of England are surprised at the high rents paid from the poorer soils in the northern parts of the king-

dom. This, doubtless, arises from a combination of causes; but not the least important of these is a simpler and cheaper system of farm labour."

We do not know any work more suitable for a gentleman's bailiff, or a gardener who has also the management of a farm, than that before us. There is a greater variety of matter in our *Encyclopædia of Agriculture*, because the subject is there treated on according to a much more comprehensive plan; but, if we had a bailiff to instruct in the best kind of British farming, we should certainly put into his hands Professor Low's *Elements*, in preference to any other book that we know. If we were desirous of enlarging the mind of a reading bailiff, or a reading gardener, then we should recommend to him our *Encyclopædia*.

ART. III. *Catalogue of Works on Gardening, Agriculture, Botany, Rural Architecture, &c., lately published, with some Account of those considered the more interesting.*

A Descriptive Catalogue of Roses cultivated for Sale by T. Rivers and Son, at their Nurseries, Sawbridgeworth, Herts. For the Autumn of 1837 *and the Spring of* 1838. In two parts. *Part I. Roses for the Summer Rose-Garden, that bloom only in May, June, and July. Part II. Roses for the Autumnal Rose-Garden, that bloom from June till November.* By T. Rivers, jun. Large 8vo, pp. 16.

THIS excellent catalogue is printed on very thin paper, so as to be sent by post in a single letter. It contains only the new and more beautiful kinds; and the idea of dividing them into summer and autumn roses is excellent in a practical point of view.

The Summer Roses, which bloom only in May, June, and July, are thrown into the following groups: — Provence, or cabbage, roses (*Rò*sa centifòlia). Moss roses (*Rò*sa centifòlia muscòsa). French roses (*Rò*sa gállica). Hybrid Provins and French roses. Hybrid China roses. White roses (*Rò*sa álba). Damask roses (*Rò*sa damascèna). Scotch roses (*Rò*sa spinosíssima). Sweetbriars (*Rò*sa rubiginòsa). Austrian briars (*Rò*sa lùtea). Double yellow roses (*Rò*sa sulphùria). Climbing roses (in six divisions): 1. Ayrshire roses (*Rò*sa arvénsis); 2. *Rò*sa multiflòra; 3. Evergreen roses (*Rò*sa sempervìrens); 4. Boursault roses (*Rò*sa alpina); 5. Banksian roses (*Rò*sa Bánks*iæ*); 6. Hybrid climbing roses.

The Autumn Roses, or those which bloom from June to November, belong to the following groups: — Perpetual roses. Bourbon, or l'Ile de Bourbon, roses (*Rò*sa Bourbon*iàna*). Chinese roses (*Rò*sa índica). Tea-scented Chinese roses (*Rò*sa índica odoràta). Miniature, or dwarf, Chinese roses (*Rò*sa

Lawrence*àna*). Noisette roses. Musk roses (*R*òsa moschàta). Macartney roses (*R*òsa bracteàta). *R*òsa microphýlla.

Any person wishing to have a collection of the very best roses, has only to write for one or two plants belonging to each of the foregoing groups; directing either that the cheapest sorts may be chosen, those which are the best representatives of the group, or those which are the handsomest. Five shillings per group would procure a very handsome small collection; and something may be done at even 2*s.* 6*d.* a group.

A Descriptive Catalogue of Fruits cultivated by T. Rivers and Son, at their Nurseries, Sawbridgeworth, Herts; with the Prices of Fruit Trees as sold by them, 1836-7. 8vo, pp. 20.

We should like much to see such a descriptive catalogue, by Mr. Rivers, of hardy trees and shrubs; provided it were, as in the case of these fruit trees, limited to kinds actually propagated by him for sale. The great evil of many nurserymen's catalogues is, that they contain many names of which they have no plants; and a number of other names, which are only synonymes. We shall take the beautiful genus *C*ratæ'gus for an example, and ask, where there is a catalogue of the species and varieties that is good for anything? We take this genus, because most of the kinds belonging to it have fruited in the country; and they are, besides, easily known by their leaves.

The British Almanac of the Society for the Diffusion of Useful Knowledge; and the Companion to the Almanac, or Year-Book of General Information, for 1838. 12mo, pp. 96, and pp. 248. London.

The British Working Man's Almanac; and the Working Man's Companion, or Year-Book, for 1838. 12mo, pp. 48, and pp. 144. London. Price 1*s.* 4*d.*, bound in cloth.

These are two excellent almanacs. *The Year-Book to the British Almanac* contains directions for collecting specimens of geology and mineralogy; directions for collecting and preserving plants in foreign countries for an herbarium; and directions for collecting zoological specimens. These directions are, to a young gardener, alone worth the price of the volume.

The *Working Man's Companion*, the price of which, without the almanac, is only 9*d.*, sewed, contains: The Interest of the Working Men in a provident Administration of the Poor Laws; Home-made Bread; Insurance against Expense of Sickness; Home-brewed Beer; Cottage Economy, and the Dwellings of the Working Classes.

Art. IV. *Literary Notices.*

Sweet's British Flower-Garden is proposed to be merged into the *Botanical Register;* and this latter work is to contain the improvements indicated in the following notice: —

"The great and constantly increasing importation of new and curious plants into this country renders it necessary for the proprietors of the *Botanical Register* to make an exertion to keep pace with the spirit of the times; and finding, on the one hand, the present limited number of descriptions in each Number (eight) by no means sufficiently extensive for a record of the rare and beautiful plants submitted to their notice; and, on the other hand, feeling anxious to diminish rather than increase the expense of the work, Dr. Lindley has suggested the plan of increasing the number of descriptions as much as possible; and, instead of giving a figure to every description, as formerly, to figure such only as force themselves upon the attention of the botanist or amateur, either by their surpassing beauty, or some rare and curious quality; adding, also, a sufficient quantity of letterpress to embrace, under the title of *Botanical and Horticultural News*, a monthly register of the most rare and interesting matter relating to those subjects. It is also proposed, in all cases, to give precise directions for the cultivation of the plants that may be introduced into the work. This arrangement cannot but add greatly to the labour of Dr. Lindley; who, nevertheless, anxious to promote the extension of scientific knowledge, will not allow any personal consideration to stand in the way of so desirable an end. In the confident hope of the increased patronage of the botanical public to the plan, the proprietors have determined to reduce the price of all future Numbers, beginning with January 1., to 3*s.* 6*d.*, instead of 4*s.*; which will render the *Botanical Register* the cheapest, as it is the most beautiful, of all the botanical periodicals; and eventually constitute it the completest and most authentic illustrated catalogue of plants in the whole world."

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Joyce's new Mode of Heating. — Mr. Joyce, a commercial gardener at Camberwell, has recently made one of the most extraordinary inventions for producing heat which have ever been given to the public. We question if any thing so remarkable has occurred, in a practical point of view, since the *invention* of gunpowder. Whether Mr. Joyce's stove will be so economical as to be adapted for general use, is a question that can only be satisfactorily determined by experience; but in the mean time it promises to be so; and, while it may be employed to heat churches, and all kinds of public and private buildings, ships, and the inside of carriages, Mr. Joyce thinks that the poorest cottager will find more comfort and economy in its use than in the common open fireplace. The invention not being, at the time we write, fully secured by patent, the details cannot be here given; but the result is, that heat is produced by an apparatus of very limited magnitude, and that it may be raised to any temperature that can be required, short of red heat, by combustion without the production of smoke. To most of our readers this will seem impossible; but the fact was placed beyond a doubt yesterday (Dec. 5.), when one of Mr. Joyce's stoves, in action, was exhibited at a meeting of the Horticultural Society in Regent Street, and examined by a great number of persons. The form of the stove in which the heat is generated is that of an upright cylinder, from the conical apex of which a heated current of air escapes, and which current can be regulated at pleasure, or altogether stopped: but the chief source of heat is the radiation from the sides. Of course, the heat so generated may either be allowed to escape directly into the surrounding atmosphere, or be conveyed away in air-tubes, or by means of hot-water pipes, to a distance, or to

any other apartment. If this invention answer the expectations which have been formed of it, it will effect a complete revolution in the mode of heating dwelling-houses throughout the world; because it is the only mode hitherto discovered by which heat can be produced by combustion, without any heat being lost. At present, whether a room is heated by an open fireplace, a close stove, steam pipes, or hot-water pipes, or by the introduction of a current of heated air from a cockle-stove, still a large proportion of heat necessarily escapes along with the smoke produced by the consumption of the fuel; but here not one particle of heat escapes, and the only care requisite in regard to the air of a room will be, to have a quantity of fresh air admitted proportionate to what is deteriorated by the combustion of the material employed in this new mode of heating, and by the persons breathing in the room. One advantage attending this invention is, that it is perfectly free from dust, and that the stove, when once charged and lighted, requires no attention whatever for from 20 to 30 hours, according to the charge. The convenience of such a mode of applying heat to rooms without fireplaces, closets of every description, cabinets, whether of books, curiosities, or plants, &c., and, in short, to all enclosed places without chimneys, must be obvious. It is also adapted, beyond all other inventions, for heating, with security from fire, ships, and for warming the inside of close carriages; and it might be taken under water in a diving bell, or into the atmosphere in a balloon. It is also admirably adapted for the purposes of French cookery. We shall not, however, enlarge farther on this invention till we can explain to our readers what it is; and this Mr. Joyce has kindly promised to enable us to do at the very earliest moment after his patent is sealed. It is no small honour to the profession of gardener, that an invention of so much importance has been made by one of their number. — *Cond.*

Art. II. *Domestic Notices.*

ENGLAND.

The Lambertian Herbarium has lately received a rich collection of rare and unique specimens of plants from New Zealand. Among these, are some trunks of tree ferns believed to be undescribed species; the flowers and leaves of a climbing aroidean plant, which ascends to the tops of the highest trees, and part of the spathe of which forms what the natives consider as a most delicious food; and an immense mass of the resin of the kowrie pine, or dammara, of New Zealand. The outside of this resin is opaque, and of a dirty white; but, where broken, it has a glassy transparent look, and a pale greenish tinge. There are a number of stems and roots of scitamineous plants and palms, and also various dicotyledonous plants, all of which remain to be described or recognised by botanists. Among the known plants, are some splendid specimens of Knight*ia*; of Clianthus, from a new, and much colder habitat, &c. Mr. Lambert devotes every Saturday, while he is in town, to the display of these, and the numerous other treasures of his herbarium, to the botanical world; who assemble in his richly furnished library in Grosvenor Street, as they did formerly in that of Sir Joseph Banks in Soho Square.

Art. III. *Royal Caledodian Horticultural Society.*

The Winter General Meeting of this Society was held on December 7., in the Council Room, at the Garden, Inverleith, James Gammell, Esq. (in the absence of the Vice-President), in the chair.

The Prize Committee had been occupied for several hours in examining and deciding on the respective merits of the articles produced. They reported, that, for the premium offered for the best six sorts of French, Flemish, or German Peers, of recent introduction, four competitors had appeared; and that the medal was due to Mr. James Smith, gardener to the Earl of Hopetoun, Hopetoun House; the kinds being, Grumkower Winterbirne, beurré

Diel, beurré d'Aremberg, beurré de Capiaumont, calebasse Bosc, and glout morceau. The Committee were of opinion that a second premium should be given for a collection sent by Mr. James Macintosh, gardener to Robert Fergusson, Esq., Archerfield; the kinds being, beurré d'Aremberg, Easter beurré, emerald, glout morceau, winter Nelis, and winter beurré (the last, however, doubtful). The premium offered for the best three kinds of French or Flemish pears, from standard trees, was also gained by Mr. Smith, Hopetoun; the sorts being, Nelis d'hiver, beurré Diel, and autumn Colmar.

A medal having been offered for any approved variety of culinary vegetable not hitherto cultivated in Scotland, it was awarded to Mr. James Macintosh, Archerfield, for specimens of the Portugal cabbage, the midribs of the leaves of which are used in the manner of sea-kale, and much approved of.

A dish of fresh ginger roots, for preserving, raised in the secretary's garden at Canonmills, having been presented (but not for competition), the medal offered for this article was, notwithstanding, awarded to Mr. William Lawson, gardener to Dr. Neill, as a mark of approbation of his merit as a cultivator.

Specimens of the Florence fennel, a new vegetable, much used in Italy, and also in France, but hitherto unknown in Scotland, were produced from the Meadowbank Nurseries; and the secretary read an account of its mode of culture and preparation for the table, derived from the *Bon Jardinier* for 1837. A medal was voted to Mr. John Baird, foreman to Messrs. Lawson and Son, for this novel production.

Several beautiful collections of *C*hrysánthemum sinénse were exhibited; and the premium was awarded to Mr. James Muir, gardener to William Mitchell, Esq., of Parson's Green. Other fine collections of this elegant winter flower were sent by Mr. Macintosh, Archerfield, and Mr. Gow, Tulliallan.

Several of the extra articles submitted to this meeting were of great novelty and interest. A large and ripe cluster of the luscious fruit of the true banana (Mùs*a* sapiéntum), from the palm stove in the Royal Botanic Garden, excited admiration, especially when it was mentioned that the same plant had yielded above 60 lb. weight of similar fruit. The Society's silver medal was voted, amidst acclamations, to Mr. William M'Nab for this production. Specimens of the tubers of a new Indian cress (Tropæ*olum tuberôsum) were exhibited from the garden of the Society. When dressed (as they were during the sitting of the Committee), they were found equal in flavour to the best asparagus; and the superintendent mentioned that the plant was of very easy culture: so that this is likely to become a valuable acquisition. Proliferous German greens, bearing rosette sprouts on the leaves, which are very delicate when boiled, were exhibited from Archerfield Garden. A large and fine citron, from a two-year-old plant cultivated at Millearn, the seat J. G. Home Drummond, Esq., was much admired. A fine clump of large mushrooms, about twenty in number, and the group measuring more than 3 ft. in circumference, was sent from the mushroom-house at Pinkie, the garden of Sir John Hope, Bart., under the management of the venerable Mr. James Stuart, who has been more than fifty-three years head-gardener there. Cakes of compressed basil and of sweet marjoram, prepared in America, and sold in Covent Garden market, but new to Edinburgh, were exhibited by Mr. John Carstairs, How Street. Some beautiful apples and pears were placed on the table, with their names, from the gardens of Sir David Baird of Newbyth, and of General Durham of Largo.

Several communications were laid before the meeting; particularly, an account of a botanical and horticultural journey through the central counties of England and north of Ireland, by Mr. James M'Nab [if this is not intended to be published in Edinburgh, we shall be happy to receive it for the *Gardener's Magazine*]; receipts for the making of the red rhubarb jelly and jam, formerly presented to the Society, and recommended by them; and a description of a mode of grafting the grape-vine, devised and successfully practised by Mr. William Gowans, Cadder Garden. (*Edinburgh Advertiser*, Dec. 12. 1837.)

Art. IV. *The West London Gardeners' Association for mutual Instruction.*

Minutes of the Proceedings. *May* 9. 1837. — The report of the committee for the last six months was read and approved of. It was resolved, that an assistant secretary be appointed; that the number of the Committee be augmented from twelve to fifteen; and that the subscriptions of amateurs should be the same in amount as those of head gardeners. The propriety of giving more publicity to the Society's proceedings was postponed for further consideration. The Committee and office-bearers for the ensuing half year were then elected.

Exhibited. Some good specimens of the Syon House, or Kenyon, cucumber, cut off a plant which has been in a bearing state since October, 1835, from Mr. Richard Ayres, gardener, Chicksands Priory, Bedforshire. It was intimated that Mr. Ayres intended publishing a treatise upon the subject.

June 12. — Specimens of the newest and best kinds of Pelargònium were exhibited from the Duke of Devonshire's green-houses, Chiswick. The trusses of bloom of the pet, Forster's gem, &c., were very splendid.

Mr. Cody read an essay on the cultivation of the pelargonium for competition. The plants are cut down pretty close, about the middle of August, when they push fresh buds; the greater portion of the earth is shaken from their roots; and then they are potted into fresh rich compost and smaller pots, placed in a pit or frame, shaded until they have made fresh roots, and attended to properly during the winter and spring, with air, heat, light, moisture, and shifting. A criterion by which to judge of the properties of a pelargonium was pointed out, and twenty-four of the best kinds enumerated.

Mr. Caie alluded to several systems of growing the pelargonium; and remarked that the principal object of gardeners should be, to flower them at all seasons; as some make a showy appearance in winter and spring, and others answer well for turning out into clumps.

Mr. Judd advocated the using of manure water for insuring first-rate blossoms. Mr. Russel coincided with Mr. Caie, and alluded to a circumstance which but too generally occurred with regard to growing for competition; namely, that the grower was spoken of, and valued, according to his success with a few specimens; while the general stock might, and often was, below mediocrity. Mr. Keane observed that the general system practised by the most successful competitors was, to grow their pelargoniums near the glass, in low-roofed houses; and that, by repeatedly shifting, and other necessary attentions, they were brought to that state of perfection in which they were seen at the late shows.

June 26. — Mr. Ayres brought forward a plan and description of a propagating-house, accompanied with observations on the same. After recapitulating the leading ideas of his former essay, to show on what principle the house had been erected, he proceeded to describe its construction and management. The house was 20 ft. long, by 10 ft. wide; with a pathway 2 ft. wide, running longitudinally along the centre of it, and having two beds, facing north and south, for the cutting pots to be placed upon. These beds were divided into four different compartments: one for cuttings of stove plants; a second, for green-house plants; a third, for such green-house plants as require to be kept cool for a time; and a fourth, for the young plants after they have been potted off. The house is heated by linings of dung, grass, and leaves, and a hot-water pipe conducted round the house close to the wall. For stove cuttings, Mr. Ayres recommends a bottom heat of 90°, and an atmospheric temperature of 70° or 75°; for green-house cuttings, a bottom heat of 80°, and a top temperature of 65° or 70°; and in the green-house preparatory department, a temperature not exceeding 60°, at any time. He also recommends watering in the afternoon, before the sun has left the house; and

the having at all times an atmosphere saturated with moisture. A number of members spoke on the subject; but the ideas were little different from those suggested when the subject of propagation was before the Society.

July 10.— Mr. Fish introduced the subject of the cultivation of the mushroom. An animated discussion took place, but no great diversity of opinion was elicited. For producing spawn, Mr. Fish recommended a mixture of horse and cow-dung. In forming his beds, he uses the dung from old linings, or any litter rather dry than otherwise, capable of raising a little heat; spawns the bed when milkwarm; and, when there is no danger from over-heating, covers it with a casing of cow-dung in a wet state, or fresh horse-dung if cow-dung is not to be had; the use of which is to give strength to the mushroom before coming through the mould, and to render it thick and fleshy. He then covers the beds with $1\frac{1}{2}$ in. of mould, rather stiff than otherwise, beating it firmly, and attaching great importance to earthing up as soon as possible after spawning. In beds out of doors, liable to get wet before they are spawned, the spawn is wrapped into a good handful of dry litter, and then firmly inserted into the beds; when the wet dung, by which it is surrounded, will operate in the same manner as a casing of cow-dung under cover. In beds put up out of doors without prop covering, especially in the winter months, care must be taken that they be not too hot when spawned: it is better to have them rather cool; as, if a sufficiency of heat does not arise after being earthed up, a proper temperature can at any time be infused and kept up by means of covering with straw and dung. Mr. Judd recommended watering with lime-water to destroy worms and woodlice; but doubts were expressed if the using of lime, so fresh as to destroy the insects, would not also be prejudicial to the mushroom. The growing of mushrooms in summer was much discussed; and it was agreed that, unless there was the command of cool sheds or cellars, the growing of them was almost labour thrown away, especially out of doors; as much watering would be required to keep the beds cool by evaporation. The temperature of 60° was considered most favourable to the growth of the mushroom.

Art. V. *Retrospective Criticism.*

A DOUBLE-FLOWERED Rhododendron.—I observe, in Vol. XIII. p. 537., you state that "a double-flowered rhododendron has been originated in Paris recently, and the whole stock imported into this country by Mr. Lawson of Edinburgh." May I be permitted to inform your readers that I have cultivated a double-flowered *R*hododéndron pónticum for the last ten years or upwards? I purchased my original plant from Messrs. Loddiges, who, I believe, had had it some years; but how or where it originated I am not aware. Whether the Paris plants are of the same species, or of some other, I, of course, am ignorant; but I am aware that it frequently happens that plants are sent to this country from the Continent, as novelties, which have originally been sent hence to the Continental gardens. — *J. Cree. Addlestone Nursery, Dec.* 1837.

The variety alluded to by Mr. Cree was published in the *Hortus Britannicus* (p. 171.) in 1830; that purchased by Mr. Lawson was found in a bed of seedlings in Cel's nursery, Paris, in 1832; it is called *R*hododéndron pónticum *h*yacínthi*flórum*. (See *Annales de Flore*, &c., September, 1836.) The flowers are very numerous; each consisting of fifteen or sixteen petals, of a fine violet rose colour. Leaves as in the species. — *L. L. L., Paris, December* 21. 1837; and *Cond.*

Art. VI. *Queries and Answers.*

An Insect on Tropæ'olum peregrìnum. — An insect has troubled us much here this season, by injuring the leaves of Tropæ'olum peregrìnum. The com-

mon nasturtium has intertwined its leaves with those of the above-mentioned species; but not a single insect seems to have touched it. — *J. P. Chatsworth, Oct.* 23. 1837. [We sent the insects to Mr. Westwood, who says they are those of the Póntia brássicæ (the common white cabbage butterfly), which often feeds on the nasturtium. It is a curious instance of preference given to an exotic plant, which it is very difficult to account for.]

Art. VII. *The London Horticultural Society and Garden.*

Certificates *granted to young Gardeners by the Horticultural Society of London, from Sept.* 25. *to Nov.* 13. 1837 : —

September 25. — James Thompson of Scone, Perthshire, *a Certificate of the First Class.*

October 23. — Richard Parnell of Heligan, St. Austel, Cornwall, *a Certificate of the First Class.*

November 13. — Walter Scott Grierson of Penpont, Dumfries, *an extra Certificate of the First Class.*

October 17. — *Read.* A paper "On the Growth of Stove Aquatics in the open Air," by L. W. Dillwyn, Esq.

Exhibited. — *Erica* Masson*iana*, from Joseph Wilson, Esq., of Clapham Common. Queen pine-apple, weighing 4 lb. 14 oz., from William Harrison, Esq., F.H.S. Clerodéndrum speciosíssimum, Cròwe*a salìgna*; *Erica cerinthöides*, *E.* curviflòra; Gloxín*ia* maculàta, G. cæruléscens, Oncídium papílio, Colúmne*a* scándens, Ròche*a* falcàta, *Euphórbia* punícea, Ipomœ'a insígnis, and *Scílla hyacinthöides*; from Mr. Green, gardener to Sir Edmund Antrobus, Bart. French marigolds, from Messrs. Beck and Co. of the Strand. Impàtiens scapiflòra, and Tropæ'olum tuberòsum, from Messrs. Young of Epsom. Brugmánsi*a* Whymánni, from Mr. Conway, gardener to L. Sulivan, Esq. Allamánd*a* cathártica, Aphelándra cristàta, Polýspora axillàris, and *Loàsa* coccínea, from Mrs. Lawrence. Jersey chrysanthemum, maiden's blush, and a collection of dahlias, from Messrs. Chandler and Son. Three apples (name unknown), from Mrs. Fielder, of Alton, Hants. Dahlias, from Mr. Catcleugh of Sloane Street, Chelsea. Green-fleshed melon, grown in an open frame, from John Williams, Esq., C.M.H.S. A collection of cut flowers, from the Hon. W. F. Strangways, F.H.S.

From the Garden of the Society. — Dahlias, and single Mexican seedlings. — *Pears:* Buffam's (an American variety of some merit), Boyle Farm wilding, Duc de Berri (a great bearer, melting, yet seems to require a warmer climate than this), poire Neill, beurré de Capiaumont, Marie-Louise (from a wall). The flavour of this, like many other Belgic sorts, is not so good when grown smooth-skinned against a wall, as those that are browned on standards. Doyenné blanc, Seckle, fondante Van Mons (deserves cultivation), Styrian, Gansel's bergamot (wall), moorfowl egg, beurré Bosc, Henri Quatre, Aston Town. — *Apples:* Wormsley pippin (a valuable sort), and king of the pippins; the golden noble, pomme violette, Dutch codlin, gloria mundi, mère de ménage, Hollandbury, Bedfordshire foundling, Waltham Abbey seedling, sops of wine: all good kitchen apples. Crimson queening, Orack Elma (Persian variety), Foxley, yellow Ingestrie, Downton, Ribston pippin, Paradise pippin, Blenheim pippin, and autumn pearmain.

Awarded. Silver Knightian medals, to Mr. Pratt, for the queen pine-apple; to Mr. J. Green, for the Colúmne*a* scándens; and to Mr. Young, for the Tropæ'olum tuberòsum.

November 17. — *Exhibited.* A pumpkin, weighing 1 cwt. 21 lb., from Denia, in Valencia, from Joseph Travers, Esq., F.H.S. *Erica* propéndens, *cerinthöides*, curviflòra, *abiétina*, viridiflòra var., and sp.; Epiphýllum truncàtum, Begòn*ia* octopétala, and Zygopétalum Mackày*i*, from Mr. Green, gardener to Sir Edmund Antrobus, Bart. Epiphýllum truncàtum, from Mr. Lane, gardener to John Horsley Palmer, Esq., F.H.S. Cattlèy*a* labiàta, from Mrs. Lawrence, E.H.S. A collection of new seedling Jersey chrysanthemums, from

Messrs. Chandler and Sons of Vauxhall. Citron melons and cucumbers, from Mr. Robert Buck, F.H.S., of Blackheath. Maxillària pícta, from William Harrison, Esq., F.H.S. A new hybrid gourd, a bottle gourd, and swan's neck gourd, from Mr. Watt, gardener to Sir C. E. Smith, Bart.

From the Garden of the Society. — Seedling and queen chrysanthemums. — *Pears:* Autumn Colmar, Forelle, Bezi de la Motte, *Belmont, Buffam's, *Dumortier, Colmar Neill, *St. Germain Van Mons, Dumas, *Eyewood, beurré d'Audesson, urbaniste, Ormskirk bergamot, beurré Diel, Duchesse d'Angoulême. Those marked thus * are sorts raised by Mr. Knight, or which have been received lately from Belgium, and fruited for the first time in the garden. (See XIII. p. 549.)—*Apples, Kitchen:* Gloria mundi, Blenheim pippin, Burns's seedling, golden noble, Waltham Abbey seedling, incomparable, Wormsley pippin, Brabant bellefleur, nonsuch (it is not generally known that the merit of this apple consists in its culinary properties), large white Calville, Rymer, Bedfordshire foundling, and Rabonlink. — *Table Apples:* Downton, Sam Young, Fearn's pippin, Beachamwell, Borsdorffer, Hughes's golden pippin, Margil, Ross nonpareil, white russet, old Pome-roy, and Pitmaston nonpareil. — *Chestnuts:* Downton, prolific, châtaignier des bois, prime, and Bretonne.

Awarded. A large silver medal to Messrs. Chandler, for a seedling chrysanthemum; and silver Banksians, to Messrs. Green and Lane, for Begò*nia* octopétala and Epiphýllum truncàtum.

Dec. 5. 1837. — *Exhibited.* Three queen pine-apples, from Mr. Harrison of Cheshunt, weighing respectively 4 lb. 2 oz., 4 lb. 2 oz., and 3 lb. 14 oz. Cypripèdium insígne, C. venústum; Amarýllis Hoódii, Epiphýllum truncàtum, and *Ér*ica cerinthöides, from Sir E. Antrobus, Bart., Jersey. Chrysanthemums, from Messrs. Chandler and Sons, Vauxhall. Passiflòra cærùlea, and a seedling apple, from C. Rankens, Esq., Dulwich. Chrysanthemums, from Miss Wilson. Brás*sia* caudàta, from W. Dunsford, gardener to Baron Dimsdale. A large pine-apple, from Mr. Fowler, Little Bushy Farm, near Stanmore. Zygopétalum Maxillària, *Eu*phórb*ia* fúlgens (jacquini*æflòra*), Maxillària pícta, Læ*lia* ánceps, Calánthe densiflòra, Lechenaúlt*ia* formòsa, Bilbérg*ia* amœ*na*, and a collection of cut flowers, from Mrs. Lawrence. Poinsétt*ia* pulchérrima, from Mr. J. Reading, gardener to Mrs. Marryatt. *P*lumbàgo *r*òsea, and Alstrœmèr*ia Lígtu*, from Mr. R. Buck.

From the Garden of the Society. — *Plants.* Læ*lia* ánceps, *Eu*phórb*ia* fúlgens (jacquini*æflòra*), tree dahlia, and chrysanthemums. — *Apples:* Golden Harvey (perhaps the richest table apple), white nonpareil, Pearson's plate (a very good and handsome table apple), Syke House russet, old golden pippin (which varies much), Nonesuch Park, Beachamwell, Dutch mignonne, Braddick's nonpareil, Nell Gwyn, Hubbard's pearmain, Blenheim pippin; Brabant Bellefleur, k.; gloria mundi, k.; Woolmann's long pippin, k.; stony Royd pippin, k.; reinette du Canada, k.; American pippin, k.; Baldwin, k.; and Dumelow's seedling. — *Pears:* Glout morceau, beurré Diel, passe Colmar, Napoléon, bergamot cadet (remarkable for the length of time it keeps ripening in succession), crassane, and Moccas.

Awarded. Silver Knightian Medals to Mrs. Lawrence, for *Eu*phórb*ia* fúlgens (jacquini*æflòra*); to Mr. John Green, for the plants exhibited; and to Mr. Harrison, for the pine-apples. A Silver Banksian medal to Mr. Cook, gardener to Miss Wilson, for chrysanthemums, which were remarkably large and perfect flowers.

Joyce's stove was also exhibited, and attracted great attention, as has been noticed in a preceding page.

Art. VIII. *Covent Garden Market.*

From the continued openness of the weather, we have had a regular and good supply of all vegetables usual at this season. Prices have continued rather depressed, and the demand but limited; nevertheless, we have but little

surplus over the steady and regular consumption at this period of the season; nor can any great improvement be expected during the next month or two, as it is well known that the supply will continue to be good, unless interrupted by severe weather; or the demand materially increased by the arrival in London of the principal families after the Christmas holidays and the recess of Parliament; at which time, also, the crops of most of the private gardens may be exhausted. The supply of fruit (*principally apples*) continues to be abundant, and would be much more so could anything like a remunerating price be obtained to pay the carriage of the common sorts from a distance. As it is, the grower has been frequently a loser after paying carriage and other expenses. The better sorts are necessarily depressed in value by these circumstances. Of pears, especially the better varieties, we have had but a limited supply, and these have not ripened well. Some of the newer sorts of French and Flemish pears have been furnished, and have realised good prices; also the old esteemed varieties, such as the cresannes, brown beurrés, &c.

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbage, per dozen:		
White	0 0 9	0 1 0
Red	0 2 0	0 3 0
Plants, or Coleworts	0 1 3	0 1 9
Savoys, per dozen	0 1 0	0 1 6
Brussels Sprouts, per ½ sieve	0 1 6	0 2 6
Cauliflowers, per dozen	0 4 0	0 6 0
Broccoli, per bunch:		
White	0 1 6	0 2 0
Purple	0 0 9	0 1 6
Tubers and Roots.		
Potatoes per ton	2 10 0	3 0 0
Potatoes per cwt.	0 2 6	0 3 0
Potatoes per bushel	0 1 3	0 1 6
Kidney, per bushel	0 1 9	0 2 0
Scotch, per bushel	0 1 6	0 1 9
Jerusalem Artichokes, per half sieve	0 1 0	0 1 3
Turnips, White, per bunch	0 0 1	0 0 2
Carrots, per bunch	0 0 3	0 0 4
Parsneps, per dozen	0 0 9	0 1 0
Red Beet, per dozen	0 1 0	0 1 6
Skirret, per bunch	0 1 6	0 0 0
Scorzonera, per bundle	0 1 6	0 0 0
Salsify, per bunch	0 1 6	0 0 0
Horseradish, per bundle	0 1 6	0 4 0
Radishes:		
Red, per dozen hands (24 to 30 each)	0 0 9	0 1 0
White turnip, per bunch	0 0 2	0 0 3
The Spinach Tribe.		
Spinach, per sieve	0 1 6	0 1 9
Spinach, per half sieve	0 0 9	0 1 0
The Onion Tribe.		
Onions:		
Old, per bushel	0 5 0	0 6 0
For pickling, per half sieve	0 2 6	0 5 0
When green (Ciboules) per bunch	0 0 3	0 0 4
Leeks, per dozen bunches	0 0 9	0 1 6
Garlic, per pound	0 0 6	0 0 8
Shallots, per pound	0 0 8	0 0 10
Asparaginous Plants, Salads, &c.		
Asparagus, per hundred	0 3 6	0 11 0
Sea-Kale, per punnet	0 2 0	0 2 6
Lettuce, per score:		
Cos	0 0 9	0 1 0
Cabbage	0 0 6	0 0 0
Endive, per score	0 0 9	0 1 3
Celery, per bundle (12 to 15)	0 0 9	0 2 0
Small Salads, per punnet	0 0 2	0 0 3

	From £ s. d.	To £ s. d.
Watercress, per dozen small bunches	0 0 4	0 0 8
Pot and Sweet Herbs.		
Parsley, per half sieve	0 1 6	0 2 6
Tarragon, dried, per doz. bun.	0 2 0	0 0 0
Thyme, per dozen bunches	0 2 0	0 3 0
Sage, per dozen bunches	0 2 0	0 0 0
Mint, dried, per dozen bun.	0 1 0	0 0 0
Peppermint, dried, per dozen bunches	0 1 0	0 0 0
Marjoram, dried, per doz. bun.	0 1 0	0 0 0
Savory, per dozen bunches	0 2 0	0 3 0
Basil, dried, per dozen bunches	0 1 6	0 0 0
Rosemary, per dozen bunches	0 4 0	0 0 0
Lavender, dried, per doz. bun.	0 2 6	0 0 0
Stalks and Fruits for Tarts, Pickling, &c.		
Capsicums, per hundred	0 4 0	0 0 0
Edible Fungi and Fuci.		
Mushrooms, per pottle	0 1 0	0 1 3
Morels, per pound	0 16 0	0 0 0
Truffles, per pound:		
English	0 3 0	0 0 0
Foreign, dried	0 12 0	0 0 0
Fruits.		
Apples, Dessert, per bushel:		
Nonpareils	0 10 0	0 12 0
Ribston Pippins	0 4 0	0 6 0
Cour de Wick	0 4 0	0 6 0
Pearmain	0 4 0	0 5 0
Baking	0 1 3	0 2 0
American, per barrel	0 16 0	1 0 0
Pears, Dessert, per dozen:		
Charmontelle	0 3 0	0 6 0
Saint Germain	0 2 0	0 4 0
Glout morceau	0 3 0	0 4 0
Beurré d'Aremberg	0 3 0	0 4 0
Baking, per half sieve	0 1 6	0 2 6
Medlars, per half sieve	0 5 0	0 0 0
Almonds, per peck	0 7 0	0 0 0
Pine-apples, per pound	0 4 0	0 7 0
Hot-house Grapes, per pound	0 2 0	0 5 0
Oranges per dozen	0 0 6	0 2 0
Oranges per hundred	0 3 0	0 14 0
Bitter Oranges, per hundred	0 10 0	0 14 0
Lemons per dozen	0 0 9	0 2 0
Lemons per hundred	0 5 0	0 14 0
Pomegranates, per dozen	0 2 0	0 3 0
Sweet Almonds, per pound	0 2 3	0 2 6
Nuts, per bushel:		
Spanish	0 16 0	0 18 0
Barcelona	1 0 0	0 0 0

THE

GARDENER'S MAGAZINE,

FEBRUARY, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *The State of Gardening in the South of Ireland, as compared with England and Scotland.* By JOHN JEFFERY, Nurseryman, Mitchelstown.

To describe the state of gardening in the south of Ireland, properly, would take up much room, as different places in each county would require to be mentioned, and a comparison drawn between them. At present, I shall only say what state Ireland is in, so far as I have observed it, with a few remarks on the different classes, which I shall divide into four. In the first class, I shall include the nobles, prelates, principal gentry, and wealthy merchants possessed of country seats. With regard to walled gardens and glass, this class, in the south of Ireland, is equal to England or Scotland, except in this, that very few have trees on the outside of their garden walls. Most of them have good orchards of apples for cider, and many have also tolerable flower-gardens and shrubberies. In the park, or what ought to be the arboretum, they are very deficient; and their shrubberies are not well kept: neat short grass, and highly kept walks, are scarcely to be met with in this quarter. I do not consider that gardening, &c., with this class, is on the advance, as there seem to be full as many gardens on the decline as there are building or repairing. The principal cause, in my opinion, is, that so few of the first-rate families live in Ireland. Gentlemen of this class pay their gardeners full as well as either the English or Scotch, their wages varying from 30*l.* to 60*l.* per annum, with board, &c. In fact, they mostly have either English or Scotch gardeners, or Irishmen who have been partly educated in England. Another cause is, that the seats of the first class are so few, and so far distant from each other, that neither the gardener nor his employer is sharpened by the state of his neighbours. The question asked of the gardener is, Can he keep the garden at less expense, or can he manage with a man or boy less? He scarcely ever is asked, Can he keep the place better, if he had better means? or, What would it cost to

keep the place like such and such a place? as would be the case in England, where both he and his employer must know of places maintained in good order.

The Cork and other Horticultural Societies are likely to do good, if properly followed up; but I am much afraid that a schism is creeping into the Cork Society already, as has happened in almost every other useful club or society attempted in that city. I do not consider it expedient to have the Horticultural shows in any nursery; it makes it too much of a party business. The Society ought to build and lay out a proper place, with all conveniencies for themselves, if they wish to continue, and be independent. It is a loss to horticulture, at this time, that the Botanic Gardens in Cork were given up: they would have been a rallying point for the Society, which it seems to want much. The class of noblemen and gentlemen has planted considerably within the last thirty years, but there seems to be a falling off within these six years. The principal kinds of trees planted are oaks (by such as know their value), with larch and Scotch and spruce firs as nurses. This system would do well if carried through with care: but very often the plantation is neither thinned nor pruned until the oaks are smothered, or so weak-drawn, that the best judges would think it a pity to cut away the fine larch, &c., for the sake of such poor miserable-looking trees; and thus, very often, the oaks are quite lost, particularly when the thinning of such plantations falls under the care of persons of little experience. Beech is not so much planted now as it was forty or fifty years ago. Ash is very much neglected, because it is so liable to be cut by trespassers for firing and other uses; and in a few years it will be a scarce article in Ireland, if some few do not take courage and plant it. Any one that keeps wood-rangers might protect ash as well as other timber, if planted in masses, and not all over the country in hedgerows, as it is at present. Hedges and hedgerows are very much neglected in Ireland, even in the demesnes of noblemen of the first rank. These remarks are only meant as applicable to the majority of this class: there are, indeed, a few exceptions, but, at present, I do not mean to particularise.

In the second class may be placed the rectors of parishes, the second class of gentry, and merchants. Many of this class have tolerable walled-in gardens: very few have more glass than a few frames for melons and cucumbers. Most of them have an orchard of apples for cider; a small flower-garden, with a few shrubs; no arboretum; a small lawn with a screen of common forest trees, a few clumps, and single trees of the commonest kinds, in general badly planted.

I consider this class much on the advance within these last twenty-five years. The cause seems to be, that they live nearer

together than the first class, are almost always at home, and see each others' places often, which causes them to vie with each other. Gentlemen of this class pay their gardeners very badly: if they paid their gardeners better, I believe that they would very soon equal the Scotch or English gentlemen of the same rank. From 8*l.* to 16*l.* per annum, with board, is what is in general paid, if only gardener: if gardener and steward, they may have from 12*l.* to 20*l.*, with board, &c. A distressed man will be glad to get even this; but he enters his employment with discontent; he goes on passing over every thing in the most superficial manner; and is all the while looking out for another and better situation. When able to do it, he gets into some nursery, or emigrates to England. Some other distressed man, from some of the nurseries, succeeds him; or, perhaps, what is even worse, some man that is a *little handy* about the place. If a distressed man succeeds him, things go on just as before; if the *handy man*, they become worse. At the same time, the new comer will be sure to make some *alterations*, either good or bad; which will cost the employer more than the difference of wages, which would have retained and satisfied the former man. This mistaken system often deprives this class of any enjoyment in horticultural pursuits, and renders their gardeners a distressed and discontented class of men. Whereas from 15*l.* to 25*l.* a year, as gardener, or 30*l.*, with board, &c., as gardener and steward, with some additional advantages to married men, would render them contented, and therefore anxious to satisfy and benefit their employers; which, I may say from observation, many of this class of gardeners are capable of doing. Gentlemen belonging to this second class have planted more in proportion than any other class. Many of them are now getting a good return by thinnings, and have, at the same time, woods advancing in value, and ornamental to their properties and to the country at large. The young gentlemen of this class seem to have a taste for ornamental planting; and some of them run a little on the arboretum, and seem to know the names and habits of ornamental trees far better than their predecessors.

The third class may be composed of the farmers, shopkeepers, &c. A few of the farmers have cider orchards; but they have nothing else beyond the most common vegetables, as cabbages, parsneps, carrots, and turnips. The shopkeeper who has any ground attached to his house near a town has, in general, a good many flowers and shrubs, and a fair variety of vegetables, with common fruits. But, in general, the fruit trees are badly taken care of, and the shrubs badly arranged. The gardening, planting, &c., of this class are all done by the *jobber* or *handy* labourer. It is for want of knowledge, in a good many cases, that the farmer does not improve. Every farmer ought to have

his orchard and kitchen-garden in proportion to his farm. As to flowers and shrubs, it is not to be expected that he can spare much ground or time for them. The only way that I see this class is to be improved is, that a few noblemen and gentlemen should take each of them, suppose, three farms (one large, one middle-sized, and one small), and lay them out with convenient buildings, garden, and orchard, as patterns for others. The portion intended for the kitchen-garden should not be planted with orchard trees, but rather with bush fruit. What vegetables the farmer did not want for his family would pay him well for his pigs and cattle. The fields should be laid out in proportion to the farm; and the fences arranged and planted in a proper manner. The best of all fences for the farmer, in my opinion, is crab: it grows fast, and is a good shelter, and a few let run up, say at every 9 ft., might give as much cider as would do for common use. Such hedgerows, it is true, while rare in the country, might require to be watched, in the fruit season, against pilferers; but, when general, this expense would cease. All between the 9 ft. I would keep cut down and shorn, as a thick fence. Ploughing matches, and premiums to farmers, would also be of use. I am sorry to say that these encouragements are falling off much from what they were twelve or twenty years ago. I would also recommend all the waste grounds of a farm to be planted; such as old quarries, very steep banks, rocky places, &c., but no land that would do for tillage, as there is plenty of waste land in Ireland; and to plant any other, except for ornament or shelter, is, as I conceive, a loss to the community at large. Draining is very much neglected in Ireland: much might be done in this respect.

The fourth and last class is the cottager. The spot where his potatoes grow is called his garden; which he, in general, rents of the farmer for the season. Many of the cottagers and small farmers have some portions of ground besides, near their cottage, which might be made to look well, and be of considerable use; but they are, in general, filled in summer with a few early potatoes, and late cabbage, which are all cut off by Christmas. From that time the gap, or gateway, is open, and the pigs, the sheep, and goats run over the whole, until about the 1st of March, or, perhaps, till Patrick's Day, at which time the gaps are made up, and the garden planted as before.

Mitchelstown, Nov. 15. 1837.

ART. II. *On the Formation of a Public Botanic Garden.* By C. C.

IT is well known to every one who has travelled on the Continent, or who has availed himself of the information of others,

that, through the whole range of Europe, from St. Petersburg to Naples and Madrid, nearly every capital, great or small, whatever be the form of government, from the Swiss canton to the great monarchies of Austria and Prussia, is provided with botanical gardens. These establishments, which are sometimes disproportionately large to the countries to which they belong, are conducted on a tolerably uniform plan; and, being of easy access to all classes, and lectures being given at them at the public expense, they serve at once to attest the munificence of the founders, and to amuse and instruct the people.

Sorry I am to add that the metropolis of this splendid empire, where the crown domains are on a scale commensurate with our rank amongst nations, forms nearly the sole exception to this almost universal and daily extending rule; and it is the more mortifying, because the means are within our reach. The work is already half done; and a very slight exertion on the part of government, in making the arrangements as usual at the commencement of a new reign, would effect this most laudable and desirable object.

What we beg to suggest is, that Kew Gardens be ceded to the public, of course under the usual reservation of the crown property, and converted into a regular botanical garden; lecture rooms built; professors appointed; and the series of plants now in the Botanic Garden gradually increased, so as to make it completely adapted to the purposes of utility and scientific research; for which, the foundation being laid, and houses already built, a comparatively small outlay would be required.

In addition to the smaller plants, it will be indispensable to add an arboretum. As the extent of the grounds at Kew may not be quite sufficient for this purpose, I should propose that 100 or 200 acres be taken from Richmond Park, where they can be perfectly well spared; and the situation of which would answer admirably for the hardier trees and shrubs. In the arrangement, of course, I should expect to see every hardy tree which could be collected in any part of the globe; and I even anticipate revelling in querceta, fraxineta, salicetums, pinetums, aceretums, &c. Preparations should also be made for the gradual construction of houses, on a large scale, for the principal tropical and tender trees, of known utility in our own dominions; for instance, the Norfolk Island pine, the teak, the African teak, and the eucalypti, &c., from Australia. The cost of all this would be comparatively moderate, if properly managed. A twentieth, or even fiftieth, part of the money wasted by one of the follies of George IV. at Brighton, Windsor Cottage, or Buckingham House, would suffice to raise a monument worthy of the sovereign and a liberal government.

I often think of the astonishment the foreigners who now

repair in such crowds to this country must feel, when they are told that there are no public lectures on botany, and no means of receiving instruction in that science, except by payment of fees to individuals. Yet such is the case; and a curious proof of it was exhibited, a short time since, when the botanical chair at Oxford, which had long been a drowsy sinecure, fell into the hands of the eminent person who now holds it: he was not qualified to hold such an appointment, probably, for the very want of means of instruction. This gentleman, much to his honour, repaired immediately to Geneva; in whose petty state, and worse soil, he found what it was impossible to find in Great Britain.

It may be urged, that the Horticultural Society, and other institutions in London, supply the deficiency complained of; and that the putting of the public to any additional expense is unnecessary. To this we beg to reply that the horticultural and all other establishments alluded to are private and proprietary, or corporate, to which the public have no right of admittance, but by favour. Another objection is, that these foundations are not perpetual, but are ephemeral in their nature, and depend on the caprice of the subscribers, which may, on any day, cut off the supplies, and cause their existence to cease. Another reason is, that the object of the Horticultural Society is, mainly, economical. The proprietors, of course, expect an equivalent for the money they contribute; and its energies are naturally turned in this direction, more than to the purposes of science; although the eminent individuals who direct it have managed, to their infinite honour, to combine the two to as great a degree as is, perhaps, possible. There is ample room for the exertion of both; and I am convinced that I speak the sentiments of those individuals, in anticipating the warmest approval of the plan, should it be adopted.

In case this plan be followed up, as I sincerely hope it may, on every account, there are one or two observations to be made. In the first place, that it be not done in a narrow or niggardly manner; that the professors appointed be practical working men, not overpaid, nor with the temptation to push themselves into the society of their superiors, leaving the work to be done by inferiors; and that all control or interference be ceded by the crown. The miserable and disgraceful system introduced in these gardens by the late Sir Joseph Banks is now amended; but a very great inconvenience has survived: the retention of power in the sovereign in disposing of plants. The exercise of this discretion by the late truly excellent and patriotic king, whose knowledge of plants was on a par with that he possessed of horses, was a serious evil; for foreigners and others, taking advantage of his goodnature, were in the habit of soliciting par-

ticular plants, for which a mandate was frequently given, without consulting the chief as to whether they could be spared or not, to the great prejudice of the establishment. I should propose that no one should have the right of giving away anything whatever, unless to make exchanges; but that all the residue, especially the spare stock of new or useful productions, should be disposed of by public auction, at stated intervals; with the view to their circulation by the trade, at the same time that it would tend to reduce the expense of the establishment. A complete school of agriculture, which is also wanting, although the backward state of that right arm of national prosperity, in almost every part of the kingdom, makes it peculiarly desirable, ought to be annexed, in order to make the foundation complete.

I now earnestly call on the government, and on the patriotic and independent members now taking their seats in the first parliament of Victoria, not to lose this favourable moment to raise a monument worthy of the sovereign and themselves; thus acquiring, by the fairest means, legitimate and well-founded popularity. Sooner or later, it must be done; and I can foresee no opportunity more favourable than the present. If properly done, we shall be as far above, as we are now below, other nations, in this grand department of human knowledge.

London, Dec. 1837.

Art. III. *On the Germination of Seeds.*

(Read by Mr. Lymburn, President of the Kilmarnock Horticultural Society, at its Annual Meeting for 1837.)

The subject of the present essay concerns a new method of furthering the germination of seeds, in which I have lately made some experiments, which, I think, may be beneficial if better known; and for the proper understanding of which it will be necessary to preface the subject by a short explanation of the theory of the reproduction of plants. In flowerless plants (the class Cryptogàmia of botanists), reproduction takes place by means of homogeneous masses of cellular substance, called sporules or spores; in ferns, on the back of the leaf; in mosses, in small capsules or urns; and in lichens and fungi, from tubes buried in the substance of the plants. Unlike the germ of flowering plants, they contain no cotyledons, radicle, or plumule; and, instead of growing uniformly from two constant points of their surface, they are mere masses of cellular substance, and send forth their roots from whatever place happens to have been covered, and the stem from that portion exposed to light. In the more simple forms of fungi and lichens, the subject is involved in such mystery, that many have thence contended for

equivocal generation, or a common matter of vegetation, which issues into various forms, according to accidental circumstances. It is, however, more consonant to observation, and to the method and wisdom displayed by the Creator in those parts of his works more tangible to our senses (especially when we take into consideration the millions of millions of sporules contained in a single fungus, as the common puff ball, or the many hundreds in the common blue fungus of the cheese), to suppose that they are reproduced by myriads of microscopic pores floating in the atmosphere, dispersed by currents of air, and only called into existence when the accidental circumstances of moisture, putrefaction, &c., necessary to their developement, are present.

In flowering plants, reproduction takes place by means of the germ or embryo contained in seeds, and in the tubers and bulbs of the root. In the seed, the germ developes into radicle or root, and plumule or stem, between which is an axis connecting the two, and communicating with the cotyledons or seed lobes, which contain the food destined to nourish the young plant till able to extract nourishment from the ground for itself. A deposition of this food is likewise laid up in the cells of the bulb or tuber, and to it the general name of albumen, from its fancied resemblance in functions to the white of an egg, has been given. It is generally enclosed in a hard or bony case, for protection from injury (but which is not necessary to the growth of the germ), and consists of mucilage or gum, sugar, and fecula or starch, which are all convertible substances, consisting of different proportions of carbon, hydrogen, and oxygen, which, by chemical analysis, have been found to stand as under, viz.:—

	Carbon.	Oxygen.	Hydrogen.
Gum to consist of	42·23	50·84	6·93
Sugar	42·27	50·63	6·90
Starch	43·55	49·68	6·77

By the continued deposition of carbon, very ripe seeds and tubers contain more starch or flour than unripe seeds; and, from the difficulty of reducing starch again into mucilage, which must take place in the vegetating process before it can be rendered a soluble food for the young embryo, ripe seeds will be found to keep longest, and to survive accidents of bad treatment better than unripe seeds; which, however, from having their food in a state more easily rendered soluble, are found, both in seeds and tubers, to spring more quickly, and, if sufficiently far advanced, with more vigour, than ripe seeds or tubers. In the process of germination, when carried on in the usual manner, if a seed is picked up, the cotyledons will be found filled with a soft mucilaginous substance, generally of a milky colour and sweetish taste. This is the food of the young embryo reduced into a soluble

state, and is conveyed through the vessels of the cotyledon to the axis, and thence to the radicle and stem. On the quantity of this food furnished depends the vigour with which the young plant will shoot; and, hence, the best means of reducing the albumen of the seed or tuber into a soluble food in the speediest manner, and in the greatest quantity, is the greatest desideratum to arrive at in prosecuting our enquiries after the best method of furthering the process of germination. The starch and sugar must be reduced to mucilage; and, from an inspection of the table, it will be found necessary that carbon must be abstracted, and oxygen and hydrogen added; and, accordingly, it is found that, in germination, carbonic acid gas is given off, the air is deprived of part of its oxygen, and water yielding hydrogen and oxygen is absorbed. Air, heat, and moisture are all necessary, and likewise the exclusion of light. The air yields the oxygen necessary in abstracting the carbon, in the state of carbonic acid, from the starch, and converting it into sugar and mucilage, which may be familiarly illustrated in the sweetness of malting grain and germinating potatoes. A heat of 160° is required to reduce starch to solubility; and it is not exactly known how so much heat is generally acquired. The disengagement of the oxygen sets caloric free; and, hence, seeds moistened and thrown into a heap to germinate are found to generate a great heat. Alkalies are also found useful in furthering the process, and are generated whilst it is going on. Perhaps, also, the starch is more soluble in its state of combination than when extracted; and, to all perceptible causes, we must add that vital energy so every where necessary, and so little known. In soils which have been properly prepared, by being broken into very small particles, confined air is generated, which so increases the heat as to be perceptible even to the touch; and hence the benefits of well-pulverised ground, and of covering with pieces of glass and flower saucers, &c., to increase the heat and retain the moisture, and thus further greatly the vegetation of the seeds; and hence the different quantities of heat and moisture requisite for seeds, according as they are dry and farinaceous, or oily and mucilaginous. Very dry farinaceous seeds, as the acacia, and others of that tribe, are benefited by immersion in boiling water; and hence the reason why either heat or moisture of itself is not sufficient, and even hurtful, if carried to excess, either in the germination of seeds, or the bud or embryo of the tuber of the potato, as lately illustrated in the three last consecutive springs, in which, from the drought and heat acting on the substance of the newly cut tuber, without the advantage of moisture, the albumen has not been reduced into a soluble food, or in such small quantity as not to be sufficient to produce the developement of the bud or shoot.

I now come to that part of the subject where, from the explanations already given, I hope it will be in my power to explain the reasons why I was induced to try the experiments I set out with taking notice of, and which I hope will be found, on proper trial, to be very beneficial. It is to seeds damaged by being too long kept in a dry state, or hurt by too much fire heat, or heat of the sun, that my attention has been principally directed. It has been often recommended to apply substances readily yielding oxygen; and I have myself tried oxalic acid frequently, but without any perceptible effect; and, from experiments lately instituted, it appears thatimore than the quantity of oxygen, or about one third, contained in common air, is not beneficial, though this proportion is absolutely necessary.

From experiments lately made by Mr. Charles Maltuen, and narrated in *Brewster's Journal of Science*, he found that the negative or alkaline pole of a battery caused seeds to vegetate in much less time than the positive; and he was thence induced to experiment on seeds in glasses filled with acetic, nitric, and sulphuric acids, and also in water rendered alkaline by potash and ammonia. In the alkaline the seeds vegetated in 30 hours, and were well developed in 40; while in the nitric and sulphuric they took 7 days; and even after a month they had not begun to grow in the acetic acid. The great benefit of the alkalies in hastening the germinating process being thus so apparent, I was induced to experiment on lime; a very easily procured alkali, and which I reckoned to be more efficient than any other, from the well-known affinity of quick, or newly slacked, lime for carbonic acid. Lime, as taken from the quarry, consists of carbonate of lime, or lime united to carbonic acid; and, in the act of burning, the carbonic acid is driven off; and hence the great affinity of newly slacked lime for carbonic acid. I depended, therefore, on this affinity to extract the carbon from the starch, assisted by moisture; in the aid of the heat disengaged in this process, and also in the above well-attested effects of alkaline substances in hastening the process of vegetation; and, in the spring of 1835, having a quantity of old spruce fir seed, I was determined to try the experiment. It is well known by nurserymen, that the seed of the spruce fir will scarcely vegetate the third year, although kept in the cones; but, in the present instance, the seed had been out of the cones during all that time; and the year before, or second year of the seed, had been so weak, that, although well damped, and sown a great deal thicker than usual, in a favourable state of the weather, and in ground in good condition, still it came through very thin yellow in the colour, so weak as scarcely to be able to free its cotyledons from the ground, and not producing one third of a crop. Thus, under ordinary circumstances, after keeping the same seed a year longer,

we had little reason to think it worth sowing. I, however, caused the seed to be well damped a few days before sowing, and then added some newly slacked lime; the influence of which was not long in being manifest. The year before, when the two-years-old seed had been damped, it swelled none, but acquired a mouldy smell: on the contrary, this third year, after the quicklime had been added, it swelled off plump and full, and had all the sweet smell of fresh germinating seed. It was sown very thick; but the plants started fresh and vigorous through the covering of soil, of a dark green colour, and in such quantity as to produce a crop much thicker than usual; and the plants grew and throve as well as in the first year of the seed. I tried the same experiment this year; but, from the unprecedented long-continued dry weather, it had not a fair trial: although, however, four years old, the crop is still about the same thickness as some fresh Scotch pine seed sown on the same day beside it, and the plants equally strong. I tried it on some magnolia seed, the seedlings of which have this year grown with more than their accustomed vigour. As the whole of the plants may be seen, for very little trouble, in our nursery grounds [at Kilmarnock], and as the good effects, I think, have been made apparent, I hope it will not be considered trespassing too far on your time to give a detail of the method I would like pursued. Let it be understood that the nature of the experiment applies only to seeds in which the albumen has become hard and dry, from long keeping, kiln-drying, exposure to a hot sun in crossing the equator, &c.; (and not to such as have been wasted away, and the albumen destroyed or damaged by moisture, heating in a green state, &c.;) or when it is wanted to hasten the ordinary process of vegetation in seeds that are tardy. Let the seeds to be experimented on be spread on a floor, or in a box or saucer, according to quantity, and thoroughly damped (more or less according to the nature of the seed, as to its naturally dry or oily condition); let the whole be well mixed together, so as that every seed may receive its proportion of moisture; then add newly slacked lime, in the proportion of from one eighth to one tenth of the bulk; and mix the seed again well, so that each may receive its proportion of lime; lay it up in a heap, and, when it begins to get dry, have it turned and mixed, and again damped; and continue this process for a longer or shorter time, according to the known habits of the seed as to speediness in vegetation, observing not to let it lie long in a dry state, in which the lime is rather prejudicial; and I feel confident, if these instructions are attended to, the result will be beneficial. Before quitting the subject, I would like to call attention to the immense use of alkalies in the vegetable economy. We have seen their use in furthering the germination of seeds; and lately has been narrated in our newspapers the good effects of quicklime sprinkled

over the newly cut tubers of the potato: but it is in preparing the food of the plant, or in rendering manure into a soluble food for the plant, that their greatest benefits are to be found. The different constituents of plants (starch, sugar, mucilage, and lignine or fibrine,) are all composed of various proportions of carbon, hydrogen, and oxygen. The water absorbed by the root yields hydrogen and oxygen; and carbon being the only substance thus wanted, it has been tried to afford it, by exhibiting to the spongioles of the root carbonic acid gas in its pure state; but its quantity has been always found undiminished, until mixed up with alkalies into a saponaceous matter, in somewhat of the proportions found to exist in manures of the kinds most beneficial to plants. (*Kilmarnock Journal*, April 6.)

ART. IV. *List of the Species and Varieties of Coniferous Plants in the Pinetum at Elvaston Castle, the Seat of the Earl of Harrington, in Derbyshire.* Communicated by Mr. BARRON, Head Gardener there.

THE enclosed is a list of the pines, &c., in the Earl of Harrington's collection at Elvaston Castle, which I send you by His Lordship's desire; and it may not be out of place to observe, that, although His Lordship cannot boast of large specimens generally, in consequence of the short time that has elapsed since he commenced collecting, still he possesses some of the finest in the kingdom; and, in point of numbers, I believe, the very best in Britain.

TAXA'CEÆ.

*T*áxus baccàta *Arb. Brit.*, figs. 1983. to 1991., and plates.
erécta.
fòliis variegàtis. This variety seems to be scarce in the country, and but little noticed, notwithstanding the striking beauty and character which it gives to a place when contrasted with a sombre background. This variety seems to be stunted and unhealthy in appearance wherever I have seen it, except at Elvaston Castle, where it makes shoots upwards of a foot in one season, and where, after having been planted for a short time, its leaves become of a brilliant gold colour. We have hundreds of this yew, varying from 8 in. to 8 ft. in height.
T. bac. fastigiàta *Arb. Brit.*, figs. 1981, 1982., and plate.
fas. fol. var. This variety originated with us, about two years ago.
canadénsis.
nucífera.
coriénsis. This species I had from Mr. Knight; and it, perhaps, is coriàcea. [Podocárpus coriàceus *Arb. Brit.*, fig. 1998.]
mucronàta.
Podocárpus elongàtus *Arb. Brit.*, fig. 1997.
macrophýllus.
*n*eriifòlius.
nùcifer.
latifòlius *Arb. Brit.*, fig. 1995.
Salisbùr*ia* *a*diantifòlia *Arb. Brit.*, figs. 1992, 1993., and plates.

ABIE'TINÆ.

*P*ìnus sylvéstris *Arb. Brit.*, figs. 2044. to 2046., and 2048. to 2056., and plates.
syl. altàica.
uralénsis.
uncinàta var. 3. in *Arb. Brit.* fig. 2047.
haguenénsis.
austrìaca *Arb. Brit.*, fig. 2085.
pyrenàica *Arb. Brit.*, figs. 2090. to 2093.
horizontàlis.
altíssima.
rigénsis.
scariòsa.
pumílio *Arb. Brit.*, figs. 2057, 2058. and 2062.
Fischer*i*.
Mùghus Arb. Brit., figs. 2059. to 2061.
uncinàta.
Banks*iàna* Arb. Brit., figs. 2064, 2065.
púngens *Arb. Brit.*, figs. 2078, 2079.
escarèna.
ìnops *Arb. Brit.* figs. 2068. to 2070.
brùtia *Arb. Brit.*, figs. 2115, 2116.
Larício *Arb. Brit.*, figs. 2081. to 2084., and plates.
calábrica.
romàna.
hispánica *Arb. Brit.*, figs. 2090. to 2093.
Pallas*iàna* Arb. Brit., figs. 2086. to 2089., and plate.
azórica.
nígricans *Arb. Brit.*, fig. 2085.
resinòsa *Arb. Brit.*, figs. 2094. to 2096.
halepénsis *Arb. Brit.*, figs. 2110. to 2113., and plate.
*P*ináster *Arb. Brit.*, figs. 2100, 2101. and 2105., and plates.
fòliis variegàtis.
fol. var. péndula.
nova zælándica.
marítima.
mìtis (variábilis of some) *Arb. Brit.*, figs. 2072. to 2074.
*T*æ'da *Arb. Brit.*, figs. 2118. to 2121., and plate.
var., very distinct.
lùtea.
serótina *Arb. Brit.*, figs. 2127. to 2130., and plate.
rígida *Arb. Brit.*, figs. 2123. to 2126., and plate.
P. chinénsis *Arb. Brit.*, figs. 2168, 2169.
canariénsis *Arb. Brit.*, figs. 2163. to 2165.
longifòlia *Arb. Brit.*, figs. 2148. to 2151.
palústris *Arb. Brit.*, figs. 2156. to 2159.
Gerard*iàna* Arb. Brit., figs. 2153. to 2155.
ponderòsa *Arb. Brit.*, figs. 2132. to 2135.
Sabini*àna* Arb. Brit, figs. 2138. to 2142.
macrocárpa *Arb. Brit.*, figs. 2136. and 2144. to 2147.
insígnis *Arb. Brit.*, figs. 2170, 2172.
*S*tròbus *Arb. Brit.*, figs. 2193. to 2195., and plate.
longifòlia.
pygmæ'a.
Cémbra sibírica *Arb. Brit.*, figs. 2188. to 2191., and plate.
helvética
hel. heterophýlla. This is a singular variety, having, in many of its sheaths, all the leaves closely united, and forming one strong wire-like leaf. These sheaths have none of the glaucous tint shown in the other leaves, and thus contrast very agreeably with those that are opened.
Lambert*iàna* Arb. Brit., figs. 2203. to 2207.
montícola *Arb. Brit.*, figs. 2208, 2209.
excélsa *Arb. Brit.*, figs. 2197. to 2202.
A'bies excélsa *Arb. Brit.*, figs. 2212. to 2223., and plates.
fòliis variegàtis.
péndula.
tenuifòlia, láxa, gigantèa, élegans. These four are nearly allied to excélsa; but, as the specimens are very small, I am not able to decide satisfactorily. Messrs. Loddiges have plants of all of them.
nòva hollándica.
rugòsa, carpática, orientàlis. The two former of these do not appear very distinct in a small state; and the latter, I am inclined to think, is not true

to the name. Knight has plants of all of them.
*A*bies álba *Arb. Brit.*, fig. 2224.
nìgra *Arb. Brit.*, figs. 2225. to 2227.
rùbra *Arb. Brit.*, fig. 2228.
cærùlea.
Clanbrasil*iàna*.
Doúglas*i* Arb. Brit., figs. 2230, 2231., and plate.
Drummónd*ii*.
cephalónica *Arb. Brit.*, figs. 2235, 2236.
canadénsis *Arb. Brit.*, plates.
Morínda Arb. Brit., fig. 2229., pl. There seems still a confusion to exist respecting this species. I observe that you make it synonymous with Smith*iàna*. Now Smith*iàna*, as figured by Wallich, is a very different thing: I should say a *Pícea*. I am likewise of opinion that all the plants raised from seed by Mr. Knight are identical with the Hopetoun plant, from which all our morindas have been raised from cuttings. The circumstance of that plant being of rather a rigid habit accounts for the slight difference existing between the cuttings raised from it: however, that difference is not nearly so great as may be found amongst the varieties in any bed of spruces. My reason for being so particular about *Morínda* is, because I am aware that most people, who possess both varieties, think differently from me on the subject.

[Mr. Barron is quite right in thinking that Dr. Wallich's figure resembles a *Pícea* rather than an *A*bies; the cone in that figure being erroneously turned upwards. The figure of Dr. Royle, of *P*ìnus *Khútrow*, however, from which our fig. 2229. in the *Arboretum Britannicum* is copied, has the cone turned downwards; and the tree, in its native country, being familiar to Dr. Royle, though, we believe, never seen by Dr. Wallich, Royle's figure is doubtless correct, and *A*bies *Khútrow*, *Morínda*, and Smith*iàna* are one and the same.]
nàna monstròsa.
*P*ícea pectinàta *Arb. Brit.*, figs. and plates.
balsàmea *Arb. Brit.*, figs. and plate.
Fràser*i* Arb. Brit., fòliis variegàtis *Arb. Brit.*
Píchta (sibírica).
pectinàta tortuòsa.
*t*axifòlia.
grándis *Arb. Brit.*, figs.
nóbilis *Arb. Brit.*, figs.
amábilis *Arb. Brit.*, figs.
Webb*iàna* Arb. Brit., figs.
*L*àrix europæ*'*a *Arb. Brit.*, fig. and plates.
intermèdia.
microcárpa *Arb. Brit.* plates.
péndula.
*C*èdrus Libàni *Arb. Brit.*, figs. and plates.
Deodàra Arb. Brit., figs.
Cunninghàm*ia* lanceolàta *Arb. Brit.*, fig.
Araucària imbricàta *Arb. Brit.*, figs.
brasiliàna *Arb. Brit.*, figs.
excélsa *Arb. Brit.*, figs.
Cunninghàm*ii* Arb. Brit., fig.

*C*UPRE*'*SSINÆ.

*T*hùja occidentàlis *Arb. Brit.*, fig. and plate.
orientàlis *Arb. Brit.*, fig.
pyramidàlis.
pyr. variegàta. Originated here two years ago.
tatárica.
plicàta.
articulàta *Arb. Brit.*, fig.
japónica.
sphæröídea, ? *C*upréssus *t*hyöìdes.
variegàta *Arb. Brit.*
*c*upressöìdes *Arb. Brit.*
Cállitris Fothergílli.
pyramidàlis.
macrostàchya.
tríquetra. This species appears to be quite hardy, as it has stood out two winters; and, in March, 1837, bore 22° of frost; the thermometer being at 10° Fahr.
*C*upréssus sempervìrens *Arb. Brit.*, figs. and plate.
sem. horizontàlis *Arb. Brit.*, fig. and plate.
strícta (true). The true *C.* strícta, or fastigiate variety, is very scarce in nurseries,

or, indeed, in private collections.
*C*up. strícta variegàta. I believe a unique specimen.
lusitánica *Arb. Brit.*, fig. and plate.
variegàta. Very scarce.
occidentàlis.
austràlis.
repánda. Distinct from *J*uníperus repánda.
articulàta. This is quite distinct from *T*hùja articulàta, now Cállitris quadriválvis.
torulòsa. *Arb. Brit.*, fig,
Tournefórt*ii*.
Fothergílli. Best plant at Lee's.
Taxòdium dístichum *Arb. Brit.*, fig. and plates.
díst. péndulum *Arb. Brit.*, figs. and plates.
*J*uníperus virginiàna *Arb. Brit.*, figs. and plates. In almost infinite variety; many of which are very distinct, and truly beautiful.
virg. hùmilis.
excélsa.
chinénsis mas et fem. *Arb. Brit.*, figs. The latter variety is called excélsa in some collections (e. g. Loddiges's).
excélsa *Arb. Brit.*, fig.
lýcia *Arb. Brit.*, fig.
J. phœnícea *Arb. Brit.*, fig.
thurífera *Arb. Brit.*, fig.
*S*abìna *Arb. Brit.*, fig.
erécta.
variegàta.
commùnis *Arb. Brit.*, fig.
alpìna *Arb. Brit.*, fig.
hibérnica.
canadénsis *Arb. Brit.*, fig.
suécica *Arb. Brit.*, fig.
sibírica *Arb. Brit.*, fig.
nàna *Arb. Brit.*, fig.
glaúca.
*t*amariscifòlia *Arb. Brit.*, fig.
prostràta (Húdson*i* of Loddiges) *Arb. Brit.*, fig.
oblónga *Arb. Brit.* fig.
drupàcea *Arb. Brit.*, fig.
*O*xýcedrus *Arb. Brit.*, fig.
recúrva (repánda of some) más *Arb. Brit.*, fig.
fém. Distinct habit from mas, and considered a species by some.
austràlis.
dáùrica, cracòvia. These two are not very distinct.
sp. from the Himalaya; very beautiful, and distinct from any of the former.
A few others, too small as yet to determine.

[All the above names, with only one or two exceptions among the *C*upréssinæ, will be found in our *Arboretum Britannicum*, either as species, varieties, or synonymes. The species and varieties are accompanied by characters and descriptions, and those indicated in Mr. Barron's list are illustrated with engraved botanical specimens; or with portraits of trees within ten miles of London, or at Dropmore, as plates occupying the size of a page. The No. of the figure in the *Arboretum Britannicum* is in many cases not given in the above list; because, at the time we sent this paper to the printer (Jan. 2.), the proof sheets of that part of the *Arboretum* were not yet imposed. — *Cond.*]

Elvaston Castle, Dec. 16. 1837.

[Perhaps it may not be improper to state that Elvaston Castle is not a show place: the pleasure-grounds are never allowed to be seen, except by visiters staying at the castle, or by the personal acquaintances of the Earl and Countess of Harrington. The gardens and pleasure-grounds being in a state of infancy, it is considered unsuitable to throw them open to the public; but, after the trees and shrubs have had the advantage of a few years' growth, there can be little doubt that the noble proprietor will not suffer Elvaston Castle to form an exception to the liberality usually displayed by the nobility and gentry of England. — *Cond.*]

ART. V. *On Grafting the* Cèdrus Deodàra *on the Cedar of Lebanon.* By WM. BARRON, Gardener at Elvaston Castle, Derbyshire.

RESPECTING the grafting of the Cèdrus *Deodàra* upon the cedar of Lebanon, it is accomplished by what I call wedge-grafting: *a* in *fig.* 5. will show the incision; and *b* the scion, inserted in form of a wedge. After the portion of the stem chosen for the insertion of the graft has been cleared of leaves, I commence by entering the knife above, and make a slanting cut downwards, through the pith, from 1 in. to 1½ in. in length. The graft, being cut in form of a wedge, from both sides, is then inserted in the incision; and, after being neatly tied, may either be coated over with grafting wax or clay. I have been successful with both, although I prefer the former, simply from its being lighter, and not bending the shoot. I always insert the grafts as high on the stock as possible, in order to gain height. Considering the pendulous habit of *Deodàra*, I should not object to 4 ft. or 5 ft. high, if good stocks of a sufficient height could be obtained. I choose the grafts of the last year's wood, from 3 to 5 inches in length, and insert them in either one or two years old wood, as I find the stocks to answer. In no instance do I take off the leader from the stock (that is, the part above the graft) when I insert it, or many of the lower branches: I only stop them as they push; and, after the graft is fairly established, the leader is then cut close to the graft, and the lower branches thinned by degrees. It is an absurd practice (particularly with pines) to cut off the branches below the graft; though, in inarching, I see it is generally done, for the reason, as it is said, of throwing the sap into the graft, and making it more vigorous. However, it requires but little reflection to be convinced that it has a contrary tendency. The branches below the graft, instead of robbing it, are indispensable to the health of both stock and graft. As a proof, take for instance a Weymouth pine, and let it undergo the same treatment as if it were grafted; first, selecting one of its shoots, which we shall suppose to be a graft, and, either before it has pushed, or shortly after (which is the practice generally), deprive it of all its other shoots, and you will either kill it, or render it so sickly that it will not recover for years.

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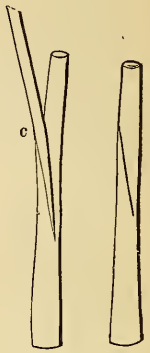


I think that inarching, as generally practised, is any thing but acting upon scientific principles, as it will obviously appear to any one who will take the trouble to cut a transverse section of a plant where inarched, and count the number of vessels at

work; they will be found to bear but a small proportion to the number in the whole diameter. Cleft-grafting, too, I think objectionable, *in two ways:* first, from having the leader broken, although a few leaves may be left; and, in the next place, a cleft, or split, being made down the stock, it is evident that but few of the vessels of the stock can be at work, unless a shoulder is formed upon the scion, to cover the vessels which would otherwise be left open at the top of the stock. Pines, comparatively speaking, have but few buds; hence, it is of importance to destroy as few as possible; and, by diverting that portion of the leader which is above the graft into a side shoot, I think more is gained by leaving it on than by removing it. The remarks in the *Arboretum Britannicum* respecting the proper selection of stocks for grafting are very judicious, and of much greater importance than most propagators of the present day seem to be aware of. I am sorry to see a great many fine plants of deodar cedar sacrificed by being grafted on larches, merely because cedars of Lebanon are expensive stocks. Now, it requires very little foresight to predict their ultimate failure; not only because the larch is deciduous, but it never can swell in the same ratio as the deodar. On the contrary, I am persuaded that it will make a tree sooner upon the cedar of Lebanon than upon its own bottom.

In April, 1836, we grafted several deodar cedars upon the cedar of Lebanon, and, in February, 1837, many more; in all, about 200; and several of those grafted last spring have grown more than 18 in. from the graft.

Elvaston Castle, Dec. 12. 1837.

ART. VI. *Descriptive and Historical Notice of the A'bies cephalónica.* By the CONDUCTOR.

♇ *A'BIES CEPHALO'NICA.* The Cephalonian *Silver* Spruce Fir.

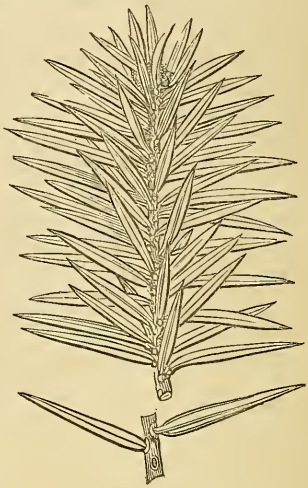
Synonymes. Koukounaria, and also Elatos, in Cephalonia; *A. taxifólia Hort.*; *A. luscombeàna Hort.*; the Mount Enos Fir.

Engravings. Our *figs.* 6. and 7., from living specimens received from Hampton Lodge, Luscombe, and Dropmore.

Spec. Char. Cones, ?. Leaves subulate, flat; dark green above, and silvery beneath; tapering from the base to the summit, which terminates in a sharp spine. Petioles very short, dilated lengthwise at the point of their attachment to the branches; the dilated part of a much lighter green than the rest of the leaf. A tree, in its native country (Cephalonia), upwards of 60 ft. high, with a trunk 9 ft. or 10 ft. in circumference, and numerous side branches, which, when young, give it the general appearance of an araucaria. Introduced in 1824.

Description. General Charles James Napier, who, when governor of Cephalonia, paid great attention to this tree, and first sent seeds of it to England, informs us that the largest specimens which he saw of it in Cephalonia were 60 ft. high and upwards; and that the side branches, when the tree is not crowded by others, are very numerous, and spread out to a great

distance, so as to form a very broad tree in proportion to its height. The leaves, on plants raised in England, are equally and thickly distributed over the branches, and stand out nearly at right angles on every side. They are of a fine shining dark green above, and have two rather obscure silvery lines, separated by the midrib, beneath. They differ from those of all other species of *Abies* and *Picea*, in terminating in a long, brown, sharp prickle, and in having the footstalks (which are so short that the leaves are almost sessile) dilated lengthwise in the direction of the branches; the dilated part being of a much lighter green than the rest of the leaves. The leaves, on branches at some distance from the ground, and on the leading shoot, as compared with those of other pines and firs, may be described as dagger-shaped, or as resembling miniature bayonets. They are equally and closely distributed over the branches; and, being almost without footstalks, and broad at the base in proportion to their length, they give the branches which are clothed with them a good deal of the appearance of Araucària brasiliénsis. The leaves, on the branches which are close to the ground, are rather more two-rowed, in the manner of the silver fir, than those on the higher branches; as may be seen in *fig.* 7., which represents a portion of the lowest branch of the young tree in the pinetum at Dropmore. The colour of the bark of the young shoots is a decided brown; which, contrasting with the light colour of the petioles, and the dark green of the upper surface of the leaves, and their silvery lines below, gives the plant at once a rich and a lively appearance. The buds are prominent, somewhat square-sided, pointed, and slightly covered with resin. In plants kept under glass, they have much more resin than in those kept in the open air. The branches are very numerous; and, though originating at the main stem in regular tiers, yet, at a short distance from it, they divaricate in all directions; and, in plants in pots, from 3 ft. to 4 ft. high, which are the largest that we have seen, they form a bush broader than it is high. This is also said to be the case with the plants in the open ground at Luscombe and at Hampton Lodge. The general resemblance which the plant, in this state, has to an araucaria is very remarkable; and, if the cones should prove to be as different from those of other species of *Abies* and *Picea* as the leaves, this tree will form a connecting link between the firs and the araucarias. The cones have not yet been seen in Britain; but General Napier thinks that they are sometimes pointing upwards, and sometimes turned down; and Mr. Curling, who was superintendent of the Colonial Farm in Cephalonia at the time that General Napier was governor of the island, and who is now steward to Sir Henry Bunbury, at Mildenhall, Suffolk, thinks that he recollects that the cones were soft and pendulous, like those of the spruce fir. This point, through the kindness of General Napier, now (January, 1838,) residing at Bath, who has promised to procure cones for us, and a specimen of the wood, we hope soon to be able to determine.



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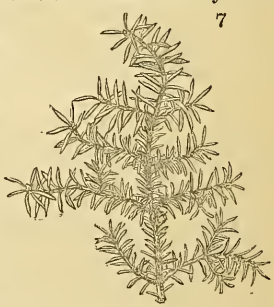

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Geography. The only known habitat of this remarkable fir is in Cepha-

lonia, on a ridge of mountains, the highest point of which was anciently called Mount Enos; but the general name of the ridge is now the Black Mountain. This ridge is between twelve and fifteen miles in length, and between 4000 ft. and 5000 ft. above the level of the sea. Dr. Holland, who saw it in 1813, describes it as the most striking feature in the general aspect of the island. On the summit of the highest point of this ridge, the Mount Enos of antiquity, stood, according to Strabo, an altar dedicated to Jupiter Æenesius; and Dr. Holland was informed that some of the stones of this altar, and of the bones of the animals sacrificed on it, were still occasionally to be found on its site. "The name of the Black Mountain," he says, "was obtained from the large pine forests which once covered its acclivity; but, during the disturbed state of the islands fifteen years ago (about 1798), these forests were wantonly set on fire, and in great part destroyed; so that now (Feb., 1813) the appearance of the mountain entirely contradicts its name. This is especially the case on its southern side, where the precipitous point, which rises by a single majestic elevation from the base to the summit, is broken by numerous deep gullies, displaying the white limestone rock of which the mountain is composed." (*Travels in the Ionian Isles*, &c., p. 35.)

The main ridge of the Black Mountain lies in the direction of north-west and south-east. The upper part only is, or rather was, covered with forest; while the lower part of the sides is covered with vineyards, olive grounds, corn fields, and gardens. The ridge, General Napier informs us, is very narrow, and its sides steep, and in many places almost without soil; nevertheless, this fir springs, in many places, from the crevices of the rock, though, like other mountain trees in similar cases, the tree only attains a large size in mountain hollows, where the soil is deep and the situation sheltered. Neither Pouqueville nor Olivier mention this forest; and, though Dr. Pococke speaks of the mountain, the highest point of which he calls Mount Gargasso, he does not mention its trees. This omission is, however, accounted for by the fact, that Dr. Pococke did not go on shore on the island. In General C. J. Napier's work, entitled *The Colonies*, published in 1833, there are more ample details. It is there stated that, notwithstanding a great part of this forest was burned down several years ago, it is still very extensive; though it is greatly injured by the vast number of goats which are permitted to range at pleasure among the trees, and which destroy the young ones by uniformly biting off the leading shoot. As wood is very valuable in Cephalonia, the forest, General Napier observes, might be made a source of great riches and utility; and twenty years' care, would make it magnificent. Count Marine Mataxa, one of the nobles of the island, he adds, told him that, "when he was presented to the Emperor Napoleon, His Majesty's first question was about the forest on the Black Mountain." (*Colonies*, &c., p. 336.) The following is an extract from an *Agricultural Report* made to Colonel Conyers respecting this forest in 1832, by Mr. Edward Curling, the director of the Colonial Farm already mentioned: — "Before I conclude, I must draw your attention to the fine forest of firs that might be had on the Black Mountain of Cefalonia. With a very little attention, this would form a source of riches to the islands, which, at present, import all the wood they require for houses, ship-building, &c. This forest, at one time, contained some of the finest trees in the world, but was unfortunately burned down by the negligence of some Greeks in setting fire to their lands; and, since then, the goats have effectually prevented anything like a good tree from growing. These animals always eat off the leading shoot, and thus entirely ruin the tree: for this fir does not renew its leading shoot when injured. And thus, only stunted crooked trees are to be found, except a few that have sprung up since Colonel Napier took pains to keep the goats out; though, immediately that the island was left in less attentive hands, the goats renewed their incursions. Even these young trees are in danger of being destroyed by the women who collect resin, who take off about a foot of the bark of the leading shoot; and, of course, the tree dies. Colonel Napier has made a road up to the forest; and the thinnings

would pay all the expenses of taking care of it, as firewood sells enormously dear at Argostoli." (*Colonies*, &c., p. 283.)

"It has been said that 'it is useless to take any pains to protect this forest, as there is scarcely a tree in it worth the trouble;' but this is the very reason why it should be protected, to prevent the trees from being injured as they have hitherto been, and to allow them to attain a timber-like size." (*Ibid.*)

History. As far as we have been able to discover, no botanist has yet noticed this tree. We were once inclined to conjecture that it might be the *Abies orientàlis* of Tournefort, notwithstanding the discrepancy between the description and the Cephalonian plant; but, having examined the specimen of *Abies orientàlis* in Mr. Lambert's herbarium, we are satisfied that the latter is a variety of the common spruce fir. The merit of introducing *A.* cephalónica into England entirely belongs to General Napier, who, from his work, *The Colonies*, and also from a pamphlet by him, entitled, *Memoir on the Roads of Cephalonia*, seems to possess an enthusiastic attachment to the island, and an ardent desire for its improvement. He was particularly anxious that this forest ridge should be enclosed so as to exclude the goats, and to allow the trees to grow up and become timber; and, when he was governor, made many remonstrances on the subject to Sir Frederick Adam, the chief commissioner, but without effect. In 1824, in compliance with a request of Henry L. Long, Esq., of Hampton Lodge, near Farnham, who was desirous of knowing the species of fir described by the ancient writers as the *peukē* and the *elatē*, Colonel Napier sent a packet of seeds of the Cephalonian fir to England. The seeds were without the cones, and were sent to the care of the colonel's sister, Lady Bunbury. The packet was duly forwarded to Hampton Lodge; but some seeds having dropped from it, Lady Bunbury gave these seeds to Charles Hoare, Esq., of Luscombe. Mr. Richard Saunders, the woodreeve, at Luscombe, in a letter dated November, 1837, informs us that he recollects receiving the seeds from General George Napier, about thirteen years since; and "hearing that the general had obtained them from his brother, at that time governor of Cefalonia." "The seeds," he adds, "were of the largest size. I raised twelve plants from them, four of which I lost, when young, by damp and frost, having planted them out in the open ground at the age of two years only. Three of the plants raised were given to Mr. Pince of the Exeter Nursery, and one to Mr. Pontey of the Plymouth Nursery. The other four plants are remaining at Luscombe, flourishing exceedingly well, and never having had any protection during the winter, since they were planted in the open air. The largest of the plants at Luscombe is 3 ft. 10 in. high, and the branches cover a space 4 ft. 3 in. in diameter. All the plants are very thickly furnished with side branches quite close to the ground, forming, at a distance, very handsome green bushes. — *R. S. Luscombe, Nov.* 6, 1837." It thus appears that the *Abies* cephalónica was introduced into England by General Charles James Napier in 1824, though it was never heard of in any public collection, or in the nurseries, till within the last two or three years.

The plant sent to the Plymouth Nursery was, in 1837, sold to the Duke of Bedford for 25 guineas. Two of those sent to the Exeter Nursery were sold to the Rev. Theodore Williams of Hendon Rectory, for about the same sum each; and the third is retained as a stock plant to propagate from.

The seeds sent to Hampton Lodge were safely received, and vegetated without difficulty. Mr. Long, in a letter dated Dec. 3. 1837, says: — "I lost a great number of plants by spring frosts and by rabbits, owing to want of care whilst I was on the Continent. I have only three plants left; and they are in full vigour, and have made shoots, during the past summer, from 6 in. to 7 in. in length." The tallest plant is 3 ft. high, and the breadth of space covered by its branches is 4 ft. in diameter. "I gave some plants to Lord Orford, for his pinarium at Wolterton, in Norfolk; some to Lord King, for his collection at Ockham Park, Surrey; two to Robert Mangles, Esq., of Sunninghill; three I have planted out myself; and the remainder I gave this year to Mr. Penny, the nursery-gardener at Milford." We are thus enabled to account for all the plants raised from the seeds sent home by General Napier.

Properties, Uses, Propagation, &c. The timber of this tree is said to be very hard, and of great durability. General Napier informs us that, in pulling down some old houses in the town of Argostoli, which had been built from 150 to 300 years before, all the wood-work of the Black Forest fir was as hard as oak, and perfectly sound. In Britain, the tree may be considered as one of the most interesting and beautiful of the *Abiétinæ*; and, when it attains the dimensions of our cedars of Lebanon, which there is no reason to suppose it will not do in favourable situations, its timber may probably be found as useful here as it was in Cephalonia. Should, however, its timber be of no more use than that of the cedar of Lebanon, it is still in every way as worthy of being planted as an ornamental object as that fine tree. As the plant strikes with great readiness by cuttings, a number have been propagated in the Devonshire nurseries, and also in the neighbourhood of London. There are plants in the pinetum at Dropmore, and in the garden of Robert Mangles, Esq., of Sunninghill. The large plants at Hendon Rectory, and in the pinetum at Woburn Abbey, are upwards of 3 ft. high; but the one at Dropmore is only about 18 in. high. Price of young plants, in the British nurseries, 2 guineas each.

Since the above was printed for the *Arboretum Britannicum*, we have seen two of the plants given to Messrs. Young and Penny of the Milford Nursery, in the conservatory of the Rev. Theodore Williams at Hendon Rectory, each about 18 in. high; and we have also been informed by Lord King, that the three plants he received from Mr. Long are about 15 in. high, that two of them are in the pleasure-grounds at Ockham Park, and one at the Dowager Lady King's, at Woburn Farm.

Since the preceding part of this postscript was sent to press, we have received from General Napier a work by Dr. Della Porta on the medical and alimentary plants of Cephalonia, published in Corfu in 1821. It is entitled *Prospetto delle Piante che se trovano nell' Isola de Cefalonia, e che si possono adoperare, e Titolo di Alimento o di Remedio.* Del Signor Dr. Niccolo Della Porta, Medico Fisico, &c. 4to. Corfu, 1821.

In this work, only two species of *Pinus* are mentioned, the *P. Pinea* and *P. Abies* of Linnæus. Of the latter species it is said, that it merits attention for the uses to which the wood is applied, and the medical virtues of some parts of the plant, much more than the Black Mountain on which it grows. This shows, either that the common spruce fir abounds on the Black Mountain, as well as the species which we have called *Abies cephalónica*, or, which is much more likely to be the case, that Dr. Della Porta has mistaken the latter for the former.

In enumerating the medical virtues of his *Pinus Abies*, the doctor mentions that the points of the shoots are used for communicating antiscorbutic properties to water and to wine. The same is effected by the cones. It is reported, he says, that the points of the shoots, cut into small pieces, and strewed on the floors of rooms in summer, exhale a refreshing fragrance; and he adds that, possibly, the same effect may be produced by keeping branches of the fir in vessels of water in rooms. He next mentions the resin, which is applied to various uses; and, lastly, a manna, as a resinous product; but which, he says, is not gathered by the country people in Cephalonia. The reader will observe that all these virtues attributed to the Cephalonian fir are precisely those which are attributed to the common spruce in Norway; even to the refreshing of the air of rooms by strewing the sprigs on the floor. It is clear, therefore, that *Abies cephalónica* was not recognised by Dr. Della Porta as a distinct species.

ART. VII. *Mode of propagating Green-house Plants.* By JOHN FYFFE, Gardener at Milton Bryant.

THE practice which prevails at present in floriculture, of planting out exotics, must call forth the exertions of every gardener, to keep up a stock of young plants.

The sketch (*fig.* 8.) shows a mode with which I have been very successful, in propagating all the different species of green-house plants. In this figure, *a* is a 32-sized pot; *b*, a No. 60. turned upside down in the pot No. 32.; *c*, small pebbles; *e*, a layer of peat earth or moss; and *d*, a covering of sand. The channel which is given for the escape of all over-watering, by the inverted pot, will be found to be most useful for such species as are apt to damp off; and, when the pots are plunged in gentle heat, the vacuity thus obtained, being filled with the moist warm vapour, it ascends through the pebbles and moss, and will be found greatly to forward the growth of the cuttings. This method answers well for cuttings of heaths. Every one who has been in the habit of propagating heaths must be aware that, when not properly drained, or if the water is allowed to stand about them, they turn black, and at last damp off. By using the inverted pot, a good quantity of pebbles, with a covering of spongy peat, and about two inches of clear washed sand, no bottom heat being required, every gardener may be successful in propagating all the Cape ericas. Particular care ought to be taken in watering cuttings of heaths, never to allow them to be completely dried up; as nothing is more injurious to this tribe of plants in all stages, whether cuttings or specimens.

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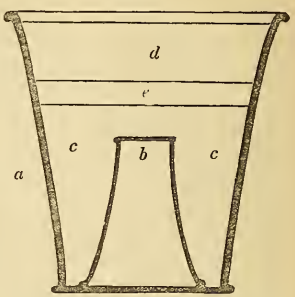

Milton Bryant, Oct. 16. 1837.

Art. VIII. *On the Shriveling of Grapes.* By George A. Lake, F.L.S., Tulse Hill House, Brixton.

It is not a little mortifying that, amongst the very many important additions which have been made of late years to the science of gardening, that of a knowledge of the causes and prevention (for cure there is none) of the disease in vines called "shriveling" is not to be found, and that such knowledge is a desideratum still anxiously to be sought.

I do not pretend to much experience in the cultivation of the grape; and, although I had frequently noticed this disease, it is only within the last few months I have paid any serious attention to it. I think it right to state this, that I may not lead any one to think that the observations and speculations contained in this paper are founded upon a long experience, and that they may not pass for more than they are really worth.

Accident may sometimes bring us acquainted with the cure, prior to the discovery of the cause; but, in the greater number

of cases, in order that we may seek, with any prospect of success, for the cure or preventive of an evil, we must first endeavour to discover its cause. Every cultivator has a theory of his own on the shriveling of grapes, but it would be extremely difficult to find any two which agree. One attributes the disease to too much heat; another, to too little; a third, to damp; a fourth, to bad ventilation; a fifth, to friction; a sixth, to the irregular expansion of the flowers, by which some of the berries get the start of the others, and rob them of their due share of nourishment and support; and a seventh, to some other cause.

That some of these theories are wholly untenable, I think will be evident from the following description of the disease. Shriveling does not manifest itself until the berries are colouring: up to that period, the infected ones continue to increase, and swell equally with the others; they appear equally healthy, and, in fact, it is impossible, I think, to distinguish them: but suddenly, whilst some, varying in number according to the extent of the disease (and sometimes only a few berries), begin to be infected, the remaining berries (forming sometimes nearly the whole of the bunch) continue to deepen in colour, and gradually become black; while the others (the diseased ones) suddenly cease to colour, but remain of a brownish red tinge; and, although they at first appear full and plump, and sometimes have a considerable degree of bloom, they gradually shrivel and wither up, as in the process of drying grapes into raisins, and, if tasted, have a disagreeable sour flavour, scarcely any of the saccharine principle being present.

The disease must not be mistaken for "want of colour." In this latter case, although the berries are not so black as they should be, and, consequently, have not the proper degree of flavour (for the blacker the grape, apparently the greater the flavour), still they are not sour, and do not wither. Upon examining the diseased berries themselves, we do not discover any thing to account for these effects; but, upon looking at their foot stalks, these appear black and withered in the centre, as if they had been pinched with the finger and thumb; sometimes, also, the main stalk presents a similar appearance. Here, then, seems to be the seat of the disease; but how long this may have been in progress is uncertain: its course is, probably, rapid, although obscure, and hitherto only observed at its last stage, and then by its effects.

Now, after a careful and attentive consideration of these appearances, I cannot think they should be attributed to friction, or the irregular expansion of the flowers; but I am induced to suspect that they may be referred to one of these two causes: either the presence of a minute fungus, similar to the rust and smut in corn, mildew, and other allied fungi; or to the at-

tacks of some minute insect, a coccus, an aphis, or, perhaps, the *A*carus telàrius (red spider). If this suspicion be correct, then a too low or a too high degree of temperature, a dry or moist state of the atmosphere of the house, a more or less effective ventilation, may favour or prevent the developement of the insect or fungus. My suspicion is confirmed by the fact, that, at least as far as my experience goes, grapes in the open air are not infected by the disease; although they are as much subjected to friction, irregular expansion of the flowers, and many of the other causes supposed to produce shriveling, as are grapes under glass; but then they are not, perhaps, subjected to the atmosphere or temperature necessary to the developement of the peculiar species of fungus or insect supposed. Vines under glass are sometimes infested with the mealy bug, and frequently with the red spider, but never, I believe, with either in the open air.

I do not pretend to assert that I have discovered the nature of this evil, much less its prevention, but have here merely stated inferences drawn from a consideration of the peculiar characters of the disease. I trust, however, that I may be in some degree instrumental in drawing the attention of practical men to this obscure subject, but one so important to the gardener; and that they will not cease to anxiously investigate it, until both cause and prevention are distinctly known.

Brixton, December 15. 1837.

ART. IX. *A Mode of growing early Cauliflowers.* By JOHN CUTHILL, Gardener at Dyrham Park.

THE plan which I have practised with cauliflowers these two years past is as follows: — After the cucumbers upon a ridge are done with, I put four inches of peat mould all over, from either side of the ridge, and plant in it my cauliflower plants. The peat mould is to keep the roots from the rich mould and dung below, until the spring, so that the plants may stand no chance of buttoning; but, when they do begin to grow, they grow more in one month than in two with the old practice; and we thus get cauliflowers very early in this strong cold ground. It matters not whether the ridge runs east and west, or north and south, as I keep one corner of the hand-light on the edge of the bed, upon either side. Of course, I have double rows of hand-lights upon the same bed alternately; which throws one side of the light to the s. w., where all the heavy rains come from, and the opposite, where the cold east winds come from; so that we tilt accordingly. I never allow one drop of rain to fall upon a frame or hand-light cauliflower until March; and, in order to make sure, the lights are on at all times, giving air. Those who allow their plants to get

wet are only preparing them for the rubbish-heap. Some will say they do well enough under a wall. Yes, they will, because their treatment there is regular: but, by the above plan, we save ground and gain time; and, by the lights being always on, we save our plants from the injury they would receive from treading upon the soil about them night and morning.

Dyrham Park Gardens, Dec. 8. 1837.

REVIEWS.

Art. I. *A Botanical Lexicon, or Expositor of the Terms, Facts, and Doctrines of the Vegetable Physiology, brought down to the present Time.* By the Rev. Patrick Keith, Clerk, F.L.S., Rector of Buckinge, Kent, and Author of "A System of Physiological Botany." London, Orr and Co., 1837.

This is a very useful work, and should be in the hands of every young botanist and every young gardener. It contains, not only the marrow of the reverend gentleman's former work on the same subject, but numerous quotations from every author, ancient and modern; forming a valuable compendium of botanical knowledge.

The author's intimate acquaintance with the languages of Greece and Rome renders him eminently qualified for drawing thence every observation on vegetable phenomena which appears in the earlier writers, and which may serve to throw light on the history of systematic or local botany. This is so far valuable, in enabling us to compare the knowledge of the ancients with what is now known and taught; and it also shows by what gradual steps the science of botany has been advanced to its present pre-eminence. Neither are such quotations given, as we have often met with them before, "stark naked," but accompanied with sound critical remarks, which greatly enhances their value.

Another very useful feature in this book is, the chemical knowledge of the author, which is always brought to bear on and explain vegetable phenomena, not otherwise to be accounted for, and thus illustrating what is naturally obscure.

The author strongly recommends the study of *comparative anatomy* to the student of vegetable physiology, he being of opinion that they throw light on each other; and, to assist the student in this, has very properly added an article "Zoology" at the end of the *Lexicon.* In this particular, our author has gone, perhaps, farther than he will get many naturalists to follow him; though he keeps himself quite free from the extravagance of those naturalists who vainly endeavoured to explain all the parts and powers of vegetables by comparing them with the parts and functions of animals.

As a systematic botanist, he ranges himself on the side of Jussieu; though not without pronouncing the most respectful eulogy on Linnæus, and some of his predecessors. Nor does he pay an implicit preference, nor give an unqualified commendation, of the natural system, without comment. He criticises some of its expounders, as wandering from the simplicity in which its author studied, and the best of his commentators study, to exhibit it: on which point he expresses himself thus: —

"If we were called upon to say how it is at all practicable to adapt the system of Jussieu to the present state of botanical knowledge, without innovating upon its principles, in external appearance at least, our reply would be, that, availing ourselves of whatever we may find in the works of the above-mentioned authors [De Candolle and Lindley] or of others, calculated to illustrate the character of the groups, or to give perspicuity to the arrangements, of Jussieu, and retaining not merely the foundation, but the identical structure which he reared upon it, we would venture to add to it a trifle more of extension, or of filling up, in the style and manner, as much as may be, of the original edifice, that the masterly traits of the hand of the founder may never be lost sight of. It will be seen that this adaptation can descend no lower than to the distribution of classes. The orders and their arrangement will be continually changing, as long as there shall remain new plants to be collected, or new affinities to be discovered; but we do not see the necessity of any violent alteration in the circumscribing of the larger groups. All that we regard as necessary is comprised in the following tabular sketch, giving, as we fancy, a neatness of outline to the higher divisions of the system, by the formal introduction of a very few distinctions, that were either implied in it from the beginning, or rendered necessary by the progress of analytical research.

Vegetables.

Group I. Cotyledonous Plants. Vascular, with spiral tubes; phænogamous, bisexual, angiospermous.

Divis. I. Dicotyledons. Growth exogenous, circumferential.

Subdiv. I. Dichlamydeæ. Floral envelope double, a calyx and corolla.

Sect. 1. *Polypetalous*, containing three classes, viz.: 1. Hypopetalæ; 2. Peripetalæ; and, 3. Epipetalæ.

Sect. 2. *Monopetalous*, containing three classes; viz.: 4. Hypocorollæ; 5. Pericorollæ; 6. Epicorollæ; to which are attached, first, Synantheræ, and, secondly, Corisantheræ.

Subdiv. II. *Monochlamydeæ*. Floral envelope single; perianth or presumed calyx.

Sect. 1. *Apetalous*, containing three classes; viz.: 7. Hypostamineæ; 8. Peristamineæ; and, 9. Epistamineæ.

Sect. 2. *Anomalous*. Class 10. Diclines, of which one subsect. is Angiospermæ, and another Gymnospermous.

Divis. II. Monocotyledons. Growth endogenous, central. Floral envelope a perianth, often in two rows; sepaloid, petaloid, or glumaceous.

Class 11. Monohypogynæ; 12. Monoperigynæ; and, 13. Monoepigynæ.

Group II. Acotyledonous Plants. Cellular, or, if vascular, without spiral tubes; cryptogamous.

Class 14. Ductulosæ. Cellular, with interspersed ducts; seminiferous.

Class 15. Eductulosæ. Wholly cellular; gemmiferous.

Thus, the whole of the vegetable kingdom is divided into two grand groups, without any sacrifice of the technical language of Jussieu."

Whatever may be the merit of this scheme of systematic arrangement, it has one recommendation, and that is conciseness; although aware that it is the opinion of many able botanists that

the more the natural system is expanded, the better it will be understood. The author has given his reasons why he has been induced to offer this scheme to the attention of his readers, and concludes thus: —

"It is the part of the experienced and practical botanist to reduce classes to orders, or to suborders, if necessary, and to construct their diagnosis; or, rather, perhaps, by reversing the process and advancing to the line of ascent, to reduce orders and suborders to classes; and to the experienced and practical botanist we are content to commit the task."

As a vegetable physiologist, the reverend author stands deservedly high. The book before us contains almost every thing which has been written by men of science on the subject; but we look in vain for anything decidedly new. The plain and palpable parts of the science all stand out in sufficiently bold relief; but the more obscure parts are left untouched. This is much to be regretted; because, as Mr. Keith holds possession of the good opinion of the public, he might have made his *Lexicon* a standard work, without "spot or blemish." The dark pages of former writers he should have cleared up; their theories he should either have established or demolished by an appeal to practical facts; and not sent them down to posterity surrounded by the halo of a great name.

It appears that Mr. Keith is an abettor of the idea that the matured sap is "*organisable:*" surely, his chemical knowledge (of which he has an ample share) should undeceive him in this untenable doctrine. Can he, as a chemist, really comprehend that any organic structure or membrane, however simple, can be formed of sap in any state in which it is found, or by any change or combination of which it is susceptible? He unluckily asserts, on the authority of the respectable and venerable Mr. Knight, that the elaborated sap descends; while he knows that this, being an invisible process, never has, nor ever can be, proved, and is, therefore, a mere supposition. The only instances cited as proofs are, first, the counter-currents of juices observed in the petioles of leaves by Dawson, Knight, and by the late Mr. Capper of Bath: but the descending portion cannot be traced farther than the base of the petiole; and to maintain that it sinks all the way to the roots, is a purely gratuitous assumption. The second instance cited as proof is the swelling of a branch *above* a bandage; but, as the branch also swells *below* the band, it is, in fact, no proof at all. If a branch be strangled by a wire, the swelling on each side is nearly equal; but, if with a shred or tape, the protuberance is certainly greater on the upper side.

Mr. Keith continues to reiterate the notion, that the new alburnum and liber are formed of the descending sap, prepared for that purpose by the leaves. Now, this is again unfortunate; because he must know that new layers of both alburnum and

bark are annually formed for a long series of years, without the assistance of either leaves or descending sap of any kind; and, moreover, Mr. Keith must be aware that new bulbs and new tubers are produced by old ones, without connexion with either stems or foliage. Any practical man can vouch for the truth of these last assertions; and, the truth of the former, M. Dutrochet's account of the growth of the roots of the silver fir, whose boles had been felled many years before, will sufficiently attest.

This curious circumstance had been observed long before M. Dutrochet published his account of it; and it furnishes undeniable proof of the existence of a vital membrane, which possesses an innate power of increasing itself, independent entirely of assistance from either leaves or descending sap. It is this membrane which Mr. Keith sometimes calls cambium, and at other times perfect or elaborated sap; and, when describing it as protruding over to heal a wound, he speaks of it as being *granular;* which can hardly be applied with propriety to either sap or cambium.

That intelligent and practical botanist, Mr. Niven, curator of the Glasnevin Botanic Garden, near Dublin, in describing the new wood and bark which gradually cover a wound on the stem of a tree, imagines, very properly, that the upper lip is "an attempt to form roots," and that the protrusion from below is "an attempt to develope shoots." That the new wood and bark which cover the wound of a stem produce both roots and shoots, and even flowers, is known to every propagator of plants; and that shoots are produced from the lower lip is admitted by Mr. Keith himself, when combating the silly idea that all buds originate at the pith; which idea he repels with great truth: but he appears to have some misgivings whether or not those buds and shoots which come not from the pith are, or are not, *adventitious* creations.

Be this, however, as it may, there is no denying that both roots and shoots originate on that member which is known by the name of cambium in the month of May, and which is certainly alburnum in the following September, whether existing, as it usually does, under the bark, or appearing jutting out from the sides of a wound.

Mr. Keith is well aware that the cambium appearing every summer between the liber and alburnum has been considered as a *distinct member* of exogenous stems; and it is really a pity that he has not condescended to notice and refute an opinion which is at such variance with, and so antagonist to, his own physiological principles. Errors in the science of phytology cannot be too soon exposed and refuted. A silent neglect of the opinions of obscure writers may be dignified; but it cannot advance a science which is, as yet, far from being entirely free

from imperfections; and, as long as the dogmas of scientific writers are liable to objections from merely practical men, so long will the science of vegetable physiology remain a mystified branch of human knowledge.

When it is observable that a writer, in one part of his book, condemns and completely refutes the old doctrine of "equivocal generation of animals," and in another part advocates the *adventitious creation* of cells, vessels, buds, and wood of vegetables, we are compelled to question the philosophy of such an author; for it is sufficiently evident to every one who has made the cultivation and management of plants his business and study, that every plant, and consequently every identical *part* of a plant, has rudimental existence before it becomes visible by expansion. There is no new creation of even the minutest cells: the whole apparatus is originally complete; the various members whether, cellular, vascular, or fibrous, are gradually amplified by division, subdivision, and simple inflation and expansion. Why, then, should authors labour to perplex their readers, by affirming that this very expansion is a product of a homogeneous fluid, which does not contain one organised atom fitted for the construction of vegetable membrane?

I trust to the candour of the reverend author of the *Lexicon* to excuse me for making the foregoing observations, which I have done in order to call his attention to this point of his favourite study; convinced as I am, that, if he would take up this view of the matter, he would either controvert it by an appeal to facts, or make it much more conspicuously clear by language, than it is in my power to do. In either case, this interesting part of botanical science would be freed from the thick mist which now hangs over it. Mr. Keith may be assured that it demands more of his attention than he has thought fit to bestow upon it. He ought to know that a very competent judge and scientific physiologist (whose name I am not at liberty to mention) declares, in a letter to me, that, "if your idea of a vital membrane be wrong, no other idea which has been entertained on the subject can possibly be right."

I have only to repeat that the *Lexicon* is highly creditable to its author, and deserves a place in the library of every young botanist and gardener; and, notwithstanding the exceptions I have taken the liberty to mention, I can confidently recommend the book to every one wishing an acquaintance with the history and glossology of botany: and I am not without hope that the talented author may be induced by these remarks, and for the sake of the science, to add an appendix to the next edition of the book, to introduce omissions, if any, and what other illustrations he may think necessary. This I think the more called for, because Mr. Keith has, from *pure deference to others*,

adopted opinions which had better not appear in the book, without some qualification. — *J. Main. Chelsea, Dec.* 15. 1837.

Art. II. *The Rose Amateur's Guide; containing ample Descriptions of all the fine leading Varieties of Roses, regularly classed in their respective Families, their History and Modes of Culture.* In Two Parts. Part I. *The Summer Rose-Garden.* Part II. *The Autumnal Rose-Garden.* The whole arranged so as to form a Companion to the Descriptive Catalogue of the Sawbridgeworth Collection of Roses, published annually. By T. Rivers, jun. Large 8vo, pp. 95. Price 5*s.* 6*d.*

Our readers, by turning to our notice of the *Descriptive Catalogue of Roses*, p. 55., will find the exact arrangement of the *Rose Amateur's Guide;* which, it is proper to observe, is only a guide as to the choice of sorts, and not as to their planting or culture, or the formation of rosariums, as, from the title, one might be led to expect. As far as it goes, however, it is excellent, and the public are certainly greatly indebted to any nurseryman who, like Mr. Rivers, devotes his especial attention to any tribe or family of plants; clears up their nomenclature; describes the more valuable kinds; and engages to deal honestly and honourably with the purchaser, in always giving him sorts true to their names. We do not say that every British nurseryman does not do this as far as he is able; but this we do say, that there is not one in a score of them that has it in his power to do it, for want of the necessary knowledge. With respect to the French nurserymen, let the reader peruse the following quotation from Mr. Rivers's preface: —

"In forming a collection of roses from the French gardeners, great difficulty is often experienced by their incorrectness in the names of their plants: this inattention, to call it by no worse name, has long been the bane of commercial gardening. In this country, almost every nurseryman is now aware of the great responsibility he is under as to correct nomenclature. But, in France, they manage these matters differently, certainly not "better;" for, if a Parisian cultivator raises a good rose from seed, and gives it a popular name, a provincial florist will immediately give some one of his seedlings, perhaps a very inferior rose, the same name, so that there are often two or three roses bearing the same name; and, if the original or most superior variety is ordered, ten to one if you can get it; as the French florist generally gives you that which is most convenient for him to send, quite regardless of what you wish for. This is carried to an extreme of which only those well and intimately acquainted with roses can form a just idea." (p. v.)

Art. III. *Literary Notices.*

Kollar's *History of the Insects injurious to Gardeners and Farmers*, illustrated by engravings; translated from the German

by J. and M. L., and with notes and additions by J. O. Westwood, Esq., F.L.S., Secretary to the Entomological Society; is in the press.

Portraits of Oak Trees, and Studies of their Ramification and Foliage, by G. R. Lewis, will shortly appear in folio numbers. The portraits will represent the same trees in winter, when without their leaves, and in autumn, when in full foliage. They will all be taken from trees in the neighbourhood of Hereford (where Mr. Lewis has been staying for the last eighteen months on purpose), and chiefly from Tibberton Park, the seat of Henry Lee Warner, Esq.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Joyce's new Stove and economical Fuel. — Since we noticed this stove in our former Number, p. 57., Mr. Joyce has taken out a patent, and has formed a partnership with Mr. Harper of Cornhill. The stove has been exhibiting to the private friends of Messrs. Harper and Joyce, and to some literary and scientific men, three times a week; and it has been noticed in the *Mechanic's Magazine* and the *Literary Gazette* for Jan. 13., the only public journals, as far as we have observed, that have noticed it at all, except this Magazine. The following are extracts from the notices referred to: —

Joyce's new stove "is in the form of a tall urn, having a pipe running entirely through the centre, with a cap or valve at the top, to regulate the draft. The urn is of thin bronze, and about 2 ft. high, and 8 in. in diameter. By the combustion of the fuel inside, the metal continues at a dull red heat, and so gives off the caloric to the surrounding air. The fuel is stated to be a vegetable substance; and one charge, in a stove of the above described dimensions, will burn for 30 hours, and will cost 6*d*. No smoke or effluvia are produced. (*Mechanic's Magazine*, Jan. 13. 1838.)

"*New Mode of heating Rooms.* — The puzzle which has been shown at the Jerusalem Coffee House has set the wits of conjecturers at work upon the nature of the particular fuel which, at so cheap a cost as a farthing an hour, is to warm a room. Of these conjectures we have heard two. The first is, that the gardener who discovered the fuel which enabled him to keep up the fire whilst he slept must have used old tanner's bark, as it was the only fuel accessible in a hot-house. The other is, that charcoal is the base, and lime employed to absorb the carbonic acid gas. Gipsies are in the habit of using the ashes of their fires, raked together in a heap, and sprinkled with lime. This will burn throughout the night, and no deteriorating gas is evolved to distress the sleepers in the gipsy tent." (*Literary Gazette*, Jan. 13. 1838.)

Mr. Joyce's patent is dated Dec. 16. 1837; and the time for giving in the specification to the Patent Office is limited to six months from that date. It will not be before our July Number, therefore, that we can make our readers acquainted with the secret of the kind of fuel and the mode of burning; but, in the mean time, we may state that the conjecture as to the fuel consisting of charcoal and lime, which was made by Mr. Sylvester, the engineer, in the Horticultural Society's meeting-room, when the stove was first exhibited there, is by far the most plausible.

On the Formation of Mould. — At a meeting of the Geological Society on Nov. 1., a paper was read on this subject by C. Darwin, Esq., F.G.S. The author commenced by remarking on the two most striking characters, by which the superficial layer of vegetable mould is distinguished. These are, its nearly homogeneous nature, although overlying different kinds of subsoil;

and the uniform fineness of its particles. This may be well observed in any gravelly country; where, although in a ploughed field a large proportion of the soil consists of small stones, yet, in old pasture lands, not a single pebble will be found within some inches of the surface. The author's attention was called to this subject by Mr. Wedgwood of Maer Hall, in Staffordshire, who showed him several fields, some of which, a few years before, had been covered with lime, and others with burnt marl and cinders. These substances, in every case, were now buried to the depth of some inches beneath the turf, as was ascertained by a careful examination of the several fields; and Mr. Darwin stated that the appearance, in all cases, was as if the fragments had, as the farmers believe, worked themselves down. But it did not appear to him at all possible, that either the powdered lime, or the fragments of burnt marl and the pebbles, could sink through compact earth to some inches beneath the surface. Nor is it probable that the decay of the grass, although adding to the surface of some of the constituent parts of the mould, should separate, in so short a time, the fine from the coarse earth, and accumulate the former on those objects which had so lately been strewed on the surface. Mr. Darwin had also observed near towns, in apparently unploughed fields, pieces of pottery and bones some inches below the surface. So, on the mountains of Chili, he had been perplexed by marine elevated shells, covered by earth, in situations where rain could not have washed it on them.

The explanation which occurred to Mr. Wedgwood of these phenomena, Mr. Darwin does not doubt to be the correct one; namely, that the whole is due to the digestive process by which the common earth-worm is supported. On carefully examining between the blades of grass in the fields where the observations had been made, the author found that there was scarcely a space of 2 in. square without a little heap of the cylindrical castings of worms. It is well known that worms, in their excavations, swallow earthy matter, and, having separated the serviceable portion, eject at the mouth of their burrows the remainder, in little intestine-shaped heaps. Hence, the fine particles are brought to the surface, and the cinders, burnt marl, or powdered lime, would, by degrees, be undermined, and eventually become covered by what was previously the underlying earth. In a field in which cinders had been spread only half a year before, Mr. Darwin actually saw the castings of the worms heaped on the smaller fragments.

On the above hypothesis, the great advantage of old pasture land, which farmers are always averse to break up, is explained; for the worms must require a considerable length of time to prepare a thick stratum of mould, by thoroughly mingling the original constituent parts of the soil, as well as the manures added by man. The author observes, that the digestive process of animals is a geological power of greater extent than might at first be imagined. In recent coral formations, the quantity of stone converted into the most impalpable mud, by the excavations of boring shells, and of nereidous animals, must be very great. Numerous large fish (of the genus *Sparus*) likewise subsist by browsing on the living branches of coral. Mr. Darwin believes that large portions of the chalk of Europe has been produced from coral, by the digestive action of marine animals, in the same manner as mould have been prepared by the same process on disintegrated rock. (*Athenæum*, Nov. 25. 1837.)

In our opinion, the phenomenon of the lime sinking in the soil is accounted for by the difference between the specific gravity of that earth, and the mixture of earths and organised matter, of which soils are originally composed. We have known a dressing of chalk laid on the surface of a meadow, so as to form a stratum of, say one-twentieth of an inch in thickness. In a number of years afterwards, the same stratum, of the same thickness, was found several inches below the surface. This appearance is quite familiar to farmers who have been in the habit of manuring old grass lands with chalk or lime; with whom it is a common saying, that lime and other dressings of earth sink into the soil, and that dung rises to the surface. Both assertions are strictly true, and both

accounted for on the principle of gravitation. It is to be observed, that the gravitation takes place in consequence of the softening of the soil by rains, when the lighter particles being softened, the adjoining heavy ones over them naturally take their place. Every one must have observed that a brick or a stone, laid on the surface of the ground, no matter how firm that ground may be, gradually sinks into it. We have only to refer to the name bricks in Messrs. Loddiges's arboretum. It would be easy to prove the whole of this theory, by filling two flower-pots with soil, and laying a stratum of dung at the bottom of the one pot, and a coating of lime on the surface of the earth in the other. Both pots should then be plunged into the ground in an open situation, where they will be exposed to the rain; or the experiment may be accelerated by watering the pots every day with a fine-rosed watering-pot. — *Cond.*

Effect of Carbonic Acid on Vegetation. — M. Traviranus, in his *Physiologie Végétale*, has stated that vegetation is not so active near springs where carbonic acid is disengaged. In reply to this assertion, M. Schleiden has inserted, in Wiegmann's *Journal of Natural History*, a note to prove the contrary. According to M. Schleiden, the numerous springs in the valley of Gœttingen contain a great quantity of disengaged carbonic acid gas, and some carbonate of lime in solution; and the vegetation of their waters and on their sides is always very vigorous, more advanced in spring and prolonged in autumn, than in other situations. Amongst the plants growing in the water was *Sium* angustifòlium; and among those growing on the sides of the springs were *Ranúnculus* lanuginòsus, the pilewort, the marsh marigold, and Prímula elàtior. It appears from this, that carbonic acid, either when disengaged, or when absorbed by water, exerts a beneficial influence on vegetation. (*L'Echo du Monde Savant*, Nov. 4. 1837.)

Phosphorescent Plants. — M. De St. Hilaire says that the agaricus (l'olivier) gives out a yellowish phosphorescent light in the dark; and it is supposed by M. Vallot that the notices of phosphorescent plants in ancient writers refer to that of the agaricus. There are, however, flowering plants which also emit phosphorescent light; such as the *Euphórbia* phosphòrea *L.*, the milky juice of which possesses this quality. (*Ibid.*)

Loss of Species of Plants.—M. De St. Hilaire states that many species of plants have been lost within the period of history. Within a few years, many species, quite common in the environs of Paris have become very rare; *Scílla* itálica, *Spártium* púrgans, and *Pæònia* corállina have entirely disappeared from the neighbourhood of Orleans; and, even in our own days, the rocks of Vaucluse have been completely despoiled of the *Asplènium* Petrárchæ. Is it not possible, then, he adds, that many flowering plants, really phosphorescent, may have been lost in the long period which has elapsed since the days of Democritus, Pliny, and Josephus? (*Ibid.*)

Silkworms fed upon Rice. — In a Chinese work on the culture of the silkworm, lately translated into French by M. S. Julien, a curious process is mentioned, the correctness of which has been proved by experiment. It is said that, in China, in order to supply more nourishment to the silkworms, the mulberry leaves upon which they feed are powdered with the flour of rice. But M. Bonafons of Turin, who translated the work into Italian from the French, wishing to prove the truth of the Chinese process, powdered the mulberry leaves with the flour of rice, with wheat flour, and with other fecula; and found that these various substances, which otherwise are not eaten by the silkworms, become, in this case, excellent nourishment, and cause the worms to develope themselves rapidly. The cocoons of the silkworms fed upon rice flour are much finer and heavier than usual. The other kinds of fecula did not produce a satisfactory result; but it is to be hoped that, by experiments made among the European keepers of silkworms with different farinaceous substances some substitute may be found for the rice. (*Ibid.*)

Preservation of Vegetables. — M. D'Eaubonne prepared a case in such a manner as entirely to exclude the air; he then mixed potter's clay and cow's

dung together, with water enough to render them liquid: with this he covered the stems of some young trees which he wished to convey to the Mauritius, and he also steeped in it the roots; he then covered them with common moss, and filled up all the insterstices with straw. He closed the case hermetically; and, when it was opened at the end of the voyage, not only were the trees alive, but bearing both leaves and blossoms. (*Athenæum*, Dec. 9. 1837.)

Art. II. *Foreign Notices.*

FRANCE.

Agriculture. — The sum of 500,000 francs has been placed at the disposal of the French Minister of Public Works, for the encouragement of agriculture during the year 1838. There have been also several gentlemen travelling in Scotland, at the expense of the Society of Agriculture, in order to examine the system of farming in that country. (*Ibid.*, Dec. 2. 1837.)

Vegetable Monstrosity. — M. Decroix of Norbécourt presented, at the last meeting of the Société d'Agriculture at Douai, a curious vegetable monstrosity: it is a pear, so disfigured as to have the appearance of an artichoke. (*L'Echo du Monde Savant*, Oct. 21. 1837.)

Cordage from the Napæ'a læ'vis L. — At the last show of the products of industry of the Côté d'Or at Dijon, cordage made from the bark of the Napæ'a læ'vis *L.* was exhibited. This plant belongs to the natural order *Malvàceæ*. It is a native of North America, and has long been cultivated in the gardens. It attains the height of 6 ft., even in poor soil. The bark separates easily from the stem after it has been steeped for two days in water: the fibres are not so strong or so fine as those of hemp, but they are very useful for the manufacture of the coarser kind of cordage, and far preferable to the bark of the lime tree. (*Ibid.*, Nov. 8. 1837.)

SWEDEN.

A Visit to Hammarby, the Country Seat of Linnæus, in the Spring of 1834, *by the Royal Swedish Physician M. Af Pontin.* From the *Transactions of the Swedish Horticultural Society for the Year* 1835; translated into German by Colonel C. v. Dannfelt; and from the German into English, for the *Gardener's Magazine*, by J. L. The journey from Stockholm to the Royal Castle (*Lustschloss*) of Rosersberg, and the University of Upsal, was undertaken in company with two members of our Horticultural Society, viz. Bishop C. A. Agardh, and the secretary, J. A. Rosenblad.

Before leaving Upsal we paid a respectful visit to the only remaining branch of Linnæus's family, Miss Louisa von Linné, who, although about 80 years of age, was still cheerful and in good health. Old persons testified that her features exceedingly resembled those of her immortal father. We received from her the key of the rural dwelling, which was the favourite retreat of Linnæus. The road to this place, which is about a mile and a quarter from Upsal, runs through the well-known King's Meadow (*Königswiese*) mentioned in the works of Linnæus, which was yet completely covered with the varied shades of the purple fritillaria (*damspiels-tulpe*), and presented an appearance not unlike that of the meadows of the Hartz Mountains in September, where the colchicum flourishes. Three colours generally predominated here: bluish purple, pale red, and white. I dug up a considerable number of all the varieties of these bulbs to plant in my own garden, where I found that these plants soon spread themselves, and generally far from the mother plant; which led to the conclusion that the wind conveys the seed to a distance.*

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* All that were brought home flowered this year, and have retained their peculiar variety of colours.

Besides these flowers which were self-sown (*selbst pflanzt*) in the King's Meadow, the whole neighbourhood is bare and free of wood. No trees surround the farm-houses, and still less is there any appearance of forest cultivation on a larger scale; although, for several hundred years, both the government and private individuals have encouraged the inhabitants to plant. This proves how much is still wanting for the comfort of the inhabitants of this flat district, and, also, that the means are yet to be devised how this useful shelter can be forced upon them. The Swedish Horticultural Society, however, appear to have found out how this can be effected, from the the measures they have pursued in Uppland.*

After leaving the King's Meadow, we passed through a bare plain, without wood, to Hammarby, where we first found a few trees here and there growing in a wild state, and some scattered plantations. This neighbourhood cannot be called rurally beautiful by any means: a turgid stream runs so deep as to be unseen between the fields. The King's Meadow affords the only beautiful view that can be obtained from this place of the Castle and towers of Upsal. The building containing Linnæus's dwelling-house consists of two houses, and is situated on the south, at the foot of a stony height, surrounded by large rocks, as if an earthquake had thrown the granite rocks around it. A tree could only here and there find space enough to spring up among these rocky ruins; and yet the lecture-room (*lehrsaal*) of Linnæus, so well known to the world, is found at the summit of a majestic uptowering pyramid formed of them. There are two plantations near the house, more or less in a ruinous state (*verfullene*).

There are two large rhamnuses at each side of the door, near the court, which is overgrown with grass; and these trees, in all probability, were planted in the time of Linnæus. There is also a sweet chestnut, which has widely spread out its branches over the entrance of the best of the dwelling-houses, and has two supports, which give it the appearance of an old man leaning on crutches; and which was planted by Linnæus himself, as his handwriting testifies.

The dwelling-houses consist of two wooden buildings, each two stories high; one of which (built like a wing), at the time of our visit, was inhabited. The other, which appeared to be intended for Linnæus and his family, was closed, and the ground was covered with high grass as far as the steps; a proof how seldom the dwelling is visited. On account of some unknown family arrangements made by the descendants of Linnæus, this house has never been occupied since his decease. It consists of a dwelling, which contained all the comforts of wealth; and which, with its furniture, has remained undisturbed for the space of fifty years. The sensations which overpowered me when I entered it may be compared to those felt on crossing the threshold to the *atrium* of a newly excavated house in Pompeii: all that surrounded us were relics and recollections of bygone times, consecrated in a sanctuary for future generations. The following expressive inscription is placed over the entrance of the living-room of the lower story: — "*Dum faveat Cœlum.*" "While it pleases Heaven."

This apartment seemed to be intended for daily use; and in it we observed two indifferently painted likenesses of Linnæus, and portraits in crayons of his wife and four daughters. It is worthy of remark that, among the numerous family pictures hanging on these walls, the portrait of his son and successor, Professor Charles von Linné the younger, is wanting. The upper apartment is in the same state as it was left on the death of Linnæus. Furniture which, perhaps, was in fashion more than a hundred years back, ornaments, and different kinds of household articles, all in the fashion of bygone times, are in the same places in which Linnæus left them. The walls of two apart-

* See the *Jahreschrift* of 1834, p. 38.

ments were covered with folio plates out of botanical works; the first with those out of Linnæus's *Decas Plantarum rariorum horti Upsaliensis;* and the second with coloured plates out of other splendid works. The following sentence is seen over the door of the outer apartment : — "*Innocue viventes Numen adest.*" "Living harmlessly in the sight of God." There were, also, various likenesses of Linnæus, not only in oils (one of which had this inscription : "*Effigiei similis*"), but also in copper engravings, silhouettes, and wax. We likewise saw likenesses of Banks and Solander in a kind of cameos (*kamèen*). There were tea and coffee services, vases, &c., of China, from the East Indies, ornamented with painted shoots (*ranken*) of the Linnæ'a boreàlis. On small pedestals in the corners of the room stood mythological figures in gypsum, very much gilt, and of tolerable workmanship; also two Venuses close by them. Linnæus's academical hat (*doctor-hut*), pretty much worn, yet in good preservation, lay on a table, as if it had but just been placed there. It was made of green silk stuff, turned up on three sides, and ornamented with bows of red ribbon at the corners. Whether this was the same hat that Linnæus wore at his promotion in Harderwyk, in Holland, I cannot determine; I only remember hearing, as a kind of tradition, that sometimes, when Linnæus was promoter in Upsal, the young doctors wore hats of these lively colours. The interior room contained the bed of Linnæus, with very rich silk curtains from the East Indies, on which were stamped representations of flowers. The coat of arms of Linnæus hung over the door of the third room. Articles of furniture; chairs with backs as high as a man, sofas in the same taste, and tables with tortuous feet, were found in all the rooms, and of the same antiquity. A spacious dining-room occupied nearly the half of the house; the staircase was also more convenient than was usual at that time in small wooden houses. Probably Linnæus built this house entirely according to his own taste, which may be confirmed from what he wrote in his notes in the year 1762 : — "Linnæus built at Hammarby, so that the children might have a place of abode, as he felt himself growing weak."

On the highest point of the above-mentioned rock stands the Linnæan Museum of Natural History, established in 1768 : it is a four-cornered stone building, one story high, with windows on three sides, and a four-cornered pointed roof, not unlike that of a small chapel. A somewhat beaten path led to it between young firs ; a proof that, in the time of Linnæus, few trees stood on that place. The Linnæan arms, painted on porcelain, are built in the wall over the entrance.

It was here that Linnæus deposited his valuable collection of every department of natural history, called by himself Museum Hammarbyense. It was also an auditorium, in which, during the academical occasions, he delivered lectures eight hours every day; and communicated his most important discoveries to a select audience, who lodged with the neighbouring peasantry, so as to be always present at these lectures, which were venerated as the sayings of an oracle. He received here many learned men from other countries, and Mæcenases from all Europe. Amongst these, Linnæus himself mentions a Lord Baltimore, a naturalist and author, who, on his departure, presented him with a golden snuff box, weighing a hundred ducats; but, as he did not think his gratitude sufficiently manifested by it, he afterwards sent him a present of 800 ducats. (See Hedin's *Recollections of the two Linnæuses, Father and Son*). The objects of natural history were no longer found in this Museum; but the chair (*lehrhstuhl*), and a three-legged tressel, with a board for writing on fastened on the top, still stood there, surrounded with the benches for the audience.

This chair, once of greater consequence than the three-footed Delphic chair, was the throne of the mighty Prince of Nature, from which he governed the flowers of the world (*blumenwelt*), according to the laws he had himself enacted, which he never trespassed, and which, in their fundamental principles, do not require improvement or alteration.

On descending from the height, we visited a small level terrace between

rocks. Only a moderately large larch stood there, probably planted in the time of Linnæus, when this tree was rare in Sweden. A pleasure-ground (*garten-park*) was laid out near the dwelling-house, in which, although now in a wild state, traces were still visible of regular plantations, paths, and bowers. Similar to the country seat of the Philosopher of Ermenonville, attention is directed here by means of memorial tablets (*gedächtnisstafeln*) to every group of trees that Linnæus had planted, and to those seats on which he reposed with most pleasure. A circle of poplars, a hedge of rhamnuses*, and some plants of *Acer* Pseùdo-*Platanus* were the only traces remaining of their long departed planter. Probably this was the spot which Linnæus called his Siberian garden at Hammarby, and where he mentions that he cultivated 500 kinds of seeds sent him by the Empress of Russia. The high grass was intermixed with the beautiful *Fumària nóbilis*, growing completely wild here. We also saw the *Anemòne ranunculoìdes*, and several other plants rare in this country. After we had collected several specimens of plants, as mementos of their immortal master (*pfleger*), we went to the celebrated Stones near Mora.† These stones are situated in the neighbourhood of Hammarby; and the monument erected on them is nearly of the same form as the Museum of Linnæus; two memorials of different periods, and different objects, but probably of equally great historical value to their native country. (*Verhandlungen*, &c., *for* 1837. Berlin, p. 267.)

IONIAN ISLANDS.

The Gardens of Alcinous. — The ultra new palace, built by Sir Frederick Adam on the supposed site of the gardens of Alcinous, in the island of Corfu, is so unhealthy, that, notwithstanding its splendour, Lord Nugent declined to live in it; and it was, in consequence, converted into an hospital for idiots. (*The Colonies of the Ionian Islands, by Col. Napier*, p. 213.)

AFRICA.

Hydrangea Hedges in the Island of Madeira. — All the hedges of hydrangea planted on the mountains round Funchal bear only blue flowers, and the blue is of a beautiful deep shade; those, on the contrary, planted in the gardens of the city of Funchal itself retain the pink colour; or, at most, assume a pale dirty shade of blue. Must we conclude that the soil above is much more rich in iron than the soil below, and that the latter contains more of vegetable and animal matter? Or is it because the air on heights contains much more oxygen than the atmosphere of the city? Or do both causes concur simultaneously in producing this constant effect? Many amateurs have assured me that they have never been able to preserve the natural colour of the pink hydrangea on the mountain. Another remarkable fact is, that the foliage of these blue hydrangeas is astonishingly vigorous, and of an extremely dark spinach-green. The soil in which they grow is never changed; though, in Europe, gardeners and amateurs are of opinion that, to produce hydrangeas of a blue colour, they should not have ferruginous earth many years in succession; but,

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* Linnæus seems to have been very fond of this tree, as it is found in several places. It was probably on account of its supposed use in medicine, such as in Aoilhaud's powder, made from its berries, &c.

† Stones of Mora. In ancient times, it was the custom to elect the kings of Sweden (*erwählt*) at the Stones of Mora: such of these were Erich der Zeitige, Waldemar, Magnus Ladulus, &c. : Charles VIII. (Knutson) was the last who was elected here, in 1457. The names of these kings, also their coats of arms, and three crowns, are found engraven here on several stones; and, in order to preserve these interesting memorials, a small house of stone has been erected over them, near which a person lives who keeps the key, and acts as a guide to strangers.

on the contrary, should be allowed to repose in common mould, before exciting them again with ferruginous soil. Is this true or false? Or can it be that artificial ferruginous mould can never equal soil naturally ferruginous? This may be probable, from the analogy of artificial mineral waters, which are never equal to those naturally mineral. In short, are there amateurs in England who would wish to import mould from the mountains of Madeira into England for growing blue hydrangeas? If that is the case, amateurs should address their orders, by letter (post paid), to me, within three months from this time (October 21. 1837), so that I might be able to execute their orders before my departure for the Canaries, which will probably take place next spring. — *Dr. J. F. Lippold. Funchal, Madeira, Oct.* 21. 1837.

Pine-Apples in Madeira. — In almost all the large gardens in Madeira, near Funchal, pine-apples are found planted in the open air; but almost all these plants look sickly, and produce but very indifferent fruit, and that rarely. May we not look for the cause in the want of care in general, and particularly in the fatal influence of the rainy season, when the water penetrates into the heart of the plant (the leaves of which form a very close small cornette), and, at the same time, keeps the earth about the roots too cool? Would it not be better to take up the plants before the rainy season, plant them in pots, and replace them, in spring, in the open air, after having well dug and improved the soil? or, at least, to shelter the pine-apple plants, during the rains, by a movable roof of canvass or planks, sloping sufficiently to carry off the water? I have seen this method of cultivating the pine-apple, partly in the open ground and partly in pots, succeed pretty well in France. It would, no doubt, succeed perfectly well, and with less trouble, in the fine climate of Madeira. — *Id.*

The Tea Plant has been introduced here, on a large scale, by Mr. Veitch, late British consul at Funchal. Mr. Veitch has made different plantations of different species or varieties of the tea plant on the mountains, at the height of 3000 ft. above the level of the sea, in situations where the snow falls occasionally in winter, and sometimes rests even on the tea plants. I hope Mr. Veitch may be induced to send you a detailed account of these very interesting plantations. — *Id.*

Guards for single Trees in Egypt. — Last of all, we went to see the palace of Mehemet Ali, which lies at the end of a tongue of land between the two harbours of Alexandria. It is in some degree characteristic of this prince, that an avenue 2000 ft. in length leads to it from the city, bordered by brick towers, without roofs, 8 ft. high, the use of which is to protect against injury the young acacias that are planted in them. (*Athenæum*, Dec. 2. 1837.)

Art. III. *Domestic Notices.*

ENGLAND.

Surrey Zoological Gardens, November 28. — One great attraction in these gardens during the past summer was the gigantic model of Mount Vesuvius during an eruption. The models of the mountain and the lesser hills of the range still remain; and, rising boldly into the horizon above every other object, have, unaided by the volcano, a very grand and impressive appearance; and suggest the idea of introducing panoramic views of mountains in different parts of the world in landscape scenery, on an equally large scale. For this purpose, it would be necessary to have a piece of ground containing ten or twelve acres, and of a circular form. In the centre might be an island of, say, 150 ft. in diameter; beyond this, there might be a zone of water, 200 ft. wide; and farther on, lawn, trees, and shrubs, to be arranged and varied in such a manner as to form an appropriate basement for the mountain range. Whether such an exhibition would pay for the expense, is very doubtful; but no one who has seen the portion of panoramic view of the Vesuvian range alluded to

can doubt of the grandeur of the effect that would be produced. So successful have the proprietors of the Surrey Zoological Gardens found the model of Mount Vesuvius in attracting company, that they are altering a portion of the garden, directly opposite the model, in order to its being seen with greater ease, and by a greater number of spectators. The alteration consists in rendering a surface, now nearly flat, an inclined plane, so that a crowd standing on this plane may see the mountain and the eruption across the lake over one another's heads. The glass structure, containing the animals of hot climates, has recently been heated by Mr. Kewley; and, notwithstanding the great length of the pipes, the effect is most satisfactory, the temperature being everywhere the same. The greatest attraction which these gardens have for us is the collection of named trees and shrubs along the walks. These are growing vigorously; and the different species and varieties are flowering, fruiting, and showing their distinctive characters in a most interesting manner. We regret to find, however, that a number of them are erroneously named; but this error we trust to see corrected in the course of next summer. — *Cond.*

Kewley's Hot-Water Apparatus has been applied to the new stove in the Botanic Garden at Oxford. This stove, which was erected about three and a half years ago, with smoke flues, used to give us a great deal of trouble to keep up the heat to the requisite degree; but with Kewley's mode we have not the slightest difficulty. It consumes little more than half the fuel, and does not require half the attention which the smoke flue did. The expense of erecting the apparatus was not a great deal more than what the flue cost. — *W. H. Baxter. Botanic Garden, Oxford, Nov. 5.* 1837.

Premiums for Arboretums. — The Royal Society of Horticulture and Agriculture offer to award the gold Adelaide medal, value 20 guineas, and the gold Victoria medal, value 10 guineas, will be awarded, to the individuals who shall form and plant the best arboretum, regard being had to the extent, arrangement, quality of specimens, plan of ground, &c.: the large medal to private gentlemen or ladies, the smaller, to nurserymen. The condition is, that more than two thirds of the plants ultimately forming the arboretum shall be procured or removed after the date hereof; by which means those who have already specimens on their ground shall be able to avail themselves of them in forming their plan, though arboretums already formed will not be eligible. Among the competitors, who give notice within one month of their intentition, silver medals will be awarded to such as shall have respectably competed for the prizes. Sketches of the plans, with numbers referring to the trees, shrubs, &c., to be delivered at the Egyptian Hall, by the end of May, with names of the intended competitors. (*Gard. Gaz.*, Dec. 2.)

Varieties of the common Spruce Fir. — In the course of our enquiries on this subject for the *Arboretum Britannicum*, we have received a list of those raised or collected by Mr. Smith of Ayr; a notice of several new varieties in the Chester Nursery, which have not yet been given out; a notice, by the Earl of Aberdeen, of a remarkable fine-leaved fastigiate tree at Harewood Hall, and of which the Earl of Harewood has kindly sent us specimens, which we have distributed among the nurserymen to propagate by cuttings; a notice from Mr. Frost, gardener at Dropmore, of a variety sent him by the Rev. Mr. Ellicombe of Bitton, near Bath, and which Mr. Frost thinks comes very near the Harewood spruce, of which we sent him specimens; and, finally, our attention has been directed to a variety sold in some of the nurseries as *Abies orientàlis*, and which is so remarkably like the Harewood spruce, as to be almost identical with it.

Aster argophýllus has stood out in the open shrubbery at this place since 1821, growing vigorously and flowering freely every year. Your readers are, doubtless, aware that it is a native of Van Diemen's Land, and that it is remarkable for the musky fragranee of every part of the plant. It forms here an evergreen bush, 13 ft. high; and its branches cover a space 11½ ft. in diameter. The trunk divides, about 6 in. above the ground, into several stout

branches, which spread outwards and incline upwards, somewhat in the manner of those of Búddlea globòsa. Mr. Lawrence, gardener to the proprietor, Sir Richard Simeon, Bart., raised the plant from a cutting brought to London in 1821. — *William Arnold. Bromfield, Eastmount, Ryde, Isle of Wight, Dec.* 15. 1837.

E*chium gigantèum* has grown to a fine bush in the open border of Sir Richard Simeon's garden at St. John's, producing its pyramidal spikes of rich blue flowers most abundantly in July and August; the shrub then appearing like a magnificent candelabrum, about 3 ft. in height, with a stem as thick as a man's arm. — *Id.*

P*yrus torminàlis*, in Quarn Copse, at Binstead, near Ryde, is about 40 ft. high, with a head of about the same diameter; and the trunk is 7 ft. 1½ in. in circumference at 1½ in. from the ground. It appears to be indigenous. — *Id.*

S*ìda pulchélla* Arb. Brit., p. 363. f. 89. — This was kept here in a pot as a green-house plant, 12 months ago; and, thinking it might prove hardy, I planted it against a south wall in the spring. It has made a growth of 4 ft. and upwards this season, and has been covered with flowers for six weeks past. The frost of the 18th and 19th inst. did not seem to hurt it in the least: in fact, it is, to all appearance, as hardy as a common myrtle. I believe it was raised from seeds sent from some parts of New Holland. — *John Spencer. Bowood Gardens, Colne, Nov.* 24. 1837.

The Cáctus Tribe. — I am a great admirer of the Cáctus tribe, of which we have a very good collection; but none of them, in my opinion, can claim our admiration more than Epiphýllum truncàtum, particularly when grafted on any of the other kinds, such as Peréskia aculeàta, Cèreus speciosíssimus; or, what is the best of all stocks, Opúntia brasiliénsis, of which I have several grafted plants, and on which stock E. truncàtum does, indeed, grow to very great perfection. I have one plant, which I grafted, two years since, on a stock 4 ft. high, which has now 109 flowers open on it. Nothing can be more splendid than this plant, when well grown, with its pendulous branches falling in all directions. This is, also, by far the best way to grow Cèreus flagelliformis, &c., which can be trained very gracefully on a light wire trellis, according to the taste of the grower. — *John Clarke. Compton Gardens, near Sherborne, Dorset, Dec.* 28. 1837.

E*uphórbia Jacquiniæflòra.* — A specimen of this very splendid plant is now in flower here, 7 ft. high; it is regularly covered with branches, leaves, and flowers, from the surface of the mould upwards, and forms a fusiform cone of surpassing beauty. — *Id.*

Mùsa Cavendíshii. — In the cultivation of our favourite plant, the Mùsa Cavendíshii, we are as enthusiastic as ever. One plant produced such a bunch of fruit this season as would have astonished any one: we did not weigh it (which I regret), as it was used at different times in the house at Chatsworth, and much approved of. Two other plants are just beginning to ripen their fruit, which is very fine. Each plant, we have found, produces, on an average, about 110 full-grown fruit; all of which will ripen well, and of a good flavour, if it is kept in a warm dry atmosphere. I think you might recommend it advantageously for a suburban garden, or in an ornamental point of view. — *Joseph Paxton. Chatsworth, Oct.* 23. 1837.

Two newly invented Ploughs in Jersey. (See Vol. XIII. p. 572.) — I cannot refrain from giving you an account of two remarkably clever ploughs that have lately been invented by M. John Le Boutillier, a native of Jersey. He constructed a one-horse plough for me, about two years ago, which only weighs 58 lb., for planting potatoes. It is simple and efficient; and traces a narrow furrow, in and along which women or children deposit the potato sets at any given depth, when the next turn of the plough throws the earth 18 in. off, and neatly and completely covers the sets in the furrow that has been planted; making a new furrow at the same time. This is an admirable improvement, as it saves the labour of one horse, besides that of one turn of the plough at each furrow; for formerly it required two turns of the plough to plant one furrow;

and it thus enables the farmer to plant double the land he formerly did in the same time, at half the expense of horse labour.

The other plough was at work on this farm all last Thursday (October 26.). It is for taking up potatoes, and is drawn by three horses, working at an easy pace, without stopping. It turned out half an acre of potatoes in five hours; which, considering the novelty of the invention, the number of persons who came to see it, and the interruption to the pickers thus occasioned, was good work. It has the breast of an ordinary Jersey plough. On the inner side of it is a large circular wheel, which rolls on the bottom of the furrow, with teeth which catch the ground as the wheel rotates: this gives motion to a small catch-wheel, with cogs, that drive a lesser one, which turns a shaft, to which are attached four short arms with paddles. These paddles, as the plough advances, revolve with considerable velocity, catch all the earth, potatoes, or weeds that may be brought over the breast of the plough, and throw them off 5 or 6 feet, in a perpendicular direction from the plough, leaving the ground quite comminuted and level. This does away, in a great measure, with the necessity of having men to fork out the potatoes; and will enable nearly all the hands to be employed in merely picking up and sorting them.

It is not only for potato digging that I consider this invention important: in some of the dry stiff soils, that require to be finely divided and comminuted, where fallows are to be broken up, or for intermixing ashes, soot, lime, or any powdered manure with the soil, it is the most efficient instrument I know. As a first invention, it is very complete: your great mechanics will perfect it. — *Le Couteur. Belle Vue, Oct.* 30. 1837.

SCOTLAND.

Lawson's Agricultural Museum, Hunter Square, Edinburgh, still retains the character of being a principal place of attraction and source of instruction to practical agriculturists and others. Among vegetable productions, we may notice a gourd, from Rouen, weighing not less than 135 lb. imperial; five varieties of the sweet potato (*Convólvulus Batàtas*); numerous specimens of turnip, of unusual size; almost all the new or recently introduced superior varieties of grain, such as wheat, barley, oats, beans, peas, &c., as well as hardy forage, herbage, and economical plants generally; in which department 52 varieties of Italian rye grass, grown by Mr. Robert Arthur, at North Berwick, deserve to be particularised. Some interesting specimens from residents in foreign countries, including a rare, curious, and highly interesting collection from the gardens and jungles of western India, by Thomas Williamson Ramsay, Esq., transmitted gratuitously, through the Hon. East India Company, by the Government of Bombay, on the grounds of national utility; a packet from the foot of the Himalaya, through Dr. Duncan; another from Calcutta, by Dr. Robert Stuart, and two from Van Diemen's Land, by John Saunders and Archibald Thompson, Esqrs.; the latter containing samples of wheat, barley, oats, and turnip seeds grown in that country. (*Edinburgh Weekly Journal*, Jan. 3. 1838.)

A Pinetum is being commenced by Mr. Gorrie in the neigbourhood of Loudon's Howe, near Annat, Perthshire. In this howe, Mr. Gorrie informs us, the Haguenau variety of the *Pinus sylvéstris*, sown or planted there in 1829, is prospering beautifully. The plants appear more vigorous than those of the common Scotch pine, and the young wood has a yellowish colour. We hope Mr. Gorrie will try some of the Swedish variety of Scotch pine, plants of which can now be procured in abundance from Messrs. Dickson of Chester, who imported, some years ago, a large quantity of seeds.

Art. IV. *Royal Caledonian Horticultural Society.*

The account of the December meeting of this Society, given in p. 58., was copied from a newspaper, sent us, as we supposed, by the secretary.

It was, however, deficient in several particulars; and we therefore give the following additions from authority. Of the pears sent from Hopetoun House, the wall kinds were, beurré Diel, beurré d'Aremberg, beurré de Capiaumont, Colmar Bosc, glout morceau, and Grumkower winterbirn; and the standard sorts, Nelis d'hiver, beurré Diel, and autumn Colmar.

It may not be uninteresting to add to the account already given of the prize awarded for the fruit of Mùs*a* sapiéntum to Mr. M'Nab, that, under the management of that distinguished cultivator, and with the aid of the spacious new hot-houses liberally erected, two years ago, at the expense of government, no fewer than five species of Mùs*a* have this year produced their perfect fruit; viz. the true banana above mentioned (Mùs*a* sapiéntum); the dacca, which yielded a cluster of 80 fruit, averaging 10 oz. each; the Mùs*a* Cavendíshii; Mùs*a* paridisìaca; and a species from St. Helena (name not ascertained), which afforded a cluster of 80 fruit, the whole weighing 75 lb. Besides these, Mùs*a* coccínea and M. *r*osàcea showed flowers, but they proved abortive. It is a curious fact, that a box containing an ample store of the ripe fruit of several of these bananas was transmitted to the Lord Mayor of London for the banquet given to the Queen at Guildhall. These were calculated to form the most magnificent, and at the same time the rarest, dish of fruit at the royal dessert; but, from what cause is not known, this precious gift was never once noticed in the report regarding the dinner and dessert given in the newspapers. The reporters are not to blame, for they evidently tried to be as minute and accurate as possible; but it is strange that the purveyors of the dessert did not include them in the lists or notes furnished to the gentlemen of the press. Is it possible that the purveyors did not know the fruit? Were they astounded at the sight of such huge, oblong, angular berries? Or were they afraid that their luscious flavour would eclipse the relish of all the other fruits? Did the aldermen of the city not know how to estimate the value and rarity of the Scottish present, or were they slow to believe that anything good could come out of Scotland?

The Tropæ'olum tuberòsum, the tubers of which, when boiled, were found to be "of very delicate flavour, resembling the richest asparagus," may be readily multiplied by cuttings during the summer months. The Portugal cabbage [probably the same as the dwarf Couve Tronchuda, mentioned Vol. II. p. 485.] is allied to the Braganza or Couve Tronchuda, but is smaller and more tender in texture. It was from Archerfield Garden, under the management of Mr. Macintosh. The midribs of the leaves are succulent, crisp, and white. When stewed, they are found equal to sea-kale, or more delicate.

The basket of fresh ginger roots, already mentioned (p. 59.), were fit for preserving, and equal in size and pungency to those from the West Indies; and they were from the stove of the secretary, Dr. Neill, where Mr. Lawson, his gardener, found no difficulty in producing the roots. Two or three shallow pans will afford a sufficiency of roots to fill an ordinary sized jar. They should be taken up and washed whenever the leaves show a tendency to decay.

The plants of the Florence fennel, or finochio (see Vol. VIII. p. 267.), had been raised at the Meadowbank Nurseries, belonging to the enterprising Mr. Chas. Lawson, seedsman to the Highland and Agricultural Society of Scotland, who brought the seeds with him from France. The plants had been earthed up like celery, and the stems were thus well blanched. The *Bon Jardinier* for 1837, under the article "Fenouil d'Italie," merely recommends hoeing, weeding, and watering; but the earthing up is a decided improvement in the mode of culture. It may be remarked, that the seed should be sown late in the season, not sooner than the middle of June. The stems, which are the part used, have sufficient time to swell before the end of October, without the risk of the plant beginning to run to flower, when the stalks naturally become thready and hard. On the Continent, the stems are eaten raw, in slices (*en*

poivrade, or with salt and pepper), like young artichoke heads; but they are good, either stewed entire or sliced, for garnishing and flavouring; and, when cut small, they make an agreeable ingredient in soups. — *P. N.*

Art. V. *The West London Gardeners' Association for mutual Instruction.*

Half-yearly Report.—From this it appears that the meetings began to be thinly attended during the summer months; and that, in the succeeding season, it is intended "that a vacation should take place for three or four months in summer, as during that period it is impossible for many persons to attend. The Society now consists of 81 members.

The subjects which have come before the Society during the half year ending Christmas, 1837, are, the cultivation of the pelargonium; the construction and management of a propagating-house; the cultivation of the mushroom; the cultivation of the orange; the advantages of a classical education; the cultivation of sea-kale; the forcing of roses; the principles of forcing; and the cultivation of the cranberry.

A prospectus containing the rules and aims of the Society has been printed, and by its circulation, it is hoped, many efficient members will be obtained. The Report adds, that "the Society has not received that general support from gardeners that was anticipated," and that it has even "met with opposition and misrepresentation from those from whom better things might have been expected. Independently of these attempts at hinderance, the Society has now stood the ordeal of a twelvemonth's existence. It has sought and received little support, save the presence of its members." The Society solicit the cooperation of those who, if they do not honour the meetings with their presence, might assist the Society with their resources and patronage; "and thus enable its members, and, through their published minutes, the profession at large, to glean from the fields of science and philosophy those elementary truths, which would bear upon and clear up the principles of their profession."—*R. F.*

Meetings, Sept. 18. 1837.—*Cultivation of the Orange.* Mr. Ayres read an essay on the cultivation of the orange, which was generally approved of. He divided the subject into history; propagation; management of trees in an unhealthy state, and management of those in a healthy state; the treatment requisite for plants wanted for embellishment, and the treatment requisite to secure a crop of fruit. Mr. Fish considered the essay was much too long, especially the historical part of it, as being of comparative little importance. He considered that, in cultivating exotics, it was of the utmost consequence to know the circumstances in which they naturally flourished; but all that had been said about the history of the orange failed to impart one idea of the soil, temperature, altitude, &c., in which it luxuriated. Upon the whole, however, he allowed that the essay was the best that had appeared, and that Mr. Ayres had every opportunity of making it such, his father having been a very successful cultivator of the orange. Mr. Caie considered that such strictures would not be serviceable to the Society; contended that the essay was not too long; and added that it was necessary to bring every subject within the comprehension of the weakest mind, by making it as plain and as simple as posible. Mr. Fish explained; showed the necessity of fair discussion; and contended that the more condensed and simple an essay on any subject was made, the easier it would be remembered and comprehended by others; and in proof of this proposition, among other things he referred to the proverbs in our language, which in a single sentence contain a volume of thought.

Mr. Massey contended that the historical part was the best of the essay, as it would induce young gardeners to read themselves, in order to ascertain the validity of the disputed points therein stated; and that he had not known the native place of the dahlia, until, from reading in a book of travels, he found it

was discovered at a place called Dahlia, in Asia Minor. [The dahlia is a native of Mexico, and was named after the Swedish botanist, Dahl. Mr. Massey ought to be called upon to name the work in which he found such a palpable absurdity.] Mr. Keane thought the essay too long, and more bewildering than edifying, in the historical part. He expatiated on the great importance of other parts of the essay; and read a letter from a friend at Versailles, where oranges are successfully cultivated, stating the method of culture and the compost used there. A dispute ensued between Mr. Keane and Mr. Fish as to the advantage of learning to compound composts for different plants. Mr. Russel considered that the orange would grow in almost every description of compost, and that the treatment, in other respects, was of much more consequence; that the heather, though transplanted with its native earth, would not flourish in the marsh, nor yet would the rush luxuriate, though moved with its mud to the mountain's brow. Mr. Caie made a series of remarks upon watering well in summer, pruning the branches, and thinning the fruit. Mr. Stormont advocated having oranges out of doors, as being a great embellishment to a gentleman's residence in summer. Mr. Caie contended that no true taste could be displayed in placing oranges on a lawn as single specimens; that something like unity of expression would be obtained by making a mass of them, and sinking them in the earth to the surface of the tubs; but even then they would not be wholly in unison with the surrounding scenery. Mr. Ayres explained and defended his essay; showed that the historical part was most important; that it was not long enough, as several important particulars had been necessarily omitted; and that he did not doubt that a compost consisting of fewer materials would answer; but he preferred giving one which he knew to be successful. He also stated that he was indebted to his father for most of the practical parts, and to various sources, but chiefly to the *Library of Entertaining Knowledge*, for the historical part; and finally directed attention to the vessels in which oranges were grown, disapproving of slate from its hard ungenial tendency, rendered still more so from being generally daubed over with oil and varnish; and wished to know whether Kyanised wood would, from the corrosive sublimate used in its manufacture, be prejudicial to the roots of plants; as, if not, a great saving would be effected.

Oct. 2. 1837.—*Classical Education.* The principal business of the evening was entered into by Mr. Keane, who read an essay on the advantages to be derived from gardeners possessing a knowledge of the classics. Mr. Keane laid great stress upon the fact that botanic names, &c., were derived from the Greek and Latin; that a thorough knowledge of these terms could only be acquired by a knowledge of the respective languages; and that even the proper pronunciation of the names of plants should be learnt at the fountain head. He allowed, however, that the remuneration at present given to gardeners was not sufficient to encourage them to acquire such attainments; but he hoped that times were fast changing, and contended that a man's mental energies were such, that he had only to put them forth in any given cause, and difficulties would vanish.

Mr. Fish agreed with Mr. Keane in several of his propositions, especially that the knowledge of the classics would be advantageous for ascertaining the meaning of botanic terms; but added that even a pretty extensive knowledge of the classics would not always cure faults of pronunciation, as the Latin language was pronounced differently in the north and south of Britain; and that, altogether, recommending a complete knowledge of the classics was unsuitable for gardeners in their present circumstances, as it would take up time which might be much better employed, the more especially since every gardener could have access to catalogues, where the meaning of every word was given and properly accented. Mr. Fish then proceeded at great length to rebut the propositions which had been advanced in support of the general advantages of a classical education; contending, among other things, that, apart from the beautiful imagery of the ancient poets (but which frequently no

very delicate mind could feel sympathy with), and directions upon rural affairs (most of which are now obsolete), the theme of war was almost the only one on which the classics treated. After numerous similar observations, Mr. Fish took a rapid sketch of the immoral tendency of the classics, and concluded a very able speech by doubting their tendency to fit man for acting a superior part in life. Mr. Russel contended that neither Mr. Keane nor Mr. Fish had kept to the subject; that the essay was not on classical education, but on its utility to gardeners. He considered all knowledge desirable, but would give the preference to that which was self-acquired; and thought that, when a young gardener resolved to master any subject, he would be sure to succeed. Mr. Henry Knight stated that he had not been fortunate enough to receive a classical education; but, if the advantages of it to the gardener consisted in his knowing at a glance the meaning of botanical and scientific terms, then he should say, Get a classical education if possible, if the time required do not interfere with other matters of more importance; but, if the advantage consisted in giving true dignity, delicacy of sentiment, &c., to the mind, then he should say, the less a gardener had of a classical education the better, as, from the translations he had read, so far as he could judge, the study of the classics would have an opposite tendency. After some further observations from Mr. Russel and Mr. Fish, Mr. Stormont contended that the reason why gardeners often appeared so stupid to their employers was for want of a classical education; and made many other observations, which were ably refuted by Mr. Fish. In conclusion, Mr. Keane replied to the objections that had been made to his paper, especially by Mr. Fish, whom he thought selfish in wishing to deny to others the advantages he had experienced himself; and who had been enabled, by the classical education he had himself received to contend with the ability he had done against its becoming general.

Oct. 16.—*Cultivation of Sea-Kale.* Mr. Russel read an essay on the cultivation of sea-kale, stating it had been used time out of mind by the natives on the western shores of England, and that he had seen it in great abundance in a wild state on the shores of the Moray Frith, in the sandy desert called Miveston Sandy Trills, supposed to have been produced by the same inundation which swept away the Earl of Godwin's estate in England; that it was sold in Chichester Market in 1753, and in London in 1767. He first treated on soil and culture, and then on forcing and blanching. He recommended the ground to be deep and dry, as he had traced the roots 7 or 8 feet deep, and found that, in wet situations, the roots are small and soon decay. He prepares the ground by covering it with equal proportions of sand and rotten dung, to the depth of 6 in.; trenches and mixes the soil and the above ingredients 3 ft. deep in the beginning of March; sows the seeds in drills 3 ft. apart; thins out the plants to two in a patch, which should be 18 in. asunder; and blanches and cuts the second season after planting. The blanching he effects by covering each stool with a wooden box, surrounding it with fermenting matter in winter, so as to raise a litte heat, and covering the stools with light earth in spring; he disapproves of coal-ashes, as they give the shoots a rusty appearance. He cuts off all the seed-stalks in summer, unless when seeds are wanted, and advises having large pots filled for putting into mushroom-houses.

Mr. Fish thought that the fact of Mr. Russel tracing the roots to the depth of 8 ft. in dry situations was something like a proof that they went down in search of moisture; also, that the specific name given to the plant, as well as the localities in which it grew, would naturally lead him to imagine that, though the plants delighted in a rich light soil, and would not endure stagnant water, still, like the bulbs which flourished in Holland, they liked water to be within their reach; but that it was a very accommodating plant, suiting itself to various situations. He considered that Mr. Russel's directions as to soil were too general, as, if the soil was rich, it might not require so much dung; if very light, not so much sand; and, if a poor stiff clay, more of both. He detailed a method of blanching by covering the plants with peat moss,

and placing the fermenting matter over it; but stated that the best system of forcing it was, by having the plants established in pits with pigeon-holed walls and wooden covers, and surrounding them with fermenting matter, as was now becoming general for asparagus and rhubarb; remarking that the principal thing was to have the plants short and bushy, and that for this purpose the temperature ought never to be higher than from 55° to 60°. Mr. Stormont defended the transplanting of sea-kale; considered the old system of blanching with pots preferable to boxes; did not see how the applying of the heat to the roots, instead of the top, according to Mr. Fish, would render the stalks more sweet and pleasant. He also defended the use of coal-ashes for blanching; had never seen any bad effects from them, while they could be got dry when earth could not.

Mr. Judd approved of the brick-pit for forcing, but considered Mr. Russel might assist nature without going to the depth of 8 ft.; disapproved of wooden boxes, from their liability to rot; and stated that he had seen the plant flourishing in many diversified circumstances. Mr. Russel explained, and gave a description of an attempt to grow sea-kale in the highest perfection; but which, after employing sea-weed, &c., to a great extent, proved a complete failure; and remarked that many, who were very confident in their own systems, would, perhaps, be less so if they had to bring their productions to the competition of an open market.

Art. VI. *Retrospective Criticism.*

Erratum.— In Vol. XIII. p. 572. line 16. from the bottom, for "Mr. R. Langelier's pears," read "Mr. P. Langelier's pears."

Transplanting full-grown Trees.— We plant a great many small forest trees here; and some large ones, on Sir Henry Steuart's plan, which answers remarkably well. You do wrong in advocating the lopping method recommended by Mr. Monteath; for you will have twenty to one die by this method, more than by not pruning at all at the time of planting. I wish I could sketch trees well; I would then send you an account, illustrated by figures, of our mode of pruning, as well as of transplanting; which, I think, would be of service to your readers. — *James Nash. Arlington Court, near Barnstaple, Oct.* 16. 1837.

The Culture of the Vine in Pots. (Vol. XIII. p. 501.) — Mr. Grey is of opinion that light crops of fruit are more apt to shrivel than heavy ones: my experience leads me to quite a contrary opinion. If a plant does not fully mature its crop when a light crop, is it likely to do so when it is heavy? The heavier the crop, the greater the imperfection, both as to bunches and to colour. With respect to the expanding of the blossoms (see Mr. Grey's paper, p. 501.), I perfectly agree with him, and think that much may be done at the time of colouring, as grapes require a higher degree of dry temperature than is generally given them. I have never observed shriveling to go to so great an extent in early crops as in late ones. How is this? — *W. Brown. Merevale Hall Gardens, Warwickshire, Dec.* 14. 1837.

Mr. Lindsay's Method of propagating the Coniferæ (Vol. XIV. p. 444.) I consider good; but I beg to observe, that I think the summer months, perhaps, the best time for cuttings, as you will observe by the following remarks: — On the 10th of July last, I put in cuttings of *Abies Smithiàna* and Menzièsii, and of *Picea* amábilis, Webbiàna, and grándis, which were beautifully rooted by the 26th of October; by which time the roots were 3 in. long. I have put in cuttings at various periods, but find the summer months decidedly the best. My cuttings were plunged in sawdust in a propagating-house (north aspect), with a slight bottom heat. As the pit had been filled up with leaves the autumn previous, and covered a foot thick with sawdust, I had glass placed over them, with an aperture on the top. — *Philip Frost. Dropmore, Dec.* 10. 1837.

Art. VII. *Queries and Answers.*

A Manure which any Farmer or Cottager can make in any Quantity on his own Premises, and even in the very Field where he may require to use it. — Such a manure is said to have been invented by Mr. George Kimberley, an experienced and scientific agriculturist, who occupies a farm of 500 acres at Trotsworth, near Egham; and it is said that it will be made public through the Central Agricultural Society. (See a letter signed Agricola in the *Morning Chronicle*, Jan. 2. 1838.) Can you, or any of your correspondents, inform me whether there is any truth in this supposed discovery; or whether, like many others of the present day, it does not savour of quackery? — *John Roe. London, Jan.* 3. 1838.

[Before receiving our correspondent's query, we had written to Mr. Kimberley, who politely sent us an immediate answer, consisting of a letter in which he states that the account given of the manure in the public papers (and especially in *Bell's Weekly Messenger* of December 25. 1837) is correct. He also sent us a printed paper, dated from the Central Agricultural Society, in which it is stated that "Mr. Kimberley's method of improvement is entirely owing to the discovery of a combination from the vegetable and mineral kingdoms, which, in a liquid state, contains the essential food and properties of all plants, and may be so varied as to suit all soils. This liquid speedily decomposes all vegetable matter: but the best and cheapest mode of using it is to mix it with mould. This mould, when mixed with the liquid, in the course of a few days is changed to the richest vegetable food for plants, and may be made by the farmer or cottager to any extent, and even on the very field where it is required." This certainly appears a most extraordinary and valuable discovery; and one would almost be inclined to doubt it, had we not Joyce's stove (p. 57.) fresh in our recollection. — *Cond.*]

Effects of the Frost on certain Species of Erica. — Happening to be lately in Kew Gardens, I was much struck with the effects of the severe frost on different species of heath in the open garden. The species, I think, were *E.* stricta, *E.* mediterrànea, *E.* austràlis, *E.* multiflòra, and perhaps some others. In these the branches, both large and small, were bruised and split from nearly the points of the shoots down to the very surface of the ground, as if they had been laid on a board and beaten with hammers. They reminded me of the appearance of beaten flax. The bark was in some cases separated from the wood, but not generally. I have since seen the same appearances in some gardens near London; but never on any other shrub but heaths. I have looked for it in other *Ericàceæ*, and in *Rhodoràceæ*, but without success. Now, what I am anxious to know is, how the splitting is be accounted for in a kind of wood apparently containing very little moisture. I hope some of your numerous readers may have attended to the same phenomenon, and that some of your correspondents who are better acquainted with vegetable physiology than I am, will be good enough to account for it in the Magazine. I have heard of the sugar maple tree splitting in America from severe frost; but I have always fancied that that was owing to the expansion of the saccharine juice, when turned into ice.— I should like to know what Mr. Main has to say on this subject. — *I. B. A. London, Jan.* 25. 1838.

Art. VIII. *Obituary.*

Died, at Stapleford, Herts, on the 28th of December, *Mr. William Griffin*, in the 85th year of his age. He was for twenty-two years gardener to the late Samuel Smith, Esq., of Woodhall, in this county; and author of a *Treatise on the Culture of the Pine-Apple;* also, a paper "On the Management of Grapes in Vineries," published in the *Horticultural Transactions*, vol. i. p. 98. The deceased was a native of Leicestershire, in which county he commenced his business; and, after filling various situations in that and the neighbouring

counties, with the greatest credit to himself and satisfaction to his employers, he arrived at Woodhall, at which place I first became acquainted with him; and, by practising under his direction for some time, I found in him the real man of business, and one who acted the part of a father and friend to all the young men that, like myself, had the good fortune to receive a part of their instruction from him. I believe him to have been a first-rate horticulturist of his day; and, up to the last day of his practice, his anxiety was as great as ever; although his faculties had become somewhat impaired, and, consequently, business was not carried on with the same degree of success as formerly. He had retired to the village above mentioned about four years before his death; which was occasioned by a fall in his bed-room, that brought on inflammation, and that, in eight days, put a period to his sufferings. He has left an only daughter to lament his loss.—*C. J. Jan.* 6. 1838.

Art. IX. *Covent Garden Market.*

From the prevalence of severe frost during the last fortnight, the market has been but indifferently supplied with the general assortment of vegetables usually found at this season; prices have been consequently advanced, but may be considered nominal, as the first change in the weather would immediately affect them.

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbage, per dozen:		
White, large	0 1 0	0 1 6
Red	0 4 0	0 5 0
Plants, or Coleworts	0 3 0	0 4 0
Savoys, per dozen	0 1 0	0 1 6
Brussels Sprouts, per ½ sieve	0 1 6	0 2 6
German Greens, or Kale, per dozen	0 0 8	0 1 0
Broccoli, per bunch:		
White	0 2 0	0 3 0
Purple	0 1 6	0 2 0
Tubers and Roots.		
Potatoes per ton	2 10 0	3 0 0
Potatoes per ewt.	0 2 6	0 3 0
Potatoes per bushel	0 1 3	0 1 6
Kidney, per bushel	0 1 6	0 1 9
Scotch, per bushel	0 1 6	0 1 9
Jerusalem Artichokes, per half sieve	0 1 0	0 1 6
Turnips, White, per bunch	0 0 3	0 0 6
Carrots, per bunch	0 0 5	0 0 6
Red Beet, per dozen	0 1 6	0 2 0
Skirret, per bunch	0 1 3	0 1 6
Scorzonera, per bundle	0 1 3	0 1 6
Salsify, per bunch	0 1 3	0 1 6
Horseradish, per bundle	0 3 6	0 4 0
The Spinach Tribe.		
Spinach, per sieve	0 2 0	0 2 6
The Onion Tribe.		
Onions:		
Old, per bushel	0 4 0	0 5 0
For pickling, per half sieve	0 2 6	0 3 0
Leeks, per dozen bunches	0 0 9	0 1 6
Garlic, per pound	0 0 6	0 0 0
Shallots, per pound	0 0 8	0 0 10
Asparaginous Plants, Salads, &c.		
Asparagus, per hundred:		
Large	0 9 0	0 11 0
Middling	0 3 0	0 5 0
Small	0 1 6	0 2 6
Sea-Kale, per punnet	0 1 6	0 2 6
Celery, per bundle (12 to 15)	0 0 9	0 1 6
Pot and Sweet Herbs.		
Parsley, per half sieve	0 3 6	0 5 0
Tarragon, dried, per dozen bunches	0 1 6	0 0 0
Thyme, per dozen bunches	0 2 6	0 3 0
Sage, per dozen bunches	0 3 0	0 0 0
Mint, dried, per dozen bun.	0 1 6	0 0 0
Peppermint, dried, per dozen bunches	0 1 0	0 0 0
Marjoram, dried, per dozen bunches	0 2 0	0 0 0
Savory, per dozen bunches	0 1 0	0 0 0
Basil, dried, per dozen bunches	0 2 0	0 0 0
Rosemary, per dozen bunches	0 2 0	0 0 0
Lavender, dried, per dozen bunches	0 2 0	0 0 0
Stalks and Fruits for Tarts, Pickling, &c.		
Rhubarb Stalks, forced, per bundle	0 1 6	0 2 0
Edible Fungi and Fuci.		
Mushrooms, per pottle	0 0 6	0 0 9
Morels, per pound	0 14 0	0 0 0
Truffles, per pound:		
English	0 4 0	0 0 0
Foreign, dried	0 12 0	0 0 0
Fruits.		
Apples, Dessert, per bushel:		
Nonpareils	0 10 0	0 12 0
Golden Pippins	0 10 0	0 12 0
Baking	0 2 6	0 4 0
American	0 12 0	0 0 0
Pears, Dessert, per half sieve:		
Colmars	0 12 0	0 0 0
Colmar d'Hiver	0 12 0	0 0 0
Passe Colmar	0 10 0	0 0 0
Baking, per half sieve	0 4 0	0 0 0
Almonds, per peck	0 7 0	0 0 0
Chestnuts, French, per peck	0 4 0	0 7 0
Pine-apples, per pound	0 6 0	0 10 0
Oranges per dozen	0 0 6	0 2 0
Oranges per hundred	0 3 6	0 14 0
Lemons per dozen	0 1 0	0 2 0
Lemons per hundred	0 6 0	0 14 0
Sweet Almonds, per pound	0 2 3	0 3 0
Nuts, per bushel:		
Brazil	0 16 0	1 0 0
Spanish	0 16 0	0 0 0
Barcelona	1 0 0	0 0 0

THE

GARDENER'S MAGAZINE,

MARCH, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 11. THE WIRE-WORM.

AMONGST the most destructive insects belonging to the order of beetles, whilst in their preparatory states, are to be numbered several species belonging to the family Elatéridæ, or, as they are commonly termed, skip-jack or click-beetles, from the peculiar property which they possess of elevating themselves, when laid upon their backs, to a considerable height in the air, by means of an apparatus placed in the breast of the insects, accompanied by powerful muscles, and attended by a sharp clicking sound, when this peculiar motion is performed. It is not, however, in the perfect state that these insects are detrimental to cultivators, but in that of the larva, when several of them are known under the name of wire-worms, not only from their very hard external integument, but also from their long and cylindrical form.

The family of the Elatéridæ is of considerable extent, there being as many as seventy British species. Many of these reside in woods, thickets, and hedges; and their larvæ are found in rotten wood, and are of a more depressed form than the destructive wire-worms; to the genus of which, in allusion to their injurious powers, Mr. Stephens has applied the generic name of Catáphagus, derived from the Greek word *kataphagō*, to devour. (*Illustr. of Brit. Ent.*, Mandibulata, vol. iii. p. 247.) This genus comprises six British species; and it is not improbable that they all agree in their powers of devastation; but it is the typical species only which has been traced through its different states. This is the E'later lineàtus of Linnæus, or the E'later ségetis of Bjerkander, the larvæ of which (*fig.* 9. *a*) are of a fulvous colour, with six very short legs attached in pairs to the first three segments after the head, and scarcely extending beyond the sides of the body, which is composed of twelve scaly rings (exclusive of the head),

the last of which is not notched at the tip (as in the larvæ of some of the species), is longer than the preceding segment, and terminated by a rather acute mucro at the tip, with a deep circular impression on each side of the segment, near the base, on the upper side. These impressions have been doubtingly regarded by Messrs. Kirby and Spence as the only breathing spiracles possessed by the insect; but, as they are not situated in the ordinary place of spiracles in coleopterous larvæ, and as the other larvæ of this family are destitute of them, and, moreover, as the wire-worm possesses a series of spiracles on each side of the body, which Messrs. Kirby and Spence have overlooked, I consider that these impressions must have some other office attributed to them, and that they cannot be analogous to the two spiracles at the extremity of the body of the larvæ of some dipterous insects. The under side of the terminal segment of the body (*fig.* 9. *b*) is furnished with a large fleshy retractile tubercle, employed as a seventh leg, and which, when unemployed, is concealed within a nearly semicircular space at the base of the segment beneath. The larva is very similar in its general appearance to the meal-worm, or larva of Tenèbrio mólitor (*fig.* 9. *c*, the head seen from beneath).

The late Mr. Paul of Starston, in Norfolk (the inventor of the insect-net described in the first article of my series), also succeded in tracing the wire-worm to its perfect state. His specimens were described by Mr. Marsham as the E'later obscùrus, which Stephens gives as distinct, but which Kirby and Spence consider merely as a variety of E'later lineàtus *Linn.*

About the beginning of the present century, these insects were very injurious; when the late Mr. Marsham laid a communication upon the subject before the Board of Agriculture, and likewise published a short note concerning them in the ninth volume of the *Linnæan Transactions*. From these and Bjerkander's statements, it appears that the wire-worms feed chiefly on the roots of wheat, rye, oats, barley, and grass, and that the insect is not less than five years in attaining its perfect state; so that it may easily be conceived that, during so long a period, its ravages must be very extensive. Indeed, from information which I have received, I understand that they are occasionally so injurious as to render resowing necessary. They will also attack turnips (eating to the centre of the root), potatoes, carrots, salads, and cabbages (*Gard. Mag.*, iii. 381.), *Iri*deæ, pinks, lobelias, &c. (*Ibid.*, p. 493.). Mr. Spence, in a note published in the *Introduction to Entomology*, states that they are particularly destructive, for a few years, in gardens recently converted from pasture ground. In the Botanic Garden at Hull, thus circumstanced, a great proportion of the annuals sown in 1813 were destroyed by them.

I have found these larvæ occasionally in the stems of lettuce plants, the interior of which has been completely devoured. They creep tolerably quickly, with a sliding kind of motion, the tail being bent on one side, somewhat like the letter S. Bouché, in his *Naturgeschichte* and *Garten Insecten*, has described a larva, which he states to be that of Elater lineàtus *Linn.* (ségetis *Gyll.*, and striàtus *Fabr.*), but which materially differs from that of the true wire-worm, in being depressed in its form, with the tail forked, and with the lateral margins uneven (*fig.* 9. *g*). His account of its habits, also, does not accord with that given both by Bjerkander and Marsham: indeed, the description and figure which he has given of the larva of Elater fulvipénnis of Hoffmansegg most closely resembles that of the true wire-worm. *Fig.* 9. *f* represents the larva of another of the Elatéridæ, differing in its larger size, and in the shape of the terminal segment of the body.

The pupa of the wire-worm, as described by Bjerkander, is much shorter than the larva, of a whitish colour, and formed like the pupæ of coleopterous insects in general.

Signor Passerini, an Italian entomologist, who has paid much attention to the insects injurious to cultivators, has also published a memoir upon this insect, which, in Italy, commits much devastation on the roots of corn. (*Rapporto sopra l' Opuscolo del Signor Negri sopra il Bruco che devasta i Seminati di Frumento.*)

Of the means to be adopted for the destruction of this insect, none can, perhaps, be more beneficial than that proposed by Sir Joseph Banks, which is not only very simple but very effectual; namely, to stick slices of potato upon skewers, which should be buried near the spots infested by these insects, and examined every day, when the wire-worms, which collect on them in great numbers, may be easily destroyed. From a communication which was, however, made to the Entomological Society of London, on the 7th of November, 1836, by the Rev. F. W. Hope, it appears that laying the slices of potato on the surface of the ground is more efficacious than burying them. Mr. Hogg, also (*Gard. Mag.*, iv. 317.), notices the great service he has derived from laying slices of lettuce on the ground as a bait for the wire-worms. It is not generally known that the mole destroys them in great quantities, and pheasants are particularly fond of them: indeed, I have heard of instances in which the crops of these birds, when shot, have been found to be filled with wire-worms.

In cases, however, in which whole fields are infested with them, it would certainly be more serviceable at once to throw down what remains of the crop, and turn up the earth with the plough several times; when poultry and rooks, which are equally fond of them, will destroy great quantities of them.

Without some such step as this, it would, of course, be absurd to resow the ground with the same kind of grain.

With the view of preventing those mistakes respecting the identity of this insect, and by which it is confounded, not only with others belonging to the same family, but even with insects of totally different orders, it will be serviceable to accompany this notice with more precise figures, both of the larva and perfect insect, than have yet been given, as well as to give the systematic names and description of the latter, which are as follows: —

Order, Coleóptera (Beetles).

Family, Elatéridæ *Leach and Stephens.* (So named from the typical Linnæan genus E'later, which receives its name either from the Greek *clatēr*, a thing which beats like a pulse; or the Latin *elatus*, lifted up; both of which titles are applicable to the group in question.)

Genus, Catáphagus *Stephens* (derived from the Greek word *kataphagō*, to devour). Syn., Agriòtes *Eschscholtz.*

Species, Catáphagus lineàtus *Linnæus* (so named from the brown lines down the elytra). Syn., E. ségetis *Bjerkander*; E. striàtus *Fabricius.* *Fig.* 9. *d*, natural size; *e*, magnified.

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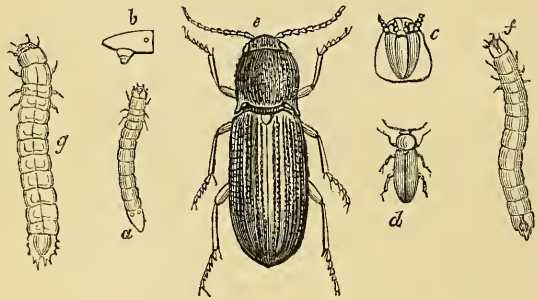

Perfect insect, "fuscous, with a griseous pubescence. Head and thorax blackish; the latter with the lateral margins nearly straight, and the posterior angles very acute; the disc very convex and thickly punctate; scutellum fuscous; elytra broad, a little attenuated, rounded at the apex, very convex, punctate, striated; the striæ disposed in pairs, and united at the apex; griseous yellow, with the alternate narrowed interstices fuscous or dusky. Margins and apex of the abdomen ferruginous. Antennæ and legs rufo-testaceous; the femora sometimes dusky, rather variable in colour, being more or less pubescent or testaceous." (*Stephens*, loc. cit., p. 250.) Length, one third of an inch.

In the ninth volume of the *Linnæan Transactions* is contained a memoir, by Mr. Walford, on a larva supposed to be the wire-worm, but belonging, certainly, to the family of the rove-beetles

(*S*taphylínidæ). This insect was observed to infest the wheat, in its earliest stage of growth, after vegetation had commenced; eating into the young plant about an inch below the surface, and devouring the central part; and thus, vegetation being stopped, the plant dies. Out of fifty acres sown with this grain in 1802, ten had been destroyed by the grub in question so early as October. This larva is quite unlike that of the wire-worm; being depressed, and more of a fleshy consistence, with the abdomen terminated by two long, slender, articulated, hairy filaments. In its habits, however, it bears a much nearer resemblance to that insect; although, in a popular work on insects (*Ins. Transf.*, p. 231.), it is doubted whether the injury in question were really caused by the larvæ observed by Mr. Walford. There can, however, be no doubt that such was the fact, as the larvæ of many of the *S*taphylínidæ, as well as of the *C*arábidæ (including that of the Zàbrus gíbbus, respecting which considerable diversity of opinion has existed, as to whether it was herbivorous or insectivorous), are known to feed upon vegetables, not only in a putrid, but also in a growing, state.

In like manner, the larvæ of two species of *T*ipùlidæ, generally confounded together under the name of the grub, and which are often very prejudicial in pasture lands, by devouring the roots of the grass, and so causing it to die off, have been occasionally described as the wire-worm; probably from their cylindrical form, although the consistence of their bodies is much slighter than that of the latter: and, still more recently, an account has been published in the daily newspapers, of the injuries caused by a larva upon turnips, and of a very successful attempt to destroy them, in which the insect was spoken of as the wire-worm.*

* I am indebted to W. Spence, Esq., for the last above-mentioned notice; and I have introduced it as a foot-note, being in doubt whether the larvæ in question were really wire-worms, or the grubs of A′grotis ségetis, which are exceedingly destructive to turnips, and which, I may here take the opportunity of stating, have been selected as the subject for the next year's prize essays of the Entomological Society. The notice appeared in the *West-Briton*, a provincial paper, during the month of November last; and is as follows: —

"*Interesting to Farmers.* — Mr. George Pearce of Pennare Goran, having been obliged to plough up a piece of ground, about an acre and a half, which he had sown with wheat, in consequence of the wire-worm having nearly destroyed the whole, sowed it with turnips; but, finding that the worms had commenced their work of destruction on that crop, he employed boys to collect them, and at first gave them twopence per hundred. Finding they would pick easily 600 per day, he reduced their allowance to three halfpence per hundred; and they have gathered the surprising number of 18,000, besides what Mr. Pearce and his servants picked up. By this means, Mr. Pearce has saved about one acre of turnips; which, no doubt, would have been completely destroyed. The boys soon found out, by the sickly appearance of the plant, when the enemy had taken possession of it; and, having removed the

Of the ill effects resulting from this kind of ignorance much might be said. I will only, however, remark that, as it must be evident, from the diversity in the habits, times of appearance, &c., of these various kinds of insects, equally various must also be the modes of treatment to be pursued for their respective extirpation, for which the treatment for the destruction of the wire-worm would not be the most efficacious; and, further, that I trust sufficient has been said to show the advantages of obtaining something like an acquaintance with the domestic manners of these obnoxious insects, which it is the especial object of this series of articles to extend as widely as possible.

ART. II. *Conjectures respecting the Causes which produce double Flowers in Plants; together with the Results of some Experiments made with a View to the same Object.* By JAMES MUNRO, Forester to the Marquess of Northampton, at Castle Ashby, Northamptonshire.

OF the various phenomena which Nature exhibits in her economy of the vegetable kingdom, the cause which produces double flowers, and other singular varieties of plants, is, perhaps, least understood by horticulturists. Different reasons have been assigned for the presence of this *lusus naturæ* among vegetables; but, when even these theories have been subjected to a practical test, disappointment has followed.

The prevailing opinion, in earlier times, rested on the theory of contact; in other words, that double-flowering plants were a result from single and double plants of the same kind growing near to each other; an erroneous assumption, that double flowers possess impregnative qualities. Any person, possessing the slightest knowledge of the sexual system of plants, knows that double flowers are destitute of the productive organs; consequently, no seed can be obtained from plants of this description: they are anti-natural, and are occasioned by some infringement of the laws which regulate the vegetable economy. How, then, is it possible that plants thus physically incapacitated for self-reproduction, by seminal process, can influence the character of their neighbours by the mere circumstance of proximity? Besides, the unalterable relation of the order of cause and effect is fatal to this theory; for, if the agency of double flowers is required to alter the quality of single-flowering plants of any

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mould, and picked off the worms, they then returned the mould to its former position. As many as fifty worms have been taken from one turnip."

Mr. Spence adds, upon this fact (so strikingly corroborative of the views as to hand-picking, advanced so often in this series of articles), that, at three halfpence per hundred, the 18,000 cost 1*l.* 2*s.* 6*d.*; a sum well expended for saving an acre of turnips worth from 5*l.* to 7*l.*

kind, the question arises, By what means did such flowers come to exist at first?

Of late years, it has been stated that Dr. Graham of Edinburgh gave it as his opinion, that, in order to have double stocks, it is only necessary to sow and rear the plants upon an exceedingly rich soil, such as the pulverised material of old hot-beds, &c. By this mode of treatment, I suppose it is presumed that the plants shall receive such a surfeit of alimentary matter as will cause a departure from the natural way by which their various organs are formed, and their functions regulated. The high authority whence this theory was said to emanate secured it from me a fair trial; but the experiment failed completely. My after experience points out a cause of treatment the opposite to that of Dr. Graham. I have found that, the more plants intended to save seed from are checked in their luxuriance, the greater is the chance of success. Every florist must have observed that all the stunted-growing kinds of annual stock are more productive of double flowers than are the rambling-growing sorts; and that, in both cases, the proportion of doubles is greater from seed that is saved in an exceedingly dry season, when the growth is less luxuriant. From this and other circumstances which have come under my notice, I think there are grounds for questioning whether the agency of any of the aforementioned theories is in the remotest degree connected with the producing of double blossoms.

The longer I consider this subject, the less I feel disposed to trust in the efficacy either of the theory of contact or of alimentary surfeit; the true cause, I think, is more likely to be detected by properly tracing that striking analogy which subsists between vegetable and animal creation. This analogy is stronger than is generally supposed; and, therefore, if we would arrive at correct conclusions regarding vegetable physiology, we would do well to keep constantly in view the relative position which the subjects under consideration may occupy in the scale of creation. Plants are dependent on air and nutriment as well as animals: they are furnished with numerous organs, suited almost to an animated existence; these are skin, pores, glands, hairs, bristles, flesh, or fibre: they have organs for respiration, with veins and arteries, and a circulating fluid traverses the whole. This fluid is at times held in excess by some trees; when bleeding, or an operation equivalent thereto, may be practised with propriety. Ringing the bark of fruit trees, and shortening their roots to bring them into bearing, are here alluded to; by which process, if a copious discharge is not effected visibly, still a determination of sap to the head is prevented: this fluid adds annually to the bulk and strength of the vegetable structure; which, as with animals, the better it is fed, the better it flourishes. Nor does the analogy stop here:

mutilations may be healed or replaced; wounds and bruises may be cured by applications similar to those remedies resorted to in cases of fractures of the animal frame. Cancerous substances and tumorous excrescences may be excavated from trees as from animals; and counter-irritations are successfully employed by gardeners, many of whom well know the advantage of this process on trees technically termed hide-bound. Slitting open the bark, in such cases, produces effects on trees similar to that of the blister on animals. It has likewise been affirmed that excrementitious matter is emitted from the roots; and scrofulous-looking tumours, on some trees at least, are common.

If due consideration be allowed to all these close resemblances which the vegetable creation bears to the animal, I trust I shall not be thought extravagant in my ideas, if I endeavour to account for the phenomena of vegetable variation by tracing that analogy a step farther, and assign to plants, as in animals, a plurality of fluidal systems. In animals, the different fluids and humours originate in one common source, the blood; in plants, each system seems to have a direct communication with the elements, and in their operations are independent of each other. It is evident, from the manner in which its operations are conducted, that there is one grand system employed in forming the bark, leaves, and woody fibre; viz., the albuminous current: it is also apparent that a separate system exists in plants for the perfecting of the fruit, which may be denominated the seminal fluid; and it is highly probable that these systems are of a compound nature, each, perhaps, furnished with organs for producing the properties of colour, taste, and smell, peculiar to each division. If the progress of vegetation is watched closely, we find that every tree, according to its kind, if raised in the natural way (that is, from the seed), has its whole powers directed to the accumulation of wood, bark, and leaves, for a series of years. Twelve years commonly elapse before the fruit-buds appear on the apple. In form and size, these buds differ so widely in appearance from the buds which produce the annual spray, that the most partial observer must conclude that they cannot be the work of one and the same agent: if it were so, the fruit-buds, of course, would be contemporary with those that produce wood; this is sometimes the case with grafted trees, but never with such as are raised from the seed. If one universal system of fluid in plants (a servant of all-work) is contended for, viz. the albuminous current, how are we to account for its extremely eccentric nature? To suppose that it possesses the faculty of communicating colour, taste, and smell to the wood, bark, and leaves, of a peculiar description, whilst it supplies the flower and fruit with these properties of a totally different description, is preposterous. In its journey through the leaves, the

alburnous fluid must, doubtless, all undergo the same process of elaboration; consequently, must possess a unity of character: the whole mass must be applicable to one purpose only, either for the creation of bark, wood, and leaves, or of flowers and fruit. It cannot be credited, that the same agent that gives to the capsicum stem and leaves the green colour and insipid taste, is capable of communicating the inveterate acrimony of taste to the seed, and high colour to the capsule. For my own part, I can see no way of overcoming the difficulty of accounting for the difference of colour, taste, and smell, held respectively by what I shall here designate as the two grand divisions of the vegetable structure, except a plurality of fluidal systems be admitted. In short, the fact that these properties can be affected by the manner in which a plant is treated, is conclusive: colour, in particular, may be altered by treatment, without interfering with any of the other properties; a fact clearly demonstrative of the independent action of the different systems.

There are many other facts which might be brought to bear upon this interesting subject; and I may particularise the dahlia as constituting a lucid example. Strictly speaking, the dahlia is not a double-flowering plant; still, I affirm that no plant ever introduced into our British gardens has been so rapidly improved. Great are the changes that have been effected in the colour, size, and form of its flowers; still the stem and leaves have kept a uniform similarity, differing but little in appearance since the day of its introduction; a fact clearly proving that one of the grand divisions of the fluidal systems in plants may be affected by foreign influence, without detriment to the others. The improved condition of the dahlia, in regard to its flowers, I do not consider to be a consequence either of contact or of alimentary surfeit; but that it owes its origin to treatment in accordance with the theory herein contended for. Competitors at dahlia exhibitions, from observation, have learned the propriety of preventing an excessive bloom on their best sorts, seldom permitting more than three or four of the flowers to expand. By this means the sphere of the seminal fluid is curtailed, and the excess thus produced, acting upon a concentrated field of operation, undoubtedly causes the departure of the progeny from the habit of the parent: whereas, if the whole of the flowers which appear upon a plant were permitted to expand successively, the seminal fluid would then be equally distributed, in such proportion to each seed as would accomplish the intentions of nature; namely, consentient reproduction. The following experiment, performed by me some years since, is so strongly corroborative of what is here advanced, that I cannot resist giving it in brief detail.

At that period, I had a quantity of single scarlet ten-week stocks. Impressed with the belief that my theory was worth a trial, I selected a number of the plants; and, as soon as I observed five

or six seed-pods fairly formed on the flower spike, every succeeding flower was pinched off. From the seed saved in this manner I had more than four hundred doubles on one small bed. Whether this success was in consequence of my mode of treatment, remains to be proved by future experiments; yet I cannot help thinking that it was; and that, if I had left fewer seed-pods on the spikes, the proportion of double plants would have been still greater.

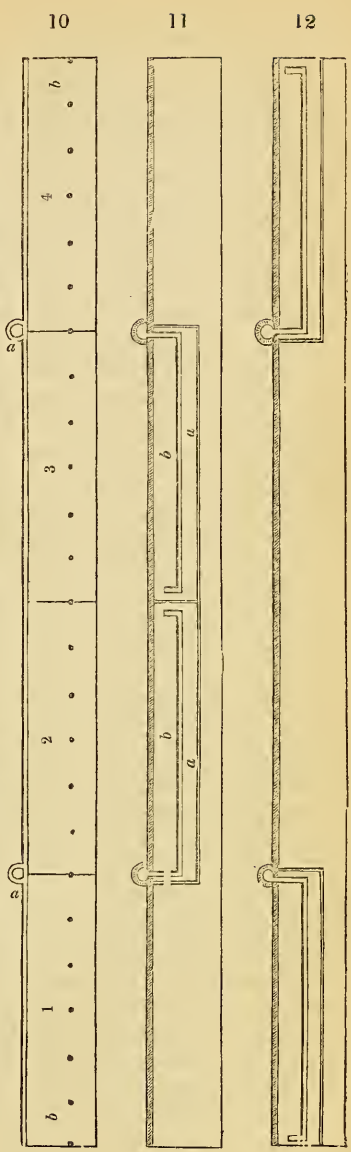
In conclusion, I shall instance one or two more facts in favour of this theory, which are acted on almost every day: I allude to thinning of grapes, peaches, and other fruits; a process whereby the quality of fruit is much improved, while the woody part of the plant is not visibly affected. If the albuminous current were alike the source of woody fibre and fruit, any operation tending to produce immediate improvement on the one would, as a matter of course, be observable on the other: this, however, is not the case. Again, when a tree shows any decided determination to fruit-bearing, little or no spray-wood is made; on the contrary, when an inclination to wood is exhibited, fruit is less plentiful: circumstances clearly proving that in vegetables there do exist two principles, and, to a certain extent, opposed to each other. It is in consequence of the contention of these principles, that practical men resort to ringing of the bark, shortening of the roots, &c., as remedies bearing the sanction of experience, for counteracting any ascendency which the one may have obtained over the other. I shall only add, that the experience which I have had of the working of this theory has determined me to resume my experiments on the first opportunity, the results of which shall be faithfully communicated.

Castle Ashby, Dec. 1837.

ART. III. *On portable glazed Structures.* By N. M. T.

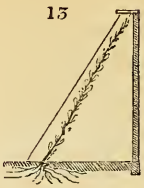
WHEN speaking of portable glazed structures in a former communication (Vol. XIV. p. 443.), I disclaimed all pretensions to the ornamental; and those I am about to propose would best suit gardens where an abundance of excellent fruit is every thing, appearance nothing. I will not at present attempt to describe all the structures that would be necessary in a large establishment, but merely give an example sufficient to show the principle; leaving every one to adapt it to his own circumstances.

In every case, it will be necessary to have an extent of south wall capable of producing the quantity of fruit required for the service of the family. Suppose, then, a wall of any extent, divided into equal lengths, say of 60 ft. each (*fig.* 10.);



and a boiler placed between every alternate division (*a a*). Along the whole length of border, a line of strong oak posts (*b b*), placed at a given distance from the wall, and sunk level with the soil, would form a sufficient base to hold a sill, or plate, upon which to secure the rafters that may be fastened to the wall at top in the same manner. Such a foundation to a forcing-house would not interfere with the roots, but allow them the full scope of the border. In the present example (*fig.* 10.), Nos. 2. and 3. would be the first forced divisions, and Nos. 1. and 4. the last: they must therefore be planted with sorts to suit accordingly. The houses, in the first instance, would be placed together, as in *fig.* 11. *a a*; and heated by pipes (*b b*). When the forcing of these divisions is finished, the glass and pipes must be moved to Nos. 1. and 4., which must be exactly like the last: the houses would then be placed as shown at *fig.* 12. The first forced trees or vines would be greatly benefited by being fully exposed to the weather; while the late ones would be enabled to perfect their crop of fruit, and provide a supply of well-ripened wood; a cure, in my opinion, for almost all the ills that trees are heirs to. The vines may be planted and trained as shown in the sections, *figs.* 13, 14.; so that they may reap the benefit of the wall when not under glass. A few of these houses would produce a great quantity of fruit; double the quantity afforded by those in present use.

Whatever number of houses may be deemed necessary in any



establishment, they ought to be in every respect alike, so that the rafter, sash, or house, that fitted one place, might fit all. The reason for this is obvious, when we consider that the fruit, in many cases, requires protection, long after fire heat is unnecessary. In such cases, the pipes might be moved to the late division, and a house probably spared from another part of the wall. Such houses would, also, require to be formed of the best materials, the best workmanship, and made to fit accurately: this would render their removal safe and easy.

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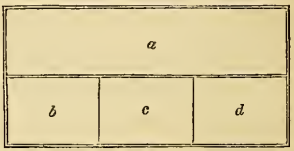

Were a number of such houses in a garden, they could not, in the first part of the season, be all employed in forcing grapes and peaches: but they need not be a moment idle; they may be employed in forwarding and protecting in many ways. *Fig.* 15. shows a compartment in the kitchen-garden, 60 ft. by 30 ft., planted with asparagus (*a*), rhubarb (*b*), sea-kale (*c*), truffles (*d*), and with boxes of potatoes (as shown in the section, *fig.* 17. *e*), and mushrooms (*f*). The side (*a*) next to the wall must be covered with the glazed sashes from a division of the wall; the other side (*b c d*), with wooden shutters, painted black, and working in rafters, the same as the sashes. The whole may be heated by pipes up the centre (*g*). When it is considered that all these vegetables are enjoying their natural position in the soil, their roots unscorched by flues, I venture to say that no structure of the present day, heated by one fire, could equal it. When the vegetables are all gathered, the pipes and glass part of this structure may be moved to the next division of the wall, and the forcing recommenced as the fruit may be wanted in succession. We have now the boarded part of this structure to deal with; and I would not allow even this to remain idle. If a row of cleft posts were placed between a double row of espalier cherries, the shutters laid lengthwise upon single brickwork, raised 18 in. above the surface, it would form upwards of 200 ft. of wall 6 ft. high. The north and south borders of this wall planted with strawberries, and the whole covered with a net (*fig.* 16.), would form no contemptible supply of superior fruit. There is, in fact, no end to the purposes to which such things might be applied; and an astonishing produce might be reaped from a very small garden, with plenty of such means.

To show with what facility such structures may be adapted

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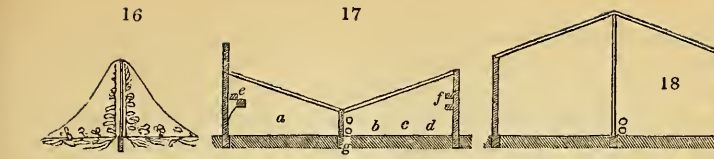

to almost any purpose, let us suppose the piece of ground 60 ft. by 30 ft. (*fig.*15.) separated from the kitchen-garden by a cross wall, and the space planted with camellias, oranges, or a mixed group of exotics, requiring protection in winter or assistance in spring: in this case we need only provide a double row of posts to support the front and centre; secure them in cast-iron sockets, sunk a few inches lower than the surface, to admit of covers being put over them, and covered with soil when the posts are withdrawn; put the wooden shutters to face the north, the glazed sashes to the south; and we have the house *fig.* 17. inverted, forming a span-roofed house (*fig.* 18.), 30 ft. by 60 ft., capable of sheltering a great many plants. A house upon the same principle, but lower than the accompanying section, would produce the finest display of heaths ever assembled in the open ground: by undulating the surface of the ground within the said limits, habitats might be formed for a numerous class of the beautiful Orchídeæ.

Minor structures, for protecting plants, may be made to suit the objects requiring protection: this would necessarily create forms

> " That might be worship'd on the bended knee,
> And still the second dread command kept free."

It would therefore be needless to attempt to describe them; but, in their erection, I should always bear in mind that they should only be detached parts of a perfect whole; so that the glass that, in winter, protects a group of exotics, a bed of Orchídeæ, or even a single object, may, in summer, form part of a forcing-house, or of a range of melon-frames. Thus, glass would always be usefully employed, not a day of its duration lost; and all the effect produced by the winter protection would cost comparatively little, as the glass would probably be lying idle, or sheltering a few miserable objects in pots.

For half-hardy plants, I much prefer having two or three sides of the upright post of the structure formed of close basket-work; this throwing off the rain, and at all times maintaining a perfect ventilation, the interior soon becomes a fit habitation for plants during the foggy humid months of winter. If these structures are boarded, or formed of close materials, all round, they require constant attendance; and, scattered over the grounds as they necessarily must be, they occasion much trouble, and are apt to be neglected, even in the best regulated establishments. The open-sided structures require nothing from the time that they are erected until removed, except the addition of a few mats, in

cases of severity: here I speak from experience, having several here that answer admirably.

I cannot see any possible objection to such a system. The proprietor cannot startle at the expense, because it would be cheaper; nor the gardener at the trouble, for it would be infinitely less. Were the system once established, it would be as easy for him to hook his sashes upon the frame of a clump, as to lumber them up in a shed; while the beds that he is now obliged to furnish annually would be permanently filled with plants that are now existing in the green-house. The great thing wanted is a spirited individual to set the example. Were the subject once fairly under discussion, something infinitely better than what I have proposed would be the result. In the actual erection of such houses, many improvements would suggest themselves that cannot possibly be imagined by the mere theorist. It would have been presumptuous in me to have occupied your pages with a minuter detail, or a working plan; but I would most gladly furnish such, with an estimate of the expenses, and all the information I am able to give, to anyp erson that mayfeel disposed to give them what I think they so richly deserve—a fair trial.

Folkstone, Dec. 29. 1837.

[The author of this excellent paper, a gentleman's gardener in Kent, has sent his address, which we shall be happy to give to any one who wishes to correspond with him on the subject of the above communication. We should also be glad to hear the opinion of other practical gardeners on the subject.—*Cond.*]

ART. IV. *Notice of a hollow Brick Wall for Gardens.* By J. D. PARKS, Nurseryman, Dartford.

HOLLOW walls are generally built with bricks on their edges, and tied at every 9 in., thus forming a 9-inch wall, with one rough and one smooth face; but the plan I am about to propose is, to form a 14-inch wall with two smooth faces, of the same materials as would be used in a solid 9-inch wall. This plan is, to have the bricks made for tying 14 in. long, in lieu of 9 in.; which, I believe, can be done by the maker paying an extra duty in proportion. Instead of placing the bricks on their side or edge, they are laid flat, in the manner of two 4-inch walls, leaving a cavity between them, to make the width 14 in. altogether. The tie-bricks have been thought necessary at every third or fourth course, leaving apertures at the top and at the bottom of the wall, in a few places, for the air to pass. A wall thus constructed will have the following advantages: by being hollow, in place of one bearing, it has two, which will be a means of its standing more firmly; it is stronger, and requires no projections to strengthen it, as in a 9-inch wall; it is lighter at top than a solid wall; and it has two smooth faces for nailing, &c.

Perhaps it would be better to scatter a few tie-bricks in every course. Would the apertures in a garden wall so constructed tend to reduce the heat which would be given out by a solid garden wall at night, to the advantage of the trees?

The plan of this wall originated with Mr. Wm. Denyer, market-gardener, at Battle, Sussex, and late gardener to Lady Webster of the same place.

Dartford Nursery, Dartford, Dec. 9. 1837.

ART. V. *On glazing Hot-houses, Pits, Frames, &c.* By A. FORSYTH.

HAVING lately examined the glass roof of an ill-constructed new green-house, I found nearly one half of the glass more or less cracked by frost. The laps of the glass, not being filled with putty, allowed the water to lodge there; and, as soon as frost congealed the water into ice, the squares of glass cracked by the expansion of the water in the process of freezing. That frost breaks glass in this manner, gardeners generally are well aware of; yet, so recently as 1836, and in the very suburbs of London, I met with unbelieving brethren, even on this important point, whom I undeceived by calling their attention, one frosty evening, to the metallic roofs of some unprotected cold frames; when the sound of breaking, and the sight of the broken squares, satisfactorily convinced the most sceptical. Now, to prevent this great and unnecessary expense in repairing, and also to prevent cracks in the glass, which always let in water more or less, either the inside temperature must be so high (as is the case with stoves), that the water between the laps of the glass may not be allowed to freeze; or the laps must be rendered water-proof; to accomplish which, in a manner at once cheap, simple, and satisfactory, I propose the lap shown in *fig.* 19., and which is to be

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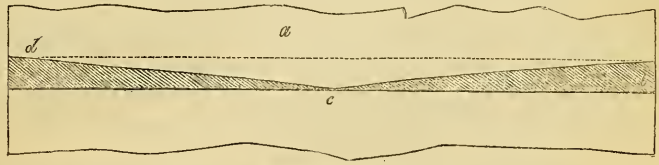

Breadth of lap three eighths of an inch.

a, Upper edge of lower square.
b, Lower edge of upper square.
c, Lower edge of paint.
d, Upper edge of paint.

puttied and painted. The sashes are glazed with rectangular quarries of glass, overlapping each other about three eighths of an inch, with the space between, grouted with soft putty, in the usual way; then, in painting, instead of doing all the putty except that which stands in greatest need (viz. that between the laps), let the joinings of the glass, both the under lap and over lap, be carefully painted; but, in doing the upper lap, let the upper edge of the paint run in the direction of *d c*, thus carrying

all the water down the centre of the squares. By this it will be seen that the joinings, or laps, thus channeled and cemented, instead of being the weakest and most liable to crack, become the strongest part of the quarry, and act like so many cross bars to strengthen the body of the glass. In the *Encyclopædia of Gardening*, there are eleven cuts, and nearly three pages of letterpress, on popular systems of glazing, adapted to all grades, from the one-light box glazed with fragments, to the productions of architectural talent where the patent sash-bar is glazed with plate glass and Stewart's copper lap, forming princely conservatories, adapted to the culture of the lofty banana. Yet, notwithstanding this patronage, and your high encomiums on the copper-lap glazing with a hole in the centre, I beg leave to differ in opinion, and that for the following reasons:—When a temperature of 70° (with moisture, and occasionally smoke) has to be maintained in a stove, whilst the thermometer ranges about midway between the freezing point and zero, all ingress and egress, either through lap-holes or loopholes are out of the question. The least hole, or even crack, in a hot-house roof is certainly injurious in the culture of exotics; a few drops of water, drifted in during a storm, often destroy bunches of grapes. Besides, hot air being of less specific gravity than cold, naturally seeks a higher level through every cranny; and it is a small cranny indeed through which this subtle element will not pass. Yet, in the face of all this, there are unobservers who prefer open unputtied laps, and holes at the lower corners of their peaked squares; not calculating on the impossibility of maintaining artificial summer weather under a hot-house roof with holes in it, on a windy wintry night. I have had to maintain high temperatures in stoves constructed with metallic roofs, and peaked panes of glass with Stewart's lap and opening; and I have also had to maintain it in stoves roofed with closely puttied laps of glass, wooden sash-frames, and cast-iron rafters. In the former case, unwearied attention could not even come near the desired end; for no sooner was a genial moist heat raised, than it escaped through holes and crannies; and, in the latter, it was maintained with accuracy and comparative ease.

Alderley, Chester, Oct. 19. 1837.

ART. VI. *Minutes on the Method adopted by Robert Turner, Esq., Surveyor of the New Forest, in raising and protecting Oak Plantations.* By T. DAVIES of Warminster, and Y. STURGE of Bristol.

THE New Forest contains about 66,000 acres, of which about one half is, more or less, covered with timber. The officers are called on to supply 500 loads per annum of oak timber to the royal dockyards; besides which, about 200 loads are yearly felled for other purposes. Hence are also supplied very extensive

annual warrants of beech wood for fuel to the owners of adjacent estates, claimed by custom or prescription.

The crown has the right of fencing in and keeping enclosed any part of the forest, not exceeding 6000 acres at any one time; but much of the land lies exposed, being barren or boggy, and not adapted to the growth of oak; although it is probable that Scotch pines and pinasters would succeed in great part of such land, if it were enclosed, and the bogs and wet places previously drained. Considerable plantations of oak were made towards the end of the reign of King William III., and in that of Queen Anne, which are now fit for naval purposes, many of the trees containing two loads, or 100 ft., of timber each. From that time down to about the end of the last century, but little was done to improve the forest; and, as there is scarcely any undergrowth in the open ground, very few young trees are to be seen growing up spontaneously. Enclosures are therefore necessary to obtain a succession of timber; and good judgment is requisite in the selection of proper pieces of land, and in such an application of them as shall best promote the great national object of a regular supply of oak timber for the navy.

The attention of the Commissioners of Woods and Forests appears to have been especially directed, for the last twenty years, to the state of the timber in this forest; and several thousands of acres have, within that time, been enclosed expressly for the purpose of raising oaks.

Where the land was considered generally proper for the growth of oak, plantations of from one hundred to five hundred acres each were made in various ways.

First, by merely enclosing the land, to preserve from injury such oak saplings as sprang up spontaneously. Of these (which were not very numerous) great part are now short and scrubbed; and there are vacant places of considerable extent throughout the enclosures.

Secondly, by planting young trees; viz. some seedlings, with every tenth plant an oak of five years old; some in alternate rows, with Scotch pines; others, with every tenth a Scotch pine; some raised from acorns, and some wholly oak plants of five years old.

Of the oaks thus planted, particularly the seedlings (which were soon overpowered by the long grass, &c.), many died, and were replaced by others, which met with a similar fate. Those which lived (principally the five-years-old plants) continued many years in a stunted and scrubbed state, and so still remain, except in a few places where the land is of superior quality, and where they were mixed with the Scotch pine; but the progress these have made is, *cæteris paribus*, much less than by the system after mentioned.

In considerable spaces of these enclosures, deemed unfit for the principal object of raising oaks, Scotch pines were planted, 4 ft. apart, to fill up the ground. This introduction of pines into an ancient oak forest was strongly objected to by men of taste, and all the neighbouring gentry; but it has proved the means, under Mr. Turner's management, of raising fine oak plantations, even on land heretofore considered incapable of growing oak. The system by which this effect has been produced may be reduced to the principle of *giving the young oak trees warmth and shelter*, by using the pines as *nurses*, competent to protect them from the ravages of frosts and winds. The mode of the application of this principle is, to plant oaks of five years old, in plantations of Scotch pines or pinasters of six to twelve years old (about 10 ft. or 12 ft. high, and 4 ft. apart), in the place of alternate rows of the pines, cut out to admit them.

In the second year after planting the oaks, some of the pine branches are roughly cut away. In the third or fourth year (according to the growth of the trees), some of the pines may be removed by taking out alternate trees; and, two or three years afterwards, by removing alternate rows. This thinning is to be repeated, with caution, until the oaks have attained sufficient strength and height to do without their nurses; which will probably be in about ten years, when the oaks will be about 20 ft. high; but care must be taken to preserve a belt of pines on the outside of the plantation, to serve as a screen from the prevailing winds; and, also, in large plantations, to leave intermediate lines of pines across the direction of such winds. The outside belts are ten rows in width (4 ft. apart), and the cross lines five rows. Similar belts and lines, in old plantations of oak, across the prevailing winds, will much assist their growth: in valleys, lines of pines are planted across from one hill to the other, to break the force of the current of wind up or down the valley. A few of the pines, stripped of their under branches, are also suffered to remain, scattered over the body of the plantation, as a permanent shelter thereto.

When a row of pine trees is taken away in the latter thinning, the surveyor of the forest plants oaks in their places, to prevent the larger oaks from throwing out lateral branches, or spreading too much in the head; and to draw them up into straight handsome trees, without pruning. As these oaks advance in size, they will, of course, require to be timely and judiciously thinned.

The following are a few observations which occurred in viewing the plantations where this system has been adopted.

Besides the advantage of shelter, the pines have the effect of loosening the soil for the roots of the young oaks; and it is argued, by some, that the pine roots act chemically in preparing the land for the growth of oak. In pine plantations, now six-

teen years old, where the oaks have been planted six years (or eleven from the acorn), they are now from 12 ft. to 20 ft. high; the pines here having been reduced to the distance between the trees of about 20 ft. from each other. In another pine plantation, with oaks planted four years, every alternate row of pines is now being cut down. In another, the oaks planted three years are 7 or 8 feet high, and the plants are strong and flourishing. In another, the oaks planted two years ago (in a pine plantation, then thirteen years old, and 15 ft. high,) are thriving well; though the branches of the pines nearly meet over them. In another, holes are made for planting oaks next February, where the pine plantation is twelve years old, *but of slow growth.* In a fast-growing plantation of pines six years old, a like preparation is made for oaks. Some of the pine branches are lopped; but no trees will be removed till the following year.

In a plantation made on *the old plan, twelve years ago,* the oaks are bushy, and not half the height of those planted among the pines *six years ago;* although the land is equally good.

The general result of this improved method of planting, compared with the old mode, is, that *the oaks attain double the growth in half the time,* besides being much finer and better-formed trees; and there does not appear to have been a failure of one plant in a hundred. It is now about seven years since Mr. Turner commenced this system of planting oaks in the New Forest; and it has since been introduced, under his superintendence, into some other of the royal forests.

The following directions, with respect to planting, pruning, &c., as practised in this forest, were communicated by the surveyor: —

Sow the Scotch pine and pinaster seed in March or April; transplant them the first year close together (about 100 plants in a yard), in rows 1 ft. apart: to be transplanted the second time 4 in. apart in the rows. The Scotch pine is sometimes transplanted but once, but better twice; the pinaster should be transplanted every year: these will be fit to plant out at three years' growth; the Scotch pine at four years'.

Sow acorns in February, in ground trenched a foot deep; transplant them in the following February or March, 6 in. apart, in rows 15 in. asunder; cutting off the taproot, but trimming the other roots only where injured. The oaks may then remain three years till planted out.

In forming the plantation, the pines may be put in with a planting-spade. Two men can thus plant 600 in a day.

The oaks should be planted in holes dug 18 in. deep (but partly refilled with the loose earth) and 18 in. square. The cost of digging these holes is from 1*s.* to 1*s.* 9*d.* per hundred, according to the nature of the soil.

The best season for planting the oaks is in *February:* this is also a proper time to plant the pines, except in dry soils, for which November and December are better.

The pinasters make as good nurses as Scotch pines, and will grow better in wet land. They will also thrive better than any other kind of pine, in very exposed situations on the sea coast.

Sweet chestnuts thrive well, both in the seed-bed and in plantations, under the same system as the oak. The best seed is imported from France.

All wet land should be properly drained before it is planted. The forest drains are *open*, 2 ft. wide and 2 ft. deep, and cost 4*d.* per perch. The drains must be kept well cleaned.

The pine trees must not be pruned till about March, for the benefit of the *oaks*, which should *first receive air in the spring.*

The oaks, under this system, will require but little pruning. If they grow well together, nature will do it best; but in forked or branching trees the judicious use of the knife will be beneficial.

In closing these minutes, praise must be given to Mr. Turner for the free and liberal manner in which he affords his valuable information to those gentlemen who feel interested in the subject.

[The above minutes were made in the year 1827, and some copies of the article lithographed and circulated. Considering it of great practical value, we applied to Mr. Davis for permission to insert the paper in this Magazine, which, as far as he is concerned, he very kindly granted. The very superior management of Mr. Turner has frequently been mentioned to us by Mr. Page of Southampton; and we have often wished for an opportunity of making it known to the public. We are informed by Mr. Milne, one of the Commissioners of Woods and Forests, that the same practice as that described above still continues to be carried on in the government plantations of the New Forest; and Mr. Milne has recently recommended it for adoption, to a nobleman who applied to him to know what government had found from experience to be the best method of raising oak woods.—*London, Oct.* 1837.]

Art. VII. *Remarks on the annual Layers of Trees; with the Measurement of the annual Rings of a Larch planted in* 1811. By A. Gorrie, F.H.S., C.H.S, &c., Annat Gardens, Perthshire.

I have uniformly observed that the thickness of the annual deposit of wood, in most forest trees, was exactly in proportion to the healthy foliage of such trees; and, if the balance of branches

were predominant on one side, whether that tree stood singly in a lawn, in the middle or at the side of a forest, and whether that side where the branches so predominated faced the east, the west, the north, or the south, the annual deposits I have always found broadest directly under that side best clothed with branches, and narrowest directly under that side of the tree where the branches above were most scanty; giving room to infer that the descent of the sap is partly affected by gravitation.

The following table shows how the growth of the larch is affected by a proper supply of moisture. The tree grew in an open dry soil. The second column shows the breadth of annual deposit of wood in decimals of an inch; and the third column, the depth of rain which fell from April to October inclusive, in inches.

Years.	Wood.	Rain.	Years.	Wood.	Rain.
1819	·5 in.	16 in.	1826	·2 in.	7 in.
1820	·3	14	1827	·31	18
1821	·18	12	1828	·41	16
1822	·2	15	1829	·4	19
1823	·5	21	1830	·37	18
1824	·3	13	1831	·2	16
1825	·31	13			
			Total	4·18	198

Annat Cottage, Jan. 13. 1838.

Art. VIII. *Remarks on a few Ornamental Trees which are at present growing in the Neighbourhood of Ripon, Yorkshire.* By William May, Nurseryman, Ripon.

In the grounds at *Pickhill*, lately in my occupation as a nursery, is a purple beech, which, at 4 ft. from the ground, girts 10 ft.: its height is about 35 ft.; and it is completely feathered to the ground. In spring, it forms one of the most superb objects that can be imagined: the diameter of the space covered by its branches is equal to its height. The next is a Turkey oak, the girt of which, at 4 ft. from the ground, is 10 ft.; its height is about 40 ft.; and it is also feathered to the base; having splendid limbs, sweeping the ground over a circumference of 120 ft. A striped-leaved oak, at 4 ft. from the ground, girts about 5 ft: its height is 20 ft. This, in summer, is a beautiful object; its leaves being variegated with white and green, tinged with pink. These trees are supposed to be about 95 years old, and to have been planted at the time this nursery was first established: three objects more magnificent, in the season of foliage, cannot be imagined. The purple beech and the Turkey oak stand singly: the striped oak is among other trees; but all are very conspicuously situated. These trees cannot be too highly

recommended for planting in situations where they will stand singly as ornamental objects; for which purpose they are well adapted, on account of their elegant and magnificent habit. Too much cannot be said in their favour for such situations: yet how seldom do we see them! There may be some examples larger than these; but none can be more perfect specimens of their several kinds, particularly the Turkey oak and purple beech.

At Newby Hall, the seat of Earl De Grey, are several fine specimens of *P*látanus occidentàlis, which I believe to be superior to anything of the kind in this country. Their girt, at 4 ft. from the ground, as near as I now recollect, is about 9 ft. (not less); and their height, I should say, from 40 ft. to 50 ft. These are situated near the mansion, which renders them very attractive objects. In the same grounds is a collection of American varieties of oak, of about 40 years' growth, and of a size much larger than anything of the sort I am acquainted with. Their height may be about 30 ft., and their girt in proportion: they are now apparently in the zenith of their growth. There are, also, some of the rarer species of *Æ*sculus: one of *Æ.* flàva, a fine tree, standing singly on the lawn, flowers beautifully in May. Its height may be about 15 ft.; and it is well furnished with lower branches. Of Magnòl*ia* tripétala there are some fine specimens, about 10 ft. high, which bloom freely, and are very conspicuous in the season; as are some fine old specimens of *R*hododéndron pónticum (true variety), one of which is 20 ft. high, with branches which sweep the ground over a circumference of 40 ft. When in bloom, it is an object indescribably splendid, being one complete mass of purple flowers. The present countess is a great amateur in trees and plants, and is adding many new and good things to these already well-furnished grounds.

At Scruton Hall, the seat of Mrs. Coore, are some of the largest cedars of Lebanon in this country. For size and beauty, nothing I have seen in the least approaches them. There is a clump of ten or twelve of them together, the average height of which will be from 30 ft. to 40 ft.; and their girt about 6 ft., with clean straight boles for 20 ft. high; a circumstance which rarely occurs with the cedar of Lebanon.

Hope Nursery, Leeming Lane, near Ripon, Jan. 28. 1838.

ART. IX. *On the Cultivation of Broccoli, and Borecole or Scotch Kail.* By A. FORSYTH.

BROCCOLI. — In order to be concise, and also that readers may have confidence in what I advance, I shall copy from my notebook the selection of sorts, and the system of culture adopted, by

a very experienced cultivator (my respected friend Mr. Charles Dowding), ten miles from London; whose supplies of this article, throughout the autumn, winter, and spring, were most satisfactory. The seeds were furnished by Messrs. J. and A. Henderson, of Pine-Apple Place, Edgware Road, London; with the exception of one sort, for which Mr. Dowding had no name, and which he carefully preserved from contamination, by rearing his supply of seed in a select spot, remote from the blossoms of the whole *Brássica* tribe. I have elsewhere heard of one exactly tallying to my description of this kind of broccoli, which I take to be the same; viz. Miller's broccoli (Miller of Bristol, I presume). The full-grown plant is about the size of one's hat, producing beautiful white heads, as large as two clenched fists, in May; and even much later, when reared under the shade of a north wall. I should be glad to see this variety in more general cultivation; as it requires so little room, that a perfect specimen may be reared on a square foot.

Quantity of Seed, and Time of making Sowings. About half an ounce of Grange's early white, and half an ounce of early purple Cape, having been sown in March, one ounce of each of the following sorts was sown the first week in May: — close-headed early purple Cape, Knight's protecting, imperial late white winter, new early sprouting, Portsmouth, early white Malta, Grange's early white, new hardy Cape, and Miller's.

For the manner of sowing and transplanting, see the article on white cabbages in Vol. XIII. p. 358. Mr. Dowding neither pricked out, nor in any way protected, his broccoli plants, but sowed in an open compartment very thinly; and, when the plants were about 4 in. high, had them transplanted into well-manured soil, keeping them well watered till they became established and began to grow. The plants of all the varieties, when transplanted, may stand 30 in. between the rows, and 18 in. apart in the rows, with the exception of Miller's, which should stand 15 in. by 9 in.

Borecole, or Scotch Kail. — Two ounces sown in March, and two ounces sown in May (for the manner of sowing and transplanting, see white cabbage, Vol. XIII. p. 358.), and when about 4 in. high, transplanted into any ordinary open compartment, in rows 2 ft. by 1 ft., will bring succession enough for a spring supply, the only season this article is in request near the metropolis.

Isleworth, Feb. 1837.

ART. X. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary*

to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, new series, each containing six plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Maund's Botanic Garden, or Magazine of Hardy Flower Plants cultivated in Great Britain; in monthly numbers, each containing four coloured figures in one page; large paper 1*s.* 6*d.*, small 1*s.* Edited by B. Maund, Esq., F.L.S.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo, large paper, 2*s.* 6*d.*; small paper, 1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

Paxton's Magazine of Botany, and Register of Flowering Plants; in monthly numbers; large 8vo; 2*s.* 6*d.* each.

Lindley's Sertum Orchidaceum, &c.; in parts, folio, 1*l.* 5*s.* each. Part I. January, 1838.

RANUNCULA'CEÆ.

1600. *ACONI'TUM*
*chinénse *Sieboldt* Chinese ♃ △ cu 4 s B China 1833 R co Paxt. mag. of bot. vol. v. p. 1.

Leaves alternate, nearly sessile, partially divided into 5 unequal lobes, somewhat trapeziform, acute, deeply toothed; the upper surface of a deep green, assuming, when old, a purple cast; the under surface of a very light green. This new and highly ornamental species of *Aconitum*, a native of China and probably also of Japan, was introduced by Dr. Von Sieboldt, about 1833. "It is remarkably bold and handsome in its habits, and the flowers are very large, and of a most beautiful blue colour; the terminal flowers expand first, and shortly after a great number of flowers are produced from the axil of every leaf, on short lateral shoots, even down to the base of the stem; which gives it a very interesting appearance. It remains in flower about two months, and will, no doubt, prove perfectly hardy. It is of very easy culture, and, from its ornamental character, is well adapted for the flower-garden. It ripens seeds freely, and is also easily increased by division of the roots." There are plants in the Epsom Nursery. (*Paxt. Mag. of Bot.*, Feb.)

Hypericàceæ.

2190. *HYPE'RICUM* [1784 C p.l Maund, Bot. gard. t. 630.
*verticillàtum *Thunb.* (*Don's Miller*, i. p. 611. No. 164.) verticillate ♃ △ pr ⅝ au Y C.G.H

A neat little suffruticose half-hardy plant, which grows freely in sandy loam, in the open border during summer, and requires protection during winter. There are plants in the Horticultural Society's Garden. (*Maund's Bot. Gard.*, Feb.)

Rutàceæ.

1152. BORO'NIA [mag. of bot. iv. p. 267.
9327*a* *crenulàta *Paxt.* crenulate-*leaved* ✱ ⌴ or 2 my.au R King George's Sound ... C s.p Paxt.

This differs from B. serrulàta in the leaves being crenulated, not serrated; and also in the flowers. The habit of it is very pleasing. The flowers appear near the extremity of the branches, and, about the month of May or June, they are fully expanded, and continue in tolerable profusion until late in August. Messrs. Loddiges have raised a number of plants from seeds received several years ago from New Holland. (*Paxt. Mag. of Bot.*, Jan.)

Leguminòsæ.

1246. CHORO'ZEMA
*cordàtum *Lindl.* cordate-*leaved* ✱ ⌴ pr 2 ap R N. S. W. ... c s.p Bot. reg. n. s. t. 10.

A pretty new species from the Swan River, by Robert Mangles, Esq., who considers it the freest grower of the genus. Cuttings of the young wood root in sand under a bell-glass. (*Bot. Reg.*, Feb.)

Onagràceæ.

1188. FU'CHSIA
*fúlgens *Dec.* glowing ✱ ⌴ spl 4 my.o R Mexico ... C p.l Bot. reg. n. s. t. 1.

"This is probably the most beautiful plant of the temperate flora of Mexico. It was originally met with by Moçino and Sesse, two Spanish naturalists, authors of an unpublished *Flora Mexicana;* and has very lately been introduced to this country. It is difficult to conceive anything more brilliant than the appearance of this species, when its rich vermilion-coloured flowers are formed beneath the influence of a Mexican sun; but, if it is grown in a shaded situation, with too much heat and moisture, the bright colours inevitably fade, and the plant is deprived of half its beauty. It will, no doubt, prove a robust shrub of easy culture, growing freely in a mixture of loam and peat in the green-house. Cuttings of the young wood will strike freely in sand under a bell-glass, on a moderate hot-bed. It is probably about as hardy as F. arboréscens, and, perhaps, like that species, not enough so to stand the winter, or to flower well in the open border; but it will certainly grow, and flower freely, in the green-house; and it is by no means impossible that it may even succeed in the open air, in good summers, in a warm sheltered situation." (*Bot. Reg.*, Jan.)

Myrtàceæ.

1483. CALLISTE'MON [n. s. t. 7.
*microstàchyum *Lindl.* small-spiked ✱ ⌴ or 5 mr R New Holland ?1836 C s.p Bot. reg.

"A new Holland plant, which flowered for the first time in Europe in the garden of William Harrison, Esq., of Cheshunt, in March, 1837. It is remarkably striking, on account of the clear vivid crimson of its flowers, which are certainly the most brilliant in this brilliant genus; so that, although the spikes are

much smaller than in some other species, the general effect of the blossoms is not equalled. The species is abundantly distinguished by its spreading, narrow, spathulate, pliable, obtuse leaves, and small spikes of flowers. Cuttings formed of the points of the young shoots, in spring, when these are in a growing state, and planted in sand and covered with a bell-glass, root freely. (*Bot. Reg.*, Feb.)

Passiflòreæ.

1923. PASSIFLO'RA
*onýchina *Lindl.* purple-*flowered* ⚘ ▵ or 10 n lapis-lazuli B Buenos Ayres 1835 C p.l

Raised by Messrs. Low and Co., from seeds received from Mr. Tweedie of Buenos Ayres. It flowered in the garden of Miss Traill of Hayes Place, Bromley, Kent, in November of last year. (*Bot. Reg.*, n. s., p. 2.)

16885*a* *nigelliflòra *Hook.* Nigella-flowered ⚘ ▭ or 10 s W.G Buenos Ayres 1835 C p.l Bot. mag. 3635

Leaves yielding a fetid smell when bruised, exactly cordate in their circumscription, 5-lobed, hairy, or almost silky, on both sides; the margin distinctly serrated; on the under side, and at the margin, there are numerous hairs, tipped with unctuous glands. It is plentiful at St. Jago de Estero, on the Rio Dulce, where it was discovered, in 1835, by Mr. Tweedie, on his way from Mendoza to Tucuman. It will be at once seen that it is nearly allied to P. *g*ossypiifòlia, P. *h*ibiscifòlia, P. fœ'tida, and P. cilìata; four species which have, indeed, a near affinity for each other: but the present may be at all times distinguished by its truly cordate leaves (which are 5-lobed, except in the upper part of the stem), and strongly serrated. (*Bot. Mag.*, Feb.)

*tucumanénsis *Hook.* Tucuman, *or large-stipuled* ⚘ ▭ or 10 jl W.G Chili 1836. C p.l Bot. mag. 3636.

Leaves copious, dark-green above, pale and glaucous beneath, broadly cordate, deeply 3-lobed; the lobes spreading, oblong, sometimes approaching to ovate or lanceolate, entire, except at the base, where they are glanduloso-serrate. Discovered by Mr. Tweedie at St. Jago and Tucuman, at the eastern foot of the Cordillera of Chili, inhabiting, though rarely, the woods. It is a free grower, and flowered copiously the second year in the stove of the Glasgow Botanic Garden. (*Bot. Mag.*, Feb.)

Loàseæ.

2193. *LOA'SA*
*laterítia *Hook.* red-*flowered* ⚘ ▥ el 20 my R Tucuman 1835 S s.l Bot. mag. 3632.

Leaves petiolate, opposite, pinnate, especially the lower ones, with from 5 to several pinnæ; upper leaves bipinnatifid, and much shorter than the lower ones. This singular and truly beautiful species of *Loàsa* was discovered in Tucuman by Mr. Tweedie, and plants were raised, from seeds sent home by him, in the Glasgow Botanic Garden, in 1836, which survived in the hot-house through the winter, climbing to the uppermost light;

and they produced their bright orange-red blossoms in May, 1837.* "In its native country it is an annual: with us, probably from having been sown so late in the season, it is certainly biennial. There is every reason to believe that, either by seeds or cuttings, this fine species may be perpetuated. (*Bot. Mag.*, Feb.)

Cácteæ.

1471. MAMMILLA'RIA
*Lehmánni Hook. Lehmann's ✲ □ cu ½ ... Y Mexico ... O ru Bot. mag. 3634.

"A very distinct and remarkable species, bearing dark points in the axils of the mammillæ, which, in hot weather, exude a dark-coloured viscid matter, which has not been observed in any other species. Raised by Mr. Mackie of the Norwich Nursery." (*Bot. Mag.*, Feb.)

3359. ECHINOCA'CTUS [? 1836 O s.p Bot. mag. 3627.
*tubiflòrus *Hort. Angl.* (*Pfeiff. Enum. Cact.*, p. 71.) tube-flowered ✲ □ gr ½ ... W Mexico

Raised by Mr. Mackie of the Norwich Nursery. It is allied to E. Eyriès*ii*, but "differs remarkably in the fewer and much deeper angles to the stem, in the very much longer, stronger, and blacker spines, collected into fewer fascicles." (*Bot. Mag.*, Jan.)

Compósitæ.

MO'RNA [n. s. t. 9.
*nívea *Lindl.* snow-white-*flowered* ○ or 1½ my.au W.Y N.S.W. ... S 1p Bot. reg.

A half-hardy annual, about 18 in. high, from Swan River, by Robert Mangles, Esq., and, like the other species of the genus, remarkable for the brightness of its flowers. These will retain their shape and colour for years if carefully prepared, and thus form a charming addition to the everlasting flowers already known. Plants intended to flower in May and June should be sown in the preceding autumn, kept through the winter in the green-house, and shifted into larger pots, or turned into the open border, about the end of May. To flower in autumn, the seeds should be sown in February or March, and planted out in May or June. They flower best in the green-house, but ripen their seeds more freely in the open border. (*Bot. Reg.*, Feb.)

2430. SPHENO'GYNE
22060*a* *speciòsa *Maund* showy ○ or 1 jl.au Y S. Amer. 1836 S co Maund bot. gard. 625.

"This is one among the interesting new annuals lately introduced to our gardens from that great continent of vegetable magnificence, America. It is not alone interesting when in flower, but also when bearing its seeds. These are furnished with a cup-like membranaceous appendage, called the pappus, as ornamental as the flower itself, and even more attractive to those who happen to be unacquainted with seeds of this description. If gathered before they become too ripe, they may be kept to

* In the same season, a plant in the open border at the Glasgow Garden flowered freely, and retained its flowers till killed by the frost.

mix with such dry flowers as the Xerânthemum, Gnaphàlium, and *E*lichrỳsum. Seedling plants of Sphenógyne should be raised in a hot-bed, so that they may be transplanted into the borders early in May." (*Maund's Bot. Gard.*, Jan.)

*Gesner*àceæ.

1809*a*. *DRYMO'NIA *Martius.* DRYMONIA. (From *drumonia*, woodland; species inhabits forests.) *Gesner*àceæ.
bícolor *Martius* two-coloured ♃ ⍁ or 6 ... P.Y W. Indies 1806 C l.p Jac. sc. 3. 290.
Synonyme: Beslèr*ia* serrulàta *Jacq.*; *Hort. Brit*, No. 16048.

*Asclepi*àdeæ.

755*a*. TWEE'D*IA* [mag. 3630.
6090*b* *versícolor *Hook* changeable-*flowered* ♃ ⍁ pr 3 ... B Buenos Ayres 1837 C s.l Bot.

Leaves opposite, on short petioles, oblong, between cordate and hastate at the base. A most highly interesting asclepiadeous plant, raised by Mr. Niven of the Glasnevin Botanic Garden, from seeds sent home by Mr. Tweedie. Its large flowers, of a singularly changeable blue colour, remind one rather of a boragineous than of an asclepiadeous plant. In genus, it borders upon Oxypétalum and Tweèd*ia*; but Sir W. J. Hooker thinks it may safely be referred to the latter. (*Bot. Mag.*, Jan.)

SCHUBE'RT*IA*
*gravèolens *Lindl.* strong-smelling ♃ △ pr ... ... Crea. Brazil ... S s.p.

Sent to Mr. Henderson of the Pine-Apple Nursery, by Lady Wilton, in whose garden it was raised from Brazilian seed. It is a pretty stove twiner, with hairy stems, deep green downy leaves, and large cream-coloured flowers, with a strong but not disagreeable odour. It differs from Schubért*ia* grandiflòra in the leaves being very obtuse, and the tube of the corolla quite beardless inside. (*Bot. Reg.*, n. s., p. 2.)

*Genti*àneæ.

483. LISIA'NTHUS
4019*a* *Russellià*nus* Hook. Duke of Bedford's ⍁ or 3 jl.au P Mexico 1835 s.l.p Bot. mag. t. 3626.
Synonyme: L. glaucifòlius *Nutt. Fl. Ark.*, p. 197. (not *Jacq.*)

Leaves glabrous and glaucous, opposite and connate, ovate or ovato-oblong, 3—5-nerved, very acute, gradually becoming smaller upwards, and more acuminated, till they pass into the subulate bracteas at the base of the peduncle. Flowers large, handsome, borne in a terminal panicle; corolla as large as a tulip. Specimens and seeds were sent from Texas, in 1835, by Mr. Drummond, accompanied by the remark that they were not to be excelled in beauty by any one. "It was shortly before the period of the arrival of these seeds and specimens," observed Sir W. J. Hooker, "that His Grace the Duke of Bedford, with his wonted liberality, contributed a sum of money, which, had the receiver continued in health, would have materially assisted in forwarding his views in Florida, but which was no less available in a period of pain and sickness immediately preceding his lamented death in Cuba; and I am sure that, in dédicating this splendid plant to so distinguished a patron of science, I shall

have the approbation of every botanist and of every lover of horticulture. I think there can be no doubt but, under proper management, by forcing in the early spring, and planting out in the open border, this plant will there perfect its flowers as readily as the *P*hlóx Drummónd*ii*." It appears to be an invaluable addition to the flower-garden." (*Bot. Mag.*, Jan.)

Scrophulariàceæ.

1783. *MI'MULUS* [Botanist, 51.
**r*òseo-cardinàlis *Henslow* rosy-scarlet, *or Hodson's hybrid* ○ pr 2 jl.s R hybrid 1837 S co
Synonyme: *M.* Hódson*i* Gard. Mag., xiii. p. 333.

"This showy plant may be considered as a decided improvement upon the *Mí*mulus *r*òseus. It was obtained from seeds of a plant of that species, which had been fertilised by pollen from *Mí*mulus cardinàlis. Many specimens were raised in the Botanic Garden of Bury St. Edmunds, which all resembled each other, and flowered for the first time during the summer of 1837. (*The Botanist*, Jan.) [When Mr. Turner sent us a plant of this hybrid, he expressed a wish that the specific name should be in honour of his employer, Mr. Hodson; but the name *r*òseo-cardinàlis, a distinctive term, composed of the two parent species, being founded on a general principle laid down some years ago in the *Horticultural Society's Transactions*, when Passiflòra cærùleo-racemòsa came into notice, is in every respect preferable, and we therefore adopt it.]

V*erbenàceæ.*

1749. *VERBE'NA*
28421*b* *incìsa *Hook.* cut-*leaved* £ ⌊Δ⌋ cl 2 jn.s R Panama 1836 C p.l Bot. mag. t. 3628.

"This is another South American verbena of the *Melíndres* group, for the discovery of which we are indebted to Mr. Tweedie, who sent the seeds to G. F. Dickson, Esq., of Everton, near Liverpool, by whom they were raised in 1836." It is extremely handsome. The blossoms are of a deep red rose-colour, with a yellow eye, and become paler in age. It will rank next to *V.* Tweed*iàna*, from which it differs in the broad and depressed (not spiked) corymbs; in the broader leaves, which are more deeply lobed, and cut in a pinnatifid manner. This will, in all probability, prove as hardy a species as *V. c*hamædrifòlia. (*Bot. Mag.*, Jan.)

O*rchidàceæ.*

2537. MAXILLA'RIA [Bot. mag. t. 2789.
22672*a* *aúreo-fúlva *Hook.* golden-brown £ ⊠ pr 1 my.jn Go. Br S. America ? 1836 D p.r.w

It is nearly allied to M. racemòsa; but the pseudo-bulb and leaf are very different; the flowers larger, of a full golden brown colour; the spur shorter, more obtuse, and more closely applied to the germen; and the lip is narrower, and very different in form. (*Bot. Mag.*, Jan.)

2532. ZYGOPE'TALUM [p.r.w. Paxt. mag. of Bot. iv. p. 171.
22659*a* *maxillàre *Paxt.* maxillar *tooth-like-flowered* £ ⊠ or 1 jn.jl B.G S.*i* America 1829 D

This species differs from Z. rostràtum and Z. Mackày*i*, in

having smaller flowers; nevertheless, it is unquestionably the most beautiful and interesting; the deep rich blue colour of the lip, and the bright green and chocolate of the sepals, constitute it one of the most delightful objects that adorn our stoves: it is also remarkable for the length of time the flowers continue perfect. (*Paxt. Mag. of Bot.*, Jan.)

2554. EPIDE'NDRUM [3631.
*papillòsum *Batem.* warty-*fruited* ₤ ☐ cu 2 jn G.W Mexico 1837 D p.r.w Bot. mag.

Another of the many interesting discoveries of Mr. Skinner, which has enriched the collection of Mr. Bateman at Knypersley Hall. It is a very distinct species, and of easy culture. (*Bot. Mag.*, Jan.) Next to E. squálidum, from which its habit alone would at once distinguish it. (*Bot. Reg.*, n. s., p. 7.)

[abbild n. s. gewäch. t. 12.
pastòris *La Llave* shepherd's ₤ ☐ cu 1 ... Ol Mexico 1837 D p.r.w Link and Otto

Originally sent from Mexico, by Dr. Deppe, to the Royal Garden of Berlin, about the year 1828. The plant described by Dr. Lindley came from the garden of R. Harrison, Esq., having been sent from Mexico, by Mr. Bates, to Mr. Tayleure of Parkfield, near Liverpool. (*Bot. Reg.*, n. s., p. 3.)

tessellàtum *Roxb.* tessellated ₤ ☐ cu ... ... G. Br. Guatemala ? 1836 D p.r.w.

Sepals and petals greenish on the outside, but brown on the inside, and marked with regular streaks of a darker shade, which produces a tessellated appearance. It is near E. pastòris. (*Bot. Reg.*, n. s., p. 8.)

rhizóphorum *Bateman MSS.* root-bearing ₤ ☐ cu ... ... Guatemala ... D p.r.w.

A most remarkable species, near E. cinnabárinum. (*Bot. Reg.*, n. s., p. 8.)

aurantìacum *Bateman MSS.* orange-coloured ₤ ☐ cu ... ... O Guatemala ... D p.r.w.

This is a most remarkable species, which Mr. Bateman was doubtful whether to refer to an epidendrum, an encyclia, or a cattleya. In habit it approaches E. clavàtum. (*Bot. Reg.*, n. s., p. 8.)

tibícinis *Bateman MSS.* piper's ₤ ☐ spl 9 ... Ro Honduras 1836 D p.r.w.

"By far the most magnificent species of the genus. Flowers of the size and colour of Cattlèy*a* labiàta. Scape 3 yards long. The hollow cylindrical stems are used as trumpets by the native children: hence the name. (*Bot. Reg.*, n. s., p. 8.)

Booth*iànum* Lindl. Booth's ₤ ☐ cu ½ s G Cuba 1835 D p.r.w.

This curious plant is a native of the Havannah, whence it was brought by Captain Sutton of Flushing, near Falmouth, and added to Sir Charles Lemon's collection at Carclew. It is allied to E. variegàtum *Bot. Mag.* (*Bot. Reg.*, n. s., p. 7.)

*floribúndum *Hook.* many-flowered ₤ ☐ cl 1 n G.B Mexico ... D p.r.w Bot. mag. 3637.

Imported by Messrs. Loddiges, some years ago, from Mexico. The flowers of their plant were considerably larger than those

of some wild specimens gathered on the Amazon River by Dr. Pœppig. It continues a long time in flower, and has a particularly neat and pleasing appearance. Humboldt found it in woods near St. Jean de Bracamoros and the Amazon River; and Mr. Henchman, in Demerara. (*Bot. Mag.*, Feb.)

*ochràceum *Lindl.* ochre-coloured ℰ ⊠ cu ½ jl Y Mexico ... D p.r.w

Dr. Lindley says: "I have long since called this plant Encýclia ochràcea; but I am now convinced that the genus Encýclia must be reduced to Epidéndrum." A figure, &c., will hereafter appear. (*Bot. Reg.*, Feb.)

*Schombúrgk*ii* Lindl. Schomburgk's ℰ ⊠ el 2 ... S S. America ... D p.r.w.

A noble species in the way of E. elongàtum, with bright scarlet flowers. (*Bot. Reg.*, Feb.)

*fucàtum *Lindl.* stained ℰ ⊠ cu 1 jl G.B Havannah 1835 D p.r.w.

A curious species, imported from Havannah, and which flowered in Sir Charles Lemon's collection at Carclew in July, 1837. (*Bot. Reg.*, Feb.)

*CIRRHOPE'TALUM *Lindl.* THE CIRRHOPETALUM. (From *kirrhos*, tawny, and *petalon*, a petal; in allusion to the prevailing colour of the flowers.)
*Thouárs*ii* Lindl. Thouars's ℰ ⊠ cu 1 jl Y.B Society Isles ... D p.r.w Bot. reg. n. s. [t.11.

One of the most extensively diffused of the epiphytal Orchidàceæ; having been found in the Society Islands, Java, the Isles of France and Madagascar, and Manilla. Nothing can be more singular than the long strap-shaped sepals which grow from one side of the flowers, and almost bear them down with their weight. (*Bot. Reg.*, Feb.)

2527. LISSOCHI'LUS
*parviflòrus *Lindl.* small-flowered ℰ ⊠ or 1 d P.R Algoa Bay ... D p.r.w.

A rare species, which flowered, in December, 1837, in the collection of Messrs. Loddiges. The leaves are plaited like those of a Blèt*ia*, and the sepals are a dull greenish purple. (*Bot. Reg.*, Feb.)

3412. STANHO'PE*A* [Bot. reg. n. s. t. 5.
28531*b* quadricórnis *Lindl.* four-horned ℰ ⊠ pr 2 jn Y. spot. with R Spanish Main ... D p.r.w

An exceedingly pretty species of Stanhòpe*a*, allied to S. oculàta. It was received from the Spanish Main by S. Rucker, Esq., jun., of Wandsworth, who states that the pseudo-bulbs and leaves are extremely like those of S. grandiflòra. (*Bot. Reg.*, Jan.)

Under this species, a long extract is given from the *Sertum Orchidaceum*, just published, describing the management of terrestrial Orchidàceæ at Chatsworth, drawn up by Mr. Paxton. They are grown in pots, filled and heaped up with fibrous moderately sandy peat, broken into various forms and sizes, but none less than a walnut, and thoroughly drained, not only by filling the pots two thirds full of broken pots, but by carrying up a column of the same material as high as the cone of peat, which is raised above the rim of the pot, and on which the plant is

placed. To give stability to the cone of peat, every stratum of lumps, as it is put on, is pegged down with wooden pegs, without which firmness no plant whatever will venture to protrude its roots. The general temperature ranges from 60° to 85°. Great advantage is found in having a tan-bed in which to plunge the plants, which causes them to grow with the greatest vigour. Very little water is given to the roots, especially in winter; the great desideratum in the cultivation of Orchidàceæ being to preserve the roots, which, by over-watering, especially in winter, are apt to be destroyed.

Mr. Paxton concludes with the following summary of rules, which, as coming from so successful a grower, will be highly prized by the gardener who has this interesting description of plants under his care.

Air. Terrestrial Orchidàceæ should never have a great volume of external air admitted at once, however fine the weather may be. To prevent the house becoming too hot, a thick canvass shading should be drawn over it during sunshine.

Light. The best aspect for an orchidaceous house is due south; and the house should be made to admit as much light as possible. In summer, a thick canvass is always put on the house, to prevent the bright sun damaging the plants. In winter, every ray of light is advantageous to the plants.

Heat. During the growing season, Orchidàceæ require a moderately moist heat, varying from 65° to 85°; in the dormant season, from 60° to 75° is quite sufficient; in the season of rest, the house should be kept dry.

Water. With this element more damage is done than by all the others put together. Orchidàceæ in pots should be sparingly watered in the growing season: in the dormant state, little or no water should be given. The secret of growing these plants is, to take care *never* to kill the old roots: when too much water is given, while the plants are not in a growing state, almost all the old roots invariably perish.

The brief account here given refers entirely to plants potted in a peat soil: those grown in moss, and on bits of wood, require quite a different treatment.

Lindlèyi Zuccar Lindley's ⅋ ⍁ or 1 au Br.R Mexico ... D p.r.w

It does not appear to be distinct from S. oculàta, differing principally in the colour of its flowers, which are a dull, pale, brownish red on the sepals and petals, while the spots on those parts are comparatively inconspicuous. The bright yellow, so great an ornament to the lip of the original S. oculàta, is wanting, and is replaced by the dull vinous (port wine) stain of the other parts. (*Bot. Reg.*, n. s., p. 3.)

[D p.r.w Sert. orchid. t. 1.

*devoniénsis *Lindl.* *Duke of* Devonshire's ⅋ ⍁ s.pl 2 au O. spotted with R Mexico ? 1837 *Synonymes: Coatzonte Coxochitl seu Lyncea* Hernandez Thesaur. Rer. Med. Nov. Hisp., p. 266.; Angulòa Hernandèzii Kunth Synops., i. p. 332.; Maxillària lyncea *Gen. et Sp. Orch.*, p. 151.

A noble plant, which flowered for the first time in Britain in the epiphyte house at Chatsworth, in August, 1837; "and certainly there never was a more beautiful sight than when it expanded its large, rich, leopard-spotted blossoms, in all the perfection of their singular form and deep soft colours. The full-blown flowers measured nearly 4½ in. across, and emitted a very agreeable odour, resembling a combination of chimonanthus, heliotrope, and the perfume called Maréchal." Dr. Lindley considers that this was the famous lynx flower of Hernandez, alluded to by Mr. Bateman (XIII. p. 509.). It approaches nearly to S. tigrìna, "and the Mexican plant, the rival of this in beauty, which is about to appear in Mr. Bateman's magnificent publication." There is nothing remarkable in the foliage or manner of flowering, except that the furrow which terminates the upper side of the leaf, at the lower end does not run through to the pseudo-bulb, but loses itself about half-way down the petiole. This peculiarity, which was pointed out to Dr. Lindley by Mr. Paxton, is to be found in no other species hitherto introduced. "The success with which epiphytes are there cultivated by Mr. Paxton is wonderful; and the climate in which this is effected, instead of being so hot and damp, that the plants can only be seen with as much peril as if one had to visit them in an Indian jungle, is as mild and delightful as that of Madeira. As to luxuriance of growth, never have they been seen in their native woods in such perfect beauty." The essence of Mr. Paxton's mode of culture we had previously abridged from the *Botanical Register*, and it will be found in p. 144.

2547. DENDRO'BIUM [orchid. t. 3.
*nóbile *Lindl.* noble £ ⍓ pr 2 f Gsh. Y. tipped with P China ?1836 D p.r.w Sert.

Dendròbium is one of the handsomest of the Asiatic genera of Orchidàceæ; and D. nóbile, says Dr. Lindley, "must be considered the handsomest of all Dendròbia. Its very stems are so bright and transparent, that they form a beautiful object; and the effect of the bright green veins of the leaf-sheaths seen through the semitransparent skin, is very striking. The flowers are unrivalled for delicacy of texture and gracefulness of form; at first nodding, as if their slender stalks were unable to sustain their weight; and then, as they disentangle their ample folds, assuming a horizontal position, with the rich trumpet-shaped lip forming an apparently solid centre, they seem purposely to raise themselves to the distinct view of the beholder." This species was introduced from China by Mr. Reeves, who bought the plant in the market at Macao, and does not know in what part of China it is found wild. It flowered with Messrs. Loddiges in 1837; but in what year it was introduced is not mentioned. It is most nearly allied to D. monilifórme. (*Bot. Reg.*, t. 1314.)

2565*b*. *SACCOLA'BIUM *Blume* SACCOLABIUM. (From *saccus*, a sack, and *labium*, a lip.) *Orchidàceæ*.
*bĭfidum *Lindl.* bifid £ ▢ cu ½ d Pk.Y Manilla ?1837 D p.r.w.

A pretty species of this interesting genus of epiphytes, with the habit of a small vanda. It was received by Messrs. Loddiges from Manilla, where it had been collected by Mr. Cuming. (*Bot. Reg.*, n. s., p. 3.)

2558*a*. *PESOME'RIA *Thouars.* PESOMERIA. (From *piptō* (*pesō*), to fall, and *meros*, a part; because the sepals are spontaneously thrown off from the flower shortly after they have expanded, just as leaves are thrown off the stems of many of these plants, when they receive a sudden check, and then the petals and labellum only remain to constitute the flower.) *Orchidàceæ*.
*tetragŏna *Thouars* four-cornered-*stemmed* £ ▢ cu 2 d Br Isle of France 1837 D p.r.w.

It was introduced from the Isle of France by Messrs. Loddiges. (*Bot. Reg.*, n. s., p. 4.)

Liliàceæ.

1050. THYSANO'TUS
*prolĭferus *Lindl.* proliferous £ ⊔ cu 1 au P N. S. W. ... S r.l Bot. reg. n. s. t. 8.

For this beautiful Swan River plant, as for several others, our gardens are indebted to Robert Mangles, Esq., of Sunning Hill. The fringed margin of the petals in this species, as in all the others of the genus, form a remarkable feature, and one which will cause some species or other of the genus to be much sought after in collections. T. prolíferus is rather difficult to keep; for, in winter, the least frost or wet destroys the roots. It may be grown either in pots in a green-house, or in the bed of a pit, from which the frost ought to be completely excluded. When done flowering, and the seeds are ripe, moisture should be withdrawn, in order that the root may have a period of rest. (*Bot Reg.*, Feb.)

2553. CATTLE'YA
22726*a* *Perrín*ii* Lindl. Perrin's £ ▢ or 1 ... P Brazil ... D p.r.w Bot. reg. n. s. t. 2.

This species is a native of Brazil, and is not unlike C. labiàta, although inferior to it in beauty. It has been named after Mr. Perrin, Mr. Harrison's intelligent gardener, under whose care so many fine South American epiphytes have been for the first time brought into flower in this country. "Like the rest of the genus, this requires to be grown in a moist stove, the temperature of which may be kept from 60° to 70° of Fahr. in winter, and from 70° to 90°, or even 100°, with sun heat, in summer. It is propagated, like the other plants of this order, by divisions of the rhizoma, or rootstock, with a stem adhering to them. The soil should consist of good peat, broken or cut into pieces, 1 in. or 1½ in. square. The pots should be about half-filled with broken bricks, or something of that description, to carry off superfluous water; and, if they are plunged in a tan-bed, this will allow the heat to rise more freely than if the pots were wholly filled with soil. It is of the greatest importance to preserve and encourage the roots; and, as they are generally protruded near the surface of the soil, it should be raised several inches above the level of the pots, in a pyramidal form, in order that they may have full room to push out." (*Bot. Reg.*, Jan.)

Cattlèya.—This is one of the most beautiful of the Orchidàceæ. A superb specimen of C. crispa flowered in the Orchídeæ house at Chatsworth in the summer of 1837, and is figured in Paxton's *Magazine of Botany* for February, 1838. From the unusual number of flowers produced, Mr. Paxton observes, "it may be regarded as a striking illustration of the high degree of perfection to which orchideous plants may, and will eventually, be brought, when their habits, and the treatment they require in cultivation, become understood among the admirers of this, the most beautiful, and by far the most interesting, family of plants known in the vegetable world. When seen with three or four flowers on a stem, the usual number produced, it is a splendid object; but when, as in this instance, with seven, it is much more so. The fan-like arrangement of the flowers upon the stalk, the depth of richness in the velvety purple of the lip, and the snowy whiteness of the undulated petals and sepals contrasted with the deep green of the leaves, produce a display of beauty rarely seen in the Orchídeæ house. It is a native of Rio Janeiro, whence it was sent, in 1826, to the London Horticultural Society, by Sir Harry Chamberlayne, Bart. Since that time, many plants have been introduced; and now, although not common, it may be found in most of the leading collections, and will, ere long, doubtlessly be in the possession of every zealous cultivator in the kingdom. The genus Cattlèy*a* is less difficult of cultivation than most growers imagine. The majority err in keeping the plants in an atmosphere too hot and humid: others, equally in the wrong, give too much water to the roots in winter, when the plant is, or ought to be, dormant. By the practice of the first, the plants grow delicate and weakly, and are unable to push flowers; while the result of the second is, rotten, or greatly injured, roots, so that the plant cannot make a good growth the succeeding season, for want of good roots. Now, as the cattleyas thrive best in a degree of heat below that required for the major part of orchideous plants, and as they are too few in number to have a house appropriated to themselves, the best place is to set them at the coolest end of the house in which they are grown, when they will thrive and flower much finer than before. At Chatsworth, the degree of heat given to cattleyas, as near as we can tell, varies, in the growing season from 70° to 75°, and, in winter, from 60° to 65°. During the growing season, the roots are liberally supplied with water, and the whole plant is, say once a week in fine weather, sprinkled over in the evening with a syringe or fine rose. In the winter, the roots are kept nearly dry, and the top of the plant is not watered at all. It is customary, towards 3 or 4 o'clock during summer, to throw a little water on the path and flue, which renders the atmosphere moderately humid, and greatly refreshes

and strengthens the plant." (*Paxt. Mag. of Bot.*, vol. v. p. 6.) We are happy to see some improvement in the colouring of the plates of Paxton's *Magazine*, but it is still not what it ought to be in this respect.

REVIEWS.

ART. I. *Sertum Orchidaceum; a Wreath of the most beautiful Orchidaceous Flowers.* Selected by John Lindley, Ph. D., F.R.S., Professor of Botany in University College, London, and in the Royal Institution of Great Britain, &c. Part I. Folio, 5 plates. London. Price 1*l.* 5*s.*

"IN consequence of the growing taste for the cultivation of tropical orchideous plants, and the impossibility of doing justice to many of those noble epiphytes in the small plates of the cheap botanical periodicals of the day, Messrs. Ridgway have been induced to make arrangements with Professor Lindley for the publication of a selection of the most remarkable of the tribe, in a manner worthy of their interest and beauty." (*Advert.*) The figures will be partly of species which may flower from time to time in the hot-houses of this country, and partly of some of those magnificent plants of this order, which are at present unknown in Europe in a living state. "It is expected that by this means cultivators will have the advantage of knowing in what countries to seek for such kinds as it is most desirable to procure, and will also know when the specimens they already possess have arrived at the greatest perfection of which they are susceptible." (*Ibid.*) This work, therefore, though it may be considered as ranking with the *Orchidaceæ* of Mr. Bateman, is evidently not intended to be so much a work of luxury as that work; and, therefore, in estimating its comparative merits, it may be looked on as a collection of botanical figures, but on a larger scale, and more highly finished, than is generally the case in such works. The *Sertum* "will be completed in twenty folio numbers, each containing five plates, highly finished from drawings expressly made for the purpose by Miss Drake. They will appear every three months, price 25*s.* each; and ten numbers will form a volume."

The figures in the part before us are beautifully coloured, particularly Dendròbium nóbile; though in some of them there is a coarseness of outline and of shading, which we hardly expected from the lithography of M. Gauci. In our opinion, the finish of most of the plates in the *Floral Cabinet* is superior, in point of delicacy, either to those of the *Sertum Orchidaceum*, or the *Orchidaceæ of Mexico and Guatemala*. Dr. Lindley's figures are, however, to be considered only as botanical portraits, not as works of art. We are quite aware that botanists very properly

place a much higher value on botanical accuracy, than on beauty of execution; but we think that, in such works as Mr. Bateman's and Dr. Lindley's both ought to be united in a high degree.

To enable the reader who has an opportunity of seeing the *Sertum* and the *Floral Cabinet* to judge for himself, we request him to compare Stanhòpe*a* devoniénsis, *Sertum*, pl. 1., with Myánthus barbàtus, *Floral Cabinet*, No. 37.; Burlingtòn*ia* venústa, *Sertum*, pl. 2., with Cattlèy*a* labiàta, *Floral Cabinet*, No. 26. The remainder of the plates of orchideous plants in the *Floral Cabinet* will very well bear comparison with the other plates in the *Sertum* and the *Orchidaceæ*.

We call attention to this circumstance, as remarkable, ad as deserving the attention of Dr. Lindley and Mr. Bateman. It is evident that, if, in a cheap publication like the *Floral Cabinet*, such superiority of execution can be produced, it only requires some improvement in the system of management to introduce at least an equal style of art in metropolitan publications of a more ambitious character. We feel confident that all the parties interested will thank us for calling their attention to the subject. There can be no flowers more worthy of being represented in the highest style of art than those of the Orchidàceæ.

It is almost needless to add that, though the *Orchidaceæ* and the *Sertum* are not absolute perfection in regard to the execution of the plates, yet they are in every other respect so excellent, and in point of magnificence so far before all other works on the Orchidàceæ, that they cannot fail to command the admiration of all botanists and patrons of botany; and there is no doubt in our minds, that, in this country, and at the present time, the demand for them will be such as to pay their respective authors for their liberality and public spirit in undertaking such works. It is true the great demand of the public is for low-priced works, but there is also a demand for what is truly excellent, without regard to price. The *Sertum Orchidaceum* is dedicated to the Duke of Devonshire, in the following words: "To the munificent patron of art, the princely friend of science, especially of botany; at whose command the noble palace and gardens of Chatsworth have been created, rather than restored, in the heart of the wild hills of Derbyshire, this history of some of the most beautiful of his favourite flowers is gratefully dedicated by His Grace's most faithful and most devoted servant, — *The Author*."

The species described in Part 1. are: Stanhòpe*a* devoniénsis, pl. i.; Burlingtòn*ia* venústa, pl. ii.; Dendròbium nóbile, pl. iii.; Cymbídium gigantèum, pl. iv.; Cattlèy*a* bícolor, pl. v. f. i.; Sophronìtis grandiflòra, pl. v. f. 2. The first and the third of these are introduced; and such particulars of them as are necessary to enable us to enter them in their proper places in

the *Hortus Britannicus*, will be found under Floricultural Notices. The remaining species are figured from drawings lent to Dr. Lindley by Baron Delessert and the East India Company. They are as follows: —

Burlingtònia venústa Lindl., pl. ii., noticed in *Bot. Reg.*, in the text to t. 1927., is at present only known from a drawing made in Brazil by M. J. T. Decourtilz, and forming part of a manuscript description, with figures, now the property of M. le Baron Benjamin Delessert. "As I have," says Dr. Lindley, "the permission of their liberal proprietor to publish such as are most remarkable in this collection, I shall have frequent occasion to avail myself of its materials in illustration of the present work." There is no description of B. venústa among Descourtilz's MSS.; but, as the species comes very near Burlingtòn*ia* fràgrans *Lindl.*, described and figured by Descourtilz, the description of that species is given, as the best attempt that can be made at present to get some idea of B. venústa. Nothing is known of the habits, or parts of Brazil where B. venústa is found. B. fràgrans is remarkable for the fragrance which its flowers exhale of jonquil or of some water lily. "It grows among the topmost branches of the cedrela, in the districts of Morro-Quémado and Macabé, and near the city of Bom Jesus de Bananal, blossoming in October."

Cymbídium gigantèum Wall. Cat., No. 7355., Lindl. Gen. et Sp. Orch., p. 163., and Lindl. Sertum, pl. iv. "The most striking of all the plants belonging to the true genus Cymbídium; a native of Nepal, where it was discovered by Dr. Wallich in 1831. Dr. Lindley's figure is prepared after a drawing made at the time of its discovery, and liberally placed at his disposal, for publication, by the East India Company. The leaves are upwards of 2 ft. long. The flowers are large, rather closed, and of a dull purple colour.

Cattlèya bícolor Lindl. Sert. Orch., t. v. f. 1., Bot. Reg. in letterpress to t. 1919. A very distinct Brazilian species, only known from the drawing of M. Descourtilz, who speaks of it as follows: — "This beautiful plant grows at a great elevation on the trunks and branches of the largest trees, where it sometimes forms an enormous tuft. I have only found it in the neighbourhood of Bom Jesus de Bananal. Its flower endures for a great while, opens in the month of April, and exhales the sweet smell of the garden pink."

Sophronìtis grandiflòra Lindl. Sert. Orch., t. v. f. 2.; *syn.* Cattlèy*a* coccínea *Bot. Reg.*, t. 1919., in letterpress; E'pidendre ponceau *Descourtilz's Drawings*, pl. x. p. 27. A most brilliant little epiphyte, found in Brazil by M. Descourtilz, upon the high mountains that separate the district of Bananal from that of Ilha Grande. It grows there in abundance upon falling and decaying

trees: its scentless flowers appear in June." Roots long, flexuose, dead white. Leaf solitary, thick, tongue-shaped. Flower with all its parts of a bright vermilion red or orange.

ART. II. *On the Nature and Property of Soils; their Connexion with the geological Formation on which they rest; the best Means of permanently increasing their Productiveness; and on the Rent and Profits of Agriculture.* By John Morton. Small 8vo, pp. 235.

THE subject of soils has never yet been treated chemically or geologically, in such a way as to be of much real use to the cultivator. After all that has been written on the subject, what scientific gardener or farmer (Mr. Gorrie, for example, who unites both characters), if he were sent over an estate, to select the soil and situation most suitable for a kitchen-garden, or an orchard, or that which would produce the greatest return in corn of any kind, would not form his judgment on the kind and condition of the plants growing on it, rather than on digging up samples of the soil for inspection or experiment. Taking a broad general view of the subject, soils are the earths or rusts of rocks mixed with organic matter; and, as there are a great many different kinds of rocks in every country, there must, necessarily, be a great many different kinds of soils: for example, some in which the earth is almost entirely composed of what may be called the simple rocks, such as limestone, sandstone, or slatestone; others, in which the earths are composed almost entirely of compound rocks, such as granite, schist, &c. Now, in examining the surface of a country in which these and other rocks abound, we shall find the same grasses, trees, and other plants, growing on all of them. We shall find elms, oaks, grass, docks, and thistles, and hundreds of other plants, equally vigorous in soils formed of the debris of granite, limestone, sandstone, basalt, &c. It is clear, therefore, that the vigour of the plant does not depend on the kind of earth of which the soil is composed. But soils, relatively to plants, are liable to be affected in various other ways: by the state of mechanical division of the earths composing them; by the quantity of organic matter they contain; by their fitness for holding water in suspension, or allowing it to escape; by their inclination to the sun; and by other similar circumstances. All these circumstances may be readily judged of by an experienced cultivator, from the plants growing on the soil; and, therefore, we conclude that the state of mechanical division, the quantity of organic matter, and the condition relatively to water and to heat, are the only important points for a cultivator to consider relatively to soils; and, again, we say that all these may be more readily judged of by the plants growing on

the surface, than by any other means whatever. While we state this, we readily admit that the geological and chemical study of soils is of very great importance with reference to their improvement; and that, without a considerable degree of this kind of knowledge, no man need attempt to improve an unproductive soil, so as to render it permanently productive. The author of the little work before us has adopted the following mode of treating his subject. He commences by observing that

"The surface of the earth partakes of the nature and colour of the subsoil or rock on which it rests.

"The principal mineral in the soil of any district is that of the geological formation under it; hence, we find argillaceous soil resting on the various clay formations — calcareous soil over the chalk — and oolitic rocks, and silicious soils, over the various sandstones. On the chalk, the soil is white; on the red sandstone, it is red; and on the sands and clays, the surface has nearly the same shade of colour as the subsoil.

"The lime, potash, and iron, existing in various proportions in the rock, are acted on by the atmosphere, and the rock is decomposed; some of it into fine impalpable matter, some into sand, and some into coarse gravel or rubble.

"The surface is composed of the same materials as the subsoil, with the addition of vegetable and animal matter, in every state of decay, intimately mixed with it; and we perceive a change in the external appearance of the surface, whenever there is a change in the subsoil below.

"The similarity of the materials which compose each of the geological formations with those which compose the soil resting on it, will be easily discerned; and their seeming difference may be owing to the vegetable and colouring matter in the soil. Iron, on being exposed to the atmosphere, becomes oxidised, forming the oxide of iron, and gives a redder colour to the soil than that which is exhibited by the subsoil.

"The connexion which subsists between the soil and the subjacent rock or subsoil is, in our opinion, of great importance, as a knowledge of it would form the best foundation for a classification of soils; and would always convey some idea of the nature and quality of the materials of which the soil is composed."

He next gives an outline of the main body of each of the geological formations in England, and its connexion with the surface. These formations consist of earths of transportation; alluvial soil; diluvium; peat moss, or bog; London clay; plastic clay; chalk formation; green sand formation; gault; oak tree, or Weald clay; iron sand, or Hastings sand; coral rag, calcareous grit, Aylesbury and Portland stone; the Oxford, clunch, or fen clay; oolite formation; inferior oolite, and calcareous ferruginous sand; blue lias; new red sandstone, or red sand; magnesian limestone; coal formation; millstone grit; carboniferous, or mountain, limestone; old red sandstone; greywacke and clay-slate; granitic formation; basaltic rocks. The descriptions of these formations, and the notices respecting their agricultural character, occupy upwards of one hundred pages.

The classification of soils is next treated of; and this is done more in what may be called a practical manner, with reference to

agriculture, than scientifically, with regard to the geological or chemical constituents of soils. All the soils of England may be classed under aluminous, calcareous, and silicious soils. Thus: —

Aluminous soils include the London clay, the plastic clay, the Weald clay, and the clay of the coal formation: there is little or no calcareous matter in the soils resting on these formations. The blue lias, the gault: there is a considerable portion of calcareous matter in the soil of these, but less silicious matter than in others.

Calcareous soils include, the lower chalk marl, some of the gault, the clay of the oolite: the soils resting on these formations are formed of impalpable matter. The diluvium on the Oxford clay, the diluvium on the blue lias: these are calcareous gravelly soils. The upper chalk, some of the lower chalk, the shelly oolite, the great oolite: the soils on these formations are composed of fragments of calcareous rock, with little or no silicious matter in their composition. The coral rag, the lower oolite, the magnesian lime, the carboniferous lime: the soils on these formations are composed of fragments, and have a considerable portion of silicious matter in their composition.

Silicious soils include the sand of the plastic clay, the iron sand, the sand of the coal formation, the millstone grit, the old red sand, the granite formation: the soils on these formations are composed of very friable, loose, dry sand, with very little aluminous, and no calcareous, matter in their composition. The diluvium on the plastic clay, the diluvium on the gault, the diluvium on the new red sand, the diluvium on the coal formation: these form gravelly strong soils, with a considerable portion of clay in their composition. The greywacke and clay-slate, some of the basalt: these soils are composed of fragments. The alluvial, the green sand, the new red sand, the old red sand, or red marl of Hereford, some of the basalt: all these soils have calcareous matter with silex and clay in their composition, and are of the first quality.

The author next gives some paragraphs on the principles of vegetable life; the effects produced by the sun and air on vegetation; water; air; analysis of vegetables; nature and properties of the minerals which compose different soils; silex, alumina; lime; loam; the properties and use of soil and subsoil; with other subjects; and he concludes with remarks on fallowing, and various agricultural processes.

On the whole, he has produced a work which may be perused with advantage by the young cultivator, whether a gardener or a farmer. Perhaps it is not too much to say of it, that it is the most practically useful treatise on soils which has been published since the time of Sir Humphry Davy.

ART. III. *On Liquid Manures.* By Cuthbert W. Johnson, Esq., Barrister at Law, Corresponding Member of the Maryland Horticultural Society. Pamph. 8vo, 39 pages.

WHAT the English cultivator requires chiefly to have impressed on his mind, with reference to liquid manure, is, *the absolute necessity of fermenting it, where it is to be made the most of.* This Mr. Johnson has stated in a quotation, in his fourth, fifth, and sixth pages; and we wish he had stopped there, and endeavoured to impress on the mind of the reader the necessity and advantages of fermentation. This he had an admirable opportunity of doing, from an article published in the *Quarterly Journal of Agriculture* (vol. vii. p. 445. to 472.), about nine months before the date of his pamphlet.

ART. IV. *On Warming and Ventilating; with Directions for making and using the Thermometer Stove, or self-regulating Fire, and other Apparatus.* By Neil Arnott, M.D., F.R.S., &c., Physician Extraordinary to the Queen, Author of the "Elements of Physics," &c. 8vo, pp. 138.

WE have more than once in preceding volumes, strongly recommended Dr. Arnott's *Elements of Physics* to the young gardener; and, though the work now before us belongs rather to domestic economy and architecture, than to horticulture, yet it is a work that every man who lives in apartments warmed artificially may benefit by perusing. We are much mistaken if the stove invented by Dr. Arnott does not prove one of the greatest blessings to society, in the way of heating, that it has ever participated in since the invention of chimneys. In our two preceding Numbers (p. 57. and 95.), we have spoken highly of Mr. Joyce's stove, mentioning it as one, perhaps, of the most extraordinary discoveries which had been made since the invention of gunpowder; viz., the combustion of fuel without the production of deleterious gases. There is nothing inconsistent, as might at first sight be supposed, in our equal admiration of the two inventions; for the two together may, perhaps, be considered as supplying every desideratum that can be required in a dwelling-house in the way of warming. For heating rooms and closets that have no chimneys, for heating particular parts of rooms, or, in short, for carrying about a supply of heat to be immediately made use of in any part of the house, as one carries about a supply of light by means of a lamp or a candle, recourse will be had to Joyce; but for keeping at a steady temperature rooms that have chimneys, at little expense, Arnott's stove is decidedly the one that claims the preference. Mr. Joyce, when we had last the pleasure of seeing him, was of opinion that his stove would be a source of great economy

to cottagers; and, undoubtedly, this would have been the case, had not Dr. Arnott's invention appeared subsequently. Dr. Arnott's stove, we think, must have the preference for the poor man; because, though, to act in the best manner, it requires a fuel not bituminous, or apt to cake, such as charcoal, stone coal, or coke, yet it will act tolerably well with any kind of wood, coal, peat, &c. Whereas Mr. Joyce's stove will not act at all, without fuel prepared according to his patent.

In the *Architectural Magazine* for this month, we have gone more into detail respecting Dr. Arnott's stove, illustrating the subject with woodcuts; and we shall therefore defer any further notice of it here till our next Number, when these cuts will be disengaged, and at the service of the *Gardener's Magazine*.

ART. V. *Catalogue of Works on Gardening, Agriculture, Botany, Rural Architecture, &c., lately published, with some Account of those considered the more interesting.*

MONOGRAPHIE de la Famille des Conifères, par M. Jacques, Jardinier en Chef du Domaine Royal de Neuilly, Membre de la Société d'Horticulture, &c. Extrait des "Annales de Flore et de Pomone." Pamph. 8vo, 80 pages.

A catalogue that will be useful to the cultivators in the neighbourhood of Paris. The same genera are given, as belonging to the Coníferæ, as in the *Arboretum Britannicum*, except that Taxàceæ is included, and Casuarìna added, as a genus related to the Coníferæ. Among the species of pines in cultivation in the Paris gardens, which M. Jacques cannot refer to any of the regular sections, are: *P*ìnus cærùlea *Lodd. Cat.*, which is *A*bies cærùlea; *P*ìnus novazelándica *Lodd. Cat.*, which is nothing more than *P. P*ináster; *P.* scarìna *Cels.*, which is *P.* escarèna *Risso*; *P. P*ináster escarènus *Arb. Brit.*; *P.* nepalénsis *Hort.* (a name which, in England, is sometimes applied to *P.* excélsa, sometimes to *P.* Gerard*iàna*, and sometimes to *P.* longifòlia; so that, unless we saw the plant, we cannot say what it is); and *P. Neòsa*, which is *P.* Gerard*iàna*.

The author confines himself chiefly to short popular descriptions; with occasional notices respecting culture, in the Paris garden in which the species is contained.

Histoire du Cèdre du Liban, par M. Loiseleur Deslongchamps, Membre de l'Académie de Médecine, de la Société Royale et Centrale d'Agriculture, de la Société Royale d'Horticulture, &c. Pamph. 8vo, 66 pages, one plate.

M. Loiseleur Deslongchamps is well known among botanists as the author of the article on the Pine and Fir Tribe in the *Nouveau Du Hamel*. He has here reprinted the essence of what he had there stated respecting the cedar, added some recent infor-

mation, and corrected the error which he, some other French writers, and Mr. Lambert, had fallen into, in making the cedar a native of Siberia. He does not, however, appear to be aware of the fact that the cedar is a native of Africa; shoots, cones, and wood having been sent home from Morocco by the English consul there to Mr. Lambert. The latest news from Mount Lebanon respecting the cedars, given in M. L. Deslongchamps's book, is by M. Laure, an officer in the French marine, who visited Mount Lebanon in September, 1836. "There is not one young cedar," M. Laure observes, "in all the wood of El-Herzé. The soil of the Forest of Lebanon, on which there was not a single blade of grass in September, 1836, is covered, to the thickness of half a foot, with the fallen leaves, the cones, and scales of the cedars; so that it is almost impossible for the seeds of the trees to reach the ground, and germinate." (*Laure* in the *Cultivateur Provençal*, p. 317. to 323., as quoted in Deslongchamps's *Histoire du Cèdre*, &c., p. 63.)

Verzeichniss von im Freien ausdauernden Stauden-Gewächsen, welche für beigesetzte Preise zu haben sind bei Friedrich Adolph Haage, jun., Kunst- und Handels-Gärtner in Erfurt.

Catalogue of Seeds sold by Friedrich Adolph Haage, jun., Seedsman and Florist, Erfurt (Germany).

We recommend this last catalogue to those who are curious in their varieties of culinary vegetables. A great many sorts of these are cultivated at Erfurt; and the seeds are sold by F. A. Haage at the prices affixed to each in his catalogue. There can be little doubt that many of his sorts are quite new to the English gardener. We recommend him to try them; and this he may do by sending his orders to M. L. Hilsenberg, 29. Old Jewry, London, who will forward them to M. F. A. Haage in Erfurt.

Observations on the Preservation of Health in Infancy, Youth, Manhood, and Age; with the best Means of improving the moral and physical Condition of Man, prolonging Life, and promoting human Happiness. By John Harrison Curtis, Esq., Author of "Observations on the Preservation of Sight," "On the Preservation of Hearing," &c. 2d edition, small 8vo, pp. 162.

Mr. Curtis recommends the erection of ornamental fountains in various places throughout the metropolis, for the sake of imparting an appearance of coolness in the summer months, and keeping clear the sewers into which the superfluous water would fall; to which recommendation we would, in addition, remind our readers of one given by Colonel Mason, some years back, of having jets in the centre of some of the public squares, and em-

ploying such a powerful steam-engine as to throw a column of water 6 in. in diameter from 60 ft. to 80 ft. high. The steam-engine might be placed a good way off, in any mews or back street; and, as the same water would be thrown up that fell down, there would be very little waste or expense in that way. One or two public-spirited individuals, in any of our squares, might easily get his neigbours to join in carrying such an idea into execution.

Mr. Curtis is also in favour of places of exercise and recreation in the neighbourhood of all towns. He suggests the formation of a public botanic garden for London, in such a situation as the centre of the Regent's Park; and the throwing the gardens of the squares open at stated times to the public. Railroad travelling is mentioned as highly congenial to health; and he quotes from Dr. James Johnson's *Medico-Chirurgical Review* to the following effect: — "Railroad travelling possesses many peculiarities, as well as advantages, over the common modes of conveyance. The velocity with which the train moves through the air is very refreshing, even in the hottest weather, where the run is for some miles. The vibratory, or rather oscillatory, motion communicated to the human frame is very different from the swinging and jolting motions of the stage-coach, and is productive of more salutary effects. It equalises the circulation, promotes digestion, tranquillises the nerves (after the open country is gained), and often causes sound sleep during the succeeding night; the exercise of this kind of travelling being unaccompanied by that lassitude, aching, and fatigue, which, in weakly constitutions, prevents the nightly repose. The railroad bids fair to be a powerful remedial agent in many ailments to which the metropolitan and civic inhabitants are subject." (p. 134.)

MISCELLANEOUS INTELLIGENCE.

Art. I. *Restrospective Criticism.*

Shriveling of Grapes. — In p. 87. l. 18., after the words "extent of the disease," read "(sometimes only a few berries are infected, sometimes nearly the whole in the bunch), continued to deepen in colour, and gradually become black; the others (the diseased ones) cease to colour, and remain of a brownish red tinge."— *G. A. Lake. Feb.* 1838.

Art. II. *Queries and Answers.*

Effects of Frost on certain Species of Erica.—One of your correspondents, J. B. A. (p.111. of the present Volume), has paid me a compliment, by wishing to know my opinion concerning the destruction of the stems of some heaths in Kew Gardens by the late severe frost. It is an effect which I have often noticed, and had to deplore, in my time. It is remarkable, that our intelligent and worthy friend, Mr. M'Nab of the Edinburgh Botanic Garden, put forth this very circumstance (in a small pamphlet published by him some years

ago) as one of those *inexplicable phenomena* occurring among plants. If I mistake not, Mr. M'Nab added that the tender tops might be struck as cuttings, while the stems were shattered into shreds by the frost.

It is well known that those plants which have the thinnest or most watery sap are more liable to be killed by frost than those which have gummy or resinous juices; those which have a flexible or yielding texture, are less liable to be ruptured than such as are rigid in habit; clover is decomposed, while wheat is only withered, without any laceration of the leaves.

So, in the case of heaths, the tops are flexible, and yield without fracture to the congelation within; whereas the stems, though almost sapless, are so rigid in their vascular structure, that they are rent to pieces. A cast-iron tube of 6 in. diameter, and 2 in. bore, filled with water, and exposed to keen frost, will burst as easily as a tube of paper; whereas a bladder filled and exposed in like manner will escape scathless, in consequence of the expansibility of the integument.

I may be mistaken in this my supposition; but it was the only reasoning which occurred to me, in accounting for the destruction alluded to.—*J. Main. Chelsea, Feb.* 9. 1838.

Art. III. *The London Horticultural Society and Garden.*

January 16. 1838.—*Read.* A paper "On the Cultivation of the Orange Tree in England," by the Right Hon. Sir Augustus Foster.

Exhibited. Eránthemum pulchéllum, Corræ'*a* Mílneri, Ardísia crenulàta, E'pacris imprèssa, Canarìna campanulàta, *Euphórbia* jacquini*æflòra*, Strelítzia hùmilis, and Chorózema sp.; from Mrs. Lawrence. Pomme grise (grown in Upper Canada), and seedling apple (raised in Upper Canada from the Pomme grise); from Mr. Blackemore.

From the Garden of the Society. Apples: Pearson's plate, t.; court pendu plat, t.; Syke-house russet, t.; Beachamwell, t.; Alfreston, k.; Bedfordshire foundling, k.; Tower of Glammis, k.; Brabant bellefleur, k.; Rhode Island greening, k.; Dumelow's seedling, k.; Woolman's long, *syn.* Ortley, k. t.; scarlet nonpareil, t.; Yorkshire greening, which is often compared with the northern greening; Sam Young, t.; royal russet, k.; Brickley seedling, t.; tulip apple, k.; reinette du Canada, k. t.; Pomme royale, a new sort of russet, which will do for dessert.—Pears: Easter beurré, glout morceau, beurré rance, ne plus meuris, Downton, a sort esteemed by some, while others think it too astringent; Dowler's seedling; Rouse Lench, a most abundant bearer as a standard; winter crassane, which, in favourable seasons, is a most excellent and very hardy pear. — Chimonánthus frà*g*rans, and C. grandiflòrus.

Awarded. A silver Knightian medal to Mrs. Lawrence, for *Euphórbia* fúlgens (jacquini*æflòra*.)

Feb. 6. 1838.—*Exhibited.* Queen pine-apple, from Mr. G. Leslie, gardener to J. Heming, Esq., Stoneham Park. Three drawings of *Orchidàceæ*, by Mrs. Withers. Catasètum pùrum, from Mr. Douglas, gardener to J. Bateman, Esq. Rhubarb from two years old plant, raised from seed, from Mr. R. Black. Citrons grown without artificial heat, from J. Luscombe, Esq. A pine-apple weighing 3 lb. 13 oz., from Mr. T. M'Carthy, gardener to J. Elliot, Esq.

From the Garden of the Society. Table Apples: Old golden pippin, Baxter's pearmain, Nell Gwyn, packhorse, reinette du Canada, Adam's pearmain, Pile's russet, Margil, Lamb Abbey pearmain, Court of Wick, conquest de Wigers, Dutch mignonne, Court pendu plat, cockle pippin, Ortley.—Kitchen Apples: Green nonpareil, Baldwin, pomme royale, Alfreston, northern greening, Yorkshire greening, tulip apple, mère du ménage, Bedfordshire foundling, Holland pippin, beauty of Kent, Tower of Glammis.—Pears: Easter beurré, beurré rance, Dowler's seedling, Downton, Catillac. These pears were preserved in a clean flower-pot spread with slate, and plunged in

dry sand, of which about 3 in. deep was spread over above the slate, the latter preventing the sand from mixing with the fruit in the pot.

Awarded. A silver Banksian medal to Mr. Luscombe, for the citrons.

Art. IV. *Covent Garden Market.*

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbage, per dozen:		
Red	0 2 0	0 4 0
Plants, or Coleworts	0 5 0	0 10 0
Savoys	0 1 0	0 1 6
Brussels Sprouts, per ½ sieve	0 2 6	0 3 6
German Greens, or Kale, per dozen	0 0 9	0 1 0
Broccoli, White, per bunch	0 6 0	0 7 0
Tubers and Roots.		
Potatoes per ton	4 0 0	6 0 0
Potatoes per cwt.	0 4 0	0 6 0
Potatoes per bushel	0 2 0	0 3 0
Kidney, per bushel	0 2 6	0 3 0
Scotch, per bushel	0 2 0	0 3 0
New, per pound	0 1 0	0 1 6
Jerusalem Artichokes, p. ½ sieve	0 1 6	0 2 0
Turnips, White, per bunch	0 0 3	0 0 6
Carrots, per bunch	0 0 5	0 0 6
Parsneps, per dozen	0 0 9	0 1 3
Red Beet, per dozen	0 1 6	0 2 0
Horseradish, per bundle	0 1 6	0 4 0
The Spinach Tribe.		
Spinach, per sieve	0 2 6	0 3 0
The Onion Tribe.		
Onions, old, per bushel	0 7 0	0 8 0
Leeks, per dozen bunches	0 1 6	0 0 0
Garlic, per pound	0 0 6	0 0 8
Shallots, per pound	0 0 10	0 1 0
Asparaginous Plants, Salads, &c.		
Asparagus, per hundred:		
Large	0 8 0	0 10 0
Middling	0 4 0	0 5 0
Small	0 2 6	0 3 6
Sea-kale, per punnet	0 1 6	0 3 0
Endive, per score	0 2 0	0 2 6
Celery, per bundle (12 to 15)	0 1 0	0 1 3
Small Salads, per punnet	0 0 3	0 0 0
Watercress, per dozen small bunches	0 0 6	0 0 8
Pot and Sweet Herbs.		
Parsley, per half sieve	0 3 6	0 5 0
Tarragon, dried, per doz. bun.	0 2 0	0 0 0
Thyme, per dozen bunches	0 3 0	0 0 0
Sage, per dozen bunches	0 3 0	0 0 0

	From £ s. d.	To £ s. d.
Mint, dried, per dozen bun.	0 1 0	0 0 0
Peppermint, dried, per dozen ...bunches	0 1 0	0 0 0
Marjoram, dried, per doz. bun.	0 1 0	0 0 0
Savory, dried, per dozen bun.	0 1 0	0 0 0
Basil, dried, per dozen bunches	0 1 3	0 0 0
Rosemary, per dozen bunches	0 6 0	0 0 0
Lavender, dried, per dozen bunches	0 3 0	0 0 0
Stalks and Fruits for Tarts, Pickling, &c.		
Rhubarb Stalks, forced, per bundle	0 1 6	0 2 0
Edible Fungi and Fuci.		
Morels, per pound	0 16 0	0 0 0
Truffles, per pound:		
English	0 6 0	0 0 0
Foreign, dried	0 14 0	0 0 0
Fruits.		
Apples, Dessert, per bushel:		
Nonpareil	0 10 0	1 0 0
Golden Pippin	0 10 0	1 0 0
Baking	0 3 0	0 5 0
American	1 0 0	0 0 0
Pears, Dessert, per dozen:		
Passe-Colmar	0 3 0	0 6 0
Glout Morceau	0 3 0	0 6 0
Baking, per half sieve	0 5 0	0 8 0
Almonds, per peck	0 7 0	0 0 0
Cranberries, per gallon	0 3 0	0 4 0
Strawberries, forced, per oz.	0 3 0	0 0 0
Chestnuts, per peck:		
English	0 4 0	0 8 0
French	0 4 0	0 6 0
Pine-apples, per pound	0 5 0	0 9 0
Cucumbers, frame, per brace	0 5 0	0 10 0
Oranges per dozen	0 0 9	0 2 6
Oranges per hundred	0 4 0	0 14 0
Bitter per hundred	0 8 0	1 0 0
Bitter per dozen	0 1 6	0 4 0
Lemons per dozen	0 1 0	0 2 0
Lemons per hundred	0 6 0	0 14 0
Sweet Almonds, per pound	0 2 3	0 3 0
Nuts:		
Brazil per bushel	0 16 0	0 0 0
Barcelona, per peck	0 5 0	0 0 0
Spanish, per peck	0 4 0	0 0 0

The continued prevalence of severe frost has so interrupted the supplies, and completely destroyed all vegetation, that the market offers but little to notice, except asparagus, sea-kale, &c., which are not as yet extensively furnished. During the intermission of the frost, about ten days since, we obtained an excellent supply of apples, which had the effect of stocking the market, and caused a considerable depression in prices, which have not again rallied. The general impression, that onions would materially suffer by the severity of the weather, has created a spirited demand for them, and prices have risen considerably. Potatoes have also increased materially in price, from the apprehension of serious injury having been sustained, and the detention of the ordinary supplies by water, caused by the interruption of the navigation.

Art. V. *Obituary.*

Dr. T. F. L. Nees von Esenbeck.—A letter in the *Cologne Gazette*, dated Bonn, contains the following biographical sketch of the late Dr. Th. Fr. Ludwig Nees von Esenbeck (the younger), professor of pharmacy and botany in the University of Bonn. He expired on the 12th December, at Hières, in the south of France, whither he had gone, in the hope of improving his health, by the influence of a mild climate. His complaint was consumption.

Nees von Esenbeck was born at Reichensberg, in the Odenwald, on the 26th of July, 1787. He passed his youth at Erbach, whither his parents had removed. After he left school, he received instruction in languages and physical science from his elder brother, President and Professor Nees von Esenbeck (now in Breslaw). In his eighteenth year, he commenced a course of pharmacy, under Martius of Erlangen, well known by his writings in that department of science. During eleven years, he attached himself to the profession of pharmacy exclusively, residing part of the time in Erlangen, and part in Basel and Hanau. Botany, however, was his favourite science, and to it he devoted much of his time, both practically and as a teacher. While at Hanau, he accepted the offer of the situation of inspector of the Botanic Garden at Leyden, and he held that office for two years, under Bruggmanns. Here he obtained the degree of doctor in philosophy. The newly instituted University of Bonn, of which his brother had been nominated professor of botany, was the occasion of his quitting Leyden, he being appointed inspector of the Botanic Garden, and assistant professor of botany to that establishment. From this period he conducted the botanical excursions in the neighbourhood of the university with the most favourable results; and, by this means, added considerably to the little knowledge which had then been acquired of the flora of that part of the country. In the year 1820, he officiated as private tutor. In 1822, he undertook the continuation of the great copperplate work on medicinal plants, published at Dusseldorf. His appointment as extraordinary professor followed that of ordinary professor of pharmacy. He applied himself cheerfully and with success to the task of instruction: his language was clear and concise. He enriched that branch of science of which he was professor with several essays, inserted in pharmaceutic journals. Pharmaceutic botany, and the knowledge of drugs, were his favourite departments of science; and he drew from them the subjects on which he chiefly dwelt in his lectures. The *Handbook of Pharmaceutic Botany*, in three volumes, which he published in conjunction with Dr. Ebermayer, bears evidence, among other works, of his successful pursuit of knowledge. After the completion of this work, he undertook the editing of the *Genera Plantarum*, which has obtained for his name a very conspicuous place in science. Among his latest works, was the first part of the *System of the Fungi*, which he published conjointly with Herr Henry. He had also commenced editing, along with Herr Justus Liebig of Giessen, and Dr. Marquart of Bonn, a new edition of Geiger's *Handbook of Pharmacy*. He was elected fellow of numerous learned societies both foreign and German; and, among the papers of these bodies, are several essays of his composition on subjects not confined to the sphere of general and pharmaceutic botany. He was buried at Hières amidst rose trees, orange trees, lavender, and all those sweet children of flora which he loved so dearly. The funeral ceremonies were performed by an evangelical clergyman who came from Toulon for that purpose. His remains were followed to the grave by a numerous train of friends.—*G. R.*

THE

GARDENER'S MAGAZINE,

APRIL, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *Detail of Experiments on Vegetable Physiology, and Observations thereon.* By N. NIVEN, Curator of the Glasnevin Botanic Garden, Dublin.

(Read at the Meeting of the British Association in Liverpool, on Tuesday, Sept. 12. 1837.)

MY DEAR SIR, In compliance with your request, I have much pleasure in sending you my paper on Vegetable Physiology, read at the Meeting of the British Association, held in Liverpool last September.

That paper, one of the respected gentlemen to whom I committed the specimens presented to the botanical section, for the purpose of being deposited in the British Museum, kindly offered to get published for me in London; but, having then some expectations of publishing it in this country, I declined his obliging proposition. Not having realised that intention, I have the greater pleasure now in committing my paper to you, which I hope you will find it convenient to publish nearly as it stands.

It may not be presumptive in me to state in this letter, which you are at perfect liberty to publish with my paper, that, had I noticed in proper time the question proposed by the Academy of Sciences at Haarlem last year, to be given in before the date of this letter, namely, "*How is wood formed?*" I should not have hesitated to enter the lists, in answering that, and possibly some other questions connected with the same subject. As your Magazine will, in all probability, come under the notice of that learned body, I respectfully refer its members to my paper, and beg leave to say that leaves, or any modification of leaves, form the origin of wood. N. NIVEN.

Glasnevin Botanic Garden, January 1. 1838.

HAVING, for the last three years, been more or less engaged in some experiments on the interesting subject of vegetable physiology, it may, perhaps, not be uninteresting, on the present

occasion, to submit a statement of the results, some of them appearing to me both curious and important.

At the commencement of my first series of experiments, in the early part of the spring of 1835, the principal object was, to try to ascertain, by different processes of ringing, how far the life of the tree depended upon the *cortical* layers, or parts *external* to the wood; and the alburnous layers, or sap wood, or, to speak more plainly, that portion of the woody structure *interior* of the cortical layers; having observed, in studying the works of the most eminent authors on this very important branch of botanical science, that considerable diversity of opinion existed amongst them thereon. For example, it may be recollected that Du Petit Thouars states, "When the bark, liber, and alburnum were removed, the tree continued to live;" whilst the venerable and celebrated Knight found, by a similar experiment, "that the tree exhibited no signs of vegetation the spring following."

For these and such like reasons, I was induced, at first, to adopt the experiments alluded to.

The experiments now about to be described are those which formed a *second* series, instituted in the early spring of 1836.

Without at all presuming to discuss the various and conflicting opinions of authors respecting the *channel* of the *ascending* or *descending* sap, I shall at once proceed to present figures of the subjects of the various experiments, with a simple statement appended to each of their various results; and, having done this, conclude with some observations respecting them.

It may be well, also, to state here, that the trees operated upon were the common English elm (*U*lmus campéstris), and about forty-two years of age; the breadth of the rings cut out being, in each case, about 4 in.

With these short preliminary remarks, I beg respectfully to throw myself upon the kind indulgence of the high authorities before whom I have the honour this day to stand.

Fig. 20. shows part of the stem of a tree, deprived by ringing of the cuticle and external cortical layers only; that is, leaving the *liber* and *cambium* undisturbed. This, as well as the following experiments (as I have just stated), was done in the month of February, 1836. About the month of May following, a fresh formation of young bark and wood began to take place, as shown at A, *from above; descending*, in a very short time, over the whole surface of the ring, *except* a few *spots* (B) where the operation had been performed rather *deeply*. The tree continues to grow as vigorously as any of the same kind in its immediate neighbourhood; and the excorticated part is, this year, nearly filled up with *new bark*, and *new layers* of *sap wood*.

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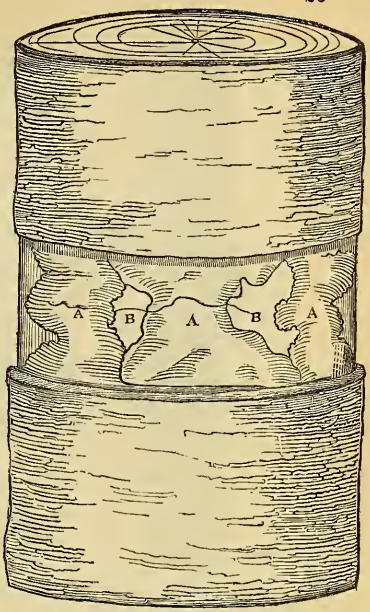
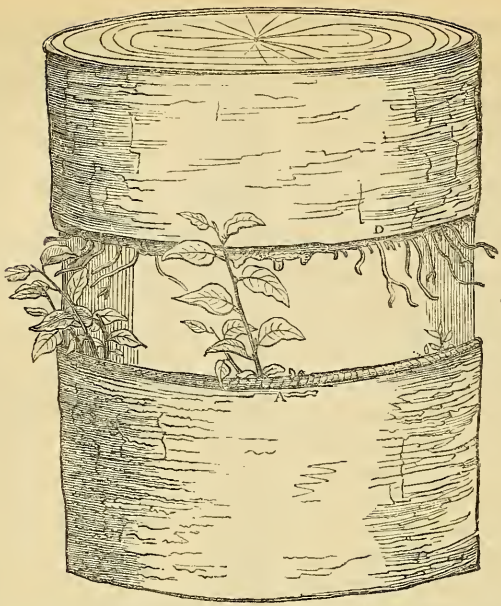


Fig. 21. shows part of a tree, deprived of the whole of the cortical layers, with every vestige of the pulp, or cambium, attached to the alburnum.

This tree continued, for the *first year*, as healthy and vigorous as any of its undisturbed neighbours; but, in the *second year* (Aug., 1837), there were evident signs of less energy and vigour in the tree; and there is no formation of new bark or wood over any part of the surface of the ring. It has all over appeared dry and inactive. Two developements, however, have been produced, of a very curious and interesting description; one of which I have not seen noticed by any author: they appear on the tree as shown in *fig.* 21., in the shape of *roots* and *branches;* but, as I humbly conceive it would interrupt the description of the rest of the figures too much, to make any lengthened observations respecting them here, besides their not being exactly in connexion with the primary object of investigation, with which I set out, I shall leave the consideration of them till the conclusion, when I shall present the *true specimens* to speak for themselves; and then make some observations on these developements. In *fig.* 21., A shows the ascending principle producing buds, leaves, and shoots; and D the descending principle forming wood and roots.

Fig. 22. represents part of the stem of a tree, deprived in the same way of the bark, liber, and cambium, with *two* layers of the *alburnous* wood. This tree was rather in an unhealthy state when the operation was performed: it continued to live throughout the last year; shed its leaves rather early; and this year it developed its leaves, but has since withered away and died. I have every reason to conclude that the operation of ringing accelerated its death. There was no appearance of any flow of sap, either *above* or *below*, from the two exposed edges of the *layers* of *alburnum*; but there was a *small* developement of the ascending and descending principles, between the *bark* and *alburnum* on the *upper* and *lower* edges of the ring.

Fig. 23. represents a tree divested not only of its bak,



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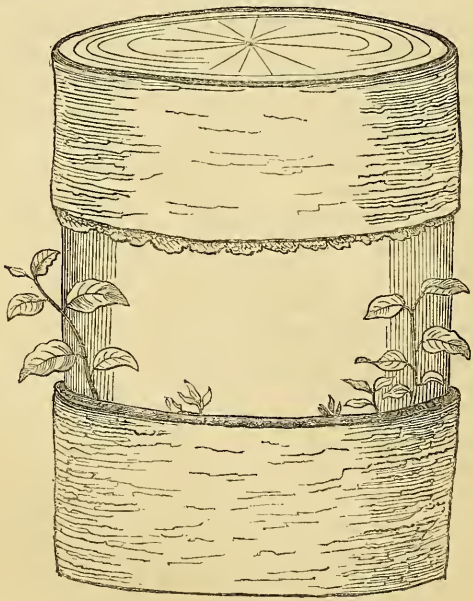
liber, and pulp, but also of *six* layers of the alburnous wood. This tree exhibited no diminution of health or vigour last year;



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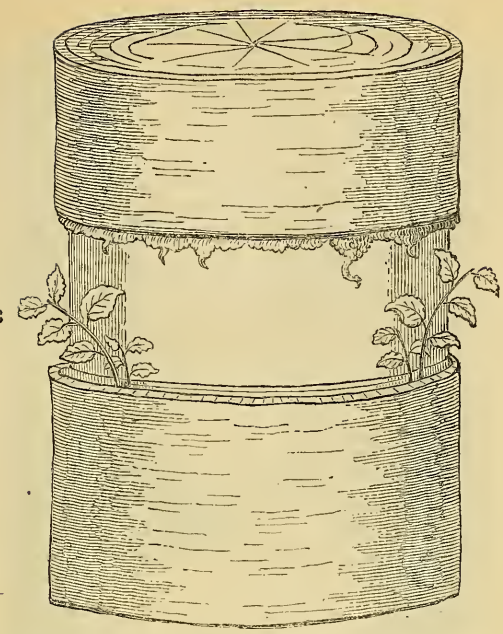
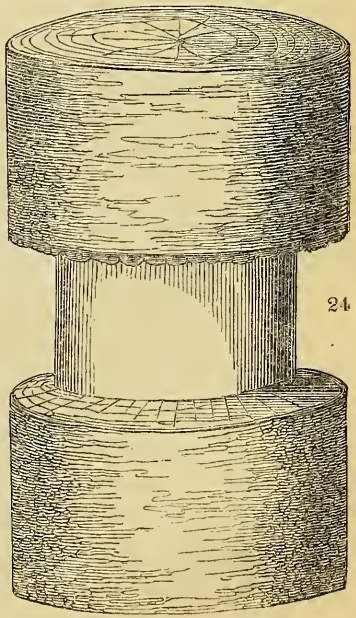
but this year it exhibits an *early yellowing* of the leaves, similar to *fig.* 21. No appearance of sap showed itself on either of the



surfaces of the edges of the exposed alburnous layers; only the two developements before alluded to, in *fig.* 21., very copiously produced.

Fig. 24. represents part of the stem of a tree, divested of its cortical layers, and *twelve* layers of the alburnous wood.



This tree continues to live, and appears not to be less healthy than the last. In the case of the exposed surfaces of alburnous layers, no vestige of sap has made its appearance, except from a cut that had been inadvertently made with the saw on one side, to the depth of, perhaps, five or six layers of wood beyond the 12: from which cut a flow of sap took place, that continued to run, more or less, throughout the whole of last summer, and a little this spring, but has latterly ceased.

This accidental circumstance

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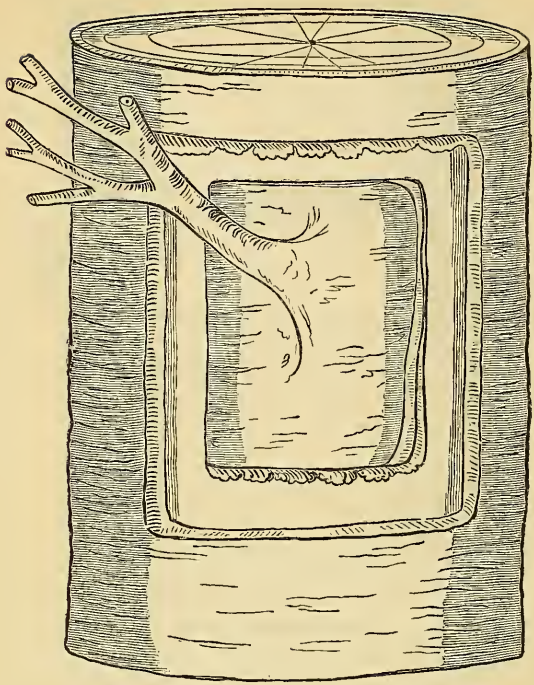

appears important, and will lead me, further on, again to remark upon this experiment.

Fig. 25. exhibits an isolated branch, after the manner of Pallisot de Beauvais, mentioned and figured by Sir Humphry Davy; with this difference, however, that, instead of an isolated piece of bark only, it includes a branch of some size and age. The space around the separated bark and branch was divested of all the cortical layers and pulp, or cambium. The branch continues as healthy and vigorous as any others on the tree, and exhibits a beautiful example of the *descending* principle, both from the *edge* of the *bark above* the separated part, and the edge of the bark *below* the *branch*, *on* the *separated bark;* the woody layers formed *beneath* having been evidently produced through the medium of the *leaves* of the branches, as the formation is principally *below the line* of the *branch's insertion* on the tree.

Fig. 26. shows a tree so managed as to exhibit two surfaces of the greater portion of the *internal parts* of the tree, without apparently interfering with its growth above the operation. The tree is thus placed on four *separate pillars* of bark and alburnous wood. This has proved an exceedingly curious and interesting experiment, and will, I hope, prepare the way for some experi-

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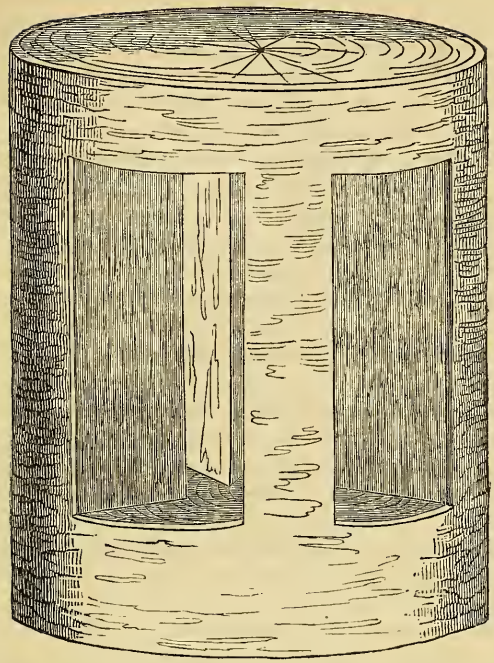


ments still better adapted for the purposes of future investigation.

In watching the flow of the sap, in this case, strange to say, it made its *first* appearance about the beginning of March, from *above*, descending *through the pith*. Shortly afterwards, it appeared, also, from about *fourteen* layers of the heart wood, around the pith, the exterior or alburnous layers remaining perfectly dry; *thus accounting* for the *tap*, if I may so speak, made by the saw in *fig.* 24. Little or no appearance of moisture was observed on any part of the corresponding surface *below*, with the exception of a slight oozing from the *external* or *alburnous layers*. This, however, was scarcely perceptible. I at present suspect that the principal flow of the ascending sap must have found its way up through the four pillars of alburnous wood alluded to. But I hope to investigate more closely, by future experiment, some points connected with this result. From these experiments, it would appear that the life of the tree does not entirely depend upon the preservation of the bark, liber, and alburnum, as *two seasons* of growth have elapsed since the operation of ringing was performed; and the trees, with the exception of the one alluded to, as apparently accidentally dead, continue to

develope leaves, and *form shoots*, as before: but it remains to be proved how long they will continue to vegetate *above* the rings. If I may give an opinion, I am disposed to think that, whilst to one species of tree such operations would produce almost *immediate death*, in others the result would be very different. Drawing an analogy from animal life, as to the tenacity with which it is held by different species, there is every reason to conclude that the same will be found to hold good with respect to tenacity of vegetable life in different species of plants also. We have, for instance, the willow, elm, and several other trees, that will continue to produce leaves and shoots from the trunks for one, two, and even three, years after they are cut down, and laid along the ground. The descent of the sap, described in *fig.* 26. as descending from *above*, through the pith and internal layers of wood, even *before the developement of leaves*, appears to me both curious and important; especially when I recollect that the received opinion, according to Mirbel and Knight, is, that the sap descends "through the cortical vessels;" the latter admitting that, "when interrupted by the destruction of a ring of bark, he supposes that part of it escapes downwards through the alburnum; but, before forming any positive opinion on this curious result, it is my intention, first, to follow it up with additional experiments.

In my first series of experiments, in 1835, on watching the developement of what has been called the "new cortical layers," usually appearing in the form of protruding bark, from the *upper edge* of the rings, I was much interested to find something of a similar developement beginning to appear from *below* also, and *exactly from the same part between* the *bark* and the *alburnum*, as that from above. *Recollecting no instance of any author having noticed this appearance*, and remembering that statements *perfectly opposite* to such an appearance had been made; as, for instance, in Sir H. Davy's fourth lecture in his *Agricultural Chemistry*, he says that, "when new bark is formed, to supply the place of a ring that has been stripped off, it first makes its appearance from the *upper edge* of the wound, and spreads slowly downwards; but no *new matter* appears from below rising upwards." A similar opinion appears to have been entertained by Du Hamel and others, who "cut a ring of bark from a branch, and found that, by thus stopping the *descent* of the pulp, the upper part extended and healed, while the lower remained *stationary*." On a close examination of the two appearances alluded to, I thought I could distinguish a marked difference between them; the one appearing like small *gems* or *buds*, the other like to the *rudimental* structure of *roots*. It immediately struck me that here might be *two perfectly distinct external principles*, proceeding in *opposite directions* through

the same part of the tree; that is, through the *cambium* or *pulp*, *between* the *bark* and *alburnum*. I thought, by the application of some medium of moisture, I might be able to prove the supposition. This was done by an application of moss to *both* edges of the one side of the ring. In about fourteen days after this application, I found that the supposition had been correct. The specimens before you exhibit a repetition of the *same result*, *in both stages;* presenting, in my humble opinion, a very important fact; namely, that there appears, *exterior* to the wood itself, *two perfectly distinct principles:* the one passing *upwards* from the *roots*, to the developement of *leaves*, which I would call the *leaf principle*, for I find it *cannot be changed;* and the other passing *downwards* from the *leaves*, to the developement of *roots*, which I would call the *root principle*, and which also appears to be equally permanent. I am consequently disposed to maintain, that from *any part* of the *surface* of the *woody structure* these *two developements* are to be found; and it appears to me only a *modified example* of the *descending one*, when we see roots proceeding from the *stems* of such genera as the *Ficus*, *Pothos*, and many others.

A very satisfactory proof of this is found in the case of propagating plants from cuttings. Each cutting appears to contain *within itself* so much of the *two principles*, that it only requires to be placed under such circumstances of *atmosphere* as will tend to *preserve* the *action* of the *leaves* without *collapsing*, until the *descending* principle has had *time* to *ramify itself*, through their action, into *roots;* when, by a gradual removal of the bell-glass, the plant is prepared to perform its various functions unaided, as well as to meet the viscissitudes of a constantly changing atmosphere. The one principle, I have no doubt, will be found to proceed principally from the *soil*, to the expansion of *leaves;* and the other from the *combined agency* of the *atmosphere*, to the *formation* of *new wood and roots*, and the *extension of the roots*. Corresponding with these views, some eminent phytologists hold the opinion, that "when a bud shows itself at the base of a leaf, or on a branch or stem, it follows two opposite movements; one upwards towards the air, the other downwards towards the earth. By the upward movement a new branch is produced; whilst the downward movement gives origin to a great number of new fibres, which lengthen out between the bark and the wood of the mother branch, as well as of the trunk down to the extremities of the roots." This opinion, another learned gentleman says, "rests entirely upon vague conjecture and hypothetical reasoning; and it appears to him the most *fanciful* and *baseless* opinion ever propounded." The opinions of such authorities being so much at variance on these matters, I am sure the learned gentleman alluded to will unite with me in thinking that it is de-

sirable that thus, by *direct experiment*, the subject should be further investigated.

As yet, I am extremely diffident in venturing any general theory respecting the views I am led to entertain on the subject before us, until I have made further advances into its investigation; so far, however, I cannot help thinking that I am fully justified in the formation of some views concerning it, differing considerably from any that I am aware have as yet been promulgated.

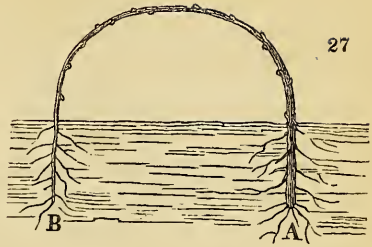
In the midst of so many learned gentlemen, perhaps it would be well for such an humble practitioner as I am not to venture such statements; but I am in hopes the learned gentlemen I have the honour and pleasure of addressing will give me credit not only for the correctness of my statements in reference to the experiments described, but also their kind indulgence for the observations I have so far taken the liberty of making. I trust, gentlemen, I need not say how much pleasure it will afford me to follow *any suggestions* that may be offered, on the present occasion, towards the further prosecution of these investigations.

To conclude: it is about two years since I wrote a short paper on the subject of the *first series* of my experiments; which paper I had the honour of reading at one of the evening meetings of the Royal Dublin Society. In this paper, reasoning from the external developements alluded to, I was led to *doubt the possibility* of *roots* becoming *branches*, or *branches roots*, as had been published, as the results of several experiments; which opinion, I have since found, agrees exactly with that which is held by Mr Knight; who, in a note on the subject, says, with respect to the statements made by different naturalists, that "the branches of willows, and other trees, when *buried in* the soil, *became* roots, whilst their *roots* became *branches*, *is not correct*;" instancing the mistake that Du Hamel made by making his cuttings too short.

For the purpose of further satisfaction on this point, and feeling that it might bear importantly either *for* or *against* the views I am led to entertain on this interesting subject, I have had several specimens prepared during the last two years, of which I now present one. To accomplish the object in view, namely, the *inverting* of the tree, and the changing of roots to branches, &c., both ends of the cutting were inserted into the soil, as shown in *fig.* 27.

The whole of the part above ground produced shoots, which, for the first year, I allowed to grow. Early last spring, the bottom end (A) was carefully *raised*, with all its roots and fibres, into the air: at the same time, a few of the *young shoots* next the top end (B), alongside the few roots of the top end, were put into the soil;

thus having the branches and root in the two situations most opposed to each other. The result has just turned out as I expected; namely, the roots died, and the inverted stem only produced buds, leaves, and shoots; proving that the conclusion of Du Hamel and others, on this point, may have been founded on mistake; as it is very evident, from the specimen I now present, that no such result as buds and leaves from the roots has taken place.



If the views I entertain on the important subject of vegetable physiology be correct, I can have little hesitation in saying that *buds* and *leaves* never can be developed from the *extreme ends*, or mouth-pieces, of *roots;* but that, at any the least distance from the end of the root, buds and leaves may be produced.

Many plants, we know, are propagated from the *roots*, as well as from the *cuttings* of the top: this evidently arises from the simple circumstance of the *leaf* and *root* principles being diffused over each of their surfaces.

With these observations, gentlemen, I beg leave, for the present, respectfully to conclude.

ART. II. *The Botanical Periodicals and their Illustrations.* By H. N. H.

SINCE the establishment of the *Botanical Magazine*, about 1793, which may be considered the father of botanical periodicals, and which, for some time, stood alone, the increasing taste for gardening and botany has gradually called into existence many rival publications. Some of these form parts of works to be completed in a given time, which have, in most instances, been completed, and form, in more than one case, handsome additions to our botanical libraries; and others are of the magazine character; some of them appearing and vanishing almost as soon as they have appeared; whilst others, with various success, are still continuing their career, amid the rivalry of fresh competitors, which the still increasiug taste for the pursuit, both as a recreation and a science, calls almost daily into existence.

One of the first works, of a botanical character, that appeared in this country, claiming any great excellence for its illustrations, was Lambert's *Description of the Genus Pinus;* a truly

splendid work, which did at once, and in the beginning, almost as much as the increased facilities of art and the experience of nearly forty years have enabled us to realise at the present time. This beautiful work appeared in 1803, and possesses few of the faults of execution common to the works of that period. It attempted an union of elegance and beauty of illustration, combined with scientific utility, never before attained; and which, in many points, has never yet been excelled. The plates were engraved by good artists; and the shading not confined to *lines*, but, in the execution of the cones and other parts, where softness and delicacy of effect were required, *dotting* in the chalk style was resorted to, which rendered the effect, when coloured, much softer and more even than could ever be attained by *lining*. (I am, of course, now speaking exclusively of plates for botanical illustration, and more particularly of such as are intended for colouring.) The colouring of these plates is in a style of careful excellence not to be surpassed, however it may have been outdone, in some works of the present day, in brilliancy and effect.

A few years subsequent to Lambert's *Pinus*, appeared Sibthorp's *Flora Græca*, a much more voluminous work, but not equal to the *Pinus* in the finish of its illustrations. In the delicate petals of flowers, where softness and delicacy were even more required than in the cones of the pines, in the work I have been before describing, no attempt was made to take advantage of an admixture of the *dotting*, or chalk style, to attain the desired effect; but the expression of shade was, on the contrary, confined to a few *lines*, which, though put in with a good deal of character and artistical feeling, are rather coarse; and some of the most beautiful effects of many a delicate flower are consequently lost. Still, this must be considered a very handsome work, even when viewed merely on the score of its illustrations, and divested of its great interest in a scientific point of view. It is, in fact, one of the steps towards that excellence, which we have now the means of attaining, but which we have not yet attained.

In 1836, Wallich's *Plantæ Rariores Asiaticæ*, emulating the splendid works then in progress on the Continent, formed a new era in the art of pictorial illustration of works of this class. The plates, by the aid of the beautiful art of lithography (at length in general use for the illustration of scientific works), made a greater approach towards many points of excellence than had hitherto been attained. The cold effect of aquatinta shades, which had spoiled many former works, was abolished; and the harshness of line-shading on copper or steel was superseded by the soft chalky shades of lithography. The plates thus assumed more of those characterestics of works of art, which should always be the ambition of works of such expense:

for, to a certain extent, they are works of luxury, rather than mere science. These plates have, nevertheless, many faults; as, even so recently as the period when they were produced, lithographic printing had scarcely attained its present certainty of equal success. There is also another defect, not dependent upon the imperfection of the printing: a *coarseness* in the work of the lithographic artist, which is very offensive to the eye, as it precludes the possibility of obtaining that transparency of colour, which is so desirable in depicting flowers. Some of the plates are, notwithstanding these defects, very beautiful; and I cannot but particularise, though there are some still better, the one of that inconceivably splendid tree, Amhérst*ia* nóbilis; to see which, growing in all its native luxuriance, is really almost worth a pilgrimage to the East. Another fault in this work is derivable from the stiffness of the original drawings, which, being almost entirely the work of Indian artists, are wanting in that freedom and elegance of outline, which is only to be acquired in a more advanced school of art.

The present rage for the collection of orchideous plants has led to the publication of two works, the first numbers of which have just appeared, laying claim to greater splendour of illustration than any similar works which have as yet appeared in this country. I allude to Mr. Bateman's *Orchidaceæ of Mexico and Guatemala*, and Dr. Lindley's *Sertum Orchidaceum*. The first is really a magnificent work; got up, regardless of expense, with every aid that the arts in various branches can afford. The beautiful woodcut vignette, the ornamental capitals and illustrative tail-pieces, are most admirably executed, and form an elegant feature in the work; but the titlepage, which afforded still greater scope for similar excellence, is clumsily designed, and lithographed. The idea is good, being to form a composition from fragmental remains of ancient Mexican sculpture; but there is neither delicacy of touch or feeling in its execution. Such a design might have been made just as well from a few of the pretty impressions which are used to decorate furniture, &c., in what is called the "Egyptian style." The plates, at first glance, are brilliant in the extreme, and really convey a good idea of the dazzling beauties of the subjects themselves. These are well chosen, and the task of the artist, Miss Drake, gracefully accomplished: they do great credit to her talent in that beautiful branch of watercolour painting. But the works of the lithographer and colourer have not been so successful; for, upon a closer examination, many faults are obvious. These plates, though possessing great brilliancy, want the beautiful and careful accuracy which distinguishes some earlier works, particularly the *Pinus*, which I have mentioned; and all the advantages which lithography offers to plates of this description have, to a

great extent, been neutralised by a hasty coarseness in the working, which will, I trust, be remedied in future numbers; and which is the more to be regretted, as I am sure that no expense has been spared to insure excellence in every department. One great defect is, the outlining of the petals of some of the most delicate flowers with *ink;* which detracts much from the wax-like delicacy of some of the most beautiful species of this elegant race of plants. By this system of employing ink instead of chalk, much time is, perhaps, saved, and a great degree of sharpness easily obtained; but it is at the expense of the delicate softness so requisite. A fine *chalk* outline, in the cases in question, would produce a much more true and beautiful effect; I am aware that it is difficult, with the chalk alone, to produce a great degree of delicacy combined with sufficient firmness: yet it is to be accomplished with the requisite care and skill. In Oncídium Cavendish*iànum*, the defects of which I am complaining are very glaring; namely, the heavy ink outline in the bright yellow flowers; and the coarseness of the chalkwork in the foliage, which is but ill concealed by the colouring, which, in this instance, is rather raw and tame. In Catasètum maculàtum, the coarseness of the work is offensively prominent in the pseudo-bulbs. The plate most free from any of these faults is, perhaps, Oncídium ornithorhýncum, with its pendent raceme of bright pink flowers: it is really beautiful and brilliantly coloured. It is a great pity that such defects should exist in this splendid work, as it is published with no view to profit: indeed, the spirited projector is prepared to meet considerable loss, in order to produce a work worthy of illustrating the elegant wonders of the Orchidàceæ. To Dr. Lindley's *Sertum Orchidaceum*, a work which has appeared since Mr. Bateman's, and which contains portraits of some incredibly beautiful species of Orchídeæ, never yet seen out of their native regions, the same remarks apply; for, to a great extent, the same artists have been employed. The pseudo-bulbs and foliage of Stanhòpea devoniénsis, for instance, are lithographed in the coarsest manner, and cut up with dark harsh lines of ink, to save the labour of the chalk. This is a false economy in works of this expense and pretension; particularly when, in a little half-crown publication (the *Floral Cabinet*), plates are given free from these defects, and, in many instances, superior in every respect to any in these splendid works in their present state. As a case in point, I refer to the Myánthus barbàtus, given in No. 10. of the *Floral Cabinet*, as it is sufficiently similar in the general character of its pseudo-bulbs and foliage to compare to the stanhopea of Dr. Lindley's work: placing them together, the superiority of the myanthus, in execution and colouring, will be abundantly evident. There are no harsh ink lines, but all

delicately and highly finished with pure chalk. To return for another glance at the *Sertum*, let us not criticise too closely Burlingtòn*ia* venústa, where the delicate white petals are spoiled by the black outline; but turn at once to Cattlèy*a* bícolor, where these defects are less apparent, from the colour being darker: indeed, the ink outlining has, perhaps, in this instance, a sharp and rather good effect; and it is, upon the whole, a very brilliant delineation of a very splendid subject.

It now remains to notice the other leading botanical periodicals which are now going on; and first, perhaps, we should place *The Botanical Register* (Ridgway. 3*s.* 6*d.*). It continues to possess great interest, from its superior means of obtaining the latest novelties; and the plates are very neatly engraved, and coloured with every accuracy necessary for a valuable scientific record; but, as works of art, they are, of course, nothing. The last number contains, Boròn*ia* crenulàta, Govèn*ia* *l*iliàcea, *P*hiladélphus hirsùtus, Cósmos scabiosòides, Pentstèmon crassifòlius, and *E*rìca chlorolòma. The *Botanical Magazine* (Sherwood. 3*s.* 6*d.*). The same remarks may be applied to the plates of this work as to those of the *Register;* except that, perhaps, in some of its later numbers, they are rather more lightly and carefully engraved. It is curious to turn back to some of its early numbers of forty years ago, and note the progress which, without any pretension to make pictures of the subjects, the extended appreciation and general improvement in art has effected. The last number contains Epidéndrum tessellàtum, *E*rìca flórida var. campanulàta, *A*ristolòchia saccàta, *C*henopòdium *Quinòa*, Mammillària atràta, and Dendròbium aggregàtum.

Paxton's Magazine of Botany. (Orr and Co. 2*s.* 6*d.*) is of a somewhat different character from the above; not being confined to a mere record of new and interesting plants, but containing much interesting horticultural information, derived from many sources within the experience of its conductor, who, being director of the princely horticultural establishment at Chatsworth, possesses eminent advantages for such a task. The plates, however, are execrable: badly engraved, and abominably coloured.

The Floral Cabinet (William Smith, Fleet Street. 2*s.* 6*d.*) endeavours to unite the best qualities of some of the preceding works; viz. general information connected with floriculture and gardening, with plates got up in a style of excellence not to be surpassed even by such works as the *Orchidaceæ of Mexico* and the *Sertum*. It is the only botanical periodical, upon this scale, which has taken advantage of the superiority of lithography for its plates; and it is decidedly the cheapest now publishing. Its first volume, handsomely bound in morocco, with gilt edges, and containing *forty-five* highly finished and splendidly coloured plates,

is only 36*s.*, which is scarcely more than the price of one number of Mr. Bateman's *Orchidaceæ of Mexico.* The first number of the second volume, which appeared on the 1st of March, contains Scevérs*ia* montàna, Cósmos diversifòlius, Bigòn*ia* incarnàta, and Barkèr*ia* élegans.

The Botanist (Whittaker and Co. 2*s.* 6*d.*). This work is very beautifully got up. The plates are well engraved on steel, and very carefully coloured: indeed, perhaps more so than any work of its class, except the *Floral Cabinet:* it is also next to that work in cheapness. The small paper-copy, at 1*s.* 6*d.*, is, indeed, uncommonly cheap; but some of the plates, from an injudicious economy, are arbitrarily cut into the required square, without much regard to beauty of design. To mark a recent example, I refer to two plates in No. 14.; first, Cypripèdium insígne, which, besides being cut into a square in an ugly manner, is badly executed; and *S*olànum lanàtum, which, although very good in other respects, is spoiled by this squaring system. The last number contains Anthocércis viscòsa, *V*erbèna Tweed*iàna*, Pimelèa lanàta, and Sparáxis péndula.

The *Botanic Garden* (Whittaker and Co. 1*s.* 6*d.*). This still continues to be a very neat little work; but the reduction of the subjects to half, a third, and sometimes a fourth, of their natural size destroys the effect, and prevents the plates, in many instances, from conveying any idea of the originals. It is, however, a very pretty little work, and, for its price, very good. The last number contains Tropæ`olum tuberòsum, *O*'robus pisifórmis, Nemóphila insígnis, and Deùtz*ia* scàbra.

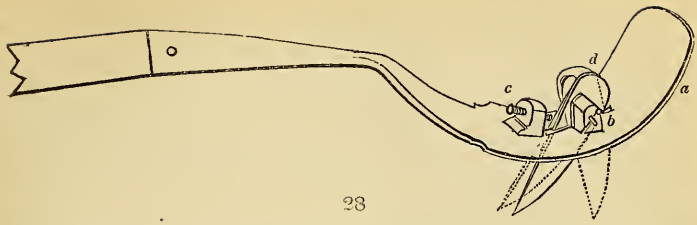
There are many other periodical botanical publications, which meet, in different ways, the demands that have called them into existence, and are creditably conducted and brought out; but they are not such as call for notice in an article where my only object has been to trace the progress, and note the present state, of pictorial embellishment, as applied to botanical works.

London, March, 1838.

ART. III. *A new Turf-Racer and Verge-Cutter.* By EDWARD BELL, Landscape-Gardener.

IN the course of an extensive practice, in which I have had occasion to have cut and relaid a great quantity of turf, I have invariably found the old turf-racer totally inadequate, where the surface was at all hilly or uneven. I was therefore led to contrive the one shown in *fig.* 28., which, I trust, will be found to cut alike well on every variety of surface where such an implement is required.

Its advantages are, first, that it cannot be pressed into the ground, the broad and circular-formed part (*a*), that is pressed



28

upon, preventing its entering the ground, however soft the same may be; whilst the same curvilinear form enables it to ride freely (as the workmen term it), requiring but comparatively little force to drive it: secondly, two knives accompany this implement, of different lengths, which can be taken out and replaced in a few seconds, by removing the bolt (*b*); thus enabling the workmen to have the knives in good working order at all times: and, thirdly, by the adjusting screw (*c*), placed at the back of the knife (*d*), it can be set to cut any depth; and, consequently, one great desideratum is obtained, as any required thickness of turf can be taken up; a matter of much importance where very neat work is required.

I have invariably found that one man, with the new turf-racer, will race sufficient for six cutting-knives; giving active employment to twelve persons, six men and six boys; the latter to roll up and pile the same.

When turf is let out to be cut by the job by this racer, I give sixpence per hundred turves, each 3 ft. in length, and 1 ft. in breadth. I used to give, a few years back, one shilling for the same quantity, and, in some instances, one shilling and sixpence. Thus, a great saving is obtained by the introduction of this implement, with some additional improvement in the form of the turfing-knives.

Ingress Park, Feb. 16. 1838.

ART. IV. *Remarks on the Propagation of the Dahlia.* By GEORGE A. LAKE, F.L.S. Tulse Hill House.

EVERY cultivator of the dahlia is aware of the facility with which it is propagated by cuttings of the young shoots, plunged in a little bottom heat. Indeed, from a single root, under proper treatment, several dozens of young plants may be raised in a short space of time. Consequently, this method is universally adopted by nurserymen; they annually requiring a large stock of young plants for sale; and by individuals anxious to propagate extensively a new variety. But it ought not to be

practised by amateurs or others, anxious to obtain fine perfect flowers for exhibition or otherwise. I speak advisedly, and from experience, when I assert, that plants raised from cuttings do not produce equally perfect flowers, in regard to size, form, and fulness, with those produced by plants grown from division of the tubers, the old method of propagating the dahlia. It has been said that plants raised from cuttings flower more abundantly than those raised by division; but to this I am not prepared to subscribe.

Physiological botany readily accounts for the different results of the two methods. The starch, or feculent matter, stored in the roots, is intended by nature for the nutrition of the animal shoots; not only, until the tubers have formed, at the commencement of the vegetating season, the spongioles necessary for the absorption of the required quantity of pabula; but also when that the spongioles are unable, from drought, or other causes, to absorb a sufficiency of nutrient matter, to sustain the rapidly developing and vigorous vegetation.

Plants propagated by cuttings cannot, of course, absorb the nutriment prepared and stored, during the last season, in the tubers of the mother root; and are forced to form spongioles and tubers for themselves. But the fecula contained in these latter is not, till towards the end of the year, sufficient in quantity, or sufficiently ripened by the deposition of carbon, to be, perhaps, in any way serviceable.

The potato might be propagated by cuttings of the young shoots, in the same way with the dahlia; but such plants would not, in the early stages of their growth, be nourished by the starch of the tubers; and, therefore, would neither be so strong and vigorous as plants raised in the usual method, nor would they yield a return equal in weight or quantity.

It is well known that tubers and bulbs, when placed in damp situations (the potato, for instance, in a damp cellar), develope their leaf-buds; and that these continue to grow and elongate, without the assistance of rootlets or spongioles, so long as there is any fecula in the tuber or bulb; but that when this is exhausted the stem withers and dies. We hence perceive how important the nourishment derived from this substance is to the vigour of the plant, and why whole tubers of potatoes produce larger crops than are produced by cut sets. Hence, too, we may learn why perfectly ripe sets are so much more certain of success than unripe ones; the fecula in the former being so much the more abundant, and more perfectly elaborated. To the unripeness of the sets is attributable the failure of the potato crops in some parts of Scotland, in the autumns of 1835 and 1836, and the consequent misery and starvation of the unfortunate peasantry.

I feel no doubt that much of the disappointment and dissatisfaction experienced by buyers of new varieties of the dahlia, arising from these so rarely answering the expectations formed of them, is the result of the system of propagating from cuttings. A good seedling is raised: the grower is naturally anxious to make the most he possibly can of it; he therefore plunges the root in heat, and strikes every cutting he can force it to throw out. The young plants are consequently weak and unhealthy, rarely throw out a good flower during the whole season, and are, probably discarded, as undeserving of further notice. My first plant of Brewer's Rival King was a cutting from a root, which had been much worked, and, consequently, did not show a good flower during the season. The next year, I grew it from tubers, and also from cuttings: the latter always produced imperfect flowers, but the former beautifully perfect ones. With many other varieties, I have found the same difference between plants raised from cuttings and those from tubers.

I would therefore recommend, in order to secure a good and satisfactory bloom, that the roots be laid, in March, in a damp warm place, such as a forcing-house, gentle hot-bed, or even a cellar; and that, when the buds show themselves, each root be divided into as many pieces as may be required, retaining a bud to each piece; and that they be then planted separately, in 48-sized pots. The after-treatment is the same as for plants raised from cuttings.

Brixton, Feb. 8. 1838.

ART. V. *On the Culture of the Mignonette.* By JAMES CUTHILL.

MIGNONETTE is considered a very simple plant to grow, and so it is in fashion. We generally see it during winter; but a celebrated grower of forced flowers for Covent Garden told me that he never had but one really good crop of mignonette, and by it he made a good sum of money. After four winters' sowing, without the least failure, I consider my system established; and by it I have had, without the least variation, forced mignonette in flower by Christmas, and as strong as border mignonette. On the 20th of August, I sowed 100 pots of 32's, filled with the following compost: half sandy loam, the other half made up with leaf mould, and road sand, not sifted, but very dry when used, and pressed into the pots up to the brim. When the seeds are sown, a little of the compost is sifted over them. The pots are then put into a pit or frame, and set very near the glass. The lights are kept off at all times, except during

rainy weather, when they are always put on; as, above all things, a drop of rain is never allowed to fall upon the pots, for several reasons. The first of these is, because rain is often very heavy, and washes the seed out of the pots; secondly, the rain is often too little, and only moistens the surface; and, thirdly, after the 1st of October, rain is too cold, and chills the plants. I water the plants with a very fine rose, and always twice over, but never until they are upon the point of flagging; and, after the 1st of October, I either warm the water, or use it out of the stove. I remove the mignonette to the front of the green-house, about the 1st of November, for fear of damps. If a succession is wanted, I cut down as many as may be necessary, about the middle of December; and these will make a better blooming and thicker pot of mignonette, than a second sowing, and will save trouble. In thining, I leave only six or seven plants in each pot; five of them about 1 in. from the rim, and one or two in the centre. In order to show gardeners how wrong it is to let rain fall upon their frame plants during winter, I had two pots of mignonette put on the bare flue of an empty pit in November, giving them no water and no covering; and, upon the 1st of February, brought them into the green-house; and now (Feb. 5.) they are looking well. This speaks volumes: if mignonette will stand 30° of frost, merely because it is kept dry, what will cauliflowers, lettuce, radishes, &c., not stand? The above may appear a simple story to many; but I am obliged to be more particular with winter mignonette in pots, than with the finest stove plant.

Dyrham Park Gardens, Feb. 6.

ART. VI. *On the Swarming of Bees.* By JOHN WIGHTON, Gardener to Lord Stafford, Cossey Hall Gardens, Norfolk.

MUCH has been said and written, of late years, on the means of preventing the swarming of bees; but all the various plans suggested have, I believe, proved ineffectual. I have had the care of bees, on what is termed the "humane system," for eight years; but all my experiments to prevent their swarming have failed. Want of room, and great heat in the hive, are held by some to be the causes of swarming. Mr. Nutt of Lincolnshire attempted to obviate these causes, by boxes of a peculiar construction, provided with tubes of tin, made movable for the purpose of ventilation. Mine are boxes of his making: but I never could prevent the bees from swarming, by allowing them plenty of room. Ventilation is not easily accomplished; for the bees are sure to seal up the smallest aperture.

Heat and want of room may induce swarming, if there be more than one mother-bee in a hive; but not otherwise. In the former case, the mother-bees will always fight, till one is compelled to quit the hive. The mother, or queen, bee who retires will always be followed by a number of others; and this constitutes a swarm. It is, in fact, a provision of nature for the multiplication of the species. Hence, there is no other way to prevent swarming, but the destruction of the rival queen. This cannot be done without much trouble, and considerable injury to the bees, however easy it may appear to some, who, probably, have never tried the experiment. The worst part is, that the process must be repeated; for, in the breeding season, there are mother-bees in different stages of existence, and some in the larva state, which cannot be detected.

Another suggestion has been made, to destroy the queen-bee out of a swarm, and then replace the bees in the hive. But here the same inconvenience recurs; for, if there should remain another superfluous queen in the hive, they would speedily swarm again, as I have found by experience. Unpleasant as it is to have a hive weakened by swarming, there is, I fear, no possibility of preventing it, while there remains more than one mother-bee in the hive. However wide a space might be assigned to them, the mother-bees will always attack one another. If two are imprisoned together, they will fight. Apiarians have said many fine things about the queen-bee and her royal government; but the simple truth is, that she is the parent, or mother, of the young progeny. Of this I had myself some doubt, till I observed the mother-bee laying an egg in several of the cells in the month of June last. This, therefore, being a provision of nature to continue the species, there can be no successful scheme to prevent swarming, and to attempt it is mere folly.

Cossey Hall Gardens, Jan. 20. 1838.

REVIEWS.

ART. I. *Catalogue of Works on Gardening, Agriculture, Botany, Rural Architecture, &c., lately published, with some Account of those considered the more interesting.*

A LETTER *to Earl Spencer* (*President of the Smithfield Club*), *on the Formation of a National Agricultural Institution.* By Henry Handley, Esq., M. P. Pamph. 8vo, pp. 36. London, 1838.

The perusal of this pamphlet shows the author to be familiar with all the modern agricultural improvements, not only in

Britain, but on the Continent; including even the new manure of M. Jauffret, mentioned below. The Highland Society of Scotland, Mr. Handley thinks, might render their splendid annual meetings more like those of the British Association, and combine somewhat of science and historical discussion with social enjoyment.

"Surely, to such a vast assemblage of agriculturists the committee of the Society might advantageously report their progress in the investigation of science, now only partially communicated, and that in an expensive form; and invite discussion and information from the pactical and scientific men on those occasions so opportunely assembled together.

"Be that as it may, doubtless the first step to the formation of a society in England will be to unite in active cooperation all, be they landlords, tenants, or others, who feel an interest in advancing the prosperity of British agriculture.

"When the necessary funds shall have been obtained by subscription, it will be desirable to form an establishment in London, comprising a complete agricultural library, a museum for specimens of seeds, plants, &c., for models of implements, and, in all cases where it can be effected, for the implements and machines themselves, together with the means of trying them. To engage the superintendence of men eminent in the respective branches of science. To collect reports on foreign agriculture; to correspond with other societies both at home and abroad. To refer, as in the French Institute and the British Association, papers, or professed discoveries of acknowledged importance, to select committees, to investigate and report. To amass statistical information interesting to agriculture.

"To offer premiums for inventions, bearing some proportionate value to the expense to be incurred; or, in certain cases, defraying the cost of experiments, observations, and reports (a course pursued by the British Association); and, above all, to communicate to the agricultural classes throughout the kingdom, by means of cheap publications, all matters of moment, which shall have been submitted to the competent authorities of the Society, and which shall have stood the test of fair, rigid, and impartial experiment." (p. 34.)

Welches ist das beste Verfahren Pflanzen durch Stecklinge zu vermehren, und welche die am meisten dazu geeignete Zeit? Bei der Beantwortung dieser Frage soll hauptsächlich nur auf die schwer zu vermehrenden Pflanzen, so wie auf diejenigen Rücksicht genommen werden, welche Knorren bilden (sich verknorpeln) und dann nicht leicht Wurzel schlagen. Gekrönte Preisschrift von den Gärtnern im Botanischen Garten bei Berlin, Herren Eduard Otto, William Brackenridge, Carl Plaschnik, und Carl Bouché. 4to, pp. 41. Berlin, 1837. Which is the best Method of propagating Plants by Cuttings; and what is the most suitable Time for most of them? In answering this Question, those Plants are principally taken into consideration, which are difficult to propagate, and those which form Callosities (*Knorren*), and, therefore, do not easily put out roots. Edward Otto, William Brackenridge, Charles Plaschnik, and Charles Bouché, obtained the prize.

This appears to be one of the most systematic and complete treatises on striking plants by cuttings ever published. It is the joint production of the most scientific gardeners in the Royal Botanic Garden of Berlin, and of Mr. Brackenridge; of whom it is sufficient to say, that he was a pupil of Mr. M'Nab of Edinburgh, and was several years head gardener to Dr. Neill. He is now, after having been some years in the Berlin Botanic Garden, settled in Philadelphia. (See his account of the Berlin Botanic Garden in our Twelfth Volume, p. 295.) It is our intention to translate this treatise, and illustrate it by figures, so as to render it perfectly intelligible to the uninitiated; that is, those who do no not know the technical meaning of the word cutting, much less how to treat one.

Index Seminum in Horto-Botanico Berolinensi 1837 *collectorum.* List of Seeds collected in the Berlin Botanic Garden in 1837.

This list contains six 4to pages, printed on extra thin post paper, so as to be sent by post. On the Continent, such a letter will be charged according to weight, and in Britain as a single sheet. The number of species and varieties enumerated exceeds 960: the greater part are hardy herbaceous plants; but a considerable number of hardy ligneous plants, green-house plants, and many exotic ferns, are included. The list is extremely interesting, as showing what plants will ripen seeds in the open air in the climate of Berlin; and it is gratifying and surprising to see the number of both hardy and house plants included in it: for example, *Astrágalus* 10 sp., Calandrínia 6 sp., Caléndula 7 sp., Callistèmon 8 sp., *Cánna* 18 sp., *Lupìnus* 16 sp., Medicàgo 20 sp., *Cratæ'gus* 7 sp., Cotoneáster 6 sp., *Erìca* 13 sp., *Œnothèra* 12 sp., Godètia 8 sp., *Pæònia* 11 sp., Potentílla 20 sp., Silène 17 sp., *Trifòlium* 15 sp., *Vícia* 17 sp. and var., *Sórbus* 3 sp. (one is *S.* scándica *Fries*), Symphoricárpus 2 sp. It is customary, in Germany, for every botanic garden to print such a list annually, and to send it to every other botanic garden. In consequence of this, the collections throughout the Continent are enriched, and comparatively equalised, at an easy rate; the result of a very different feeling from that which used to prevail in Holland and England in what may be called the Dutch school of botany and gardening. The climate of Great Britain is, undoubtedly, not so favourable for ripening seeds as that of Germany; but still, we think it would be for the advantage of all the public establishments, and even the principal private ones, if they were to pay attention to the ripening and collecting of seeds, and print such lists annually.

De l'Economie des Engrais, ou de la Méthode de Pierre Jauffret, Cultivateur d'Aix. Rédigé et mis en ordre par N. V. Auguste Lozivy, un des Mandataires-Gérans de l'Administration Jauffret, pamph. 8vo. Paris, 1837.

A collection of certificates from various parts of France in favour of Jauffret's new manure, which we have noticed in the present Number, under the head of France. If certificates in favour of an article are to depended on, there is no want of them in this pamphlet. A company seem to have purchased the patent that was taken out by M. Jauffret, with a view of turning the manure to account as a commercial speculation. They propose to grant licences for making it, to cultivators of every kind, from the market-gardener of a few poles, to the occupier of two thousand acres. The first is to pay three francs, and the latter 900 ! Those who occupy fifty acres are to pay eighty francs. We expect to be able to say more on the subject of this manure in our next Number.

Art. II. *Literary Notices.*

A Treatise on the Concentration and Reflection of the Sun's Rays, as applied to Horticulture and Agriculture, by Mr. Robert Gauen, is in the press. Mr. Gauen, our readers will recollect, is the author of an interesting article on this subject in Vol. III. p. 101.

A Treatise on the Cultivation of the Dahlia, by Joseph Paxton, F.L.S. H.S., has just been published; as has the *Green-house*, by Charles M'Intosh, F.H.S., gardener to the King of the Belgians, at Claremont.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Jauffret's new Manure.—We have in a preceding page (p. 111.) directed attention to Kimberley's manure, said to be a most extraordinary and valuable discovery; and that of Jauffret seems to be a parallel discovery of the same kind in France. M. Jauffret, it appears from *l'Ami des Champs* for December, 1837, died in November last. He was born at Aix, in the neighbourhood of Provence, and succeeded to a considerable landed estate there in 1798. In its cultivation, finding a great deficiency of manure, he tried innumerable schemes to increase it, till at last he hit upon a certain liquid, the composition of which remains a secret, except to those who have purchased the patent right; and which, poured upon any description of soil, mixed with organic matter, produces fermentation, and rapid decomposition. The ley (*lessive*) which is poured over the materials to be converted into manure is said to consist of various ingredients, but not to be expensive; two large heaps of materials to be converted into manure not requiring more

than may be purchased for about 3*s*. This manure is said to have been tried in England by H. Handley, Esq., M. P., and found effective; but by others it is represented as an imposition on the public. We have applied to sources in France which will enable us, we trust, to state something positive respecting it in our next Number. In the mean time, our readers may refer to a pamphlet on the subject, of which we have elsewhere given the title. That pamphlet, however, does not give the slightest hint as to the ingredients of the ley. — *Cond.*

Statistics of the Woods and Forests of Europe. — It has been ascertained that forests occupy a third part of the soil of Russia, Sweden, Norway, and Germany; a fourth of Austria and Prussia, a fifth of Belgium, a sixth of Switzerland, a seventh of France (4000 square leagues), a ninth of Italy, and a twelfth of Spain. In the British Isles, they only occupy a twenty-fifth part of the soil, which is fortunately the richest in Europe in coal-mines. (*L'Echo, &c.*, Jan. 10. 1838, p. 5.)

The Surface under Cultivation in Britain, Italy, Prussia, the Netherlands, Austria, Bavaria, and Würtemburg, occupies a third of the soil; in France, more than the half (14,572 square leagues); in Germany, in the kingdom of Naples, and in Sicily, a quarter; in Austria and Illyria, less than a fifth; in Russia in Europe, and Hungary, a sixth; in Sweden and Norway, a ninth. The remainder consists of forests, or of barren and uncultivated tracts. (*L'Echo, &c.*, Jan. 20. 1838, p. 17.)

Art. II. *Foreign Notices.*

FRANCE.

Cause of the Fertility of Sandy Soil in the Valley of the Loire. — J. P. Leclerc Thouin has laid before the Academy of Sciences a notice on the arable land of a part of the valley of the Loire in the neighbourhood of Chalonnes. He endeavours to prove in this notice that the fertility of the land does not entirely depend on the condition of its chemical or mechanical composition; but also on certain meteorological circumstances, which have hitherto not been taken into consideration. The soil of the island of Chalonnes is one of the most fertile in France; and, according to M. Leclerc Thouin, is entirely composed of very fine silicious sand, with a little iron, a very small portion of alumina, and scarcely perceptible traces of lime, like the soil of all the alluvial valley of the Loire. From this the author remarks, that the silicious sand, almost pure, which is completely sterile in the south and centre of France, becomes fertile towards the north, where it does not lose so much moisture by evaporation. (*L'Echo, &c.*, Dec. 13. 1837, p. 204.) Sir Humphry Davy had previously noticed the greater fertility of sandy soils in moist climates: for example, those of Ayrshire and Norfolk. — *Cond.*

The Temperature of Paris, in January, 1838, was 14° below zero Réaumur, which is only 4° less than it was in 1795, the coldest year in Paris on record. These records as to temperature commenced in the year 1763; and in no year, from that period to the present, except 1795, does the temperature appear to have been so low as in January last. (*L'Echo, &c.*, Jan 27. 1838.)

A Caterpillar injurious to the Vine. — The caterpillar vulgularly known under the name of *conque*, is produced by the pyrale (*Pyralis L.*), called *Pillerana* from the name of the Jesuit *Piller*. Its presence is so fatal to the vineyards of Rives-altes, Espira-de-l'Agly, Salles, &c., that the loss caused by this scourge in a single year has been reckoned at 13,000 hectolitres (325,000 gallons) of wine. It appears, from the author's experience, that rainy seasons are generally fatal to this pyrale; and that, among the known means of destruction, the most efficacious are: frequently digging the soil, and covering it, about the month of November, with a layer of powdered

lime (*chaux délitée*); or, what is still better, strewing the surface, towards the month of December, with a mixture of four parts of wood-ashes to one of sublimate of sulphur (*soufre sublimé*). (*L'E'cho, &c.*, November 18. 1837, p. 175.)

Employment of the Insane in Agriculture and Gardening. — An extensive medico-agricultural establishment is at present being organised in the commune of l'Eyme, arrondissement of Figeac, where the house for the insane under the care of M. Tissot is situated. A large extent of land, meadows, woods, a spacious and well-arranged dwelling, a temperate climate, and a salubrious atmosphere, render this establishment very suitable for its future destination. Skilful physicians will be attached to it. (*L'Echo, &c.*, Nov. 22. 1837, p. 183.) This idea has been carried into execution in the gardens of the Lancaster Lunatic Asylum.—*Cond.*

Method of training the Vine in the Pyrenees. (From Murray's *Summer in the Pyrenees.*) — "The valley of Arriège, between Tarascon and Foix, assumes a more quiet and gentle character; mountains and sterile rocks giving place to hills, the slopes of which are productive in grain, and the warmer and more sheltered nooks clothed with vineyards. The manner in which the vines are planted and trained is peculiar. In all the corn-fields, the stones, which would otherwise encumber the soil, are gathered in heaps of various forms and sizes. Among these heaps of stones the vines are planted, and trained over them on poles or espaliers. The effect of this arrangement is beautiful; and the corn-fields may be taken for a garden; the knots of vines for its parterres."— *J. B. W. Feb.* 1838. This extract, kindly sent us by a correspondent, to whom we are much indebted, may afford useful hints to British gardeners in training both ornamental and fruit-bearing plants. — *Cond.*

The Cedar of Lebanon and other Coníferæ.—The Society for the Encouragement of National Industry of Paris have offered medals of gold, platina, and silver, for the largest plantations of cedars of Lebanon, and other resinous trees, to be determined in 1846.

A new Strawberry is said to have been discovered, in a bed of seedlings in a garden near Paris, far superior to every other known kind. From a description given in the *Revue Horticole*, it appears to be nearly allied to the Hautbois.

Reaping-Machine. — The *Mémorial de l'Allier* mentions a very simple and ingenious machine, which had just been examined, the aim of which is an increase of produce to the cultivator, with less labour. Its other advantages are, the simplicity of the mechanism, the facility of construction, and the moderate price (15 francs at most). Two sickles; seven or eight pieces of wood, some semicircles (*demi-circles*), and two yards of cloth, compose the materials. The corn is cut by the play of the sickles in a breadth of 4 ft., and at the desired height. (*L'E'cho, &c.*, Dec. 13. 1837.)

GERMANY.

The Cold in January, 1838. — In the Berlin Botanic Garden, on Jan. 16., we had 22° Réaum. below zero (18° below zero, Fahr.), with 2½ ft. of snow, and very little sun. *E. Otto.* — At Vienna, in January, the cold varied from 10° to 18° Réaum. below zero (from 8° to 9° below zero, Fahr.). *C. Rauch.*— At Frankfort, on Jan. 16., the cold was 21° Réaum. (16° below zero, Fahr.) *F. Rinz.*

DENMARK.

State of Gardening in Denmark. — In our endeavours to do justice, as we thought, to our correspondent M. Petersen, it seems we have given offence to his countrymen of the same profession. We publish the following letter, *verbatim et literatim*, because M. Petersen wishes it, and because he seems to think it necessary in order that he should stand well with his friends: — "Dear Sir, Never have I nursed in my breast the least doubt of your good intentions and wishes to do me justice, as far as you thought I could deserve

it; but, in the case in question, your friendship for me has induced you to go beyond the limits of my exertions in this country; and my feelings were sensibly affected at the perusal of your article in the *Gardener's Magazine* for October, which prompted me to write to you on the 21st of October. But, dear Sir, as you in your answer to my letter will not give me leave to print any of your letters in our papers, I take hereby the liberty to address you again, in order to find a proper way of clearing mistakes.

"At different preceding periods, I have written to you, dear Sir, about the state of our gardening in Denmark, inserted in your *Gardener's Magazine* for July, 1826; September, 1827; January, 1828; October, 1829, &c. Several great improvements have certainly taken place since that period, some of which I take the liberty to state, as well as several errors concerning gardening in this country inserted in the *Gardener's Magazine* for October this year.

"I have introduced into this country the mode of heating hot-houses by hot water in cast-iron pipes and boilers. Mostly all the houses for fruit and flower-forcing in this garden are worked by hot water; and in several of the royal, and some private, gardens, about in the country, this mode of heating is now introduced, and I expect it will soon be quite general.

"A better and proper construction of forcing-houses, similar to those erected in England, and some aired by ventilators in front and back, I have got built and introduced.

"The culture in general, principally in the forcing department, is much improved in this garden: *e. g.*, we have had the first ripe grapes in the beginning of May; peaches, double montagne, by the end of May; cut ripe pines almost all the year round. The hot-bed forcing equally early. I have introduced nearly all the sorts of pine-apples grown in England; strawberries, Grove End scarlet, Knevett's pine, new scarlet pine, scarlet emperor, and new pine: all the Chinese chrysanthemums, some of the best English gooseberries; several good green-house, and some stove, plants; dahlias, many of the best and rare varieties, &c. &c.

"I have not established the present Floricultural Society; but, having the honour of being a member, and, having for the last eighteen months, had the inspection of their garden, I have done in this respect every thing in my power, in a sensible way, to go on with improvements. At present, the Society has bought a piece of ground for a new garden; but, not finding it answering the purpose, and, in view of economy, being of a different opinion, I have resigned my situation in the present Floricultural Society. That Society has given very much impulse to a better taste and improvements, for a better culture of flowers during its establishment, especially by introducing many new and good plants.

"The vegetable and fruit market at Copenhagen is, indeed, at all times in the year, as well supplied as any one can wish for in this country; but it is not from any merit of mine.

"Thus far the necessary explanations. You will, no doubt, dear Sir, wonder at my intruding upon your leisure on this seemingly trifling occasion; but you will, perhaps, give me right, when informed that I find myself in duty bound to it, by a publication in one of our newspapers of your October article for Denmark, which has been translated, and accompanied by low acrimonious observations on it I suppose, by a youth utterly destitute of knowledge in our profession; which publication, if not met with an adequate answer, would present me to my countrymen in a light I do not think I deserve, as my former relations to you on gardening in this country bear the best witness. I am, dear Sir, &c. &c., — *J. P. Petersen. Copenhagen Royal Gardens, Rosenburg, Dec.* 26. 1837."

NORTH AMERICA.

Philadelphia, Dec. 14. 1837. I arrived here in June last, and immediately joined —— in his very flourishing establishment. I am likely to feel satisfied

with my engagement, so far as I am yet able to judge. Good gardeners are rare in this country, especially such as understand the management of the greenhouse, and particularly the propagating department. Many young Englishmen and Scotchmen here have too prematurely commenced business; and, goaded on by the prevailing spirit of speculation which exists in this country, have outwitted themselves, and been unable to fulfil their engagements. With all these beacons set before me to avoid, I am nevertheless of opinion that a man, even with a small capital, who is steady and industrious, and who understands his business, may do well and make money fast; but, in case I disappoint any one, I say he must work hard; and, although wages are high, articles of clothing are costly, woollen more especially.

"I have made several tours through some of the neighbouring states, and visited Baltimore, Boston, and New York. In the latter, the march of improvement is advancing very slowly. Mr. Hogg still takes the lead in rare and interesting plants. Thorburn is a geranium and dahlia grower. After having read and heard so much of ——'s celebrated nursery, Long Island, judging from what I saw, it is one of the greatest impositions, as a sale establishment, that ever came under my notice. You must not believe all that Mr. Hovey says about the Bostonian gardens; but, if you estimate them about 20 per cent lower than what he holds them up at, you will probably come near the truth. Baltimore is much on the same par with Boston: but I have not time to go into particulars. To give you an idea of what the Philadelphians have arrived at, I herewith send you a copy of the report of our annual exhibition, from *Waldie's Circulating Library*, a highly respectable weekly periodical.—*W. F. B.*

[We have copied the article referred to by our esteemed correspondent, as well to show the extraordinary progress made in horticulture in Pennsylvania, as the account of different commercial gardens which are incorporated in it.—*Cond.*]

Pennsylvania Horticultural Exhibition.—The tenth exhibition of the Pennsylvania Horticultural Society was held at the Masonic Hall, on the 20th, 21st, and 22d of September, 1837; and great merit is due to the committee of arrangement for the splendour with which it was got up.

On entering the saloon, a large oval table was placed before you, filled with the choicest exotics from the tropics to the arctic circle. In the centre, stood one of the beautiful palms of Ceylon, the *Latània* borbónica. A Cypripèdium insígne (a ladies' slipper), from India, excited much curiosity, from the extreme resemblance of its flower to wax. It is believed to be the first introduced into this country (there is another, the venústum, from India; but the greater part of this beautiful family are indigenous). On the east and west of the centre table were circular ones, each crowned by a beautiful screw pine, the *Pandànus* ùtilis, and the *Pandànus* spiràlis, surrounded by a vast variety of that beautiful flower, the dahlia, of every tint and hue. At the east end of the saloon was a semicircular table, on wich was a large plant of the Astrapæ'a Wallíchii, surrounded by beautiful exotics: at the west end was a corresponding table, with another palm, the *Latània* borbónica; and near it a very large plant of the *Crìnum* amábile, in full flower, one of the liliaceous family; also the black and green teas, the black pepper, the camphor and cinnamon trees, with many of the choicest plants. The walls of the saloon were lined with tables, spread with beautiful plants. In one of the recesses was observed a most singular submarine production, from Singapore: it drew universal attention from its great size and appearance: it has received the appropriate appellation of *Neptune's wine-cup;* and near this was a framework, having the silkworm in its various stages, from the recently produced worm to the finished cocoon. In the window recesses were displayed an immense number of dahlias. Near one of the east windows was a pyramid, 10 ft. high, by A. Dryburgh, covered with various kinds of flowers, interspersed with evergreens. At one of the north windows was a beautiful architectural model of the United States Bank, by R. Buist, covered with a great variety of the finest

flowers; and on the architrave stood inscribed, in high relief, "*The Bank.*" The columns were covered with the petals of crimson dahlias, and the whole was one of the most beautiful fairy productions imaginable. On the opposite side there was an imitation of a tree, 10 ft. high, by D. Maupay, covered with upwards of 4000 flowers of dahlias. On the ends of the branches were perched stuffed birds, of great beauty; and on the top a dozen of the finest plumage, apparently in the act of perching, which had a good effect. These artificial productions gave relief to the green shrubbery, and had a most pleasing appearance. Over the door of the north, or banqueting, room was a star of the first magnitude, by S. Reeve of New Jersey, and was composed of dahlias and evergreens. Immediately within the room arose a triangular column 16 ft. high, constructed by the same hand, covered with dahlia flowers. Through the centre of this room ran a stage having three elevations of one foot each: on the first two were displayed a splendid variety of the choicest fruits of the season, tastefully arranged in glass dishes. The top was crowned with fine grapes in pots. This stage was flanked by flowers, plants in pots, and vegetables of the best kinds. Over the door at the north end was an imitation of the American eagle, composed of various kinds of flowers to suit the plumage; the eye beautifully represented by a flower of the Rudbéck*ia* hírta, strongly characteristic of the daring bird: the whole did Mr. Sherwood, the maker, great credit. On entering the room, notwithstanding the delicious fruits presented, the eye was suddenly arrested by two enormous pumpkins, one raised by Mr. John Wetherill of Chalkley Hall, near Frankford, measuring in girt 8 ft. 6 in., weighing 238 lb.; the other by Thornton Comfort of Byberry, measuring in girt 7 ft., weighing 188 lb.: they elicited great surprise. On one of the side tables was the *Ne*pénthes distillatòria, or pitcher plant, from the East Indies, and the first exhibited in this country, being raised from seed by Mr. Buist. On the end of each leaf is a pitcher with a lid, which is elevated and depressed by circumstances: it is certainly one of the strange productions of nature, and excited much curiosity. Many of the exotics in this room were rare and beautiful; a very large *Cr*ìnum amábile in bloom, from the garden of George Pepper, Esq., was justly admired.

The rooms, when viewed from any point, presented a beautiful perspective; and it must have been highly gratifying to the committee of arrangement to have heard encomiums every where passed on them by the immense numbers who visited the hall, where the beauty, wealth, and intelligence of Philadelphia were largely represented. Some only of the finest and rarest plants exhibited are here enumerated.

Plants contributed by J. B. Smith, Christian Street. — Astrapæ'a Wallíchii, A. móllis, A. viscòsa; Ardísia littoràlis, Adansòn*ia* digitàta, Araucària imbricàta; *Anòna* tripétala, *A.* muricàta, *A.* squamòsa, *A.* palustris; *Arèca* montàna, *A.* oleràcea, Acrocòmia aculeàta; Bánks*ia* grándis, B. verticillàta, B. ericoïdes, B. pulchélla, B. Cunninghàm*ii*; Beaufórt*ia* decussàta, Beaumónt*ia* grandiflòra, Bonapárte*a j*úncea; Bréxia serratifòlia, B. integrifòlia; Cameràri*a* latifòlia, *Carissa* spinàrum, *C*aryòta ùrens, Catesbæ'*a* spinòsa, Cedrèla odoràta, Cérber*a* Thevèti*a*, Cícc*a* racemòsa, Carolín*ea* prínceps, Coccóloba uvífera, *Còcos* nucífera, *C*ombrètum purpùreum, Córypha speciòsa, Cunòn*ia* capénsis, *Cy*cas circinàlis, Dillèni*a* speciòsa; Dracæ'na férrea, D. terminàlis, D. brasiliénsis, D. refléxa, D. marginàta, D. austràlis, D. Dràco; *Hùra* crépitans, *Jacaránda f*ilicifòlia; Játropha multífida, Játropha *Cúrcas*, J. *Mánihot*; *Latània* borbónica, Laúrus *Cámphora*, Lawsòn*ia* inérmis, Livistòn*ia* mauritània; *Limònia* trifoliàta, *L.* pentaphýlla; *Mýr*tus *Piménto*, *M.* àcris; *Pandànus* ùtilis, *P.* spiràlis; Parkinsòn*ia* aculeàta, *Ph*oœ'nix dactylífera, *P.* reclinàta; Poinciàn*a* pulchérrima, *Pòthos* crassinérvia, Rhàpis flabellifórmis, *Sàbal* Adansòn*i*, Swietèn*ia Mahágoni*, *Tamaríndus* índica, *T*áxus nucífera; Thrìnax parviflòra, T. élegans; Terminàlia *Catáppa*, Xylophýlla longifòlia; *Yúcca* fol. varieg., Zàmia hórrida, Z. púngens, Z. integrifòlia; *P*olypòdium aúreum, *Bíxa Orellàna.*

Plants exhibited by George Pepper. — Dracæ'na purpùrea, D. terminàlis; Zàmia hórrida, *Bíxa Orellàna*, Eugèn*ia* austràlis, Mùs*a* sapiéntum, *Laúrus*

Benzòin, *Arèca* oleràcea, Livistòn*ia* mauritània, Rhàpis flabelliformis, *Crìnum* amábile, *Phœ'nix* dactylífera, *Cỳcas* revolùta, Pitcaírn*ia* aculeàta, Sáccharum officinàrum, Manétt*ia* cordifòlia, Tillándsi*a* bromeli*æfòlia*.

Plants by R. Buist. Cypripèdium insígne, *Nepénthes* distillatòria, *Euónymus* japónicus fol. var.; Gardoquì*a* Hoóker*i*, Manétt*ia* cordifòlia, Witsèn*ia* corymbòsa, Lechenaúlt*ia* formòsa, *Crìnum* amábile, Cèreus spléndens, Russèl*ia* *júncea*, Bánks*ia* Cunninghàm*i*, Torèn*ia* scàbra, *Erìca* margaritàcea, Brunfélsi*a* americàna, Scótt*ia* dentàta, Passiflòra kermesìna, Boròn*ia* serrulàta, Gésner*a* Douglàs*ii*, G. rupéstris; Thunbérg*ia* frà*g*rans; E'pacris impréssa, E. heteronèma; Hòve*a* pannòsa, Gárry*a* ellíptica, *Verbèna* Tweedi*àna*, Ipomœ'a Horsfáll*ii*.

By T. Landreth. Bonapárte*a* *júncea*, Ròche*a* falcàta, *Fìcus* elástica, *Laúrus* *Cinnamòmum*, Magnòl*ia* fuscàta, *Pandànus* odoratíssimus, *Fìcus* nítida, *Thèa* víridis; Bánks*ia* microphýlla, B. Cunninghàm*i*; Illícium *a*nisàtum, *Citrus* variegàta, Corræ'*a* speciòsa, *Coffèa* arábica, *Fìcus* costàta, Diósma frà*g*rans, Justí*c*i*a* pícta, Agapánthus variegàta, *Laúrus* *Cámphora*, Coccóloba uvífera, Tabernæmontàn*a* coronària, Tarchonánthus camphorátus.

By John M'Arran. Agàve americàna varieg., *Cỳcas* revolùta, *O*'lea europæ'a, Mimòsa farnesiàna, Meliánthus màjor, Eugèn*ia* *Jámbos*, *A*'rum esculéntum, *Phórmium* tènax, Ruéll*ia* *s*alicifòlia, *Zíngiber* officinàle, *Píper* nìgrum, Sáccharum officinàrum, *Coffèa* arábica, Ardísia *s*olanàcea, *Ilex* variegàta; *Erìca* vulgàris, *E.* mediterrànea; Fúchs*ia* of different kinds, *Méspilus* japónica, *Taxus* chinénsis, *Coffèa* bengalénsis, *Thèa* *Bohèa*, *T.* víridis; *Fìcus* elástica, *Nèrium* spléndens, *O*'lea frà*g*rans, melaleucas of different kinds, and a variety of roses.

By Colonel R. Carr. *Laúrus* *Cámphora*, Quássi*a* amàr*a*, Mùs*a* *r*osàcea, *Píper* nìgrum, *Ceratònia* *Síliqua*, *Fìcus* elástica, *Coffèa* arábica, *Phœ'nix* dactylífera, *Cỳcas* revolùta, cactuses of various kinds, Sapíndus Saponària, Tabernæmontàn*a* coronària, Terminàlia *Benzòin*; Thunbérg*ia* coccínea T. grandiflòra, *Limònium* trifoliàtum, Zàmia púngens, *Técoma* austràlis, *Ginkgo* bíloba, *Pòthos* lanceolàta, *Pistàcia* *L*entíscus, Coók*ia* punctàta.

By J. Sherwood. Tillándsi*a* amœ'na, T. ligulàta, T. bromeli*æfòlia*; *Erìca* *c*erinthòides, *E.* urceolàris, *E.* árdens, *E.* calycìna, *E.* andromed*æflòra*, *E.* Savile*àna*, *E.* ventricòsa, *E.* verticillàta, *E.* pubéscens màjor; *Daphne* *Cneòrum*, *D.* neapolitàna, *D.* *o*leæfòlia, *D.* Dauphín*ii*, *D.* collìna, *D.* alpìna; *Saxífraga* ligulàta, Manétt*ia* cordifòlia, Russèl*ia* *júncea*, Eriócoma frà*g*rans; Cotoneáster microphýlla, C. affìnis; Astrapæ'a Wallích*ii*; *Cáctus* Boýdsi*a*, *C.* maránt*ina*, *C.* conspícua, *C.* Napièr*ii*, *C.* Vandès*ia*, *C.* macrorhìza; *Yúcca* fol. variegàtis, yellow and white rhododendrons, Cérber*a* Thevèt*ia*; Dillwýn*ia* cineráscens, D. Sutherlánd*ia* frutéscens; Boròn*ia* dentàta, Callístachys ovàta; Menzès*ia* *p*olifòlia, M. rúbra, M. álba; Gésner*a* bulbòsa, Alstrœmèr*ia* aurantìaca; *A*'rum crinìtum, *A.* trilobàtum; *Bérberis* dúlcis, Nuttáll*ia* *P*apàver, Doryánthes excélsa, Lechenaúlt*ia* formòsa.

By Alexander Parker. *Adiántum* trapezifórme; Agàve americàna, A. variegàta; Albùca altíssima; *A*'loe arboréscens, *A.* maculàta, *A.* Saponària, *A.* longifòlia, *A.* díscolor; *Asplènium* elàtum, *Artemísi*a dentàta, *A*'rum cordifòlium; Begòn*ia* argyrostígma, B. macrophýlla; *Cáctus*, many varieties and species; *Chamæ'rops* hýstrix, *Céstrum* *Párqui*, Ceratònia *Síliqua*, Diósma *e*ricifòlia, Edwárds*ia* microphýlla, Fourcróy*a* gigantèa, Gloxín*ia* grandiflòra?, Illícium floridànum, Maurándy*a* Barclay*àna*, *O*'lea europæ'a, *Portulàca* arbòrea, *Paliùrus* aculeàtus, *Pistàcia* *T*erebínthus, Plectránthus fruticòsus, Pomadérris apétala, Rivìn*a* hùmilis.

By Andrew Dryburgh. Bonapárte*a* *júncea*, Corræ'*a* speciòsa, Blæ'r*ia* *e*ricoìdes, Dracæ'na terminàlis, Erythrìna Crísta-gálli, *Euphórbia* spléndens, *Fìcus* elástica, Chiròn*ia* grandiflòra, Hæmánthus pubéscens, Ixòr*a* coccínea, Leucodéndron argénteum, Menzès*ia* álba, Pittósporum viridiflòrum; *Thèa* *Bohèa* *T.* víridis; Tillándsi*a* amœ'na, Roél*la* ciliàta, *Vibúrnum* tomentòsum, ericas of various sorts, proteas of different kinds, and a variety of roses.

The plants enumerated above are, many of them, fine and very rare, and are

not to be found in many private establishments in Europe. Those of J. B. Smith's are mostly tropical plants, requiring great judgment and care to cultivate them, and, by their fine healthy condition, establishing the skill and science of their proprietor.

Mr. Pepper is one of the oldest amateurs in the country; and his good taste is evinced in his selection of plants, and exertions in procuring rare exotics.

Mr. Buist's Garden, in Twelfth Street, near Lombard Street, is well known for its neatness and the excellence of its plants. Mr. Buist has introduced some of the rarest and most interesting plants. His collection of those from the Cape and New Holland equals any in the country: his dahlias are of the most select kinds, and of great variety; and he has raised a few seedlings which surpass any that have come from England.

Colonel Robert Carr is the present proprietor of Bartram's Botanic Garden, the oldest in the country. His plants are good, and of various celebrated kinds, his establishment being better known in Europe than any other, from the great quantity of native seeds he exports.

The Garden and Nurseries of Mr. Thomas Landreth, on Federal Street (late D. and C. Landreth), are well known as of the oldest in the United States. His collection of plants and trees may be ranked among the most select. The seed department of this ancient concern, so justly celebrated for the freshness and purity of its products, is now conducted by D. Landreth and Co. Seed grounds are on Fifth Street, below Federal. Warehouse, 63. Chestnut Street.

Mr. John M'Arran's Garden, West Market Street, is well known. His collection is good, both from the age and great growth of his plants. His *Cycas* revolùta, or sago palm, is upwards of a hundred years old; being the plant formerly in the possession of the late Wm. Hamilton, Esq., of the Woodlands. Mr. M'Arran has the merit of establishing the first public garden in Philadelphia. His green-house, in winter, refreshes the visiter by its contrast to the dreariness without.

Mr. Parker's Establishment in Prime Street is well known from its neatness and good collection of plants. He deserves great credit, being one of those self-taught men who had to encounter great difficulties in the pursuit of knowledge. His perseverance has been rewarded by the attainment of scientific skill, and by the acquisition of a large collection of plants and shrubs.

Mr. John Sherwood's Establishment at Laurel Hill, is one lately commenced; and, from the fine specimens of plants exhibited, bids fair to do well. Many of his plants are rare, and well worthy a place in any collection.

Mr. A. Dryburgh, Race Street, by Schuylkill Fourth Street, has many fine plants, especially those of New Holland. His roses and dahlias are numerous and of the choicest kinds.

Mr. Duke, the proprietor of the garden, formerly Mr. M'Mahon's, contributed many fine plants.

Mr. D'Arras, near the Rising Sun, also furnished some beautiful exotics.

D. Maupay and *D. M'Avoy*, at the Rising Sun, Germantown Road; and *Robert Kilvington*, gardener to Wm. Lloyd; contributed largely from their gardens in fine bouquets.

Mrs. Hibbert, Thirteenth Street, near South, whose establishment is well known to the ladies, has many fine plants, with a good collection of dahlias.

Mr. Heiskel, near Bristol, *Messrs. A. S. Roberts*, and *S. Cohen*, of this city; deserve thanks for furnishing plants. Mr. Cohen's figs were fine and large, the trees healthy; it being the second crop this season. The Society was much indebted to its fair friends for their imitations of flowers in wax and shells; *Miss George's* shell-work exceeding anything ever exhibited, and does the greatest honour to her taste and perseverance. The wax-work by *Mrs. Shiba*, *Mrs. Ash*, and *S. W. Horn*, was beyond all praise.

Fruit. The fruits in general were very good, much better than might have been expected, considering the unpropitious season for the finer kinds, such as grapes, peaches, and the melon family. The grapes exhibited by Mr. Beehler

and Mr. Laws were of the best quality, and perfectly ripe. These gentlemen deserve the greatest praise for their care in bringing the fruit to such perfection, and affording additional evidence of what can be done in the city in cultivating the grape: indeed, the whole exhibited were excellent, and the growers merit high approbation.

Grapes exhibited by Dr. J. T. Sharpless were the white Frontignac, the green and yellow Provence, and Chasselas of Fontainebleau. Malaga, by Tobias Beehler, Marshal Street, were the finest of the kind exhibited. By James Laws, the Fondantvert and Hanstretto were very fine, more especially when we consider the season, being grown in the garden. By J. H. Seal, the golden Chasselas; the Alexandria, by H. Ballinger, John Sergeant, Esq., Alexander Parker, and A. Peters; the Isabella, by Alexander Parker and J. H. Seal; the Hampton Court, by George Laws, Wm. S. Hansel, P. Penn Gaskill, Peter Robins, and Joseph S. Madeiry; the Powel, by J. Sergeant, Esq.; the Bland, by ditto; the Catawba, by Mr. Heisser; the Elssinboro', by David Allan and A. Quicksale, Burlington, N. J.; the golden Chasselas, ditto; the Miller, by J. Griffiths. All the above were raised without cover.

Those by Nicholas Biddle, Esq., and Mr. Camac, were as fine as could be produced, more particularly so when we consider that the vines are only two years old, and growing in pots. Mr. Biddle has erected a very extensive grapery, and, in a year or two, will be able to supply the market with thousands of pounds of that luscious fruit. He who introduces any scientific discovery, mechanical invention, or useful improvement, for the benefit of mankind, deserves far higher praise than the blood-stained hero who figures in the page of history. Mr. Camac has caught the enthusiasm, and is building a large grapery. The public is much indebted to such men for their liberality, as they never can be remunerated for their expense.

The Pears were excellent and large, giving another proof of what can be done if only care, and a little more labour, were bestowed by our farmers in their cultivation. The melons by Messrs. Jos. J. and Geo. J. Hatch of N. J., and Jos. E. Scott of Burlington, N. J., were very superior in size and flavour, and the Messrs. Hatch are entitled to all praise for the uniform excellence of their yearly display. Nutmeg melons, by Mr. Riley, gardener to Pierce Butler, Esq., were very large.

Apples, by H. Hatch, Mr. Ralston; A. Lippincott, N. J.; A. d'Arras, Horace Binney, Esq.; the pound pippins of J. Busby, N. J.; were very large.

Quinces, by Jacob Copia. *Plums*, by A. Parker.

Peaches, extra fine, from Mr. B. Bullock's garden, North Third Street; Joseph E. Scott, Burlington, N. J.; Mr. Alberger; Horace Binney, Esq.; Reeves and Ridgeway (Delaware); John Sergeant, Esq.; and J. B. Smith.

Seekel Pears, from H. Binney, Esq.; Samuel P. Wetherill, Burlington, N. J.; A. d'Arras, and Mrs. Hibbert.

Butter Pears, by H. Ballinger, Anthony Felton, and A. Parker.

Doyenné Pear, by J. B. Smith, Esq.

Vegetables. The vegetables generally merited the highest approbation; more especially those exhibited by Mr. Anthony Felton, showing the great care, perseverance, industry, besides great expense, before they could be brought to such perfection. Never was there a finer display of vegetables.

Egg Plants, by Edwin A. Stephens, Bordentown; Thomas Hancock, Burlington, N. J. (the above were very large); R. Ralston of Mount Peace; Anthony Felton; Wm. Camac, Esq.; and Thomas Heiskel.

Cabbage, by D. Maupy; Wm. Norris, Turner's Lane; Jacob Amor, N. J.; and Anthony Felton. *Mangold Wurzel*, by J. C. Jones, and Casper W. Morris, Magnolia Farm. *Sugar Beet*, by Pierce Butler, and P. C. Wetherill. *Beets*, by W. Norris, Turner's Lane; and A. Felton. Two very large ropes of very superior *onions*, raised from seed by Mr. E. Kelley, gardener at the United States' Naval Asylum, under the superintendence of Captain James Cooper; and also very fine by J. Beadle, gardener to Mr. Norris. *Parsneps*,

by Thomas Snyder, very fine. Some fine *peas*, by Abigail Pool, near Burlington, N. J. The following were deposited by Anthony Felton, and were of the very best quality; viz.: chard, tomatoes of every variety, squashes; the Egyptian, the Maltese, the China, and the South Sea broccoli; lettuce, Lima beans, carrots, parsneps, potatoes, celery, radishes of every kind, curled kale, peas, turnips, peppers of various kinds, and endive. There was some very superior celery, by Francis Briell, N. J. Dahlias, by Andrew Dryburgh, Robert Buist, W. B. Wood, S. Cooper; Horace Binney, Esq.; J. B. Smith, Esq.; T. Landreth, A. Parker, Mr. T. Heiskel, D. Maupay, Samuel Reeves; Salem, N. J.; and some very choice kinds from George C. Thorburn, N. Y.

Of the above numerous gardens in and around the city we may well be proud; and the country is materially benefited by the Pennsylvania Horticultural Society, in exciting such laudable emulation among our gardeners. The advantages possessed here are great, more so, perhaps, than in any other place of the Union; and we ought duly to improve them in cultivating horticulture in all its departments of beauty and usefulness.

Upon the whole, the exhibition, in all respects, gave more general satisfaction than any of preceding years. The Society has every reason to draw from its results motives of the highest encouragement for the future. Respectfully submitted. — *G. Watson, Recording Secretary. Philadelphia, October* 17. 1837.

Products of the Vine in Ohio and South Carolina. — On eighteen square feet, less than half an acre of ground, Jacob Resor, Esq., at his residence, about seven miles below this city, on the river, has raised, this season, Cape and Catawba grapes, sufficient to make *six hundred and seventy-seven gallons of pure wine!* besides a large quantity consumed in the family, and otherwise disposed of, estimated to be sufficient to have made the amount full 700 gallons. It is to be remarked that this is the first bearing season of the vines. The Isabella and Cape yielded at the rate of fifteen hundred gallons to the acre! the Catawba was less productive, from the rot having destroyed many of the grapes. Mr. Resor values his crop of wine at *one thousand dollars;* a pretty handsome remuneration for half an acre of ground, and ten days' labour. (*Cincinnati, Ohio Gazette*, Oct. 1837.)

Mr. M. Herbemont of Columbia, South Carolina, states, in the *Southern Agriculturist* for October last, that he made at his farm 750 gallons of wine, and 528 gallons from his garden. The last was from one sixth of an acre, or at the rate of 3168 gs. to the acre. The produce of two of the vines in his garden is so great, that, if he had not the most respectable witnesses of the fact, he should hesitate to name it. They produced 130 gallons of wine, and even more." Mr. Herbemont has long cultivated the vine, and the utmost reliance may be placed on his statements. The wine is of the flavour of Madeira. — *J. M. Philadelphia, Nov.* 21. 1837.

Mr. Fessenden of Boston died of apoplexy in the beginning of November, 1837. He was a very useful man, and for many years conducted the *New England Farmer*, a quarto weekly sheet; and latterly, the "*Horticultural Register*." — *Id.*

Grafting the Orange on the Pomegranate. — Mr. Andrews of Boston, U. S., consul at Malta, was recently in this city; and confirms the fact I formerly stated to you, on the authority of a friend who had visited that island some years since; viz. that the red flesh oranges of Malta derive their hue from the pomegranate stock, on which they are engrafted; and promises to send you undeniable certificates of it. Brydone, in his fifteenth letter, also says that "the Maltese oranges deserve the character they have of being the finest in the world: many of them are of the red kind, and much superior to the others, which are too luscious. They are produced, I am told, from the common orange bud engrafted on the pomegranate stock. The juice of this fruit is red as blood, and of a fine flavour." It is singular that the call you made, on the cover of a number of this Magazine, for a reference to some work in which the fact was stated, should not have produced one to Brydone. That

author, however, was not the one in which I saw it, and which, with the oral testimony of my commercial friend, induced me to use it as argument in favour of the opinion that the stock influenced the fruit.—*M. J. S. Philadelphia, Nov.* 27. 1837.

Art. III. *Domestic Notices.*

ENGLAND.

The Birmingham Society for the Advancement and Diffusion of Floricultural, and Horticultural Knowledge. — The projectors of this Society, fully appreciating the value of floral and horticultural exhibitions, as a means of encouraging a taste for gardening, are, at the same time, convinced that the mere inspection of specimens, however excellent, must fall short of the object aimed at; namely, that of diffusing a practical knowledge of the science; inasmuch as it leaves the enquirer as ignorant of the management by which such successful results are attained as before they came under his notice. It is the intention of this Society to remedy this defect by the following means: —

1st, By holding periodical meetings of the members, at which lectures will be given, essays read, discussions held on floriculture and horticulture, and interesting specimens exhibited.

2dly, By publishing its proceedings in the gardening periodicals.

3dly, By endeavouring to obtain new varieties of vegetables, fruits, and flowers, for inspection; and to procure, when practicable, seeds and plants for distribution among the members.

4thly, By opening a correspondence with societies of a similar nature.

Rules, to the number of fourteen, have been laid down; and the name of the secretary and treasurer is W. Darke.

Leeds Zoological and Botanical Garden, which was noticed in Vol. XIII. p. 519., as in contemplation, has since been formed. There was a competition for the plans; and the first premium was awarded to Mr. Billington and Mr. Davies; the second, to Mr. Perkins of Leeds; and the third, to Mr. Taylor of Sheffield. Our esteemed correspondent, Mr. Pringle, gardener to W. R. C. Stansfield, Esq., M. P., Esholt Hall, near Leeds, was one of the competitors; and, having a high opinion of his talents for designing and systematising, we shall give his plans and report in a future page. They will be read with interest by all, and with instruction, we trust, by the young gardener. We have neither seen nor heard anything of the other plans. — *Cond.*

Kew Gardens. — By order of the Lords of the Treasury, two experienced gardeners have been ordered to report upon the state of these gardens, and also Dr. Lindley, prior to some extensive reforms contemplated in that establishment. (*Morn. Chron.*, Feb. 26.) The gardeners alluded to are, Mr. Paxton of Chatsworth Gardens, and Mr. Wilson, gardener to the Earl of Surrey, at Worksop Manor. The object of the commission is said to be, to arrange some plan by which all the royal gardeners may act in concert, in such a manner as to produce a regular and sufficient supply, instead of too much of one thing, and too little of another, as is said to be the case at present, owing to every royal gardener acting independently. Previously to the time of William IV., all the royal gardens were under the direction of W. T. Aiton, Esq.; and the supplies were regular, without superabundance of particular articles. This is the essence of the rumours that are afloat on this subject. Whatever changes may take place, we trust the merits of that modest and unassuming man, and thoroughly scientific botanist and gardener, Mr. Smith, will not be forgotten. If Mr. Aiton resigns, which, we trust, he has too much spirit and good sense to do (he having, as we learn, been found altogether blameless), Mr. Smith is, we think, the fittest man in England for the Kew Botanic Garden. — *Cond.*

The Entomological Society's Prize for 1838 will be given for the best essay on the Agrotis ségetis, a moth, the larva or grub of which burrows into and devours the turnip.

Lambertian Museum and Boyton Garden. — " I have just received from the neighbourhood of the Red Sea a fine plant of the true socotrine aloe, which, I believe, is the first ever brought to Europe. I have also received splendid specimens in flower of the Cheirostèmon *p*latanoïdes, from the Prince Bertero, at Palermo, in whose garden it flowers annually. A few days ago, I received a branch of the only tree now growing on the site of the supposed pensile gardens at Babylon, which proves to be the *T*ámarix orientàlis. Among a collection of plants from Arabia, I have received fine specimens of *A*mỳris gileadénsis, figured by Bruce ; and *A*mỳris opobálsamum, figured by Vahl. — *A. B. Lambert. Feb.* 22. 1838.

The severe Weather of January, 1838, has killed, or greatly injured, almost all the half-hardy ligneous plants in the neighbournood of London. The foliage of the trees on the walls of the Botanic Garden at Kew, and also on those of the Horticultural Garden, is quite black ; and the common laurustinus, the common laurel, the Portugal laurel, the phillyrea, the alaternus, and other such shrubs, are blackened or killed down to the ground. Even the aucuba and the arbutus have had their hardy foliage injured ; and, in short, so much damage has scarcely been done to evergreen shrubs within the memory of any gardener living. It is interesting to observe the different degrees of hardiness in different individuals of the same species, and in the same garden, where the plants have been raised from seed, as in the case of the Portugal laurel, the arbutus, the evergreen oak, the cork tree, &c. Some individuals of these species, standing in nursery lines, among others in all respects similarly circumstanced, are scarcely injured at all ; while others are partially blackened, their wood being alive, and some are killed down to the ground.

The mean Temperature of January, 1838, at High Wickham, Bucks, was 25·61°, which is 3·31° below the mean of any corresponding month during the last fourteen years. This information was communicated by J. G. Tatem, Esq., of High Wickham, to the Meteorological Society. (*Lit. Gaz.*, Feb. 24. 1838.)

The Menogramme. — A new wooden label, or name-stick, for flower-pots in borders, has lately been brought forward under this name by Messrs. Mapplebeck and Lowe, manufacturers of horticultural implements, Birmingham. These labels are formed of wood, and seem slightly rubbed over with white lead. Whether they have been Kyanised, or not, we are unable to say ; but, as the manufacturers have kindly sent us a packet, we will try them, and report on them at some future period.

Cárica Papàya, the Papaw tree, a native of India, has ripened abundance of fruit, this winter, in the stove at Ripley Castle. We have received some specimens from the gardener there, Mr. Elliot, which we shall figure in our next Number. In the mean time, as an object of luxury, the plant may be worth cultivating, as one of the very few which ripen a handsome edible fruit in the winter season. — *Cond.*

SCOTLAND.

The Highland and Agricultural Society of Scotland, one of the best organised and most useful societies that ever existed in any country, has published its list of premiums for the year 1838 ; and, as some of the subjects concern gardeners as well as agriculturists, we shall here notice them : —

Tillage by Steam. — A premium of 500*l.* will be awarded for the first successful application of steam power to the cultivation of the soil. A stationary steam-engine might easily be contrived to drag along ploughs or harrows ; but we hardly think it would answer in an economical point of view. A locomotive engine that would stir the soil in any manner wanted, as it went along, by a horse, is what is wanted, and this might probably be produced on the principle of repeatedly operating very slightly on the same surface, as in the case of the native plough of Hindostan. Perhaps the curvilineal tines of a harrow fixed in a large cylin-

der or drum might at once stir the soil and move itself along ; or a set of chisels might be employed to cut the soil in slices as in digging, and the top of the slice might be put in the bottom of the trench, without the unnecessary operation of turning the slice upside down, as practised by the British spadesmen ; but simply by throwing it, so that the top of the slice may always fall in the lower part of the furrow, agreeably to the practise of Flemish spadesmen, and in general the spadesmen of all warm climates. The subject is one of intense interest to the gardener, no less than to the agriculturist ; and we think government would be justified in offering 1000*l.*, or even more, in addition to the premium proposed by the Highland society.

"*Preserving Potatoes.* —Ten sovereigns, or a piece of plate of that value, will be given for the best and approved account, founded on experience, of the most successful method of preserving potatoes in good condition, in their natural state, for a period of not less than ten months from the time of their being taken up.

"Competitors are required to communicate their experience as to the superiority of any of the methods now in practice, viz. securing the potatoes in covered heaps upon the surface, in pits, in houses, vaults, cellars, or otherwise.

" Very opposite opinions seem to be held on the advantages of pitting or storing in out-houses or cellars, and also as to the general temperature which should be aimed at ; some recommending from 35° to 40°, and others from 50° to 60° Fahr. Where pitting is preferred, there appears to be a difference of opinion as to the proper depth of the pits, and as to the thickness of the covering ; likewise, whether the heap should be kept in a dry or damp state generally, and as to the utility of placing either a layer of dry straw or of dry fern, or of green sprats or fresh turf, between the potatoes and the earthy covering, or of employing no other covering than the dry soil. Competitors are required to state their views on all these topics, and also as to what extent the preserving character of potatoes depends on innate qualities in the tubers, or on the mode of preservation employed ; and it is desirable that the names and descriptions of the different varieties of the potato that appear better addapted than others for long keeping should be mentioned.

" Reports to be lodged with the secretary, on or before the 20th of October, 1838.

"*Comparison between different Kinds of Manure in raising Potatoes.* —It seems the street manure of Edinburgh is inferior in raising potatoes to that obtained from stables or dairies, in the ratio of 30 per cent ; or as 44 bolls are to 64. For an explanation of the cause of this, founded on chemical analysis, a premium of 20 sovereigns is offered. See *Scotsman* of Feb. 17., and *Quart. Journ. Agr.* for June next (1838).

"*Effects of Wood on Climate.*—For the best essay on the effects of woods on climate, and showing how far the climate and productiveness of a district have been or may be improved or altered by extensive plantations, a gold medal.

" In the essays to be given in for this premium, it is wished that the general principles advocated should, as far as possible, be supported by facts ; and, in particular, it is requested that reference be made to districts formerly bare of wood, which have been extensively and judiciously planted within the last 30 or 40 years, and to the effect thereby produced on the climate, as well as on the productiveness of the district. It is also desired that regard be had to the comparative advantages and disadvantages in this respect of planting in masses, stripes, clumps, and hedgerows, and the local situations proper for each. Competitors will have in view how far the climate may have been modified or improved by other causes, such as drainage.

" Essays to be lodged on or before the 20th of October, 1838."

" "*Disease in the Silver Fir.* — The honorary silver medal will be given for the best account of the disease which has of late years attacked the stem, larger branches, and occasionally the twigs, of the silver fir (*Pícea pectinàta*), somewhat resembling the well-known affection of the larch ; with suggestions, founded on experience, for checking the progress of the malady, or for preventing it.

" It will be desirable that specimens of the diseased bark, and of both sexes of the insect which occasions the evil, should accompany the reports, which are to be lodged by the 20th of October, 1838.

" *Forest Planting.* — For the best and approved essay on forest planting, founded on personal observation and experience, or on known practical results, a premium of 20 sovereigns, or a piece of plate of that value.

" The essay will be expected to include an account of the different soils, exposures, and declinations best suited for growing the various kinds of forest trees, with remarks on the climate of different districts of Scotland, correct lists of the various genera, species, and varieties of trees best adapted for particular situations, and the proportional number of each species which should be planted on a given space; an account of the comparative value of the different kinds of trees, showing the purposes for which the respective sorts are more applicable in affording wood for plough-wrights, and for general country purposes, for joists, deals, carpentry, or naval timber, &c., or useful bark; the influence of the different sorts of trees on the pastures below them, or in their immediate vicinity; notices of the insects and diseases which affect forest trees, with suggestions for their prevention or cure; together with remarks on the comparative advantages of the promiscuous planting of different kinds of trees, or of grouping masses of the same species together, both in an economical and ornamental point of view.

" Essays to be lodged on or before the 20th of October, 1839.

" *Insects injurious to Agricultural Plants.* — Ten sovereigns are offered for the best accounts of these. To be sent on or before the 20th of October, 1839.

" *Insects injurious to Forest Trees.* — The same premium and conditions are offered.

" *Extirpating Ferns from Pastures.* — Fifteen sovereigns, or a piece of plate of that value, will be given for the best and approved account, founded on experience, of a cheap mode of eradicating ferns from pastures, and particularly from hill pastures, where the plough cannot be employed.

" The extent of ground subjected to the experiment must not be less than 20 acres; the report must state what proportion of the surface was occupied by the ferns, with the expense per acre incurred in their eradication, and must be lodged with the secretary, accompanied by specimens of the ferns destroyed, on or before the 20th of October, 1840.

" There is evidence in favour of the belief that the object in view may be accomplished by repeated irrigation of the ground; also, that repeated cutting of the ferns while young and succulent, thus preventing their bringing their tops to perfection during the whole season, or two consecutive years, will destroy them. It is desirable that the truth of these opinions should be established or refuted, and any other successful mode of treatment pointed out.

" *Science of Agriculture.* — Discretionary premiums will be awarded for the best essays on, — The mode on which soil operates in producing or facilitating the germination and growth of vegetables. The best admixture of the ordinary elements of soil for promoting the germination and growth of particular vegetables. The mode in which lime operates in rendering the soil better adapted for the germination and growth of particular vegetables. The effect of drainage in altering the constitution or qualities of the soil, and increasing its fertility. The nature of the atmospheric influences on soil, in promoting its fertility, including the modification of these influences, arising from heat and cold, dryness and moisture.

" It is expected that the authors of the above essays will not offer mere speculative conjectures on the subjects treated of, and far less make a compilation of the opinions of others. They must be able to state that they have themselves studied and investigated the subject treated of. They must also explain the nature and the mode of enquiry adopted by them, and detail the experiments which they have instituted, from which their inferences have been derived. The essays or memoirs to be lodged by the 20th of October in any year.

"*New Plants adapted to Field Culture.*—The silver medal, or a discretionary premium, is offered, and gardeners, who are good botanists, and have leisure and a little spare room, might do something in this way.

" *The best kept Cottages and Gardens.* — Four counties in different parts of Scotland are named, in each of which, to encourage cottagers to keep their cottages and gardens neat and clean, the Society will, for four successive years, give two sovereigns annually to any parish in each of the said counties, or to any local association, comprehending at least one parish within the object of its operations, on receiving a satisfactory guarantee from or on behalf of the parish or association for an equal sum being placed at the disposal of the Society, for the same purpose, and during the same period. The number of parishes to receive the premiums is to be limited to four in each county.

" *Medals to Cottagers.* — In the view of giving still farther encouragement to cottagers who do not reside in the counties in which the regular premiums are in operation, and, at the same time, of giving aid to local associations and public-spirited individuals, establishing or continuing, at their own expense, premiums for the like object, the Society will give its cottage medal to such associations or public-spirited individuals as apply for the same, and may be desirous to add that testimony of approbation to such premiums as they themselves bestow. The number of medals to be issued annually is limited to six.

" *Woods and Plantations.* — An honorary premium is offered for extensive planting. The gold medal for the best report on recent plantations. The report should comprehend every interesting particular; among others, the exposure and altitude of the place, and general character of the soil; the mode of fencing and of planting adopted; the kind of trees planted, and the number of each kind per acre; their relative progress; the proportion of blanks or deaths at the end of three years; the state of the plantation at the date of making the report, and the expense per acre, as nearly as can be calculated.

" *Pinus sylvestris.* — Premiums are offered for the best account of native woods of this tree; collecting the greatest quantity of seed from healthy self-sown trees in the Highlands; and importing the greatest quantity of seeds from the native forests on the Continent.

" *Introduction of new, and extended Cultivation of rare and useful Forest Trees.* — It is especially wished to ascertain the value of the *Pinus Pinaster* in Scotland.

" *Introduction of Forest Trees not yet known in a living State in Scotland.* —To the person who shall, in any year, most successfully transmit to the Society, in a state fit for germination, seeds of forest trees not yet in cultivation in this country, and which are natives of such places as, from their latitude or altitude, may be expected to produce trees hardy in the climate of Scotland, the gold or silver medal, or a piece of plate of such value as the directors, in the circumstances of the case, may think suitable.

" The Society would particularly wish to direct (but by no means to confine) attention to the fir tribes; and the countries from which contributions are particularly expected are, the north-west part of America, the table-land of Mexico, such parts of the Andes as have sufficient elevation, and the Himalayan Mountains, or of the great plains to the northward of them. The seeds may be sent home in the cones, wrapped in brown paper, packed in a box, and kept in a cool airy part of the cabin, but by no means in the hold, nor in tin cases. If competitors possess the means, by themselves or their correspondents, of trying their vegetation in this country, it will be desirable that they should do so; but otherwise, if the seeds be sent to the secretary of the Society, they will be tried under the direction of the Society, so as to afford every chance of success. The transmission of living plants in boxes, or in cases covered with glass panes, may be attempted, where practicable; the external air should be excluded, and almost no water given during the voyage. Where this plan is adopted, smaller seeds, berries,

or heps, may be thickly mixed with the soil or earth in which the plants are placed.

"*More extended Introduction of known Species of Abiétinæ.* — To the person who shall, within three years from 1835, inclusive, have introduced from any part of the world, cones containing seeds capable of germination, the produce of hardy species of the fir tribes which have been already introduced into Britain, but of which only a few plants have been raised, the gold or silver medal, or a piece of plate of such value as the directors may, in the circumstances of the case, deem adequate.

"It is required that the quantity of cones of each species imported shall be sufficient to afford at least 500 seedling plants; and farther, that, before the premium be awarded, the number of seedling plants of each species actually raised in Scotland shall not be less than 100. Attention is particularly directed to Araucària imbricàta; *P*ìnus ponderòsa, Lambertiàna, and Sabiniàna; to *A*bies Douglàs*ii*, nóbilis, grándis, and Menziès*ii*; and to Taxòdium sempervìrens; which last is abundant in the vicinity of San Francisco, and throughout the low sandy plains of California."

The scientific and thinking gardener will derive instruction from the bare perusal of the above paragraphs; and there are a number of our readers, both in England and Scotland, who might compete for several of the premiums. Some of the subjects we should be glad to have articles on, for our *Encyclopædia of Arboriculture*, or for this Magazine.

Art. IV. *Some Account of the Swedish Horticultural Society, and the Garden of M. Rosenblad, in Stockholm.* By Austrian Travellers, in the Summer of 1836.

The Swedish Horticultural Society was established in the autumn of 1832 by some of the individuals most zealous for gardening. The president was the *Ober Statthalter* in Stockholm, General-Major and Commander, &c., Baron von Sprengtportin, who has always taken an active part in every thing that is ornamental and useful in Sweden, and especially in Stockholm. The direction of the Society consists of a vice-president, Dr. Pontin, a knight; two secretaries, one treasurer, one bookkeeper, and a council of fourteen members, ten of whom belong to the garden, and four to the agricultural department. The Society, at present, consists entirely of members who pay, and who amount to about 1500 persons, each of whose yearly subscription is only one rixdollar of the Hamburg bank. Foreign corresponding members will soon be invited to join the Society.

The object of the Swedish Horticultural Society is to promote a general taste for garden and field culture in every part of Sweden; to record the progress of gardening in that and other countries; to try experiments on the fruitfulness of different soils; to introduce and acclimatise new plants, and to select the most suitable of them for cultivation, either for their beauty, or on account of their producing wholesome and well-tasted food, for men or cattle. The Society distributes yearly, seeds of new flowering plants and vegetables to its members, without any extra remuneration.

The situation chosen for the garden of the Society is in the middle of Queen Street, which is the largest and most beautiful street in Stockholm. This very desirable spot appears to be about 2000 ft. long, and from 400 ft. to 500 ft. wide, occupying a fourth part of the land from the above-mentioned street to the banks of a small lake, which communicates with the Lake Maclaren, and the royal palace of Carlberg. A very beautiful enclosure has been executed from a drawing of Baron von Sprengtportin, which received the royal assent, and was accepted by the Society.

We shall always feel grateful to Baron von Sprengtportin, who, during our short stay in Stockholm, afforded us the information which has enabled us to write this paper. He conducted us to the beautiful and rich flower show,

which was exhibited in M. Rosenblad's garden, of which we shall give a short description below.

M. Rosenblad is a young private individual, who has, for his own amusement, and from his zeal for the extension of horticulture in Sweden, given, for the space of five years, every encouragement in his power to gardening. His garden is considered to be the most beautiful in Sweden, and to have the best collection of plants; in which opinion we fully join. It is situated in the capital, and is kept in the very best order by the invariably obliging proprietor; who not only admits all travellers and botanists, but, also, all respectable persons in the city, to visit it; and, we were told, presents all those who are interested in the subject with plants, seeds, and cuttings of all the newest and best kinds, with the intention of distributing them throughout the country. The number of the different kinds of plants probably amounts to from 3000 to 4000 species; which is being continually increased by contributions from England, France, and Germany, and occasionally from America, and the tropical flora of India. The hot-houses consist of a large and beautiful building, 200 ft. long, in five divisions. This house is heated by hot water. This building and hot-water apparatus were finished in 1832. The apparatus consists of a boiler, which contains 130 quarts of water, with copper tubes, 6 in. in diameter, through which the water is conveyed through the different divisions, and produces sufficient heat when there are 20° of frost, without the necessity of covering the glass with shutters.

While we were in Stockholm, a flower show was announced to take place in M. Rosenblad's garden, which was to consist only of the flowers produced in the garden itself. The origin of this show was a visit made by the Queen and her court, a few days previously, to the benevolent proprietor; Her Majesty having been accompanied by the crown princess and her mother, the Duchess of Leuchtenberg, and the princesses Hortensie von Hohenzollern, and Theodolinde von Leuchtenberg, who were on a visit to their royal relations in Sweden.

The exterior of the garden was exceedingly elegant. All the walls, palings, and railings were covered with young espaliers; large tin labels were attached to every tree and shrub, inscribed with its name, native place, and the order to which it belongs; from which we found that, among the numerous fruit trees were included the very best sorts from England, France, and Germany.

The garden itself, although not large, is laid out with great skill. No one, viewing it from a height, would believe that so great a number of plants could find a space in so small a compass without the ground appearing too full. The numerous beds were covered with thousands of the most splendid flowers, which filled the air with their delightful perfume; so much so, indeed, that the visiter might fancy that he was approaching the abode of the Goddess of Flowers.

We discovered many new and rare plants in this rich collection, which we passed over, on account of their profusion, and hastened to the cabinet and saloon, which were ornamented in the greatest splendour.

There was a very rich collection in the first saloon of the most beautiful New Holland, Cape, and North American plants, tastefully arranged. These plants consisted principally of arbutuses, acacias, melaleucas, metrosideroses, and ericas. We particularly admired two splendid specimens of Magnò*lia* grandiflòra, 20 ft. high, and several other beautiful magnolias of great value. The walls, sides of the windows, and stage, were ornamented with winding shoots of Passiflòra cærùlea, and *Ro*sa multiflòra, álba, and coccínea, which were covered with thousands of flowers. From hence we went to the first division for tropical plants; where we found the walls, roof, and sash-frames overgrown with creeping plants and cactuses; the splendid flowers of which, appearing among the blossom-covered shoots of Passiflòra quadrangulàris, insígnis, *l*aurifòlia, alàta, and lanàta, and of many kinds of Thunbérg*ia*, had the most beautiful effect. The other divisions were filled with fruit-bearing bananas, palms, dracænas, jatrophas, astrapæas, and carolinas, round whose straight and splendid

stems sweet-smelling tufts of rare and beautiful flowers were twisted. In the background of this division was exhibited a beautiful collection of bromelias, some of which were remarkable for their fruit, and others for their blossoms. On leaving this division, we entered the sanctum of the green-houses; the cabinet of Linnæus, at the side of which there is a large ornamented saloon. It is difficult for us to give a proper description of this interesting space; but we will endeavour to give as good an account as we can of a place which seems more to approach the idea of a fairy temple than that of a usual apartment.

The walls of the cabinet were covered with Passiflòra racemòsa and palmàta, mixed with Lonícer*a* japónica, Rodochìton volùbilis, Dillèn*ia*, and other twining plants; all of which were so richly covered with flowers, that they almost eclipsed the leaves, and filled the atmosphere with the most delightful perfume. A colossal bust of Linnæus, crowned with flowers, under a canopy of climbing plants, is seen on a pillar in the middle of the back wall. Some of these plants twisted gracefully over the bust; and three flowering shoots of Passiflòra racemòsa, palmàta, and cærùlea twined around the breast of the great prince of nature. There was a bracket on the fore part of the pillar, on which were placed those plants that have flowered for the first time in this garden; and they remain there till their places are reoccupied by newer plants in flower. This is a noble way of testifying great respect for this immortal man; at least, the sight of it inspired us with such enthusiasm, that we looked upon the dead stone as a living substance; and the homage which was paid him seemed to give his countenance an expression of great pleasure. Brackets were erected on both sides of the bust, which were ornamented with the most beautiful flowering plants, and arranged in such a manner, that those nearest the bust were always the rarest; among which we saw Alstrœmèr*ia* aúrea, Sóll*ya* heterophýlla, Cinerària bícolor, some rare *L*iliàceæ, and new calceolarias, splendid roses, pelargoniums, lobeliæ, gladioli, mimuluses, &c. There was a large pyramid in front of the cabinet, consisting of rare flowering plants; and in the corners of the room the richest groups of rhododendrons, azaleas, and neriums. Since the queen's visit, her chair, surmounted by a colossal crown, filled with the most beautiful flowers, has stood before the bust of Linnæus. Although several days had elapsed since these flowers were placed there, they were still so fresh, that one would almost have thought they had only just been gathered: we concluded that the crown had pewter tubes within, filled with water, in which the stalks of the flower were inserted, so as to preserve such a fresh appearance.

The walls of this ornamented saloon, near the cabinet, were also covered with Passiflòra álba, Lophospérmum erubéscens, and several species of *C*lématis, which even extended over part of the ceiling. The sides and corners of the saloon were filled with the most beautiful flowering orange trees and camellias; pyramids of the most splendid neriums, among which there was one very remarkable and quite new, from M. Louis Noisette of Paris; beautiful fuchsias, such as Fúchs*ia* cónica, 10 ft. high, with a head full of foliage; *A*càcia dealbàta, Edwárds*ia*, Búddle*a* globòsa, several arbutuses, Alstrœmèr*ia*, gigantic pelargoniums, and the most splendid standard roses.

There was a large hot-house at the side of this beautiful saloon; the arrangements of which had only just been made, and therefore, did dot make such an impression on us as the other houses. Yet even here we saw Passiflòra pulchérrima and rùbra, Thunbérg*ia* grandiflòra and coccínea, Bignòn*ia* crucígera, with several aristolochias, and other unknown climbing plants. A large pit for palms and other large trees was ready; and among the plants already in it we observed several species of *Yúcca*; such as *Yúcca* glorìòsa, with the finest flowers; splendid specimens of *Coffèa* arábica, Sáccharum officinàrum, several kinds of *F*ìcus, *A*rum, Strelítz*ia*, *P*lumbàgo, and several species of vines, in flower; and what, at least to us, was a great rarity, a Gardèn*ia* Thunbérg*i*, above 8 ft. in height, and a still larger specimen of *Anòna Cherimòlia*. Although this hot-house was principally intended for ligneous plants, there was still

space enough for other sorts; and the empty spaces between the trees were filled with a valuable collection of *Cr*ìnum, Amarýllis, *Hed*ýchium, Gardèn*ia*, and *Hi*bíscus.

The proprietor used every endeavour to receive, in a suitable manner, the high personages who did him the honour to visit him; and he had the pleasure of finding that his exertions were gratefully acknowledged. He also showed great kindness, after the royal visit, in throwing open his flower-garden to the public; on which occasion we feared that it would sustain considerable injury, as the crowd was exceedingly great; but the following day proved that the damage the garden had suffered was very trifling; a great honour to the inhabitants of Stockholm, and which showed that they knew how to make a right use of the confidence that was placed in them. (*Gar. Zeit.*, 1837.)

Art. V. *Retrospective Criticism.*

Mr. Main's Animadversions on Keith's Botanical Lexicon. (p. 89.)—Having admitted Mr. Main's animadversions on my *Botanical Lexicon* into your Magazine, perhaps you will have the goodness to admit a few brief remarks in reply. In the outset, Mr. Main is all gentleness and urbanity; and redolent of nothing but sweets, and flowers, and frankincense, making the delighted author feel, for a moment, as if he were reposing on a bed of roses. Every thing is as it should be; for the work contains, by the admission of Mr. Main, not merely "the marrow of my former work, but numerous quotations from every author, ancient and modern, accompanied with sound critical remarks, which greatly enhance its value. In short, it is a valuable compendium of botanical knowledge, which ought to be in the hands of every young botanist, and every young gardener, as it enables the student to compare the knowledge of the ancients with what is now known and taught, and shows by what gradual steps the science of botany has been advanced to its present preeminence." This is all very gratifying, to be sure, and a favour for which I beg Mr. Main to accept of my best thanks. But who would have supposed that it was merely a temporary calm, and the prelude of a coming storm? or who, after all this commendation, would have anticipated an attack, such as to make the writer forget, or, at the least, fail to make use of, the ordinary civility of expression which is due, not merely to those who agree with us in opinion, but to those who differ from us also, whether upon matters of science, or upon other subjects. [We have inserted this; but we think the reverend writer has been unjust towards Mr. Main, whose review appears to us to be written with perfect candour and good feeling.]

In what I have said concerning systems, and the preference which I give to the system of Jussieu over that of Linnæus, I am let off pretty easily. But it is when Mr. Main comes to that part of his review which relates more immediately to physiology that the latent storm begins to break out.

1. My first fault is a fault of defect, which the critic finds in the work. He has looked "in vain for anything decidedly new." My reply is, that it was not the object of the work to hold up novelties to the view of the world, but rather to state facts, or theories already known, in their chronological order; and, if I had even had a new theory, "cut and dry," and ready, perhaps there might be more of discretion in keeping it by me for nine years longer,—

——"Nonumque prematur in annum," Hor. *De Art. Poet.*

than in publishing it too hastily, as some theorists do, only to make themselves a laughing-stock, or subject of sneer, to all men of sense, and of sound science.

2. My second fault is a fault of defect, or of omission also. "The dark pages of former writers [I ought] to have cleared up; and their theories [I ought] either to have established, or demolished by an appeal to practical

facts." Now, this is precisely what I might fairly boast of having achieved, either by facts or arguments of my own, or by adducing those of others. For on all the grand physiological topics in botany I have shown what were the earliest theories on the subject, and by whom propounded; as, also, how they came to be superseded by later theories, and these, in their turn, by theories later still, till you come down to the state of the science as it subsists at the present day. Let the reader look at the work itself, and not rest content with Mr. Main's account of it in this respect. Let him turn to almost any of those more abstruse and intricate subjects which have been the ground of theories; such as the ascent of the sap, and its cause; the descent of the cambium, and its cause; the fecundation of the vegetable *ovulum* through the agency of the pollen; the direction of the radicle and plumelet; and the growth and food of the plant, and he will find the proofs of what I now assert; so that, if it be true, as Mr. Main says it is, that I hold possession of the good opinion of the public, I shall expect my *Lexicon* to become a *standard work*, which he thinks I might have made it by doing what I have just now shown that I have actually done. After so much of preliminary praise, Mr. Main's attack was to me, at first, quite astounding and unaccountable. It looked as if I had inflicted upon him some very aggravated injury. It looked as if I had criticised and denounced his own favourite theory in an unhandsome and unfriendly way. Now, I have done no such thing: but I have done what is worse, I have passed it by in silence. To some men, notoriety is sweeter than even praise: they will put up with your censure, if you will but talk about them. But my apology to Mr. Main for not bringing him upon the stage is, that it was not in my plan to introduce or to criticise any theory, or every theory, but such theories only as had been popular among botanists, or propounded by physiologists of high reputation; and, above all, such as were intelligible to myself. Now, I have not yet met with any botanist who professes to have adopted Mr. Main's theory; and, for myself, I have only to say that I cannot comprehend it, however much I may think about it. For the main ground and pillar of this novel theory, namely, the *indusium*, with which Mr. Main seems to be so familiar, and about which he writes so confidently, I have never yet been able to catch a glimpse of; and, if Mr. Main may argue from the invisibility of the descending *cambium* to its non-existence, so may I argue from the invisibility of the *indusium* to its non-existence also. I will enter no further into a debate on a subject which is beyond my comprehension, or throw away time in disproving the existence of a nonentity.

3. My third fault is, that I am "an abettor of the idea that the matured sap is *organisable*, while my chemical knowledge (of which he thinks I have an ample share) ought to undeceive me in this untenable doctrine." I do not lay claim to any great share of chemical knowledge; but I have quite enough of it to enable me to discern the possession, or the want of it, in others. The opinions which I hold with regard to the organisable capabilities of the sap, or cambium, I hold in common with all the modern chemists I have ever had an opportunity of conversing with, or whose works I have read; and I regard the principles of modern chemistry as resting on a foundation that cannot be overthrown. Hence, I decline entering into any controversy with Mr. Main on this subject also. His chemistry is a chemistry *sui generis*. With him, gases are *immaterial bodies*, which, like the sap itself, are incapable of being formed into any organic structure or membrane, by any change or combination of which they are "susceptible." (*Illustrations of Veg. Phys.*, vol. ii. p. 135.) But the gases recognised by modern chemists are all material: they may be compared, and weighed, and measured; and are convertible, by certain chemical combinations resulting from life, into organised structures. Further, Mr. Main represents me, again and again, as advocating doctrines which I must, or ought to, know to be unfounded; and of adopting opinions out of *pure deference to others*, which I must, or ought to, know to be erroneous. Now, I think that Mr. Main must, or ought to, know that he has no right to indulge

in such assertions or assumptions. It is the imputing to me of a line of conduct that would be altogether degrading and disgraceful; or of a pusillanimity that would merit the contempt of all honourable men. Whatever doctrines I have advocated, I have advocated *bonâ fide;* and whatever opinions I have adopted, I have adopted because I believed them to be true.

4. My fourth and last fault is, that I have refuted one doctrine, and advocated another, which is nothing but a revival of the former; and have thus rendered the soundness of my philosophy questionable. "When it is observable that a writer, in one part of his book, condemns and completely refutes the old doctrine of the equivocal generation of animals, and in another part advocates the adventitious creation of cells, vessels, buds, and wood of vegetables, we are compelled to question the philosophy of such an author." The negation of the doctrine of equivocal generation, and the advocacy of the doctrine of adventitious buds, are two things perfectly consistent and reconcileable upon the chemical and physiological principles which I profess to hold, and are contradictory only upon those of Mr. Main, which I have nothing to do with; so that the whole fabric of the charge is merely a creation of Mr. Main's too fertile fancy, compelling him, as he says, to doubt, and to question the soundness of my philosophy. Had this remark been made, or this doubt expressed, by any physiologist of acknowledged and established reputation, I confess that I think it would have caused me much annoyance; but, coming as it does merely from the pen of a phytological writer, the soundness of whose philosophy is itself sufficiently questionable, I can very truly say that it gives me no annoyance whatever.—*Patrick Keith.*

9. *Charlotte Street, Fitzroy Square, Feb.* 14. 1838.

Effect of sheltering Trees from the Lee Wind. (Vol. XIII. p. 256.)—Is not the principle of trees being sheltered from the leeward fully demonstrated in every clump of trees, of whatever sort? This forcibly struck me when crossing Barham Downs, a few days ago. In that neighbourhood, there are many single trees, more bent from the wind than any of the figures given to explain Mr. Davis's paper on that subject. Interspersed with these, are a number of clumps, all of them as tamely rounded, stiff, and formal as the brass handle of a door, or as the most ardent admirer of ovals and circles could wish them. Society, in the case of the clumps, performs what the solitary is left to effect for itself; if any of these clumps were gutted (and they want it badly enough), and only four outside trees left, it is evident they would lean to all the four winds of heaven, and the one to the windward would be directly in the teeth of its brethren.—*N. M. T. Folkstone, Jan.* 14. 1838.

Mr. Cuthill's Mode of growing Strawberries and ripening early Melons.—Mr. James Cuthill has just discovered a method of growing strawberries that many of your readers (from your having published it some ten years ago) have long practised. But, perhaps, this was as much a mystery to him as his "grand melon secret" is to me, even after he has been kind enough to publish it. He says, "As soon as the melon was the size of a walnut, I covered it with a propagating glass, which I filled with sand." Now, this I do not understand; and, if Mr. James Cuthill would be a little more explicit, as soon as convenient, I doubt not but it would oblige many, besides your humble servant,—*Ignoramus. Jan.* 1. 1838.

Cultivation of Currants. (Vol. III. p. 263.)—Mr. Symons's method of summer pruning was very successfully practised, twenty years ago, by Mr. M'Donald, then and now gardener to His Grace the Duke of Buccleugh, at Dalkeith Palace; and, by referring to the published *Memoirs of the Caledonian Horticultural Society*, any of your readers may satisfy themselves of the truth of my statement, bringing into view my own practice and experience. I do not approve of pinching off the young shoots at so early a period, nor exactly at the same place, as Mr. Symons does. My method (and I never have had any "withered" currants or gooseberries either) is, after the fruit *is fairly set*, to pinch off the superabundant wood, *almost close to the main shoot;* and, by so

doing, in place of an additional number of young shoots pushing afterwards (which is the inevitable result of the two-inch system, if the tree is in a healthy state), I get two or three strong fruit-buds formed at the base of each shoot so treated.

I have two walls whose joint lengths make 360 yards, literally covered with gooseberries (comprising, perhaps, from fifty to sixty distinct varieties of the finest Lancashire, and other sorts equally good), that I have treated in exactly the same manner since I first planted them, nine years since, and have succeeded beyond my expectation. From one of these walls, I have gained the first prize, six years in succession, at the Aberdeenshire Horticultural Society's competition in July each year.—*James Wright. Westfield, Dec.* 30. 1837.

Bernholz's Mode of growing Truffles. (Vol. XIII. p. 408.)—The natural history of the truffle, given in the September Number of this Magazine, contains much information that must be useful to such as may attempt to cultivate that highly prized substance. But, after reading the treatise of A. Von Bernholz on their cultivation, I am sadly afraid he knows little more than I do. But the subject has enjoyed a sufficient quantum of repose, and my remarks may, perhaps, induce some of your abler correspondents to commence a discussion that may lead to the desired result. Had A. Von Bernholz's treatise been the result of practice, I think he would have conveyed a more accurate idea of the nature and culture of truffles than he has done. He goes on deploring the ignorance of former days, and glorying in the superior or perfect knowledge of his own time, when the nature of truffles is perfectly understood, the proper place assigned them in the scale of creation, and their culture a mere matter of course. Thus we follow him, expecting that at every turn the grand secret is going to burst upon us; but, after all, we are obliged to rest satisfied with assertions, where the record of a few simple facts would outweigh all the pretence in the world. And, if I may be allowed to reason upon what appears to be a most unreasonable subject, I would say that there is by far too much stress laid upon a strict imitation of nature in forming the artificial bed. Supposing a bed formed upon these principles were to succeed, it would go far enough to show that truffles might be cultivated, but it would not answer the purpose of the cultivator. He will be expected to raise from a few square yards the produce of many acres, and to have them at all seasons; therefore, a bed formed of very different materials, and vastly richer than the natural one, placed where a proper temperature may at all times be maintained, will most probably be found necessary to their successful cultivation. There is, it seems, an acknowledged analogy between the truffle and the mushroom: and what would the gardeners of the present day think of the man that would recommend a strict imitation of nature in forming a mushroom-bed? The natural habit of the mushroom would be hard to define; a certain degree of heat and moisture being all that appears necessary to produce it in almost any substance, even in bricks and mortar. In numberless instances, we find mushrooms in pure light loam, lying high and dry, and fully exposed to the weather, without shelter of any kind. Any person, observing them in such a site, might suppose a pure unmixed soil, extreme ventilation, and the broad glare of day, necessary to their production; and we need only contrast this with the fetid mass, the stagnate atmosphere, and total darkness in which we grow such plenty of excellent mushrooms, to see how far we may deviate from the ordinary course of nature, and still be eminently successful. Then, as regards planting, and the nature of the things planted: after all the lucid explanations given, I confess that I still see very dimly. If they are hydatids produced in the upper strata of earth, why plant truffles? The earth supposed to contain the latent germs would be more likely to succeed if they are its spontaneous production, not the progeny of each other. If produced from offsets, or anything connected with their predecessors, a full-grown well-ripened truffle would be more likely to contain these, whatever their nature, than one that had been disturbed by transplanting (al-

lowing that it had been weaned), except they are indeed animals; then the case is different. And, if A. Von Bernholz had not flatly denied their being animals, I should have thought that he considered them as such; for we find them changing place to suit themselves with a comfortable bed, and acting as a social body by combining their efforts to produce a result. This locomotion he attributes to attraction; but, if they are so volatile, so easily repulsed and attracted, that they keep bobbing up and down like so many ball-cocks, I do not think that they would stand to be squeezed into deformity by every contumaceous clod, or to be gutted as in the case of the denarius that so nearly choked the Roman prætor. Their rising in wet seasons, and sinking in dry ones, is, nevertheless, an important fact, as it goes far, in my opinion, to prove that truffles are propagated like other fungi. Seeds possessed of the greatest vitality require a certain degree of moisture to call them into action: give them excess, and they either perish, or remain dormant, until the medium be acquired. The truffle is, probably, very nice in this respect; and occupying the intermediate space, will easily account for its different position in different seasons, without troubling it to move backwards and farwards. A. Von Bernholz would likewise persuade us that they are only to be found in perfection under the fostering arms of the "gnarled oak." The experience of others would lead them to prefer the beech. Hence, it appears that *shade*, rather than any particular shade is necessary to their production; and I think the old wattled hurdles that you have somewhere proposed, very preferable to planting small-leaved trees to shelter them. But, after all, we may live to see them luxuriating among the millepedes, beneath a bundle of straw, or a few old mats, in the dark corner of some back shed. I do not live where they can be readily procured; but, if you could persuade some of your correspondents to send me a box of the soil, with a whole batch of truffles, from the unlicked cub, to the dingy veteran, I would subject them to a number of trials; and, if they would not live out of a natural bed, I promise you that some of them would die a most unnatural death. If I had any design upon the 100*l.* that you think ought to be held out as an inducement, I would have kept these remarks to myself.—*N. M. T. Folkstone, Dec.* 4.

Art. VI. *Queries and Answers.*

Do decaying Leaves absorb, and assist in evaporating, the Sap of the Plant? — In Maund's *Botanic Garden* for February is the following paragraph: — "*Leaves withered.* — As with the stems of the fuchsia, so it is with withering leaves: in their decay they absorb, and assist in evaporating, the sap of the plant, without performing any office in return. Therefore, when leaves of any shrubby plant begin to wither, take them off immediately. We have seen orange trees, which have been removed at an unseasonable period, with their leaves dropping and partly withered. Some of these trees, by way of experiment, were entirely stripped of such leaves. These threw out young foliage, and soon recovered; whilst those on which the withered leaves continued till they fell off naturally, recovered with difficulty, and evidently suffered more than those which had a contrary treatment. It must not be forgotten that it is prejudicial to the course of nature to destroy the foliage of a healthy plant: but here it was the choice of two evils; the destruction of the foliage, or the continuance of it when worse than useless." I have great doubts on the subject of decaying leaves assisting in evaporating the sap of a plant; and I can hardly think that professor Henslow, who is said in the advertisements to be Mr. Maund's coadjutor, will be of this opinion. However, I may be wrong; and, at all events, I should wish to know what some of your scientific readers think on the subject. I do not agree with Mr. Maund's dictum, "When leaves of any shrubby plant begin to wither, take

them off immediately;" being of opinion that the withered leaves of the beech, the hornbeam, and the Turkey oak, among trees, and those of the Benthàm*ia* fragífera, Escallòn*ia* different species, Tenòr*ia*, &c., keep the young shoots warm in the winter season. But here, again, I may be wrong: at all events, I shall be happy to be set right by you, or any of your correspondents. *J. M. C. N. Fulham Nursery, Feb.* 5. 1838.

Art. VII. *The London Horticultural Society and Garden.*

February 20. 1868. — *Exhibited.* Cucumbers, from Mr. George Mills. A basket of camellia flowers, from J. Allnutt, Esq. Tubers of Tropæ'olum tuberòsum.

From the Garden of the Society. Apples: Baxter's pearmain, Dutch mignonne, reinette du Canada, Court of Wick, Syke House russet, Lamb Abbey pearmain, golden pippin, &c. — Pears: Trésor d'amour, Dowler's seedling, bellissime d'hiver, bon Chrétien Turc; also plants of Clíve*a* nóbilis, Cymbídium sinénse.

Awarded. A silver Banksian medal to Mr. Mills, for the cucumbers; and to Mr. Young, for the Tropæ'olum tuberòsum.

March 6. 1838. — *Exhibited.* Burchéll*ia* capénsis, from Mr. Lane, gardener to J. H. Palmer, Esq. *E*uphórb*ia* spléndens, from Mr. J. Falconer, gardener to R. Palmer, Esq. Plant of French white camellia, and a basket of camellia flowers, from John Allnutt, Esq. Grapes, from J. H. Vivian, Esq. Spanish onions, from Mr. C. Judd, gardener at Seacombe Park (Mr. Gambier's). E'pacris púngens, E. impréssa, E. nivàlis, Apheländra cristàta, *E*rìca vérnix coccínea, from Mr. Henry Pratt. E'pacris impréssa, E. púngens, *E.* p. *r*òsea, E. nivàlis, Boròn*ia* serrulàta, from Mr. J. Green, gardener to Sir E. Antrobus. Caméll*ia* epsoménsis, C. *a*nemoneflòra álba, C. *p*apaveràcea, C. Colvílli*ï* striàta, C. élegans, C. Colvílli*ï*, C. *p*æoni*æflòra*, C. Donklàer*i*, E'pacris impréssa (seedling), from Messrs. Chandler. *C*ombrètum purpùreum, Burchéll*ia* capénsis, Gésner*a* oblónga, Ardísia paniculàta, Stanhòpe*a* grandiflòra, Oncídium biflòrum, Chorózema cordifòlium, Lechenaúlt*ia* formòsa, Ardísia crenulàta, *S*elàgo corymbòsa, *E*uphórb*ia* fúlgens (jacquini*æflòra*), E'pacris complanàta rùbra, E. c. álba, E. variábilis, E. impréssa, Kennèd*ia* Marryátt*i*, n. sp., Boròn*ia* pinnàta, Azàlea índica rùbra, Ruéll*ia* sp, E'pacris nivàlis, from Mrs. Lawrence. Pròte*a* speciòsa, P. longiflòra, Bánks*ia* Cunninghàm*ïi*, Cymbídium nùtans, C. *x*iphiifòlium, Neóttia sp., from Mrs. Marryat.

From the Garden of the Society. Dessert Apples: (those marked * are the best.) Benwell's pearmain, Wyken pippin, Byson Wood russet, cluster golden pippin, * Redding's nonpareil (small, but brisk-flavoured), * Braddick's nonpareil (excellent bearer), Ponto pippin, Baxter's pearmain, Coe's golden drop, * new rock pippin (a firm rich apple), * Boston russet, cockle pippin, * Syke House russet. Kitchen Apples: * Alfreston, * Bedfordshire foundling, hollow-crowned pippin, Chapple apple, Colville malingre, * Brabant bellefleur, Rhode Island greening, tulip. — *Plants. Loàsa* laterítia, Brasavòl*a* cordàta, Oncídium amplìatum, Illícium floridànum.

Cuttings for Distribution. Plums: Pond's seedling, a large and very handsome variety, equal in size to the magnum bonum; of a reddish colour, with a fine bloom; a very abundant bearer; quality not equal to the green or purple gages, but much better than that of the magnum bonum. Coe's fine late red. This is a valuable late variety. In the past season, it was found to be the same as the St. Martin and St. Martin rouge; under which names trees were received from the Luxembourg Garden at Paris, and from the Parisian nurserymen. (No foreign synonyme has yet been discovered to Coe's golden drop plum.) — Cherries: Early purple Guigne, bigarreau gros cœuret; a very large black bigarreau, very deserving of cultivation: it is larger

than the common bigarreau. Griotte de chaux; considerably larger than the May duke: the latter scarcely so rich, but of that nature.

Awarded. A silver Knightian medal to Mr. Falconer, Mr. Green, and Mrs. Lawrence, for the *Euphórbia*, the E'pacris púngens, and the Ardísia paniculàta and Stanhòpea grandiflòra. Silver Banksian medals to Mr. Pratt, Messrs. Chandler, and Mr. Redding, for the E'pacris impréssa, E. impréssa (seedling), and the proteas.

Art. VIII. *Covent Garden Market.*

	From £	s.	d.	To £	s.	d.
The Cabbage Tribe.						
Cabbages, per dozen:						
Red	0	4	0	0	10	0
Plants, or Coleworts	0	6	0	0	8	0
Savoys, per dozen	0	2	0	0	0	0
Brussels Sprouts, per ½ sieve	0	3	0	0	5	0
Legumes.						
Kidneybeans, forced, per hundred	0	4	0	0	5	0
Tubers and Roots.						
Potatoes, per ton	3	0	0	4	0	0
Potatoes, per cwt.	0	3	0	0	4	0
Potatoes, per bushel	0	1	9	0	2	3
Kidney, per bushel	0	1	9	0	2	3
New, per pound	0	2	6	0	0	0
Jerusalem Artichokes, per half sieve	0	1	6	0	0	0
Turnips, White, per bunch	0	0	3	0	0	5
Carrots, per bunch	0	0	4	0	0	6
Horseradish, per bundle	0	2	6	0	5	0
Radishes, red, per half dozen hands (18 each)	0	1	6	0	1	9
The Spinach Tribe.						
Spinach, per sieve	0	2	6	0	3	0
Spinach, per half sieve	0	1	6	0	2	0
Sorrel	0	3	0	0	0	0
The Onion Tribe.						
Onions, old, per bushel	0	9	0	0	10	0
Green (Ciboules) per bunch	0	0	4	0	0	8
Asparaginous Plants, Salads, &c.						
Asparagus, per hundred:						
Large	0	8	0	0	12	0
Middling	0	3	6	0	0	0
Small	0	2	0	0	3	0
Sea-kale, per punnet:						
Large	0	4	0	0	4	6
Middling	0	2	0	0	0	0
Small	0	1	0	0	1	6
Pot and Sweet Herbs.						
Parsley, per half sieve	0	5	0	0	7	0

	From £	s.	d.	To £	s.	d.
Tarragon, dried, per doz. bun.	0	1	6	0	0	0
Fennel, per bunch	0	0	6	0	0	8
Thyme, per dozen bunches	0	2	6	0	0	0
Sage, per dozen bunches	0	2	6	0	0	0
Mint, dried, per dozen bunches	0	6	0	0	0	0
Peppermint, dried, per dozen bunches	0	1	0	0	0	0
Marjoram, per dozen bunches	0	1	6	0	0	0
Savory, per dozen bunches	0	1	0	0	0	0
Basil, per dozen bunches	0	1	6	0	0	0
Rosemary leaves, per pound	0	2	0	0	0	0
Lavender, per dozen bunches	0	3	0	0	0	0
Stalks and Fruits for Tarts, Pickling, &c.						
Rhubarb Stalks, per bundle	0	1	0	0	1	6
Edible Fungi and Fuci.						
Mushrooms, per pottle	0	1	0	0	1	6
Morels, per pound	0	14	0	0	0	0
Truffles, Foreign, per pound	0	12	0	0	0	0
Fruits.						
Apples, Dessert, per bushel:						
Nonpareils	1	0	0	1	5	0
Baking	0	1	6	0	3	6
American, per bushel	1	0	0	0	0	0
Pears, Dessert, per dozen:						
Easter beurré	0	4	0	0	0	0
Ne plus meuris	0	4	0	0	0	0
Almonds, per peck	0	7	0	0	0	0
Strawberries, per gallon (2 pottles), about 3 pints	0	2	0	0	4	0
Pine-apples, per pound	0	10	0	0	16	0
Hot-house Grapes, per pound	1	10	0	1	15	0
Cucumbers, frame, per brace	0	5	0	0	16	0
Oranges, per dozen	0	0	9	0	2	0
Oranges, per hundred	0	3	6	0	14	0
Bitter, per hundred	0	8	0	1	0	0
Lemons, per dozen	0	1	0	0	2	0
Lemons, per hundred	0	6	0	0	14	0
Sweet Almonds, per pound	0	2	3	0	2	6
Nuts, per bushel:						
Brazil	0	16	0	0	0	0
Spanish	0	16	0	0	0	0
Barcelona	1	0	0	0	0	0

The supplies to the market are very limited, and principally confined to some few articles that are forced; consequently, prices are, and must continue to be, high; and, as the weather has destroyed the crops intended for early spring supply, vegetables will continue scarce, until asparagus, sea-kale, and peas are supplied, which cannot be (under the most favourable circumstances) before the end of May. Potatoes are in good supply, although great mischief has been done by the severe weather. Onions are still furnished moderately; but, in consequence of the high prices heretofore realised, are not so generally in demand, and have declined materially in price. — *March* 22. 1838.

THE

GARDENER'S MAGAZINE,

MAY, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *Some Account of the Gardens of Herefordshire.* By J. B. W.

I LATELY had an opportunity of seeing the garden of Thomas Andrew Knight, Esq., at Downton Castle in Herefordshire, with several other gardens of note in that county and in Shropshire, and the following account of those places is drawn up from the notes I made at the time of my visit, September 25. 1837.

Downton Castle is situated on the northern bank of the river Teame, about six miles west of Ludlow. It stands on an elevated brow, a few hundred yards from the banks of the river, which, for a distance of several miles hereabouts, traverses a country of great natural beauty. Looking down the river, the scenery is eminently picturesque, and harmonises well with the castellated style of the mansion. Except a narrow lawn, planted with a few shrubs, there are no ornamental grounds attached to the castle, Mr. Knight being of opinion that such decorative accompaniments would be out of character with its simple grandeur: even a few small flower-beds, in front of a curvilinear-roofed green-house, which stands against some of the offices in a nook of the lawn, are shut out from the lawn by a screen of evergreens. At one end of the lawn there is another glass structure, in which grapes are grown for a late supply: it is divided into two houses, both of them being planted with one of the Chasselas varieties of grape, the fruit of which, although plentiful, was by no means fine. The grape has not hitherto engaged much of Mr. Knight's attention, which has been principally directed to fruits of greater general utility; having, however, brought many of his experiments to a successful issue, he may, perhaps, in future, devote a portion of his leisure to the cultivation of the grape, in which case, those houses might easily be made capable of producing fruit of the finest quality.

The kitchen-garden is the principal seat of Mr. Knight's horticultural experiments. It stands a few hundred yards northward of the house, on the side of a bank which falls gently to the south. Its area is not large, and it is, besides, greatly en-

cumbered by large seedling fruit trees, the result of Mr. Knight's hybridisations, which, consequently, cannot be removed until the value of their produce has been ascertained. The hot-houses, also, are not connected in a range with a view to effect, but are widely scattered over the ground; and it is in a great measure owing to these circumstances that strangers, who, from what they have heard and read of its productions, expect to find a splendid place, generally feel disappointment at the first sight of Mr. Knight's garden. But, although the absence of "heaven's first law" is strikingly apparent, a gardener who is a true lover of his art will return "a wiser," if not "a better, man," from an inspection of Downton Gardens, and a conversation with its benevolent and scientific owner.

Among many other things requiring particular notice, I observed some beds of onions, which, in size, regularity of form, and cleanness of skin, greatly surpassed all I had previously seen of the same variety, the Portugal. The seeds were sown in February, in shallow boxes or pans, and kept under glass till April, when, after having been gradually inured to exposure, the young plants were planted out in rich soil; afterwards they were treated much in the usual way. In the *Brássica* tribe, Mr. Knight has procured an exceedingly hardy variety of cabbage, and of a purple sprouting broccoli, by selecting, for a series of years, those plants for seed that suffered least from severe weather. He believes the sort sold by seedsmen under the name of "Knight's cabbage," although originally true, to be much inferior to his own; that of the seedsmen having greatly degenerated, owing to want of care or skill in selecting seed-bearing plants, whilst Mr. Knight's has yearly improved, through attention to that particular. The Brussels sprouts, also, are quite true to their kind, and widely different from the cow-cabbage-looking articles one so often sees grown for that excellent green. The soil of the plot where the Brussels sprouts grow is not more than 8 or 9 inches deep, upon a stratum of rock; yet they, as well as kidneybeans and Knight's marrow peas, flourish luxuriantly: this great vigour is induced by irrigation, a channel communicating with a pond having been formed, through which the ground can be flooded at pleasure. This method of supplying plants with moisture must he incomparably better than the usual way of watering, independently of the saving of labour, and, where practicable, ought always to be adopted.

I was particularly struck with the healthy appearance of the peach and nectarine trees, upon which not a single curled or blistered leaf was to be seen. Mr. Knight ascribes this freedom from such imperfections to the following simple process, which is described at length in the *Horticultural Transactions*: — "When the blossom-buds of my peach trees had acquired about

the size of hemp-seeds, water, holding in solution or suspension a mixture of lime, and flowers of sulphur, and soot, was thrown upon the peach trees above mentioned with an engine, in sufficient quantities to wet the whole of the trees and wall, but not materially to affect the colour of the wall. No injurious effects followed, and not a single blistered leaf has appeared upon my trees, which are bearing an abundant crop of fruit," &c. In the same paper, he confesses his inability to account for this preventive action of the liquid, the blistering of the leaves being generally supposed to arise from severe cold destroying their organisation. Previously to the application of this liquid, the trees were usually very much injured by the disease alluded to: had it not been so, the absence of blight might, with reason, have been ascribed to the innate vigour of the trees, which, having been recently raised from seeds, are now, as it were, in the manhood of their existence. A fine tree of the mountaineer peach had the best crop of fruit upon it that I have seen this year in the open air. The nectarine having been one of the parents of this variety, its fruit partakes of the nectarine character in a greater degree than that of other peaches: its constitution is hardy, and it seems altogether well adapted for a cold situation. The fruit of one seedling nectarine was particularly handsome, and also well flavoured; but I could not discover any great difference between it and the violette hâtive: another, called the impératrice, is a small fruit, with remarkably firm flesh, and a high vinous flavour. Mr. Knight prefers the almond for a stock for peach and nectarine trees.

The Nerii fig is, in Mr. Knight's opinion, the best of all the kinds known in England, and also the most difficult to grow, owing to the great tendency of its fruit to fall off the tree before maturity. It is cultivated in a large pit, the trees being planted in a narrow but deep bed of soil inside the pit, and trained to a trellis under the glass. I tasted one of the figs, which, although very good, was not superior to some of the more common sorts. Persian melons are cultivated nearly on the same system as the fig, except that these have their roots confined in very large tubs, which are ranged along the front of the pit, and supported by bricks above the flue. Each tub contains two or three plants, and round the stem of each plant there is a flower-pot without a bottom, to prevent the stems from being wetted when water is given; as from this cause the troublesome disease known as the "canker" frequently arises. Wires, sufficiently distant from the glass to permit the proper developement of the leaves, are stretched from end to end of the pit, and to these the shoots are trained, rather widely apart: the fruit, which, otherwise, would hang beneath the leaves, and be shaded by them, are supported by light wooden cradles resting upon the wires. The plants may

be dressed, watered, &c., without removing the lights, the pit being high enough to allow a person to walk beneath the wires; and, for admittance, a doorway is made in the back wall. The gardener, Mr. Lander (a most intelligent and obliging man), informed me that the white-fleshed Hoosainee is the best of all the Persian varieties yet tried at Downton. Mr. Knight has discontinued the culture of pine-apples, finding that they were not generally liked by those who dined at his table. I tasted his last fruit (a St. Vincent's), which was excellently flavoured.

Besides the curvilinear-roofed pine-houses, the melon-house, and the fig-house, the kitchen-garden contains a peach-house, which is constructed much in the usual way. A simple but effective instrument is used by Mr. Knight for dusting the leaves of his peach trees, melon plants, vines, &c., with sulphur, which he finds is the best check to the ravages of the red spider. A small cylindrical tin box, with holes in its one end, like the rose of a watering-pot, is attached to a common bellows, by means of a short tube, which slips on to the bellows-pipe. Into this box the sulphur is put, together with some pieces of feathers, and, by blowing with the bellows, the sulphur is ejected through the rose, and distributed over the plants in the form of fine powder. The box is made to open at one end, and, therefore, is easily replenished.

Oakley Park. — About four miles from Downton Castle, and two from Ludlow, on the south bank of the Teame (but in Shropshire), is Oakley Park, the property of the Honourable R. H. Clive. The mansion stands on the north side of an extensive park, a few yards only from the river, which is there considerably increased in body by the accession of another stream. The country hereabouts is more level than in the vicinity of Downton Castle; and, consequently, the scenery surrounding the house is strikingly inferior in picturesque beauty, although it is not deficient in beauty of a tamer character.

Approaching the house along the common road from the Bromfield Lodge, its appearance is exceedingly imposing, for then its two principal fronts (the west and south) come successively into view; but, upon a nearer inspection, there is an air of baldness and a want of finish about it, that greatly lower the previous favourable impression. The carriage-entrance, at the west front, is very mean; preparations are made, however, for the erection of a stone portico (the house being of brick) on a large scale. On the south front there is a small flower-garden, composed of variously-shaped beds, filled with showy flowers, as petunias, pelargoniums, China asters, &c. A handsome curvilinear-roofed conservatory is attached to the mansion; and, as the plants in it are not planted in borders of earth, as is usual in conservatories, but are kept in pots standing upon a bed of sand, a succession of bloom might be, and probably is, kept up from a

small reserve-house standing near. A raised walk, passing along the back of the conservatory, communicates with Lady Harriet Clive's museum, and forms an agreeable promenade in bad weather. In front of this structure, and connected with the flower-garden, but several feet below its level, there is a square plot, laid out in the geometrical style, and having an elegant marble fountain in the centre; the basin, however, which receives the water is only common ware painted in imitation of marble, and affords a striking example of the inferiority of art to nature. In front of the reserve green-house before mentioned, and adjoining the fountain parterre, there is a small rosarium, bounded, as well as the parterre, on the south by a slightly raised bank, which is planted with low-growing shrubs. This shrub-covered bank is continued in an irregular manner along one side of the main flower-garden; and its object is to shut out from view a small rocky glen, which, as an imitation of nature, is very much superior to all the artificial rockwork I had previously seen. The sloping banks that form the diversified sides of the glen are covered with large masses of stone, among which ferns, and various alpine plants, flourish luxuriantly: there is also a small stream of water issuing from a shell, and, in a nook, a pretty little grotto of shells, made by Lady H. Clive. A gravelled bridge, bowered over with ivy, to hide the view of the back premises, is thrown across a sunk road leading to the house: this bridge connects the flower-garden with another portion of pleasure-ground, through which, along the river's bank, judiciously contrived walks lead to the kitchen-garden. The surface of this piece of ground is very unlevel, falling irregularly to the edge of the river, which it skirts; and being, moreover, adorned with many fine trees, a pleasanter place for a summer evening's walk could hardly be found. Among these trees there are several majestic oaks, fully equal, if not superior, in size to those in the park at Studley. One, now a divided and almost lifeless shell, "stretching its naked whitened limbs tow'rds heaven," must have been at least 40 ft. in circumference when perfect. If the calculations of physiologists are to be depended upon, those trees have "braved the breeze" for more than a thousand years, and, possibly, may have borne witness to the mystical rites of Druidism.

I had not time to go over the kitchen-garden, which, however, appeared to be large and in good order. There is a considerable extent of glass against the north wall, chiefly peach-houses and vineries: in the latter there were some good grapes, but the peach-houses were, of course, cleared of fruit.

Mr. Spare, the gardener, has a dwelling-house, conveniently situated, in the kitchen-garden.

Shobdon Court, the seat of Lord Bateman, is near the pretty little village of Shobdon, in Herefordshire. The house is of

brick, quadrangular, one of its spacious fronts facing each of the cardinal points. It is a noble building; and, being situated on the side of a hill of some magnitude, it commands extensive views over a fertile and well cultivated country. The grounds about the house are finely undulated, and the scenery park-like and richly wooded: there are also several large sheets of water near, some of which border the approach-road, which ascends for nearly a mile from the village to the house. Pleasure-grounds extend nearly all round the house; the principal part, however, is on the south and east fronts, where, also, the best views are obtained. Among the trees on the lawn there are some large robinias, several fine specimens of Liquidámbar Styracíflua, two very large trees of Liriodéndron Tulipífera, and an immense beech. One side of the lawn is fenced off for a flower-garden, and contains some prettily shaped beds, and a great variety of rustic baskets, filled with gay flowering plants. Most of these tasteful ornaments were made by Mr. Mearns, who was gardener at this place many years.

The kitchen-garden is close to the mansion, but not visible from it, being hid by the stables, and by the offices and servants' apartments (which are detached from the house, and communicate with it by an underground passage). Perhaps, a better site might have been selected for the kitchen-garden, the surface of which is much too steep for convenient working; nevertheless, the soil seems good, and suitable for fruit trees, and I have seen, in Mr. Mearns's time, some very superior productions from it. The arrangement of its area is much after the usual fashion, except that the melon-ground is not detached, as in most gardens, but its unsightly dung-beds stand, in company with several paltry little vine and pine-pits, in one of the most conspicuous parts of the garden: there is, likewise, a small space devoted to flowers by the side of the main walk that leads to the hot-houses. The principal hot-houses stand against the north boundary wall. Formerly, these consisted of a large green-house, a peach-house for early forcing, and a vinery for late grapes; lately, however, the ugly old green-house has been taken down, and a spacious and handsome new building erected in its stead, under the direction of Mr. Crogan, the present gardener. So far as could be judged from a brief inspection, this house is finished in the best style, and it differs in one or two particulars from green-houses as generally constructed. The shelves are of stone, and, being intended for the support of large orange trees, they are made very broad; so that, in the front rows at least, smaller plants in pots might be placed, so as to hide the tubs: a broad stone shelf, also, passes along the front of the house, intended for the reception of small plants, and to hide the heating apparatus. The house is very wide in proportion to its length; therefore, to prevent the back from being unnecessarily high, the crown of the roof, sup-

ported by pillars, is several feet distant from the back wall, short sashes, facing the north, forming the connexion between the top of the roof and the back wall of the house. The grapes in the late vinery were (September) just colouring. An erroneous notion prevails among gardeners, that grapes ripened very late in autumn will retain their plumpness longer and keep better than those matured at an earlier period: accordingly, many gardeners, who require grapes in January or February, strive to regulate their growth so that the colouring process may take place about the beginning or middle of September; consequently, the fruit is not even moderately ripe for several weeks after that time, and never, perhaps, reaches that state of maturity in which its saccharine properties and high vinous flavour are fully developed. Black Hamburg and white Muscat grapes should be perfectly ripe by the first of October; and they will then, with proper care, keep good till the end of January, or later.

Garnstone, near the ancient borough of Weobley, in Herefordshire, is the residence of Samuel Peploe, Esq. Standing on a gentle acclivity, the mansion commands a prospect over the rich valley of which Shobdon and its neighbouring hills form the northern boundary: the Radnorshire hills, afar off, terminate the view on the west and north-west; and, to the north-east, the eye ranges over a large tract of country, with the Clee Hills (in Shropshire) dimly seen in the distance. On the south side, a beautiful park, thickly studded with giant oaks and elms, rises, gently at first, and then more abruptly, till it joins a wooded hill. The house is a large and very handsome edifice, happily combining the grandeur of the castellated style with the comforts and elegancies of a modern residence. The south, or garden, front is the finest part of the building, and also contains most of the best rooms, among which the library is particularly good. The view from the windows of this room, although limited, is beautiful at all seasons of the year, but eminently so in summer and autumn: the foreground is a well-arranged flower-garden, rich in roses and choice herbaceous plants, and kept in the highest state of neatness; beyond is the park (separated from the flower-garden by a neat iron railing), enlivened by numerous deer and a rookery, and backed by a fine old wood. An extensive lawn recedes from the east end of the house, sweeping round the north front, and losing itself in shrubberies; there is also a small sheet of water at one extremity of the lawn, too distant, however, to be seen to advantage from the windows. The shrubberies here are extensive, and the trees and shrubs of which they are composed grow most luxuriantly; the soil being a deep fertile clay, retentive of moisture, but not injuriously so to trees of a hardy nature: for those of a more tender character, however,

such as the peach and apricot, it is too cold, and the trees are, in consequence, apt to gum. An orchard, used also as a nursery-ground, contains a great variety of most of the hardy fruits, among which the filbert and other nuts very properly find places, although too frequently neglected in gentlemen's gardens. This orchard is environed by shrubberies, and surrounded by a gravel walk and flower-borders; it is likewise divided into four compartments by cross walks bordered with flowers, and thus a considerable extent of walk is obtained on a comparatively small area. The kitchen-garden is beyond the orchard, at a very convenient distance from the mansion; but its situation is not well chosen in other respects, for it faces the north instead of the south, and the soil is strong and rather wet; its productions are, therefore, late, although generally very good. The melon-ground is, as it always should be, separated from the garden. In cultivating melons, Mr. Smith (the gardener, an active and intelligent young man) has adopted Mr. Knight's plan of isolating the stems from the soil, by means of pots: he likewise, sometimes, covers the whole of the soil in the frame with pebbles, by which the soil is kept in a more equable state of moisture; and, not requiring to be watered so frequently as when exposed, there is not so much risk of the stems cankering.

Mr. Peploe is gifted with an exquisite taste in fruits, and, consequently, none but the best sorts are admitted to his table. To obtain the Flemish pears in the highest degree of perfection, he, some years ago, built a wall with nearly a southern aspect, purposely for them: the trees now nearly cover the wall, and produce splendid fruit. A trellis, on the principle of that figured in Vol. XIII. p. 260., but made of wood, and not curved, has been in use at this place some years, and the trees upon it generally bear good crops of fruit, which is equal in size to that produced against the east or west-aspected walls. The only objection alleged by Mr. Smith against this method is, that the fruit is not sufficiently exposed to the sun's rays during its ripening season, owing to its hanging below the trellis. This defect, however, might easily be remedied, or, at least, so modified as to be of trifling importance, by adopting light iron rods, ranging north and south, and by training the branches thinly. If the soil beneath the trellis was covered with a fine coating of gravel, it would also conduce to the same end, by the increased reflexion of light and heat. Such of Mr. Knight's seedling pears as have fruited at Garnstone are considered inferior to many of the old varieties.

When this garden was first formed, an important error was committed, in making the wall borders much too deep, in consequence of which the roots of the trees have penetrated so deeply as to be almost beyond the reach of atmospheric influence; and, finding at all times a plentiful supply of moisture, the

trees, pears and apricots especially, throw out a superabundance of barren shoots instead of forming blossom-buds. Gardeners are now beginning to see the advantages which *shallow*, well-drained fruit-tree borders possess over the deep pits recommended by most gardening authors, whose directions have in too many cases been implicitly followed in this matter, however at variance with common sense or every-day experience. Perhaps no circumstance is more inimical to fertility in fruit trees than excess of moisture at their roots; and this can be corrected only by the proper constitution of the medium in which they find their food.

Coals are very dear in Herefordshire, consequently forcing is not much practised generally. At Garnstone, the hot-houses consist of two vineries, one peach-house, and a fig-house. The vineries have lately been reconstructed, and a new border made, and the plants in them are now growing and bearing well. The fig-house is also of recent erection: it is wide and low, having two rows of bushy plants growing in the border inside the house, and others nailed against the back wall. Mr. Smith considers the Brunswick a coarse-fleshed fig; and he prefers a middle-sized pale green variety (the name of which is not known) to all others, for richness and delicacy of flesh. Large trees of this variety formerly existed at Foxley, the seat of Sir Robert Price, Bart., M.P.; but these have lately been destroyed. Besides the hot-houses above mentioned, there is a small green-house in the flower-garden, but it is so badly situated as to be almost useless. The Garnstone scarlet strawberry was raised at this place by the late Mr. Andrew Henderson, who was gardener there many years.

Foxley. — Two or three miles south of Garnstone is Foxley, once the residence of the late Sir Uvedale Price, Bart., the celebrated author of *An Essay on the Picturesque*, &c., and now in the occupation of his son Sir Robert. It is well situated in a narrow dale, formed by two converging ridges of wood-covered hills, which range nearly east and west, and unite at a short distance above the house; the view, therefore, is necessarily confined, except towards the east, in which direction it stretches over a wide expanse of beautiful country. Extensive alterations of the house and its appendages have been in progress several years; and, so far as I could learn, the place is now about as far from completion as when the improvements were first begun, the greater part of the time having been spent in undoing on one day that which had been done the day before. As an instance, a wall, intended for the support of a grass terrace, which extends along the south and east fronts, has already been twice removed from its original situation, and it is thought that it is not yet permanently fixed. These patchwork proceedings, by which so much unnecessary expense will be incurred, and, most likely,

the place bungled and spoiled in the end, instead of improved, are the inevitable result of beginning an undertaking without a previous well-considered plan. Under the directions of an able architect and landscape-gardener, Foxley might be made one of the first places of the country; for the surrounding scenery possesses much natural beauty; the woods are exceedingly fine, and the picturesque snatches of view caught from the numerous rides with which they are intersected bear witness to the taste of their late talented and much respected owner. Many individual trees are of great size, and some junipers near the house are higher by many feet than any I ever saw. Some real improvements have, however, been made; such as the removal of the farm buildings, which, formerly, were inconveniently near the house, to a distance. The new farm buildings are chiefly of wood, grown on the estate, and cut into boards, &c., by a saw-mill moved by a water-wheel. Besides the sawing apparatus, this wheel also works a cider-mill and a thrashing machine, by the aid of a very simple and effective machinery.

The gardens are scarcely worthy of notice, consisting merely of a little flower-garden, and a small extent of shrubbery. The only ornamental glass structure is a conservatory, of many years' standing, which contains some large specimens of Fúchs*ia*, Camél*lia*, and similar common conservatory plants. The roof of this house is taken off in summer, and its inhabitants fully exposed to the weather.

The kitchen-garden is nearly a mile from the mansion: it stands in a good situation, and the soil is fertile; but it is now wretchedly managed.

Some years since, there was a tolerably good aviary at Foxley, the late Lady Caroline Price having been passionately fond of birds, and some remains of it still exist. Golden and other pheasants enjoy comparative liberty in a small lawn; the precaution having first been taken of docking one of their wings of a joint, to prevent their flying over the boundary walls.

Garnons; Sir John Geers Cotterill, Bart. This place is about the same distance south of Foxley as the latter is from Garnstone. From its position, on the side of a hill, the mansion commands an uninterrupted view of some miles over one of the finest valleys in Herefordshire, through which the lovely Wye gracefully winds its way. The hills rise to a considerable height at the north side, or back, of the house, and are partially wooded, but much less picturesquely than the high grounds in the vicinity of Foxley. Garnons House was built about the same time as Garnstone (some twenty-five or thirty years since); it is also similar in style and materials, but, unfortunately, the beauty of the building, when viewed from the front, is totally destroyed by the want of one wing, in the place of which part of the old house still remains. A battlemented terrace, with mi-

niature cannon upon it, stretches along the south, or principal, front, where, also, is the main entrance. The east front opens upon a prettily undulated flower-garden, that, receding from the house, loses itself among trees, through which a gravel walk conducts to the kitchen-garden, and to another exceedingly lovely spot devoted to flowers. This little flower-garden is nearly of the form of a crescent, rising gently to join a grove that skirts its convex side. The walk enters at the lower corner, and goes quite round the plot, passing in its course two well-designed rustic buildings, and also a fountain, decorated with rock-work, which was so contrived as to deliver its water, at intervals of about a minute, through a basin in its centre. The water supplied by this fountain ran in a narrow channel across the turf: now, however, the fountain no longer plays, and the stream it fed is dry. I always considered this stream the most objectionable feature in the plan; for, owing to its small size, which scarcely exceeds the rut of a cart-wheel on a bad road, its effect is quite puerile; besides, the common ditch plants that line the sides of the channel present too great a contrast to the smooth shaven turf through which it passes, and to the artificially shaped beds, once filled with gay exotics, that approach within a few yards of the margin.

At the top of another strip of flower-garden, in which the ladies of the family recreate themselves by planting, &c., there is a very fine specimen of the variegated-leaved elm.

A good collection of dahlias is grown here in a small plot of ground, enclosed by a tall hedge. The area is divided into a series of narrow beds, which encircle a central clump, and are separated by gravel walks with box edgings; the dahlias are, therefore, arranged in circles; and, when judiciously ordered, in regard to colour and height, a splendid effect is produced; every facility is, also, thus afforded for inspecting the individual beauties of the sorts. Tall-growing varieties are planted in the border next the hedge, the stems of which are trained to a wooden frame, so as, in a great measure, to hide the hedge.

Besides a number of common frames, the melon-ground contains a pine-stove and a curious ridge-roofed melon-house: pines are no longer grown, and the houses are fast going to ruin.

The kitchen-garden lies well to the sun, and is capitally sheltered on all sides. Several hot-houses (which I did not enter) occupy the usual situation, against the north wall. One is a peach-house, the lights of which, after the fruit is ripe, are transferred to a late vinery; but this season the grapes are so very late that they cannot possibly ripen. Some years ago, a plain green-house formed part of this range; it, however, has lately been pulled down, and a singular abortion erected in the flower-garden, so as to be seen from the mansion. The new house is of Lilliputian dimensions; and, in form, it somewhat resembles a

beehive, with one of Nutt's boxes attached to the side; it contains plants and canary birds.

By a master-mind and a liberal outlay of money, Garnons might be made a beautiful place, for Nature has freely distributed many of her choicest gifts about it: even now, there is much to admire; although it is to be regretted that a fondness of novelty, and an injudicious extension of the grounds beyond the means allowed for keeping them in good order, have caused an evident falling off in the appearance of the garden and grounds generally.

Moccas Court is pleasantly situated on the south bank of the river Wye. The house is of brick, spacious, and possessing a considerable share of architectural beauty. Since the decease of the late proprietor, Sir George Cornwall, Bart., it has been in the occupation of his widow. The gardens have never been well managed since I had any knowledge of the place, and they are now in a deplorably neglected condition.

The principal object of my visit was to see the celebrated "weeping oak;" but, as it grows at some distance from the mansion, I was obliged to return ungratified. There is, however, in the pleasure grounds "a worthy scion of the noble stock," some 30 or 40 feet high, and, perhaps, 1 ft. in diameter of trunk: this tree differs greatly in habit from the common oak, its spray being decidedly pendent, but much less so than that of the weeping ash or the weeping willow.

Some years ago, a valuable dessert apple, to which the name of Cornwall pippin has been given, was raised from seed at this place. The appearance of the fruit induces the supposition that its parents were the golden Harvey and the golden pippin, but its real origin is unknown. — *October* 12. 1837.

ART. II. *Descriptive Notice of Hendon Rectory, the Residence of the Rev. Theodore Williams, with a List of the Pinetum in Pots kept in the Gardens there.* By the CONDUCTOR.

THIS residence is selected in order to show what may be effected on a very small spot by the choice of trees and shrubs of a superior description, by the distribution of green-house plants in tubs and pots, and also by combining the gardenesque with the picturesque. There is nothing remarkable in the art or taste displayed in laying out this place; that having been done before the present occupier, the Rev. Theodore Williams, had acquired a taste for botany and gardening. On the other hand, the selection of the plants grown in pots, boxes, and vases, and their disposition on the lawn; the kinds of trees and shrubs planted in the masses and groups; and the manner in which these are managed; display the greatest taste, and a degree of care and high keeping in the management, which is very rarely to be met

with in either small or large gardens. To give some idea of the extent to which this high keeping is carried, we may mention that, though the whole space occupied by the garden and pleasure-ground is only about an acre and a half, yet several gardeners are kept; the head gardener, Mr. Lawrence, is a man who ranks high in his profession, and his foreman is also a very superior cultivator.

Mr. Williams, considering that, in all works of art, and in all natural objects which are to be examined singly, one of the greatest beauties is symmetry, has those trees and shrubs which he manages in a gardenesque manner brought into the most perfectly symmetrical forms, by tying the branches up or down, inwards or outwards, as may be necessary, with small almost invisible copper wire; by which means, not only every plant in a tub or a pot is perfectly symmetrical, whatsoever be its form, but those trees and shrubs which stand singly on the lawn, or compose gardenesque masses, are individually so treated; and, standing as they do a few inches apart from each other, the separate shape of each plant is seen by the spectator. The same care is bestowed on the dahlias, which are here grown in large quantities, and of sorts most of which were raised under the direction of Mr. Williams, from seeds saved in his own garden.

That which renders Hendon Rectory altogether unique in a gardening point of view is, a collection of Coníferæ in pots; as remarkable in its way as the collection of fruit trees in pots which was maintained for so many years, for the purpose of proving and describing the kinds of fruit, by that celebrated pomologist, Dr. Diel of Nassau-Dietz, the author of *Obst-Orangerie in Scherben.* These Coníferæ are in part set out on the lawn in the summer season, and in part kept under glass; and all of them are trained into the most beautifully symmetrical shapes that are any where to be seen. As the pine and fir tribe is liable to be attacked by insects in the summer season, it is the business of one gardener to attend entirely to them and to the Cupréssinæ; in other words, to the pines, firs, cedars, araucarias, dammaras, cypresses, dacrydiums, junipers, and arbor vitæs, in pots. They are thus kept regularly watered, accurately tied into shape, and perfectly free from insects. Some of the plants of this kind at Hendon Rectory are of great value; one, a dacrydium, in particular, is matchless for its size, beauty, and rarity. The same plan of dividing the labour of the place is adopted with reference to the dahlias, which, from the day they are planted out till the time the roots are taken out of the ground, are constantly under the care of one individual. Another man is solely occupied in propagating by cuttings or otherwise; and one is kept as a man of all work, to assist the others, and to look after the walks. The duty of the head gardener is to see

that the rest perform the several works assigned to them, and, in general, to be careful that the whole is kept in perfect health and order.

The fence which separates the grounds of Hendon Rectory from the road which leads from Hendon to Mill Hill, is of oak pales; and the main entrance is through a door, also of oak. Besides the garden, the property consists of a grass field, of 3 or 4 acres, surrounded by an irregular hedge with oaks and elms, which harmonises so well with the adjoining fields similarly enclosed, that the limits of the property are no way discernible. The details of the plan (*fig.* 29.) are as under, the botanic names being those used by Mr. Lawrence: —

a, Principal entrance. To the left is shown a small path in an ogee direction leading to a door, opening into the court of offices (*m*).

b, A point, from which the view *fig.* 30. is obtained.

c, A point, where the spectator, having his back to the house, sees before him a narrow strip of lawn, with handsome symmetrical plants of the following kinds: — Next the entrance door, Taxòdium dístichum; then *Sophòra* japónica péndula; next, *Pìnus Mūghus*, Dáhl*ia*, Taxòdium dístichum nùtans, Dáhl*ia*, *Pìnus* rígida, Taxòdium dístichum pàtens. Beyond this, there is a row of dwarf hybrid rhododendrons, as a margin to a bank of common laurel, cut smooth above, with standard roses, and other trees, all cut into symmetrical roundish forms, rising through it, as seen in *fig.* 30., which forms a very singular phalanx of objects, and serves to occupy the mind of the spectator, and prevent his recollecting that he is so very near the boundary and the public road. Turning round, with the face towards the house, a number of rare and beautiful plants are displayed on a rockwork composed entirely of crystallised spar. The walk turns round to the entrance to the house; which circumstance corresponds well with its cottage and unobtrusive character, and is, in reality, as we think, in better taste than if the walk had been conducted to the main entrance, with a sweep like that of a carriage approach.

d, The entrance lobby of the house. *e*, The dining-room.

f, The library, which opens into the dining-room with folding doors; both rooms being intended for books. *g*, The drawingroom.

h, Study. *i*, Kitchen. *j*, Back-kitchen. *k*, Pantry. *l*, Dairy.

m, Court, common to the kitchen and stables, with folding gates to the public road. *n*, Justice-room. *o*, Coach-house. *p*, Two-stalled stable.

q, Harness-room. *r*, Dust-hole.

s, Servants' privy, entering from a winding walk, which passes from the stable court to the garden.

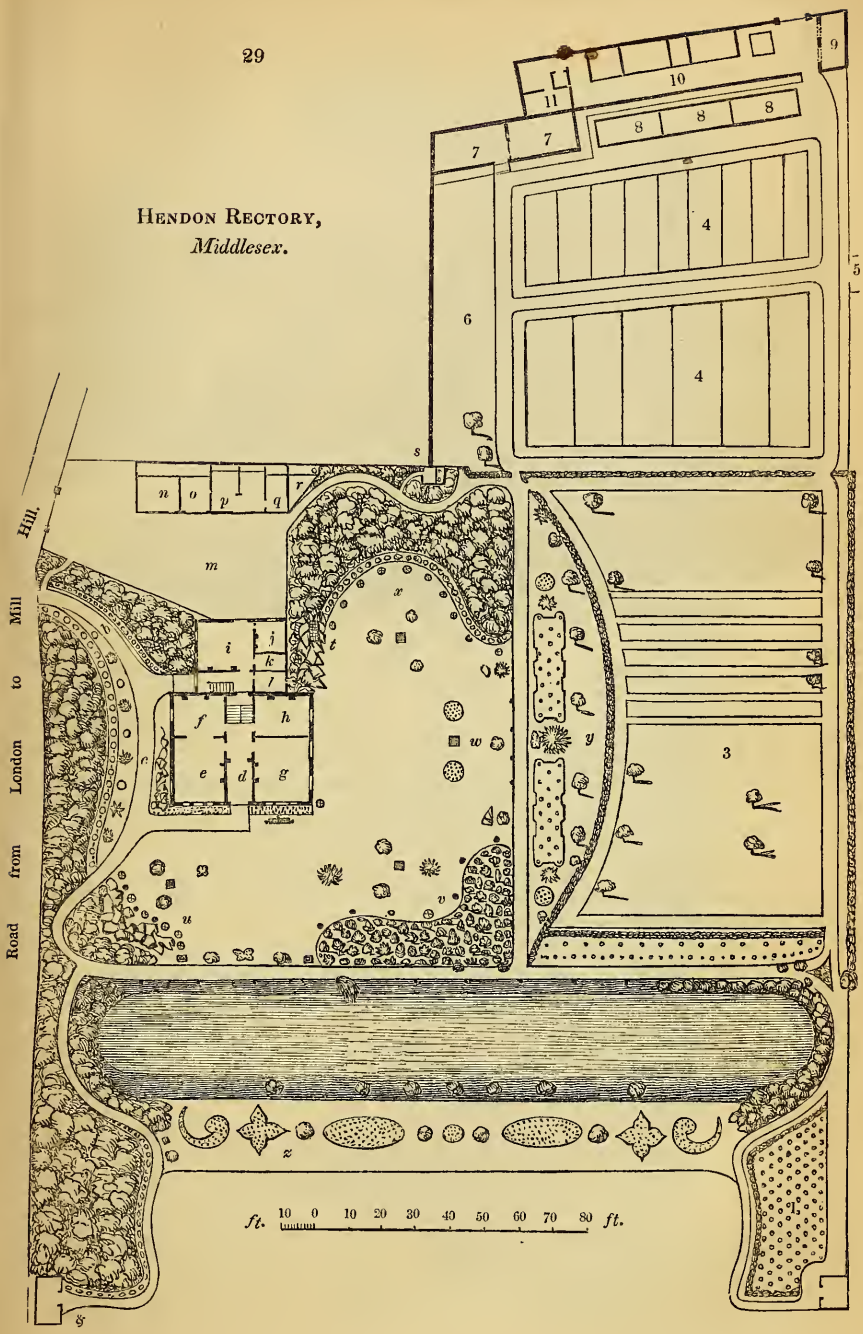
t, Situation where there is a handsome Gothic aviary partially concealed by bushes, and containing a good collection of birds; Mr. Theodore Williams, jun., being much attached to the study of ornithology.

u, A point round which there is a constellation of rare and beautiful trees and shrubs in pots, besides various statuary and sculpturesque objects. Among the hardy trees are, Photínia serrulàta and *Pìnus* Pallas*iàna*; and among the green-house plants, in pots and vases, are, oranges, myrtles, fuchsias, tree rhododendrons, &c. The view from this spot, looking towards *v*, is indicated in *fig.* 31.

v, A gardenesque plantation, in which every tree and shrub is kept distinct, and every one trained into a symmetrical shape. The mass gradually rises from the height of 2 ft. round the margin, to the middle, which is 7 or 8 feet high. Among the plants in this gardenesque mass are the following: —

29

HENDON RECTORY,
Middlesex.



View at Hendon Rectory. 30

*Magnoli*àceæ.

Magnò*lia* tripétala, 12 ft. high, and 6 ft. in diameter.

M. obovàta.

M. acuminàta, 9 ft. high, and 8 ft. in diameter; in bog soil and silver sand.

M. glaúca, 7 ft. high, and 3½ ft. in diameter; in bog and loam.

M. macrophýlla, 5½ ft. high, and 1½ ft. in diameter; in bog and loam.

M. Thompson*iàna*, 14 ft. high, and 6 ft. in diameter; in loam, bog, and silver sand.

M. exoniénsis, 5½ ft. high, and 3½ ft. in diameter; in bog, loam, and sand.

*Winter*àceæ.

Illícium floridànum, 3½ ft. high, and half a foot in diameter; in bog and silver sand.

Berberàceæ.

Bérberis fasciculàris, 3 ft. high, and 2 ft. wide; in loam, bog, and silver sand.

Pittosporàceæ.

Pittósporum *Tobìra*, 3 ft. high, and 3½ ft. wide; in loam, bog, and sand.

*Ternströmi*àceæ.

Caméll*ia* japónica quadrangulàris, 6½ ft. high, and 3½ ft. in diameter; soil half loam, and half bog and silver sand.

C. double red, 5½ ft. high, and 4 ft. wide; half loam, and half bog and silver sand.

C. double white, 3½ ft. high, and 2½ ft. wide; soil half loam, and half bog and silver sand.

C. single, 5 ft. high, and 4 ft. wide, in loam, dung, and grit.

Thèa víridis, 1½ ft. high and 2½ ft. wide.

Æsculàceæ.

Pàv*ia* rùbra, 15 ft. high, and 9 ft. wide; in loam, dung, and grit.

Aquifoliàceæ.

*I*lex, yellow painted holly, 5½ ft. high, and 3½ ft. wide; in loam, dung, and grit.

I. white-margined holly, 5 ft. high, and 5 ft. wide; in loam.

I. Cassìne, 5 ft. high, and 4 ft. wide; in loam and grit.

I. milkmaid holly, 6 ft. high, and 3 ft. wide; in loam, dung, and grit.

I. angustifòlia, 7 ft. high, and 3½ ft. wide; and *I.* a. scótica, 6½ ft. high, and 3½ ft. wide; in loam, bog, and silver sand.

31

View at Hendon Rectory.

I. Dahoón, 7 ft. high, and 3½ ft. wide; in loam, bog, and silver sand.
I. Peràdo 6½ ft. high, and 3 ft. wide; in loam, bog, and silver sand.

R*hamnàceæ.*

*Rh*ámnus *Al*atérnus fòliis argénteis, 7 ft. high, and 4 ft. wide; in loam, bog, and silver sand.

Leguminòsæ.

*Cy*tisus pygmæ'a, 6½ ft. high, and 1½ ft. wide; in loam and bog.
Halimodéndron argénteum, 7½ ft. high, and 3½ ft. wide; in loam and bog.

R*osàceæ.*

Photínia serrulàta, 12½ ft. high, and 5½ ft. wide; in loam, bog, and silver sand.

Araliàceæ.

*Hé*dera arboréscens, 4½ ft. high, and 4 ft. wide; in loam and dung.

C*ornàceæ.*

*Vi*búrnum *T*ìnus, 6 ft. high, and 4 ft. wide.
V. T. lùcida, shining-leaved, 5½ ft. high, and 5 ft. wide.

Loranthàceæ.

Aúcuba japónica, 5½ ft. high, and 4 ft. wide; in loam, bog, and sand.

E*ricàccæ.*

A'rbutus hýbrida, 7 ft. high, and 4 ft. wide; in loam and silver sand.
A. Pince's hybrid, 4 ft. high, and 3 ft. wide; in loam, silver sand, and bog.
A. procèra, 4 ft. high, and 3 ft. wide; in loam, silver sand, and bog.
A. scarlet, 6 ft. high, and 5½ ft. wide; in loam, silver sand, and bog.
*Rh*ododéndron, scarlet hybrid, 4½ ft. high, and 4½ ft. wide; in bog and silver sand.
R. azaleoïdes, 6½ ft. high, and 4 ft. wide; in bog.
R. white, 4½ ft. high, and 4½ ft. wide; in bog.
R. altaclerénse, 5 ft. high, and 5 ft. wide; in bog and silver sand.
R. caucásicum, 6½ ft. high, and 2 ft. wide; in bog and silver sand.
R. yellow variety 3½ ft. high, and 3 ft. wide, in ditto; and 16 other hybrid varieties, the greater part scarlet-flowered.
*V*accínium *A*rctostáphylos, 6 ft. high, and 4½ ft. wide; in bog.

Sapotàceæ.

*B*umèlia tènax, 4½ ft. high, and 3½ ft. wide.

L*auràceæ.*

*La*úrus nóbilis, 3 varieties, 5½ ft. high, and 4 ft. wide; in loam, bog, and sand.

E*uphorb*iàceæ.

*B*úxus baleárica, 5½ ft. high, and 2 ft. wide; in loam and silver sand.

C*orylàceæ.*

*Q*uércus *S*ùber, 5½ ft. high, and 3 ft. wide; in loam, bog, and sand.
Q. gramúntia, 6 ft. high, and 4 ft. wide; in loam, bog, and sand.
Q. I'lex, 2 varieties, 7 ft. high, and 2½ ft. wide; in loam and road grit.

O*leàceæ.*

O'lea europæ'a, 7½ ft. high, and 1½ ft. wide; in loam, bog, and sand.
Chionánthus virgínica, 11 ft. high, and 6 ft. wide; in loam, bog, and silver sand.

T*axàceæ.*

*T*áxus baccàta, 7½ ft. high, and 3½ ft. wide; in bog and silver sand.
T. b. hibérnica, 7½ ft. high, and 3½ ft. wide; in loam, bog, and silver sand.

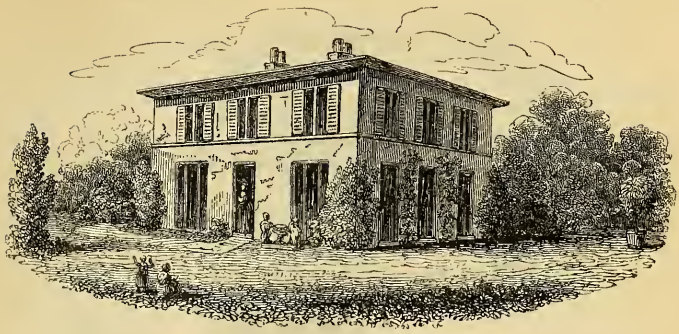
Coníferæ, § *Abiétinæ.*

*Pi*nus *Cémbra*, 6½ ft. high, and 4 ft. wide; in bog and silver sand.
P. ponderòsa, 5½ ft. high, and 3 ft. wide; in bog and silver sand.
A'bies Clanbrasil*iàna*, 5 ft. high, and 2½ ft. wide; in bog and silver sand.
*Pi*cea Frà*seri*, 5½ ft. high, and 4½ ft. wide; in loam, bog, and sand.
*C*èdrus Libàni, 2 ft. high, and 3 ft. wide, 20 years old, and shaped like a bee-hive.

Coníferæ, § *Cupréssinæ.*

*Th*ùja plicàta, 6½ ft. high, and 3 ft. wide; in loam and bog.
Taxòdium péndulum, 10 ft. high, and 3 ft. wide; in loam, bog, and sand.
*Ju*níperus chinénsis, 8 ft. high, and 3 ft. wide; in loam, bog, and sand.
J. suécica, 5½ ft. high, and 1½ ft. wide; in loam, bog, and sand.

32



Hendon Rectory.

The spectator, standing at *v*, with his back to the mass, sees the house on two sides to the greatest advantage, as in *fig.* 32.; looking towards *x*, he sees a fine display of plants in pots and vases, backed by a dense wood, of which some idea may be obtained from *fig.* 33.; and, looking towards *u*, he has also a great variety of rich and interesting objects. Among the plants in the lawn, in front of *v*, are, Brugmán*sia* suavèolens, Magnò*lia* conspícua, *A*bies Douglà*sii*, Taxòdium dístichum nùtans, and various others, which will be found in a list given below.

w. Here are two baskets of pelargoniums, with elaborately worked handles, and between them a vase, supported on an elegant shaft, as seen in *fig.* 33., and filled with *V*erbèna chamædrifòlia. Between this vase and the walk are, a fine specimen of Magnò*lia* conspícua, and one of Robín*ia* Pseùd-*A*càcia tortuòsa.

x, A bay, ornamented with a series of standard fuchsias, with some choice plants, and elegant vases in front of them. Among these plants are, Kálm*ia* latifòlia, *R*hododéndron arbòreum hýbridum, and a standard *R*hododéndron pónticum. A handsome vase is filled with *Petùnia* phœnícea.

The fuchsias and myrtles grown in tubs and pots, and set out on the lawn during summer, are splendid specimens of the following kinds : —

Fúchs*ia* grácilis, 8½ ft. high, head 6½ ft. wide; tub 2 ft. wide, and 1 ft. 10 in. high.

Another specimen, 8 ft. 9 in. high, head 6½ ft. in diameter, with a clear stem of 4½ ft., and 6 in. in circumference; grown in a tub 2 ft. wide, and 1 ft. 10 in. high.

Another specimen, total height 10½ ft., with a clear stem of 7 ft., the head 5 ft. in diameter; grown in a tub 1 ft. 9 in. wide, and 1 ft. 4 in. high.

Another specimen, in all respects the same as the last, except that it has a clear stem of 7 ft. 10 in.

Fúchs*ia* cónica, total height 6½ ft., clear stem 5 ft., width of the head 5 ft. 9 in.; grown in a tub 1 ft. 5 in. wide, and 1 ft. 3 in. high.

Fúchs*ia* globòsa màjor, total height 6 ft., clear stem 3½ ft.; grown in a pot 1 ft. wide, and 1 ft. high.

Fúchs*ia* tenélla, grown in a pot 1 ft. 9 in. wide, and of the same height, forms a regular cone 10 ft. 6 in. high, and 5 ft. in diameter at the base.

*Mý*rtus commùnis flòre plèno, the common double-blossomed myrtle, total height 6½ ft., with a clear stem of 2½ ft., the head 4 ft. in diameter; grown in a tub 2 ft. wide, and 1 ft. 9 in. high.

Two handsome standard common myrtles, 3 ft. 3 in high; grown in pots 10 in. wide, and 10 in. high.

Two standard double-flowered myrtles, of the same dimensions; grown in pots of the same size.

33

View at Hendon Rectory.

The more remarkable of the trees and shrubs planted on the lawn are the following:—

Ranunculàceæ.

Clématis, several species.

Magnoliàceæ.

Magnòl*ia* grandiflòra.
g. lanceolàta.
glaúca.
g. Thompson*iàna*.
umbrélla.
acuminàta.
auriculàta.
macrophýlla.
conspícua.
obovàta.

Berberàceæ.

Bérberis fasciculàris.
vulgàris.

Ternströmiàceæ.

Camél*lia* víridis.
japónica semidùplex.
j. rùbro plèno.
j. álbo plèno.
j. quadrangulàris.
Stuárt*ia* Malachodéndron.

Aceràceæ.

A'cer créticum, 8 ft. high.

Æsculàceæ.

Æ'sculus rubicúnda.
cárnea.
pállida.
Pàv*ia* díscolor and P. flàva, 3 ft. high, and 3 ft. wide; in loam and bog.
P. hùmilis.

Sapindùceæ.

Kölreutèr*ia* paniculàta.

Vitàceæ.

*V*ìtis vulpìna.

Celastràceæ.

Curtís*ia fagínea*.
*Eu*ónymus europæ'us fòliis variegàtis.

Aquifoliùceæ.

I'lex *A*quifòlium.
I'lex *A*. heterophýllum.
A. crassifòlium.
A. fèrox.
A. echinàtum.
A. flàvum.
A. senéscens.
A. àtro-marginàtum.
A. álbo-píctum.
A. aúreo-píctum.
A. scóticum.
A. recúrvum.
baleárica.
Peràdo.
opàca.
Dahoón.
Cassìne.
*myr*tifòlia.
lævigàta.
a beautiful unknown kind.

Rhamnàceæ.

*Rh*ámnus *A*latérnus.
latifòlius.
baleáricus.
vulgàris.
glàber.
integrifòlius.
aúreus.

Leguminòsæ.

Sophòra japónica péndula, 6½ ft. high, and 5 ft. wide; in loam and bog.
S. japónica, 10 ft. high, and 6 ft. wide; in loam and grit.
Cércis canadénsis, 8 ft. high, and 3 ft. wide; in bog.
Genísta virgàta.
Pistàcia Terebínthus.
Cýtisus Labúrnum.
L. variegàtum álbum.
woolgáricus.
U'lex europæ'a flòre plèno.
Edwárds*ia* microphýlla.
grandiflòra.
Gledítsch*ia* hórrida.
Gymnócladus canadénsis.
Acàcia armàta.
A. Julibríssin.

Rosàceæ.

Cérasus àvium múltiplex.
Cotoneáster microphýlla.
Photínia serrulàta.
Pỳrus spectábilis.
Cratæ'gus *Oxyacántha*.
O. præ'cox.
O. coccínea.
O. aúrea.
*Rò*sa, 100 dwarf standards of the very best sorts.

Calycanthàceæ.

Calycánthus flóridus.

Granatàceæ.

*Pù*nica *Granàtum*.

Philadelphàceæ.

Philadélphus coronàrius.

Myrtàceæ.

*Mýr*tus commùnis.
c. romàna.
c. múltiplex.
Eucalýptus, a beautiful pendulous species, with oval glaucous leaves, growing 2 or 3 feet in one season.

Passifloràceæ.

Passiflòra cærùlea.

Grossulàceæ.

Rìbes alpìnum, 3 ft. high, and 4 ft. wide; in dung, loam, and bog.
R. alpìnum var.
R. sanguíneum.

Araliàceæ.

Hédera arboréscens.
canariénsis.
Hèlix.
H. álbo variegàta.
H. flàvo variegàta.

Hamamelidàceæ.

Hamamèlis virgínica.

Loranthàceæ.

Aúcuba japónica.

Ericàceæ.

Rhododéndron máximum.
álbum.
purpùreum.
variegàtum fòliis aúreis.
azaleoìdes.
hýbridum.
Smíth*ii*.
arbòreum.
campanulàtum.
catawbiénse.
barbàtum.
dàùricum.
ferrugíneum.
hirsùtum.
caucásicum.
Russell*iànum*.
R. with larger foliage and flowers.
anticulénse (?).
magnoli*æfòlium*; and about 50 scarlet varieties, hybrids, &c.

Azàlea índica.
i. álba.
punícea.
purpùrea.
calendulàcea.
c. chrysolécta.
c. ignéscens.

Andrómed*a* floribúnda.
arbòrea.

*A*rbutus *U*nedo.
rùbra.
críspa.
canariénsis.
hýbrida.
*A*ndráchne.
procèra.
Pince's hybrid.

*V*accínium nítidum.
*V*acc. *A*rctostáphylos.

M*yrsíneæ*.

*My*rsine retùsa.

Oleàceæ.

*P*hillýrea, of sorts.
*O*lea europæ*a*.
*b*uxifòlia.

*Syríng*a vulgàris.
v. álba.
pérsica.
p. álba.

Chionánthus virgínica.
*F*ráxinus, variegated white-leaved.
F. curled-leaved.

Lauràceæ.

*L*aúrus *Benzòin*, 6 ft. high, and 4 ft. wide; in loam and bog.

T*hymelàceæ.*

*D*áphne Laurèola.
póntica.
collìna.
napolitàna.

Aristolochiàceæ.

*A*ristolòchia sìpho.

E*uphorbi*àceæ.

*B*úxus baleárica.
sempervìrens arboréscens.
s. a. argéntea.
s. a. aúrea.

U*rticàceæ.*

*F*ìcus Cárica.

B*etulàceæ.*

*A*lnus incìsa.

C*orylàceæ, or Cupulíferæ.*

Quércus gramúntia.
*I*lex.
I. integrifòlia.
Quércus *I*lex serràta.
I. oblónga.
I. *f*agifòlia.
I. críspa.
*S*úber.
coccífera.
Túrner*i*.
bícolor.
tinctòria.
coccínea.
palústris.
*Æ*gilops.
pedunculàta.
p. fòliis variegàtis.
fastigiàta.
lyràta.
*C*érris.
Lucombe*àna*.
Lucombe*àna* nòva.
fern-leaved.
víridis.
fulhaménsis, or dentàta.
*F*àgus sylvática *f*ilicifòlia, the fern-leaved beech.

B*alsaminàceæ.*

Liquidámbar Styracíflua.

T*axàceæ.*

Podocárpus nucíferus.

Coníferæ.

*P*ìnus *P*ináster.
*P*ínea.
*A*bies Douglàs*ii*, 10 ft. high, and 6 ft. in diameter; planted in a tub sunk into the ground and concealed.
*C*èdrus Libàni, 20 ft. high.

S*milàceæ.*

*R*úscus racemòsus.

y, A cedar of Lebanon; and to the right and left are two beds of select dwarf dahlias. Beyond the beds of dahlias are two rustic baskets of pelargoniums; and there is a shell filled with mesembryanthemums. The other plants are select species of pines, firs, and *C*upréssinæ.

z, A strip of lawn, bounded on the south by a wire fence, which separates it from a paddock, and varied with beds of dahlias, pelargoniums, and other showy flowers. On the north of this strip of lawn is an oblong pond, well stocked with water lilies and gold fish.

&, Shed for cows or horses.

1, Reserve ground for proving seedling dahlias.

2, House for hurdles for dividing the paddock.

3, Compartment entirely devoted to dahlias, which are planted in beds 3 ft. wide, with alleys 2 ft. wide between. The collection amounted, in the year 1837, to upwards of 400 sorts, which, according to Mr. Lawrence, are among the best in existence.

4, 4, Kitchen-garden, chiefly planted with gooseberries, currants, raspberries, strawberries, potherbs, asparagus, tart rhubarb, sea-kale, and several articles not so readily procured from the market-gardens in the neighbourhood.
5, Tool-house, including a potting-shed.
6, Border for choice flowers; the wall covered with half-hardy shrubs.
7, 7, Two green-houses entirely devoted to Coníferæ in pots. The following list includes those species which constituted the collection in November, 1837:—

Taxàceæ.

Dacrýdium *cupréssinum*, 6 ft. 9 in. high, and 5 ft. wide; in a pot 17 in. wide, and 18 in. deep: by far the largest and handsomest plant of this species ever seen in England.

Coníferæ, § *Abiétinæ.*

*P*ìnus sylvéstris.
P. s. rigénsis, 4 ft. high, and 2 ft. wide; in a pot 9 in. wide, and 9 in. deep.
P. pumílio. *P.* p. *Mùghus.*
P. Banks*iàna*, 3½ ft. high, and 2 ft. in diameter; in a pot 10 in. wide, and 10 in. deep.
P. ìnops, 5 ft. high, and 3½ ft. wide; in a pot 17 in. wide, and 17 in. deep.
P. mìtis. *P.* púngens.
P. Larício, 4 ft. high, and 18 in. wide; in a pot 10 in. wide, and 10 in. deep.
P. austrìaca, 1 ft. high, and 9 in. wide; in a pot 6 in. wide, and 6 in. deep.
P. Pallas*iàna*, 2 ft. 3 in. high, and 2 ft. in diameter; in a pot 13 in. wide, and 13 in. deep.
P. resinòsa.
*P. P*ináster.
P. P. var. helénica, from St. Helena, 7 ft. high, and 4 ft. in diameter, grafted on *P*ìnus sylvéstris.
P. P. var. nòva zælándica *Lodd.*, from New Zealand.
P. P. escarèna, 6 ft. high, and 4 ft. wide; in a pot 13 in. wide, and 13 in. deep.
*P. P*ínea, 3½ ft. high, and 2 ft. in diameter; in a pot 12 in. wide, and 12 in. deep.
P. halepénsis, 4 ft. 3 in. high, and 2 ft. 3 in. in diameter; in a pot 10 in. wide, and 12 in. deep.
*P. Tæ*da, 3 ft. high, and 3 ft. wide; in a pot 8 in. wide, and 8 in. deep.
P. rígida, 6 ft. 2 in. high, and 4½ ft. in diameter; in a pot 2 ft. wide, and 2 ft. deep.
P. serótina. *P.* ponderòsa.
P. Sabin*iàna*, 4 ft. high, and 3 ft. wide; in a pot 19 in. wide, and 17 in. deep: and another, 7 ft. high, and 5 ft. wide; in a pot 15 in. wide, and 10 in. deep.
P. Coúlter*i* (macrocárpa *Lindl.*), 4 ft. high, and 3 ft. wide; in a pot 13 in. wide, and 13 in. deep.
P. longifòlia, 5½ ft. high, and 3 ft. wide; in a pot 13 in. wide, and 13 in. deep.
P. Gerard*iàna.*
P. austràlis, 3½ ft. high, and 18 in. in diameter; in a pot 17 in. wide, and 17 in. deep.
P. canariénsis.
P. sinénsis, 3½ ft. high, and 3 ft. in diameter; in a pot 12 in. wide, and 12 in. deep.
P. insígnis, 5½ ft. high, and 2 ft. wide; in a pot 13 in. wide, and 14 in. deep: another is 3 ft. high, and 1½ ft. wide.
P. Teocòte, 13 in. high, and 9 in. wide; in a pot 7 in. wide, and 7 in. deep.
P. leiophýlla.
P. Llave*àna*, 2 ft. high, and 1¼ in. wide, 6 years old.
P. Cémbra, 4 ft. high, and 4 ft. in diameter; in a pot 16 in. wide, and 16 in. deep.
P. Stròbus.
P. excélsa, 1 ft. 7 in. high, and 13 in. in diameter; in a pot 7 in. wide, 7 in. deep.
P. Lambert*iàna.*
P. montícola, 1 ft. high, and 9 in. in diameter; in a pot 9 in. wide, and 9 in. deep.
*A*bies excélsa var., 2½ ft. high, and 1½ ft. wide; in a pot 10 in. wide, and 10 in. deep.
A. e. Clanbrasil*iàna*, 18 in. high, and 2½ ft. wide.
A. e. pygmæ*a*, 13 in. high, 13 in. wide, and 20 years old.
A. nìgra, 5 ft. high, and 6 ft. in diameter; in a pot 18 in. wide, and 18 in. deep.
A. rùbra, 6½ ft. high, and 5½ ft. wide.
A. Smith*iàna*, 2 ft. high, and 1½ ft. wide; in a pot 10 in. wide, and 9 in. deep: another, 3½ ft. high, and 3½ ft. wide.
A. Douglàs*ii*, 4 ft. 3 in. high, and 3½ ft.

in diameter; in a pot 1 in. wide, and 12 in. deep. The plant on the lawn, which is 10 ft. high, is also in a tub, plunged, and the brim covered.

A. Menziès*ii*, 3 ft. high, and 2½ ft. wide; in a pot 13 in. wide by 13 in. deep.

A. canadénsis.

A. cephalónica, 3 ft. 9 in. high, and 5 ft. wide; in a pot 18 in. wide, and 21 in. deep: two plants of these dimensions, and three others of smaller size.

*Pi*cea pectinàta.

P. balsàmea.

P. b. Fràser*i*, 2 ft. high, and 20 in. wide; in a pot 9 in. wide, and 9 in. deep.

P. Pichta, 1½ ft. high, and 1½ ft. in diameter; in a pot 11 in. wide, and 11 in. deep.

P. Webb*iàna*, 3 ft. high, and 3 ft. wide; in a pot 18 in. wide, and 16 in. deep.

P. grándis, 3 ft. high, and 2 ft. wide; in a pot 12 in. wide, and 13 in. deep.

P. nóbilis, 1½ ft. high, and 2½ ft. wide; in a pot 13 in. wide, and 13 in. deep.

*L*àrix europæ'a.

L. microcárpa.

*C*èdrus Libàni.

C. Deodàra, 3½ ft. high, and 4 ft. wide; in a pot 14 in. wide, and 18 in. deep: another, 5 ft. high, and 4 ft. wide.

Araucària imbricàta, 3½ ft. high, and 3 ft. wide; in a pot 16 in. wide, and 17 in. deep.

A. brasiliàna, 6 ft. high, and 4 ft. in diameter; in a pot 18 in. wide, and 18 in. deep.

A. excélsa, 5½ ft. high, and 3½ ft. wide; in a pot 13 in. wide, and 10 in. deep.

A. Cunninghàm*ii*.

Cunninghàm*ia* sinénsis, 6 ft. high, and 5 ft. wide; in a pot 13 in. wide, and 13 in. deep.

Coníferæ, § *Cupréssinæ*.

*T*hùja orientàlis.

T. plicàta, 6 ft. high, and 3 ft. wide.

T. articulàta, 7 ft. high, and 2½ ft. wide; in a pot 9 in. wide, and 10 in. deep.

Cállitris pyramidàlis, 2 ft. high, and 1 ft. wide; in a pot 7 in. wide, and 6 in. deep.

*C*upréssus Tournefórt*ii*, 17 in. high, and 8 in. wide; in a pot 5 in. wide, and 5 in. deep.

C. lusitánica, 3 ft. high, and 2 ft. wide; in a pot 8 in. wide, and 8 in. deep.

*J*uníperus phœnícea, 4 ft. high, and 18 in. wide; in a pot 8 in. wide, and 8 in. deep.

J. from Gossainthan, 2 ft. high, and 1 ft. wide; in a pot 8 in. wide, and 8 in. deep.

J. austràlis, 1 ft. 9 in. high, and 1½ ft. wide; in a pot 6 in. wide, and 6 in. deep.

J. excélsa, 3 ft. high, and 15 in. wide; in a pot 9 in. wide, and 10 in. deep.

J. bermudiàna, 2 ft. 10 in. high, and 15 in. wide; in a pot 9 in. wide, and 9 in. deep.

J. recúrva, 4½ ft. high, and 2½ ft. wide; in a pot 13 in. wide, and 13 in. deep.

8, 8, 8, Hot-beds for striking and bringing forward pelargoniums and other flowers, for the beds, baskets, vases, &c.

9, Potting-shed.

10, Large pits for preserving fuchsias, orange trees, brugmansias, camellias, and other large plants, in tubs, through the winter.

11, Working-shed, with store-room over, and containing, also, the furnaces for heating the green-houses and the pits.

Remarks. This residence is not given as one for general imitation; for there are but few persons whose taste for botany and gardening is so enthusiastic as that of Mr. Williams. It shows, however, what may be done by industry and taste, in the course of not more than four years, on a very small spot of ground, possessing few or no advantages, either natural or artificial. The amateur may see, in the lists which we have given, the names of many of the choicest trees and shrubs which can be procured in the London nurseries; and

these names may serve as a guide to him in selecting plants that shall indicate a superior degree of botanical taste. Mr. Williams has not only selected the finest specimens and varieties, but the largest plants of these that could be procured in England.

The sum that the plants enumerated in our lists must have cost, we cannot tell, on account of the large size of the plants; but small plants of all the same species might be obtained for perhaps 200*l.*

The unique practice adopted by Mr. Williams, of growing in pots pines which will endure the open air (we make an exception in favour of those that will not, such as *P.* longifòlia, leiophýlla, &c.), and keeping them in a green-house both in summer and winter, cannot be recommended; because, though the plants, when taken so much care of as at Hendon Rectory, will look remarkably well for five or six years, yet, for want of room, they must ultimately become stunted and die; or, if they are turned out into the free soil, after being six or seven years in pots, even with all the care that can be bestowed in unwinding their roots from the balls, and spreading them out, their chance of living is very doubtful. If it were probable that keeping these pines and firs in pots would make them bear cones, like Dr. Diel's fruit trees, that might serve as an apology for this kind of taste; and, doubtless, if the trees can be kept alive in pots, till nearly the usual period at which they would bear cones in the free ground, this would be the case; but still, so little would be gained by it, that we cannot recommend the plan for imitation. The only plants, in our opinion, that can be legitimately grown in green-houses and hot-houses, are such as can be brought to as great a degree of perfection there, as they would attain in the open air in their native countries. Of these there are thousands of species which can be brought to greater perfection under glass in Britain, than they are ever seen to attain in their native countries, in the open air. This will apply to almost all the shrubs, and all the herbaceous plants, of warm climates. The trees of warm climates have, in general, a miserable appearance under glass, for want of room.

To return to Hendon Rectory, we wish not to be understood as denying the right of Mr. Williams to indulge in his own peculiar taste: we merely state that it is one which never can become general, on account of the expense and trouble with which it is attended, in proportion to the effect produced. Mr. Williams's taste for the gardenesque in the planting of his garden, and for the highest order and keeping in its management, is beyond all praise, and is equalled nowhere, that we know of, in the neighbourhood of London, but at Mrs. Lawrence's, at Drayton Green.

Since the above was written, Mr. Williams has made great

alterations and additions. He has added two hot-houses at 7 7, in the situation of the hot-beds 8 8. Towards the north end of the compartment marked 3, he has constructed an elegant curvilinear house, glass on all sides, for the Coníferæ; at each end of it he has placed large masses of rockwork, which are to contain collections of ferns and *S*axifrágeæ; and the whole of the ground in front he has laid out in beds on turf, as a flower-garden.

ART. III. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 12. THE APPLE, OR CODLING, MOTH.

OF all our fruits, none can compete, for extensive usefulness and general value, with the apple: the large size of the tree itself, and, consequently, the largeness of its crops of fruit, together with its general distribution, render the apple, *par excellence*, the poor man's fruit; and yet, these very circumstances have for their natural result the existence of a larger share of fruit-feeding insects, as its peculiar enemies, than any other species of fruit.

Setting aside, for the present occasion, those species which feed upon the leaves and young buds, or which, burying themselves beneath its bark, or burrowing into the solid wood, hide themselves from our sight (amongst the former of which the American blight, A`phis lanígera, and the Cóccus conchifórmis, are not the least obnoxious), we may remark that the number of species which feed upon the fruit itself is very considerable: of these, there are several small species of two-winged flies (Díptera), belonging to the family *T*ipùlidæ, whose transformations have been observed by Schmidberger, and described in Kollar's *Insects*. There are also several species of weevils (*C*urculiónidæ), the females of which also deposit their eggs in the newly formed fruit, and upon which the larvæ feed. "During the autumn" (says Salisbury, as quoted in *Ins. Trans.*, p. 243.), "we frequently observe a small red weevil busily employed in traversing the branches of apple trees, on which it lays its eggs, by perforating the bloom buds. In the spring, these hatch, and the grubs feed on the petals of the flowers, drawing up the whole bunch of flowers into a cluster by means of their web. The bloom thus becomes destroyed, and the grub falls to the ground, where it lays itself up in the chrysalis state; and in the autumn afterwards we find the weevil renewed, which again perforates the buds, and causes a similar destruction in the following spring." This insect is, apparently, the Anthónomus

pediculàrius *Linn.*, although it is stated by the editor of the work from which the quotation is taken to be A. pomòrum.

The proceedings of another species of weevil have been described in the first number of the *Entomological Magazine*, by an anonymous writer: they are nearly similar to those described above, and are stated by the editor of that periodical, in a foot note, to be those of Anthónomus pomòrum. Schmidberger also gives the apple as the real food of the larva of the splendid (but exceedingly rare in England) Rhynchìtes Bácchus. The proceedings of a moth, of which the larva burrows into the very young fruit, and causes it to drop off before it has attained the size of a nut, have been observed by myself, and will form an article in this series; and the anonymous author of the articles on "Blight" in the *Entomological Magazine* gives a singular account of a quantity of aphides found in the interior of codlings, without "any road in or out;" but they were all dead, although some remained hanging by the beak to the pips, which seem to have been their food, although surrounded by an inch and a half of pulp in every direction.

But all these fruit-feeding insects are surpassed in their powers of doing mischief by a little moth, belonging to the same family as the rose moth described in *Gard. Mag.*, vol. xiii. p. 385.; and systematically known under the following names: —

Family, Tortrícidæ.

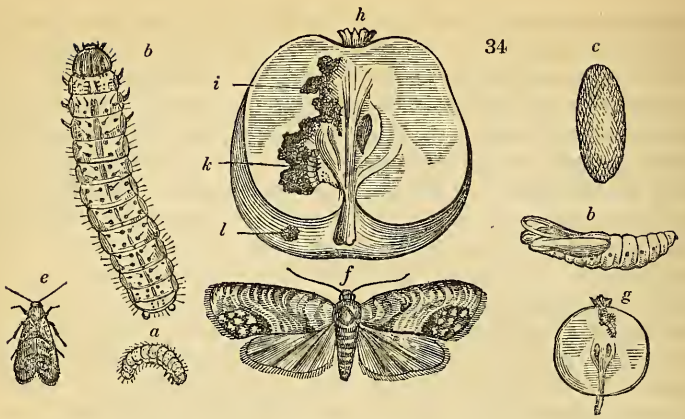
Genus, Carpocápsa *Treitschke*, *Curtis*, *Stephens*. Syn., Semàsia *Stephens olim*, Cýdia *Hübner*, Phalæ`na Tínea *Linn.*, Tórtrix *Haworth*, Pýralis *Fabricius*.

Species, Carpocápsa Pomonélla *Tr.*, *Curt.*, *Steph. Illustrations of Brit. Ent. Haustellàta*, vol. iv. p. 119. Syn., Phal. (Tínea) Pomonélla *Linn. Syst. Nat.*, ii. 892.; Pýralis Pomòna Fabricius Ent. Syst., 3. 2. p. 279.; Tórtrix Pomonàna *Haworth Lep. Brit.*, p. 457.

The Codling Moth, Ph. Pomonélla, *Wilkes Engl. Moths*, pl. 9. The Apple-Moth, *Harris's Vade Meeum*, p. 9.

Of this insect it has been well observed, that "it is the most beautiful of the beautiful tribe to which it belongs; yet, from its habits not being known, it is seldom seen in the moth state; and the apple-grower knows no more than the man in the moon to what cause he is indebted for his basketfuls of wormeaten windfalls in the stillest weather." (*Ent. Mag.*, i. p. 144.)

The cause why, on examination, the fallen fruit merely exhibits the amount of damage done to the apple, without enabling us to obtain a knowledge of the insect itself, is this:— there is a remarkable instinct, possessed not only by these fruit parasites, but also by the larvæ of the Ichneumónidæ, which are parasitic upon other insects, whereby they are directed to leave untouched the vital part of their prey till the last. It is only upon the fatty parts of a caterpillar that the larvæ of the ichneumons feed for a length of time; and it is only upon the pulpy parts of the apple (*fig.* 34. *h*, *i*) that the larva (*k*) of



the apple moth feeds during the greater part of its growth: when, however, it has nearly attained its full size, it begins to feed on the pips of the apple, which, thus attacked in its most vital part, soon falls to the ground. The caterpillar, however, has now ceased feeding: it has other operations to undergo; and no sooner is the apple fallen to the ground, than it quits the fruit by the passage (*l*) which it had previously gnawed, and thus all traces of its steps are lost to the enquirer. A hundred apples may be opened, and not more than two or three larvæ observed within them; the orifice by which they have escaped being open, and not concealed by a little mass of brown grains, which is the case with those apples from which the larva has not made its escape. These little grains are the excrement of the larvæ, which are also to be seen in the burrows formed by them within the apple, and which are protruded through the hole previously made in the circumference of the fruit, being attached together by slender threads spun by the caterpillar. When, therefore, the larva makes its escape, it clears away the mass of dry excrementitious matter at the orifice of the burrow, through which it escapes to the earth. Réaumur considers that the attaching of the pellets of excrement together, and to the sides of the fruit, by means of a thin web, has for its object the removal of the annoyance which the larva would experience by these little masses being loose, and striking against it every time the apple was shaken by the wind.

One of these larvæ, whose proceedings I examined in 1836, is represented of the natural size at *fig.* 34. *a*, and highly magnified at *b*. It is of a dirty white colour, with a brown head, varied with darkish brown marks. The body is slightly hairy; the prothorax, or first segment after the head, is whitish, with minute brown spots; the other segments are of a pale colour, with about eight small tubercles on each; each of the three

anterior segments is furnished with a pair of legs; there are also two small fleshy tubercles on each of the 6th, 7th, 8th, and 9th segments, as well as a pair of feet at the extremity of the body. This description was made when the larva had for some time quitted the fruit. In its early state, it is of a dirty reddish, or flesh, colour. After quitting the fruit, my larva crept to the top of the box in which it was confined, and spun for itself a thin but close web, of a darkish-coloured silk (*fig* 34. *c*), in which it remained all the winter, and for several of the early months of the following year, without assuming the chrysalis state. Réaumur, however, states that larvæ which he placed in glass cases for observation immediately quitted the apples, and affixed themselves in an angle at the top, where a paper covering was placed, from which the majority of the specimens gnawed small particles, with which they strengthened the outside of their web. This sagacious writer conjectured that, in a state of nature, they form their cocoons "sous les écorces d'arbres qui ont commencé à se détacher du tronc;" and Rusticus tells us that the caterpillar wanders about on the ground till it finds the stem of a tree, up which it climbs, and hides itself in some little crack of the bark. The fall of the apple, the exit of the grub, and its wandering to this place of safety, usually take place in the nighttime. In this situation it remains without stirring for a day or two, as if to rest itself after the uncommon fatigue of a two yards' march; it then gnaws away the bark a little, in order to get further in, out of the way of observation (this explains why Réaumur's confined caterpillars gnawed the paper); and having made a smooth chamber, big enough for its wants, it spins a beautiful little milk-white silken case, in which, after a few weeks, it becomes a chrysalis; and *in this state* it remains throughout the winter, and until the following June; when it is upon the wing, and hovering round the young apples on a midsummer evening. (*Ent. Mag.*, i. p. 146.)

My specimens did not appear in the winged state until July, in the following year; and Réaumur says that his specimens assumed the perfect state on the 15th of August, having been only a month from the time of their quitting the apples. The chrysalis (*fig.* 34. *d*, magnified, after the escape of the insect,) is of a pale brown, with the dorsal surface of the abdominal segments armed with two transverse rows of fine teeth, like those of the chrysalis of the rose moth, which are employed in extricating itself from the cocoon.

The moth itself (*fig.* 34. *e*, of the natural size; and *f*, magnified) is a very beautiful insect, about three quarters of an inch in expanse, and of which the following is the description: — Anterior wings ashy-brown, with very numerous, rather

obscure, darker, transverse streaks, united into a broadish fascia towards the base; on the anal angle is a large blind subocellated spot, of which the margins are of a coppery or reddish golden colour: posterior wings black, darkest at the apex. — *Stephens*, loc. cit., p. 119.; by whom it is stated that it is not very abundant, but is found in gardens within the metropolitan district occasionally, in some plenty. About three years previously he found several in his garden; and in 1834 it was again in plenty.

I was not fortunate enough to observe the deposition of the eggs by the female moth; and, anxious to ascertain the manner in which the larva commenced its attacks upon the fruit, and thereby of gaining an idea of the situation in which the eggs are placed, I opened a number of young apples at the beginning of August, and found the larvæ in a young state, in the upper part of the fruit, at a small distance from the eye (*fig.* 34. *g*), its presence being indicated by the dried powder in the centre of the eye, the head of the larva being turned towards the heart of the fruit. Rusticus, however, states that the moth may be observed, about the middle of June, hovering around the young apples, which by that time are fit for the reception of its eggs, which it lays *in the eyes*, one only in each, by introducing its long ovipositor between the leaves of the calyx, which form a tent above it that effectually shields it from the inclemency of the weather, or any other casualty. As soon as the egg is hatched, the little grub gnaws a hole in the crown of the apple, and soon buries itself in its substance; and it is worthy of remark, that the rind of the apple, as if to afford every facility to the destroyer, is thinner here than in any other part, and consequently more easily pierced. The apple most commonly attacked is the codling, which ripens in July and August.

It will be evident, from the preceding detail of the habits of this moth, that there are considerable difficulties in the way of its extirpation. It is impossible, for instance, to be aware of the presence of the enemy within the fruit, until the mischief is actually completed; and, in like manner, the destruction of the moth, from its small size, and its habit of secreting itself in crevices of the bark, &c., is equally impracticable. The gathering up of the wormeaten apples immediately after their fall, and before the enclosed caterpillar has had time to make its escape, cannot but be attended with good effect: care, however, must be taken, either by bruising the apples, or some other similar proceeding, to destroy the larvæ, which would otherwise very speedily make their escape, and so frustrate the pains taken for their destruction. It has also been suggested, that, by burning weeds in the garden or orchard at the time of the year when the insect is ready to deposit its eggs, the moth

will be effectually driven away. "If you have trees, the crops of which you value, make a smoking (mind, not a blazing) fire under each: it will put you to some inconvenience, if your garden be near your house, but the apples will repay you for that." (*Rusticus.*)

ART. IV. *A Competition Design for the proposed Leeds Zoological and Botanical Garden.* By JAMES PRINGLE, Gardener to W. R. C. Stansfield, Esq., M.P., at Esholt Hall, near Leeds.

IN submitting the accompanying designs to the Committee of the Leeds Zoological and Botanical Society, it will be necessary to give some explanation respecting the arrangement of the plans, and the different purposes I have had in view in proposing them. I have provided a kitchen and fruit garden, of about two acres in extent: it was not mentioned in the advertisement; but I beg leave to suggest the propriety of having such a department, as, no doubt, many individuals will be as much interested in the cultivation of fruits and vegetables, as in that of curious or ornamental plants. Should it not answer the purposes of the establishment, it might, when well stocked with fruit trees and vegetables, be let at a good rent, which would help to defray the expenses of the garden; or, should it be the intention of the Society to have no fruit or vegetable department, I would then suggest that the same piece of ground be divided into separate compartments, for grazing the different species of hardy graminivorous animals; or, if the Society should wish to have a museum for zoological, botanical, or geological specimens (which I would suggest as an addition to the Institution worthy of attention), there will be sufficient ground, and well situated, for the above purposes, or any future additions which the Society might require, without interfering with the finished departments of the garden.

The Approach.— The grounds are not well situated for a good and easy approach, as the gardens would be displayed to the best advantage if entered at the bottom of Chapel Lane; but, to enter there, the road through Burley is very indifferent; and to make a road across Woodhouse Moor would involve considerable expense; also, by either of the above-named roads, the traffic of the quarries would prove a great annoyance to visiters. I would therefore sacrifice the most commanding entrance to the gardens to public convenience and economy of your funds; and would make a good road the whole length of Chapel Lane, on your own property, making the entrance about half-way down the lane, thus uniting the Leeds and Burley roads at one point. As to the branch road which would, of course, be wanted from the Leeds and Otley turnpike, if it were taken off

at Headingly Church, there are buildings which would make the road too narrow for a public entrance so near the gardens; and, as I see that G. N. Tatham, Esq., has a right of road from the Leeds and Otley one to his land (marked occupation road on the plan), I would choose that as the main entrance; and would recommend the purchase of a little more land of J. Marshall, Esq., to allow of a more circuitous line of road. I would make an embankment on the lower side of the road, and plant it with evergreens, which would completely hide the view of the gardens, until you arrive at the kitchen-garden wall, which ought to be 12 ft. high, in order to prevent the grounds being seen until you come to the entrance gates.

Having now disposed of the entrance, I shall next give some explanation of the interior of the gardens. From the entrance, the visiter would be directed to a most spacious gravelled terrace (No. 80 in *fig.* 35.), 90 yards long, by 15 yards wide, ornamented with vases, balustrades, &c.; having behind him a most magnificent range of conservatories, hot-houses, &c. (*fig.* 36.); and before him a flower-garden, enriched with sculpture, vases, fountains, &c., and kept in as high a degree of management as the present advanced state of gardening will admit of. Looking forward, he will have a partial view of the whole gardens, with the pond (77) for aquatic fowls and plants, having a *jet d'eau* in the centre, backed by the dense foliage of different species of timber trees there introduced, which will completely exclude the quarries behind them. I have, likewise, in other places, endeavoured to introduce groups of large trees, where there was anything unsightly to exclude.

Throughout the arboretum, I have strictly adhered to scientific arrangement in each division of the vegetable kingdom, proportioning the spaces of each order, by imaginary lines on the plan, to the degree of ornament it will add to the garden; which allotment of space I have likewise had in view to bring particular tribes of trees into the soil most suitable for them. The orders *Ro*sàceæ and Leguminòsæ will exemplify my first, and *Eri*ceæ and *Sa*licinæ my second, object.

Having, in botanical arrangements, felt the inconvenience of having separate departments for trees and herbaceous plants, which are frequently placed widely apart in the garden, and as the orders containing both ligneous and herbaceous plants have the principal characters of systematic agreement common to both, I can see no reason why they should be taken to separate departments. I have therefore placed all the herbaceous plants near to their respective orders of ligneous plants, in parterres on the grass, which, from the commencement of the arboretum, will be all on the visiter's left hand; which arrangement, I confidently anticipate, will greatly facilitate the study of the natural

system of botany. The herbaceous plants will be much more sheltered by the trees; and all the front trees, to exemplify the orders, will have a greater space to extend their foliage than they generally have when arranged at equal distances from the walks; and the breaking of the regular curved line, I am persuaded, will add much to the picturesque effect of the garden, from the terrace and other places of view. I have likewise endeavoured to combine the pictorial with the scientific arrangement; for all herbaceous plants whose developement is quinary are arranged in groups of five beds; if quaternary, in groups of four beds; if ternary, in groups of three beds; which arrangement may be well illustrated in the laying out of gardens.

In the zoological arrangement, I have merely fixed the situations of some of the houses for animals, birds, &c.; for, not knowing the collection the Society may procure, I thought it of no use giving any elevations. I have fixed the sites for many of the houses in the arboretum, chiefly where the orders contain climbing plants, which houses, when partially overgrown, would have a more natural and picturesque effect, than if they were placed on the open lawn; and I would, as much as possible, endeavour to bring the geographical range of plants and animals together, wherever it could be effected. If your collection should, in a few years, become extensive, a more scientific arrangement of the orders might be adopted. Movable cages for birds and small animals, poles for monkeys, &c., might be placed on the lawn in the summer season.

The preceding remarks being much longer than I intended, I will not trouble you further than to refer you to a paragraph in the *Leeds Mercury* for Jan. 1833, in which some of my views on botanic gardens were stated, but shall now proceed to an explanation of the plans.

References to Plan fig. 35., *Arrangement of the Arboretum.*

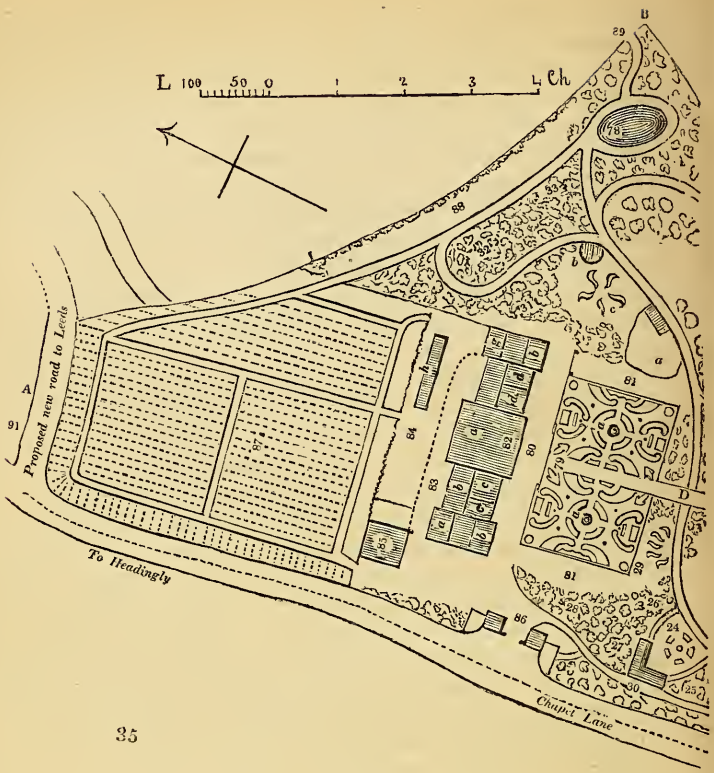
POLYPE'TALÆ.

Albuminòsæ.

1, *R*anunculàceæ, the shrubby plants of the order climbing up a circular rustic building for small European animals.
2, Beds for herbaceous *R*anunculàceæ.
3, Magnoli*àceæ*.
4, *Anonàceæ*.
5, Beds for herbaceous Umbellíferæ.
6, Araliàceæ; a rustic building for the larger European animals, covered with ivy.
7, Grossulàceæ.
8, *Berberídeæ*.
9, *V*itàceæ; a building for European and North American animals.

Epigynòsæ.

10, Beds for the orders *O*nagràceæ, *C*irceæ, Haloràgeæ §*C*ucurbitàceæ, and *Loasàceæ*.
11, *P*hiladelphàceæ.
12, *H*amamelàceæ.
13, *C*ornàceæ.



Parietòsæ.

14, Beds for Crucíferæ, *R*esedàceæ, *V*iolàceæ, Droseràceæ, and Frankeni*àceæ*.

Calycòsæ.

15, *H*ypericàceæ, on rockwork.
16, Ternströmi*àceæ*.
17, *A*ceràceæ.
18, *Æ*sculàceæ; in which may be placed a building, with appropriate architecture, for Asiatic animals or birds.
19, Beds for *P*olygalàceæ and *L*inàceæ.
20, *C*istàceæ, on rockwork.

Syncarpòsæ.

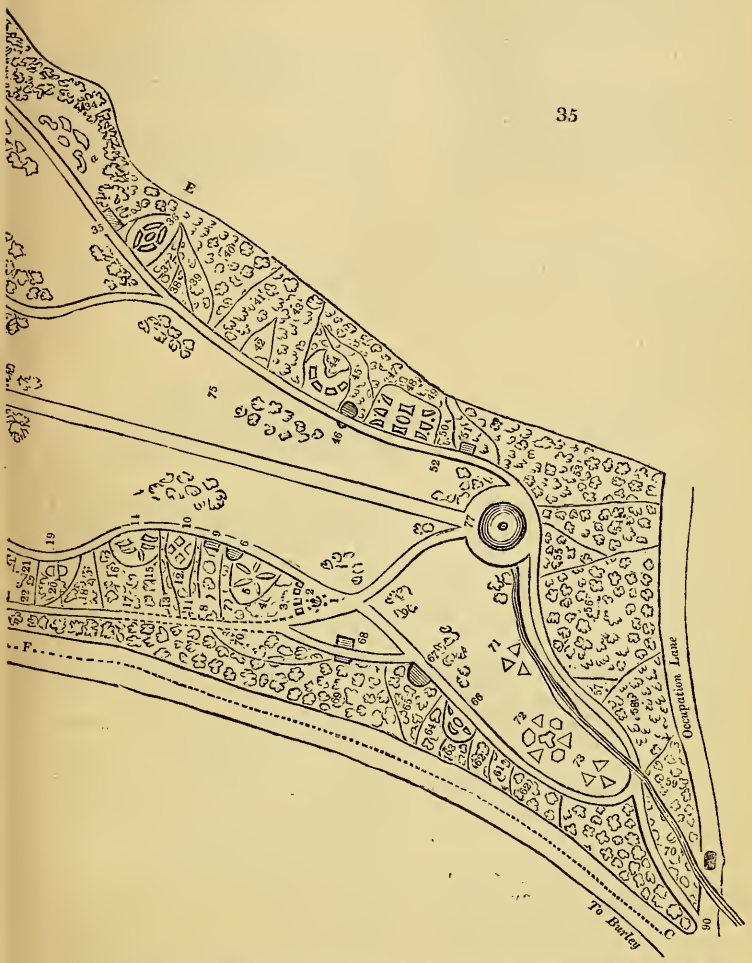
21, *M*alvàceæ.
22, *T*iliàceæ.
23, *M*eliàceæ.
24, Beds for herbaceous *M*alvàceæ, *L*ythràceæ, *E*uphorbi*àceæ*, *P*ortulàceæ, Silenàceæ, *A*lsinàceæ, and *I*llecébreæ.
25, *R*hamnàceæ.
26, *E*mpetràceæ, on rockwork.
27, *C*elastràceæ.
28, Staphyleàceæ.

Gymnobasevòsæ.

29, Beds for *R*utàceæ, Zygophyllàceæ, Xanthoxylàceæ, *G*eraniàceæ, Tropæolàceæ, *O*xalàceæ, and *C*oriàceæ.
30, A building for the larger African animals, and to serve as a general winter repository, with glass in the front, and a 10-ft. passage between the front and the dens for the animals, having passifloras and other tropical plants trained under the glass. All conveniences for heating, feeding the beasts, and the keepers' apartments, to be built behind.

Apocarpòsæ.

31, *R*osàceæ; in which order I have placed an enclosure (*a*) for the different species of ruminating animals; and also a building (*b*) covered with climbing roses, for birds from China,



&c. The elevation of the building may be in the Chinese style. *c*, Beds for herbaceous *R*osàceæ.

32, Pomàceæ.

33, *A*mygdàleæ.

34, Leguminòsæ: *a*, herbaceous beds; *b*, building for large animals, or birds from temperate climates.

35, Calycanthàceæ.

36, Beds for *S*axifràgeæ and Crassulàceæ, on rockwork.

37, Anacardiàceæ.

MONOPE'TALÆ.

Polycarpòsæ.

38, Pyrolàceæ,

39, Monotropàceæ,

40, *E*ríceæ,

41, *V*accinièæ. Rockwork may here be introduced.

42, *E*benàceæ.
43, *A*quifoliàceæ.
44, Beds for Primulàceæ, Nolanàceæ, *C*onvolvulàceæ, and *P*olemoniàceæ.

Epigynòsæ.

45, *C*aprifoliàceæ, with beds for Lobel*iàceæ*, Campanulàceæ, and Stellàtæ.
46, Building for North American or European animals or birds.

Aggregòsæ.

47, Beds for Compósitæ, *D*ipsàceæ, *Valerianàceæ*, &c.

Nucamentòsæ.

48, Beds for *H*eliotròpeæ, *B*oraginàceæ, Labiàtæ, and *V*erbenàceæ.

Dicarpòsæ.

49, Beds for Scrophulariàceæ, *S*olanàceæ, *Gentianàceæ*, and *A*sclepiàdeæ.
50, *O*leàceæ.
51, *J*asminàceæ; in which may be placed a building (52) for Chinese or Nepal birds or animals.

INCOMPLE'TÆ.

Rectembryòsæ.

53, Cupulíferæ.
54, *B*etulàceæ.
55, *U*rticàceæ.
56, *U*lmàceæ.
57, *M*yricàceæ.
58, *J*uglandàceæ.

Achlamydòsæ.

59, *S*alicàceæ.
60, *P*latanàceæ.
61, *B*alsamàceæ.

Tubiferòsæ.

62, *Santalàceæ.*
63, *E*læagnàceæ.
64, *T*hymelàceæ.

Columnòsæ.

65, *A*ristolochièæ.

Curvembryòsæ.

66, Beds for Chenopodiàceæ, Phytolaccàceæ, Nyctaginàceæ, &c.
67, Building for North American animals or birds.
68, Pit for bears, and enclosure where other huts or dens may be erected for animals from the north of Europe.

GYMNOSPE'RMÆ.

69, Coníferæ.
70, *T*axàceæ. As stone will most probably be found in this hill, a great variety of rockwork may be made amongst the trees, for ferns, mosses, &c.
71, 72, 73, Beds for monocotyledonous plants, divided into the following groups: — viz., Epigynòsæ, Gynandròsæ, Hypogynòsæ, Retòsæ, Spadicòsæ, and Glumòsæ.
74, Waste water from the pond, where numerous small places may be made for the aquatic genera of plants; and also on this stream may be made a place for beavers, and another for otters, if the Society should possess these animals.
75, Lawn, interspersed with clumps of trees and single specimens.
76, The stream divided amongst rockwork for ferns, mosses, &c.
77, Low pond for North American aquatic fowls.
78, Reservoir, on which may be kept European aquatic fowls. — Both ponds will require a light wire fence around them, to prevent the straying of the birds.
79, Flower-garden, to be kept constantly supplied with flowering plants: *a a*, fountains.
80, Terrace, elevated about 5 or 6 ft. above the level of the flower-garden.
81, Grass terraces sloping down to the garden southwards.
82, Conservatories; viz. *a*, for tropical plants, planted in the borders of the house; *b b*, for green-house shrubs, planted in the borders of the houses to obtain fine specimens; *c c*, two houses for green-house plants in pots; *d d*, two houses for stove plants in pots; *e*, under gardener's rooms; *f f*, fire, potting-sheds, &c.; *g*, tool-houses, &c.
83, Place for compost, rubbish, &c.
84, Propagation and experimental ground, having a range of low houses or pits (*h*).

85, Curator's house and yard, where there should be an office for the curator, and for general business, with a room sufficiently large for the accommodation of the committee.

86, Entrance gates and lodges, with a small yard to each lodge.

87, Kitchen and fruit-garden.

88, Wall and border for half-hardy shrubs, which will be nearly hid from the lower parts of the garden, by the trees inthe orders Pomàceæ and *Amygdàleæ*.

89, Private entrance from Duerden's gate.

90, Private entrance from Burley. Both of these entrances will be convenient for the getting in of composts, &c.

91, Reserve-ground for trees and shrubs; a triangular piece of ground, extending 50 yards further than I have room to show it in this reduced plan.

Plan fig. 36.

a, Elevation of conservatories.

b, Elevation of terrace.

c, Ground plan of conservatories, showing the pillars for the support of the domes.

d, Terrace.

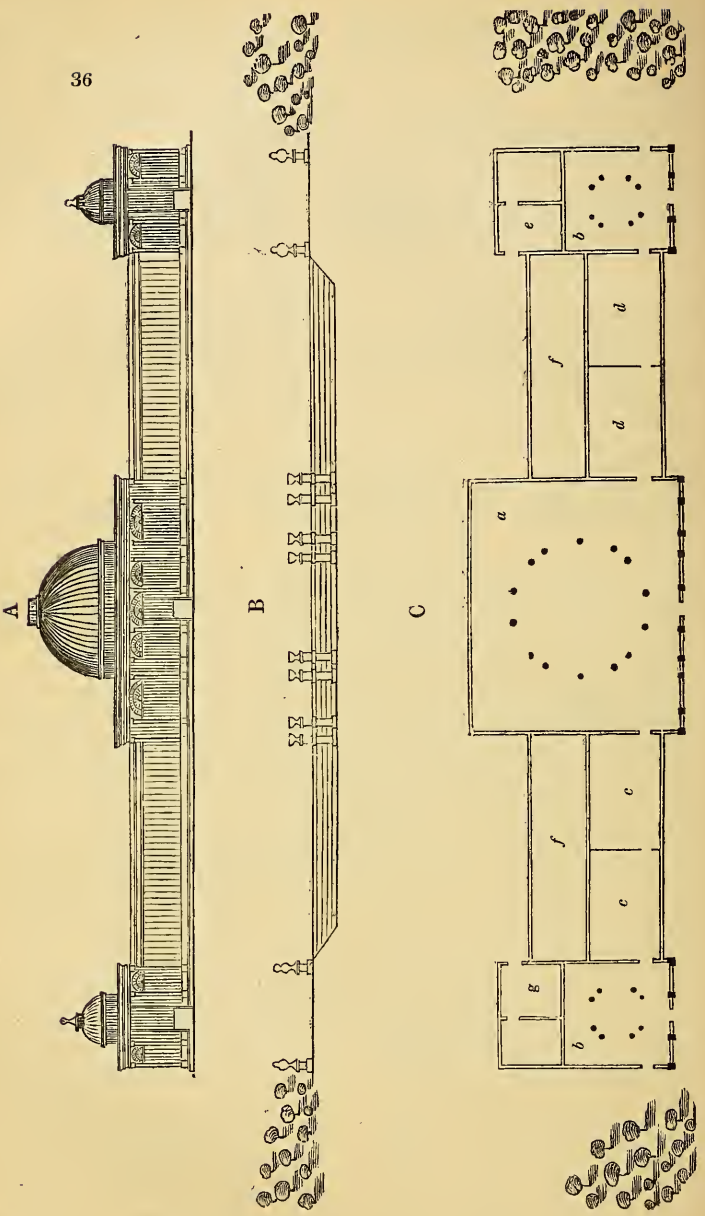
e, Flower-garden: *a a*, fountains; *b b*, &c., vases, or other architectural ornaments; *c c*, grass terrace, sloping to the garden from the dotted line, and likewise sloping to the lawn (75).

The clump of trees on the grass (Plan No. 1., *fig.* 35.) is intended for flowering shrubs. A few single trees will be required; but they may be better arranged on the ground than on a plan.

The first thing to be done is, the proper draining of the land; and likewise to make a large main drain, commencing in the kitchen-garden, running under the conservatories, terrace, flower-garden, and down the centre walk into the low pond, with sufficient grates into it for the water to be readily admitted after a shower of rain. The rain-water, and the drainage from the land, will generally be sufficient for the low pond.

After draining the land, water for the conservatories, fountains, &c., must be procured from Bainbrigg's and Potter's springs, by making a large pond as a reservoir (78), well puddled all round; and, if sufficient water cannot be procured at the two springs, I should suggest the boring for water near Potter's spring, as I have no doubt but a good supply might be obtained.

From the reservoir a main pipe, $1\frac{1}{2}$ in. diameter, must be laid to the flower-garden; with two branch pipes, $\frac{3}{4}$ of an inch diameter each, to the fountains, and one pipe, $\frac{3}{4}$ of an inch diameter, to the conservatories and curator's house. From the centre of the flower-garden, the main pipe may diminish to 1 in. diameter, and be carried down the centre walk to the *jet d'eau* in the low pond (77). A drain must be provided to receive the waste water from the fountains; but, by inserting a $\frac{1}{2}$-in. pipe into the basin of waste water of the west fountain, sufficient water may be taken to supply the winter repository; and all the buildings on that side of the garden, down to the bear pit, and then conducted in a drain to the low pond. Another $\frac{1}{2}$-in. pipe


36
A
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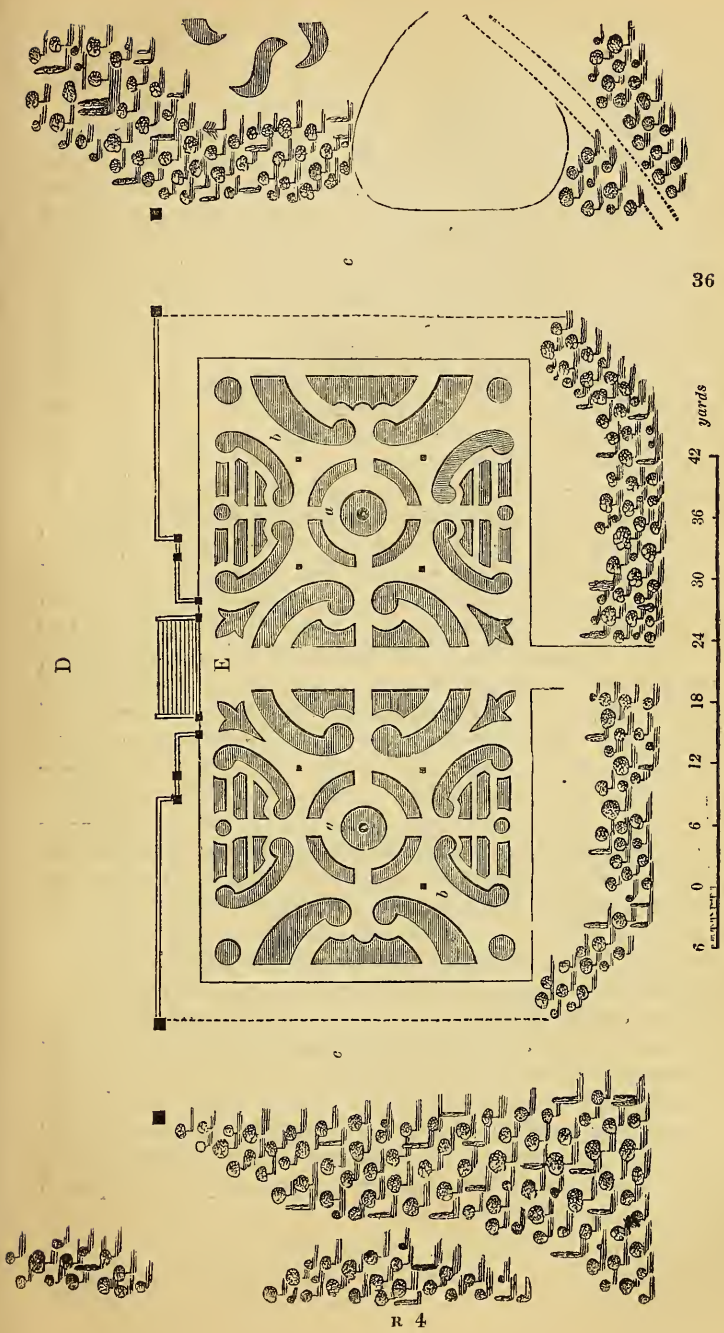
36
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42
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may be put into the last fountain, to supply all the buildings on that side of the garden. All the rain-water which falls on the conservatories to be conducted in spouts to a tank in the propagation ground, for the supply of the kitchen-garden, &c.

Fencing. — The kitchen-garden will require a wall 12 ft. high, and the wall for half-hardy shrubs may be 10 ft. high; the most effective, and least expensive, fence for the rest of the garden will be a 6-ft. wall, of hammer-dressed stones, pointed with mortar, and a holly hedge planted inside.

Estimate of the Expense of executing the foregoing plans, in a substantial and workmanlike manner: —

Conservatories, terrace, and flower-garden -	£6800
Walls for the kitchen-garden, and half-hardy shrubs -	740
Dry wall and holly hedge - - -	82
Winter repository - - - -	410
Curator's house and office - - -	380
Bear pit - - - - -	60
Nine buildings, chiefly having the front elevation of rustic-work - - -	600
Top pond, a reservoir - - - -	65
Low pond - - - - -	23
Pipes for conveying the water - - -	120
Trenching the ground for the arboretum, forming and completing the walls, &c. - -	350
Do. do. kitchen-garden - -	75
Draining the grounds - - - -	50
	£9755

The preceding estimate includes all the necessary works and buildings, of any considerable expense, for the completion of the gardens (except the purchasing of animals and plants); the entrance and roads, I presume, being included in your 4500*l.*, as mentioned in the advertisement for plans. I have given the different items of expense, that the committee may be better enabled to commence with the works most beneficial to the Society; as, perhaps, the whole of the buildings for animals may not be wanted for two or three years.

The large centre conservatory for tropical plants will be the most expensive erection, and may be deferred until the Society possess sufficient specimens to stock it with; so that all the necessary buildings, for the first year or two, may be completed for 3000*l.* under the total estimate.

Esholt Hall, Oct. 12. 1837.

ART. V. *On the Planting of Larch, as a national Object.* By C. C.

MY attention has of late been seriously called to the very important subject of the cultivation of larch, as an object of national economy; and the more so, as I foresee that the period is not far distant when that species will be found to be, on the whole, the most valuable of the European trees. Amongst the many anomalies presented by our extraordinary situation on the theatre of the world, none is, assuredly, greater than that (depending, as we do, on our naval power for the preservation of our vast possessions, and the influence derived from them) we should not only be extremely deficient in many of the most essential articles of equipment of a navy, but that we should overlook the most obvious mode by which the want might be supplied.

Probably, few of my readers are aware of the great scarcity of timber which existed during the war, which was partly owing to the previous mismanagement of the royal forests, but still more to the gross abuses of the government, which infected the civil branch of the naval administration. All that is necessary to observe on this subject is, that at this moment the interest of the countless millions that were sunk in that gulf are paid out of the produce of the national industry, and annually deducted from the national capital. The consequence of these abuses is, that, after twenty years of peace, we are obliged to ransack the forests of Scandinavia, of Russia, and of Prussia, of Canada, of Honduras, of Sierra Leone, of Pegu, of Norfolk Island, and New Zealand, in quest of an object of primary necessity, which, I shall show, could be produced at home with comparative ease. These reflections have been more strongly impressed upon my mind by observing that the naval administration, highly to their credit, are, in addition to the far-spread territories we have mentioned, adding Italy to the list, and contracts are now advertised for, on a large scale, for larch the produce of that country.

Most people are familiar with the princely undertakings of the Dukes of Atholl, who, by a steady system of moderate expenditure, have converted the barren mountains on the Tay into a future source of revenue so vast, that the late duke intimated that the holder of those forests would be as rich, in a certain number of years, or richer than any other individual in Britain! I can conceive nothing more truly noble than the employment of possessions for such a purpose, which places the Dukes of Atholl by the side of the Duke of Bridgewater, the Duke of Bedford, and other really great men, who, whilst laying the foundation of enormous wealth for their families, have conferred a lasting benefit on the country. I can pay no greater homage to this great example than by recommending and urg-

ing its adopting by the nation. I therefore propose that tracts of land should be purchased in the north of Scotland, and appropriated to the growth of larch on the largest scale, to the exclusion of every other tree. I scarcely see any limit to the scale on which, in future times, the principle might be carried; but I should commence with, say, 30,000 acres; the purchase of which, and the planting and enclosing in the first instance, would be the sole expense, and the management, for some years, would cost very little; the planting, and every thing else of outlay, being done by open competition, on the most economical scale. The planting should be at open distance, so that no thinning would be required until the operation could be made to nearly defray the expense. In about twenty years, the land might be let as sheep-walks, and would pay a good rent, which would annually increase, and, at last, be a source of very productive return, besides other advantages to be derived from it.

The reasons why I recommend the purchase to be made in the north of Scotland are these: the land is of much less value, and the outlay much less in consequence. The 40,000 acres devoted to oak in the New Forest represent a territorial value probably twenty times the same extent on the Grampian range, which in a given time would produce a value not much inferior to it per acre. Besides this, there are positive reasons for preferring the mountains of the north. The larch certainly grows better there than in the richer land in England. I believe the causes are, that the Scottish mountains are primary, and chiefly of the igneous rocks, which are warmer in their nature, and have more influence in some descriptions of vegetation than others. Again, the sides of the mountains are generally precipitous, and afford the drainage so necessary to the pine tribe; and the very circumstance of the depth and precipitous form of the valleys neutralises the effects of the prevailing winds, which are so prejudicial to the larch. These reasons I hold to be conclusive on the subject.

Some difficulty may possibly be found in the purchase of large tracts of land contiguously. In this case, separate parcels, not too small, nor too far apart, might answer the purpose; but two points should be specially attended to: that the land be of good quality for the growth of trees, that no other be bought, and that no purchase be made till the land has undergone a strict and careful examination. Also, that good communication by water, if possible, be secured, for the purpose of future shipment of the timber.

It may be objected, that these undertakings are not suited to government, from the abuses they lead to, and that they are better left to individuals. I acknowledge the principle, in general, to the fullest extent; but this is an exception, perhaps

the only one. In the first place, very few individuals are able to lay out so large a sum of money in a speculation, which, for so many years, will return no interest; and those who have the means prefer investing their money where the chance of increase of parliamentary influence may be greater than in a country which offers no such inducements. The return is too distant to engage the attention of companies; and, even if it were undertaken either by individuals or societies, what guarantee is there that they might make a proper use of the vast power which such possessions would place in their hands? In the case of individuals, I know too well that there is no fortune, however great, that may not be dissipated by extravagance. What is become of the Caledonian forests, in the same vicinity? Caprice, the existence of a minority, the avarice of a possessor, all may occur to influence the management of the proprietor. On these accounts, and because by government alone can be executed a system of the extent I contemplate, I venture to urge the adoption of it; of course, under a strict parliamentary control. If the expense of advancing the necessary capital be considered, I should say, without hesitation, alienate portions of the crown lands, which are now of little use, and apply the proceeds to the purpose. The object is worth any sacrifice. At present, we are the only power without national forests of extent proportionate to the demand; and we are in the most miserable dependence on foreigners, not only for the materials for ship-building, but for the very roofs and floors of our houses. I have no hesitation in saying that, by the adoption of the system above proposed, "the wastes of Caledonia stern and wild" might be made not only to supply our wants, but to make others our tributaries in this, as they are in so many other respects. The expenditure would be a mere trifle, compared to other fancies we have indulged in. What has the Rideau Canal cost? What was the object of it, but to preserve a sort of monopoly of the miserable produce of New Brunswick, and to carry out that masterpiece of administration for excluding good timber, and forcing the use of bad? Where are the odd five millions of Lord Stanley, making twenty in all, paid to bribe people for following their true interests? I earnestly hope to see the public attention called to this momentous question, and that in my generation, which has witnessed so many changes, I may see the foundation laid of a new source of national wealth; and that those who come after may only wonder at the folly which caused us so long to overlook such advantages.

ART. VI. *On the Cultivation of Exotic Ferns.* By J. HENDERSON, Gardener to the Right Hon. Lord Viscount Milton, M.P., at Milton, near Peterborough.

As the cultivation of exotic ferns is becoming every year more general in this country, a few observations on the means by which they are at present procured from foreign countries may be acceptable to some of your readers. The difficulty of importing in boxes plants so delicate as are the whole tribe of ferns is well known: few of them will survive a passage of long duration, and it is only with the more robust sorts that success in that way is at all attainable. Mr. Ward's plan, of glazed cases, affords a better, indeed the only, chance of importing plants of the more delicate sorts, and will, no doubt, be successful when that plan can be had recourse to; but, if plants cannot be procured by either of these ways, they may be sometimes obtained by means of seed.

The propagation of ferns from sporules, or, as it is termed in practice, from seed, which is now generally understood, would greatly facilitate the introduction of exotic ferns, if seeds collected in a proper state could be procured from foreign countries; and the object of this communication is to show that the want of success in raising ferns from foreign-collected seed is chiefly owing to the manner in which it has been gathered and secured.

The sporules, or seeds, of ferns are exceedingly minute, and appear to the naked eye like very fine dust; while the capsules, or thecæ, which are about the size, and have much the appearance, of the small seeds of some flowering plant, ere frequently mistaken for the real seed. These capsules, if open, seldom contain any seeds: a few may be found lodging among them if the frond has been gathered before they have burst open; but as, in that operation, the capsule separates into two halves, and opens with a jerk, the contents are at once dispersed, and generally thrown a short distance off. If, therefore, perfectly ripe capsules are rubbed from a frond, and, on examining them with a glass, they are found to be open, it may be concluded that very little seed will be present: it is owing to inattention to these matters that what is frequently received for fern seed proves to be only dry empty capsules.

In collecting fern seed, a frond should be selected that is not very far advanced: if the capsules near the base have turned brown, and those at the point are still green, the frond will contain plenty of seed. This frond, or a part of it, should be gathered, folded up, or rolled together, and put into a well-secured paper bag, on which the name, if known, the soil and situation in which it is found growing, and any other interest-

ing particular relating to the plant, should be written: the bag may then be put in a dry place until it is forwarded to its destination. Or the frond may be spread out, and dried as a specimen, taking care that the paper in which it is laid be well secured at the edges, to prevent the seed from escaping.

By observing these directions, which would be attended with little trouble, there would in all cases be a certainty of securing some seed; and the advantage of having a portion of the frond, however small, to compare with the young seedlings will at once be manifest. It is not maintained that plants can be raised from every packet of fern seed; even when collected under the most favourable circumstances, ferns frequently produce abortive seed, and some plants appear never to produce seed that is fertile, or, perhaps, only under certain conditions; good seed may, however, generally be known by placing a portion of it under a high magnifier: if opaque, it is, in all probability, good; if transparent, the probability is that it is bad; good seed is, also, more glossy, when viewed in the mass, than bad. These remarks apply only to new seed, and not to old: the latter, however well it may look, will generally, except in a few instances, fail to vegetate. Ferns abound in tropical countries, and only a comparatively small number of species have yet been introduced into the British gardens; there is, therefore, a rich harvest to reward any one who has the means and the inclination to contribute to the advancement of so interesting a branch of botany.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

A sure and economical Method of managing Cape Heaths. — Keep them all the year round in cold-frames or cold-pits, the frames plunged up to the brim, and the bottom on which the sand is placed being thoroughly dry. "The lights, in summer, should be kept off during dull and cloudy weather, both night and day; but, during clear sunshine, the plants should be only uncovered from four in the afternoon till nine the next morning; taking care, in the middle of the day, to have the sashes on, and to give plenty of air. In winter, the sashes must be drawn off, in mild dry weather, daily, and covered with mats, or some other covering, during frosty nights, and in very severe weather. When there is no sunshine, they will also require sometimes to be kept on, and some dry litter or other loose material to be put around the frame. The advantages derived from plunging them in the sand are, that the frost never reaches farther than the surface of the soil; that they will want little or no water from November until the middle of February; and that, even during summer, they will not require water near so often as if they stood upon the stage of the green-house, or out of doors, along with the green-house plants." The rest of the treatment is conformable with the mode of potting recommended by Mr. M'Nab of Edinburgh. Mr. Cameron, the author of the very excellent paper from which the above extract is made, justly observes that the want of success in growing heaths "for the most part arises from an insufficient circulation of air, or from not keeping the soil in the pots in a medium state of moisture; the roots being

apt to perish if kept for a short time too moist; and, if allowed to get too dry, the young fibrous roots will share the same fate, more particularly if the pots are exposed to the direct rays of the sun." (*Fl. Cab.*, vol. ii. p. 9.)

*Tropæ*olum tuberòsum*, introduced in 1834, but only lately figured by Maund and Paxton, is the most ornamental species of the genus. It may be considered about as hardy as the common potato; and what particularly deserves attention in future experiment is, that its tubers are eatable, and agreeably flavoured.

Mr. Lambert was the first, we believe, who grew these tubers in England, and presented them at table; and Mr. Cameron has lately written an excellent paper on their culture, which will be found in No. xiv. of the *Floral Cabinet*. Mr. Cameron planted about a dozen tubers in April, before they began to vegetate, and he raised other plants from cuttings, and kept them under glass till they were nearly a foot high, and turned them out in July. Both modes succeeded equally well, and the twenty-five plants, when taken up in November, were found to have produced half a bushel of tubers. The sets were planted 3 ft. apart, and the stems were so luxuriant, that they covered a space of at least 6 ft. in circumference. In the Epsom Nursery, some plants which were turned out were staked, like peas, in consequence of which each formed a dense mass of verdure, 4 ft. high, and full 6 ft. in diameter. (*Paxt. Mag. of Bot.*, vol. v. p. 50.) When boiled, the tubers are of a soft pulpy substance, and, Mr. Cameron says, "in taste resembling sea-kale, mixed with the hot taste of garden cress." The council of the Caledonian Horticultural Society, as the reader will find by turning to p. 106., consider the tubers to be of very delicate flavour, resembling the richest asparagus." Mr. Young of Epsom found the tubers, "when boiled, superior in flavour to any potato, though disposed to be watery, and not boiling firm." We would strongly recommend the culture of this plant, for the purpose of ascertaining whether anything can be made of it as an esculent vegetable. — *Cond.*

To prepare Gooseberry Cuttings which shall not throw up Suckers. — Instead of rubbing off the buds in the usual manner, cut them out with a shield of solid wood: one third of the cuttings so prepared will perish, but those that live will never throw up suckers; the adventitious buds which produce them being removed. "The reason of so many of the cuttings perishing is, that cuttings made by the ordinary process send out roots from the remains of every eye under ground, as soon as the growing season commences; whereas, by the method now recommended, every vestige of the bud is removed, and the roots issue from every part of the stem, but are sent forth at a much later period of the season; and, consequently, the buds drop off before the cuttings are furnished with roots for their support. The usual depth to plant the cuttings is from 4 in. to 6 in." (*Ibid.*, vol. ii. p. 26.)

Propagating Roses by Cuttings of the Roots. — Take long, fleshy, thick roots, and cut them into lengths of from 2 in. to 3 in. each; in the latter end of February, lay the cuttings flat, about 4 in. apart, in a bed of very rich soil. Cover them with 1 in. of light soil, 1 in. of good rotten cow-dung, and 2 in. of common soil. "Each root will send up one or more strong shoots, producing abundance of fine healthy fibrous roots among the dung. They should be transplanted singly in winter, and will flower freely the ensuing season. Most of the hardy roses may be obtained in the same way, but it is most applicable to the moss rose and rose unique." (*Mr. Cameron* in *Fl. Cab.*, vol. ii. p. 25.)

Art. II. *Retrospective Criticism.*

Mr. Niven's Experiments on Vegetable Physiology. (p. 161.) — Rejoicing to see Mr. Niven engaged in the physiological experiments detailed in the April Number of this Magazine, I am only complying with his request in offering him a few observations and suggestions connected with his enquiries.

1. As regards the flow of the crude sap. It has been already established,

that this material abounds chiefly in the innermost layers of the wood; and Biot has shown that its flow is chiefly in an upward or downward direction, according to the state of the atmosphere. I would suggest, that, as the central portions of trees are deprived of vitality, they cannot be otherwise considered than as porous channels, through which the water imbibed by the roots (and probably by the leaves, also, in rainy weather) is conveyed: when lodged there, it serves as a reservoir, from which those portions of the tree (as the leaves and outer layers) in which vitality resides are constantly furnished with the materials necessary to the elaboration of the proper juices upon which their nutrition depends.

2. With respect to the developement of roots from the uppermost rim, and branches from the lowermost, round the ringed spaces on the trunks of trees, when kept moist in the way described, I conceive these combined results are strictly identical with what takes place in two separate and ordinary operations: I mean in the developement of roots at the base of a cutting, and the developement of leaf-buds round the surface of the stool of a felled tree. Suppose the trees in the present case had been cut completely through, their stumps left in the ground, and the upper portions planted; the compound results obtained by Mr. Niven would then be referred to the two separate ones here alluded to. The multiplication and variation in the modes of obtaining these results are always interesting and useful; but I conceive no new fact has been elicited in these experiments, by which any additional light is thrown upon the mode in which wood is developed. Whilst connecting this developement of branches in Mr. Niven's experiments with the ordinary developement of buds from stools, I may, perhaps, mention an analogous result, which my brother showed me lately. He had sown a number of orange seeds in a pot; and, as they came up thickly crowded, he cut down most of them close to the ground, expecting that this would cause them to die, and leave space for the two or three he wished to keep. He was surprised to find the surface of the wound heal over, and in all cases buds develope themselves *within* the margin.

I suspect Mr. Niven will find that none of the trees which he has ringed deeper than the liber will live more than three or four years. — *J. S. Henslow. Cambridge, April* 3. 1838.

Art. III. *Queries and Answers.*

Do decaying Leaves absorb, and assist in evaporating, the Sap of the Plant? (p. 206.) — A correspondent of yours, J. M. C. N., in the April Number of this Magazine, p. 207., in referring to a remark on "withered leaves," in Maund's *Botanic Garden*, has connected my name with that publication, confounding it, as I presume, with the *Botanist*, which is the only work of Mr. Maund's in which I have consented to render him any assistance. I conceive Mr. Maund must be correct in recommending the speedy removal of leaves which have either rotted or are evidently dying from some injury; but I can hardly suppose that he intended to generalise to the extent which your correspondent imagines, or would recommend the removal of withered leaves from trees where Nature teaches they should remain as a winter clothing to protect the young buds. I should suppose that the withering of leaves must generally be taken as a clear indication that they are no longer, or only very slightly, performing their natural functions, both of exhalation and absorption of the sap. — *J. S. Henslow. Cambridge, April* 3. 1838.

An Article on the forcing of Flowers in Winter, such as roses, lilacs, the deciduous azaleas, hyacinths, &c., as practised in the London nurseries, would be very useful to many country readers of this Magazine. A list of the best varieties for forcing would increase the value of the paper; and the routine treatment of the plants throughout the year might also be included. — *J. B. W.*

Woodlice, or Millepedes. — Can you tell me of any way to destroy woodlice, or millepedes ? The bark in my pine-stove swarms with them ; and I fancy they eat the roots of the plants. — *J. B. W.*

Art. IV. *Covent Garden Market.*

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbage Plants, or Coleworts, per dozen	0 6 0	0 8 0
Broccoli, White, per doz. heads	0 2 0	0 6 0
Legumes.		
Peas, forced, per pottle	0 16 0	0 18 0
Kidneybeans, forced, per hun.	0 1 6	0 2 6
Tubers and Roots.		
Potatoes per ton	3 0 0	4 0 0
Potatoes per cwt.	0 3 0	0 4 0
Potatoes per bushel	0 1 6	0 2 0
Kidney, per bushel	0 1 9	0 2 3
Scotch, per bushel	0 1 6	0 1 9
New, per pound	0 2 0	0 3 0
Carrots, old, per bunch	0 0 5	0 0 6
Parsneps, per dozen	0 0 9	0 1 6
Red Beet, per dozen	0 0 9	0 1 6
Skirret, per bunch	0 1 6	0 0 0
Scorzonera, per bundle	0 1 3	0 1 6
Salsify, per bunch	0 1 3	0 1 6
Horseradish, per bundle	0 1 6	0 4 0
Radishes :		
Red, per dozen hands (24 to 30 each)	0 1 6	0 2 0
White Turnip, per bunch	0 0 4	0 0 6
The Spinach Tribe.		
Spinach per sieve	0 1 3	0 2 0
Spinach per half sieve	0 0 9	0 1 0
Sorrel, per half sieve	0 1 0	0 0 0
The Onion Tribe.		
Onions, old, per bushel	0 8 0	0 10 0
Leeks, per dozen bunches	0 2 0	0 3 0
Chives, per dozen roots	0 1 6	0 2 0
Garlic, per pound	0 0 8	0 0 10
Shallots, per pound	0 1 0	0 1 6
Asparaginous Plants, Salads, &c.		
Asparagus, per hundred :		
Large	0 6 0	0 9 0
Middling	0 2 0	0 4 0
Sea-kale, per punnet	0 1 6	0 3 6
Seconds	0 1 0	0 1 6
Small	0 0 9	0 1 0
Lettuce, per score :		
Cos	0 6 0	0 0 0
Cabbage, per score	0 0 9	0 3 0
Celery, per bundle (12 to 15)	0 1 0	0 2 0
Small Salads, per punnet	0 0 3	0 0 0
Watercress, per dozen small bunches	0 0 6	0 0 9
Pot and Sweet Herbs.		
Parsley, per half sieve	0 1 0	0 1 6
Tarragon, dried, per doz. bun.	0 2 0	0 0 0
Fennel, per dozen bunches	0 3 0	0 4 0
Thyme, per dozen bunches	0 6 0	0 0 0
Sage, per dozen bunches	0 6 0	0 12 0
Mint, per dozen bunches	0 4 0	0 6 0
Peppermint, dried, per dozen bunches	0 1 0	0 0 0
Marjoram, dried, per doz. bun.	0 1 0	0 0 0
Savory, per dozen bunches	0 1 0	0 0 0
Basil, dried, per dozen bunches	0 1 6	0 0 0
Lavender, dried, per dozen bunches	0 2 6	0 0 0
Tansy, per dozen bunches	0 1 0	0 0 0
Stalks and Fruits for Tarts, Pickling, &c.		
Rhubarb Stalks, forced, per bundle	0 0 4	0 0 10
Edible Fungi and Fuci.		
Mushrooms, per pottle	0 0 8	0 1 0
Morels, per pound	0 14 0	0 16 0
Truffles, English, per pound	0 12 0	0 0 0
Fruits.		
Apples, Dessert, per bushel :		
Nonpareil	1 0 0	0 0 0
Baking	0 3 0	0 5 0
American	1 0 0	0 0 0
Almonds, per peck	0 7 0	0 0 0
Strawberries, per gallon (2 pottles) about 3 pints	0 0 6	0 1 6
Pine-apples, per pound	0 10 0	0 16 0
Grapes, hot-house, per pound	0 12 0	1 0 0
Cucumbers, frame, per brace	0 3 0	0 6 0
Oranges per dozen	0 1 0	0 3 0
Oranges per hundred	0 7 0	0 16 0
Bitter, per hundred	0 6 0	1 4 0
Lemons per dozen	0 1 0	0 2 0
Lemons per hundred	0 6 0	0 12 0
Sweet Almonds, per pound	0 2 3	0 3 0
Nuts, per bushel :		
Brazil	0 16 0	0 0 0
Spanish	0 16 0	0 0 0
Barcelona	1 2 0	0 0 0
Cob	0 10 0	0 0 0

The supplies to the market continue very limited. From the general destruction attendant on the late severe winter, and the present cold and cheerless season, we cannot expect the spring to be genial, especially as regards the supply of vegetables. At present, we are receiving some broccoli from Penzance, which has realised good prices, consequent on the absence of all competition by the London gardeners, whose crops have been entirely destroyed. Some asparagus from the open ground has been furnished, but in very small quantities; and the quality so inferior, as not to induce the dealers to give anything like a high price. A few forced peas have been offered ; but, from the absence of the nobility, &c., from London during the Easter recess, did not meet with a ready sale at the price demanded. — *C. G. M., April* 24. 1838.

THE

GARDENER'S MAGAZINE,

JUNE, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *On Measuring growing Timber.* By WILLIAM BLACKADDER, Land and Timber Surveyor, Glammis, Forfarshire.

IT is generally known that timber, in its rough state, is not measured in such a manner as to ascertain its actual cubical contents: but, for an approximation to what it may contain after being squared up, the girt, or circumference, is taken with a cord or tape-line, from which a deduction is made for the bark, usually in the proportion of 1 in. per foot of the girt; and then one fourth part of the remainder, or quarter girt, thus rectified, is held to be the side of the square; and this, being squared and multiplied by the length, gives the contents according to customary measure.

The measurement of growing timber is ascertained in a similar manner; but, from the difficulty of getting at the measurable length, and more particularly at the average point to take the girt, it is in practice generally done by estimation; and sometimes by taking the girt at a point within reach, to serve to correct the estimation with the eye; and, certainly, persons of experience frequently perform it with much precision, and hence have a great advantage over others of less tact. Numerous modes have been suggested to get the better of this difficulty, and, from time to time, laid before the public. The two I am now to describe I have never seen in print, though, from the simplicity of their principles, I have little doubt but that they may be known to many others, besides those who have drawn their information from my practice, which with the one has been upwards of, and the other for nearly, twenty years.

First Mode. — For very large-sized trees, and of great length, as well as uniformity in their bole, and when either standing singly, or not so crowded but that their measurable height may be seen at an equal distance back from their roots, the height can be quickly and accurately taken with that useful little instrument the pocket sextant, by setting it at the angle of 45°,

and stepping backwards until the reflected image of the point at which the height is wanted coincide with a mark made a few feet above the root of the tree, level with the eye of the observer: the latter height being added to the observer's distance from the centre of the root of the tree, is equal to, or gives, the height wanted. The next operation is to find the diameter at middle height, or at such other point where the most correct average appears to be; and generally the readiest mode to do this is, for the observer to keep on the same spot where the height was found; standing at which, let the reflected image of one side of the tree, at the point wanted, be brought to coincide very exactly with its opposite side, as seen by direct vision; and thus the angle which the diameter subtends will be found; and, by taking the vertical angle to the same point, the data will thus be obtained for finding the diameter, by the rules of trigonometry; and the diameter being obtained, hence the circumference; and, finally, the quarter girt, and the measurable height, being also obtained, thence the size of the tree by calculation, or the ordinary tables, or slide rule, or decimal multipliers. (For various other modes, see Dr. Olinthus Gregory's *Mathemat. for Pract. Men*, some of which are very neat.)

But, as customary measure is not founded upon strict mathematical principles, it is unnecessary, in ordinary cases, to resort to the strict rules of trigonometry; and both a ready and sufficiently correct approximation may be made, if the diameter has been taken at, or nearly at, middle height, and the observation made from the point whence the height was ascertained as above described, by adding to the observer's distance from the tree one tenth part thereof, which will give the distance from his eye to the point where the diameter is taken; and, by multiplying the distance into the natural tangent of the angle which the diameter subtends, the diameter will be found with sufficient correctness.

As the diameter of trees, when the observer is at the above distance, seldom exceeds an angle of 5°, the natural tangents for every minute up to 5° can be marked in a memorandum book to the extent of three figures; and, in like manner, the natural secants for every 15′ between 15° and 30° might also be marked; and, by using them as multipliers into the base or observer's distance from the tree, the distance to the point where the diameter is taken will be given more correctly than by adding one tenth, as above noticed.

The following example will make the foregoing description understood:—A few years ago, having been requested to measure the large larch tree at Dunkeld, the following observations were taken:—The ground being level, upon one side of the tree a small piece of paper was fixed, 5 ft. above its roots; and, stepping back with the sextant set at 45°, the reflected image of the top

of the tree coincided with the paper at 95 ft. distance; which, with the 5 ft. below the paper, made the total height of the tree 100 ft., being 10 ft. more than it had always been previously considered to be. The measurable timber height was evidently seen to be beyond a broken stump; but as, above that point, it was of a very coarse description, from the numerous large side branches striking off, that point was assumed, and found, by stepping forward with the sextant set at 45°, to be 61 ft. above the mark, and thus 66 ft. above the root. An observation was then made for the diameter at middle height, and found to range between 2° 45′ and 2° 58′, there being some inequalities at the place where it required to be taken; but most of the observations gave it above 2° 50′. The vertical angle was 25°; and, the secant of 25 being 1·10, which, multiplied by 61, gives the distance from the eye to the point whence the diameter was taken to be 67 ft., taking the medium angle for the diameter (2° 52′), its tangent is ·05007; which, multiplied by the distance (67), gives 3·35469 for the diameter; and 3·355 × 3·142 makes the circumference 10·5414, or say 10 ft. 6¼ in.; and, making an allowance of 10¼ in. for the bark, leaves 9 ft. 8 in. for the rectified girt; the quarter of which is 2 ft. 5 in., which, being squared and multiplied by the length or height of 66 ft., makes the cubical measurement to be 386 ft.

Some other observations were taken thus: — The diameter at the top of what was taken for the measurable timber was found to subtend an angle of 1° 20′; and, the vertical angle being 45°, the secant of which is 1·41, which, multiplied by 61, makes the distance 86 ft.; and this, multiplied by the tangent of 1° 20′, being = ·0233, makes the diameter at that point 2 ft.; and which, multiplied by 3·142, makes the circumference 6·284, or 6 ft. 3 in., leaving 5 ft. 9 in. for the rectified girt, after allowance for bark, and the quarter to be 1 ft. 5 in. In like manner, the diameter near to the ground subtended 4° 30′. The tangent is 0·787 × 62; the distance gives 4·8794 for the diameter; and, being multiplied by 3·142, makes the circumference to be 15·331, equal to 15 ft. 4 in.; allowance for bark, 1 ft. 4 in., leaves 14 ft. for the rectified girt; the quarter of which being 3 ft. 6 in., and the quarter at the top being 1 ft. 5 in., the medium is 2 ft. 5½ in.; which, being squared and multiplied by the height, makes the cubical contents of the tree to be 396 ft.

An observation was taken for the diameter at the mark level with the eye (being 5 ft. above the ground), for the satisfaction of the party who was present; which was found to be 3° 40′, which makes the circumference 12 ft. 3 in. It was tried by the tape-line, and found to be 12½ ft. At 18 in. above the ground, the tree measures 16 ft. round; but this is occasioned by some inequalities; and the angle of 4° 30′, for the measurement at the

base, was taken a little above that point. As there was some measurable timber above the point assumed for the observation, although of a coarse description, this celebrated tree, in round numbers, may be said to contain 400 cubical feet by customary measure. In spring, 1831, when this measurement was made, the tree was ninety-five years old, having been planted in 1736. There is another, within a few feet of it, of nearly the same dimensions.

The soil is rich black loam, or garden mould, of good depth, incumbent upon an absorbent bottom of gravel, altogether the debris of primitive schists; and the earthy particles of the soil are of the same nature.

The situation is a level platform, about 30 ft., or so, above the level of the river, and some few hundred yards distant from it. The whole depth of the platform, down to the level of the river and below it, is gravel.

Some months afterwards, being near Crieff, I went to see the larches at Monzie, said to have been planted at the same period. There are five of them, growing near together, in a shrubbery, or old garden, close by the mansion, three of which are noble trees. My time did not permit me to measure them accurately; but, from some observations made with the sextant, they appear to range from 200 to 250 cubical feet, and are 90 ft. in height. The largest measures 21 ft. in girt at the base; but this arises chiefly from inequalities protruding forward, being portions of the roots.

This tree tapers very quickly in the bole, and does not carry up timber like those at Dunkeld: it is feathered with branches to the bottom, and more ornamental than the latter.

The soil is also garden mould, but upon an absorbent bottom, a little moist, and which is rendered more so by a pleasure pond close by their sides, and only a few feet below their level. The earthy particles of the soil are quite similar to those at Dunkeld, being the debris of primitive schists.

In 1832, Mr. Blair, the intelligent forester at Kippenross, near Dunblane, requested me to measure a large larch growing by the side of the Water of Allen, at the foot of the Kippenross garden, which was done with the sextant, by an operation similar to the one above detailed; and the contents were found to be 170 cubical feet; upon which he informed me, after he saw the result, that, in the previous year, he had it measured in the usual manner, by ascending it with a ladder to obtain the height and girt, and had made it 172 ft.

The soil is garden mould upon an absorbent bottom of gravel, about 10 feet above the level of the water, and within a few yards of it. The earthy particles have a small intermixture of the debris of primitive schists, but are chiefly derived from the

trap rocks of the Ochills, and a little of the red sandstone of the district, which form the basis of very excellent soil. The tree is still of vigorous growth. I had measured it, in 1817, exactly in the same manner; and in 1832 it was 15 ft. higher, and had laid on some 50 cubical feet of timber.

The height of trees, or any other object, is easily taken by the pocket sextant; and the angle of 45° is the most convenient to obtain it without calculation. Other angles are sometimes used for a different proportion of the base, but are not so certain in practice. It requires, however, some experience in the use of it to take the diameter correctly. But the trouble of acquiring this practice will be well repaid by the numerous uses to which this excellent instrument is adapted, for the purposes of practical men and amateurs. Some of them are fitted with a small level, which enables the height of the eye to be marked correctly above the root of the tree; but this can be done with sufficient correctness by suspending a plumb line from the sextant, and setting it at 90°; when the reflected image of the plummet upon the tree will mark the point; but, generally, for all the purposes wanted, the point can be ascertained with sufficient correctness by the eye.

Second Method. — It will be seen that the first mode is only for amateurs, or for very particular cases in business, such as the examples narrated; but this second mode is completely practical, and, I may say, even forced upon me from the necessity of the case. Having been employed to mark and value a large quantity of full-grown timber for a particular object, I found the mode of taking the girt within the reach of a man very unsatisfactory, the trees being of very great height. About the same time, having heard of Mr. Monteith's machine, and having got a sight of it, I saw that it was unsuitable for despatch in business, and felt much disappointed: but the thought immediately occurred, that the quarter girt might be as readily ascertained from the diameter as the circumference, and as correctly as customary measure requires. Thus, by the application of a diameter gauge, this would be done with the requisite despatch.

The gauge which I then devised, and, with few exceptions, have used for seventeen years, consists of three flat pieces of wood, 2 in. broad, and a quarter of an inch thick, put together so as to form three sides of a parallelogram; the largest side, or scale arm, being fully longer than the diameter of the timber to be measured; and the other two, or tangent arms, a little more than one half of the scale arm. One of the tangent arms is screwed fast upon the end of the scale at the zero, their interior edges forming a true rectangle at that point; and the other tangent arm is made to slip upon the scale with a rectangular motion, and can be drawn backwards and forwards by means of a cord

passing over small sheaves fixed for the purpose. A tubular handle is fixed below the point where the fixed tangent and scale arm join; into which a long pole being inserted, it is applied to the part of the tree at which the quarter girt is wanted: being light and easily managed, it can be sent up to any height; and, by drawing the movable tangent arm by means of the cord attached to it, the tree can thus be embraced within the three sides of a parallelogram; and, the scale arm being divided in such a manner as to show the inches and parts of the quarter girt, with allowance for the bark, it is thus ascertained at once. The height is taken in the usual manner, with small rods, in 5 ft. or 10 ft. lengths, fitted to each other by tubes of tin; and, while one assistant is applying the gauge, another is applying the rods. The principal directs and checks both, and marks them down in regular columns for the quarter girt and height respectively, leaving a blank column for the solid contents to be extended by means of a ready reckoner; and such is the despatch, that a surveyor, with two experienced assistants, would gauge all the growing timber in Kensington Gardens in a few days, nearly as fast as he would examine and estimate them, tree by tree, with the eye. I mean the boles, and not the branch timber.

The scale for the quarter girt is marked upon the under side, that it can be read off without bringing it down, so that various points may be taken, if wanted. Upon the upper side of this arm three other scales are marked: one shows the circumference, a second shows the diameter, and the third shows the quarter girt, without allowance for the bark. The use of the latter being, that, in any particular cases when the bark is either very thick or very thin, a different allowance may be made from the average one. It is also useful in gauging peeled timber when lying upon its side, as it does it much quicker than a cord or tape. The diameter and circumference scales are useful for ascertaining the fitness of a growing tree for any given purpose, at the height or length wanted. None of these scales are calculated so as to allow for the bark.

It will be necessary to observe, that, as the scales are all calculated on the principle that growing timber is truly cylindrical, and as it seldom happens that such is the case, the dimensions thus taken will not be exactly the same as by the usual manner with the cord, but are generally somewhat less. On the other hand, as the gauge can always be applied so as to give the dimensions in the manner it may be wanted to be squared up, it can thus give them more truly for that purpose; but, generally, unless in extreme cases, the difference between the cord and gauge is not more than between two practical measurers, or the same person at different times.

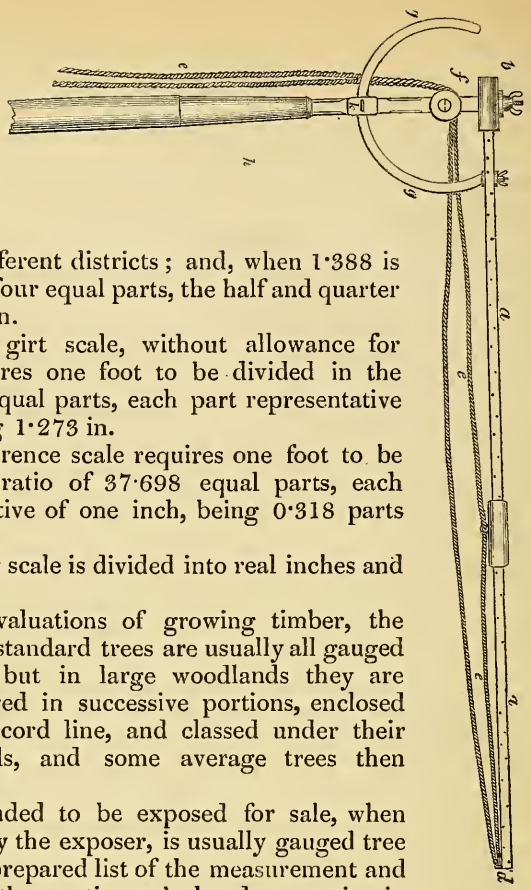
The gauge has also a movable joint upon its stalk, or handle, by which means it can be placed square to any limb or branch, so as to gauge them; but it requires to be seen, before any conception can be given of it. The one I have long used has this motion regulated by means of a semicircular piece of ironwork bracing the scale, and fixed tangent arms about 3 in. beyond their point of junction, which hence prevents it gauging timber below that diameter.

The same motion can be given by means of a ball and socket, which is both more elegant and universal. The other, however, is more useful, as it strengthens the gauge at a point much wanted. Mr. Cary, in the Strand, has one now in hand for me, with all the improvements which my experience of the defects, and his knowledge of construction, could suggest.

On this it is proposed to have decimal multipliers stamped upon the fixed tangent arm, so as to be always at hand when any calculations are wanted on the spot; and the same brass-work is to be made to fit different sets of wooden arms, so as to be suitable for large or small-sized timber; it being inconvenient to use a large gauge for the latter. I may also notice that, instead of a regular gauge thus constructed, I have frequently used one of a more ordinary description, being merely a flat piece of wood, 3 in. or so in breadth, for the scale arm; on the under side of which the divisions for the quarter girt are marked with strong black lines right across it, and having a fixed tangent arm nailed upon one end of it, down into a round short rod fitted for a tin tube, by which it can be sent up to any height by means of other rods. By applying it to the tree, and the observer standing so as to look square past it, the division which cuts the opposite side from the fixed tangent arm can be ascertained, and read off, although not so correctly as when the perfect instrument is used.

I have them also made in a rough manner, with all the scales on them, and the slipping arm to move by the hand, which are useful for gauging timber when lying on its side, being so much quicker than the ordinary way; and such a mode will be found useful by all artificers who work with rough or unsquared timber, as their common rectangular square might be readily fitted for this purpose.

The divisions for the quarter girt scale, allowing for the bark, are found by dividing one foot in the ratio of 8·64 equal parts, each division being 1·388 in.; and such divisions, when the gauge is applied to a tree, are representatives of the real inches of its quarter girt when rectified, as formerly noticed, for the allowance for the bark; butit will be obvious that this scale can be so varied as to make any other allowance which may be



customary in different districts; and, when 1·388 is subdivided into four equal parts, the half and quarter inches are shown.

The quarter girt scale, without allowance for the bark, requires one foot to be divided in the ratio of 9·425 equal parts, each part representative of an inch being 1·273 in.

The circumference scale requires one foot to be divided in the ratio of 37·698 equal parts, each part representative of one inch, being 0·318 parts of an inch.

The diameter scale is divided into real inches and parts.

In making valuations of growing timber, the hedgerows and standard trees are usually all gauged tree by tree; but in large woodlands they are usually numbered in successive portions, enclosed within a white cord line, and classed under their respective heads, and some average trees then gauged.

Timber intended to be exposed for sale, when not cut down by the exposer, is usually gauged tree by tree, and a prepared list of the measurement and value put into the auctioneer's hands to assist in guiding him. — *London, May* 30. 1837.

Explanation of References in Figs. 37. *and* 38.

Fig. 37. shows a side view of the gauge.

a a, Scale arm of box, lance, or any kind of elastic wood, defended on the edges with slips of thin brass plate, to make the tangent arm move more easily.

b, The fixed tangent arm. *c*, The movable tangent arm.

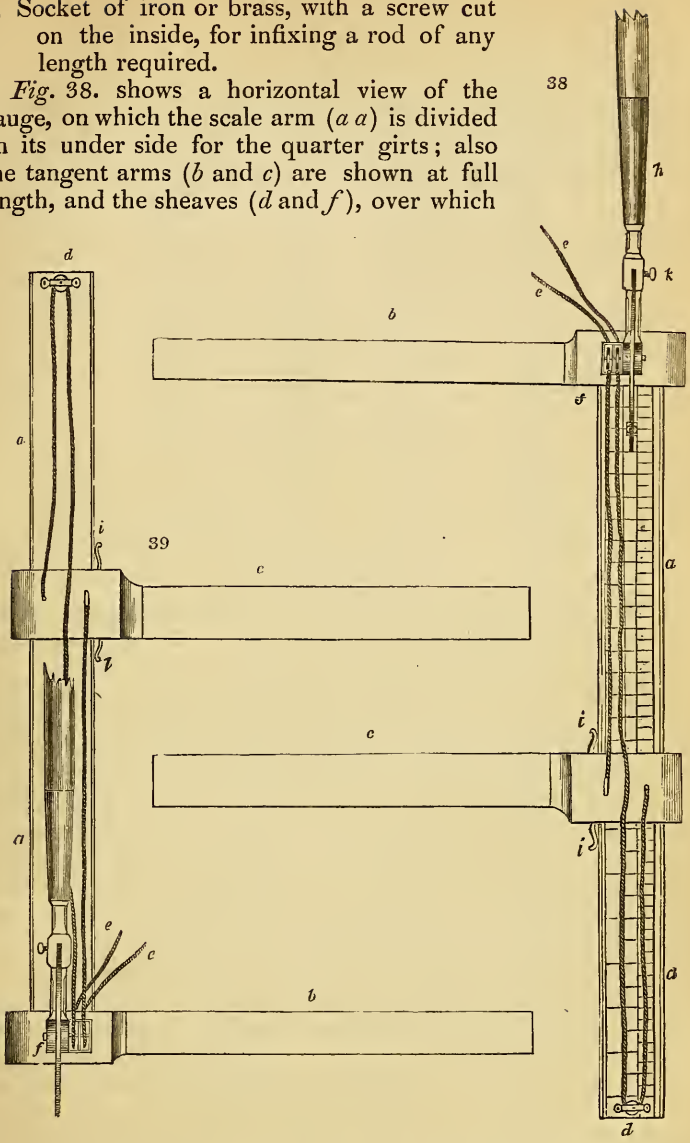
d, A sheave over which the cord *e e* is drawn, to move the tangent arm (*c*). There is a double sheave placed on the side of the movable joint *f*, over which the cord is also drawn.

e e, Cord for drawing the tangent arm (*c*) close upon the tree. *f*, Movable joint.

g g, Semicircular guide of iron or brass, to fix the scale and tangent arms square, to gauge branch wood.

h, Socket of iron or brass, with a screw cut on the inside, for infixing a rod of any length required.

Fig. 38. shows a horizontal view of the gauge, on which the scale arm (*a a*) is divided on its under side for the quarter girts; also the tangent arms (*b* and *c*) are shown at full length, and the sheaves (*d* and *f*), over which



the cords are drawn; also a cross spring (*i i*) at the neck of the movable tangent arm, to keep it steady and erect; and a screw (*k*) for fastening the arms of the gauge either square or at any angular position required.

Fig. 39. shows a different horizontal view of some of the parts as above described.

Table of Multipliers.

(Stamped on the fixed tangent arm, *b*.)

Quarter Girt.	Solid Feet for One Foot in Length. Multipliers.	Quarter Girt.	Solid Feet for One Foot in Length. Multipliers.	Quarter Girt.	Solid Feet for One Foot in Length. Multipliers.
Inches.	Ft. and dec. parts.	Inches.	Ft. and dec. parts.	Inches.	Ft. and dec. parts.
1	·007	17	2·007	33	7·563
2	·028	18	2·250	34	8·028
3	·063	19	2·507	35	8·507
4	·111	20	2·776	36	9·000
5	·174	21	3·063	37	9·507
6	·250	22	3·599	38	10·024
7	·340	23	3·673	39	10·563
8	·444	24	4·000	40	11·111
9	·563	25	4·340	41	11·673
10	·694	26	4·694	42	12·250
11	·840	27	5·063	43	12·840
12	1·000	28	5·443	44	13·444
13	1·174	29	5·840	45	14·063
14	1·361	30	6·250	46	14·694
15	1·563	31	6·673	47	15·340
16	1·777	32	7.108	48	16·000

ART. II. *Valuation of the Woodlands upon the Estates of Drummawhance and Culdees, situated between Auchterarder and Crieff, Perthshire.* By WILLIAM BLACKADDER.

GENERAL Remarks on Drummawhance Estate. — The woodlands of this property extend to 41 Scotch acres, with the addition of numerous hedgerows, and some scattered timber in the middle of the fields. The trees are chiefly from 40 to 50 years of age, but a few are from 20 to 30, and very few of the oldest exceed 50. The plantations consist principally of larch, with a mixture of spruce and Scotch fir, and in a few cases some oak. The belts around the mansion are chiefly beech, with a few other varieties of hard wood; and the rows round the fields are generally oak, beech, and elm. None of these trees, except a few of the oldest hard-wood kinds, are of large size; but, as they are of vigorous growth, they will in time become fine timber, particularly the oak and beech, wherever the soil is of sufficient depth.

The larch, spruce, and Scotch fir are generally on soils which will not produce timber beyond the ordinary sizes for roofing, and other country purposes. Most of these being now arrived at maturity, are ready to be cut down. In some cases, as on the banks of the Machany, where there is a sufficiency of oak, it should be converted into coppice; and other places, wherever the soil is suitable, should be replanted with oak for a similar purpose.

The soil, in general, is more adapted for oak and beech than any of the other varieties of hard wood: but beech is not a species of timber worth planting to any considerable extent.

Valuation of the Woodlands upon the Estate of Drummawhance.

Drummawhance Farm, No. 8. on the Plan, Wood at the Toll-house, 5·551 Scotch Acres.

Kind of Tree.	Number.	Total Trees.	Quarter Girt, in Inches.	Length of measurable Timber in Feet.	Cubic Feet.	Total Cubic Feet.	Price per Foot; that of the Oak, inclusive of the Bark.								
							s.	d.	£	s.	d.	£	s.	d.
Oak - -	23	627	5 to 6	8 to 9	43	—	2	6	5	7	6	51	18	6
Ditto -	280		3 4	8 14	425	—	2	0	42	10	0			
Ditto - -	324		Not measurable.	—	—	—	0	3 each.	4	1	0			
Birch -	98	98	3 to 6	9 15	130	—	0	6	3	5	0	3	5	0
Larch - -	632	1247	7 8	20 30	5103	—	1	0	255	3	0	393	12	10
Ditto -	416		5 7	20 30	2839	—	0	10	118	5	10			
Ditto - -	199		4 5	15 28	606	—	0	8	20	4	0			
Spruce -	196	239	5 8	18 28	1498	—	0	9	56	3	6	59	3	6
Ditto - -	43		4 5	14 20	120	—	0	6	3	0	0			
Scotch Fir -	31	527	6 8	15 20	162	—	0	9	6	1	6	31	9	10
Ditto - -	182		5 6	12 20	558	—	0	6	13	19	0			
Ditto -	314		4 5	10 18	688	—	0	4	11	9	4			
Saughs, &c.	—	8	4 6	10 14	10	—	0	6	0	5	0	0	5	0
		2746				12182						539	14	8

This wood is about fifty years old; and the soil a drained marsh, made into raised beds. The timber is very tall, but does not square on the side in the same proportion. The root-cuts for 12 ft. average a few inches more on the side than what the full timber length of the tree does, as above set down; a remark which is also applicable to all the rest which follow. The timber is of fair quality, and much in want of being thinned. There being so little oak, it has been considered unnecessary to state the bark separately, as its value has been taken into account with that of the timber.

In making the survey for the following valuation, the whole of the trees on the estate were accurately numbered, and classed under different average sizes, and then measured by an instrument constructed for the purpose. The prices are considered to be a fair average rate for the district; but, if they are higher or lower than the market rate, they may readily be recalculated: the data upon which they are founded is in every other respect correct.

Park and Belts around the old mansion, No. 4. and 5. on the plan; containing 2·613 Scotch acres, with some rows and scattered timber on the arable land, about 50 years old.

[Table of contents, &c., as before.]

These consist of belts and scattered trees on the lawn, chiefly beech, all in a thriving state, which, when full grown, will become fine timber. There are a few thriving Spanish chestnuts north from the old steading.

Park around the mansion-house, containing timber newly cut down when the survey was being made.

[Table, &c., as before.]

These consist of thinnings, chiefly for the new steading, with some hard wood requiring to be taken out.

Wood in field north side of Luckart's Howe, containing 2·348 Scotch acres.

[Table, &c., as before.]

The greater part of the larch, &c., has been already cut away. The oaks are thriving, and well adapted for forming coppice, when the field comes to be replanted.

Wood on Machany side, north of Easterton and Millness, containing 2·764 Scotch acres.

[Table, &c., as before.]

This is a very thriving young wood, the larch being generally fit for stobs and paling rafters. It should all be cut down, there being a sufficiency of oak, which would become a fine copse.

Scattered timber and hedgerows on the north side of Mains, Easterton, and Millness.

[Table, &c., as before.]

These consist chiefly of hedgerows, generally small-sized, but thriving. There are a few scattered trees of older date, chiefly plane, and of fair quality.

Wood in No. 8. of Drummawhance. The field on the south of the public road at Luckart's Howe, containing 1·042 Scotch acres.

[Table, &c., as before.]

The older part of this is now mostly cut down. The belt along the road side is thriving, and fit for stobs, &c.

Clump in the corner of Nos. 6. and 7., with hedgerows in these fields.

[Table, &c., as before.]

These are chiefly hedgerows, the last clump being nearly cut out. The oaks along the road side are very good for their age.

Littlemuir.

[Table, &c., as before.]

These consist of hedgerows, with a few older trees at the houses. The rows along the east march are very good.

Lucas Woods, east of the Toll road, containing 8·356 Scotch acres.

[Table, &c., as before.]

West side of Toll road, containing 13·717 Scotch acres.

[Table, &c., as before.]

These woods are upwards of 40 years old, and consist of timber very useful for all country purposes, although not of large size.

West end of Lucas, containing 2·847 Scotch acres.

[Table, &c., as before.]

This is a young belt, about 20 years old, and thriving. The damper portions are blanky for the want of drainage.

Cairn Farm. Three clumps, containing 1·210 Scotch acres.

[Table, &c., as before.]

Hedgerows and scattered timber.

[Table, &c., as before.]

These consist of a few scattered small clumps, with hedgerows. The clumps being on dry knolls, are set in their growth. There are a few old hard-wood trees around the offices.

Valuation of the Woodlands upon the Estate of Culdees.

The remarks upon the woodlands of this property were given in separately, and neglected to be afterwards appended to this statement.

Along the banks of the Machany, and around by the east of the garden and offices.

[Table, &c., as before.]

Standards in the lawn, and around the Castle.

[Table, &c., as before.]

Belt west of the Castle, dividing the lawn.

[Table, &c., as before.]

West Lawn.

[Table, &c., as before.]

On the West Lawn, and along the margin of the river.

[Table, &c., as before.]

Belt of young wood, along Stirling Road.

[Table, &c., as before.]

Belt along Nuthill Road.

[Table, &c., as before.]

John Taylor's Farm.

[Table, &c., as before.]

Cross Hill. John Gloag's.

[Table, &c., as before.]

ABSTRACTS.

Abstract of Drummawhance Estate.

	Scotch Acres.	Oak.				
		Trees.	Feet.	£	s.	d.
Wood at Toll House -	5·551	627	468	51	18	6
Park and Belts around the mansion -	2·613	154	365	48	0	0
Park timber cut down when the survey was being made -						
Wood in the field north of Luckart's Howe	2·348	295	792	99	0	0
Wood on Machany side, north of Easterton and Millness -	2·764	1817	671	100	9	3
Scattered trees and hedgerows, north of Mains, Easterton, and Millness	—	245	414	51	15	0
Wood on the south side of the road at Luckart's Howe -	1·042	8	38	4	15	0
Clumps on the south of the road, with scattered trees and hedgerows	·609	184	346	28	0	3
Littlemuir - -	—	164	348	43	10	0
Lucas Wood, east of Toll Road - -	8·356	7	7	0	14	0
Ditto, west of Toll Road	13·717	77	96	9	12	0
Ditto, west end of Lucas	2·847					
Cairn Farm, three clumps	1·210	45	69	8	12	6
Ditto, hedgerows and scattered timber - -	—	94	181	20	12	6
Totals - -	41·057	3717	3795	466	19	0

Ash, beech, elm, &c., follow in similar columns; and, lastly, the totals, showing the whole number of trees, their cubic feet, and the value upon the property.

Abstract of the Estate of Culdees.

Names of Places, &c.	Small Coppice.	Money Value.			Oak.		Money Value.			Bark.	Money Value.		
		£	s.	d.	Trees.	Feet.	£	s.	d.	Tons.	£	s.	d.
Along the banks of the Machany and around by the garden and offices	40 acres at 15*l.*	600	0	0	2624	8441	653	1	6	82	738	0	0
Standards in the lawn and around the castle	—	—			690	1540	115	10	0	16	144	0	9
Belt west of the castle, and dividing the lawn	—	—			57	35	2	12	6				
West lawn	—	—			2	67	6	7	0				
On the west lawn, and along the margin of the river	—	—			40	30	2	5	0	1	9	0	0
Belt of young wood along Stirling road	—	—			107	166	12	0	0	1½	13	10	0
Belt along Muthill road	—	—			154	140	10	10	0	1	9	0	0
John Taylor's farm	—	—			143	230	17	5	0	2	18	0	0
Cross Hill—John Cloag's	—	—			237	270	20	5	0	2	18	0	0
		600	0	0	4054	10913	819	16	0	105½	949	10	0

The other kinds of timber follow in the same manner; and, lastly, their totals, summing up the whole number of trees, their cubic feet and value, upon the property.

ART. III. *Notice of the Flowering of an Agàve americàna in the Flower-Garden at Clowance, in the County of Cornwall, the Seat of Sir John St. Aubyn, Bart.* Communicated by T. SYMONS.

ON referring to your *Arboretum et Fruticetum Britannicum* (p. 2529.), I see there is a notice of a splendid plant of the Agàve americàna, planted by the late Mr. Yates, in his garden at Saltcombe Bay, in Devonshire. Its rapid growth during the sixteen years, from the time it was planted out to the time of its flowering, is extraordinary; and its flower stem, 27 ft. high, loaded with 16,000 blossoms, must have exhibited perhaps one of the finest specimens of its kind ever seen in this country. The one I have to offer to your notice, although not so splendid a plant, may still be worth noticing in your valuable Magazine, and the accompanying sketch (*fig.* 40.), by Mr. Rutger, jun., may serve to give some of your readers, who may not have had an opportunity of seeing a plant of the kind in flower, an idea of the nature of its growth, &c.

Mr. Rutger, sen., my predecessor, informs me that, when he came to Clowance, in the year 1800, he found the plant in a small tub; and that about the year 1806 he turned it out, and planted it in the flower-garden, on the site where its remains still stand. For many years, it was nearly stationary, making but little progress in point of size; which may be accounted for by no particular attention having been paid to the preparation of soil, as the object of planting it out was rather to obtain additional room in the green-house, than any ulterior view with respect to its flowering. About ten years ago, the plant began to appear in a more thriving state; and, during the last four years, it made rapid advances towards maturity. At the latter end of last June, when the flower stem made its first appearance, the plant was 7 ft. 2 in.

40

high; the diameter of the trunk, at 1 ft. 8 in. from the ground was 2 ft. 3 in.; and the leaves 7 ft. 3 in. long, 13 in. wide, and from 5 in. to 6 in. thick near the base; its rapid increase during the last four years is, most likely, owing to the roots having penetrated into a subsoil more congenial to its growth than the soil in which it was planted. Allowing the plant to be about 25 years old when turned out, it may be considered as being about 56 years old when it flowered. Its site was in the flower-garden, on a border sloping to the south, backed with a fence and shrubbery as shown in the sketch, where it never had any protection, otherwise than by being screened from the north by the shrubbery behind.

"Indications of its blossoming appeared towards the latter end of June, when I perceived that the central leaves were bursting open; and, being gratified at the idea of seeing it in bloom, I was determined to particularly observe the growth of the flower-stem, and accordingly kept a daily journal of its progress. During the first 10 or 12 days, it grew from 6 in. to 7 in. in 24 hours: afterwards its daily growth gradually diminished; and, when approaching its extreme height, its progress was not more than ½ in. during the above period: cloudy weather or a fresh breeze invariably retarded its growth. On the 1st of July, the flower-stem was 10 ft. 11 in. high, and by many it was at that time thought to resemble a gigantic asparagus. On the 19th of July, its height was 16 ft.; and from that period, at about 4 ft. or 5 ft. below the top, lateral buds began to make their appearance, which, as the stem grew, formed the peduncles on which the clusters of flowers expanded. On the 31st of July, the flower-stalk was 19 ft. high, when there were 13 lateral and alternate shoots thrown out. On August 15. there were 22 peduncles put forth, differing in length in proportion to their age, the lower ones measuring 2 ft. 6 in. in length, and bearing on their extremities numerous clusters of flower-buds; these subdividing, and giving space for each individual flower, and measuring across the clusters from 14 in. to 18 in. At this period, the height of the stem was 22 ft. 6 in. On the 7th of September, the flower-stem attained its extreme height, namely, 25 ft.; and the number of peduncles was 34, besides a cluster of flower-buds on the top of the stem. The first flower-buds began to expand on the 28th of September, and on the 10th of October the lowermost clusters were in great perfection. The flowers on the whole plant were carefully counted, and the number amounted to 5088, of the colour of sulphur, and above 5 in. in length. So richly were the flowers charged with a juice resembling honey in the taste, that it dropped from them in abundance, especially from about 9 o'clock in the morning until about 12 o'clock at noon. Bees came by myriads, and feasted themselves on the fast-flowing fluid. Observing such a quantity of the juice falling on the ground, I put vessels beneath to receive it as it dropped from the flowers, and filled six soda-water bottles with it. After being corked and rested a few days, it was acknowledged to be an excellent cordial; but after a while it fermented, became acid, and acquired a fetid smell.

"From the 10th of October to the middle of November, the stately appearance of the plant, with its gracefully curved branches expanding like candelabra, and sustaining such a number of erect blossoms and buds, the flowers beautifully succeeding each other, presented to the eye a spectacle highly gratifying. The upper blossoms were in perfection so late as the 24th of December, when, a frost setting in, they were nipped; thus terminating the beauty of a plant that will long live in the recollection of its numerous visiters, the number of which, of all ranks, amounted to 7517. It may be worthy of remark, that, as the flower-stalk grew and the flowers expanded, the leaves of the plant became flaccid and drooping, and are now rapidly withering; but the stalk is still green, and will take several months to get dry.

"During its progress towards flowering, in order to secure it from the wind and rain, I erected over it a temporary covering with pit lights; and, underneath, a flight of steps to a platform 12 ft. from the ground, which enabled the visiters to approach the lowermost flowers. — *Clowance, Feb.* 1838."

ART. IV. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; or, Ornamental Flower-Garden and Shrubbery. Each number is to consist of coloured figures of plants and shrubs grown in the public and private establishments of this country; accompanied by their history, best method of treatment in cultivation, propagation, &c.; and a monthly register of botanical and horticultural news. In monthly numbers, 8vo, price 3*s.* 6*d.* In an address to the subscribers, it is stated that the proprietors of the *Botanical Register*, finding it necessary to make an exertion to keep pace with the spirit of the times, intend, in future, to "increase the number of descriptions as much as possible, and to add, also, a sufficient quantity of letterpress to embrace, under the title of 'Botanical and Horticultural News,' a monthly register of the most rare and interesting matter relating to these subjects." Further details of this new arrangement will be found in p. 57. We have recurred to it here for the purpose of stating, that to the names of those plants which are only registered but not figured, we shall prefix the sign of addition, which will indicate to the reader that the same names are likely to occur again in these notices when the plants shall have been figured.

Paxton's Magazine of Botany, and Register of Flowering Plants; in monthly numbers; large 8vo; 2*s.* 6*d.* each.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo, large paper, 2*s.* 6*d.*; small pape, 1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

Maund's Botanic Garden, or Magazine of Hardy Flower Plants cultivated in Great Britain; in monthly numbers, each containing four coloured figures in one page; large paper 1*s.* 6*d.*, small 1*s.* Edited by B. Maund, Esq., F.L.S.

The Floral Cabinet; in monthly numbers, 4to; 2*s.* 6*d.* each. Conducted by G. B. Knowles, Esq., and Frederick Westcott, Esq., Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

Lindley's Sertum Orchidaceum, &c.; in parts, folio, 1*l.* 5*s.* each. Part I. January, 1838.

RANUNCULA'CEÆ.

1631. CLE'MATIS 14472 flórida var. 3. Siebóldti D. Don; *Arb. Brit.*, p. 2535.
Synonyme: *C.* f. bícolor *Lindl.* in *Bot. Reg.*, n. s. t. 25.

"This very handsome plant," Dr. Lindley observes, "trained to some well-contrived basketwork fixed upon a pot, and protected by a green-house from rain, and other causes likely to

dim its colours, ought to form one of the most striking show plants ever seen." (*Bot. Reg.*, May.)

Bombàceæ.

+2002. *Plagiánthus* **Lampèn*ii *Booth.* This is considered to be the same plant as *S*ida pulchélla *Bonpl.*, which has borne the common winters of Cornwall for the last five years, and which has stood out about London till the present winter. (*Bot. Reg.*, March.) We have given a figure of it in the *Arb. Brit.*, p. 363.

Tropæòleæ.

1148. TROPÆ'OLUM [bot. v. p. 29.
9317*b* *Jarráttii Youell Jarratt's ⨍ ?⊔ ?⊔ el 12 ... S.Y Santiago 1836 C p.l Paxt. mag. of

A tuberous-rooted perennial, with climbing stems, in the manner of Tropæ'olum tricolòrum, but far more vigorous. The leaves are six and seven-lobed, and the flowers of a bright orange scarlet and yellow. The flowers are much larger than those of the last-named species, far more brilliant in colour, are produced in greater abundance, and the plant is supposed to be more hardy. It thrives well in equal parts of loam and peat, in a No. 16. pot. It was imported, in August 1836, from Santiago, by Messrs. Youell, nurserymen and florists, Yarmouth ; and named by them in compliment to John Jarratt, Esq., of Camerton House, near Bath, a spirited horticulturist. (*Paxt. Mag. of Bot.*, March.)

*tuberòsum *Maund* tuberous-*rooted* ⚘ ⊔ ?△ el 3 s Y.R Peru 1827 R.C r Maund bot. gard. 633.

A tuberous-rooted perennial, with five-lobed leaves, and yellow flowers, not unlike those of the common nasturtium, but smaller. It is a native of Peru, where the tubers are used as food by the inhabitants. Treated like the potato, it may probably prove a culinary vegetable of luxury in England, and other parts of Europe; but very few trials have yet been made. See p. 254., where we have recommended it for trial.

R*hamnàceæ.*

+ *Trymàlium odoratíssimum* Fenzl. This genus has been established for the plants, inhabiting New Holland, which were formerly supposed to belong to *C*eanòthus. T. odoratíssimum is a new and very interesting addition to the genus, introduced from Swan River, by R. Mangles, Esq., by whom a plant in flower was presented to the Horticultural Society of London, in Feb. 1838. Mr. Mackay, the gardener at Sunning Hill, finds the plant apt to damp off in winter, if not kept in a warm and light situation. (*Bot. Reg.*, April.)

Leguminòsæ.

1256. AO'TUS 10549 villòsa *Sm.*
Synonyme: A. ericöìdes *G. Don; Paxt. Mag. of Bot.*, v. p. 51.

2133. *O*'ROBUS [gard. 634.
*pisifórmis *Maund* pea-formed ⚘ △ el 1 my P S. Europe 1832 R s.l Maund's bot.

An elegant little plant, resembling *O*'robus vérnus, raised by Messrs. John Pope and Sons, of the Handsworth Nursery, near

Birmingham, from seeds received from the German Union, under the name adopted. (*Maund's Bot. Gard.*, March.)

+ *Acàcia cultrifórmis* A. Cunningham in Hook. Icon., pl. 2., t. 170. "This species has flowered in the collection of Messrs. Rollisson, and proves a most charming conservatory plant, with numerous clusters of yellow flowers, terminating branches covered with glaucous half-rhomboidal leaves." (*Bot. Reg.*, May.)

Philadelphàceæ.

+ 1479. *Philadélphus* **Gordoni*ànus Lindl. A deciduous shrub, from 8 ft. to 10 ft. high, with numerous small slender side shoots, small deeply serrated leaves, and flowers in clusters, appearing very late in the season. Found by Mr. Douglas, forming underwood along the banks of the Columbia River. (*Bot. Reg.*, March.)

+ *Philadélphus triflòrus* Wall. Raised in the Horticultural Society's Garden, from seeds obtained from the Himalayan Mountains by Dr. Royle. "It has the habit of *P.* láxus, and is slightly but agreeably fragrant. It will probably prove quite hardy; and is no doubt distinct from *P.* tomentòsus, from the same country, which more resembles *P.* grandiflòrus." (*Bot. Reg.*, May.)

Passifloràceæ.

1923. PASSIFLO'RA [Bot. reg. n. s. 21.
*onýchina *Lindl.* purple-flowered ♃ ☐ or 10 n lapis lazuli B Buenos Ayres 1827 C
Synonyme: P. Sulivàni Booth MS.

An elegant species, of luxuriant growth, with blue petals, like those of P. cærùlea, but with the leaves trilobate. It was originally introduced by B. J. Sulivan, Esq., now of H.M.S. the Beagle, "who procured the seeds, with others, from the Botanic Garden at Rio de Janeiro, in 1827, and presented them, on his return, to Sir Charles Lemon, Bart., M.P., in whose garden at Carclew, Cornwall, the present plant originated. It appears to be different from any of the species hitherto introduced, and is distinguished principally by its long, round, slender branches; small purplish-coloured flowers, thin leaves, and peculiar odour. Whether it will succeed in the green-house or conservatory, remains to be ascertained." In the stove of Miss Traill, at Bromley, Kent, this passion-flower grows and flowers in the greatest luxuriance; and the figure in the *Botanical Register* is from a specimen received from Miss Traill. (*Bot. Reg.*, April.)

Cácteæ.

1471. MAMMILLA'RIA
*atrâta *Hort. Mack.* dark *green* ♃ ☐ gr ½ ... Pk ... ... O s.p Bot. mag. 3642.

A columnar tuberculated mass, upwards of 3 in. broad, and 6 in. high, with a ring of elegant pink flowers near its summit. The plant is in the collection of Messrs. Mackie of Norwich, but its native country is unknown. (*Bot. Mag.*, March.)

*floribúnda *Hook.* copious-flowering ♃ ▭ gr ½ ... Pk Chili ... C s.l Bot. mag. 3647.

A columnar spiny mass, crowned with a group of pink flowers, the whole combining singularity with beauty in an eminent degree. "This really fine mammillaria was imported by Mr. Hitchin, from Chili, and passed, with the rest of that gentleman's rich collection of *Cácteæ*, into the hands of Messrs. Mackie of the Norwich Nursery." In some characters it approaches M. atràta *Bot. Mag.*, t. 3642. (*Bot. Mag*, April.)

1472. CE'REUS
*pentálophus *Dec.* [mag. 3651.
*var. 2 subarticulâtus *Pfeiff.* somewhat jointed ♃ ▭ or l ... L Mexico ... C s.p Bot.

The stem has five protruding sides or crests, each crest furnished with a row of clusters of spines or abortive buds. "The flower is exceedingly handsome; of a fine rose colour; paler, and almost white, in the centre, where are the yellow anthers; and rising above them is the cluster of dark blue-green styles. The germen is prickly like the stem." (*Bot. Mag.*, May.) This plant is in Mr. Mackie's collection at Norwich.

Grossulariàceæ.

Ríbes Menziès*ii* Smith. Raised from the last parcel of seeds received by the Horticultural Society from Mr. Douglas. It is allied to *R.* speciòsum, with the young branches covered with slender bristles, like those of *R.* lacústre. The flowers appear, from the dried specimens, to be of the same colour as those of *R.* speciòsum, but paler; and they are without the long-projecting crimson stamens, which give *R.* speciòsum so strikingly beautiful an appearance. The plants appear to be hardy, but they have not yet flowered. (*Miscell. Bot. Reg.*, May.)

Compósitæ.

2265. *LIA'TRIS* [p. 27.
*borealis *Paxt.* northern ♃ △ el 1½ au.s Pk N. America ... D p.l Paxt. mag. of bot. v.

An herbaceous perennial, from 1 ft. to 18 in. high, with ovate leaves, and terminal, capitate, pink flowers. It is a native of North America, and remarkably hardy; having endured at Chatsworth the whole of the late severe winter in the open ground, without any protection. It thrives in any soil; throws up many stems, which produce abundance of flowers. There are plants in the Epsom Nursery, where it was received from the Glasgow Botanic Garden, in 1836. (*Paxt. Mag. of Bot.*, March.)

CO'SMOS *Cav.*
*diversifòlius *Otto* various-leaved ⅄ pr 3 jn.o L N. Amer. 1835 D co Fl. cab. ii. 47.

A tuberous-rooted perennial, with flowers not unlike those of a single dahlia, and requiring exactly the same mode of culture as that plant. "It grows to the height of about 3 ft.; is much branched, each branch bearing a flower at the apex. The petals are eight in number, about 2 in. in length, and of a rose, or rather lilac, colour. The involucrum contains about as many leaflets as there are petals." (*Fl. Cab.*, March.) It has been observed by Dr. Lindley that Cósmos tenuifòlius will, in all probability, soon

produce double flowers, like the dahlia; and the same thing may doubtless be predicted of this species.

[n. s. 15.
*scabiosōides *H. B. et Kunth* Scabious-like ⁂ ⌊△⌋ pr 4 au.s S Mexico ... R 1 Bot. reg.

A tuberous-rooted half-hardy perennial, growing from 3 ft. to 4 ft. high, with scarlet and purplish-red petals, requiring the same treatment as the dahlia, to which the genus, in many respects, bears a close resemblance. The genus Cósmos abounds in beautiful species. C. tenuifòlius has large, bright, rose-coloured flowers; and others, with bright yellow, pink, or rich purple, blossoms, still unknown in gardens, may be expected to appear from among the many valuable collections of Mexican seeds now in course of importation to this country. They are more particularly deserving of attention, because they will probably become double, like the dahlia. (*Bot. Reg.*, March.)

3408. ECHINA'CEA
*Dicksoni Lindl. Dickson's ♃ △ or 1 au.s L Mexico ... D co Bot. reg. n. s. t. 27.

A very showy perennial, with panduriform hairy leaves, dark brown spindle-shaped roots, and pale red flowers, produced on stems about a foot in height. It is probably hardy enough to endure the ordinary winters in the open borders; but it is safer to take up the roots, and preserve them in sand, like those of the dahlia. Like many of the Mexican Compósitæ, it flowers very late in the season (August and September); and, for this reason, it is not likely to ripen seeds, except in the green-house. (*Bot. Reg.*, May.)

Gesneràceæ.

1698. GE'SNER*A*
*rupéstris *Paxt.* rock-*inhabiting* ☿ ⌧ cu ½ jl.d S ... 1835 C p.l Paxt. mag. of bot. 53.

A neat little plant, with leaves upwards of 6 in. long, and 4 in. broad, but with the flowers on slender radical peduncles, not rising higher than 2 or 3 inches. "The peculiar neatness, simplicity, and beauty of its appearance and habits, the profuse display of its pretty blossoms, the great length of time they remain expanded the astonishing rapidity with which fresh flowers are produced after the old ones have faded, and the striking contrast that is presented between its large and handsome foliage and its elegant blossoms, entitle it to more than ordinary attention and regard, and render it at once both interesting and valuable." (*Paxt. Mag of Bot.*, April.) This is very neatly expressed, and the specific character in this, as in most other cases, is very correctly and perspicuously drawn up; but, when we look at the plate, it really appears altogether unfit to accompany the letterpress. We cannot but regret that a publication having such an extensive sale as *Paxton's Magazine of Botany* is said to have, and one, consequently, calculated to do so much good, should not be rendered more worthy of the patronage it receives.

Ericàceæ.

1173. *ERI'CA* § i. Tubiflòræ
9416*a* *chlorolòma *Lindl.* green-edged ❀ ⌴ or 2 n C.G ?C.G.H ... C s.p Bot. reg. n. s. 17.

An erect and graceful bush, with crimson flowers tipped with green, produced in clusters at the ends of the young shoots. It was raised by Mr. Young, in the Taunton Nursery, and belongs to Professor Don's genus Syringòdea. Whether it has been received from the Cape, or is a British hybrid, is not expressly stated; but the former is implied in the following sentence: — "This, like the other Cape species of this charming genus, is propagated easily from cuttings." (*Bot. Reg.*, March.)

9854 flórida. [3639.
*var. campanulàta *Hook.* bell-*flowered* ❀ ⌴ pr 3 my R. hybrid 1837 C s.p Bot. mag.

A charming shrub, which has attained the height of 2½ ft. in two years, and which, in the profuseness, beauty, and expanded form of its blossoms, in its foliage, and in the straightness and vigour of its branches, is greatly superior to the species. It was raised at Bothwell Castle, from seeds of *E.* flórida, by the very intelligent gardener there, Mr. Turnbull, who selected it from a number of seedlings, not apparently different from the parent. The plant which bore the seed, it is conjectured, must have had one of its flowers fertilised by the pollen of some other species, probably by means of an insect. (*Bot. Mag.*, March.)

Bignoniàceæ.

1706*a* *AMPHI'COME *Royle.* AMPHICOME. (*Amphi*, round, and *komē*, hair; in allusion to the structure of the seeds.) *Bignoniàceæ.*
*argùta *Royle* finely cut ⅋ △ p.r 1 au L Himalayan Mts. ... C l.p Bot. reg. n. s. 19.

A very elegant, and rather slender, perennial, probably hardy enough to stand out on dry rockwork. Its flowers resemble those of a bignonia, and its leaves those of some species of Coreópsis, or of the French marigold. "Seeds of this very rare and curious plant were given to the Horticultural Society by Professor Royle, marked as having been collected on the Himalayan Mountains, at the elevation of from 6000 ft. to 8000 ft. A single individual was raised, and produced its beautiful and graceful flowers in August, 1837." It is very different from A. *Emòdi*, a still finer species, not yet introduced. It may be propagated either by seeds or cuttings. (*Bot. Reg.*, April.)

Polemoniàceæ.

501. Hoítza *mexicàna* Lam. Encyc., iii. p. 134. A charming plant, with flowers of the most brilliant red, and altogether one of the most beautiful of the Mexican *Polemoniàceæ*. It has long been a desideratum in this country, and has at length blossomed in the garden of Thomas Harris, Esq., of Kingsbury. (*Bot. Reg.*, March.)

Convolvulàceæ.

491. *Ipomœ'a* **Schied*iàna *Hamilton*, not of Zuccarini. A splendid hot-house climber, introduced by Dr. Hamilton of Plymouth,

which flowered in the stove of Mr. Pontey's nursery there in October, 1837. The flowers are of a deep lapis lazuli blue. (*Bot. Reg.*, March.)

Scrophulariàceæ.

1717. PENTSTE'MON
*crassifòlius *Lindl.* thick-leaved ⊻ △ or 1 jn B N. Amer. ... D co Bot. reg. n. s. 16.

A very handsome, hardy, suffruticose plant, with purple flowers, growing about 1 ft. in height, and requiring the same treatment as Pentstèmon Scoúleri. It may either be grown in peat or in rich garden soil. (*Bot. Reg.*, March.)

1774. *A*NTIRRHI'NUM 15770 màjus [mag. of bot. v. p. 55.
*var. *caryophyllòides Hort.* Carnation-like ⊻ △ or 2 jn.s S.St hybrid gard. C lt. s.l- Paxt.

A splendid plant, and one of such easy cultivation, that it might have a place, during summer, in every flower-border and in every cottage garden. The reader will have a very imperfect idea of the beauty of this plant from Mr. Paxton's figure; but it is correctly described, as "differing from all other snapdragons in the colours of its flowers, which approximate in beauty to the choicest carnation." It is exceedingly liable to sport, and to show pure white flowers, or white, merely spotted with red, instead of being striped. The following directions are given for causing the plant to flower from the commencement of the spring till the close of the autumn: —

"In the month of September, cuttings should be taken of the young shoots of those plants which are growing in the open border; and, after planting them in pots, in a light soil, they should be placed in a slight heat till they have struck; when they should be potted singly into small pots, and kept in a gentle heat, till they have become established, and then removed to a greenhouse, and afterwards to a cold-frame; where they may be kept through the winter, with a trifling protection from frost. Early in the spring, they will require shifting into larger pots; and, as soon as the weather will permit, they should be planted out into the open border, in which situation, they will speedily produce their flowers. As soon as the plants above mentioned have formed lateral shoots, a few of these should be taken off for cuttings, and struck in a similar manner to those before alluded to. Again, other cuttings may be taken off each month; and by this practice a continual succession of flowers may be obtained. Besides this, the plants should never be suffered to ripen their seeds; and if the flowers are constantly plucked off as soon as they begin to decay, an abundance of new flowers will speedily be formed. This plant will not endure the open air in the winter months; therefore, it is better to raise young plants each season, in the manner above directed, more especially as these latter will flower in much greater perfection than the old ones. Plants of it kept in pots, in the green-house, will have a truly interesting appearance, and flower very abundantly at almost all seasons of the year." (*Paxt. Mag. of Bot.*, April, p. 56.)

1783*a*. * DI'PLACUS *Nutt.* Diplacus. (From *dis*, two, and *plax, plakos*, a placenta; in allusion to the splitting of the capsule, to each valve of which is attached a large placenta, and under its edges are found the slender subulate seeds.)
*puniceus *Nutt.* scarlet-*flowered* ♿ ⎵ or 4 year S California 1837 C r.m Bot. mag. 3655.

A low suffruticose plant, with lanceolate glutinous leaves, and the general appearance of *Mímulus*; and flowering, in its native country (Upper California), in April and May; but, in European and American green-houses, nearly the whole year. It was dis-

covered by Mr. Nuttall, sent to Mr. Buist of Philadelphia in 1836, and subsequently to Mr. Low of the Clapton Nursery. In mild winters, it will doubtless stand the open air in the climate of London. (*Bot. Mag.*, May.)

Chenopodiàceæ.

810. Chenopòdium 6477 *Quinòa.* In addition to the information contained in Vol. X. p. 587., and Vol. XI. p. 212. 216. and 680., add as follows : —

Carapulque is a favourite dish with the ladies of Lima. "The grains are slightly toasted like coffee, strained, and boiled in water, yielding a brownish-coloured bouillie, seasoned with spices, as in the first method; but it has so peculiar a flavour, that few strangers like it. Two kinds of *Quinòa* are, however, in use in South America : the one here figured, with very pale fruits, called the white; and the dark-red-fruited one, called the red quinoa. The latter is chiefly cultivated in gardens for its medicinal virtues: its seeds, bruised and boiled in water, form a bitter decoction, which, mixed with sugar, is employed as a vulnerary for sores and bruises. Cataplasms are also made of this variety. But the bitter principle may be removed by throwing away the water in which the seeds are infused." (*Bot. Mag.*, March.)

Thymelàceæ.

87. PIMELE'A
*lanàta *Hens.* woolly ☗ ⊔ or 6 my W V.D.L 1834 C s.p Botanist, 61.

An elegant little Australian shrub, of easy culture in loam and peat, and possessing the same general character of small size, neatness, and beauty, as the other pimeleas. (*Botanist*, March.)

805 incàna *R. Br.*; *Bot. Reg.*, n. s. t. 24.
Synonyme: P. nívea *Fl. Cab.*; not of Labillardière.

Aristolochièæ.

2582. *A*RISTOLO'CHIA
*saccàta *Wall.* pouch-*flowered* ⚳ ☐ cu 20 s Y.Psh.R Silphet 1829 C l.p Bot. mag. 3640.

A curious twining stove shrub, which flowered in the Royal Botanic Garden, Edinburgh, in September, 1838. The leaves are from 12 in. to 15 in. long, and 4 in. broad; and the flowers pendulous, with the tube turned upwards in the middle; yellow within, and of a purplish red, or brick colour, without. They are very curious, and bear some resemblance in their form to the leaves of *N*epénthes. (*Bot. Mag.*, March.)

Euphorbiàceæ.

1460*a*. POINSE'TTI*A* pulchérrima
*var. álbida *Henslow* white-*bracted* ☗ ☐ or 1 d W Mexico ?1834 C s.l Botanist, 70.

A variety remarkable for the white, or very pale yellow, colour of the bracts. The plant was sent to the Liverpool Botanic Garden by C. Tayleure, Esq., who had also received the red-bracted variety, previously to its introduction from Philadelphia by Mr. James M'Nab. Both varieties were discovered about 400 miles from the city of Mexico, by William Bates, Esq., and sent by him to C. Tayleure, Esq., of Toxteth Park, near Liverpool. (*Botanist*, May.)

Orchidàceæ.

2526. BRA'SSI*A* [Fl. cab. 53.
*cochleàta *Knowl. & Westc.* spoon-*lipped* ⚳ ⊠ cu 1 my.jn G.Br Demerara 1834 D p.r.w

A stove epiphyte, a native of Demerara, where it was found by Mr. Henchman, when collecting for the Clapton Nursery in 1834. It flowered for the first time in the garden of John Willmore, Esq., of Oldford, near Birmingham, in the spring of 1836. (*Fl. Cab.*, April.)

*macrostâchya *Lindl.* long-spiked ⌂ ☐ el 2 o Y Demerara ? 1835 D p.r.w Sert. orch. t. 6.

The most graceful and brilliant species hitherto discovered. Its "long nodding racemes of flowers, bent gently over the rich and verdant foliage; while the slender petals are so long, so slight, and so delicate, as to be agitated by every impulse given them by the air." It was imported from Demerara by Messrs. Loddiges, in whose collection it flowered for the first time in 1836. (*Sert. Orch.*, t. 6.)

3455. GOVE'N*IA*
*liliâcea *Lindl.* Lily-*flowered* ⌂ ☐ el 1 jl Psh.W Mexico ? 1837 R p.l Bot. reg. n. s. 13.

A tuberous plant, with the habit of a bletia; and whitish flowers, on a stem about 1 ft. high. Imported from Mexico by George Barker, Esq. (*Bot. Reg.*, March.)

*BARKE'R*IA* Knowles & Westcott. BARKERIA. (In honour of *G. Barker*, Esq., of Springfield, "whose zeal and liberality have been the means of introducing to this country a great variety of new plants.") *Orchidàceæ.*
*élegans *Knowl. & Westc.* elegant ⌂ ☐ el 1½ ... L Mexico ? 1836 D p.r.w Fl. cab. 49.

An elegant stove epiphyte, imported from Mexico, with lilac-coloured petals; and the columns are beautifully marked with crimson spots, "two of which, being larger than the rest, and placed, like eyes, near its apex, give it no slight resemblance to the head of some animal." (*Fl. Cab.*, March.)

*STE'NIA. STENIA. (*Stenos*, narrow; in allusion to the form of the pollen masses.)
*pállida *Lindl.* pale-*flowered* ⌂ ☐ pr ½ au Y Demerara ... D p.r.w Bot. reg. n. s. 20.

A rather pretty epiphyte, somewhat resembling a maxillaria, imported from Demerara by Mr. Barker of Birmingham. (*Bot. Reg.*, April.)

+ *Blèt*ia *havanénsis* Booth differs from *B.* verecúnda, in the colour of its flowers being a deep reddish pink, and also in other particulars. "Introduced from the Havannah by Captain Sutton, in the spring of 1835, and added to Sir Charles Lemon's collection at Carclew, where it flowered in March, 1837. (*Bot. Reg.*, April.)

+ *Bolbophýllum setígerum* Lindl. A curious little epiphyte, with small dull purple flowers, obtained by Messrs. Loddiges from Demerara. (*Bot. Reg.*, March.)

*Masdevàll*ia *infrácta* Lindl. A curious epiphyte, imported from the Brazils by Messrs. Loddiges. Flowers whitish yellow, tinged with pink. (*Bot. Reg.*, May.)

*CRYPTOCHI'LUS *Wall.* CRYPTOCHILUS. (From *kruptos*, hidden, and *cheilos*, a lip. The concealed lip, or labellum, cannot be easily seen, in consequence of the contraction of the mouth of the calyx.)
*sanguínea *Wall.* blood-coloured ⌂ ☐ p.r 1 jn S Nepal ... D p.r.w Bot. reg. n. s. t. 23.

A "very pretty" epiphyte, with pseudo-bulbs enveloped in green sheaths, and each producing a single, broad, coriaceous, recurved leaf. The flowers are of a brilliant scarlet, but are

not otherwise remarkable, in consequence of the contraction of the mouth of the calyx, which conceals the labellum. (*Bot. Reg.*, May.)

+ *Cleisóstoma tridentàta* Lindl. A small-flowered epiphyte, sent from New Holland to Messrs. Loddiges. Flowers of a dull, dirty, reddish white, mixed with a little yellow. (*Bot. Reg.*, May.)

CYRTOCHI'LUM *Humb. & Bonp.*
*maculàtum *Lindl.* spotted ⅇ ⍁ cu 1 ... G.Y.R Mexico ... D p.r.w Fl. cab. 57.

A handsome plant, with green pseudo-bulbs, and greenish-yellow flowers, marked with rich purple. It is a native of Mexico, whence it was obtained by Messrs. Rollisson. (*Fl. Cab.*, May.)

+ *C. mystacìnum* Lindl. This species resembles an oncidium, in having a branched scape of bright yellow and white flowers, and a curiously fringed column. (*Bot. Reg.*, April.)

+ *Chænánthe Bárker*i *Lindl.* A most singular epiphyte, imported from Para by George Barker, Esq., of Birmingham. Nearly allied to Notýlia. (*Bot. Reg.*, May.)

+ *Octomèria grácilis* Loddiges MS. An inconspicuous epiphyte, received by Messrs. Loddiges from Rio Janeiro. Flowers like those of O. Baúer*i*, but smaller.

+ Vanílla *bícolor* Lindl. A fragrant epiphyte, from Guiana. Flowers of a dull red. (*Bot. Reg.*, May.)

+ *Cymbídium viréscens* Lindl. An epiphyte, introduced from Japan by Dr. Sieboldt, which flowered with Messrs. Rollisson of Tooting, in April, 1838. Flowers pale yellow and dull red. A valuable species, as requiring only the temperature of the green-house. (*Bot. Reg.*, May.)

+ *Cirrhopétalum cæspitòsum* Wall. MS. A little epiphyte, imported from the East Indies by the Duke of Devonshire. Flowers pale yellow. (*Bot. Reg.*, May.)

+ *Dendròbium cándidum* Wall. MS. An epiphyte, found by Mr. Gibson, the Duke of Devonshire's collector in India, on the north side of the Khoosea Hills, growing on rocks, sand, and decayed trees. Flowers pure white. (*Bot. Reg.*, May.)

+ *Oncídium stramíneum* Batem. MS. A beautiful stove epiphyte, from Vera Cruz, sent by M. Hartweg, the collector of the Horticultural Society, in 1837. Flowers straw-coloured, with the odour of primroses. (*Bot. Reg.*, May.)

+ *Huntlèya melèagris* Bot. Reg., 1991., has blossomed at Messrs. Rollisson's, and will doubtless soon be figured. (*Bot. Reg.*, March.)

+ *Miltòn*ia *cándida* Lindl. A charming species, which flowered imperfectly with Messrs. Loddiges, in the spring of 1838. (*Bot. Reg.*, April.)

+ *Physínga prostràta* Lindl. A plant of no beauty, but one of

the most curious that Dr. Lindley is acquainted with. (*Bot. Reg.*, April.)

+*Specklínia ciliàris* Lindl. A small plant, resembling a lepanthes, with purplish-green leaves, and dull green spotted flowers. Imported from Mexico by Messrs. Loddiges. (*Bot. Reg.*, April.)

S. orbiculàris Lindl. resembles the preceding in habit, but with more purple both in the leaves and flowers. Imported by Messrs. Loddiges from Demerara. (*Bot. Reg.*, April.)

+2537. *Maxillària variábilis* **var. unipunctàta* Lindl. A singular little epiphyte; but "scarcely more than a yellow-flowered variety of M. variábilis." (*Bot. Reg.*, March.)

+2539. *Pleurothállis* **circumpléxa* Lindl. A curious new species, from Mexico, by Messrs. Loddiges; which, as it flowered in February last, will doubtless soon be figured. (*Bot. Reg.*, March.)

+*P. ophiocéphala* Lindl. A most curious Mexican species, in the possession of Messrs. Loddiges, and also of Mr. Barker of Birmingham. Flowers dull yellowish brown, spotted with purple. (*Bot. Reg.*, May.)

3445. CORYA'NTHES [Paxt. mag. of bot. v. p. 31.
*macrántha *Hook.* large-flowered £ ⍁ cu 1 ... Och sp Dl.P Caraccas ... D fib. s.p

An epiphyte, with the pseudo-bulbs strongly furrowed, and with flowers of a form so extraordinary, that no description can give any thing like a correct idea of them. When the plant flowered at Chatsworth, in 1837, "wonder and surprise were created in all who had an opportunity of seeing it." In colour, the sepals are an ochry yellow, spotted with dull purple; and the two lateral ones look something like "bat's wings half at rest." There is another part of the flower in Mr. Paxton's figure which bears some resemblance to a human skull, supported by a vertebral column, very distinctly marked. Dr. Lindley, in the *Botanical Register*, p. 1841., describes this plant as having the habit of a stanhopea or a gongora; and Mr. Paxton says the culture is the same as for these genera; viz., "in potting, use fibrous sandy peat, with plenty of drainage; build the bulk of the soil a trifle above the level of the pot, in consequence of the pendulous nature of the flexuous scape. In the spring, when the young buds begin to swell, let it have plenty of water and heat, and it will grow and flower very freely." (*Paxt. Mag. of Bot.*, March.)

2554. EPIDE'NDRUM
22741*a* *lácerum *Lindl.* lacerated £ ⍁ cu 3 n.d Pk Havannah 1835 D p.r.w.

Nearly allied to E. elongàtum, but of a more lax and slender habit. Sent by Captain Sutton to Sir Charles Lemon, in whose collection, at Carclew, it flowered during November and December, 1837. (*Bot. Reg.*, March.)

tessellàtum *Batem.* chequer-*flowered* ℄ ⍓ cu 1 jn.jl. G.Br Guatemala [Bot. mag. 3638. 1836 D p.r.w

A bulbous epiphyte, with small flowers, on a stem shorter than the leaves. The sepals and petals are greenish yellow outside, and brown inside. (*Bot. Mag.*, March.) This species was already noticed, p. 142.

*ochràceum *Lindl.* ochre-coloured ℄ ⍓ cu ½ jl Y Mexico 1835 D p.r.w Bot. reg. n. s. t. 26.

A pretty little epiphyte, sent to Sir Charles Lemon's garden from Guatemala, in 1835. It is cultivated by Mr. Booth, by tying it to the branch of an old apple or pear tree, in a tuft of moss, in a close moist stove, protected from the scorching heat of the sun. (*Bot. Reg.*, May.)

+ *E. ásperum* Lindl. This interesting species has recently flowered in the garden of Thomas Harris, Esq., of Kingsbury. (*Bot. Reg.*, April.)

+ *E. chloránthum* Lindl. A green-flowered species, allied to Encýclia viridiflòra, a native of Demerara, whence it was sent to Messrs. Loddiges by M. Schomburgk in ? 1837. (*Bot. Reg.*, April.)

+ *E. pachyánthum* Lindl. A large green-flowered species, sent to Messrs. Loddiges from Guiana by M. Schomburgk. (*Bot. Reg.*, April.)

+ *E. píctum* Lindl. resembles E. odoratíssimum, with dull yellow flowers, neatly striped with crimson. Received from Demerara by Messrs. Loddiges. (*Bot. Reg.*, April.)

+ *E. smarágdinum* Lindl. Closely allied to E. orchidiflòrum. Obtained from Demerara by Messrs. Loddiges. (*Bot. Reg.*, April.)

+ *E. varicòsum* Batem. MS. A small-flowered dull-coloured species, from Guatemala, whence it was imported by Mr. Bateman. (*Bot. Reg.*, April.)

+ *E. altíssimum* Batem. MS. An epiphyte from the Bahamas, in the collection of Mr. Bateman, and also in that of Messrs. Rollisson. It grows in great abundance among rocks, among other pseudo-bulbous epidendra. "At the period of Mr. Skinner's visit, they were in a parched and torpid state; but he was informed by a resident that, during the season of their flowering, they scented the air to an extraordinary and almost insupportable degree. To this excess of sweets, E. altíssimum contributes a powerful odour, resembling bees' wax; but in potency it is far surpassed by another unpublished species from the same quarter, for which I am also indebted to the zeal and liberality of Mr. Skinner, and which yields a perfume at once delicate and powerful, and so closely resembling that of our wild English primroses, that I have in consequence named it E. primùlinum." (*Bot. Reg.*, May.)

+ *E. cucullàtum* Lindl. One of the most unattractive species of

this large genus, obtained from Para by Richard Harrison, Esq., of Liverpool. Flowers small and white. (*Bot. Reg.*, May.)

+ *E. longicólle* Lindl. Obtained from Demerara by Messrs. Loddiges, and nearly allied to E. noctúrnum. Flowers pale yellow and white. (*Bot. Reg.*, May.)

+ *Sarcochìlus parviflòrus* Lindl. Introduced from New Holland by Messrs. Loddiges, and interesting as the second species of this genus. Flowers green, with dull purple spots. (*Bot. Reg.*, May.)

+ *Calánthe díscolor* Lindl. A low-growing species, not exceeding a foot in height, lately introduced from Belgium; but whether a native of Java or Japan, is uncertain. (*Bot. Reg.*, April.)

+ *C. bícolor* Lindl., syn. *Amblyglóttis flàva* Blume. Flowers larger than in C. díscolor. Introduced from Belgium, and supposed to be a native of Java or Japan. (*Bot. Reg.*, April.)

+ *C. furcàta* Batem. MS. A white-flowered species, with a scape about 1 ft. high, received by Mr. Bateman from the Luzon Islands, where it was collected by Mr. Cuming. (*Bot. Reg.*, April.)

Iridàceæ.

† 142. *I*RIS [cab. 51.
1250*a* *deflèxa *Knowl. & Westc.* deflexed-*flower-scaped* ♃ △ or 1½ jn L Nepal 1833 R p.l Fl.

An elegant stove or green-house herbaceous perennial, with large flowers, somewhat resembling those of *I*ris squàlens, and remarkable for the elegant deflexion of its flower-scape. It was brought from the East, in the year 1833, by —— Boultbee, Esq. Sir W. J. Hooker doubts if this species be distinct from *I.* subbiflòra, a hardy species, a native of Portugal: but Messrs. Knowles and Westcott consider it a distinct species; because, among other reasons, "its constitution is so very tender, that it requires a stove heat, or that of a warm green-house." (*Fl. Cab.*, April.)

*Amaryllid*àceæ.

† HIPPEA'STRUM aúlicum *Herb. Amaryll.; Fl. Cab.*, 52.
Synonyme: 969. Amarýllis 7992 aúlica *Ker.*

Liliàceæ.

1007. *H*EMEROCA'LLIS
*Sieboldti Paxt. Sieboldt's ♃ △ or 2 s Del.Pk Japan 1833 R s.l Paxt. mag. of bot. v. p. 25.

An herbaceous perennial, with flower-stalks from 9 in. to 1 ft. in length, and delicate pink flowers, merging to white towards the centre. As in other species of the genus, and of the *Liliàceæ* generally, the flowers soon fade. The plant is quite hardy, of easy culture, and not high-priced. It was introduced from the Continent by Messrs. Young of the Epsom Nursery, where it flowered for the first time in September, 1837. (*Paxt. Mag. of Bot.*, March.)

REVIEWS.

ART. I. *The Fruit, Flower, and Kitchen-Garden, being the Article "Horticulture" of the Seventh Edition of the "Encyclopædia Britannica."* By Patrick Neill, LL.D., F.R.S.E. 8vo. Edinb. 1838. 6*s*.

WE noticed with approbation the first impression of this work, which appeared in 4to, in 1835, in our Eleventh Volume, p. 673. The present edition, though in a more humble form, is enlarged in point of matter; and, the engravings being reduced, and printed from wood along with the text, instead of being in copperplates at the end, it forms a portable volume, and, perhaps, one of the best modern books on gardening extant, for its size. We should say it is in gardening, what Professor Henslow's *Descriptive and Physiological Botany* (written for the *Cabinet Cyclopædia*) is in that science, viz., comprehensive, clear, and in every part well reasoned.

"The whole subject of horticulture, or practical gardening, is here treated in a condensed form, in a popular style; yet, it is hoped, with sufficient accuracy, although no more of the philosophy of the subject has been introduced than seemed requisite to a clear understanding of the practice. It has occurred to the publishers that, in the form of a duodecimo volume, it might prove a useful manual; no book on general gardening, of the same size, having appeared in Scotland for a good many years past." (p. vii.)

We cannot help taking this opportunity of strongly recommending the *Encyclopædia Britannica* to all who can afford to purchase that work, or such treatises from it as have been published separately. Horticulture is only one of the many excellent treatises contained in it, in which the gardener is interested, and which are also, like horticulture, published separately: for example, Agriculture, Architecture, Entomology, Mineralogy, &c.

ART. II. *Sertum Orchidaceum: a Wreath of the most beautiful Orchidaceous Flowers.* Selected by John Lindley, Ph.D., F.R.S., &c. Part II. folio. 25*s*.

IN our notice of the first part of this work (p. 148.), we pointed out some slight blemishes in the lithography of the plates; but we are most happy to find that the plates in the present part are altogether free from defects of this kind, and are at once artistical and botanical, in the highest degree. In fact, it does not appear to us that they can be surpassed, in the present state of this department of art. The first species, Brass*ia* macrostachya, figured in this part, having been introduced into British gardens, the details respecting it will be found under our "Floricultural Notices;" the others are as follows:—

Certochìlum stellàtum, t. 7. Nearly related to C. flavéscens *Bot. Reg.*, t. 1627.

" This magnificent species is dispersed through the districts of Macahé and Bananal. It flowers in September, and remains in that state till the end of January. It diffuses but a weak perfume; but the beautiful spikes, which, seen at a distance, make it resemble a mass of verdure, strewed with large stars, render it a most remarkable object."

Oberòn*ia* rufilàbris *Lindl.*, t. 8. *A.*
O. Griffith*iàna* Lindl., t. 8. *B.*

" Although it is not intended in this work to make a practice of figuring minute plants, which are interesting only for their curious structure, yet the extremely remarkable forms of some species render them even more worthy of illustration than the more striking plants, for which these plates are chiefly destined. Such a case is the present, where a page is occupied by three microscopic species of Orchidàceæ, each of which is still more strangely fashioned than the other, and all so different from other plants, that one might almost doubt their belonging to the vegetable world. If the Brahmins had been botanists, one might have fancied they took their doctrine of metempsychosis from these productions; in the genera Oberòn*ia* and Drýmoda, Pythagoras would have found a living evidence of animals transmuted into plants. The genus Oberòn*ia* consists principally of small fleshy-leaved epiphytes, inhabiting the branches of trees in the woods of India, and having the most tiny of flowers. Fourteen species have been described, of which one only, and that the least interesting (O. *i*ridifòlia) has been seen alive in Europe. The resemblances to insects and other animal forms, which have been perceived in the orchidaceous plants of Europe, and which have given rise to such names as Fly Orchis, Bee Orchis, Man Orchis, Butterfly Orchis, and Lizard Orchis, may be traced so plainly in the genus Oberòn*ia*, in every species, that it alone would furnish a magazine of new ideas for the grotesque pencil of a German admirer of the wild and preternatural. The two species now figured were discovered in the Burmese empire by Mr. Griffith, a botanist of great reputation, from whose indefatigable zeal and exertions the greatest discoveries may be expected in the flora of the British possessions in India. The plates have been prepared from sketches made by Mr. Griffith himself, on the spot, and since compared with dried specimens collected at the same time.

" Oberòn*ia* rufilàbris is an almost stemless plant, hanging down from the branches on which it grows, and to which it clings by its slender thread-like roots." The habit of O. Griffith*iàna* is very much that of the last species.

Drymòda pícta, Lindl. t. 8. *C.* A most curious plant, so entirely different from any other Orchidàceæ, that Dr. Lindley is " unable even to name a genus with which it may be compared." Mr. Griffith, who discovered the plant in the Burmese empire, in 1835, considers its place in the order to be on the confines of Epidéndreæ and *Vándeæ*. (*Sert. Orch.*, t. 8.)

Calánthe brevicórnu Lindl. Gen. et Sp. Orch. p. 251. A native of Nepal, where it was found by Dr. Wallich, in 1821. Calánthe is an extensive Indian genus, of which there are as yet scarcely more than two species in British gardens. There are said to be two other species in Flanders and Holland, which will doubtless soon find their way to this country; and there are a great many indigenous to Java, to repay the exertions of future collectors. (*Sert. Orch.*, t. 9.)

*Schombúrgk*ia *crispa* Lindl., t. 10. A very handsome genus apparently confined to British Guiana, where two species have been discovered by M. Schomburgk, a zealous naturalist, after whom they are named. The genus is nearly allied to Epidéndrum, from which it is distinguished by its large spathaceous bracts. (*Sert. Orch.*, t. 10.)

Considering the number of plates given in each part, and the exquisitely beautiful manner in which they are got up, this splendid work may really be considered as cheap.

ART. III. *Flora Telluriana.* By Professor Rafinesque. Parts I. and II. 8vo. Philadelphia, 1836.

THIS work, it is stated, will be completed in six parts, and will include 2000 new genera and species, with many new natural orders and families. It is intended as a sequel to the *New Flora of North America*, and as the completion of the author's numerous botanical works. He next contemplates publishing the genera of fossil plants, the primitive types of our actual vegetation; and, as a "subsequent sequel," *Fauna Telluriana*, or a synopsis of the new animals, living and fossil, observed or ascertained between 1796 and 1836.

Part I. contains an Introduction, in which the author states his own peculiar opinions on different subjects connected with botany, and speaks of his labours for the advancement of the science in Italy and the South of France, from 1796 to 1802; in North America, from 1802 to 1804; in Italy and Sicily, from 1805 to 1815; in Spain and the Azores, in 1815; and in North America, from Canada and Boston to the Mississippi and the Apalachian Mountains, from 1816 to 1836. He concludes by observing, that this work "is, perhaps, the first ever published in America on classical botany," and that it "will be a mine of botanical knowledge to those willing to avail themselves of such help any where." (p. 25.) Much as the author has written, he is seldom quoted by his contemporaries; but, whether this is solely owing to his own speculations, or their prejudices, we shall not venture to decide. It will be singular, if there is not something good in the writings of a man who has seen so much, and who is so enthusiastically devoted to the subject on which he writes. After the introduction, a table of new natural families is given; and the subject of natural arrangement occupies the remainder of Part I.

Part II. commences with explanations of botanical terms, a list of abbreviations, &c.; and we have next the characters of genera, which are carried as far as genus 400., Aloýsi*a* Ortega.

ART. IV. *Monographie du Genre Camellia, &c.: Monograph of the Genus Camellia; or, an Essay on its Culture, Description, and Classification.* By the Abbé Berlèse, Member of the Hort. Soc. of Paris, and of various other Societies. 8vo. Paris, 1837. Price 3 francs.

WHEN we mention that the Abbé Berlèse is a travelled scholar, an enthusiastic amateur of botany and gardening, and an intimate friend of the Chevalier Soulange-Bodin, our readers will readily conceive that this monograph of the Camellia is likely to be as good a work of the kind as can be produced in France at the present period. The Abbé Berlèse, for upwards of the last 20 years, has devoted himself exclusively to the culture of the Camellia; and his collection in Paris is visited by every stranger, and highly spoken of by travellers. [The abbé is the author of several instructive articles in the *Annales de la Société d'Horticulture de Paris;* but this, as far as we are aware, is the first separate work with which he has favoured the public. We ought sooner to have noticed it, but we have been of late much pressed for room.]

The work before us is divided into four chapters: the first is historical and descriptive of the species; the second treats of culture and propagation; the third treats of the classification of Camellias; and the fourth contains a description of 482 species and varieties. This last chapter will be the most interesting to the English reader, on account of the division of the different kinds into eleven groups. These groups are founded on two series, or scales, of colour; the first scale commencing with pure white, which, passing into rose, then into cherry-colour, goes to amaranth, and stops at crimson; the second scale commences by a carnation-yellow, or dirty white, which passes into flesh-colour, then into orange red, and stops at dark crimson.

In each of these scales the flowers are either of one colour or of two colours. In the first, there is only one of the colours belonging to the scale, without the admixture of any other colour; but, in the second, some one of the colours belonging to the scale must exist as a ground, varied with some of the other colours, also belonging to the scale. Thus, in scale one, we have

Unicolores, or flowers of one colour; white, rose, cherry, amaranth, crimson.

Bicolores, or flowers of two colours; a white ground varied by rose, a rose ground varied by cherry, a cherry ground varied by white; or, in short, any one of the colours as a ground, varied by any of the other colours belonging to that series. But, to be able to get a practical knowledge of these scales, the reader must have recourse to the work itself.

Chap. I. *Origin and botanical Characters of the Camellia, and the Progress of its Culture.* Here the author states that he has been aided in arranging the varieties of Camellia into scales, or gamuts, by M. Chevreul, director of the manufactory of the Gobelin tapestry, and professor of chemistry to the Museum, who is about to publish a scientific work on the arrangement of colours. The other parts of this chapter are already familiar to our readers.

Chap. II. *Culture of the Camellia.* Sandy peat is recommended as the best soil, though it is stated they will grow also in fresh loam (terre normale, dite terre franche); and the circumstance of fresh loam, along with leaf-mould and sand, being used by cultivators in the neighbourhood of London, is also noticed. The best season for potting is the spring. It is a principle in horticulture, the author observes, that evergreen exotics under glass, being continually more or less in a growing state, require a good deal of water throughout the year, even in winter; and this is particularly the case with the Camellia. It must be supplied abundantly with water, from the time its buds begin to swell, previously to flowering, and till the buds on the young shoots have attained their full size; and, throughout the remaining part of the year, the ground must be kept in an equable degree of moisture, as either too much or too little humidity is as injurious to Camellias as it would be to heaths. During the months of May and June, the Camellias may be watered overhead by a syringe; and the floor of the house should always be kept watered at this season, in order to maintain a humid atmosphere. The Abbé Berlèse finds

that the best time for removing the Camellias from the house into the open air is after they have completed their young wood, which is generally about the end of June. They should be placed in an open airy situation, exposed to the north, and where they would only receive the direct rays of the sun in the mornings and evenings. If exposed to the sun during the whole of the day, the flower-buds will be too promptly matured, and will not attain the same size as they would if matured slowly. The Camellias are taken back to the house again when the heavy autumnal rains commence, which is generally about the beginning of October.

Camellias will grow in any kind of house, provided they are placed near the glass. The Camellia can endure some degrees of cold; but, to preserve it through the winter in a state fit for flowering vigorously in spring, it requires a constant temperature of 6° or 8° of Réaum. (45° to 50° Fahr.) Air should be given to them every day, even when the weather is very cold; choosing the mildest period, and opening the windows only for a few minutes. Moss should never be allowed to grow on the surface of the pots. Camellias are subject to various insects; such as the green fly, the ant, a species of Cóccus, &c.; and worms get into the pots. Smoking with tobacco, and washing with a sponge and water, will destroy or remove the insects; and watering with a decoction of tobacco will kill the worms. The abbé has tried for this last purpose lime-water; but he finds that, unless it is used sparingly, it destroys the roots.

The Camellia flowers naturally in the green-houses, in Paris, from December till the end of March; but, by a little management, the flowering season may be made to commence in December, and continue till April. For this purpose, plants intended to flower in September should be put into heat in February, so as to complete the growth of their young wood, and mature their blossom buds, at least a month sooner than usual. Plants thus treated will be ready to be removed into the open air by the end of May, and may be taken into the house again a month sooner than usual; after which, they will immediately begin to flower. To retard Camellias, so that they may come into flower in April, they are kept in a lower temperature in spring, so as to cause them to make their wood and young shoots one month later than the natural period; and they are kept in a lower temperature than usual in autumn.

The dropping off of the flower-buds of the Camellia is a very general complaint, both in France and England; the only effectual remedy for which is, to keep the plant constantly in an equal temperature, between 7° and 8° Réaum. (48° to 50° Fahr.) during the day, and 5° or 6° Réaum. (43° to 45° Fahr.) during the night, from the 1st of October till the end of March. An equality of temperature, the Abbé Berlèse observes, is essentially necessary for preserving the flower-buds of the Camellia. It may be somewhat lower or somewhat higher than the range which he has mentioned; but on its uniformity will depend the existence of the flower-buds. This liability to drop off, from excess or defect of temperature, he attributes to the circumstance of vegetation not being active in the plant generally when it begins to come into flower, but only in the flower-buds. The abbé observed, in the course of forty-eight hours, the flower-buds drop off from 100 fine Camellias, because the temperature of the house in which they were kept had been allowed to fall from 12° Réaum. (59° Fahr.) to 3° below zero Réaum. (25° Fahr.). The late M. Cels kept his Camellias through the winter in pits, slightly heated by linings of dung or leaves, with the glass well covered up every night with straw mats. So treated, he never lost any buds, not even during the severe winter of 1829-30.

As varieties which expand their buds with great difficulty, the abbé mentions C. Dorsétti, Woódsii, Chándleri, and flórida. The buds of these varieties, he says, often do not open to above one half of the size that they ought to do. They remain in that state a few days, and then drop off. If the fallen buds be examined, a small quantity of water will be found within the calyx, and the central petals in a state of decomposition. The abbé attributes these appearances to the destruction of the vegetative power of the short petiole which sustains the bud; and he recommends, as a remedy, thinning out the buds,

and retarding the flowering of the plants by a temperature, during winter, somewhat lower than usual. By this treatment, he found some of the varieties above mentioned expand their blossoms to the fullest extent.

Camellias are very much injured when kept in crowded rooms; but the abbé thinks they might be exhibited there in cases of plate glass, and also between the sashes where there were double windows, and a considerable space between the outer and inner sash. In planting Camellias in a conservatory, great attention must be had to the under drainage of the soil; because the roots of no plant are more easily destroyed by the excess of stagnant moisture. As no Camellia will endure more than 4° or 5° Réaum. of cold (20° to 23° Fahr.), it is useless to try them in the open air in the neighbourhood of Paris; but in the warmer parts of Europe they become magnificent trees: for example, one at Caserta (brought from London by Græffer, and planted there in 1760,) was, when the abbé saw it, in 1819, 40 ft. high, with its branches covering a space nearly 70 ft. in diameter. It flowered abundantly every spring; and every flower was succeeded by fruit and ripe seeds. The abbé visited this tree several times; and he made an accurate portrait of it, which he presented, on his return to France through Geneva, to Professor De Candolle.

[We saw this tree in 1819; and an account of it, and of some other trees and shrubs at Caserta, will be found in a former volume of this Magazine, and in the *Arb. et Frut. Brit.*, p. 168.]

The Camellia bears pruning better than most other evergreen exotics; and the best periods for performing the operation are, the spring, immediately after the flowers have dropped; or the summer, after the growth of the second shoot, that is, towards the middle of August. Those which are pruned in the latter season may remain in the open air for the usual period; but those which are pruned in spring should be immediately afterwards put into a close frame, otherwise their growth will be slow and weak.

The Camellia is propagated by seed, layers, cuttings, and grafts. The seeds should be sown, as soon as they are ripe, in heath soil, and placed in a mild and humid atmosphere. They sometimes come up the first year, but more frequently not till the second. Transplanted into separate pots, and treated with the usual care, they will generally flower at the end of five or six years; though sometimes not for double that period. Seeds collected by the abbé from the tree at Caserta, in 1819, did not flower till 1831, and two plants not till 1836, when they were of fifteen years' growth. The way to make seedling Camellias flower promptly is to graft them, in their second or third year, on strong and vigorous stocks. Camellias are propagated by cuttings, chiefly for the purpose of obtaining stocks for grafting others on. The single or semi-double red, and the pink, are the varieties usually chosen for this purpose. The cuttings are taken off in the spring, and are of the preceding years' wood, 5 in. or 6 in. in length: they are planted in sandy peat, covered with a bell-glass, and plunged in peat; where, being kept shaded and moderately moist, they will produce roots in six weeks. Cuttings may also be rooted, without the aid of bottom heat, by taking them off in autumn, and keeping them from the frost during the winter; but this mode is considered too tedious. The mode of propagating by layers is not approved of in France, as requiring too much space in the houses or pits, and also the sacrifice of large and handsome plants to form the stools.

Grafting is considered the most expeditious mode; and the kinds of grafting most commonly employed in Belgium and France are, by approach, by slit or cleft-grafting, by side-grafting, and by approach-cuttings. The first mode is well known. Camellias grafted by approach, in March, are fit to separate by the end of August; those in May, in October.

Slit, or cleft, grafting universally known to gardeners, is by far the most expeditious mode, especially as practised by M. Soulange, in his establishment at Fromont, where he raises thousands of fine plants in an incredibly short space of time. M. Soulange calls this mode of grafting, with his improvement, *Greffe étouffée;* because, the moment they are grafted, each plant is covered with a bell-glass, and plunged in tan, in a pit kept at a high temperature, where

the grafted plants have the appearance of being stifled or choked for want of air. This mode of grafting is practised at any season; and the plant has completed its growth in six weeks after being put under the bell-glass. A young Belgian gardener, from M. Soulange's establishment, is now practising this mode of grafting in Mr. Knight's exotic nursery, King's Road, with the same rapid success as is experienced at Fromont.

Lateral, or side, grafting is practised by the Belgians, at any period from the spring to autumn. It has been once or twice described in this Magazine, but with some variations from the Abbé Berlèse's mode. A small portion of bark and wood is cut from one side of the stock, close to the ground, and for one or two inches in length; and a similar portion of bark and wood is cut from the lower end of the scion; so that, when it it is applied to the stock, both barks may join exactly. The graft, thus formed, is then made fast with some worsted threads. The scion need not have more than one bud and one leaf, and its whole length need not exceed an inch, or an inch and a half. The head of the stock is not cut off. The grafted plant, in its pot, is then laid down horizontally on the surface of a cold-bed of tan, or on that of a bed of perfectly dry moss, in either case in a pit or frame with the sashes on. The grafted part is then hermetically covered with a bell-glass; and, at the end of fifteen days, or at the most three weeks, the scion will be found perfectly united to the stock, and the grafted plant fit for sale. During the whole time that the scion is uniting to the stock, it must be kept in a green-house or pit, with the sashes on, but always without extra heat.

Approach-grafting by cuttings. This expression is applied to a mode of approach-grafting in which the stock is cut down to the ground, and the point of the shoot, which is to be inarched, bent down to it, and attached to it immediately above the collar, in the manner of whip, or of cleft, grafting. This mode requires rather a long shoot on the plant which is to be propagated; but otherwise it is very expeditious, and produces handsome plants.

Chap. III. *Method of Classification.* We have already noticed the two scales, or gamuts, which we shall here pass over, in order to exemplify them in the next chapter. At the end of this chapter, which occupies only two pages and a half, a list is given of the principal commercial gardeners in Europe who cultivate the Camellia. Seventeen of these reside in France, five at Ghent, one at Brussels, one at Enghien, one at Antwerp, one at Tournay, one at Turin, and four at Milan. The two mentioned in London are Knight and Loddiges, to which, at all events, Messrs. Chandler ought to have been added.

Chap. IV. *Description of Species and Varieties.*

Scale 1. *Camélliæ Unicolòres. Flowers White.* C. álba símplex, a. plèna, amábilis, axillàris, *a*nemoneflòra álba plèna, and twenty-two others.

Scale 1. *Unicolòres. Flowers of a clear Rose.* C. Aitòn*ii*, amplíssima, Apóllin*a*, dahli*æflòra*, and twenty-two others.

Scale 1. *Unicolòres. Flowers of a clear Cherry-Red.* C. *aucubæ*fòlia, Amhérst*ia*, amœ'na, augústa, and ninety-two others.

Scale 1. *Unicolòres. Flowers of a deep Cherry Red.* C. Alexandr*iàna*, *a*lthææflòra, atroviolàcea, and fifty-one others.

Scale II. *Unicolòres. Flowers Carnation.* C. álba lutéscens, or roseoflavéscens, cárnea, incarnàta, and Kew blush.

Scale II. *Unicolòres. Flowers Orange Red, more or less deep.* C. *a*nemoneflòra, *Warratáh*, sinénsis, atro-rùbens, augústa rùbra aurantìaca, and teen others.

Scale 1. *Bicolòres. First Division. White ground, striped or blotched with Rose.* C. Bánks*ii*, dianthiflòra striàta plèna, delicatíssima, elegantíssima, gloria múndi, imperiàlis, and ten others.

Scale 1. *Bicolòres. Second Division. Ground Rose, streaked or dotted with Cherry Red.* C. Colvíll*ii* vèra, Gray's Venus, Gray's Eclipse, spléndida, and eight others.

Scale 1. *Bicolòres. Third Division. Cherry Ground, more or less deep, varied by White.* C. A'glae, Adonídea, dianthiflòra, and thirteen others.

Scale II. *Bicolòres. First Division. Ground of a Yellowish Flesh-Colour, streaked with White.* C. Sweètii vèra.

Scale II. *Bicolòres. Second Division. Ground Orange Red, clear or dark, streaked or blotched with White.* C. Chándleri striàta, Cunninghàmii, mutábilis, imbricàta trícolor, and four others.

The work concludes with synoptic tables, containing the names of the 282 sorts, described in chapter iv., arranged under their different scales, with short characters given in columns. In general, the English names are sadly spelled. Next follows a synoptic table of the colours of the Camellia, arranged under the two different scales; and in which the shades of distinction are so very fine as not to admit of being recollected; and the distinctness of each of which is only to be felt by seeing the colour in its particular place in the scale.

In what the abbé calls an Epilogue, he states, that he submits his work to the public with all becoming modesty, declaring, that he looks upon it as a mere outline to be filled up by others, more competent than himself; and that he will be sufficiently recompensed for the boldness of his undertaking, however much he may be blamed for that boldness by critics, if his work shall have rendered the slightest service to horticulture; for his motto always has been, and always shall be, "*L'intérêt général avant tout.*"

ART. V. *A new Treatise on Agriculture and Grazing; clearly pointing out to Landowners and Farmers the most profitable Plans: to which are added, Remarks on the Poor Rates, the Employment of the Poor, &c.; and on the Destruction of the Black Palmer.* By an experienced Farmer. Pamph. 8vo, 2d edition. London, 1838.

WE cannot advance a single word in favour of this pamphlet. Without any knowledge of the subject as treated of in books, and with a very limited practice, the author talks of his new invented system of farming, and of having had to contend with difficulties arising from prejudice in favour of the old system, &c.

As a part of his new system, he directs the farmer to destroy slugs by sowing on young wheat slacked lime, in a flowery state, over the field; adding, that it will destroy the slugs wherever it falls. This, he says, he has done himself "with the most complete success." We can assert, from experience, that not one slug in a hundred will be killed in this way. It is true that lime, in a state of powder, or lime-water, if applied in sufficient quantities and repeatedly, will destroy slugs, worms, and even frogs and newts; but sowing it once over, even though some of the powder touch a slug or worm, will not kill it, any more than a drop of vitriol, thrown on a man's face, will kill a man. This is a fair specimen of the author's directions, and his experience. Directions are given for converting arable land into pasture; and, as a proof of their "superiority over other methods," the author begs to state "that, on the 16th of November 1801, a medal was voted to him by the Agricultural Society, in testimony of their approval of his plan." The ground being prepared, every acre is to be sown with 4 lb. of Dutch clover, 2 lb. of cow-grass, 2 lb. of rib-grass, a bushel of percy rye) grass, and 2 lb. of of rape-seed. The introduction of

rape-seed in a permanent pasture is a piece of absurdity which we do not recollect to have ever before heard of. It is clear that broad-leaved spreading plants of this sort among young grasses can only act as the most injurious weeds. But enough: the pamphlet, altogether, is a disgrace to agricultural literature.

ART. VI. *A short and simple Letter to Cottagers, from a Conservative Bee-Keeper.* Pamph. post 8vo, 24 pages. Printed by S. Collingwood, Oxford; and sold to Cottagers, and for Distribution, at 2*d.* each.

THERE are some plain practical directions in this tract, for taking the honey without killing the bees, which may be useful. For example, the bee-keepers on the Continent, and especially in Germany, "make their straw hives with the top to take off, and fasten it down with wooden pegs. In July, they pull out the pegs, and, with a large knife, cut away the top of the hive from the combs which are fixed to it, like the top of a pumpkin: they then cut out what honey the bees can spare, never caring for those which are flying about their heads; for they will not touch them if they have a pipe in their mouth. When they have helped themselves, they peg the top down again, and leave the bees to make all straight, and gather honey enough for the winter in August and September. Others put another large hive on the top of a strong stock, in May, as is done in some parts of England, which prevents their swarming. This hive they take off when full. Others turn up their hive in July or August, and cut out some of the combs. Others, who know more about it, place square wooden boxes one on another, putting empty boxes below, and taking away full ones from the top." (p. 3.) "All these ways are clumsy," says the author; and he next gives directions for stupifying bees by the smoke of puff-ball, and, when they are in this state, uniting weak swarms, and removing all the queen-bees but one. A doubled hive, he says, will eat no more honey in the winter than a single one; because, when there are many bees in a hive, they can keep warm by hanging close together, instead of eating.

ART. VII. *The Bee-Keeper's Manual; or, Practical Hints on the Management and complete Preservation of the Honey Bee, and, in particular, in collateral Hives.* By Henry Taylor. 16mo, pp. 78. London.

THE numerous books which have been published on bees may be divided into two classes: those which treat of their natural history, along with their artificial management; and those which confine themselves to the latter object. Among the former

are, Huber, Huish, and a long list of names; and, among the latter, Bonar, Thorley, Payne, and numerous other authors, down to the writer now before us. Mr. Taylor's work, on what may be called the mechanical or empirical part of bee-management has, at all events, the merit of being concise. The directions are plain and short; and, while they are suitable for the amateur who is about to commence bee-culture, they are equally adapted for the experienced bee-master who is about to exercise his humanity in the form of bee-preserver. The object of the *Bee-Keeper's Manual* is, to recommend what its author considers an improved modification of Nutt's hives (which, there can be no doubt, are by far the best in principle, for procuring a maximum of honey from a minimum of bees, and saving the lives of the latter); but, whether Mr. Taylor's hive is really an improvement on Mr. Nutt's, we confess we very much doubt. Nutt's hives work admirably, and cost only 5*l.* each; while one of Taylor's hives costs 7*l.*, and how they work, remains to be proved.

Art. VIII. *Poultry: their Breeding, Rearing, Diseases, and general Management.* By Walter B. Dickson. Small 8vo. London, 1838.

A laborious and careful compilation from books, and chiefly from French authors; and the compiler, "having for several years kept poultry himself, has recorded a number of his own observations, which he hopes may be found correct and useful." (*Preface*, p. ix.)

Art. IX. *The Hop-Farmer; or, a complete Account of Hop Culture, embracing its History, Laws, and Uses; a theoretical and practical Enquiry into an improved Mode of Culture, founded on scientific Principles: to which are added, several useful Tables and Calculations necessary and serviceable to the Growers, Factors, Speculators, and Consumers of Hops.* By E. J. Lance, Author of the "Golden Farmer," &c. 12mo. London, 1838. Price 6*s.*

We have glanced over this work, which seems to display a practical knowledge of the subject; and, there being no other modern work exclusively devoted to the culture of the hop, that we are aware of, it can hardly fail to be acceptable to the public.

Art. X. *A practical Treatise on the Cultivation of the Dahlia.* By Joseph Paxton, F.L.S., H.S. Small 8vo. London, 1838.

The name of the author is a sufficient guarantee for the practical nature of this work, and for its fitness for answering the end which he has in view; viz. "to advance and further the cultivation of a plant, than which a more splendid ornament, or a more decided acquisition to any collection, is not at present cultivated or known in British gardens." We strongly recommend this work to all dahlia-growers, and especially to amateurs.

ART. XI. *An Essay on the Antiquity of Hindoo Medicine; including an introductory Lecture to the Course of Materia Medica and Therapeutics, delivered at King's College.* By J. F. Royle, M.D., F.R., and L.S., Sec. G.S., Professor of Materia Medica and Therapeutics, King's College, London. 8vo. London, 1837.

THE work before us, like Dr. Royle's *Illustrations of Botany*, one of the best works of the kind that has ever been produced, is characterised by enlightened and comprehensive views. The author, while he never loses sight of his immediate object, seems constantly to have in view the general progress of science, and the advancement of society throughout the world. In his *Illustrations*, he shows what plants of the hilly country of India are suitable for the low country, and what may probably with advantage be cultivated in Europe; while at the same time he points out the European and American plants which would be productive of advantage if introduced into Asia. It may be thought that in the volume before us there is not much that would interest a gardener; but there is, in truth, a great deal, provided that gardener has a scientific knowledge of botany; and this we shall prove by two or three extracts.

After showing the interest that attaches to the study of the materia medica, from the circumstance of the articles which compose it being selected from every country of the globe, he says, "We are interested in the laws of vegetable physiology, that we may be able to weigh the influence of the various stimulants of light, heat, air, and moisture; the effects of soils and aspects; that we may understand something of their operation in modifying the products of plants; and be able to select our barks, woods, and roots, bulbs, leaves, flowers, and fruits, at the age and season when they contain the principles which render them useful as medicines in their most abundant and efficient state." (p. 3.)

With reference to the connexion between the structure and natural affinities of plants, and their physical and medical properties, and the geographical distribution of plants as connected with climate, he observes, "both are important subjects, whether we consider them in a scientific or practical point of view. The one teaches us the laws which influence the distribution of plants; points out the countries and climates which different families affect, and gives us principles for their cultivation, either as medicines or as objects of agriculture; the other is no less valuable in affording us innumerable indications, in every part of the world, for discovering the properties of new and unknown plants, whether as fitting them for food, for medicine, or for any of the arts of life; and, though there are, no doubt, exceptions (fewer, however, than are generally adduced), there certainly is no other method by which we may so readily find a substitute for a medicine, or an equivalent for an article of trade, as by

seeking for it in the families of plants which are already known to contain some possessed of such properties as we desiderate." (p. 4.)

The system of arrangement alone applicable for this purpose, Dr. Royle next observes, "is that called the natural method, which, enabling us to discuss questions concerning the structure of its several groups, in conjunction with climate, geographical distribution, medical and physical properties, makes modern botany a highly interesting and philosophical study." (p. 5.)

As examples of generalising according to the natural system, he says, no one who has studied this system "is surprised at hearing that the *Gramineæ* of tropical regions are as fitted for food as those of European countries; or that the oak of the Himalaya yields excellent timber; or that pines abound in turpentine, and may be made to yield tar wherever they are found. So the *Rosaceæ* afford us our best fruits; among the *Papilionaceæ* are found all the legumes used as food in different parts of the world; and the *Labiatæ* yield most of our odoriferous herbs, as lavender, rosemary, thyme, sage, savory, marjoram, and mint." (p. 5.) In a subsequent page, the author mentions an important discovery which he made while generalising in this way; viz. that all the plants which yielded caoutchouc belonged to the milky-juiced families of *Cichoràceæ*, *Lobeliàceæ*, *Apocýneæ*, *Asclepiàdeæ*, *Euphorbiàceæ*, and *Artocárpeæ*, a tribe of *Urtíceæ*. (p. 9.) It next struck Dr. Royle as singular that so many plants, which silkworms prefer next to the mulberry, should be found in those families which yield caoutchouc; which ultimately led to the conclusion that all milky plants may be made to produce caoutchouc, and that, without this ingredient, the silkworms cannot produce silk.

These extracts are sufficient to show that this work may be perused with instruction by the cultivator, no less than by the medical man.

With respect to the main object of the work, the antiquity of Hindoo medicine, it may be sufficient to state that Dr. Royle's researches confirm the theory, that, where civilisation generally is of the greatest antiquity, there also the antiquity of all the arts which constitute civilisation will be found the greatest.

Art. XII. *Literary Notices.*

The Suburban Gardener, and Villa Companion, will be completed on July 1., in one vol. 8vo, price 15*s*. Immediately after which will be commenced *The Suburban Cultivator*, to appear monthly, in one-shilling numbers, and to be completed in one volume, also price 15*s*. Each work will be complete in itself; and sold separately.

The Book of the Farm; being a systematic work on practical

agriculture, on an entirely new and original plan, by Henry Stephens, editor of the *Quarterly Journal of Agriculture, &c.;* the drawings and specifications of the several implements by James Slight, curator of the Highland and Agricultural Society's Museum. From the practical knowledge, extensive observation, and general science of Mr. Stephens, there can be little doubt that the above work will be one of no ordinary interest..

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

The Slimy Grub, Blennocámpa Selándria. (Vol. XIII. p. 485.) — Having suffered extensively from this insect, I am induced to send you a receipt for composing a mixture which I found effectually to destroy it, on upwards of 200 trees under my care, which were all more or less affected; some of the trees being literally covered with insects. Before giving the receipt, it may be useful to mention that I find a decoction of artichoke leaves so useful for mixing with other ingredients for the destruction of the insects, that I always keep some of it in readiness for that purpose.

The *receipt* is as follows: — To thirty gallons of water add a peck of quick lime: after standing a few hours, pour it gently off, to prevent any of the sediment mixing with the liquid (as that would give the trees an unsightly appearance: add 2 lb. soft soap, 1 lb. sulphur (to be well mixed with the soap before dissolving it), two gallons of the decoction of artichoke leaves, and one gallon of tobacco liquor. After mixing the ingredients properly, apply it to the trees with Read's hydraulic syringe, or any other garden engine, in the proportion of one third of the mixture to two thirds of pure water. The best time to apply it is from three to seven o'clock P. M., after a fine dry day; or between five and eight o'clock A. M., no dew having fallen the previous evening.

From two to six washings will be found sufficient to clean the trees; and, if the mixture be used on those not infected, it will be found a great means of preventing them from becoming so.

To make the decoction of artichoke leaves, I take one quarter of a hundred weight (28 lb.) of leaves, and boil them in twelve gallons of water for half an hour, then strain it off, let it stand till cold, and barrel it, to be used as wanted. — *J. M. H. S. Shrewsburry, April* 20. 1838.

Jauffret's new Manure. (p. 184.) — Since our remarks on this subject were published, we have received an opinion of it from one of the most scientific agriculturists in France; been made acquainted with all the particulars of the secret; conversed with M. Lozivy, the agent for granting licences for La Manche; and seen a quantity of the manure prepared by him on Lord Spencer's estate at Durnsford Lodge, near Wandsworth; in short, we have satisfied ourselves as to what the invention is, and what it is worth in this country. The following is from our Paris correspondent: —

"I have not yet decided upon the question of the *engrais Jauffret,* although I have long been a subscriber. The following is, however, the opinion I have formed of it: — This compost is not equal to farm-yard manure, particularly as to duration; so that in the neighbourhood of large cities, or in countries where an advanced state of cultivation furnishes the land with all the manure necessary, this practice would not be useful, or, at least, only in a slight degree. But in districts where agriculture is backward, where, for want of dung, only a half, a third, or even a fifth, part of the manure is applied that the land requires, and where there are immense tracts of heath and sandy plains, that is to say, land covered with materials for the compost; in such districts, the practice of

Jauffret is calculated, I think, to be of very great service. The characteristic feature and principal merit of this invention is, to convert in a few weeks, by means of a fermenting liquid, masses of these vegetable substances into real manure, or, more properly speaking, into perfect vegetable mould, which may be used immediately. It will come dear, I think, dearer than animal manure, near large cities; but probably less dear than the old composts, which required to be turned three or four times, and to lie six months, a year, or more; while in this case the object is effected in nineteen or twenty days. In France, where we have still almost entire provinces covered with heath and rushes, the Jauffret compost must be very useful. It will be useful also, I think, in the cantons, where the vine is cultivated. In England, where agriculture is much more advanced than in France, and the production of manure incomparably greater, it would certainly be of much less importance, except, perhaps, for some particular localities. Being a subscriber, I have the pamphlet which describes the composition of the compost. The receipt is so complicated as to be almost ridiculous, although it has been much simplified in a second edition, and it will, no doubt, be much more so in time. — *V. Paris, April* 6. 1838.

Jauffret's Manure in England. — A gentleman of property, and a great mechanical inventor and promoter of agricultural improvement, has been at the expense of taking out a patent for Jauffret's manure in England. The specification is in the *Repertory of Arts*, No. 51., for March, 1838; and it is taken out in the name of A. B. F. Rosser, of New Boswell Court, London. M. Lozivy informs us that the specification is a correct translation of that of the French patent, of which we have no doubt, having compared it with the pamphlet alluded to by our correspondent.

The object of the inventor is stated to be, to reduce, not only "broom, heather, furze, rushes, and other vegetables, not hitherto used for making manure, as being deemed too difficult of decomposition, but also vegetables and weeds, such, for instance, as couch grass, which it has hitherto been considered dangerous to introduce into manure, and the vegetating powers of which are by the invention totally destroyed. The principal object effected by the invention is the production of a rapid fermentation, the degree of which may be regulated nearly at pleasure; whereby the substances to be converted into manure are speedily and uniformly decomposed." The inventor next describes a liquid, which is to be prepared beforehand, of water, unslacked lime, a little sal ammoniac, and kitchen-water, or any sweepings, dead animals, spoiled provisions, and filth from the dwelling-house. This water is to be allowed to ferment in a tank or pit. This is the first process. The next is to procure fæcal substances and urine, particularly human ordure, chimney soot, powdered gypsum, unslacked lime, wood-ashes, sea salt, and what the inventor calls leaven of manure, being the last drainings from a dunghill already formed by the inventor's method. These articles being procured, and mixed together in certain proportions (which we do not give, because we do not suppose there is one of our readers who would adopt them), a quantity of the prepared liquid is to be poured over them, and the whole allowed to ferment for some weeks in a pit or cask. A piece of ground is now to be prepared by levelling and beating, so as to render it impervious to water; and on this raised floor the heap of straw, heath, or other rubbish which is to undergo fermentation, is to be placed. The materials may be placed in layers, and thoroughly moistened and slimed with the liquid and its sediment. The heap may be raised to the height of 7 ft., and then thoroughly moistened and covered over with the muddy sediment of the liquid. While the heap is making, it should be beaten or trodden down, so as to make the substances of which it is composed lie close and compact; and, when it is finished, it should be beaten all round with the same view. The heap is now to be covered all over with straw, branches, or herbage, so as to retain the heat and exclude the rain, or the drought. At the end of forty-eight hours from the completion of the heap, a fermentation of from 15° to 20° of heat by Réaumur's scale (66° to 77° Fahr.) has been found to have taken place; and on the following day it has generally attained from 30° to 40° of Réaumur (99° to

122° Fahr.). On the third day, the top of the heap is to be opened to 6 in. deep with a fork, and the sediment thrown on the top is to be turned over, and another good drenching with the liquid is to be applied to the heap, which is again to be immediately covered up. About the seventh day, holes about 6 in. distance from each other are to be made with a fork, to the depth of 3 ft., and another drenching is to be applied, the heap being afterwards covered up again. About the ninth day, another drenching is to be applied, through new and somewhat deeper holes, and the heap is to be again covered up. After the lapse of from twelve to fifteen days from the making of the heap, the manure will be fit to spread. The fermentation is stopped by an excessive drenching, or by opening out the heap. If the materials of the heap are straw only, the fermentation may be stopped at 55° of heat (15·6° Fahr.) ; otherwise it may be allowed to proceed to 75° Réaum. (200° Fahr.). (*Rep. of Art.*, March, 1838, p. 172.)

In order to give this process a fair chance of being introduced into England, M. Lozivy, one of the agents for the patentees in France, was invited to London, in order to prepare a heap of materials in the Jauffret manner, as an exemplification of Rosser's patent. He came in March, 1838, and prepared a heap of the new manure on the Earl of Spencer's estate at Durnsford Lodge, near Wandsworth, in Surrey, the residence of Mr. Paterson, the agent to Lord Spencer. When the heap was duly fermented, and fit to spread, M. Lozivy invited a number of persons to inspect it, on April 16., among whom we were included. It was formed on the south-east side of a field barn, on a raised platform of clay, 10 ft. or 12 ft. in diameter, and covered with a very thick coating of straw. The outer covering of straw was removed, and the heap turned over, in the presence of the company; when the materials, which had been chiefly straw, were found to be thoroughly rotted, black, and moist: and, taken altogether, in a very fit state for using as manure. On examining them closely, many small branches of heath and furze were found, the leaves and the herbaceous parts of which were decomposed, and the bark of the woody part partially so. On the whole, it appeared to us that every thing that was proposed to be done was accomplished. It had required a much longer time than usual; because, owing to the extreme coldness of the weather, the heap could not for several weeks, be brought to a sufficient temperature to induce fermentation.

The impression on our mind was, that nothing more was done by this process than what may be done in any farm-yard with similar materials, moistened with the drainings of the yard, and similarly heaped up and covered. All the numerous ingredients in Jauffret's composition would, we believe, have no more effect than clear water, without the assistance of animal matter; and, therefore, if we were going to ferment straw, or other vegetable matters, without the aid of a farm-yard, we should collect the dung and urine of all sorts of animals, and, simply throwing them into a tank or cask of water, allow them to ferment there; and, as soon as the fermentation took place, we would water the heap of materials, and cover it up. Of course, it would be of no use to attempt this except in mild weather; for even urine will not ferment in winter. We consider the lime, the gypsum, the sal ammoniac, the soot, the wood-ashes, the sea salt and the refined saltpetre, as likely to have no effect whatever in aiding the fermentation, though they would add to the value of the heap as manure.

All the good, therefore, which we consider may be drawn from a knowledge of Jauffret's process in England, by gardeners or farmers, is the confirmation of what they already know, though sometimes, perhaps, neglect to put in practice; viz. that the fermentation of litter may be greatly promoted by watering it with the liquid which drains away from it, and by covering it closely with thatch, straw, mats, turfs, faggots, branches, or some other material which will exclude rain and drought. Farther, that the urine of horses, and the urine and fæcal matters of the human species, promote fermentation in vegetable matters much more powerfully than those of cows,

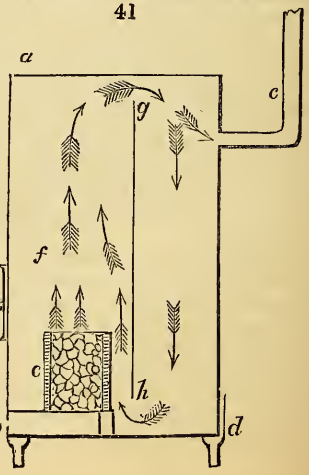
sheep, swine, or poultry; and, consequently, that the mixing together of the manures made by different animals will generally be found to increase fermentation.

Finally, if, in any part of Great Britain, there should be a quantity of such materials as, in France, would be made into manure by Jauffret's process, the shortest and most economical way would be to mix them with horse-dung, as practised in forming meadow-bank middens. In this way, one load of horse-dung might be made to ferment hundreds of loads of other fermentable matter.

Joyce's new Mode of Heating.—When we noticed Mr. Joyce's stove in our January No., p. 57., the nature of the fuel was an entire secret. It since turns out to be nothing more than charcoal prepared in a particular manner, which, though it deprives it of its smell, and, perhaps, diminishes in some degree its deleterious properties, yet leaves it of the same nature as it was before, though not so perceptibly dangerous, from its want of any noxious effluvium. Mr. Joyce's stove, therefore, has entirely failed in realising all the high expectations that were formed of it, and cannot be recommended, either for plant-houses or human habitations. The manner in which the charcoal is deprived of its smell is said by some to be by boiling it in any alkali, such as lime-water; and this may afford a useful hint to gardeners, where they are under the necessity of using a charcoal stove in fruit-rooms or plant-houses, on extraordinary occasions.

Dr. Arnott's Stove.— Our opinion of this stove, as expressed p.154., remains unchanged; and we still believe it to be the very best of all stoves for an ill-built cottage, in which the windows and doors are so badly fitted as to admit abundance of air. For the rooms of well-built houses, however, where the windows and doors fit tightly, and where this stove is substituted for an open fireplace, and no air allowed to pass up through the chimney, except what passes through the stove, a distinct system of ventilation will require to be introduced, to prevent any unpleasant feeling being experienced. We doubt very much if such a system is practicable on a small scale, and therefore question whether Dr. Arnott's stove will ever become a substitute for open fireplaces in sitting-rooms of ordinary dimensions, as now constructed. That it is the best and most economical stove for halls, staircases, and rooms, where there is an open fireplace and a fire kept burning, or, in short, wherever there is an efficient means of ventilation, we have no manner of doubt. Its excellence consists in the small proportion of the heat produced which is allowed to escape up the chimney, and in never raising the outer temperature of the stove above that of boiling water. How these two grand objects are effected will be understood by the following diagram.

41



"The outline *a b d c* (*fig.* 41.) represents a box formed of sheet iron, and divided by the partition *g h* into two chambers, communicating freely at the top and bottom. The letter *e* marks the fire-box or furnace, formed of iron, lined with fire brick, and resting on a close ash-pit, of which *b* marks the door, and near which door there is a valved opening, by which air enters, to feed the fire when the door is shut; *i* marks the door of the stove, by which fuel is introduced; *c* is the chimney flue. While the stove door and the ash-pit door are open, a fire may be lighted, and will burn in the fire box just as in a common grate, and the smoke will rise and pass away by the chimney, mixed with much colder air, rushing in by the stove door; but, if the stove door and ash-pit door be then closed, and only as much air is admitted by the valved opening in the ash-

pit as will just feed the combustion, only a small corresponding quantity of air can pass away by the chimney, and the whole box will soon be full of the hot air or smoke from the fire circulating in it, and rendering it every where of as uniform temperature as if it were full of hot water."

The above diagram does not give an accurate idea of Dr. Arnott's stove, as commonly manufactured and sold in the shops; but it illustrates the principle. In those sold in the shops, the exterior casing bears a much smaller proportion to the fuel chamber; nevertheless, by the admission of a very small quantity of air to the fire (often not more than what will pass through a goosequill), the heat produced is regulated to the greatest nicety, and the outer casing of the stove never rises to 200°. Much has been said against Dr. Arnott's stove in the *Mechanic's Magazine*, and the *Monthly Chronicle* (for May), as not being original; but this is a question altogether apart from its utility. Original inventions are very seldom practical ones at the first.

We consider it right to apprise our readers that a stove or fireplace is expected soon to be made public, which, it is said, will warm as economically as Dr. Arnott's, and ventilate, at the same time, as effectually as an open fireplace. The inventor is Julius Jeffreys, Esq., the inventor of the respirator, whose opinions on the important subject of ventilation will be found in the *Architectural Magazine* for May. How far he may be able to realise what is promised we cannot yet say; but we shall not fail to give our readers the earliest information we are able to obtain on the subject. — *Cond.*

Art. II. *Obituary.*

Thomas Andrew Knight, Esq. — The public has sustained an irretrievable loss in the death of Thomas Andrew Knight, Esq., F.R.S., of Downton Castle, in Herefordshire, the President of the Horticultural Society of London. A correspondent of the *Athenæum*, with the signature of J. L. (evidently Dr. Lindley, who is understood to write the botanical and horticultural articles for that journal), has sent the following biographical notice, written with just and excellent feeling, which we copy from the *Athenæum* of May 19., though, at this late period of the month, we have not time previously to ask the editor's permission for so doing: —

"Mr. Knight was born at Wormsley Grange, near Hereford, on the 10th of October, 1758. He was the youngest son of the Rev. Thomas Knight, a clergyman of the Church of England, whose father had amassed a large fortune as an iron-master, at the time when iron-works were first established at Colebrook Dale. When Mr. Knight was three years old, he lost his father; and his education was, in consequence, so much neglected, that at the age of nine years he was unable to write, and scarcely able to read. He was then sent to school at Ludlow, whence he was removed to Chiswick, and afterwards entered at Baliol College, Oxford. It was in the idle days of his childhood, when he could derive no assistance from books, that his active mind was first directed to the contemplation of the phenomena of vegetable life; and he then acquired that fixed habit of thinking and judging for himself, which laid the foundation of his reputation as an original observer and experimentalist. He used to relate an anecdote of his childhood, which marks the strong original tendency of his mind to observation and reflection. Seeing the gardener one day planting beans in the ground, he asked him why he buried those bits of wood; being told that they would grow into bean plants, and bear other beans, he watched the event, and, finding that it had happened as the gardener had foretold, he determined to plant his pocket-knife, in the expectation of its also growing and bearing other knives. When he saw that this did not take place, he set himself to consider the cause of the difference in the two cases, and thus was led to occupy his earliest thoughts with those attempts at tracing the vital phenomena of plants to their causes, upon which he eventually constructed so brilliant a reputation.

"It was about the year 1795 that Mr. Knight began to be publicly known as a vegetable physiologist. In that year he laid before the Royal Society his celebrated paper upon the inheritance of disease among fruit trees, and the propagation of debility by grafting. This was succeeded by accounts of experimental researches into vegetable fecundation, the ascent and descent of sap in trees, the phenomena of germination, the influence of light upon leaves, and a great variety of similar subjects. In all these researches the originality of the experiments was very remarkable, and the care with which the results were given was so great, that the most captious of subsequent writers have admitted the accuracy of the facts produced by Mr. Knight, however much they may have differed from him in the conclusions which they draw from them.

"The great object which Mr. Knight set before himself, and which he pursued through his long life with undeviating steadiness of purpose, was utility. Mere curious speculations seem to have engaged his attention but little; it was only when facts had some great practical bearing that he applied himself seriously to investigate the phenomena connected with them. For this reason, to improve the races of domesticated plants, to establish important points of cultivation upon sound physiological reasoning, to increase the amount of food which may be procured from a given space of land (all of them subjects closely connected with the welfare of his country), are more especially the topics of the numerous papers communicated by him to various societies, especially the horticultural, in the chair of which he succeeded his friend Sir Joseph Banks. Whoever calls to mind what gardens were only twenty years ago, and what they now are, must be sensible of the extraordinary improvement which has taken place in the art of horticulture during that period. This change is unquestionably traceable, in a more evident manner, to the practice and writings of Mr. Knight than to all other causes combined. Alterations first suggested by himself, or by the principles which he explained in a popular manner, small at first, increasing by degrees, have insensibly led, in the art of gardening, to the most extensive improvements, the real origin of which has already, as always happens in such cases, been forgotten, except by those who are familiar with the career of Mr. Knight, and who know that it is to him that they are owing. Of domesticated fruits, or culinary vegetables, there is not a race that has not been ameliorated under his direction, or immediate and personal superintendence; and if, henceforward, the English yeoman can command the garden luxuries that were once confined to the great and wealthy, it is to Mr. Knight, far more than to any other person, that the gratitude of the country is due.

"The feelings thus evinced in the tendency of his scientific pursuits were extended to the offices of private life. Never was there a man possessed of greater kindness and benevolence, and whose loss has been more severely felt, not only by his immediate family, but by his numerous tenantry and dependants. And yet, notwithstanding the tenderness of his affection for those around him, when it pleased heaven to visit him, some years since, with the heaviest calamity that could befal a father, in the sudden death of an only and much beloved son, Mr. Knight's philosophy was fully equal to sustain him in his trial.

"Mr. Knight's political opinions were as free from prejudices as his scientific views: his whole heart was with the liberal party, of which he was all his life a strenuous supporter.

"It is no exaggeration to add that, great as is the loss sustained by his country and his friends, it will be equally difficult to fill his vacancy in science. No living man now before the world can be said to rank with him in that particular branch of science to which his life was devoted.

"Mr. Knight died in London, at the house of Mrs. Walpole, one of his daughters, after a short illness, on the 11th of May, in the eightieth year of his age.—J. L." (*Athenæum*, May 19.)

THE

GARDENER'S MAGAZINE,

JULY, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *Descriptive Notice of the Villa of Mrs. Lawrence, at Drayton Green.* From the "Suburban Gardener."

THE object of the *Suburban Gardener* being to teach something of gardening to those who have not been regularly brought up to the profession, there are, probably, few professional men (and such, we suppose, are most of the readers of the *Gardener's Magazine*) who will think of perusing it. On this account, we gave, in a former Number (p. 220.), a descriptive notice of Hendon Rectory; and we now present a similar account of what we consider to be the very first villa of its class in the neighbourhood of London. Having done this, we do not intend to trouble our readers with any further extracts from the *Suburban Gardener*, but we leave that book to find its way in the world, feeling confident that it will extend the comforts and enjoyments of gardening more effectually than any other work that we have hitherto produced.

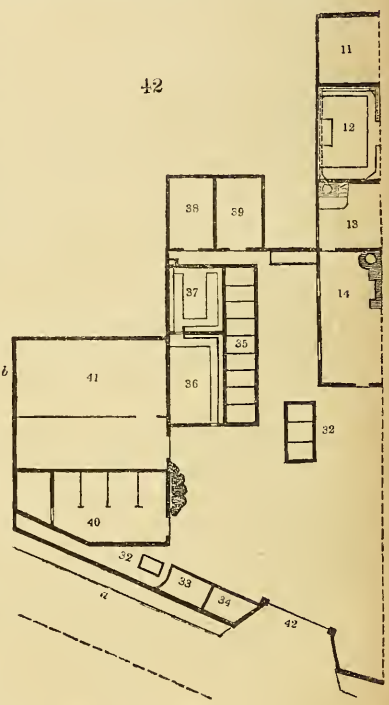
The instruction which the young gardener may derive from the article on Hendon Rectory and this article is of two kinds: 1. the occasional illustration of a principle, such as the advantage and disadvantage of different slopes of ground for displaying flower-beds, as explained in the fifth and sixth pages of the present Article; and, 2., the exemplification of other principles by practice. In the case of Hendon Rectory, the gardenesque manner of culture is illustrated, and its practice exhibited; and, in the case of the villa about to be described, the advantages of grouping are set forth in a more striking point of view, than they have hitherto been in any garden, or book of gardening, with which we are acquainted.

The young gardener may also learn from this article, and the one on Hendon Rectory, how little of the real merit of a place depends on its extent, the outline of the ground, the character of the surface, or even the disposition of the house and the domestic offices. Neither Hendon Rectory, nor the Lawrencian Villa, possesses any advantages in these respects: but skill,

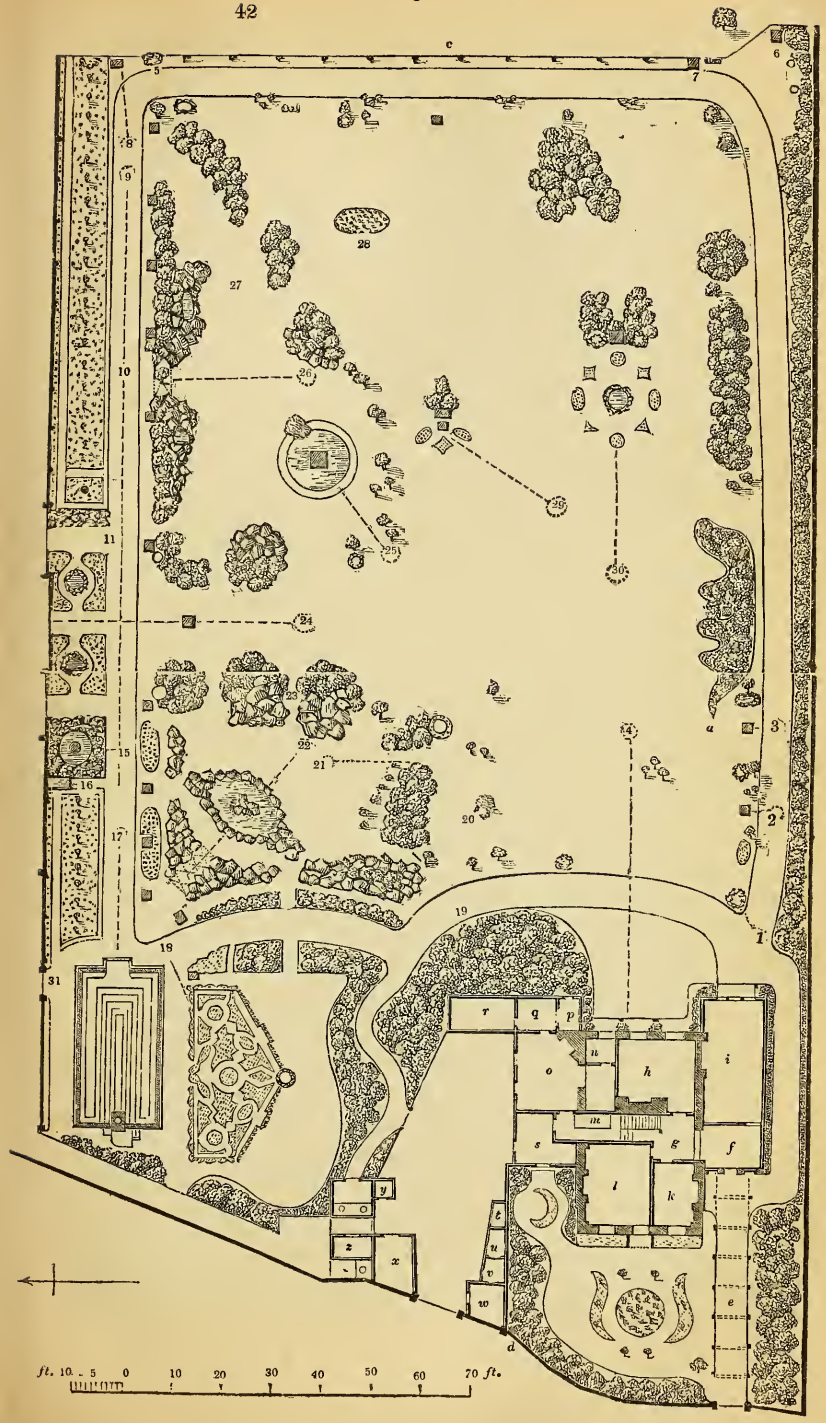
taste, and money, and, above all, taste, will effect wonders in any situation, however unfavourable; and it is to the taste of the proprietors of Hendon Rectory and Drayton Villa, and their skill in carrying that taste into execution, much more than to their wealth, that we are indebted for two villas altogether unique — unique in the manner in which they are laid out, and unique in the kinds of plants cultivated.

We regret that, in the case of Mrs. Lawrence's villa, we could not spare room for the list of plants which are there cultivated, as it consists of a selection of those species and varieties which are decidedly the most rare and beautiful.

The Lawrencian Villa, Drayton Green. (*figs.* 42. to 62.).— This villa, of which *fig.* 42. is the ground plan, is unquestion-



a, Grounds of an adjoining villa.
b b, Grass fields, occupied by a farmer.
c, Grass field, belonging to Colonel Sir James Limond, separated from the lawn by a sunk wall and ditch, surmounted by a slight fence formed of four horizontal rods of iron wire.
d d, Village lane, leading on the right to the London road, and on the left to Perrivale, Greenford, and Harrow.
e, Entrance to the house under a covered way; at the end of which, on each side of the hall door, is a niche, with a statue.
f, Entrance lobby.
g, Hall and staircase.
h, Drawingroom, opening under a veranda to the lawn.
i, Dining-room, opening into the garden walk.
k, Mrs. Lawrence's boudoir.
l, Breakfast-room, one of the windows opening to the front garden, which is ornamented with a border, and beds of low-growing peat-earth shrubs, intermixed with spring-flowering bulbs and standard roses.
m, Store closet under the staircase.
n, French wine cellar, entered through the ale and spirit cellar; from which there are stairs leading to the wine-cellar below.
o, Kitchen. *p*, Butler's pantry.
q, Back kitchen, serving also as a scullery to the dairy.
r, Dairy.
s, Housekeeper's room.
t, Dust-bin.
u, Cinder-bin.
v, Bin for refuse which cannot be burned or turned into manure.
w, Coal-house.
x, Lumber-house for bottles, hampers, &c.
y, Knife-house; adjoining which is a privy for the family.
z, Wood-house, adjoining which is a privy for the servants.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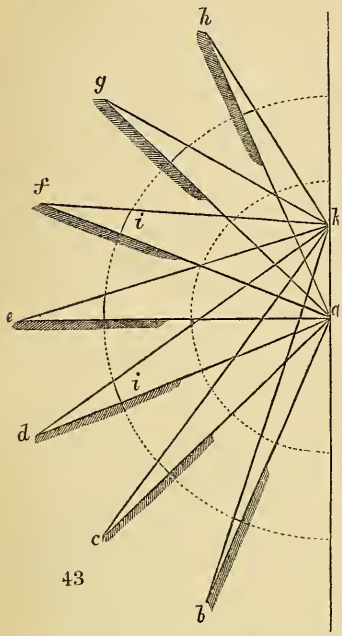
ably the most remarkable of its size in the neighbourhood of London, on account of the great variety and beauty which have been created in it, under the direction of Mrs. Lawrence, F.H.S., the lady of the celebrated surgeon of that name. The straggling little village of Drayton Green lies about seven miles to the west of London, at a short distance from the road to Oxford. The surrounding country is flat, or nearly so; and it is principally under pasture, in very irregular enclosures, with hedges, also very irregular in regard to height and breadth, and abounding, in most cases, with English elms, oaks, and limes. The soil is a thin loam on gravel, and the country generally is considered remarkably healthy, and agreeably picturesque.

The Lawrencian Villa may be said to occupy in all about twenty-eight acres. The house, stable offices, and decorated grounds stand on about two acres; and at the distance of about two or three hundred yards, across the road, are the kitchen-garden, poultry-houses, and piggeries, occupying nearly two acres; and two pasture fields, containing twenty-four acres.

The house and the ornamented grounds are shown in the plan *fig.* 42. The surface is even, and has the disadvantage of rising somewhat from the house to the further extremity of the lawn. It is bounded on the south by another villa of the same kind (*a*); on the north, by grass fields (*b*); and, on the east, by Sir James Limond's grass field already mentioned (*c*).

The disadvantage of the ground sloping to the house is counteracted in a very efficient manner, by lowering the walk that crosses immediately in front of the house, and sloping the ground from the drawingroom veranda to that walk; beyond which the lawn rises gently and gradually, till, at the cross walk at the farther extremity, it is probably 6 ft. higher than the level of the drawingroom floor. Though, when the lawn rises in this manner from the house, it detracts from the expression of dignity, considering the villa as a whole, yet, viewing the lawn as an arena for the display of plants, statues, and other interesting objects, from the windows of the drawingroom, it has an advantage in that point of view over a falling surface. If we imagine for a moment that this lawn, instead of sloping towards the house, as it does, at the rate of 1 ft. in 50 ft., sloped from it at the same rate, we shall find, on reflection, that it would appear less in extent, and that the distant objects would be less distinctly seen: this may be rendered palpable on paper by lines, thus:— In the diagram *fig.* 43., the line *a e* represents a level surface; and the lines *a d*, *a c*, *a b*, represent ground falling in slopes at different angles. The lines *a f*, *a g*, and *a h*, in like manner, represent ground rising at different angles. The point *k* represents the situation of the human eye, being 5 ft. higher than the point *a*; and the lines *k b*, *k c*, *k d*, &c., represent the angle at

which the most distant part of the ground is seen by the eye at *k*. Now, the larger the angle at which this distant point of the ground is seen by the spectator at *k*, the more distinctly will he discern objects there; and, as these different angles are represented by the sines to each (*i i*), it follows that, in rising ground, the most favourable slope for seeing objects from a fixed point is that represented by the line *a f*, or some slope near to that line; say a slope forming an angle between 20° and 30° with the horizon. In the case of falling ground, it will be observed that the most favourable slope lies between the same angles; though in falling ground the objects are not nearly so advantageously seen as in rising ground. A level surface, it will be observed, possesses exactly the same advantages, in point of seeing objects placed on it, as a surface rising at an angle of between 20° and 30°. Hence, for the display of flower-beds, a lawn which has a level surface, or one which rises at any angle under 30°, is much better adapted, than one which slopes from the eye at any angle, however small.



43

The decorated ground in the Lawrencian Villa is remarkable for the very great variety which it contains in a very limited space; and the secret of producing this variety consists in introducing numerous small groups of trees and shrubs, sometimes combined with flowers or climbers, at other times with rockwork, and with statues, fountains, basketwork, and so on. The trees and shrubs are of good kinds, though not remarkable in this respect, having been in part planted before the place was taken possession of by Mrs. Lawrence; but the flowering shrubs, including rhododendrons, azaleas, roses, &c., and the herbaceous flowers, are of the most rare and beautiful kinds. The collection of green-house and hot-house plants may be characterised as among the most select and valuable in the neighbourhood of London.

The numerous prizes which Mrs. Lawrence has received, for some years past, from the Horticultural Society of London, evince the excellence of the articles which she exhibits at their meetings. The first prize which Mrs. Lawrence received from the Horticultural Society was the silver medal for plants sent to the

exhibition at the Chiswick Garden in May, 1833; and the last, previously to the moment at which we now write, the silver Knightian medal, for a collection of plants exhibited in Regent Street, May 1. 1838; making in all 53 medals. (See *Gard. Mag.*, art. "Horticultural Society and Garden," from 1833 to the present time.) As a general summary of the flora of the Lawrencian Villa, we may mention that there were, in April, 1838, exclusive of what were killed down by the frost of the preceding January, 212 species and varieties of hardy and half-hardy ornamental trees and shrubs; 130 species and varieties of hardy fruit trees; 600 species and varieties of hardy herbaceous plants; 30 species and varieties of British and American ferns, planted in the rockwork; 140 species of alpines, planted in the rockwork; 34 species of hardy aquatics, planted in the basins; 200 varieties of heartsease; 500 varieties of garden roses, creepers and standards; 12 varieties of ivy; 40 species and varieties of American plants; 9 species and varieties of hardy ligneous climbers; 140 species and varieties of florist's pelargoniums; 172 genera and 992 species and varieties of Botany Bay, China, and Cape shrubs; 134 genera and 340 species and varieties of hot-house plants; and 57 genera, and 227 species and varieties of stove Orchídeæ. These numbers are taken from a manuscript catalogue, kindly lent to us by Mrs. Lawrence.

Next to the grouping on the lawn, and the select collection in the green-houses and stoves, the points worthy of imitation in Mrs. Lawrence's management are, the high order and keeping which pervade every part of her residence, from the most obscure recesses of the offices, to the most brilliant scenes on the lawn. This is effected, also, by a smaller number of gardeners than might be expected: the number kept in the summer time being six, with one or two women for collecting insects and dead leaves, and during winter three. It is only farther necessary to add, that all the different scenes in these gardens, all the beds of flowers, pieces of rockwork, &c., as well as the green-houses and hot-houses, were designed by Mrs. Lawrence herself, and executed under her direction.

The dwelling-house of this villa has been much enlarged and added to at different times, in consequence of which there is a want of regularity and symmetry in the arrangement, and of proportion in the dimensions of the different apartments, which is unavoidable in such cases. It is often, however, useful, to give the plan of such houses; because it shows how additions may be made according to the wants of the occupier. These additions show in a more forcible manner than a regular or symmetrical ground plan, the accommodations which cannot be dispensed with, as well as what may be considered as the minimum extent

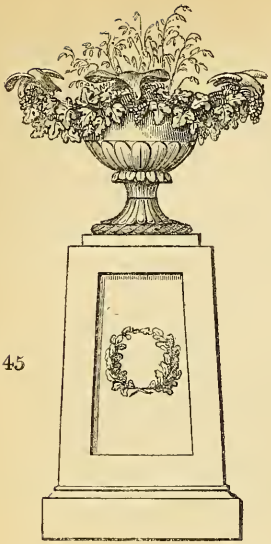
of these accommodations. In a regular plan, an apartment is sometimes added to complete the regularity of the figure; and the size of this apartment, as well as of that of some of the closets, &c., and some of the outbuildings, is often larger than there is any occasion for, and sometimes smaller than it ought to be, for the same reason. In the case of a house like the present, consisting originally of five rooms and a kitchen on the ground floor, being rendered, by additions, fit for the occupation of a family enjoying every comfort and luxury, we discover not only all the necessary supplementary rooms and offices, but the smallest size of each that will answer the end in view. We have not, in this dwelling, either a laundry or a brew-house, because washing and brewing are not done at home; nor a large library or wine-cellar, because, Mr. Lawrence residing chiefly in London, his principal stock of books and wines is kept there. We have, however, an ample pantry and dairy, and all the smaller outdoor offices which are required in the largest mansion. Baths and water-closets are not shown, because they are on the bed-room floor; and there is also a bath-house in the garden.

Entering the lawn from the drawingroom (*h*), we find a gentle descent from the veranda to the walk. Turning to the right, at the angle at 1, we observe the foliated vase *fig.* 44., the base of which is concealed by a plant of tree ivy; proceeding onwards towards 2 and 4, we pass the pedestals and vases *figs.* 45. and 46. We are now at a sufficient distance from the garden front of the house, to see it to advantage by turning round; and, if we step on the lawn to the point 4, we shall find the view *fig.* 47., to the left of which will be observed the ivy vase, and a basket containing a pyramid of roses; and to the right an elevated rustic basket of pelargoniums. The large window on the left is that of the dining-room.


44

Looking from 1, 2, and 3, across the lawn, the eye observes an intricate maze of agreeable and beautiful objects, but sufficiently distant not to create the idea of being crowded or confused; the reason of which is, that there is always an ample surface of naked lawn in the foreground, or middle distance, to contrast with the ornamental groups, and to throw them sufficiently far from the eye.

The margin of plantation on the right is composed partly of evergreen trees and shrubs, and partly of deciduous flowering kinds. The groups on the left hand are, in part, of more rare sorts, and contain a great many fine hybrid rhododendrons and



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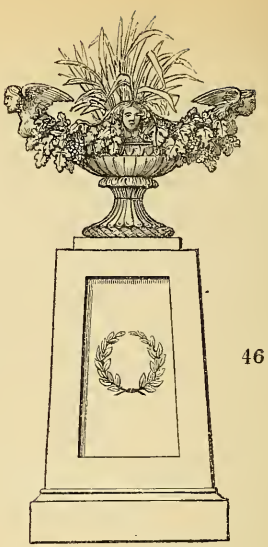

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azaleas. All these plantations and groups are treated in the picturesque manner; there being scarcely anything in these grounds, except the single plants, such as the standard roses, and some rhododendrons and other shrubs, which can be considered as treated in the gardenesque style of culture.

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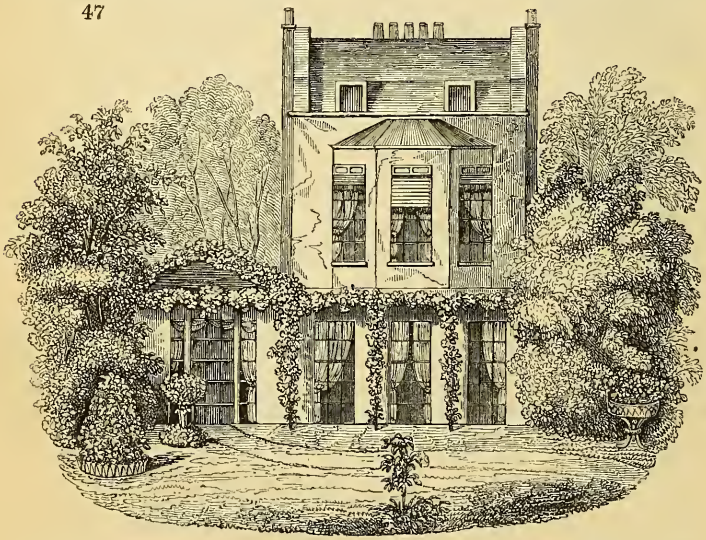

At 5, there is a fine specimen of double-blossomed furze, and two splendid vases on elevated pedestals; both combining to

form an interesting termination to the comparatively straight walk from the house to this point. One of these vases at 6, when the spectator is at a distance, appears to him to be the terminating point, while that at 5 comes into his view afterwards. The walk from 5 to 7 is several feet higher than the floor of the veranda in the front of the drawingroom; and hence the views towards the house, being along a descent, are less interesting than, from the number of objects on the lawn, they otherwise would be. The view into the paddock, to the right, affords an agreeable relief from the excess of beauty and variety on the lawn, as it consists of a plain grass field, grazed by some fine Alderney cows, and planted with two or three scattered elms, oaks, and aspens and other poplars.

The next scene of interest is the Italian walk, arrived at the point 8, in which, and looking back towards the paddock, we

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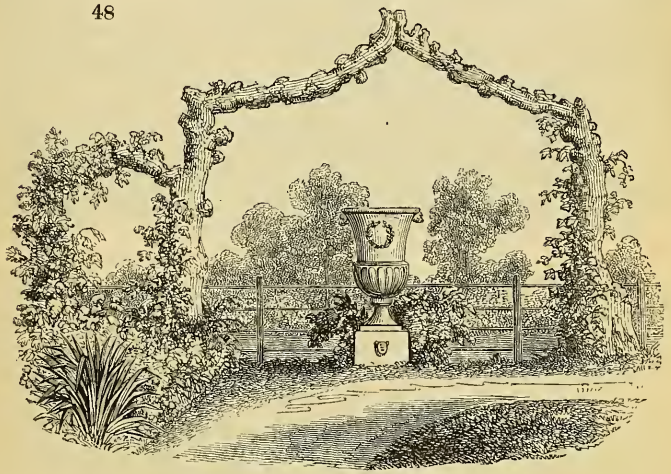
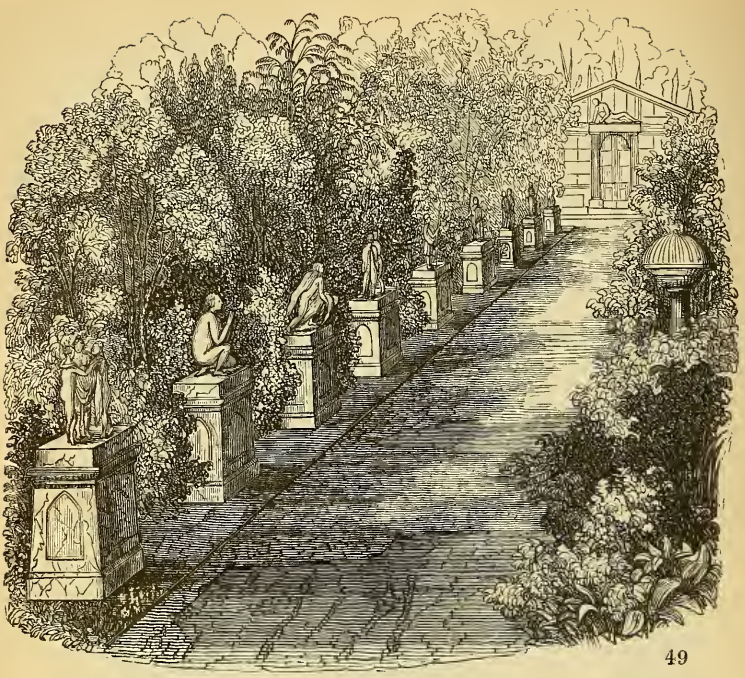


have, as a termination to one end of that walk, the rustic arch and vase *fig.* 48.

From the point 9, we have the view of the Italian walk *fig.* 49., with a span-roofed green-house as the termination at the farther end, and an elegant fountain on the right hand. The border on the left is planted with the most choice herbaceous flowers, interspersed with standard roses at regular distances; and the wall is devoted in part to the finer fruits, but principally to climbing roses, and other climbing or twining shrubs of fragrance or beauty. At the point 10, there is a rustic archway of rockwork on the right, from which an interesting view across the lawn is obtained. At the point 11, there is a walk across the border to the bath-house, adjoining which is a camellia-house (12); and beyond that two long sheds (13, 14), for tools, pots,



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&c., with potting benches, and other places for garden materials and operations, and for the boilers to heat the bath, the camellia-house, &c. In the camellia-house there are sixty-seven of the finest species and varieties that can be procured.

At the point 15, we are immediately in front of the fountain *fig.* 50., supplied from a cistern which forms a small tower on the top of the tool-house; and beyond that is a walk to the stone cistern at 16, which supplies water for watering the garden. The water is raised to these cisterns by a forcing pump in the stable-yard.

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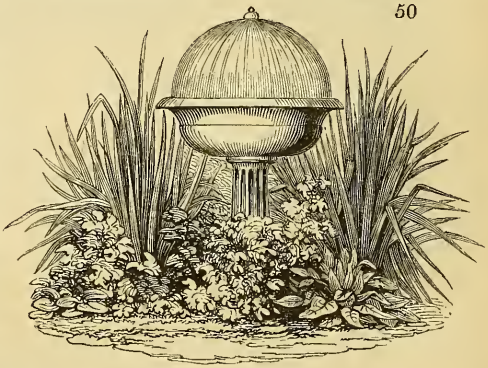
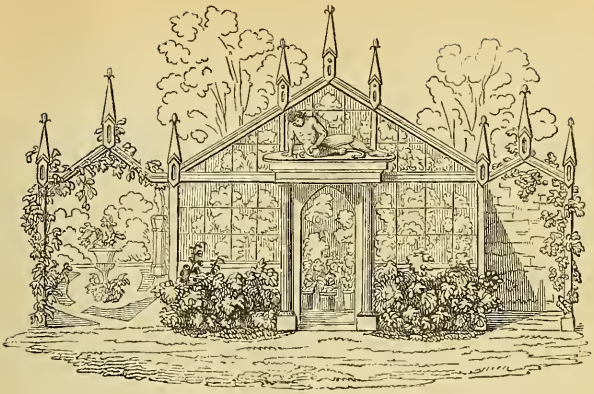


Farther on in the Italian walk, at 17, we have the front view of the span-roofed green-house *fig.* 51.; and a little to the left, at 18, the view of the French parterre *fig.* 52.



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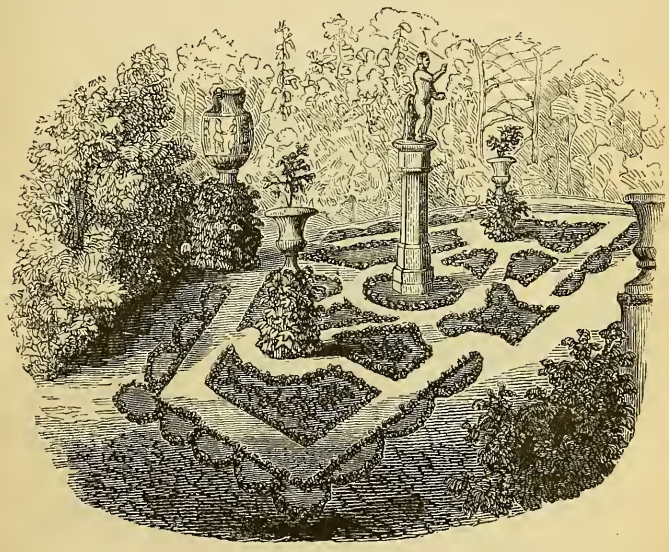
Proceeding towards the house, a view of a handsome weeping ash (20) is obtained from the point 19; and, at the farther extremity of the walk, the vases placed at 1, 2, 3 on the plan have an excellent effect, backed by the marginal plantation of evergreens. Leaving the walk at 19, and passing the weeping ash at 20, if we advance on the lawn to 21, and look towards the south, we have the pollard vista *fig.* 53.; and, changing the



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position to 22, we have the view of the rockwork, statue of Fame, &c., shown in *fig.* 54.

On the right and left of 23 are two groups of rockwork, with concealed springs, which drop from rock to rock, and from stone to stone, and form curious little moist places for aquatic plants. Advancing to 24, and looking northwards, we have the statue of Mercury in the foreground, and behind it the camellia-house, the wall on each side of which is heightened with trelliswork for creepers, as shown in *fig.* 55.

53

At 25, we have the view of the fountain and arch behind, shown in *fig.* 56. In the basin are nymphæas and other aquatics; and on one side is a Napoleon willow.

At 26, we have the view of the rustic arch and Cupid, shown in *fig.* 57.; and, at 27, the tent seen in *fig.* 56. is frequently pitched in the summer time, which gives the idea of the warm season, and of the enjoyment of coolness and refreshing breezes in the midst of intense sunshine.

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At 28, there is a bed of *Rosa indica*, in the centre of which is a large plant of *Yucca* gloriosa; and, proceeding across the

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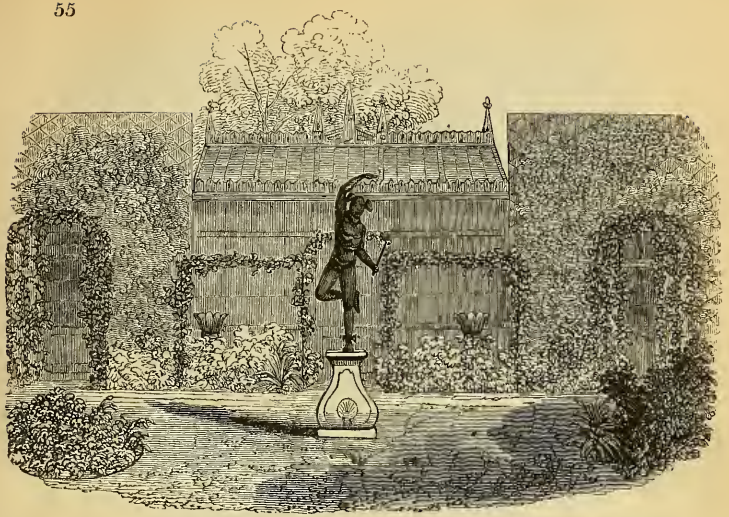

lawn to 29, we have the view *fig.* 59.; and, at 30, we have the fountain, surrounded by baskets of flowers, with the two garden nymphs *fig.* 62.

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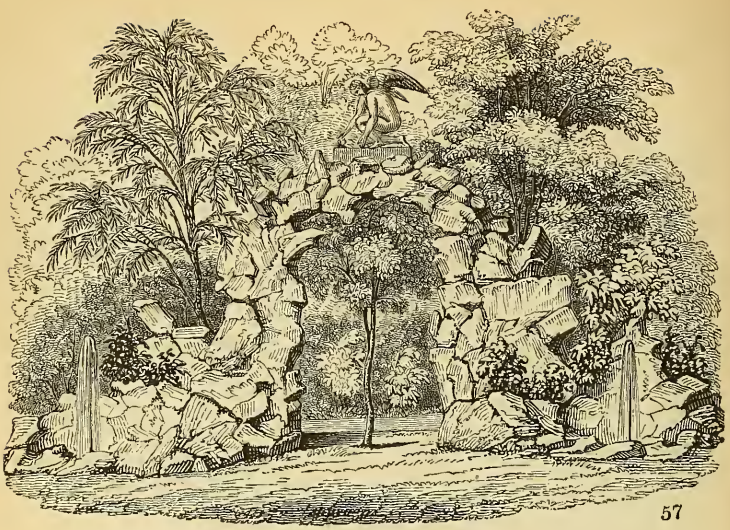

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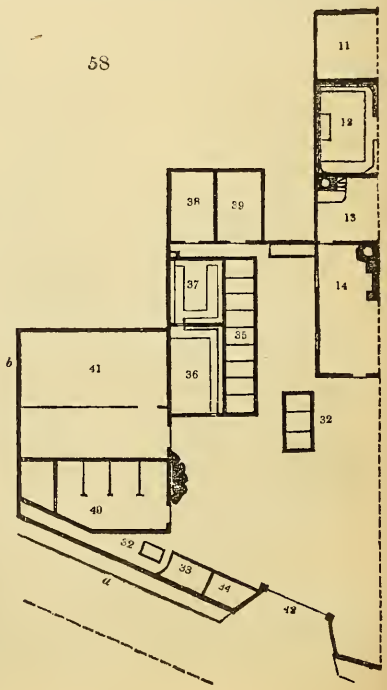
We shall now suppose that the spectator walks across the lawn, and, passing the span-roofed green-house, enters the court of offices by the door at 30. In this court which forms a part of *fig.* 42., and which we here repeat (*fig.* 58.), he finds, —

31, A large pit for plants.
32, A small pit.
33, Dung-pit for the stable.
34, Rubbish-pit, and rot-heap for the garden.
35, Pit for heaths.
36, Green-house.
37, Dry stove.
38, Shed for flower-pots.
39, Rubbish-shed.
40, Four-stalled stable, with hay-bin at the farther end.
41, Coach-houses, harness-room, and sleeping-room for coachman.
42, Place for plants in pots that have done flowering.
43, Carriage entrance from lane.



The kitchen-garden, the gardener's house, the stove, and the poultry-houses, grass fields, and cow-shed, are situated on the other side of the lane, and at the distance of 100 yards from it. These

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are shown in the plan *fig.* 61., which is accompanied by an explanation of the references.

Remarks. This villa may be considered as a model of its particular kind; and, though it may not be in the power of many to imitate it in every thing, yet the humblest and most economical possessor of a villa residence of two acres may take a lesson from Mrs. Lawrence's taste, as displayed in the manner in which the trees and shrubs are grouped on the lawn. Every one cannot have so many fountains, or form rockwork of spars, fossil organic remains, and other geological specimens brought from distant parts of the country; but every one may sink in the

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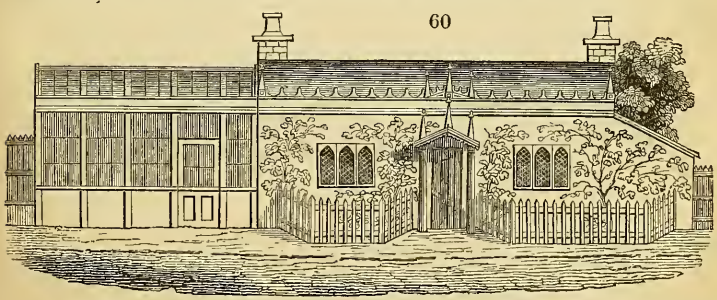
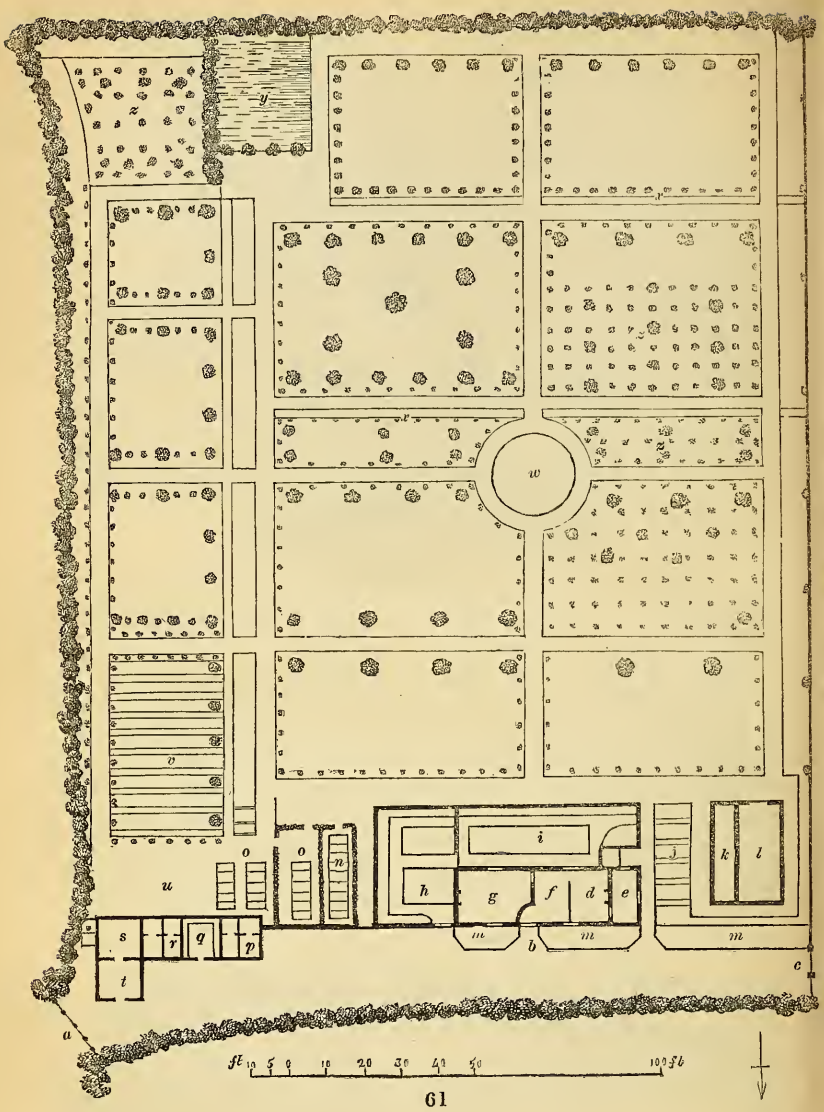


ground a few small wooden cisterns lined with lead, and supply them with water by hand, as it evaporates in the summer season. Some of these may serve as brilliant spots to attract the eye, and others as habitats for aquatic plants



61

a, Entrance gates.
b, Entrance to the gardener's house, the elevation of which is shown in *fig.* 60.
c, Entrance to the cow-field, in which the cow-shed is placed.
d, Kitchen.
e, Wash-house, or back kitchen.
f, Gardener's sitting-room.
g, Apartment divided into two bedrooms.

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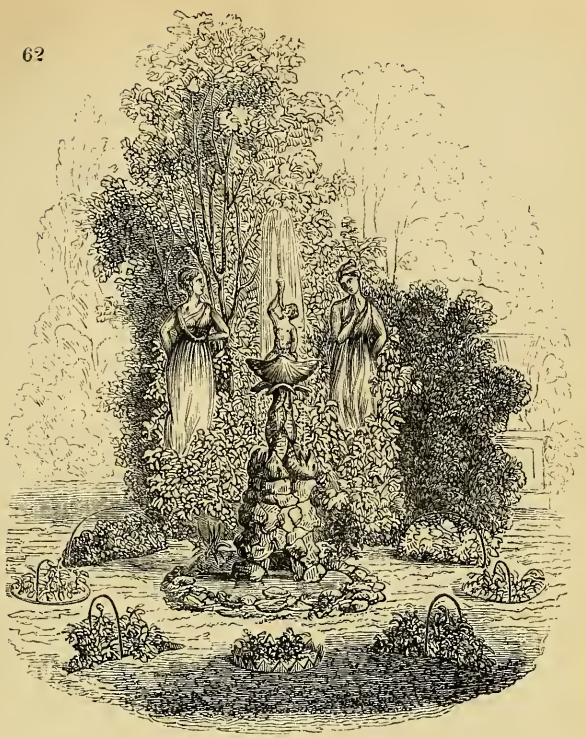


h, Stove, heated by hot water, the side elevation of which is seen in the view of the gardener's house, *fig.* 60.

i, Orchidaceous house, with miniature rockworks and artificial hillocks, for terrestrial *Orchideæ*; and small basins and fountains, formed of shellwork, for aquatics.

j, Beds of reserve flowers. *k*, Cold-pit.

l, Span-roofed green-house.

m m, Children's gardens.

n, Situation for a hot-bed, surrounded by a privet hedge, 18 in. high.

o, Compost and frame ground.

p, Two pigsties.

q, Poultry-house, with pigeon-house over. This house has a span roof, with a gable end over the door; and the triangular part of the gable end has 4 rows of holes for the pigeons, the rows having narrow shelves in front for the pigeons to rest on, and an enclosed space behind, 3 ft. in depth, for the nests.

r, Two other pigsties. *s*, Rabbit-house.

t, Tool-house, in which, also, the ducks are kept.

u, Frame-ground.

v, Asparagus-beds.

w, Circle of grass where a tent may be fixed, for eating fruit in during the summer season.

x x, Open drains, the soil of the garden being a retentive clay.

y, Pond. *z*, Fruit trees and fruit shrubs.

The margins of basins of this sort can be effectually disguised with rockwork, and this can be procured from the nearest brick-field, stone-quarry, or, perhaps, from old houses. which are taking down, chalk-pits, ferruginous gravel-pits, &c. If suitable vitrified bricks cannot be procured, common bricks may be joined together, in masses of any size and shape, by cement; and there is no reason why blocks so formed, or any other materials to be substituted for rockwork, should not receive weather stains artificially, no less than the walls of a house, where the object is to imitate an ancient building. As to the wooden cisterns, they will last long enough : and we know, from experience, that it is cheaper, in the end, to form such cisterns of wood, lined with lead, than to build cisterns of brickwork and cement; for, unless these are of considerable size, the cost is as great as where lead is employed ; and they are much more apt to leak, and receive injury from frost.

It is worthy of remark, that a good deal of the interest attached to the groups on the lawn of the Lawrencian Villa depends on the plants which are planted in the rockwork. Now, though every one cannot procure American ferns, and other plants of such rarity and beauty as are there displayed, yet there are hundreds of alpines, and many British ferns, which may be easily procured from botanic gardens, or by one botanist from another; and, even if no perennials could be obtained suitable for rockwork, there are the Californian annuals, which alone are sufficient to clothe erections of this kind with great beauty and variety of colouring.

With regard to the statues, vases, &c., though some of these, at Drayton Green, are of bronze, marble, or stone, and have cost considerable sums, yet others of composition, equal in point of taste, though far inferior in pecuniary value, may readily be procured, at a moderate cost, of Austin's artificial stone, or of earthenware.

We are aware that there are many persons, of a simple and severe taste, who will think that the Lawrencian Villa is too highly ornamented with statues and sculptures ; but allowance must be made for individual taste, for devotion to the subject, and for the limited extent of the place. Were Mrs. Lawrence in possession of a villa of 100 acres, there can be no doubt that she would display on her lawn a taste as appropriate to a residence of that extent, as the taste she has displayed at Drayton Green is suitable for that place.

ART. II. *On the Benefits which Gardens derive from Woodpeckers.* By PHILOPICUS.

I PRESENT myself, " by these presents," as an advocate in behalf of a beautiful and useful, but an often persecuted, family

of the lower creation. Your readers are all more or less naturalists: their business compels them to study and observe the phenomena of vegetation; and, in taking care of their plants, they become intimately acquainted with the economy of many insects. Some of the insect tribes are favourable to the horticulturist; such as the different species of the coccinella, or lady-bird, which live on the eggs and young, and even on the full grown aphides, or green fly; thereby doing essential service in checking the increase of those pernicious insects. The gardener also knows his friends and his foes among the feathered tribes. He dislikes and scares away those which devour his buds, his seeds, seedlings, or fruit; and he encourages, or should encourage, those which live entirely on the eggs or larvæ of those insects which prove to be noxious "worms in the bud."

In the exercise of our dominion over the "worms in the dust," and over the "fowls of the air," much discrimination is requisite in judging our friends and foes. Many are condemned for acts which they do not, or cannot, commit; and accused of depredations of which they are guiltless. When a proprietor, who is not also a naturalist, walks in his orchard, or in his woods, and observes a round hole in the trunk of an aged apple or pear tree, or in a lofty oak or elm, he enquires of his gardener or forester the cause of such defects in his trees. They naturally and truly answer that these œillet-holes are the work of the woodpeckers. The master immediately orders all the woodpeckers to be shot: and these orders are often too implicitly obeyed, as is evident from the ranks of these beautiful victims, everywhere seen nailed up on the walls of the keeper's lodge.

I am interested in the fate of those really harmless birds, and would fain put in a word in their favour; for, after an acquaintance of many years, I am perfectly convinced that, instead of being destructive to timber, they are constantly doing all they can to preserve it, by living solely on the insects and their larvæ which breed in and live on the wood.

There are four species of woodpeckers in this country: the most common of the three is the largest, namely, *P*ìcus víridis, the green, or laughing, woodpecker; next there is the *P.* màjor, the greater spotted woodpecker; the *P.* mèdius, the less spotted woodpecker; and the *P.* mìnor, the least spotted woodpecker. The two last are rather rare; and, as they mostly feed at the tops of lofty trees, are but seldom seen. Their manner of life is similar; all preying on wood insects, and nestling in holes of trees. They have but few notes, and these are far from musical. The laugh of the green one, being a love-call, may be intended for a song; but it is nearly as harsh as the scream of a peacock,

and may be heard at as great a distance. Woodpeckers are never seen to perch on the horizontal arm or branch of a tree, but invariably upon the bole, clinging to the bark in an erect posture, for which their scansor feet, having two claws before and two behind, are admirably adapted. The tail, which is short and stiff, answers the purpose of a third foot, as it is always pressed close to the tree, and acts as a prop to the body.

In this position they seek their insect food, examining every crack and crevice of the bark, and particularly every rotten or defective part, where the eggs of wood-eating insects have been deposited; and either dig them out with their strong conical bills; or, if the larvæ, when hatched, eat their way inwards, the long flexible tongue of the bird is thrust in after the maggots, and draws them forth with the utmost certainty.

Their tongue is a most wonderful organ, the mechanism of which consists of a series of cartilaginous rings, largest at the root or base, and gradually smaller outwards; so that, when drawn in within the mandibles, it is not above an inch in length. When necessary, however, to probe a worm-hole, the bird can project it outwards to the length of 5 in. or more, to reach a worm. The tip, for about half an inch, is formed like a shallow spoon, furnished with short stiff bristles, which lean backwards from the point, and which must withdraw every small body or maggot that is taken upon it. The retractive and projective powers of this organ, like those of the proboscis of an elephant, are so admirably adapted for procuring the natural food of the bird, that, without such an instrument, they could neither provide for themselves nor their young. In the winter, indeed, they are sometimes seen on the ground under trees, tossing the fallen leaves about in search of insects; but they get most of their subsistence about old decayed trees.

The *grand* crime alleged against the woodpeckers is, that they bore into sound timber; but this is a *grand* mistake. They sometimes chisel out a piece of sound-looking bark, to find the larvæ of the Scólytus destrúctor; but it is a pretty sure sign that insects are present, if the œills (as the birds are called in the country) have begun to break the bark. I have often thought that the reason these insects are less prevalent and less destructive in the open country, than they are in public avenues or malls, is because the wookpeckers have a free range in the one, and are constantly scared away in the other. If there is any probability in this supposition, it is a valid argument in favour of this genus of birds, and a strong plea against their destruction.

It has been already observed that they nestle and rear their young in hollow trunks of trees; and it is with admirable

instinctive judgment they fix upon the place to form the entrance to their intended nest. That they know the tree is hollow is evident, from their never breaking into sound trees; and this they discover by rapping their bills against the outside; or, perhaps, from the previous attack of insects on the exterior. Trees become hollow by the accidental loss of a branch, the remaining stump of which rots in time: rain enters at the scar, and, sinking downwards, destroys the sound timber in its course. The bird could gain an easy entrance into the interior through this rotten opening; but this would not suit her purpose, either for comfort or security. She therefore chooses a spot immediately under the protuberance which always grows around the base of a branch, and there chisels out a round hole, just big enough to allow an easy ingress and egress to the hollow within, where she makes a slight nest, lays four or five eggs, hatches, and rears her brood in darkness, but in perfect safety from crows and magpies, which would destroy the callow young, could they see or seize them in their helpless state. And, even when the œillets are old enough to issue out of their den, and to climb about around the entrance, many of them are destroyed by the sparrow-hawks, to whom these young birds are a favourite repast.

The largest spotted woodpecker is endowed with similar instincts, and, in manners, is very like the preceding; but this species is less common, and less industrious, than the first; for they will often content themselves with an old residence, rather than make a new entrance for themselves. In this respect, the green woodpecker may be considered a pioneer to the rest of the family; as well as to several other hole-and-corner-loving birds, such as starlings, nuthatches, and the like. But our greater spotted friend makes himself known by his own jarring *reports*, which are quite as audible as the laugh of his green-robed congener. Hence, he has got the name of the jarr-bird: for never was sound produced by any animal so significantly described by a word, than his noise is by the term jarr.

This bird, like the others, seeks his food on the dead tops of trees. The dead branches are always thickly wormeaten; and the holes, though deserted by the makers, are chosen for asylums by many different insects, as earwigs, and the like. To rouse these insects from their cells, the bird places itself upon the side of the branch, and, by a rapid and convulsive motion of the neck, strikes his beak five or six times in an instant against the branch, thereby causing a loud jarr, and such a violent concussion, as alarms the hiding insects, which, in issuing out to escape, are devoured by the watchful disturber.

The two smaller species are too feeble to dig new holes for

themselves, except in rotten wood; but, as the first holes made by the larger species become smaller every year, they may accommodate themselves in them, or in any other cavity of the tree. They are, however, well adapted, from their activity and prying habits, to devour the smallest wood-eating insects, which escape the notice or taste of the larger birds.

Upon the whole, it may be rationally concluded that the woodpeckers perform a necessary and useful part in the scale of animated nature, and contribute greatly in maintaining that balance among the insect tribes which are destined to live on trees, by checking excessive reproduction, and, consequently, repressing excessive depredation.

I therefore earnestly recommend the woodpeckers to the protection of the gardener, the forester, and to the game-keeper, who may be well assured that those birds, instead of doing any kind of damage, actually do a great deal of good.

April 20. 1838.

ART. III. *Some Account of the Growth of the Trees in the Park at Bowood, the Seat of the Marquess of Lansdowne.* By J. SPENCER, Gardener there.

HAVING had an opportunity of examining and comparing the growth of the trees in the grounds here, I have sent it to you, as, perhaps, it may serve to corroborate some facts before stated, or refute others respecting which doubts existed. I by no means think there is interest enough in it for publication: I merely send it, as a reference of the respective rates of growth of the trees specified below.

The soil in which the different trees are mostly planted is of a thin, sterile, sandy nature, on a substratum of quicksand, and a species of peat; the water rising all over the grounds to within a few feet of the surface; a circumstance essential to the growth of the *A*biétinæ. The principal part, if not all, of the trees specified below, where raised here from seed sown subsequently to the year 1770 (say 1770 to 1785), and planted in groups, as they now appear. The rate of growth, as regards quantity of timber, is, *P*ìnus *P*ináster, *A*bies excélsa, *P*ìnus *S*tròbus, *P*ìnus sylvéstris, *A*bies nìgra, *P*ícea pectinàta, and *A*bies álba; but these are inferior in that respect to *C*èdrus Libàni, which exceeds them in bulk of timber in a given number of years.

I now give you the dimensions of the following species, being all planted under similar circumstances, and at the same time: —

*P*ìnus *P*ináster, height	90 ft.,	girt 8 ft.	8 in.	at 4 ft. from the ground.
Ditto	— 75	— 9	0	—
*P. S*tròbus	— 80	— 6	0	—
Ditto	— 75	— 6	3	—
P. sylvéstris	— 85	— 7	0	—
A'bies excélsa	— 90	— 8	4	—
Ditto	— 83	— 6	6	—
A. nìgra	— 90	— 5	0	—
A. álba	— 50	— 3	0	—
*C*èdrus Libàni	— 75	— 9	0	—
Ditto	— 60	— 7	6	—

Detached trees of *A*'bies excélsa have attained the height of 70 ft. and 85 ft., with trunks of from 10 ft. to 11 ft. in girt at 4 ft. high; and having heads from 40 ft. to 60 ft. in diameter. *P*ìnus *P*ináster, planted in groups of five or six each, are 85 ft. high, their trunks being from 6 ft. to 8 ft. 6 in. in girt at 4 ft. from the ground. These trees have now a very picturesque appearance; the gradual sweep of their long, rough, naked stems, and finely tufted heads, having a noble appearance, particularly at a distance. *P*ìnus *P*ínea: this tree originally divided itself into three large arms or limbs, about 3 ft. from the ground; one of which it has lost, as well as several large branches. It girts, below where the division takes place, 11 ft., and is about 45 ft. high. The two large remaining limbs take a sweeping direction, similar to those of *P. P*ináster; being entirely naked of branches till near the top, which assumes the spreading shape so characteristic of the species. The late severe frosts appear to have had an effect on it, as it now looks rather sickly. Contrary to the general descriptions given of this tree, the bark of this specimen is very rugged and much cracked; and I observe a tendency to become rough in young trees of the same species here. *A*'bies canadénsis, in a sheltered situation, is 65 ft. high; girt of stem, at 4 ft. from the ground, 7 ft.; diameter of the head 60 ft.: a beautiful and vigorous specimen, the branches sweeping the ground.

*P*ìnus Douglàs*ii*,	16 ft. high,	10 years planted,	growing very fast.
ponderòsa	10 ft. high,	ditto,	ditto.
palústris	1 ft. 6 in. high,	ditto,	appearance stunted, but with a good bud.
Araucària imbricàta,	4 ft. high,	ditto,	not covered this frost, and, I think, very little hurt.
*C*èdrus Libàni,	85 ft. high, girt at 4 ft. from the ground 11 ft.		
Ditto	90 ft. high,	ditto	10 ft. 6 in.

A great many other trees are nearly as large as the above, and all of them are growing very vigorously.

*P*ìnus *Cémbra*, 50 ft. high, girt 3 ft.

*P*ìnus species? There are two trees which were planted for *P. P*ináster; but their general appearance is so different, that I

think there is no doubt but that they are specifically distinct. They are about 40 ft. high, with a girt of 3 ft. 8 in.; and have been planted about twenty years. Branches, when young, verticillate, afterwards irregular, straggling, and much twisted; naked, except at the ends of the shoots. Cones, after the manner of *P. Pinaster*, persistent long after the leaves are gone. One of the trees having lost its leading shoot, four or five long straggling shoots, pointing upwards, have taken its place. Bark rugged, with deep fissures. These pines have, on the whole, a singular appearance; and I should like to know what they are, as I do not recollect seeing anything like them before; and, from the immense mass of information you must have collected on the genus *Pinus* for the *Arboretum Britannicum*, I think you will be most likely to be able to tell me.

We have likewise some fine trees of Liriodéndron Tulipífera, from 75 ft. to 85 ft. high, and girting from 7 ft. 6 in. to 8 ft. 6 in.; beech, in height from 50 ft. to 60 ft., 15 ft. in circumference, and 80 ft. in the spread of the branches; *Carpinus Betulus*, 65 ft. high, 6 ft. 6 in. in girt, and 75 ft., diameter of the head, growing on a springy wet soil; and a great many other specimens, which, although fine trees, are not of sufficient interest to send you a particular account of. The different species of the genus *Quercus* grow well here, particularly *Q. Cerris*, *Q. Ilex* integrifòlia, &c., as well as *Q.* pedunculàta, in the plantations and woods, although for the most part on a wet peaty soil; a proof that the soil for oaks should be examined a great depth down before we ought to conclude which is, or is not, a proper soil for that tree. I have hitherto seen but one specimen of *Q.* sessiliflòra in this neighbourhood.

Bowood Gardens, February 22. 1838.

ART. IV. *A List of the ligneous and other Plants which have stood the Winter in the Cesarean Nursery in the Island of Jersey.* By BERNARD SAUNDERS.

I PROCEED, agreeably to your request, to give you a short account of a few ligneous and other plants, bulbs, &c., which have stood the test of our late severe winter. From the registers I have kept during the first three months of the current year, it appears that our coldest day was January the 19th, when Fahrenheit's thermometer, at five o'clock P. M., was 18°, in a north aspect. In February, our coldest days were the 12th and 14th: at eight o'clock A. M., the thermometer stood at 24°. The average heat, at midday, during the month, was 40°, in a north aspect. In March, our coldest day was on the 11th, when, at 8 A.M., the thermometer stood at 33°. The average heat, during the month, at midday, was 48°, in a north aspect. From a correspondent at Sheffield, I find the average difference in

our favour, during the month of February, was as follows: — First week, at midday, 3°; second week, 7½°; third week, 10°; fourth week, 14°. March continued, with a little variation, much the same, increasing in warmth as the season advanced.

I lay these remarks before you, to show what our climate is compared with that of England, also to show what degree of cold the plants enumerated in the following list are capable of withstanding. The list will show what I consider (after nearly thirty years' practice) may be done here in the way of acclimatising exotic plants; and to this object I intend in future to devote a portion of my time and ground, for the general benefit of science and horticulture. I will, with pleasure, each year give you the result of my labours; trusting that I shall find among your numerous correspondents some who are equally zealous with myself, and who will assist me in this undertaking, by sending me seeds, plants, &c., for trial, for which a reciprocal return will be fully made.

Having informed you of the greatest degree of cold that we have sustained, you have no doubt concluded that our hardy and general collection of evergreens has not suffered to any extent worth mentioning.

The following is the list of plants which have stood the winter in my nursery, without any protection: —

Camél*lia* japónica flòre variegàto; a large handsome plant, which has produced upwards of 300 fine blooms since the frost, and is in full health and vigour.
Camél*lia* àtro-rùbens; a fine plant, 8 ft. high, now in full bloom. Several other camellias have stood in the same quarter, and have not lost a leaf.
Fuchsias of various sorts have been killed to the ground, but are now shooting up strongly.
Escallòn*ia* floribúnda.
glandulòsa.
Edwárds*ia* grandiflòra.
microphýlla.
*C*ístus formòsus, now in bloom.
*M*ýrtus, several varieties.
*D*áphne hýbrida flowered during the whole winter.
A'rbutus procèra, now in bloom.
*A*ndráchne.
hýbrida.
Photínia serrulàta, not a leaf injured.
Eriobótrya japónica, the same.
Broussonèt*ia* papyrífera cucullàta.
[? p.] heterophýlla.
Mahòn*ia* *A*quifòlium.
Mahòn*ia* rèpens.
*Y*úcca gloriòsa.
filamentòsa.
*P*æòn*ia* arbòrea, now in fine bloom.
Cósmea capitàta has lost its leaves, but is doing well.
Magnolias, most of the Exmouth varieties.
Lonícer*a* flexuòsa.
Aloýs*ia* citriodòra.
*V*ibúrnum rugòsum.
Fontanès*ia* *p*hillyreöides.
Hydrángea *q*uercifòlia.
Pittósporum *Tobìra*.
Aristotèl*ia* *Mácqui*.
M. fol. variegàtis.
Aràlia spinòsa, 8 ft. high.

Plants trained against a South Wall.

Cliánthus puníceus, now in full bloom.
Billardièr*a* scándens, also in full bloom.
*C*olùtea frutéscens, in full bloom.
Kennèdy*a* monophýlla.
Bignòn*ia* Pandòr*æ*.
*T*écoma capénsis.
Manétti*a* coccínea, or glàbra, flowered well last summer. It was killed to

the ground, but is now shooting up from the root.

Plants trained against a Wall with a Western Aspect.

Edwárds*ia* grandiflòra, now in bloom.
*J*asmìnum revolùtum.
Wallích*ii*.
heterophýllum.
azóricum.
*C*eanòthus azùreus.
Chimonánthus frà*g*rans, flowered well during the frost.
Wistàr*ia* Consequà*na*, covering a space of wall 10 ft. high, and 36 ft. long, is now covered with bloom.
*R*òsa Bánks*iæ* lùtea.

Cape Bulbs which have stood in the open Ground, only protected by about 2 Inches of Sea Sand to cover the Beds.

Ixias of many varieties.
Tritomas, ditto.
Sparáxis, ditto.
*G*ladìolus, ditto.
Watsòn*ia*, ditto.
Bobárt*ia* aurantìaca.
Geissorhìza obtusàta.
Hesperántha pilòsa.
cinnamòmea.
Babiàna, sorts.
Moræ*'a* edùlis.
Trichonèma purpùreum.
oculàtum.
*O'*xalis *ro*sàcea, &c.

Jersey, May 24. 1838.

THE time is now arrived when we should be glad to receive lists of this description from all parts of the country. We recommend to the attention of our readers Mr. Saunders's wishes respecting acclimatising. — *Cond.*

ART. V. *On forcing the Cherry.* By ALEXANDER FORSYTH.

BORDERS.— The soil for the cherry border may be the top spit from a loamy pasture or common, mixed with about one fifth its quantity of old brick-bats that have been used in building, broken down to different sizes, from that of half bricks, down to the size of hazel nuts. The border may be four yards wide, and one yard deep, on a substratum one foot thick of stone, brick, or scoriæ, to prevent stagnant moisture, which, in all artificial soils, must be carefully guarded against; and in no case is it more necessary than in the cherry border. You can always supply water, or enrich the soil with liquid manure; but, if you neglect to mix some absorbing and retentive agent, such as brick-bats, chalk, freestone, &c., along with the loam, you cannot, with safety, enrich your soil with dung; for, if you do, it will clot when liquid manure, or even clean water, is applied; and, instead of being permeable to fluids, and congenial to vegetation, you will have a rich but fulsome mass, analogous to the sediment from the cesspools of a sewer. The border may be covered with turf (the black side uppermost), which powerfully resists the extremes of heat and cold, and on which the necessary treading in thatching, watering, &c., can be performed with impunity; and, after it has been thus fallowed on the surface for a year, it will be in excellent condition for forking into the border; and this practice I should adopt with all hot-house

fruit borders, allowing no crop to be reared on their surfaces on any consideration whatever.

Sorts. — The May duke is generally preferred; but the morello is better adapted for forcing, particularly in pots, on account of its bearing on the wood of the preceding year; and it is likely to repay in numbers, being a sure bearer, though it may fall short in flavour. I should prefer dwarf trained trees, two years from the bud or graft, for the trellis; and round-headed dwarf maiden trees, in tubs or pots, for the area. The season for planting may be a little before the buds begin to swell in spring, or just before the leaves begin to fall in autumn.

Pruning. — Young trees should be well cut back, till you get a good supply of young wood to begin with; and this, once got, must not be meddled with afterwards, as no fruit tree, that I am acquainted with, is so impatient of pruning as the cherry; therefore, this process must be performed in spring and summer, by destroying misplaced buds, and stopping over-luxuriant leaders. There is no danger to be apprehended from judicious winter pruning, or shortening of one-year-old wood; but the greatest care is necessary to be had in this, and every other process in managing the trees, to prevent wounds, bruises, strains, and twists, and particularly accidents with the knife in pruning, as being apt to produce gum, and consequently death, in the injured part, if not the loss of the whole tree. Morellos, planted out, may be pruned and trained as directed for peaches (Vol. XIII. p. 128.); and every other sort may be trained horizontally, three bricks' depth (or about 9 in.) apart, provided the trees be trained, from the first, in the same manner as is practised for horizontal pear trees. Nothing can be more simple, or more natural, than that an upright leader, shortened to a definite number of eyes (say three or five), should send out shoots right, left, and upright.

The ill success that generally attends the forcing of this delicate and delicious fruit is to be attributed to ill-drained and ill-watered borders, and to slovenly supplies of fire, air, and dew.

The artificial climate of the cherry-house should resemble as much as possible a mild English spring under an Italian sky; that is to say, plenty of air without wind, warmth without heat, and the healthful dews of a cloudless sky. This may be accomplished as follows: — First, there should be a good large fireplace, and plenty of hot-water pipes; the fire should never be allowed to burn fiercely; and, the extent of pipes being great in proportion to the size of the house and the temperature to be maintained, they will never require to be anything like hot; that is to say, not more than the hand could well bear for any length of time; and these pipes should be surmounted by a perforated leaden pipe, containing pure soft water, regulated by a brass cock, to

be supplied always along with artificial heat, except in foggy or cloudy weather, when fire is applied to promote ventilation.

Temperature. — I should begin at 40°; flower and stone, at 50°; and swell off at 55° artificial heat, always allowing 10° more during sunshine.

Insects, &c. — Almost all the enemies and evils that fruit trees are troubled with seem to rally round this devoted tree. Whilst the fruit is growing, gentle fumigations of good tobacco (not coarse rank refuse, or tobaccoed paper) will keep down the green or black fly; a fine dew, shed over both surfaces of every leaf, twice a day, except when in flower and ripening off, by means of a hand engine, or a finely perforated syringe, will greatly annoy, if not eradicate, the red spider, and benefit the trees. Hand-picking will be found the best and surest remedy for the light green caterpillar, that rolls itself in the leaves, and syringing the trees with pure soft water every evening in hot weather, after the fruit is gathered, and the lights taken off: this will prevent, in a great measure, the harbouring of insect larvæ about the buds and in the crevices of the wood; and will aid the healthy ripening of the fruitful twigs for the ensuing season. The leaders of morellos in pots must be stopped, as directed for peaches, allowing only the buds that are near the base to break, and remain entire, to produce fruit next season.

Isleworth, Jan. 27. 1837.

Art. VI. *On the Method of pruning Filbert Trees in Kent.*

By John Machray, Gardener at East Sutton Park.

In compliance with your request, I now attempt to send you a description of the method of pruning filbert trees in this quarter; and, though I have to regret that my short stay in Kent has not enabled me to see more of it, yet I trust that in what I advance I shall be sufficiently understood by my brethren to enable them to draw their own conclusions.

I am aware that a difference of opinion exists among gardeners, as to the best mode of cultivating the filbert; some maintaining that the trees ought to be left altogether to nature, as, indeed, they are in the Horticultural Garden at Chiswick; and others (among whom are the cultivators in Kent) thinking that they should be pruned. When this is intended, the bushes of filberts are generally planted along with fruit trees (apples, plums, or cherries, and sometimes hops); the filberts being placed 12 ft. apart, and the apples 25 or 30 feet. The mode of pruning is something similar to that of pruning a gooseberry bush; keeping the filberts open in the heart, and as much under hand as possible. They are never allowed to get above 4 ft. or 4 ft. 6 in.

high. They are afterwards judiciously thinned, both of old and young wood, and the young shoots shortened; for which purpose each man is provided with a handsaw and a large pruning-knife. One man will prune about fifty ordinary-sized trees per day. After finishing pruning, they are all dug round with a spud, the instrument used in hop-digging; and, about midsummer, they are gone over, and all suckers grubbed up from the roots. Cultivators calculate upon 12 or 14 cwt. per acre as an average crop; and sometimes they will have a ton, but that is not often. The largest plantation in this quarter belongs to Mrs. Porter, at Sutton Valence, and contains sixteen hundred trees, planted 12 ft. apart.

East Sutton Park, near Maidstone, Feb. 2. 1838.

ART. VII. *On the Cucumbers most likely to produce good Seed.* By JOHN WIGHTON, Gardener to Lord Stafford.

LONG and straight cucumbers are often preserved for seed; but they seldom contain any that is good, while, on the contrary, if deformed cucumbers of the same kind, with swollen ends, be kept for the same purpose, they are sure to supply plenty of good seed. This has probably led gardeners to adopt the singular practice of tying a string round cucumbers to render them deformed. I have often asked them what good the string could do, but have never received a satisfactory answer. Many, no doubt, in this as in other customs, merely do it because they see it done by others.

Tying a string round a cucumber can surely have no effect upon the goodness of the seed. The cause of failure must be a defective impregnation. The common process of applying the blossoms for what is usually termed propagation, may be observed, and still may not produce proper impregnation.

It is observable that those cucumbers which contain good seed always have the blossom end a little swollen. This, I am persuaded, is a consequence of perfect impregnation; for the good seed never extends beyond that part which is swollen. As already observed, bent cucumbers, with swollen ends, always contain good seed; but straight ones will contain seed equally good, provided they are also swollen at the end. The only thing to be alleged in favour of tying cucumbers to deform them is, that it gives the seeds at one end more room to come to perfection, by causing that part of the fruit to swell. The long cucumbers, being more solid than short ones, contain less pulpy matter.

Having stated that the cause of bad seed in cucumbers is defective impregnation, it will be natural to enquire how it hap-

pens that the short kinds, which rarely contain bad seed, are more frequently found duly impregnated. It may be answered, that the shorter kind are more hardy, and probably of the true natural size. The long ones are more tender, and, probably, are farther removed from the original species. If this be correct, it is no wonder that they should follow the fate of all other varieties and extraordinary productions, in being more sterile, as they are more remote from the original form of nature.

It may be objected that the same does not hold good in melons, a similar fruit; for fine varieties of melons always contain abundance of good seed. It is doubtful, however, if melons do, or do not, come to perfection without impregnation. Cucumbers certainly do; for, if the blossom happens to be broken off before it has expanded, the cucumber may come to perfection, though in such specimens I never found any good seed. Melons differ from cucumbers in the position of the embryo of their seeds, which will be found nearer to the blossoms, and, consequently, more surely impregnated. Cucumbers being long, the embryo is more remote; and this agrees with the fact, that the seed at the end nearest the stem is always bad.

Cossey Hall Gardens, January 27. 1838.

ART. VIII. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, new series, each containing six plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Maund's Botanic Garden, or Magazine of Hardy Flower Plants cultivated in Great Britain; in monthly numbers, each containing four coloured figures in one page; large paper 1*s.* 6*d.*, small 1*s.* Edited by B. Maund, Esq., F.L.S.

The Floral Cabinet; in monthly numbers, 4to; 2*s.* 6*d.* each. Conducted by G. B. Knowles, Esq., and Frederick Westcott, Esq., Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

RANUNCULA'CEÆ.

1599. DELPHI'NIUM
*laxiflòrum *Dec.* loose-flowered ♃ Δ or 4 jn B Siberia ... D co Bot. reg. n. s. 30.

A hardy perennial, supposed to be a native of Siberia; growing to the height of 4 or 5 feet in any good garden soil; with bright,

clear, though not deep blue, flowers, tinged with pink outside. (*Bot. Reg.*, June,)

Cactàceæ.

3359. ECHINOCA'CTUS Eyriès*ii*
*var. glaúca *Lindl.* glaucous ♃ ▭ fra 1 jl W.G ... ... C l.ru Bot. reg. n. s. 31.

Differing from the species in having the angles much more acute and less wavy; the spines longer, more slender, and rather browner; and the tube of the flower shorter, &c. This variety seldom throws out young shoots, and, consequently, does not increase rapidly; but, if young plants are of more value than a large specimen, it may be cut across, when the top may be grafted or struck, and the under part will send out young shoots. When the seeds can be procured, they should be sown in silver sand, and placed in a warm and shaded situation, where they will soon vegetate. (*Bot. Reg.*, June.)

Compósitæ.

2411. RUDBE'CK*IA*
*aspérrima *Maund* roughest ♃ △ or 3 s R.W N. Amer. 1833 D p.l Maund bot. gard. 647.

A showy herbaceous perenniel, raised in the Birmingham Botanic Garden, from seeds communicated by Mr. Hunneman. (*Maund Bot. Gard.*, June.)

+ *Panæ`tia fúlva* Lindl. A beautiful little annual, with the habit of a *G*naphàlium; introduced from Swan River by R. Mangles, Esq., with whom it flowered in May, 1838. The plant is covered with a cobweb-like hoariness; and the flower heads are of the red-gold colour of *H*elichrỳsum bracteàtum; dry, like many everlasting flowers; and, although small, very pretty. (*B. M. R.*, June, No. 83.)

+ *Helichrỳsum scorpiöìdes* Dec., Lab. Nov. Holl., 2. t. 191. A beautiful plant, introduced from New Holland by R. Mangles, Esq., and looking like a yellow everlasting flower. (*B. M. R.*, June, No. 84.)

Orchidàceæ.

2553. CATTLE'Y*A*
*pùmila *Hook.* dwarf ♇ ▭ el ½ jl.au P S. Amer. 1837 D p.r.w Bot. mag. 3656.

A beautiful species, particularly valuable, as displaying itself in a little space. "The small size of this plant, the minute rounded pseudo-bulbs, and the narrow leaves, together with the obtuse, short, and almost fimbriated lip, will, I think, clearly distinguish this very beautiful species of Cattlèy*a* from those hitherto described. It was received from the Essequebo by John Allcard, Esq., in whose collection it flowered last year." (*Bot. Mag.*, June.)

2540. ONCI'DIUM [D p.r.w Fl cab. 60.
*intermèdium *Knowles & Westc.* intermediate ♇ ▭ or 2 mr O. spotted with Br Cuba ...

A magnificent species, received by G. Barker, Esq., of Springfield, in whose stove it flowered in March last. It is closely

allied to O. carthaginénse and O. lùridum, but appears distinct from both. (*Fl. Cab.*, June.)

3455. GOVE'N*IA* [3660.
Gárdneri Hook. Gardner's ♃ ⍓ or 2 d G.Y 1837 Organ Mountains D s.lt Bot. mag.

A free-growing species, with bright green leaves, and whitish-yellow flowers, growing out of the soil in the manner of Limodòrum. (*Bot. Mag.*, June.)

*PHA'IUS *Lindl.* PHAIUS. (From *phaios*, brown; in allusion to the colour of the original species.)
*álbus *Lindl.* white ♃ ⍓ pr 2 jl W.P.G Nepal ?1837 D p.l Bot. reg. n. s. 33.

One of the most showy of epiphytical Orchídeæ, originally found by Dr. Wallich in Nepal growing on trees. It flowered at Messrs. Loddiges's in July, 1837. It requires to be kept moist and shady during bright sunshine in summer, otherwise the leaves will become yellow and sickly. (*Bot. Reg.*, June.)

\+ *Epidéndrum selligerum* Batem. MS. A pretty and distinct species; a free grower, with an odour like that of the tuberose. (*B. M. R.*, June, No. 66.)

\+ *E. équitans* Lindl. A curious species, with dull chocolate brown flowers, sent to the Horticultural Society by M. Hartweg, from Vera Cruz, in 1836. (*B. M. R.*, June, No. 76.)

\+ *E. tridáctylum* Lindl. A curious Brazilian species, which flowered, in May last, in the stove of Stephen Canon, Esq., of Stratford Green, for the first time in England. The flowers are a pale brownish yellow, except the column, which is green. (*B. M. R.*, June, No. 81.)

\+ *E. cauliflórum* Lindl. Received from Rio Janeiro by Messrs. Loddiges. The flowers are about the size of E. nùtans, of a pale straw colour, and are remarkable for appearing from the side of the stout cylindrical stem, bursting forth from among the dry sheaths with which it is closely invested. (*B. M. R.*, June, No. 82.)

\+ *Brasavòla angustàta* Lindl. A fine new species, with large long-stalked flowers, of a pale yellowish green, with a narrow fringed white lip. Imported from Demerara by John Wilmore, Esq., F.Z.S., H.S., of Oldford, near Birmingham. (*B. M. R.*, June, No. 67.)

\+ *Acanthophíppium striàtum* Lindl. Inferior in appearance to A. bícolor, having pale "French white" flowers, with dull longitudinal stripes, and not a single stain of brilliant colour. Received by Mr. Bateman, from Kew Gardens, as a Nepal plant. (*B. M. R.*, June, No. 78.)

\+ *Stèlis trístyla* Lindl. Imported from Brazil by Messrs. Loddiges; and, though one of the largest of the species, not at all remarkable for beauty. (*B. M. R.*, June, No. 69.)

\+ *Pleurothállis marginàta* Lindl. A small species of no beauty, sent from Guatemala to Mr. Bateman. (*B. M. R.*, June, No. 70.)

+ *P. aphthòsa* Lindl. A Mexican species, received by Mr. Bateman from the Birmingham Botanic Garden. Flowers a dull yellow. (*B. M. R.*, June, No. 71.)

+ *Maxillària mádida* Lindl. Nearly related to M. aciculàris. Flowers of a dull dirty yellow. Received by Messrs. Loddiges from Brazil. (*B. M. R.*, June, No. 74.)

+ *Cœlógyne prolífera* Lindl. Brought by Mr. Gibson, collector to the Duke of Devonshire, to Chatsworth in 1836, where it produced its pale brownish yellow flowers, agreeing well with the description of the plant in the *Gen. et Sp. Orchid.*, p. 49. (*B. M. R.*, June, No. 75.)

+ *Gúnn*ia *picta* Lindl. Received from Sydney by Messrs. Loddiges. A curious little plant, with dingy purple flowers. (*B. M. R.*, June, No. 77.)

+ *Grammatophýllum multiflòrum* Lindl. Sent from Manilla by Mr. Cumming to Mr. Bateman in 1837, where it has flowered; and it will very soon be figured. (*B. M. R.*, June, No. 80.)

+ *Blèt*ia *Shephérd*ii *Bot. Mag.*, Dr. Lindley finds to be only a dark-flowered variety of B. verecúnda. (*B. M. R.*, June, No. 73.)

*Amarylli*dàceæ.

935. ISME`N*E*
*Knight*ii* Knowles & Westc. Knight's ☿ ⍓ el 2 mr W Florida 1836 Sk r.m Fl. cab. 59.

A new bulbous plant, closely allied to *P*ancràtium, with flowers of a dazzling whiteness and a delicious odour. It is a native of Florida, where it was found in March, 1836, by Mr. Henry Knight, growing in a swamp watered by the Alabama river, and within a mile of the city of Mobile. As it flowers in March, its period of rest will probably be the summer and autumnal months. (*Fl. Cab.*, June.)

+ *Elisèna longipétala* Lindl. A fine bulbous plant, received from Lima by Richard Harrison, Esq., of Aighburgh. The flowers are of a delicate semitransparent white. (*B. M. R.*, June, No. 79.)

+ *Phycélla biflòra* Lindl. One of the most beautiful species of a charming genus. The flowers are fully two inches long, with an expansion of as much; their tube is a clear, bright, greenish yellow, while their upper end is of the most vivid scarlet, just tinged with purple. The processes of the tube of the flower, by which the genus is known, are nearly half an inch long, lanceolate, and split into two or three sharp-pointed lobes. It is a frame bulb, and well worth cultivation, bearing the air of a sitting-room, while in flower, without inconvenience. (*B. M. R.*, June, No. 72.)

A*sphodèleæ.*

+ B*ulbìne suàvis* Lindl. A pretty green-house plant, found by Major Mitchell, Surveyor-General of New South Wales, in

his last journey into the interior of New Holland, in 1836. It produced its yellow flowers in the Horticultural Society's Garden, in May 1838. (*B. M. R.*, June, No. 78.)

Hemerocallídeæ.

1008. FU'NCK*IA* **álbo-marginàta Hook.* white-margined ₤ △ or 1½ jl L Japan ? 1837 D s.l Bot. mag. 3657.

An interesting green-house herbaceous plant, supposed to be introduced into Europe by Dr. Sieboldt, and received at the Glasgow Botanic Garden from M. Mackoy of Liège. Though treated as a green-house or frame plant, it will probably be found hardy. (*Bot. Mag.*, June.)

*Bromeli*àceæ.

\+ *Bromèlia díscolor* Lindl. A rare South American stove plant, which has lately flowered in the garden of Miss Garnier of Wickham, near Southampton. It has sessile spiny heads of dull pink flowers, which change to brown; and differs from the panicled bromelias in the long tube of the corolla, and the long and simple stigmas. (*B. M. R.*, June, No. 85.)

REVIEWS.

Art. I. *Portraits of British Forest Trees, with and without their Foliage; together with Instructions for drawing Trees from Nature, and Rules for obtaining the Height, Width, and true Proportion that each Part bears towards another, clearly explained and exemplified.* Drawn from Nature, and on Stone, by Geo. R. Lewis, Author of a "Series of Etchings portraying the Physiognomy, Manners, and Character of the People of France and Germany; principal Muscles of the Human Body; and an Address on the Subject of Education, as connected with Design," &c. In folio numbers, each containing Six Drawings. London and Hereford, 1838. Price 1*l.*

Mr. G. R. Lewis is well known as an artist remarkable for the fidelity with which he represents natural objects. He was selected by His Grace the Duke of Northumberland to make portraits of the trees at Syon which His Grace munificently presented to the *Arboretum Britannicum;* and, to all who have seen that work, more need not be said in favour of Mr. Lewis as an artist.

The portraits in the present work are on a much larger scale than those done from the trees at Syon, and are to be considered more as studies for the artist than as objects of study for the arboriculturist. As works of art, combining also the portraits of individual trees, nothing has appeared equal to them; for though they are not so picturesque as the sketches in Strutt's *Sylva Britannica*, yet they are more faithful portraits of nature.

The portraits in Part I. are: Oak on the Lawn at Tibberton,

as seen in winter without the leaves. The same tree, as seen in summer clothed with foliage. Oak in Tibberton Park No. 2., seen in winter without the leaves. The same tree in summer, clothed with foliage. Elm in the grounds of Rotherwas, seen in winter without the leaves. This is a most remarkable tree; immense arms proceeding horizontally from the lower part of the trunk, more in the manner of an ash than of an elm. We hope a portrait of this tree will be given clothed with foliage. Oaks, in the Bucknells, Lower Chilson Farm, Madley, Herefordshire.

The dimensions of these trees are not given, nor the scale to which they are drawn; but this, we conclude, will be done in the letterpress, of which only the title and two pages are given with Part I. To drawing-masters, and to young persons studying trees from nature, this work may be recommended as of first-rate excellence.

ART. II. *Catalogue of Works on Gardening, Agriculture, Botany, Rural Architecture, &c., lately published, with some Account of those considered the more interesting.*

THE Young Lady's Book of Botany; being a popular Introduction to that delightful Science. With 12 coloured Plates, and numerous other Illustrations. 16mo, pp. 341. London, 1838.

A beautiful little work, evidently written by a practical man, and admirably adapted for the purpose for which it was intended, the infusion of a taste for the most innocent and delightful of of all the branches of natural history into the young female mind.

Gleanings in Natural History. By Edward Jesse, Esq., F.L.S. New edition, 2 vols. 8vo. London, 1838.

Full of varied and pleasing reading, calculated to interest the naturalist, the cultivator, and also the man of taste. We cannot recommend a young gardener to purchase such a work, considering his low wages, and the many scientific books that he is obliged to have, in order to acquire a competent knowledge of his profession; but our amateur readers will find Mr. Jesse's *Gleanings* a fit companion for the delightful *Essays* of Mr. Waterton, and the *Natural History of Selborne.*

Essays on Natural History, with an Autobiography of the Author, and a View of Walton Hall. By Charles Waterton, Esq. 8vo. pp. 312. London, 1838.

Most of these essays have appeared in the *Magazine of Natural History;* but there are several, and, among others, one on the Dry Rot, which are not in that work. As the greater number of

the essays are on British birds, their habits, food, &c., the work is particularly interesting to gardeners, and other cultivators. For the general reader, the Autobiography is, in our opinion, worth the price of the volume.

Directions on Practical Agriculture, for the Working Farmers of Ireland, originally published in the Cork Southern Reporter, under the Signature of "Agricola." By the Rev. William R. Townsend, Rector of Aghada, Diocese of Cloyne. pp. 64. Cork, 1837.

A cheap little work, calculated to do much good in the locality for which it is intended. At the end, there are Farmer's Calendar, Farmer's Agricultural Catechism, and a little gardening and cookery for the farmers' wives. Some idea may be formed of the want of such a work from the following directions:— "Instead of, as at present, boiling fish and putting it on a plate, swimming in its own broth, the men and children then dipping their potato, peeled with their fingers (a nasty practice), into the dish, and taking a pinch of the fish now and then, let a quantity of potatoes be well boiled and broken small; then well-boiled fish mixed up with it, a little pepper and salt, and some butter or lard, then heated and put on the table; or make it into shapes, and brown it before the fire: the latter is a handsome dish, fit for any table." (Page 63.)

Fourth Annual Report of the Jersey Agricultural and Horticultural Society. 8vo, pp. 58. Jersey, 1837.

This is a prosperous Society, which, judging from the Report, has already effected much good in the island, particularly among the cottagers. All, it is stated, have been struck with the improved appearance of their gardens and cottages. Among the prizes for the year 1838, are six for the best cropped, cleaned, and cultivated gardens; others, for the introduction of Nutt's bee-hives, which, after two years' trial, Col. Lecouteur found fully to answer the expectations he had entertained of them.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Results in Summer and Autumn of the Weather of the preceding Spring. — We are often at a loss to account for certain results occurring in summer and autumn, from our neglect or forgetfulness of meteorological phenomena which have happened in the spring. At the present date, I wish to remark that, since the beginning of the present month, we have, in this quarter, experienced dry parching winds from the north-east and east, as happens in most seasons. Wall trees were mostly in bloom during the last two weeks of April; standard and espalier plums followed; and now the pears and cherries, and a few of the

forwardest apples, are in flower, though the flowers of the last are pale and weakly. The chilly air of our nights, and bright parching sunshine of our days, I imagine, will be far from favourable to the setting of the fruit, especially when the blossoms are exposed to the full sun; and, hence, I am inclined to expect that the flowers on a north or north-east aspect (if not previously damaged by the severe frost of January) will have the best chance of escaping the parching effects of the dry season to which they are now exposed. These surmises may be right or wrong; but, either way, we must wait for proof; and, when the time arrives at which the proofs may be exhibited, it is hoped this memorandum may not be forgotten. — *J. M. Chelsea, May* 8. 1838.

Dry Rot and the Kyanising Process. — In the spring of 1837, fifteen pieces of wood, *an inch and a quarter in diameter*, were stuck into the tan-bed of a pine stove, five of oak, five of deal, five of Scotch fir ; of each of these, one had been soaked in Kyan's solution, of the strength, and for the time recommended by him ; one in an imitation of the Pary's mine water ; and one in green vitriol : a fourth of each was made of seasoned and a fifth of unseasoned wood, and these two had not undergone any preparation. The last two showed the first symptoms of decay, but all the others are now decaying, and prove incontestably that none of these preparations, used according to Mr. Kyan's directions, possess the property of preserving wood from dry rot. It is true that boards of Scotch fir, three quarters of an inch thick, soaked in green vitriol, have been taken this winter out of a mushroom bed quite sound, while similar boards, not so prepared, were found to be quite rotten : but boards so thin may be supposed to be easily saturated. Fourteen of these fifteen pieces of wood first named are still to be seen in the hot-house here. — *Welbeck, April* 4. 1838.

The above is given in the newspapers, on the authority of the Duke of Portland, and it corresponds perfectly with what we have said on the subject of the Kyanising process in our preceding Volume, p. 281. and 365. ; and in our review of Dr. Dickson's pamphlet on dry rot in the *Architectural Magazine*. We have there cautioned our readers against the practice of Kyanising logs or planks before cutting them up, and supposing that they have obtained all the benefits of the process. With equal propriety might they paint a log, and then, after sawing it up for use, consider the articles formed of it as painted. Such a mode of Kyanising or painting is obviously merely throwing away money. We know wood is frequently Kyanised in this manner by persons in the neighbourhood of London ; and when, in a few years, the articles formed of wood so treated begin to rot, this will be attributed to the inefficacy of the process. Before any piece of wood is Kyanised, it ought not only to be cut up into the form required, but even to be planed, when that process is considered necessary, before being sent to the Kyanising tank. Is is a great mistake, in our opinion, to suppose that the Kyanising process penetrates farther than a few lines below the surface, even of the softest wood. The very circumstance of the corrosive sublimate forming a hard insoluble compound, or surface casing, to the wood, a few hours after its immersion, is sufficient to prevent the fluid from penetrating to any great depth ; and we can easily conceive a log of soft wood Kyanised, and rendered hard and durable on the outside, while in the interior the process of decay was going on. This happens every day with green wood, which has been coated over with paint before it was thoroughly seasoned. It is for the permanent interest of the Kyanising company to make it clearly and distinctly known to the public, that the wood to be Kyanised ought to be worked, and reduced to the form in which it is finally to remain, before it is put into their tanks. If this be not done, the process of Kyanising may, and probably will, fall into disrepute in the course of a few years. — *Cond.*

A permanent Tally for Plants. — The following tally is used in Melbury Gardens, the seat of the Earl of Ilchester, in Dorsetshire. Plates are cut

out of sheet-lead, 2¼ in. long, and 3¼ in. broad; and on these the name is stamped, letter by letter, with steel types. The plate of lead is next soldered to one end of a piece of iron wire; after which the tally receives two or three coats of dark lead-coloured paint; and, lastly, a coat of white paint is put over the lettered side, taking care that it does not get into the letters. Before the tally is inserted in the ground, the upper part of the shank is bent a little to one side, the better to show the name to an eye which is near it, and considerably above its level. The lead used should be about one tenth of an inch in thickness, and the iron wire not less than one eighth of an inch in diameter. The plumber will furnish the lead, cut into plates of the proper size, and he will also solder them on, after they are stamped, to the shanks. The shanks, cut into the proper length, and also the steel stamps for stamping the letters, may be procured from the ironmonger; and the letters can be stamped on, and the whole tally painted, by the gardener, during weather when he cannot work out of doors. To insure correct spelling, the person stamping the names should have a printed catalogue before him, as the error of a single letter will render the whole of the labour bestowed on the plate quite useless. Tallies of this sort will last a lifetime; when stuck in the ground, they are just conspicuous enough to be read easily, and not so much so as to attract more attention than the plants against which they are placed; and, from the smallness of the shank, it is neither conspicuous to the eye, nor injurious to the roots. — *James Eaton. Melbury Gardens, April* 27. 1838. [We can confirm from experience all that is said in favour of stamped tallies, having had several hundreds of them in use at Bayswater, for the last twelve years; some, like Mr. Eaton's, with shanks, for plants in the free soil, and others, on strips of sheet lead, 4 in. long, five eighths of an inch broad at one end, and one eighth of an inch broad at the other, for plants in pots. We have also used what may be called an invisible number for plants in the open air; which is a circular plate of lead, about the size of a waistcoat button, or larger if necessary, on which the number is stamped; and the plate or button is afterwards soldered to the end of a piece of ⅛-inch iron wire, so as to resemble the head to a nail. Such a number, stuck in near the crown of an herbaceous plant, will be so concealed by its leaves, as not to be seen till it is sought for; and thus, while it affords the means of ascertaining with certainty the name of a plant when required, it does not obtrude that name upon those who already know it, or care little about it. Before being stuck in the ground, the tally should receive two or three coats of lead-coloured paint; or the head, or leaden part, may be painted with common paint; and the iron shank with anticorrosive paint, or heated, and afterwards washed over with gas tar. — *Cond.*]

Progress of Education in rearing and training Brute Animals. — The effect of gentleness in teaching the human species had not been long observed, before (generalising on the subject) it was applied in the case of brute animals in a state of domestication; and it has been found that the domestic animals used in agriculture, and for military and commercial purposes, may be trained to do their work much more effectually, and with far less labour, by gentleness, than by force. This has been lately beautifully exemplified in the education of cavalry horses; and the following extract on this subject, is from a paper, in a recent number of the *Edinburgh Medical and Surgical Journal*, by Mr. Marshall, Assistant-Surgeon to the Seventh Dragoon Guards. We give it as quoted in the *Scotsman* of April 18. 1838:—"The principal object in the treatment of young horses is to render them docile; and the same gentle means are now used for that purpose, which are found to answer best in the treatment of children. They are rendered quiet and tractable by frequent patting, handling, and rubbing them, and by taking up their feet. They are led about the barrack yard to accustom them to the sight of mounted horses, and to the glitter of arms; and, in the course of four or five months afterwards, they are transferred to the riding-school to be trained. The good old plan, like that preferred by our ancestors for teaching boys Latin and Greek, was to whip all fear and shyness out of them; but kindness and common sense have

at last gained the ascendency, to the great delight of the organs of sensation in both boys and horses."

Art. II. *Foreign Notices.*

INDIA.

Taking Bees in India. — The following curious method of taking bees in India is extracted from Addison's *Indian Reminiscences:* — "A large swarm of bees had fixed their abode on the ceiling of a veranda; and, in due time, when the honey was deposited, we wished to collect it, but were, for some time, at a loss for the means. Hearing, however, that there was a gardener who possessed a method of doing it unhurt, he was sent for and desired to bring down the honey. I watched him closely through the whole process, and was told by him, and believe, that he used no other precaution than the following. He took some of the plant called toolsy, and rubbed it over his body, face, arms, and hands: he then chewed a little, and held a sprig of it in his mouth. With no other than this apparently slight defence, he mounted a ladder, a large dish in one hand, and a sharp knife in the other; and, though as thinly clad as his class usually are, with thousands of bees swarming about his naked body, he, with the greatest *sang froid*, cut immediately through the upper part of the comb, where it was suspended to the roof, and, receiving the whole of it in his dish, brought it down without having suffered from a single sting.

"The plant is the black ocymum of botanists. Its aromatic odour is, perhaps, the strongest there is. I know that some of the species of this genus are cultivated with success in England: this, therefore, might be, in all probability, if it is not so already. Sir William Jones addresses it in one of his poems: —

'Hail! sacred toolsy, pride of plains!'

This epithet he has given to it from its particular prevalent use in the Brahminical rites: indeed, the extraordinary sanctity attached to it is evinced by its forming, with Ganges water, the base of the Hindoo's most solemn oath: his mode of swearing is by touching these. The legend respecting it in the Sanscrit records is, that it was once a most beautiful nymph of the same name, passionately beloved by Crishna, who, to perpetuate her memory, transformed her into this plant, and ordained that no worship to him should be availing, or complete, which was not graced by her presence: hence it is invariably used in all *poojahs* made by the followers of Vishnu." (*Ind. Rem., &c.*, sent by *J. B. W.*, Feb. 1. 1838.)

Art. III. *Domestic Notices.*

ENGLAND.

M. Franz Rinz of Frankfort, leaving England, cannot deny himself the pleasure, before he goes, of expressing his most sincere thanks to his friends and patrons for the very kind reception he met with in England and in Scotland during his journey in both countries. The recollection of the proofs which he received of the hospitality of Great Britain will always afford him the greatest pleasure; while, on his part, it shall always be his endeavour to render himself worthy of so much kindness and confidence. — *London, May* 16. 1838.

Bristol Philo-Botanical Society. — This Society, we are informed by the president, is daily increasing; and, thinking that a perusal of its rules may lead to the establishment of other societies of the same kind, though some of

these (in villages, for example) may be of a much more humble description, we have subjoined those which we consider of most importance: —

I. That the object of this Society shall be the improvement of its members in botanical knowledge, by the reading of papers, and the discussion of subjects connected with that science; and by excursions in search of plants.

II. That the meetings of this Society be held every Tuesday evening, during the months of April, May, June, July, August, and September; and every alternate Tuesday the rest of the year.

III. That a committee be elected, &c.; and a treasurer and secretary, &c.

IV. That a president and vice-president be chosen, &c.

V. That, to meet incidental expenses, a subscription of ten shillings per annum be paid half-yearly by each member.

VI. That any person wishing to join this Society be proposed by a member, and balloted for at the ensuing meeting.

VII. That the members be at liberty to introduce a friend to the evening meetings.

VIII. That excursions into the country be made by this Society at least once in the week during the summer half-year. The route, &c., to be fixed at the previous evening of meeting.

IX. That a library and herbarium be formed for the use of this Society; the library, by the purchase of botanical books and periodicals; the herbarium, by the contributions of the members.

X. That a curator be appointed annually by the committee, to whose care the library and herbarium shall be intrusted. This officer to be eligible for reappointment immediately after the termination of his year.

XI. That members intending to bring forward papers or discussions shall notify the same to the secretary one month beforehand. The secretary to announce at the conclusion of business, every evening, the subject (if decided) for the next meeting.

XII. That if a member be disabled from attending an evening meeting, he shall give notice thereof in writing to the secretary.

XIII. That any member wishing to introduce, alter, or expunge a rule, shall give a fortnight's notice to the Society, when a special meeting shall be called by the secretary for its consideration.

XIV. That all the transactions of this Society be entered by the secretary in a book provided for that purpose.

The Society is desirous of opening a correspondence with other similar societies, both for the communication of newly discovered facts, and the interchange of dried specimens. — *Leo H. Grindon. President. Bristol, June 7.* 1838.

The Oxford Apiarian Society. — The object of this Society is to be twofold: 1. To promote an improved and more extensive system of bee management among the cottagers, by the diffusion of information on the subject, the loan, not the gift, of hives (their cost to be repaid from the produce), and the annual distribution of prizes; of which due notice will be given in the Oxford papers, with conditions to be observed by the competitors.

2. To promote a more extensive and scientific knowledge concerning the natural history and cultivation of bees among the higher classes.

To further this latter object, a small plot of ground to be rented within a very short walking distance of Oxford, and hives of all sorts to be established there. The ground to be opened to the members of the Society, and visiters admitted by tickets from subscribers, on payment of 1*s*. Cottagers to be admitted by tickets gratis.

The subscriptions to be 1*l*. 1*s*. for the first year; for subsequent years, 10*s*. 6*d*.; to be devoted to lending new hives, distributing prizes, and establishing an experimental garden or gardens, and other purposes connected with the objects of the Society.

Donations thankfully received from casual visiters towards the support of

the bee-garden. Subscriptions to be received by Mr. Kirtland, at the Museum, and at the bank of Messrs. Parsons and Co.

Persons desirous of becoming members are requested to pay their subscriptions as soon as convenient, that the funds which will be at the Society's disposal may be known as soon as possible, as it is desirable to begin operations immediately. (*Advertisement in the Oxford Herald*, March 31. 1838.)

Since the above advertisement appeared, a Society, under the title of the "Oxford Apiarian Society," has been established, and is now flourishing, and the propositions therein made carried into effect. A piece of ground, about half an acre in extent, situate in Bagley Wood, near the river Isis, bounded mostly by willows and elms, has also been taken, and laid out as an experimental bee-garden, and opened under the above-mentioned regulations. There are at present twenty-two stocks of bees placed in common straw and experimental hives, of various constructions. The kind which, in Oxford, claims the greatest attention is that invented by the author of the pamphlet, *A short and simple Letter to Cottagers*, sold to cottagers and for distribution at 2*d.* each, and therein fully illustrated and explained. A quantity of these hives have been made under the inspection of the Society, and may be obtained on application at the Museum, Oxford, price 1*l.* 10*s.* Small models, or patterns, to work from, are also to be had at the same place, price 4*s.* 6*d.*, for the convenience of country gentlemen or mechanics who may be desirous of making or using this hive. — *W. H. B. Oxford, May*, 1838.

Dr. Darwin's Botanical Garden, near Lichfield, was situated at a place called the Abnalls, about a mile north-west of Lichfield. It was established about the year 1777, and continued in his hands as long as he remained in this neighbourhood. On his leaving Lichfield, Mr. Jackson (who, in conjunction with Dr. Darwin and Sir Brooke Boothby, formed a Botanical Society, and produced a translation of the *Linnæan System of Vegetables*, and the *Families of Plants*, each in two vols. 8vo), a proctor of the ecclesiastical court there, became the proprietor of it, and maintained it on the original plan as long as he lived. At his decease, it passed into other hands, and gradually fell away from its former beauty, until it has at length become a mere wilderness; the ponds being choked with weeds, the cascades broken down, the walks overgrown with rank grass, and the "trim parterres" converted into pasture for cattle. Sometimes, in the spring of the year, one may yet find a stray snowdrop, or a clump of daffodils, which have survived the general wreck; but these are all that remain to tell of its high and palmy days, when the high-priest of Flora stood surrounded by the blossoms of a thousand climes. At one end of the garden there is an old bath, of cold water, called Urite's Well, built at the recommendation of Sir John Floyer, physician to Charles II., and formerly in much repute for cold bathing. This has suffered in the general decay: the dressing-room serves the ignominious purposes of a sheep-pen; the doors are broken down, the windows rifled of their glass, and the fountain itself choked with weeds and rubbish.

Dr. Harwood, in his *History of Lichfield*, quotes an inscription, written by Darwin, for the "Naïad of the Fountain." It is as follows: —

"SPEECH OF A WATER NYMPH.

"If the meek flower of bashful dye
Attract not thy incurious eye,
If the soft murmuring rill to rest
Encharm not thy tumultuous breast,
Go where Ambition lures the vain,
Or Avarice barters peace for gain!"

In the *Phytologia*, Darwin writes: "There is a situation where the manner of the production of springs is most agreeably visible: it is about a mile from the city of Lichfield, near the cold bath erected by Sir John Floyer, in a beautiful piece of ground, which was formerly Dr. Darwin's botanic garden.

In this place, a grotto, about six yards wide and ten long, has been excavated on the side of a hill, consisting of silicious sandstone, with this peculiar circumstance, that the upper stratum of the sand rock, which is there about 5 ft. thick, is divided from the lower stratum of it by a sheet of clay, not more than 3 or 4 inches in thickness. On the upper surface of this sheet of clay, between the lips of these rocks, a perpetual dribbling of water oozes quite round the grotto, like a shower from a weeping rock. Thus, this thin sheet of clay prevents the water from sinking into the lower stratum of sandstone, and produces other curious springs, which are collected at about half a mile's distance, and conveyed by leaden pipes to the Cathedral Close of Lichfield, which is thus supplied with water of uncommon purity, which contains no calcareous earth, owing to its passing through silicious sand over a stratum of clay."

The botanic garden (for it still retains this name) was subsequently purchased by John Atkinson, Esq., and at present forms part of a small farm belonging to him, and adjoining his estate of Maple Hayes. — *Amateur. Shenstone, near Lichfield, March*, 1838.

Glass for Conservatories, much thicker than crown glass, and equally clear, is now offered for sale by some of the London glass-cutters, and recommended for the roofs of conservatories. The immense structure now erecting at Chatsworth, it is said, will be glazed with it.

Art. IV. *Royal Caledonian Horticultural Society.*

The spring quarterly meeting of this Society was held, March 1., in the council-room in the garden.

Notwithstanding the extreme inclemency of the weather for two months past, the number and quality of articles produced at the meeting gave great satisfaction, as showing not only the zeal and success with which different branches of horticulture are now cultivated in Scotland, but the high estimation in which the awards of the Society (which are chiefly honorary) are held.

For the prize offered for the six finest and newest varieties of Camél*lia* japónica, there was no proper competition ; but the Committee voted a premium to Mr. John Boston, gardener to Miss Innes at Drum, for a collection containing several good flowers, particularly *pæoniæflòra*, Chándler*i*, and Knight's waratah.

For the finest plant of recent introduction, in flower, the prize was awarded to Mr. Robert Guthrie, gardener to Sir Archibald Campbell, Bart. Garscube, for Cliánthus puníceus.

For the four finest different species of E'pacris in flower, to Mr. Robert Watson, gardener to David Anderson, Esq., of Moredun ; the kinds being E. impréssa, variábilis, púngens, and grandiflòra.

For the best three species or distinct varieties of Chinese azalea, to Mr. James Cunningham, Comely Bank; the sorts being A. Georg*iàna*, índica coccínea, and macrántha purpùrea.

For the best six hyacinths, two prizes were offered, one to amateur cultivators, and another to nurserymen. For the former, several competitors appeared, and the medal was awarded for the collection sent by Dr. Adolphus Ross; the varieties being rouge éclatante, dark red; Nimrod, deep blue ; Voltaire, white; porcelaine sceptre, blue; grand vainqueur, white; and grande vidette, blue. The nurserymen's prize was voted to Mr. James Kelly, foreman to Messrs. James Dickson and Son, Inverleith, for grand vainqueur, Orondatus, Appius, roi de major, bouquet tendre, and Betsy.

For the prize offered for the best three sorts of pears, fit for the dessert at this season, four competitors came forward. After a very careful comparison and trial, the medal was voted for those sent by Mr. John Young, gardener to Sir James Gibson Craig, Bart., of Riccarton ; the kinds being Colmar, crassanne, and St. Germain. For the collection regarded as next in merit, a

small premium was awarded to Mr. Arthur Calder, gardener to George Sligo, Esq., of Seacliffe; the sorts being swan's egg, Spanish bon Chrétien, and crassanne.

For the prize offered for the best six sorts of apples, either dessert or culinary, no fewer than seven competitors appeared; and, after a minute examination, the medal was assigned to Mr. Arthur Calder, for the collection sent from Seacliffe garden; the names of the apples being royal pearmain, Ribston, nonpareil, Stoup Leadington, Norfolk beaufin, and Yorkshire greening. For the collection considered as next in merit, a premium was voted to Mr. James Macintosh, gardener to Robert Ferguson, Esq., Archerfield: the sorts were Borsdörffer, hollow-eyed pippin, nonpareil, Rymer, Yorkshire greening, and Ribston: the fruit had been preserved in pounded charcoal, and were firm and glossy. A third premium was awarded to Mr. John Braid, gardener to George Simson, Esq., Pitcorthie House, Colinsburgh, for a collection consisting of the Woolbedding pippin, Ribston, Newton, Cambusnethan, winter ruby, and Ganges.

For forced asparagus, two premiums were given; one to Mr. Robert Anderson, gardener to Laurence Buchan, Esq., of Balchrystie; and another to Mr. James Smith, gardener to the Earl of Hopetoun, Hopetoun House.

Four cultivators competed for the prize offered for the best Scots pint of mushrooms, all of them producing the article of excellent quality. The medal was found due to Mr. John Young, gardener at Riccarton; and an extra premium was voted to Mr. John Macnaughton, for the mushrooms sent from the garden of John Wauchope, Esq., of Edmonstone.

The greatest novelty at the exhibition was a cluster of the fruit of the plantain tree (*Musa paradisiaca*), the first time of its being ripened in Scotland. It was from the palm-house of the Royal Botanic Garden; and thanks were unanimously voted to the excellent superintendent, Mr. William M'Nab, under whose care it was produced.

Premiums were awarded to Mr. James Murray, gardener to Andrew Fletcher, Esq., of Saltoun, for a beautiful large citron, and for clusters of the muscat of Alexandria grape, recently cut from the tree; and to Mr. William Thom, gardener to David Anderson, Esq., of St. Germains, for very fine forced rhubarb, the stalks being three feet long.

The attention of florists was attracted by a seedling camellia raised from seed of the old waratah, saved at Sunnyside, near Edinburgh, in 1833; and a premium was voted to Mr. John Christie, gardener to Mrs. Gilchrist of Sunnyside; Mr. Christie being a zealous and successful cultivator, who has many seedling camellias in progress.

In the council-room were placed a beautiful large plant of a hybrid *Rhododéndron arbòreum* in flower; and a collection of the flowers of the rarer camellias, particularly C. imbricàta (which was much admired), Gray's invincible, Press's eclipse, Chándleri, and speciòsa. These productions were from the Inverleith Nurseries, and the thanks of the meeting were voted to Thomas Dickson, Esq., the proprietor. The room was farther decorated with beautiful flowery specimens of Phàius maculàtus, *Loàsa* laterítia, and Blètia Tankervíllиæ, from the hot-houses in the Society's garden, which, at present, form a singular contrast to the exterior borders, where very many fine shrubs have been killed by the severity and long continuance of the frost.

It may be mentioned, that, besides the pears sent from Riccarton for competion, the following first-rate kinds were sent for exhibition only, all of them in high preservation: — Beurré d'hiver, beurré de Ranz, Easter beurré, and glout morceau. Also that specimens of excellent nonpareil apples from Claremont were exhibited by James Nairne, Esq.

The following presents to the garden were announced: —Nuts of Tràpa nàtans, or water-caltrops, and tubers of *Cypèrus* esculéntus, or rush-nut, from Charles Lawson, Esq., seedsman to the Highland Society; tubers of a double-flowering potato (*Solànum* tuberòsum), from Sir George S. Mackenzie,

Bart., of Coul; and seeds of *Zizània* aquática, or Canada rice, from John Haldane, Esq., Haddington.

In consequence of the heavy fall of snow having blocked up the roads, and detained the mail-coaches, several articles did not arrive in time for the competition on the 1st inst. An extraordinary meeting of the Committee was therefore subsequently called; and they agreed to recommend the awarding of the silver medal to Mr. David Brewster, gardener to Colonel Lindsay of Balcarres, for a collection of most beautiful camellias, including C. *anemoniflòra ròsea*, Press's eclipse, imbricàta, variegated waratah, Chándleri, and one marked "Seedling from China, introduced by James Nairne, Esq." Specimens of haricots verts, or green kidneybeans, preserved both in the Dutch and French mode, were send by the same active horticulturist, and remitted to a Sub-Committee for examination. The Committee likewise found the silver medal due to Mr. William Sharp, gardener to Sir John Steuart Richardson, Bart., of Pitfour, for a capital collection of named apples, in very high preservation; among which Knight's new Ribston was preeminently good; and the largest and richest asparagus shoots produced on the present occasion. At the same meeting, a letter was read from Mr. Charles H. J. Smith, garden architect, accompanied with specimens of the French crab of crop 1835 and crop 1836, from the garden of Dr. Thom of Annan; and recommending that long-keeping and excellent apple to the attention of horticulturists, as deserving a place on a west or south wall. — *P. N. March* 9. 1838.

Art. V. *The West London Gardeners' Association for mutual Instruction.*

Forcing of Roses. October 30 1837. — Mr. Judd read an essay on the forcing of roses, dividing them into two classes, China and Noisette, and moss and Provence, roses. China and Noisette roses he cuts down in the end of September; shakes most of the soil from the roots; repots them in fresh compost, consisting of equal proportions of peat earth, leaf-mould, and good loam, with a portion of sand and a little soot; and places them in a cold-pit till the beginning of November, when he removes them to one having the command of fire heat; gives them a temperature of from 55° to 65°; waters in the afternoon; syringes after a sunny day, being careful not to allow the plants to be long damp, as it renders them liable to mildew. These will flower in the end of January; and, hardened off, will flower in the green-house till May. A second stock, put in in January, will flower from May to August; those put in the green-house in January, cut down and repotted in May, will flower in August, take the place of those put in the conservatory in May, which, now cut down, &c., will be ready for forcing in November. Mr. Judd attached great importance to watering and syringing in the afternoon, contending that doing it in the morning takes off that fine dew, so beneficial to the plant, which, no doubt, containing a portion of gascous matter, becomes absorbed by the leaves when the sun shines upon them.

For forcing moss roses Mr. Judd recommends two-years-old layers; and, for Provence, good suckers or plants, taken up and potted in the month of September, into a compost consisting of two thirds good loam, and one third rotten cow-dung, with a portion of sand and soot. He then places them, in October, in a frame or pit, with a sweet bottom heat of from 90° to 100°, and an atmospheric temperature of from 50° to 55°, increasing it gradually to 65°; and they will flower in January, when a second stock commenced with will flower in April. When they have done flowering, they must be hardened off before exposure; planted out, or well supplied with water in their pots, so as to have the buds well perfected; to effect which, the first stock should be pruned in August. He also recommended having moss and Provence roses established in pots, and laid down every season, applying the heat by dung linings. For the destruction of the aphis, he recommends tobacco-smoke; for

destroying grubs, picking off by hand; and for eradicating mildew, sprinkling with flowers of sulphur.

Mr. Fish considered that, by the method proposed, China roses might be kept flowering all the year. He agreed in the propriety of watering in the evening, but did not see the justice of the reasons assigned for it. The existence of moisture on the surface, and the drops hanging on the acuminated points of leaves, in the morning, were a sign of health and an evidence that the plants required no syringing; but he had seen no prejudicial effects from syringing at any time, provided the glass over the plant was good, and free from spots. He did not think any evidence had been adduced to show that the moisture on the leaves, when not a secretion, consisted of any gaseous matter, except the constituents of water; or that the moisture was absorbed into the system by the agency of the sunbeams, and not rather evaporated in the atmosphere of the house. He mentioned that beautiful edgings to flower-borders might be made by China roses tied down to a low trellis. He agreed that, by the system of forcing roses at once, instead of having the plants previously prepared, roses would be got, but doubted much if with equal success; and that, as physiology had been introduced, he could not place the one system upon an equality with the other, if he took the principles of that science for his guide.

Mr. Caie drew a distinction between China and Noisette roses, showing how the former ought to be pruned frequently, while the latter should be very little pruned; and mentioned how, by twisting the long shoots together, a continuous succession of flowers was obtained from the same shoots. He detailed a method of growing moss and Provence roses, by obtaining plants with good shoots, and laying these shoots round the sides of the pot, when there was quite a mass produced of shoots and flowers. He approved of syringing in the afternoon; was confident that the leaves absorbed a great deal of moisture, which he considered necessary to the health and vitality of the plant.

Mr. Russell could not see how roses, taken up and forced at once, though sometimes successful, would always be as certain as those potted for a twelvemonth, and properly managed: he wished to know whether the recommending such a system was the result of successful practice; and illustrated his remarks by making a comparison between the vegetable and animal world, and showing that, where two men had to run a long race, the one who had been best prepared by previous exercise would be most likely to secure the prize, and suffer least from the excessive exertion.

Mr. Stormont did not comprehend what sort of pits would do for the forcing of Noisette roses, if they were never pruned.—Mr. Adams showed that taking up roses, and forcing them immediately, was contrary to nature; that allowing the top temperature to rise before the roots were made destroyed the success of the whole undertaking; that syringing might be done at any time, and was very beneficial to a sickly plant, even when the sun shone; and that he considered the moisture on the leaves to be chiefly evaporated, and not absorbed.—Mr. Judd stated that the remarks he had made were the result of practice and observation combined.

Mr. Ayres showed that there was no analogy between the new system of forcing roses and the coiling of the vine, as the nature of the roots in the two cases was different; that the tale about the new system being troublesome was nonsense; that it had answered when the other system had failed; and that, in reality, little more was necessary than plunging them in the hot-bed, flowering them, planting them out into the border, pruning them, and taking them up again and potting when wanted.—*R. F.*

Art. VI. *Retrospective Criticism.*

The Bee-Keeper's Manual. (p. 295.)—In your notice of my little book, the *Bee-Keeper's Manual*, you have, undesignedly, no doubt, led your readers to

imagine that I am a dealer in bee-hives. To save trouble, I wish to state that I have no trading ends to serve. The preface will explain sufficiently the circumstances under which my hints came before the public. My desire is simply to give publicity to facts; and to the experience I have derived from some attention to the subject of bee management, and the requisite machinery, pointing out evils of construction and application to avoid, with my reasons for so considering them; and giving such directions, that amateurs may, if so disposed, proceed according to my plan, spending more or less money, as circumstances and fancy may direct. Mere cheapness is seldom an object with those who possess ornamental pleasure-grounds: but I think the hives I have described may be made at a very reasonable rate, where plainness and economy are studied. — *H. Taylor. Highgate Common, June* 9. 1838.

Mr. Wighton's Objections to Nutt's Bee-hives answered. (p. 180.) — Having admitted into your pages a communication from Mr. Wighton, Lord Stafford's gardener, at Cossey Hall, on the subject of the swarming of bees, calculated, I think, to confirm, if not to propagate, erroneous opinions on that ill-understood point of bee management, I respectfully request the insertion in your next Number of the following countervailing remarks.

Now, having the highest opinion of Mr. Wighton as a gardener, suppose I were desirous of availing myself of his superior skill in the management of a hot-house, and, with that laudable view, should prevail upon him to come over and erect one for me, upon his newest and most approved plan; suppose, further, that, on his departure, he should kindly leave me specific directions respecting his peculiar mode of management in certain critically nice cases, in which other gardeners, less skilled than himself, and adhering to old-fashioned rules of practice, generally go wrong; supposing all this, and that, instead of strictly following Mr. Wighton's directions, I should be capricious enough to alter the stoves, the flues, the frames, the doors, &c., and, consequently, should fail to get either pine-apples or melons better or other than my neighbours, who have never consulted Mr. Wighton; would it be fair in me to charge my failure upon him, and to decry his plans as no improvement upon the old established ones? Similar to this are Mr. Wighton's apiarian proceedings. He had the best directions from the cleverest practical apiarian of the present day, respecting the prevention of the swarming of bees. *He departed from those directions;* has failed to prevent swarming; and now somewhat rashly publishes his dicta, viz.; that "there can be no successful scheme to prevent swarming," and that "to attempt it is rank folly. All the various plans suggested to prevent the swarming of bees have," he says, "he believes, proved ineffectual; and, for eight years, all his experiments to prevent their swarming have failed."

Now, per contra, as bookkeepers say, I believe, because I know, not from eight, but from six, years' experience, and close attention to my apiary, that Mr. Nutt's plan for the prevention of swarming has so far succeeded in my hands, that, during all those years, not more than one stock in six has swarmed; and that in no one instance has a stock of more than one year's standing ever swarmed at all. Of the seven stocks in my apiary last summer, not one swarmed; and from the six stocks I had the year before I had but one swarm: this is but one swarm out of thirteen stocks. My bees have produced abundance of fine honey in each of those years; and every one of those stocks is alive at this day, and six of them are strong and powerful. Mr. Wighton, therefore, goes too far when he says "there can be no successful scheme to prevent swarming." "Heat and want of room," he admits, "may induce swarming, if there be more than one mother-bee in a hive, but not otherwise." What means, then, are so likely to prevent swarming as proper ventilation and additional and agreeable store-room, as they severally become necessary? Ventilation will dissipate the heat, and additional room will remedy the latter inconvenience. "But," observes Mr. Wighton, "I never could prevent the bees from swarming by allowing them plenty of room;" and "ventilation is not easily accomplished, for the bees are sure to seal the

smallest aperture." Plenty of room, unless the temperature of that room be kept at a proper degree, is disagreeable, and detrimental to bees rather than otherwise. "The sealing up of the smallest aperture," when bees have recourse to that expedient, is an indication that the temperature is too low, but manageable; for, when much too low, the bees will not attempt to stop a single crevice, nor, in fact, occupy "the plenty of room" at all: it is of no use to them, it is positively injurious: the truth is, it is always wrong to ventilate empty boxes, and much mischief is thereby done. In Mr. Nutt's book, entitled *Humanity to Honey Bees*, it is well said, "Boxes will not work bees, neither will bees work boxes to advantage, unless due attention be paid to them; that is, both to the boxes and the bees." (4th edition, p. 270.) In the same interesting book, after several directions for returning swarms, the following passage occurs:—"I most strenuously maintain that prevention is better than cure, and that, by proper management of stocks in my boxes, *swarming may be prevented;* at least, so far prevented, that it may, when by any accident it occurs, be considered as the exception, and not the general rule, as heretofore. Out of fourteen stocks in my apiary, at Moulton Chapel, in 1835, not one swarmed; and the summer of 1835 was a remarkable one for swarming." (p. 50.) What will Mr. Wighton say to this? Again: "When adequately relieved, and properly assisted, bees proceed to rid the colony of all embryo queens, which would only become so many supernumeraries in a hive where the reigning queen is fertile, and the necessity for emigration is superseded. But, unless bees could be made to understand that accommodation will be extended to them at the proper time, they, guided by their sense of their situation, not by ours, naturally and wisely provide *their own means* of relieving themselves, and, in so doing, frequently bring forth what afterwards become supernumerary queens, which are invariably destroyed, and cast out of the colony, as soon as the bees are sensible they have no occasion for them." (p. 197.)

These three quotations contain a complete, and in my opinion a satisfactory, refutation of Mr. Wighton's observations. In the last is the most rational, and I might, perhaps, say the most scientific, explanation of the cause for the production of queens in stocks of bees; but, *when adequately relieved, and properly assisted,* bees rid the colony of embryo queens, *and, consequently, they do not swarm.* It may not always be easy, nay, under certain circumstances, and of the weather particularly, I will admit that it may be very difficult, and even impossible, to extend accommodation to bees *at the proper time,* and that a casual swarm may be thrown off; but, in those peculiar cases, swarming is not the general rule, but the exception; and there is a remedy: the queen may be picked out of the swarm, and the other bees returned.

There are other matters in Mr. Wighton's observations open to animadversion; but I forbear. Mr. Wighton is no apiarian. By his own showing, "he had some doubt whether the queen-bee was the parent or mother of the young progeny, till he observed the mother-bee laying an egg in several of the cells in June last." Laying *an egg in several of the cells!* This bungling confession proves that his apiarian attainments are scanty. His two last words, "rank folly" are more applicable to his own crude production, than to the subject to which he has harshly applied them.—*T. Clark. Gedney Hill, Holbeach, May* 16. 1838.

[We are much obliged to the Rev. T. Clark for the above communication; and, having ourselves always thought Mr. Nutt's system of bee management superior to all others, we are glad to have that opinion confirmed. Independently altogether of saving the lives of the bees, we should give the preference to Nutt's hives, on account of the great facility with which the honey can be taken; and because, in consequence of the ventilation in the box in which the honey is produced, it is all what is commonly called "virgin honey." We have kept bees here at Bayswater for 22 years, till, from the approach of London, and the spread of houses even farther out than where we reside, there is a want of food for them, and we have

been obliged to reduce our stock from half a dozen hives to one. That one we have recently had put into one of Nutt's hives, for the sake of experiment, and because it affords the means of feeding the bees, during winter, much more readily and efficiently than the common hive. Till we saw Nutt's invention, our opinion was in favour of the Polish hive, from having seen it in Poland, during four months, work admirably. By it the bees are never killed, and honey can be taken out every day during the summer season, when there is any to take.— *Cond.*]

Art. VII. *The London Horticultural Society and Garden.*

March 20. 1838. —*Exhibited.* Francísia uniflòra, *Euphórbia* spléndens, E. Brónnii, Combrètum purpùreum, Clívea nóbilis, Kennèdya ovàta, K. monophýlla, varieties of E'pacris, Azàlea índica rùbra, Dillwýnia glycinifòlia, &c., from Mrs. Lawrence. Seedling apples grown by Miss Popham, Littlecot Park, near Hungerford, Wiltshire. Oncídium ampliàtum and O. bifòlium, from S. Rucker, Esq., jun. Eight sorts of apples from H. Hollist, Esq. Hardy Hammersmith lettuces and short horn carrots, from M. Nieman, gardener to P. C. Labouchere, Esq. E'pacris impréssa, E. púngens, *Erica* vérnix, *E.* coccínea, Gnídia *p*inifòlia, Kennèdya longiracemòsa, St. Michael's oranges, from R. W. Eyles, Esq. Monacánthus díscolor (yellow variety), and Trymàlium odoratíssimum, from J. Jarrett, Esq. Cut flowers, from the Hon. W. F. Strangways. A hybrid cactus, from Mr. Errington, gardener to Sir P. G. Egerton, Bart. Didíscus cærùleus, from Capt. C. Mangles. Specimens of sheet glass for glazing hot-houses, from Mr. Drake, 100. Edgeware Road. This glass is rather thicker than the best crown glass.

From the Garden of the Society. Apples: Beachamwell, golden Harvey, Boston russet, new rock pippin, Lamb Abbey pearmain, Pile's russet, Bedfordshire foundling, Yorkshire greening, Rymer, and gloria mundi.

Medals awarded. A silver Knightian to Mr. Errington, for the hybrid cactus; to R. W. Eyles, Esq., for Kennèdya longiracemòsa; to S. Rucker, Esq., for the vars. of Oncídium; and to Mrs. Lawrence, for the collection of plants. A silver Banksian to M. Nieman, for the lettuces and carrots.

April 3. — *Read.* A paper on the Propagation of Trees by Cuttings in Summer, by T. A. Knight, Esq., president.

Exhibited. Dendròbium fimbriàtum and Stamfórdia grácilis, from J. Bateman, Esq. Hyacinths grown in glasses, from Messrs. Corsten and Son, Covent Garden. Strawberries, cucumbers, Tropæ'olum brachýceras, seedling cineraria, forced rose, Amarýllis obscùra, Oncídium papílio, and *Erica* sp., from J. Green, gardener to Sir E. Antrobus. *Erica* pellùcida, *E.* ignéscens, hybrid rhododendron, and *Acacia* vestìta, from Mr. Pratt, gardener to W. Harrison, Esq. Caméllia Sweètii, C. corállina, C. Campbélli, C. Leeàna supérba, Victòria antwerpénsis, and *Rhododéndron* arbòreum, from Mr. Smith of Norbiton. Epimèdium grandiflòrum and Maxillària Harrisònii, from Mrs. Marryatt. *Cássia* biglandulòsa, Comespérma sp., and seedling rhododendron, from Mr. Young of Epsom. Dr. Scott's double-action portable conservatory pump.

From the Garden of the Society. Prímula marginàta, P. longifòlia, *Anemone* vernàlis, Azàlea índica phœnícea, Brachysèma latifòlia, *Loasa* laterítia, Cymbídium sinénse, Caméllia imbricàta, C. Colvílle*i*, and Press's eclipse. — Table Apples: Golden Harvey, green nonpareil, new rock pippin, Lamb Abbey pearmain, Pile's russet, Newton pippin, and Dutch mignonne. — Kitchen Apples: Rhode Island greening (a good keeping sort), French crab, pound apple, Norfolk storing, Hormead pearmain, northern greening, Colville blanche d'hiver (this, like the Newton pippin, is much altered by climate), tulip, and royal russet.

THE

GARDENER'S MAGAZINE,

AUGUST, 1838.

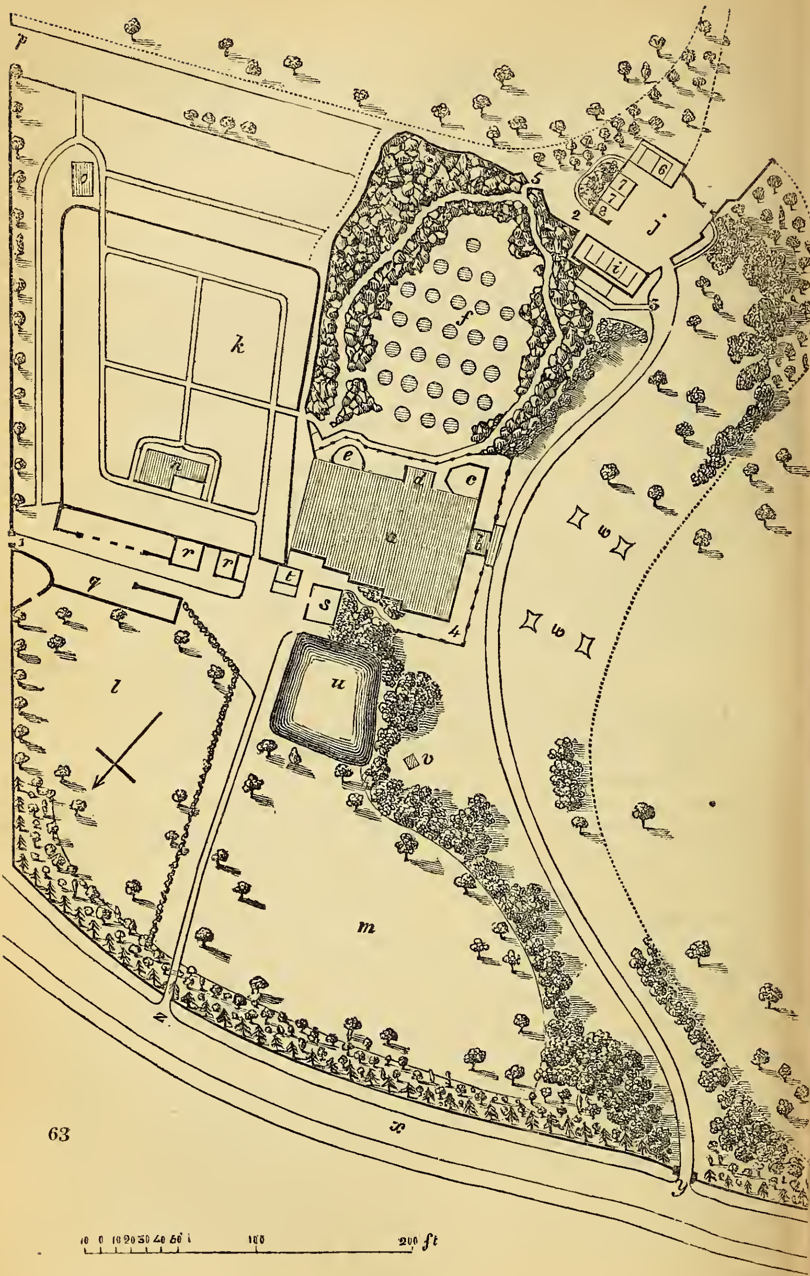
ORIGINAL COMMUNICATIONS.

ART. I. *Notes on Gardens and Country Seats.* By the CONDUCTOR.

HOOLE HOUSE, the Rev. PEPLOE W. HAMILTON; occupied by LADY BROUGHTON.

HOOLE is a residence situated about two miles from the city of Chester, on the road to Liverpool. The extent is between twenty and thirty acres, which are arranged as a farm, lawn, kitchen-garden, and flower-garden. The latter has been by far the most celebrated garden of the kind in that part of the country for the last ten years; and, as will shortly appear, it is in design altogether unique.

We saw Hoole in 1831, and were exceedingly desirous of giving some account of it in our tour published at that time in the *Gardener's Magazine* (see Vol. VII. p. 513. 543. and 551.); but, as it is strictly a private residence, and not shown to any person whatever without permission, except to the friends of Lady Broughton, we could not then prevail on Her Ladyship to accede to our wishes. Having in January last seen at Mr. Lonsdale, the eminent artist's, some exquisitely beautiful water-colour drawings (by Mr. Pickering of Chester) of the flower-garden and rock fence at Hoole, we could not resist the temptation of renewing our application to Lady Broughton, for permission to take engravings of them for publication. To this Her Ladyship very reluctantly consented, being unwilling to give publicity to her place; but, having consented, she permitted us to employ a land-surveyor to take a general plan of the garden, and also sent us some original plans and elevations made by Mr. Harrison of Chester, the late celebrated architect, for constructing a veranda, a geranium-house, a conservatory, and green-house, all connected with the living-rooms of the house. We have now, therefore, to express our sincere thanks to Lady Broughton for acceding to our request, and for enabling us to gratify our readers with some account of the flower-garden at Hoole; and, while we do this, we feel it right to express our anxious hope that the additional publicity which we are now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giving to this unique place may not induce any one to endeavour to break through a rule rendered necessary to the comfort of Lady Broughton, in consequence of the living-rooms being close upon the garden and opening into it.

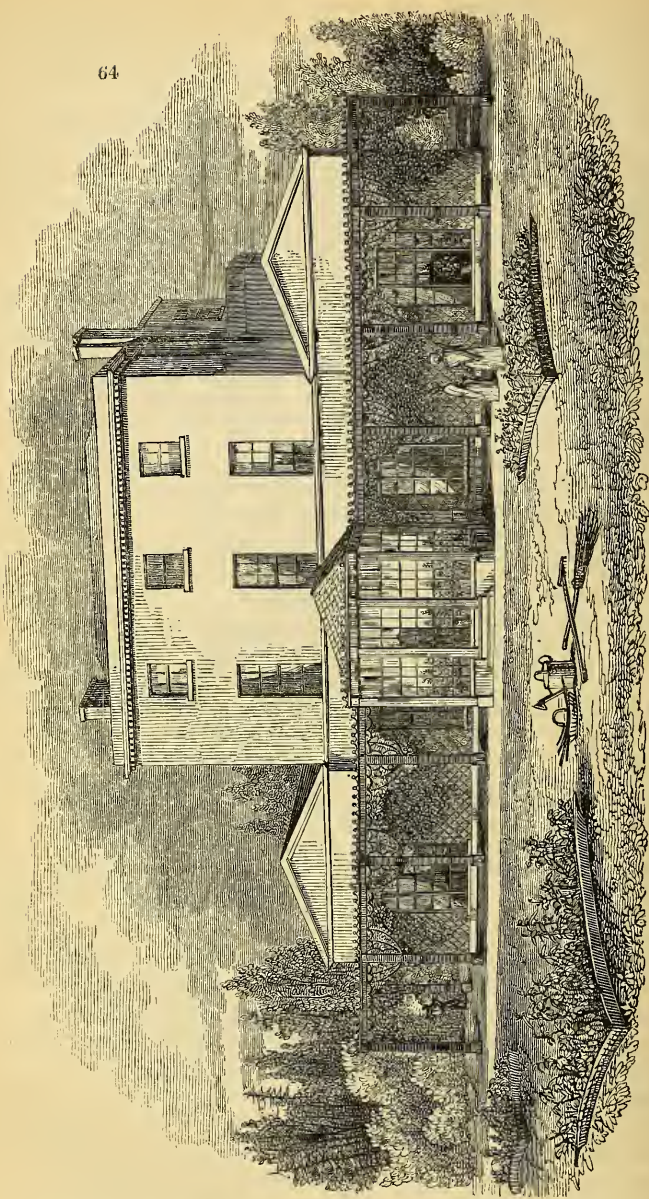
The surface of the ground at Hoole is flat, and the soil a rich loam. In the extreme distance, in one direction, are seen the Welsh mountains, in another, the Peckforton Hills and Beeston Castle. The general plan of that part of the ground which lies round the house is shown in *fig.* 63., to which the following letters refer: —

a, The house, of which the elevation is given in *fig.* 64.
b, A conservatory forming the front entrance, as shown on a larger scale in *fig.* 64.; and without the glass, in *fig.* 65.
c, Camellia-house, of which a ground plan is shown in *fig.* 67., an elevation in *fig.* 66., and a plan of the roof in *fig.* 68. In the ground plan (*fig.* 67.), *a* is the entrance from the veranda; *b*, shelf for plants; *c*, stage for plants; *d d d*, veranda; and *e*, the drawingroom.
d (in *fig.* 63.), Drawingroom window, which looks on the flower-garden.
e, Geranium-house, of which a ground plan and elevation are shown in *fig.* 69. The communication between the geranium-house and the camellia-house is by the veranda *d*, in *fig.* 67.
f, Flower-garden, the view of which, from the drawingroom window, is shown in *fig.* 70.
g, The rockwork surrounding the flower-garden.
h, Walk midway up the rockwork, but concealed from the eye below by the rocks between it and the flower-beds.
i, Stable. *j*, Stable-yard. *k*, Kitchen-garden. *l*, Reserve garden.
m, Grass field. *n*, Gardener's office and green-house.
o, Under gardener's room. *p*, Back entrance to the stable-yard.
q, Soil-yard. *r r*, Back shed and other conveniences. *s*, Coal-house.
t, Ice-house. *u*, Pond. *v*, Bee-house.
w w, Flower-baskets on the lawn. *x*, Road to Chester.
y, Entrance gate to the approach road. *z*, Back approach.
1, Back approach to the garden.
2, Archway between the rock and the stables.
3, Back entrance to the flower-garden. 4, Pavement under the veranda.
5, Back door to the rockwork and flower-garden. 6, Cow-house.
7 7, Coach houses. 8, Harness room. 9, Shrubbery.

Fig. 71. is a view of the highest part of the rockwork, from the centre of the flower-garden. The highest point is in the south-east angle, where it is 34 ft. above the level of the lawn.

Fig. 72. is a view of the rockwork, the lawn, and the camellia-house, from the rock-walk in the north-east angle.

Remarks. The striking effect produced by the flower-garden at Hoole depends on the contrast between the smooth flat surface of the lawn, with the uniformity of the circular beds, and the great irregularity of the surrounding rockwork. The length of the flower-garden, within the rocky boundary, is 60 yards, and the breadth 34 yards. The baskets, twenty-seven in number, are in five straight rows, and each basket is a circle of



Conservatory at Hoole House, forming the Front Entrance.

9 ft. 5 in. in diameter. They are made of wire, worked on an iron rod; the rod being placed upon small pegs, to keep the basket to the level of the grass; and they are painted a yellow stone colour, to harmonise with the rocks and the veranda. They stand

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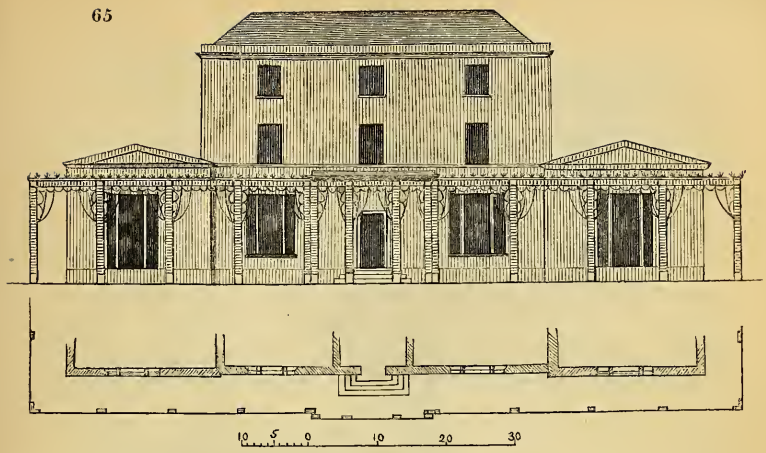

8 in. above the ground, the grass coming close to the iron rod. The distance between each, across the garden, is 4 ft., and down the garden, 8 ft. 10 in. They are planted with spring, summer, and autumn flowers mingled together; and the spaces left, when those are over, are filled with green-house plants, viz. geraniums, verbenas, &c., German stocks, and tender annuals, which keep up the colour until the frosts destroy them: the hardy perennials remain for the next season.

The design of the rockwork was taken from a small model representing the mountains of Savoy, with the valley of Chamouni: it has been the work of many years to complete it, the difficulty being to make it stand against the weather. Rain washed away the soil, and frost swelled the stones: several times the main wall failed from the weight put upon it. The walls and the foundation are built of the red sandstone of the country; and the other materials have been collected from various quarters, chiefly from Wales; but it is now so generally covered with creeping and alpine plants, that it all mingles together in one mass. The outline, however, is carefully preserved; and the part of the model that represents "la Mer de Glace" is

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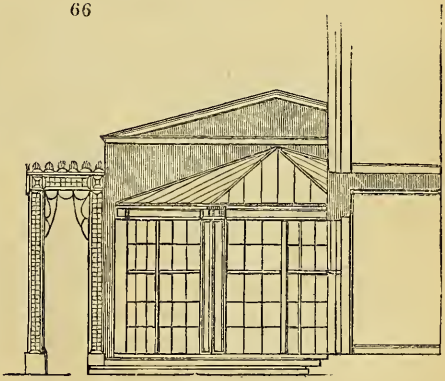
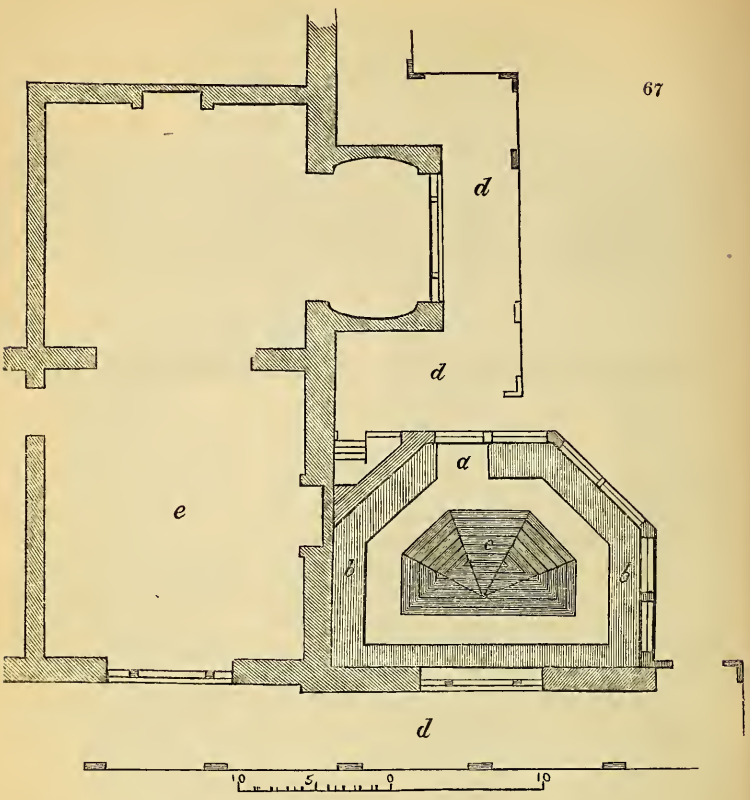
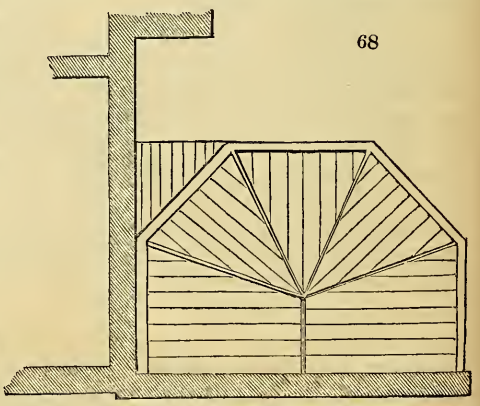




worked with grey limestone, quartz, and spar. It has no cells for plants: the spaces are filled up with broken fragments of white marble, to look like snow; and the spar is intended for the glacier. On the small scale of our engravings, and without the aid of colour, it is altogether impossible to give an adequate idea of the singularity and beauty of this rocky boundary; and we may add that it is equally impossible to create anything like it by mere mechanical means. There must be the eye of the



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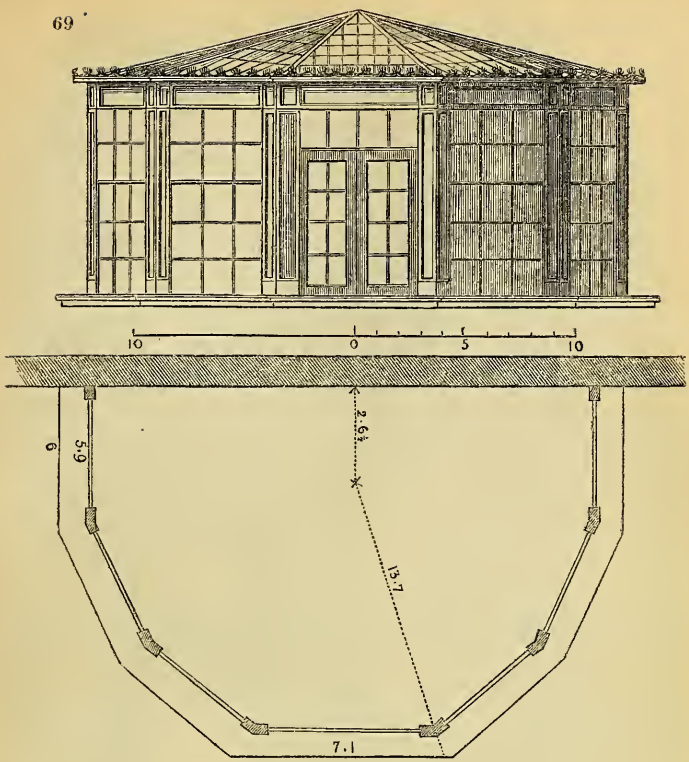

artist presiding over every step; and that artist must not only have formed an idea of the previous effect of the whole in his own mind, but must be capable of judging of every part of the work as it advances, with reference to that whole. In the case of this rockwork, Lady Broughton was her own artist; and the work which she has produced evinces the most exquisite taste for this description of scenery. It is true it must have occupied great part of her time for six or eight years past; but the occupation must have been interesting, and the result, as it now stands, must give Her Ladyship the highest satisfaction.

In 1831, when we saw the flower-garden, the flower-beds on the lawn, instead of being circular, were in the shape of the letter S; they were all of the same form and dimensions, and in rows, like the circular beds, and also placed at uniform distances; but the effect, though good, was not equal to what it is at present: the perfect unity of the circular beds producing a more complete contrast with the diversity of the rockwork, than the S-shaped beds.

The rockwork is planted with a selection of the most rare and

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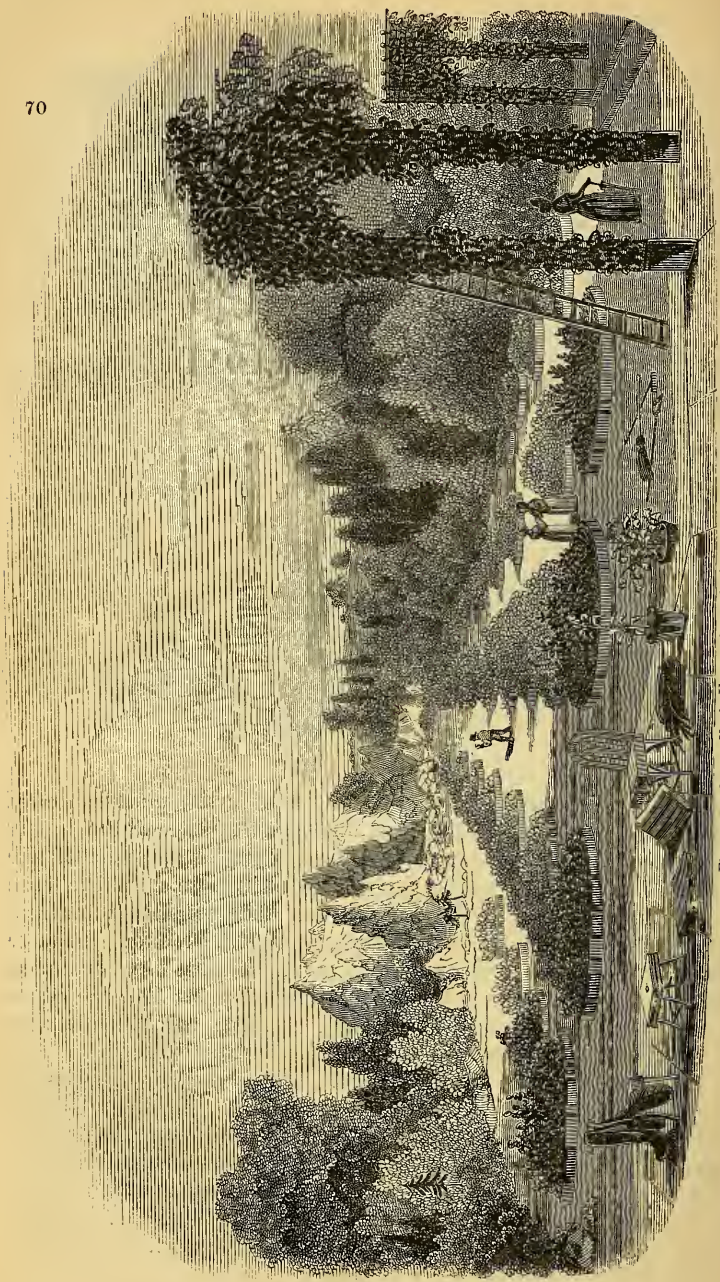

Flower-garden at Hoole House, from the Drawingroom Window.

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Rockwork at Hoole House, from the Centre of the Flower-garden.

beautiful alpines, particularly with all the close-growing kinds; each placed in a nidus of suitable soil, and the surface protected from the weather by broken fragments of stone, clean-washed river gravel, the debris of decaying rock, moss, or other suitable

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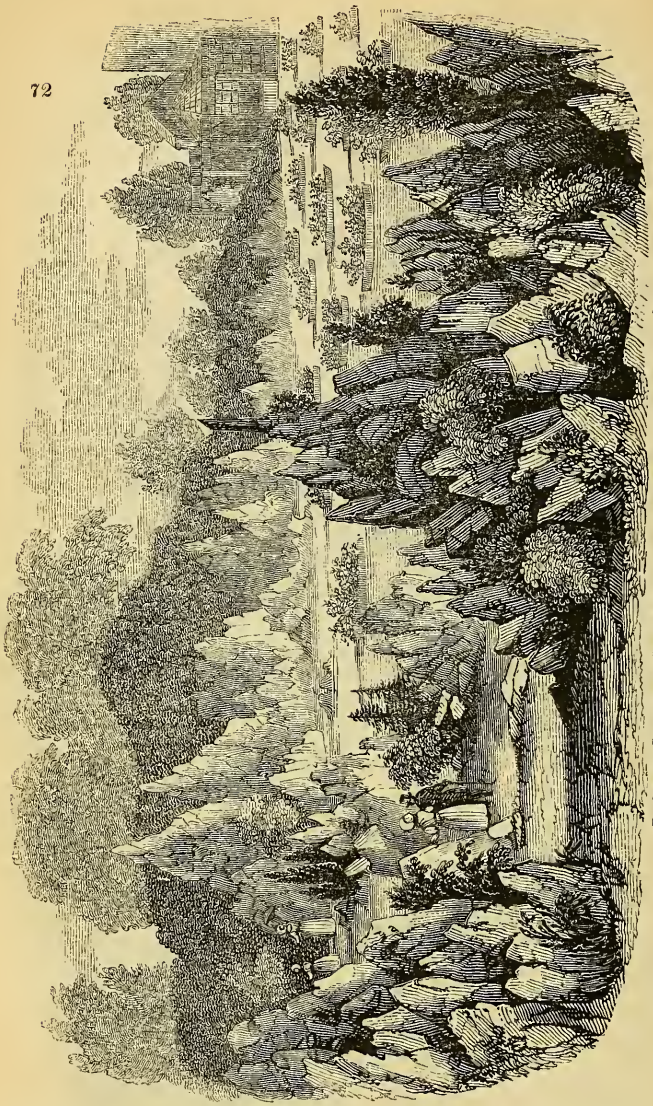

Rockwork, Lawn, and Camellia-house, at Hoole House from the North East.

substances, according as the object was to retain moisture; to evaporate moisture, in order to prevent the plants from damping off; to increase the heat, in which case dark fragments of stone are used; or to diminish it, which is effected by the employment of white pebbles, which, by reflecting the light and heat, keep the ground cool. The following is a list of the principal genera: — Saxifrages, sedums, *Cistus*, pansies, rock pinks, anemones,

Dry̆as, *My*osòtis, heaths, violas, *Lý*chnis alpìna, *Er*ìnus, Frankèni*a* læ'vis, campanulas, ajugas, alyssums, anemones, *O'*xalis, hepaticas, antirrhinums, aquilegias, *A'*rabis, aretias, asters, *As*trágalus, armerias, *An*agállis, Cheiránthus alpìnus, Cerástium, claytonias, Convallària bifòlia, Cóptis trifòlia, *Có*rnus canadénsis, Cortùs*a* Matthìol*i*, cyclamens, Calceolària Fothergílli, drabas, erodiums, *Gà*lium græ'cum, Gaulthèr*ia* procúmbens, globularias, crane's-bills, gypsophilas, gentians, hieraciums, hypericums, Hippocrèpis, Jeffersòn*ia* diphýlla, *Lá*thyrus, *Lò*tus, Leóntodon aúreum, linums, mitellas, Mœrhíng*ia* muscòsa, menziesias, Orníthopus dùrus, *Onò*nis, *Onó*sma, *O'*robus, pinguiculas, phyteumas, pyrolas, potentillas, primulas, *Pì*sum marítimum, *Po*lygala Chamæbúxus, *Rù*bus árcticus, Aubrièt*ia* purpùrea, Saponària *o*cymöìdes, *Sá*lvia pyrenàica, statices, silenes, soldanellas, Solidàgo minùta, *Bé*llis minùta, *Teù*cr*ium* pyrenàicum, Tiarélla cordifòlia, Mitélla diphýlla, Trientàlis, *Thy̆*mus córsica, dwarf veronicas. The evergreens are chiefly yews, privets, laurels, arbutus, rhododendrons, brooms, cedars, box, daphnes, laurustinus, &c.; to which are added azaleas of every kind, and various other low-growing shrubs.

ART. II. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 13. THE ELM-DESTROYING SCOLYTUS.

THE recent indiscriminate felling of the trees in the most frequented parts of Kensington Gardens having attracted considerable attention to the causes of the disease by which the elms had been killed, together with the circumstance that there are still some persons who maintain that it is attributable to the soil or atmosphere, and not to the attacks of Scólytus, induces me to lay before your readers a few recent observations which have been made upon the subject, together with figures, in detail, of the preparatory states of the insect in question.

The attention of Messrs. Victor Audouin and Spence has recently been directed towards the subject of the injuries to which the elm is subject; and these gentlemen have communicated a series of valuable observations which have been already published in the *Arboretum Britannicum*, to which I must content myself with simply referring the reader, and stating that it has been clearly proved by these observers that, in the first instance, the insects, both males and females, attack the tree, in order to obtain a supply of food, burrowing into the bark; and that this burrowing brings the tree into an incipient state of disease, when it is selected by the female for the deposition of her eggs;

her numerous progeny very soon completing the destruction of the tree. Hence it happens that, although the bark of an elm tree may be the abode of numerous perfect scolyti, the death of the tree is not necessarily consequent thereon, unless it is subsequently selected by the female for the reception of her eggs; and, indeed, trees so inhabited but which have not been thus selected, have been observed to recover their health in the space of two or three years.

When M. V. Audouin, on the 4th January, 1837, communicated his observations upon this subject to the Entomological Society of France, the Baron Feisthamel, whose brother is the superintendant of the Royal Park of Vincennes, opposed these views of M. Audouin, contending that the extraordinary mortality which had occurred in the two preceding years in the trees of that park was attributable to the *extreme dryness* of 1835; the scolytus being but a secondary cause: he, in fact, believed that the insects attacked only trees in an unhealthy state, and that dryness of the weather was the chief cause of the propagation of such immense numbers. The mortality of the trees was stated to have occurred only in those districts which were destitute of vegetable soil, and where the roots of the trees, being necessarily near the surface, were unable to reach a depth of constant moisture Of 50,000 trees which had been felled, a very small portion was found upon good soil. The Baron Feisthamel, at the meeting of the Entomological Society of France, in July last, read a short memoir upon the same subject, in which he still maintained the same views. On referring, however, to the proceedings of the same Society for February, 1836, we find a statement of facts made by the same member, which, in my opinion, clearly proves the scolyti to have been the chief authors of the mischief.

In the spring of 1835, a great number of the young leaves of the trees were observed to be shed, having been cut off at the petiole; and, in the course of the summer, the bark of the diseased trees was found to be bored with numerous minute holes; when, on pulling off the bark in the vicinity of these holes, there was found in a burrow, which was to be traced from the hole in a transverse direction (the burrows of the young grubs being always longitudinal), a small dead scolytus. In the summer months, the larvæ were less abundant; but, in September, their numbers were increased to such an extent, and the bark so completely filled with them, that, in a piece of bark 8 in. by 6 in. in size, not fewer than 135 larvæ were to be counted. The cold of the following winter had no other effect upon them than to render them torpid.

It is to be noticed, in considering these statements, that no observation is made as to the unhealthy state of the trees in the

preceding year (1834); we may conclude, therefore, that, up to the period when the falling of the young leaves took place, the trees were healthy. To what, then, is the latter circumstance attributable? I have no hesitation in answering that the petioles of the fallen leaves had been eaten into by the perfect scolyti *for food.* Although it is not recorded that such was the fact, the observation which I have subsequently to produce clearly proves the correctness of such an opinion. The loss of the leaves would necessarily bring the trees into an unhealthy state, and render them more especially acceptable to the female scolyti for the reception of their eggs. The falling of the leaves occurred in the spring, but the extreme dryness, under which it is maintained that the trees suffered, did not take place until the middle and end of the summer, by which time the trees were effectually attacked by great numbers of the larvæ. Can it be said, therefore, that the death of the trees was owing to the extreme heat and drought, when the presence of such vast numbers of insects in the spring (indicated by so copious a fall of young leaves as to have attracted the attention of the forest keepers) is so indisputably proved? No one will presume to deny that the presence of so many hundreds of thousands of larvæ boring through the sap-vessels of a tree is not amply sufficient to cause its death; and, when we know that the elms in our parks infested to this extent are killed, whilst those which are not infested still survive, I cannot comprehend what sufficient reason there can be for not regarding the scolytus as the chief cause of the injuries we sustain. If, indeed, it could be shown that the elms decayed without the scolyti being present, there would be some good ground for laying the charge of the injury either to the heat of the weather, or the long-continued drought, or the impurity of the atmosphere acting upon the leaves in the neighbourhood of large cities, or the prevention of a due supply of moisture to the roots of the trees in our public promenades by compact coatings of gravel, all of which have been at various times maintained to be the causes of the mischief. So long, however, as the trees infested by scolyti die, and those uninfested *by the larvæ* of the scolyti survive, I think there are ample grounds for maintaining the opinion that the scolyti are our enemies in this respect.

The following is an extract from my note-book: —

"In the month of July last, M. V. Audouin directed my attention to a fine young oak tree (belonging, I believe, to the species Quércus lusitánica) growing in the Jardin des Plantes, which at that time appeared in a dying state, the leaves of all the young shoots being either withered, or the shoots themselves fallen to the ground. It had assumed this appearance about a month; and, on examination, it was discovered that it was owing to the attacks of a small species of scolytus, which M. V. Audouin considered to be Scólytus pygmæ'us. This insect

had invariably gnawed a channel at the base of the young shoots of last year, sometimes almost entirely round. This, of course, entirely prevented the flow of sap, as well as so much weakened the stem, that a little wind was sufficient to make them fall. M. V. Audouin considered that these insects (whose habit it is to burrow under the bark of the common oak) had made their escape from the great *chantiers de bois à bruler*, on the adjacent banks of the Seine, having been carried there in the logs of fire-wood, whence they had flown into the Jardin des Plantes, and had there discovered this species of oak, the wood of which was so hard, that they had relinquished their ordinary habits, and had attacked the base of the young shoots *for food*. This seemed to be the natural explanation of the fact, because we found only two or three of the insects in burrows in the trunk, in which they had only penetrated about an eighth of an inch, and had then died, the head being directed inwards. The female of this species ordinarily burrows horizontally and the larvæ vertically, the contrary being the habit of the scolytus of the elm."

The accompanying figure (*fig.* 73.) represents part of one of these twigs, *m* showing the burrow made by the insect at *n*. It is

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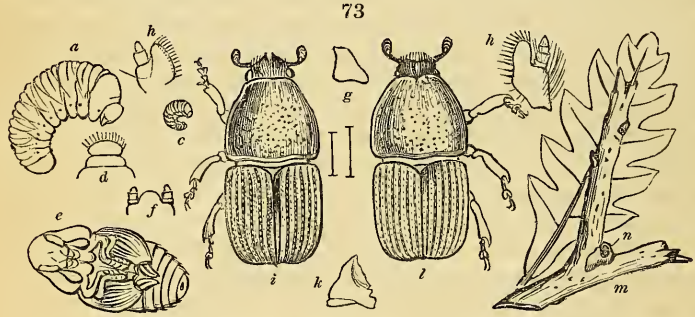

a remarkable circumstance, that this stripping off of the young twigs takes place annually, without the death of the tree being a necessary consequence; thus proving that it is the burrowing of the larva which is the cause of the mischief. In the case of the elm, however, the burrowing of the males and females into the inner bark, in order to obtain a supply of the viscid sap, or cambium, and their subsequent exit, leaving the orifices of their burrows open, produces of itself great injury to the tree, not only from the exudation of sap from the numerous wounds, but also from the entrance of rain, which by degrees filtrates into the inner bark, and causes a disorganisation of the vessels for an extent of several inches, which is not only indicated, on raising the bark, by a large black patch moistened by a black fluid, but

also even appears on the outside of the bark in the form of obscure dark-coloured blotches. Of course, accidental wounds which remain unhealed, and the attacks of other burrowing insects, have a similar effect in bringing the trees into an unhealthy state, and in rendering them as fit receptacles for visits of the impregnated female, as if the trees had been first perforated for food by the insects in the unimpregnated state. Two other circumstances, also recently observed by M. Audouin, are of sufficient interest to be here noticed: the first concerns the careful selection by the female of the situation in which her burrow is to be made into the bark, when preparing to lay the eggs, and which is generally in that part where there is a fissure, whence she is able to complete her task with less labour, and where the orifice is hidden by the rugosities of the bark, so as to escape the notice of parasites; and the second, having a similar effect, is, that the female, having deposited her eggs, dies in her gallery; but, by a remarkable display of instinct, she ordinarily crawls to the mouth of the burrow, and thus her dead body forms, as it were, a cork stopping up the aperture and preventing the ingress of enemies. But these cares are not sufficiently efficacious; for not only has Mr. Spence discovered that many of the larvæ, and all the pupæ, of the scolytus of the elm which he had examined, were infested with a little parasitic vermicle belonging to the genus Víbrio, and occasionally in vast numbers, but, moreover, that the scolytus is also attacked by a small but beautiful parasitic ichneumon, belonging to the genus Brâcon, which I captured near Paris, but which is not an inhabitant of this country.

The larva of the scolytus (*fig.* 73. *c*, natural size; *a*, magnified) is a small, white, fleshy grub, destitute of legs, and bearing a considerable resemblance to that of the nut weevil. The body is curved into a semicircle, and the segments are transversely channeled. The head is horny and smooth, without antennæ; the upper lip (*d*) is transverse, with the angles rounded, and with short hairs; the jaws (*g*) are obtuse and strong; the under jaws (*b*) flat, internally ciliated, and furnished with a very short 2-jointed palpus; and the lower lip (*f*) is produced in the centre, with two very short palpi. The pupa (*e*) exhibits the general form of the perfect insect, the limbs resting upon the breast.

According to the recent observations of Drs. Erichson and Ratzeburg, there are two species which have been confounded under the name of Scólytus destrúctor, differing in the punctation of the elytra and general outline, but more especially in the form of the burrows of the larvæ. I believe both these species are inhabitants of this country: but, for the purpose of assisting the investigation, I have added outlines from Dr. Ratzeburg's beautiful work, just published (*Die Forst-Insekten;* Berlin,

1837), of the two species; *l* being that of the insect which these German writers name Eccoptogáster destrúctor; and *i* being that of Eccoptogáster Scólytus. The French and English authors having employed the latter specific name for the genus, in preference to Herbst's not very euphonous name, another specific name must be applied to the latter species.

ART. III. *On the Treatment of the Scotch Pine in the Plantations at Huntley Lodge, Banffshire.* By ALEXANDER MURDOCH.

I RECEIVED your letter of October 6. 1837, making enquiry concerning the treatment of the Scotch pine in "natural woods and artificial plantations." I can say little of natural woods, as there are none in this district, the localities of natural woods being about forty miles distant to the south and south-west of Huntly, on the rivers Dee and Spey. The wood grows chiefly in Glent, near the base of the Grampian Mountains. It appeared to me that the soil on which the natural Scotch pine grows at Rothiemurchus is 2 or 3 inches of peat mould covered with heath; the subsoil being dry gravel, into which the small roots of the pine penetrate, the large roots running to a considerable distance near the surface. I am not aware that these woods are regularly thinned. The strongest trees obtain a mastery over the weakest, and ultimately the best trees arrange their distances for themselves. Neither do I think these woods are pruned: where the trees stand close together, the air is excluded, and the lower branches die and drop off.

There are about one thousand acres of artificial Scotch pine plantation on the Duke of Richmond's estates, near Huntly, from 12 to 60 years' growth. These plantations are chiefly formed on hilly and rocky ground, from about 400 to 800 feet above the level of the sea, and about 18 or 20 miles south of the Moray Firth. The soil is generally of a peaty nature, growing heath; and partly loam, such as, if cultivated, would produce turnips; the subsoil is principally of clay, and rather too damp for the successful growth of the pine. There is a portion of these plantations, also growing on a thin peaty soil, over a subsoil of gravel or sand; but, as, from the springs, the sand appears to be much impregnated with iron, the pine does not thrive here on this soil so well as on ground much like it near the Spey.

The trees in these woods are planted about 4 ft. apart, and require little attention. but filling up of vacancies for the first 20 years; and, from that age to 40 years, according to growth, pruning and thinning go on. At about 20 years, where the trees stand at the original thickness, about three fourths of the weakest

plants are cut out, which leaves those that remain at about 8 ft. apart; the dead branches are at the same time pruned off close to the stem of the tree, about 7 ft. up from the ground. I consider it as decidedly best to take off all the dead branches, even if they should be higher than a man can reach at this period; but in extensive plantations the expense of labour is an obstacle: the reason is, that, when the dead branch does not soon fall off, there is a danger that the wood of the trunk will grow round it, and produce a dead knot. I do not approve of cutting away live branches of two or more inches in diameter, as the resin flows freely from the wound, and where many of these wounds are made the tree is weakened. Small live branches might be pruned off with a knife, from trees of 10 years' growth or thereabouts, without much disadvantage; but in this case I would not remove more in one year than one year's production: but this mode could only be practised in plantations of small extent. As regards the distance at which the trees are finally left: supposing all the trees left at the first thinning to thrive, I gradually remove the weakest, until the best trees stand from 12 ft. to 16 ft. apart. If the branches do not touch each other, I leave the trees so that they will nearly touch; for, if much further apart, the wind gets vent amongst them, and often uproots the best ones. In point of fact, however, the trees, after first thinning, do not all thrive; both before and after this operation many of them die. There is a disease in artificial plantations, known by the name of cancer. This appears like a black resinous patch on the side of the tree, and invariably kills it in a short time after the disease appears. All these dead and cancered trees, when removed, frequently leave the plantation thinner than we wish it to be; but the rule I adopt, where there is no disease, is to leave the trees so as the tops have room, and not much more; and with this treatment I find the trees will attain the full size that the soil and climate will allow. In this district, the best planted Scotch pine trees at 60 years' growth, and there are none older, do not measure more than 16 cubic feet: the timber is rather soft, and, when used for roofing houses, it is found to be much inferior to Scotch pine from the natural woods. The largest planted Scotch pines I have seen, grow on the banks of Wishart's Burn, near Gordon Castle; those trees contain from 50 to 70 cubic feet. I do not know how long those trees have been planted, or how treated: they are evidently old. In all the country on the banks of the Spey, Scotch pines thrive better than in this quarter. I suppose the soil being nearer in quality to that on which they grow naturally is the principal cause. I cannot say, with certainty, how plantations are treated in that district, but I rather think much in the manner I have endeavoured to describe. There are extensive plantations in Strathspey, and elsewhere, on Lord

Seafield's estates; and I have no doubt that you might get useful information on the subject generally, by making application at Cullen House.

I do not know of any plantations in this quarter composed solely of silver fir or spruce. A few of these trees may be seen in ornamental plantations near gentlemen's houses. They are not usually pruned. Their chief beauty consists in the branches being well spread near the ground. There are six large silver fir trees in the centre of the garden here, which have been planted about 80 years. They are still healthy, and grow in rich loam about 2 ft. deep on a subsoil of clay.

Huntley Lodge, Nov. 7. 1837.

ART. IV. *Remarks on an economical Use of the Cones of the Pine and Fir Tribe; and more particularly of those of the* Pinus sylvestris, *or Scotch Pine.* By WILLIAM HOWISON, M.D., Lecturer on Botany, Edinburgh.

HAPPENING, during the commencement of the month of May, 1838, to be passing, in the course of a botanical excursion, through the centre of the county of Fife, I paid a visit to an old pupil of mine, who had recently set up as a medical practitioner in a small village in that part of the country. I found him sitting in his parlour without a fire. After giving me a hearty welcome, "I was going to visit a patient at a distance," says my friend to me, "but as it is not every day that you and I meet, doctor, I will defer my business; and, as the weather is still cold, we will have a blazing fire, and that instantaneously. As I know you to be interested in these matters, I will show you a valuable use to which fir cones are applied in this part of the world; and of which, although a native of a fir-covered part of Scotland myself, I was never, until now, aware. I became possessed of this knowledge in the following way: —

"Lately I was called upon, in the course of my professional duty, to attend a poor woman residing a few miles off, who was labouring under a cancerous complaint. She could not afford to give me any remuneration for my trouble, and it may be unnecessary to inform you that I expected none. A few days afterwards, however, two of her daughters, each of them carrying a large sack or bag filled with dry fir cones of the preceding season, collected in the neighbouring woods, brought them to me from their mother, in conformity with her anxious request that I would accept of them as a present. Astonished at the nature of the gift, I asked the girls what I was to do with them, when they told me that the cones would either make an excellent fire of themselves, to those who were so poor as not to be able to purchase coals, or they would make a delightful

kindling for a coal fire; and of this latter quality you shall presently have an opportunity of satisfying yourself."

My friend now rang his bell, and desired a fire to be instantly kindled. His housekeeper entered the parlour with a few dozens of fir cones in her apron, which was of clean cotton, and the cones were as clean and beautiful, I may add, as the apron itself. She tumbled them into the grate, and immediately over them she laid pieces of cold coal, until the grate was full. She next lighted a piece of coarse brown paper with a candle, and thrust it into the centre of the fir cones. They instantaneously took fire, burning with great violence in consequence of the quantity of resinous matter which they contained. In a short time, they gave out such intensity of red heat, from the burning of the turpentine they contained, as completely to set fire to the covering of coals; and that without the assistance of bellows, but merely with the common air of the apartment, so that in a short time we had a warm and blazing fire.

Every individual knows the trouble of collecting sticks, or the branches of the fir tree, for fuel; the difficulty of breaking them down into billets or pieces, and the uncertainty after all of their setting fire to coals; though but few are aware of the easy gathering up, the cleanliness, success, and comfort attending the use of fir cones, as more desirable for the above purpose. To diffuse this information amongst all ranks of the community, but particularly amongst the lower orders, and to make public a valuable use to which the cones of the fir tree may be put, which have hitherto been allowed to rot in the woods, by the starved and hard-wrought peasantry of this over-peopled country, are the inducement and intention of committing these remarks to paper.

In *Excursions in Italy*, by Fenniman Cooper, Esq., I find the following passage. "We drove into the gate of Lucca, just as night had set in, shivering with cold, for this little capital is in the heart of the mountains. We made our way into a house, and only began to recover the natural hue of our skins, when a dozen cones of the pine well filled with resin went in a bright blaze. These and a plentiful supply of faggots brought back the congealed vitality, whose current had almost frozen. A good supper and good beds reconciled us to life."

Edinburgh, 9. *Nicolson Square*, *May*, 1838.

ART. V. *Of the Pruning of forced Roses, and Planting out of forced Plants in Summer.* By JAMES CUTHILL.

THE Forcing of Roses had occupied much of my time for some years past to but little advantage, until November last; when,

being about to prune some roses in pots, a new idea struck me. This was, that, instead of pruning them on the old system of leaving only two buds of that years' growth (which is by far the best method with flower-garden roses), I would leave two prominent good buds, wherever they could be found; so that after pruning, some shoots had five or six buds left, though generally when they were put into heat only the two upper buds upon each shoot started. I have had one cabbage Provence rose with 30 blossoms upon it, and several moss roses with 20, and the plants only two years old; and not one has been turned out of the forcing-house without plenty of bloom. When all the roses have done forcing, I intend cutting them down to two buds, to which I have always cut them down in November, upon the old system, in order to make their summer wood; so that I hope every practical person will see the decided advantage of my new mode. I will go so far as to say, that it is quite wrong to go on forcing plants in pots the whole year round, not excepting roses, after they have stood one year in pots, to form their balls. Lillies of the valley, also, will do no good whatever if kept in pots; the only way to have a full pot of blossom is, to take them up in autumn, and pot none but those that have good buds, and then you will have a fine bloom about the end of May. I intend planting out every sort of forcing plant I have got, and giving it a fair trial.

Dyrham Park Gardens, April 5. 1838.

ART. VI. *Notice of Mr. Joyce's Apparatus for heating by Steam; with an Account of his Method of forcing Strawberries.* By THOMAS JOYCE, Market-Gardener, Camberwell.

IN the first week of June last, we called on Mr. Joyce, at his market-garden in Camberwell, New Road, in order to see a mode of heating by steam which he has invented, and for which, he informs us, he has taken out a patent. According to this mode, a charcoal fire is made in the centre of the boiler of water, and the vapour from the charcoal is conveyed away in the same tube which carries the steam from the water round the house. The steam condenses in the tube, and the condensed water is all returned to the boiler; while the vapour of the charcoal is allowed to escape at the extreme end of the tube. The boiler, which is portable, and made of copper, occupies a very small space; and being placed within the house, and isolated, none of the heat generated by the fuel can, by any possibility, be lost; for even the heat that escapes at the farther extremity of the tube, along with the vapour, is still given off to the atmosphere of the house; and, however deleterious it might be for human

beings if allowed to accumulate, it certainly appears to produce no bad effects on plants, for a more luxuriant crop of strawberries than that in Mr. Joyce's forcing-house we have never seen. On looking over these strawberries, we observed some pots rather later than the others; and Mr. Joyce having previously informed us that they were all put in on the same day, we could not help enquiring what he considered the reason. This led to our requesting from him an article on his mode of forcing strawberries, and he has sent us the following: —

"The size of pot which I find to be the best is No. 48. I fill the pots with good strong soil, tolerably rich, and I press it into them rather firmly. This is done in the beginning of August; and I then get the strongest runners I can find, of the same year's growth, of Keen's seedling. I plant one runner in each pot, and then plunge the pots in the open garden, in an airy situation, keeping them well watered when the weather is dry. Here they remain till wanted to be taken into the house for forcing. I may remark that, when the runners are taken up later than the very beginning of August, the blossoms do not come nearly so strong the following season.

"When the time for forcing arrives, I prepare my shelves by nailing laths along their edges, so as to form a ledge on each side, about an inch high, so as to retain a thin layer of mould. After covering the shelves with mould, of the same kind as that in which the strawberries are planted, I take up the pots from the open garden, and set them on it. I find the roots come through the pots, and grow vigorously in this thin layer of mould, which is kept constantly moist by the water which escapes through the pots. I have tried the mode of placing the pots in saucers, and always keeping some water in them; but I find a layer of mould, such as I have described, greatly superior.

"Instead of planting the runners in the pots, I have tried the mode, very generally recommended, of plunging the pot, and training the runner over it, so that the young plant might root into the centre of the pot before it was detached from the mother plant. This method produces apparently very strong plants, because they have both the nourishment from the parent plant communicated through the runner, and the nourishment absorbed by the plant itself through its fibrous roots: but such plants, when they are forced, I find to be invariably a fortnight later in ripening their fruit, than those which have been planted in the manner I first described; and I find, also, that they run much more to leaf, and that, if the plants be turned out of the pots to examine the roots, though these are stronger than those of the transplanted plants, yet that they are invariably much less numerous. From this I conclude, that the cause why the transplanted plants are so much more prolific, and so much earlier,

than the others, is to be found in their numerous fibres; by which they absorb a greater quantity of nourishment than the others, and that in a shorter time. Possibly, also, the nourishment, coming through smaller fibres, may be of a less watery kind, and more productive of fruit, than that passing through large and vigorous ones.

The temperature at which I begin to force is 48°, and I gradually increase this to 65°. Plants put into the house on the 21st of March generally produce with me ripe fruit on the 21st of May. Many of the pots with the transplanted plants produce from 40 to 70 fruit each, and swell them off to a fine size.

Clarendon Arms, Camberwell New Road, July 9. 1838.

ART. VII. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing seven plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, new series, each containing six plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Maund's Botanic Garden, or Magazine of Hardy Flower Plants cultivated in Great Britain; in monthly numbers, each containing four coloured figures in one page; large paper 1*s.* 6*d.*, small 1*s.* Edited by B. Maund, Esq., F.L.S.

Paxton's Magazine of Botany, and Register of Flowering Plants; in monthly numbers; large 8vo; 2*s.* 6*d.* each.

The Floral Cabinet; in monthly numbers, 4to; 2*s.* 6*d.* each. Conducted by G. B. Knowles, Esq., and Frederick Westcott, Esq., Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

RANUNCULA'CEÆ.

1599. DELPHI'NIUM 14153 palmatífidum *Dec.*
Synonyme: *D.* intermèdium palmatífidum *Lindl.; Bot. Reg.* n. s. t. 38.

One of the handsomest of perennial larkspurs, growing to the height of 5 or 6 feet, and flowering in June and July. (*Bot. Reg.*, July.)

Berberàceæ.

390. EPIME'DIUM [v. p. 123.
*violàceum *Paxt.* violet-*flowered* ⁂ △ or ♆ ap.my V Japan 1838 C p.l Paxt. mag. of bot.

A graceful and interesting little perennial, at present kept in the green-house, but, from its native country, probably hardy enough to endure the open air in the climate of London. It was introduced into Europe by Dr. Siebold, and plants may be

obtained in the Clapton Nursery. (*Paxton's Mag. of Bot.*, July.)

Cistàceæ.

1589. *CI'STUS*
*lusitánicus *Hort.* Portugal ❀ or 3 au Y S. of Europe 1830 C s.l Maund bot. gard. 649.

This cistus, according to Mr. Maund, was introduced before 1830, and is "both a larger and hardier species" than "the common gum cistus of our gardens." Whether it is really a new species or not, appears to us very difficult to say; it is certain that great numbers of cistuses, from the time of Gerard to the present day, have been introduced from Spain, Portugal, and Italy, and lost; and, also, that an almost endless number of hybrids, and seminal varieties, have been raised in this country, and lost also; the shades of some of them only remaining in Sweet's *Cistineæ*. (*Bot. Gard.*, July.) At all events, we are obliged to Mr. Maund for figuring this cistus; for there is scarcely a genus, of which it may with more truth be said, that all the species and varieties are showy plants when in flower.

Oxalídeæ.

1414. *O'XALIS*
brasiliénsis *Lod. Bot. Cab.*, 1833, and *Flor. Cab.*, No. 62., is *O.* bipunctàta *Grah., Hort. Brit.*, No. 11933*a*.

Rosàceæ § Pòmeæ.

1507. *PY'RUS* 12979 arbutifòlia; *Arb. Brit.*, p. 925. f. 646.; *Bot. Mag.*, t. 3668.

Onagràceæ.

\+ *Fúchs*ia *cylindràcea* Lindl. "A pretty new species of fuchsia, raised from Mexican seeds, presented to the Horticultural Society by George Barker, Esq., of Birmingham. It belongs to the same section as F. microphýlla and *t*hymifòlia, and has cylindrical deep scarlet flowers, about half an inch long; on very slender stalks, an inch and a half in length." (*B. M. R.*, July, No. 96.)

*Gesner*àceæ.

1698. *GE'SNER*A
*reflexa *Flor. Cab.* reflexed ⁂ ☐ or 15 ap.my S Valp. 1837 p.l.s Flor. cab. 61. !

A very handsome species, in flowers and foliage, approaching to G. faucialis. It was introduced by Capt. Seymour, of the Royal Navy; and there are plants in the Exotic Nursery, King's Road. The gesneras will flower stronger, and in greater profusion, if the tubers are repotted in March, just as they begin to grow, and plunged into a brisk hot-bed for a month, to fill the pots with young roots; after which they may be removed to the stove.

rupéstris *Graham* in *Edin. Phil. Journ.*, Dec. 1837; *Paxt. Mag. of Bot.*, April, 1838.
Synonyme: G. tuberòsa *Mart. Nov. Gen. and Sp. Bras.*, 3. p. 29. t. 212.; *Hook. Bot. Mag.*, 3664.

Convolvulàceæ.

\+ Batàtas *bonariénsis* Lindl. A handsome twining convolvulaceous plant, with large purple flowers, imported from Buenos Ayres, by Messrs. Low and Co., and flowering freely in the green-house. (*B. M. R.*, July, No. 99.)

491. IPOMŒ'A [3665.
*bonariénsis *Hook.* Buenos Ayres ⁂ ⍁ or 10 au P Buenos Ayres 1826 S r.m Bot. mag.

A handsome stove twiner, with flowers nearly as beautiful as those of Ipomœ'a insígnis. It is common on ditch banks about Buenos Ayres, whence seeds were sent to Britain by Mr. Tweedie in 1826. (*Bot. Mag.*, July.)

Scrophulariàceæ.

1777. NEME'SIA
*floribúnda *Benth.* many-flowered ○ or 1 jn.au W.Y C. G. H. ... S s.l Bot. reg. n. s. t. 39.

An upright-branching annual, nearly glabrous in all its parts, and requiring the same treatment in the garden as the annual linarias. (*Bot. Reg.*, July.)

Labiàtæ.

76. SA'LVIA
687*a* canéscens *Mey.* hoary ⅄ △ or 2 jn.au P Caucasus ... C co Bot. reg. n. s. t. 36.

A hardy perennial herbaceous plant, with flowers of a fine deep purple, and leaves covered with whitish wool. It comes near *Sálvia flavóides*, and is very ornamental. It inhabits rocks in the Caucasus, and seeds were sent to the Horticultural Society from Dr. Ledebour of Dorpat. (*Bot. Reg.*, July.)

Primulàceæ.

451. PRI'MULA
*carniólica *Hort.* Carniolan ⅋ △ or ¼ mr.ap P Carniola 1826 D p.l Maund bot. gard. 651.

A beautiful little plant, well adapted for rockwork, in which it may be planted in peat soil, under the shade of a ledge of stone to protect it from the midday sun. The plant is at present rather scarce in collections. (*Bot. Gard.*, July.)

Orchidàceæ.

2554. EPIDE'NDRUM [mag. 3666.
*víridi-purpûreum *Hook.* purplish-green ⅋ ⍁ or 1½ au.o G.P Jamaica ... D p.r.w Bot.

An epiphyte imported from Jamaica by Mr. Horsfall of Liverpool, and also sent to the Glasgow Botanic Garden from Jamaica by Dr. M'Fadyen, resident in that island, and author of the *Jamaica Flora*. It roots in the ground, and produces a stem a foot and a half high. (*Bot. Mag.*, July.)

*PHALÆNO'PSIS *Blume.* BUTTERFLY PLANT. (From *phalaina*, a moth, and *opsis*, resemblance.)
*amábilis *Blume* lovely ⅋ ⍁ cu 1½ jn W.R.Y Manilla ... D p.r.w Bot. reg. n. s. t. 34.
Synonyme: Epidéndrum amábile *Linn. Sp. Pl.*, 1351.; *Angræ'cum* álbum màjus *Rumph. Herb. Amboin.*, 6. p. 99. t. 43.

A very rare and beautiful epiphyte, which flowered for the first time in Europe in the Tooting Nursery, in July, 1838. "The curious form of the flowers, the graceful way in which they hang down from below the leaves, their large size, and the brilliant whiteness of their broad leathery petals, give this species a most striking and uncommon appearance." It grows in Amboyna, on short thick trees covered with moss, hanging down in entangled tufts. It succeeds best when fixed to pieces of decaying wood, along with a little turf or moss, and suspended from the roof. Not sending out shoots freely, it is probably rather difficult to propagate. (*Bot. Reg.*, July.)

2547. DENDRO'BIUM [bot. v. p. 121.
*densiflòrum *Paxt.* dense-flowered ₤ ⊠ or 2 ... Y Nepal 1837 D p.r.w Paxt. mag. of

A very showy epiphyte, originally sent to this country by Dr. Wallich, but more recently imported by His Grace the Duke of Devonshire, whose collector, Mr. John Gibson, found it on the Khoosea Hills, growing upon trees in shady moist woods, at an elevation of about 3000 feet. "Plants of this showy species, when grown in the artificial climate of our hot-houses, seldom produce their flowers, which is chiefly owing to the inattention of cultivators to the process of drying them, and also of preventing them from flowering at their favourite season; for, with due regard to these particulars, we have succeeded in flowering most profusely no less than six plants of this species, in the collection of Chatsworth." The first step in attaining the knowledge of the culture of any plant is, a knowledge of the nature of plants generally; and the second is, what may be called the natural history of the particular plant to be cultivated. Supposing the gardener to possess the first requisite, he only requires in addition to know the natural habit of the particular species, its seasons of flowering and of rest, its duration, and its liability to the attacks of insects or other enemies. All Orchidàceæ require, in common with all other plants, "a season of growth, a season of rest, and a season for flowering;" and, in our stoves, these should coincide, in order and duration, with the corresponding seasons of those parts of the globe where the species to be cultivated is indigenous. "All, or the greater number, of the species of Dendrobium, flower in India in the hot or dry season; which is succeeded by the rainy season, when they make their shoots; and, during the cold or winter season, they have a period of repose: they thus enjoy three seasons, while in this country we have four, the autumnal quarter not being known there. The different seasons of India being thus so well known, it is by no means difficult to imitate them in our hot-houses; and, by attending to these simple rules, we should be enabled to flower the various species of Dendrobium more abundantly than those of any other genus of Orchidaceæ; besides which, we might easily induce them to flower in this country at any season of the year. Dendròbium densiflòrum may be propagated by detaching one of the stems, while in a dormant state, taking care not to injure the roots, and potting it carefully into heath soil, well drained; the stem will require supporting with a slender stake, and the pot containing it should be plunged in a gentle bottom heat, where it will speedily produce new shoots." (*Paxton's Mag. of Bot.*, July.)

PHA'IUS *Paxt.* PHAIUS. (From *phaiō*, to shine; in allusion to the splendour of the flowers.) [p. 125.
*álbus *Paxt.* white ₤ ⊠ spl 1 my W E. Indies 1837 D p.r.w Paxt. mag. of bot. v.

"This may be said to be one of the most delicate, as well as the most lovely, of orchidaceous plants, the flowers being large

and pure white, penciled in the most exquisite manner with purple on the lip; when in flower it has a strikingly beautiful appearance, particularly as the flowers are produced at the extremities of the shoots when these are in full leaf. The habit of this plant is very remarkable, and is certainly not an uninteresting feature in its character. At one season of the year, it is seen in a leafless and torpid state, its stems having the appearance of dried and lifeless branches; at another period of its growth, it exhibits its finely pointed and glaucous leaves in a state of the most lively verdure; and subsequently the flowers are produced, which vie in beauty with the choicest of nature's productions. After flowering, the stems will speedily become matured, and shed their foliage, when the plant will again assume the appearance of a decayed piece of wood." It was found by the Duke of Devonshire's collector, growing upon trees, in shady damp woods on the Khoosea Hills, from 2000 to 3500 feet above the sea, where it blossoms during the rainy season in the greatest profusion. The plant at Chatsworth flowered beautifully in the early part of May. Mr. Paxton observes, that it will be found very difficult to cultivate; but that he has experienced the most perfect and gratifying success, the particulars of which he promises to give hereafter. (*Paxton's Mag. of Bot.*, July.)

+ *Saccolàbium gemmàtum* Lindl. Imported by the Duke of Devonshire, from the Khoosea Hills of India, where it was collected by Mr. Gibson, and it flowered at Chatsworth in May, 1838. The blossoms are the smallest of the genus, not being larger than a grain of mustard seed, but the finest amethysts are not of a more brilliant purple, and the tips of the labellum and sepals are quite white. (*B. M. R.*, July, No. 88.)

+ *Odontoglóssum cordàtum* Lindl. A very different species from any hitherto described. The flowers are very handsome; having the sepals and petals richly clothed with brown; the lip white, and the crest purplish. Imported from Mexico by G. Barker, Esq. (*B. M. R.*, July, No. 90.)

+ *Oncídium confragòsum* Lindl. Also imported by Mr. Barker, and resembling in general aspect O. stramíneum. (*B. M. R.*, July, No. 92.)

+ *Micróstylis excavàta* Lindl. A green-flowered species, with a corymbose inflorescence, imported from Mexico by Mr. Barker. (*B. M. R.*, July, No. 93.)

+ *Dendròbium formòsum* Wall. A "noble plant," the large ivory-white flowers of which are unrivalled in even the rich flora of India, whence this species was imported by the Duke of Devonshire. "It has been sometimes said, that the flora of South America is richer in beautiful orchidaceous plants than that of India: and an appeal has been made to the catt-

leyas, epidendra, oncidiums, and maxillarias of the former country; but I know of no South American species so admirably formed and coloured as India can produce in the case of dendrobia of various kinds, saccolabiums, and species of the genera Phaius, Vanda, Cœlogyne, and Grammatophyllum. Of these Dendrobium formosum must stand among the foremost in point of beauty." (*B. M. R.*, No. 86.)

+ *D. stupòsum* Lindl. An erect species, with the habit and general appearance of Dendròbium cándidum. Obtained, like the preceding, for the Duke of Devonshire, from India, by his collector, Mr. Gibson. (*B. M. R.*, July, No. 94.)

+ *Epidéndrum ionósmum* Lindl. The fragrance of the flowers of this species is as delicate and delicious as that of the violet. It was imported by Messrs. Loddiges from Essequibo. (*B. M. R.*, July, No. 87.)

+ *E. vesicàtum* Lindl. A curious Brazilian species, also imported by Messrs. Loddiges. It approaches E. équitans in habit; but, in the structure of both flowers and leaves, it is widely different. (*B. M. R.*, July, No. 89.)

+ *E. lívidum* Lindl. An obscure inattractive species, imported from Columbia by Messrs. Loddiges. The flowers are small, of a dull dingy purple. (*B. M. R.*, July, No. 91.)

+ *Maxillària Boóthii Lindl.* Collected in Guatemala by G. U. Skinner, Esq., and introduced in 1835 by Captain Sutton, who added it to Sir Charles Lemon's collection at Carclew, where it flowered in May, 1838. (*B. M. R.*, July, No. 95.)

+ *Luísia alpìna* Lindl. A very distinct species, with coriaceous distichous leaves resembling those of an Aérides, collected by Mr. Gibson on the Khoosea Hills, 4000 feet above the sea, where snow frequently falls in the cold season. (*B. M. R.*, July, No. 101.)

+ *Bolbophýllum umbellàtum* Lindl. A curious species, with dull, dirty yellow flowers, sent to the Duke of Devonshire from the Calcutta Botanic Garden. (*B. M. R.*, July, No. 102.)

(?) *Zingiberàceæ.*

+ *Bravòa geminiflòra* Llexarç. et La Llav. A beautiful quasi-bulbous plant, a native of mountains near Valladolid in Mexico, sent by Mr. Rule to Sir Charles Lemon, in whose stove it flowered in March, 1838. It also flowered in the green-house at Carclew, and it is expected to ripen seeds. (*B. M. R.*, July, No. 98.

Iridàceæ.

123. TRITO'NIA
*fucàta *Lindl.* painted ☿ ♃ or 1 my R.Y C. G. H. 1813 O s.p.l Bot. reg. n. s. t. 35.

A remarkable species, which appears to have been cultivated by the Hon. and Rev. W. Herbert for twenty-five years before it flowered. It grew vigorously in common garden soil, and at

last it occurred to Mr. Herbert to have dung laid on the place where the patches of the plant grew, and the result was a flower stem in 1837. The leaves are about 2 ft. or 2½ ft. high, and they are surmounted by the flowers, which last about a month. (*Bot. Reg.*, July.)

H*emerocallídeæ.*

1008. FU'NK*IA*
Siebold*iàna* Lodd. Siebold's ✗ ⊔△⊔ or 1 jl W Japan ? 1837 R s.l Bot. mag. 3663.

Introduced to the gardens of Belgium by Dr. Siebold, and in beauty and culture closely resembling *H*emerocállis *j*apónica, now Fúnk*ia j*apónica. (*Bot. Mag.*, July.)

A*sphodelàceæ.*

1066. STYPA'NDRA
frutéscens frutescent ⚘ ⊔⊔ cu 2 ? jn.jl V N. Holland 1836 C l.p.s Flor. cab. no. 63.

A plant of easy culture, but of no great beauty; the stem having neither decidedly the character of a woody plant, nor of one that is herbaceous. In this respect it resembles some of the epidendrons, which, as plants, independently altogether of their flowers, are, in our opinion, less beautiful than the herbaceous-looking Orchidàceæ.

L*iliàceæ.*

+ O*rnithógalum gemmiflòrum* Herbert MS. A small white-flowered species, resembling *O.* chloroleùcum, sent from Lima, by John M'Lean, Esq., to the Hon. and Rev. W. Herbert. (*B. M. R.*, July, No. 100.)

*Commelin*àceæ.

+ *Commelìn*a *orchiöìdes* Booth in Litt. "More a subject for the botanist, than those who are fond of showy flowers." Sent to Carclew by Mr. John Rule, the superintendant of the Real del Monte mines, in Mexico. (*B. M. R.*, July, No. 96.)

REVIEWS.

Art. I. *A general System of Gardening and Botany: containing a complete Enumeration and Description of all Plants hitherto known; with their Generic and Specific Characters, Places of Growth, Time of Flowering, Mode of Culture, and their Uses in Medicine and Domestic Economy; preceded by Introductions to the Linnæan and Natural Systems, and a Glossary of the Terms used: founded upon Miller's Gardener's Dictionary, and arranged according to the Natural System.* By George Don, F.L.S., in 4 vols. 4to. Vol. IV. London, 1837.

This work is, unfortunately, brought to a close, without being completed; and we cannot better assign the reasons for this, than by quoting the preface.

"The Proprietors take this opportunity of explaining the circumstances under which they find themselves reluctantly obliged to close the work at its

present stage. At the commencement of the undertaking, the editor arranged with them to complete it in four volumes; but, when the present or fourth volume was printed, he informed them for the first time, to their surprise, that his materials had proved so much more voluminous than he anticipated, that the descriptions of the remaining plants would fill more than two additional volumes of the same extent. They are compelled to add, that the circulation of the work has hitherto been too limited to afford them any prospect of reimbursement of the large additional expense which would be incurred if they proceeded to complete the work; an expense which they had not originally contemplated. As, however, the work has been compiled upon the natural system, the description of that division of the science which is contained in the four published volumes is complete, and the volumes are, consequently, not in this respect rendered imperfect by the absence of the remaining two, since they contain a complete account of the Dichlamydeous plants. In justice to the editor, they feel bound to add that he has spared no labour to render the work as comprehensive and perfect as possible; and they are confident that no publication has hitherto appeared in this country which contains nearly so large a compass of valuable information upon that division of botany of which it treats. They can only account for the confined circulation which the present work has hitherto met with in the altered taste of the day for treatises of a less recondite and extensive nature.

"The proprietors would be ready to complete the work if they could hope for a sufficient encouragement from the public to induce them to proceed in this unusually expensive undertaking.

"At the end of this volume new titlepages for the four volumes are added, in accordance with their contents, as a 'General History of the Dichlamydeous Plants.'"

The new title to the work is: *A General History of the Dichlamydeous Plants, comprising complete Descriptions of the different Orders; together with the Characters of the Genera and Species, and an Enumeration of the cultivated Varieties; their Places of Growth, Time of Flowering, Mode of Culture, and Uses in Medicine and Domestic Economy; the scientific Names accentuated, their Etymologies explained, and the Classes and Orders illustrated by Engravings, and preceded by Introductions to the Linnæan and Natural Systems, and a Glossary of the Terms used: the whole arranged according to the Natural System.* By George Don, F.L.S. In 4 vols. London, 1831 to 1838.

Judging from our own observation, we should say that the reason why this work did not succeed may be traced to the title, which looked like an attempt to pass off the book for what it really was not, viz. "A General System of Botany and Gardening." It has certainly no claim to be considered either a general system of botany, or a general system of gardening, but it might justly have been called a general history of plants; and, if completed, it would have been by far the most copious and perfect general history that has ever been published. We are sorry the work has stopped, because we do not know another man in England so well calculated for going through with it as Mr. George Don.

ART. II. *The Arboretum et Fruticetum Britannicum; or, the Trees and Shrubs of Britain, native and foreign, hardy and half-hardy, pictorially and botanically delineated, and scientifically and popularly described; with their Propagation, Culture, Management, and Uses in the Arts, in useful and ornamental Plantations, and in Landscape-Gardening. Preceded by a historical and geographical Outline of the Trees and Shrubs of temperate Climates throughout the World.* By J. C. Loudon, F.L., H.S., &c. 8 vols. 8vo, viz. four of letterpress, and four of plates: consisting of above 3000 pages of letterpress, above 400 8vo plates of trees, and upwards of 2500 woodcuts of trees and shrubs, besides numerous diagrams, &c., explanatory of culture and management. London, 1838.

THIS work contains portraits from nature, to a scale of a quarter of an inch to a foot, of all the trees which endure the open air in Britain, of the sizes which they attain in ten years in the neighbourhood of London; with botanical figures in flower, and in fruit or seed, to a scale of 2 inches to a foot. It also contains portraits of full-grown trees to the scale of $\frac{1}{10}$ of an inch to a foot, of at least one species of all the principal genera, drawn from Nature by eminent artists (G. R. Lewis, H. W. Jukes, &c.), from specimens within ten miles of London, &c. Of all the principal shrubs in Britain, it contains engravings of botanical specimens in flower, to a scale of 2 inches to a foot; and many of the half-hardy shrubs are also illustrated by engravings. Among the miscellaneous engravings are numerous views showing the effect of particular species of trees in scenery; plans and isometrical views of ericacetums, rosariums, American gardens; trellises, structures for training on, embroidery-work in box, labyrinths in hornbeam, conservative walls, &c.

The letterpress is in three parts: Part I. contains the history of the introduction of foreign trees and shrubs into Britain, with the history and geography of the trees and shrubs of temperate climates throughout the world.

Part II. contains: 1. The study of the organisation, physiology, physiognomy, and all that may be considered as the botany or natural history of trees; and 2. The study of what relates to their propagation, culture, uses in the arts, medicine, landscape-gardening, forest-planting, agriculture, &c., or what may be called the economical history of trees.

Part III. contains the application of the theory laid down in Part II., in the description, natural history, and economical history of the trees which endure the open air in Britain, taken individually; and this part occupies nine tenths of the letterpress of the entire work.

An Appendix contains, among other articles, a priced catalogue of tree and shrub seeds for London; and catalogues of plants of trees and shrubs, with the retail prices in London, Edinburgh, and Hamburg, and at Bollwyller, in the year 1838.

Though it is not permitted to us to give an opinion on the manner in which we have executed this work, yet we may be allowed briefly to state the objects we had in view.

We have seen every tree and shrub that we have described, with a very few exceptions; which only apply in the case of such plants as have never been introduced; or, if they have been introduced, are now lost, or could not be found in this country by us. In the description and history of every tree and shrub, we have endeavoured to give the essence of all that has been written before on the subject worth reading; as well as to add whatever information we possessed, or could procure otherwise than from books, that we thought would be truly useful.

The only circumstance that we regret is the high price of the work; but this we could not help. At all events, we gave gardeners a fair opportunity of purchasing it at a moderate rate, by publishing it in Numbers at 2*s.* 6*d.* each; and stating that, when the work was completed, the numbers would be raised to 3*s.* 6*d.* each, which is now the case for the separate numbers; the price of the entire work being 10*l.*

ART. III. *The Visitor's Companion to the Botanic Garden, Glasnevin; comprehending a General Outline of the Principles of botanical Science, with Hints on Flowers, Fruit, Kitchen and Landscape Gardening, &c.; also, Illustrations and popular Notices of various Objects of Interest in the Garden.* By Ninian Niven, Superintendent of the Royal Dublin Society's Botanic Garden, &c. 12mo. Dublin, 1838.

THE idea of producing such a book is, we think, excellent; because it will tend to spread a knowledge of the subjects of which it treats. Mr. Niven justly observes, in his preface, that,

"Of all public resorts, a scientific garden, when properly kept, will be found not only one of the most delightful mediums for intellectual gratification and amusement, but, also, one of the greatest of temporal blessings that can be bestowed on a people.

"To all classes of society, the rich and the poor, the old and the young, the infirm invalid, or the robust and vigorous, the prince or the peasant, a garden may be considered almost alike an object of interest, of instruction, and amusement. It is a field which abounds with objects, that generally make lasting impressions on the mind; and, happily, there are but few, who, however unacquainted with the principles of botanical science, are not more or less filled with admiration at the endless variety of form presented by any considerable assemblage of the vegetable kingdom; their grotesque trunks and tapering stems; their leaves, so varied in shape, and so beautiful in structure; their flowers, so curious in their parts, so diversified in colour, and often so exquisitely fragrant. But, above all, how admirably adapted is each, not only for the preservation of its own species, and the circumstances under which it may be placed in its natural locality, but also by its wonderful adaptation, in one way or another, for the use and gratification of man."

We hope the example set by Mr. Niven will soon be followed by the curators of all the botanic and horticultural gardens throughout the country.

ART. IV. *Catalogue of Works on Gardening, Agriculture, Botany, Rural Architecture, &c., lately published, with some Account of those considered the more interesting.*

LETTERS on the Natural History of the Insects mentioned in Shakspeare's Plays: with incidental Notices on the Entomology of Ireland. By Robert Patterson, Treasurer of the Natural History Society of Belfast. 12mo. London, 1838.

A very agreeably written book; and one which may create a taste for natural history in those who have delighted chiefly in poetry. In the first letter, the author has some remarks on the defects of modern education, which, though they contain nothing new, can scarcely be too frequently repeated. Addressing his friend, who has returned from college to a retired part of the country, and can find nothing in what surrounds him to employ his mind, he says, —

"I do believe that, if the true cause of your dissatisfaction were explored, it would be found to spring from what I consider a radical error in the system of education pursued in our universities. You have passed through the usual course with honour; you have on many occasions won 'golden opinions from all sorts of people;' and yet I do venture to assert that the defects in this very course of education are the primary causes of your present discontent. Take one of those graduates who have been most distinguished; ask him concerning an event in the ancient history of the world, the translation of an admired passage in Anacreon, or the connexion of classic fable and historic truth; and, in all probability your questions will be answered. Inquire how the knowledge of mathematics gives new views of the sublime science of astronomy, and you will receive the information you demand. Request an exposition of some particular theory in metaphysics, and your desire may still be gratified. But ask the same student to describe the functions or uses of some common plant or insect, one which he sees every day, with which he has been familiar from childhood, and he will be unable to answer; nay, most likely unable to tell its name.

"This is the radical error in university education. Its votaries are conversant with books, not with nature; or, as it has been quaintly expressed, 'they view nature through the spectacles of books.' With the works which form the most lasting monuments of the talents of man they are familiar; of those nobler works which bear the visible impress of the Deity, they are profoundly ignorant.

"I have no desire that you should become either a farmer or a sportsman; but, with your mental powers and habits of observation, I should rejoice indeed to see you become a naturalist; not one of that kind who suppose a knowledge of nature to consist in a knowledge of the terms which have been applied to her works, or of the sections into which they have been divided; but one who studies the things themselves, and gives to classification its proper functions; namely, that of designating correctly the individual objects of enquiry."

Man in his Physical Structure and Adaptations. By Robert Mudie, Author of "The Heavens," "The Four Seasons," "The British Naturalist," &c. 12mo. London, 1838.

This is the first of a series of four volumes, which are to treat of Physical Man, Intellectual Man, Moral Man, and Social Man. In the preface, Mr. Mudie informs us that his object is, to prepare the way for the other volumes, by showing that the human body is organised and adapted for purposes which cannot have their complete fulfilment in the present life.

"This will lead to the consideration of Intellectual Man, in a second volume; and, as the doctrine of intellect, and its necessary consequence, immortality, are the foundation of morality in the individual, and of good order in society, two more volumes will be required to complete the whole subject; though each of the four will, by the avoiding of the formality of system, be an entire book without the others. They are my favourites, above all others that I have written; and, whatever may be said of the execution, the subject deserves attention from the public."

The volume before us is elegantly written; and, when we say that we think it equals any that have hitherto been laid before the public by the same author, it will readily be conceived that the book is one that every body ought to read.

Art. V. *Literary Notices.*

A Monograph on the Genus Œnothera, by Mrs. Edward Roscoe of Liverpool, and the Rev. William Hincks, F.L.S., of York, is proposed to be published by subscription. The claims of the genus Œnothèra to have a work devoted to its especial illustration are such as to invite the attention not only of scientific botanists, but of all cultivators and admirers of plants. They are founded on the number of the species, the eminent beauty of a large proportion of them, their being favourite subjects of culture, and the difficulty of satisfactorily settling their specific characters, or determining which ought to be recognised as essentially distinct, and which should be reduced to the rank of varieties. It is hoped that the beauty of the work will qualify it to grace the drawingroom table; whilst the fidelity and spirit of the figures, and the care employed in bringing together all the information that is to be obtained on the subject (not to presume on the value of any efforts of the authors in the exercise of their own judgment), will give it some claim on the favourable regard of the botanist.

The work will be published in numbers, containing six plates each, in 4to. The plates will be executed in the best style of lithography, by M. Gauci, and beautifully coloured, from the original drawings by Mrs. Edward Roscoe; the descriptions

by the Rev. W. Hincks, F.L.S. The numbers will appear at intervals of four months, price 10*s.* 6*d.* each. There will be not less than seven, possibly one or two more.

Plantæ Javanicæ rariores, descriptæ Iconibusque illustratæ, quas in Insula Javæ, Annis 1802—1818, legit et investigavit Thomas Horsfield, M.D. E siccis Descriptiones et Characteres plurimarum elaboravit J. J. Bennett. Observationes Structuram et Affinitates præsertim respicientes passim adjecit Robertus Brown.

In the work, the plan of which is now submitted to the notice of the public, it is proposed to give descriptions and figures of the more remarkable new or imperfectly known plants contained in an herbarium of two thousand species, collected by Dr. Horsfield, and placed by him in the museum of the Honourable East India Company.

The work will consist of two parts, forming together a volume of moderate size. Each part will contain 25 plates, and about 100 pages of letterpress. The size of the work will be a large quarto; and several double or folio plates will be contained in each part, for the illustration of large subjects. The descriptions will be given in Latin; the observations in English. It will be published with coloured and uncoloured plates; the price of the coloured copies will be 3*l.* 10*s.* each part, and of the uncoloured copies 2*l.* 10*s.* each part. The second part is in progress of preparation, and is expected to be ready early in the ensuing year, 1839. Messrs. W. H. Allen and Co., booksellers to the Honourable East India Company, will be the publishers of the work in England. — *April* 2. 1838.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Developement of the Bark in Trees. — The distinct developement of the bark consists, sometimes, in the thickening of the cork substance; at others, in the thickening of the cellular envelope. There are, however, many cases in which the great increase of the bark substance consists chiefly in the expansion of the layer of liber; and we may cite, for instance, the beech (*Fàgus sylvática*). In this tree, the bark almost always remains even, and the cellular envelope continues very small, even when the bark has become of considerable thickness. The bark, also, of the plane tree (*Plátanus occidentàlis*), which is found in this country, must also be specially mentioned. It exhibits the same structure as the bark of the beech; remaining, however, in this state only from the eighth to the tenth year. About this time, there forms in the layer of liber (that is, only at some places) a delicate layer of tabular cells, which agree exactly with that of the periderma. This new layer

of periderma is so situated, that a part of the bark substance is completely separated by it, which then slowly dries, and, after gradual disunion, actually falls off. These new formations of new layers of periderma are repeated, and thus follows the continual dilamination, by which the tree still retains a very even bark. The great scales of bark, which fall off, consist, however, of the cellular envelope, and of a portion of the substance of the liber. The scales of the bark in *Prùnus*, *Pỳrus*, *Cratæ'gus*, *Quércus Ròbur*, *Tília* europæ'a, &c., are said to originate in the same manner as in the plane tree. Mohl, with other botanists, distinguishes these thick inner layers of the bark of the cork, which are formed in quite a different manner, and calls the inner layer the rugose bark (rhytidoma, from *rhytis*, a wrinkle). The results of these observations are, that the origin of the scales of the surface of the bark of dicotyledonous plants is not to be sought for in a desiccation of the bark layers, and in a mechanical splitting of them ; but that it depends on the later developement of distinct cellular layers, which disunite the single bark scales, or prepare for their disunion, or even themselves form the scales. Upon the whole, we may suppose two main differences in the later developement of the cellular tissue of the bark. In the first case, the layers are developed outside the cellular envelope ; and in the other, the becoming thicker arises from the developement of a stratum of cells under the cellular layer. In the first case, it is generally cork substance which is formed; in the second, rough bark (rhytidoma).

There are, besides, a number of plants in which a new layer of liber is annually formed, while the old layer dies away and peels off; for instance, *Vìtis* vinífera, Lonícera *Caprifòlium*. The bark of dicotyledons consists, therefore, as has been demonstrated in the cases specially examined by Mohl, of three distinct layers, of very different structure, besides the epidermis. The exterior stratum of cells, which, in many cases, changes into a thick corky substance, is called by Mohl the cork layer (*stratum suberosum seu phlœum*). Link calls this layer *epiphlœum*, outer rind (oberrinde) ; while he designates the intermediate rind *mesophlœum*, and the inner rind *endophlœum*. The latter may evidently be compared with the layer of liber of other botanists; and the intermediate rind, with the green cellular layer, the so-called cortical pith of many botanists. (*Phil. Mag.*, Jan. 1838, p. 57.)

Horticultural Exhibition under the Auspices of the York Philosophical Society. — The council of the York Philosophical Society has announced that an exhibition of plants, flowers, fruits, and vegetables will be held, in the Society's grounds in the city of York, on Wednesday, the 8th of August next, when prizes to the amount of sixty pounds are to be awarded, the competition for which will be thrown open to all England. No individual to be entitled to receive more than one prize in each class. We understand the committee of management has received very flattering promises of support from the most influential quarters, and that there is every prospect of its being both fashionably and numerously attended. It is expected that the exhibition will be of the most splendid description.—*H. S. York, June* 9. 1838.

India Rubber, or Caoutchouc, is slightly analogous to silk. It is a remarkable fact, that all the plants the silkworm feeds on contain a larger or smaller quantity of caoutchouc such as the lettuce, dandelion, mulberry tree, &c. In the Brazils, and more particularly in those parts where the India rubber tree (*Fìcus* elástica) abounds, large moths, of from 2 in. to 3 in. in length, producing excellent silk, in large quantities, are very common. From the variety of useful purposes to which India rubber is applicable, (from a lady's watch-guard or stay-lace, to a ship's cable, a great demand has been created for this article, which has induced the mercantile world to bend its attention to it, as a valuable remittance. It is a singular fact, that, wherever the teak tree flourishes, there the India rubber plant may be found in abundance, namely, 20° north and south of the equator. (*Newsp.*)

Antiseptic Property of Honey. —The best mode of conveying grafts of trees, cuttings of vines, &c., to a distance, is to place them in a tin case or cylinder

filled with honey. The honey hermetically excludes the air; and cuttings so preserved will vegetate many months after they have been packed. (*Newspaper.*) [Melons, and various fruits, are preserved in this way in Italy.—*Cond.*]

Art. II. *The West London Gardeners' Association for mutual Instruction.*

The Principles of Forcing. Nov. 13. — The subject of the evening, which was a discussion on the principles of forcing, was opened by a series of remarks made by Mr. Caie, showing the necessity of the gardener possessing a physiological knowledge of the plants to be forced, of the climate and altitude in which they naturally flourish, and the circumstances under which they chiefly luxuriate.

Mr. Fish took a rapid view of several of the simplest modes of forcing, by exposure to the sun, shelter, &c. He detailed an instance of vines, planted against a black wall, ripening their bunches well the present season, nearly half-way up the wall; and attributed their superior appearance to those farther up the wall to a row of dahlias, about 4 or 5 feet from it, which prevented, to a certain extent, the radiation of heat from the wall at night. From this he drew an inference, that black-coloured walls would be of advantage when they could be covered in spring and autumn. He then dwelt on the importance of giving a proper previous preparation to plants intended to be forced; and adverted to the influence of light upon vegetation; the importance of a covering medium that would transmit the greatest number of rays; and the having the slope of the roof at such an angle as to command the greatest number of perpendicular rays, when most heat and light were wanted. He farther adverted to the importance of conducting all the operations of forcing gradually; and dwelt at some length on the importance of proportioning heat to the presence of light; showing that the keeping up of an equally high temperature by night and by day, and the same in dull as in bright weather, prematurely exhausted the irritability of the plant; and, independently, often, of the miserable appearance of the fruit, it was not procured even so early as by following a more natural system, leaving out of view the difference in expense and trouble. He then insisted upon the necessity of forcing the whole plant; and, on this account, contended against deep borders; showing that, by shallow borders, not only would a tendency to fruitfulness be produced, but, by judicious covering, the roots might be forced simultaneously with the top. — Mr. Russel corroborated the leading ideas of Mr. Fish, and contended against the absurdity of forcing the branches while the roots might as well have been in Siberia. He contended that fruit seldom coloured when a high temperature was kept up at night, and the house allowed to rise proportionally high during the day; and adverted to a case in a public establishment, where, after forcing hard night and day, from February to July, the fire was taken away; when the Hamburg grapes, instead of being black, were not even red. He disapproved of stripping off leaves, as it prevented grapes from colouring. — Mr. Adams admitted, to a certain extent, the strictures of Mr. Fish upon journeymen talking so much out of doors, and saying so little in the room; but consoled himself with the thought that man was a progressive being, and hoped his brother journeymen would come forward, as it was quite preposterous that, out of so large a Society, so few should take an active part in its deliberations. He considered the angle of 45° the best for the slope of the roofs of hot-houses; and added, that he had seen finer fruit upon a black wall than any other. He did not agree with Mr. Fish in his ideas of proportioning heat to light, as, if fully carried out, the plants would be checked in their growth in dull weather; nor yet did he coincide in his opinion, that little fresh matter was added to the plant at night, though it became elongated; as, if merely elongation took place, the plant would become more attenuated, which was not the case. He then stated that plants were never completely in

a state of rest, as he found roots of plants turgid, and elongating themselves, in the depth of winter.

Mr. Caie entered into an elaborate description of the different structures erected for forcing, and showed the inconsistency of having them erected by individuals who considered them merely as objects of architectural taste, rather than of adapting them to the end in view. He then adverted to the form of roofs, and the materials of which they were composed; considered the curvilineal the best for the transmission of light, and did not think that metallic roofs, if kept well painted, were prejudicial from their power of conducting heat; but, as the light was greatly increased, the plants ought to be farther from the glass than in wooden houses. He also defended shallow borders, by stating some examples of their beneficial tendency in improving the flavour of fruit, &c. He alluded to a fact mentioned by Mr. Fish, that plants would not thrive at a distance from the glass, and considered it arose from the sun not shining vertically upon them, as, when it did, there would be less difference; and drew from this the inference, that plants should stand at a distance from the glass corresponding to its slope and the season of the year. With respect to the modes of heating, he approved of that by which an equilibrium of temperature could be most easily kept up; and contended that this simple principle was departed from in several modes of heating by hot water; as, where small pipes were used, they were speedily heated, and as speedily cooled. — Mr. Russel had seen the rafters of houses made of metal, the sides and ends of the sashes of wood, and the centre bars of block tin, which answered extremely well. — Mr. Fish considered that, to giving air, too much importance had been attached; and contended that, though particularity in giving air to keep down the temperature by day, when a high temperature was kept up at night, was required, it was not so necessary when the temperature of the house was allowed to fall at night. In a vinery, for instance, he was quite satisfied if the temperature did not fall below 60° at night; but, when the roots were in full operation, he would let the thermometer range from 80° to 100° in sunshine, provided the moisture in the house was proportionate to its temperature. — Mr. Ayres contended that, for securing all the advantages of light, the houses ought to be kept clean, and the walls coloured white. He objected to curvilineal houses, on account of the air being stagnated in the curve, and the liability of every thing being burned there in consequence. He agreed with Mr. Fish as to temperature; and considered it of such great importance to have the atmosphere well supplied with moisture, that, in fact, a hygrometer was as necessary in a forcing-house as a thermometer. As to air-giving, the best melons he ever saw were planted, watered, shut up, and the sashes never moved, till the fruit was to be cut; and he knew an eminent pine-grower who gave little or no air to his pines. — Mr. Judd laid great stress upon the construction of the houses; and considered that, if plants were well grown, there was no danger of the fruit colouring well. — Mr. Fish had had a part of the back wall, near the top of some of his houses, coloured black, as, when white, the reflection of heat was so powerful as to scorch the leaves. — Mr. Massey was aware of the importance of metallic-roofed houses for the transmission of light, but was doubtful if so much light was necessary for forcing-houses, as he had seen the best crops produced in comparatively dark-roofed houses; was rather at issue with Mr. Fish in respect to shallow borders; contended that the depth of the border should be determined by the high or low, dry or wet, nature of the situation; that still he was decidedly opposed to deep borders; and mentioned instances where crops had never been obtained owing to this circumstance alone. — Mr. Fish stated that grapes would not colour, if the bunches were completely exposed to the sun; and mentioned facts to show that the direct influence of light upon fruit was often prejudicial to their colouring, but that the direct action of light upon the leaves was necessary to the maturing, and consequent fruitfulness, of the buds in their axils.

Art. III. *Short Memoir of James Stuart, Head Gardener at Pinkie.* By P. N.

This most excellent person deserves to be held in remembrance, for he was truly an honour to the gardening profession.

He was born, in October, 1758, at Blainslie, in the parish of Melrose, in Roxburghshire, and his birth is recorded in the public register kept at that town. His parents were in humble circumstances, but were upright and intelligent people. After enjoying, at the parish school of Legerwood, the ordinary education of a Scottish country lad (reading, writing, and counting), James was apprenticed, in 1774, to Mr. Bradley, gardener to Mr. Spottiswoode of Spottiswoode, in Berwickshire; and he continued there for four years. He then removed to Loudon Castle, in Ayrshire, where he officiated as foreman or under gardener for two years. At the expiration of that period, he was recalled to Spottiswoode, to succeed Mr. Bradley; but, not finding that situation so agreeable as he expected, he removed, in November, 1782, to Dalkeith Park, being anxious to improve his knowledge of horticulture, and particularly of the various practices of forcing, under Mr. John Learmouth, who then conducted the extensive gardening establishment of the Duke of Buccleuch at Dalkeith. He had spent only one year in this favourable school, when he was engaged, at Martinmas, 1783, by the late Sir Archibald Hope, Bart., to take charge of the garden of Pinkie, near Musselburgh. Upon the death of Sir Archibald, in July, 1794, Mr. Stuart was reengaged by his son and successor, the present Sir John Hope; and in the service of this excellent gentleman Mr. Stuart spent the remainder of a long life.

One of the most characteristic traits of his character consisted in the unremitting attention which he paid to the duties of his station; and it is pleasing to have to record that his zeal and fidelity were duly appreciated by all the members of the Hope family, and rewarded by unceasing marks of kindness and attention from them. Although not inattentive to the ornamental departments, he more particularly excelled as a fruit and kitchen gardener. Many years ago, he could boast of producing the finest and largest colmars and crassanes to be seen in the neighbourhood of Edinburgh; and he was among the earliest cultivators of the other esteemed French and Flemish pears of more recent introduction. He was, perhaps, the first who practised the forcing of sea-kale in the open border, by covering the plants with boxes or pots, and surrounding the whole with stable litter in a fermenting state. Besides his duties as head gardener, he came to be intrusted with the management of the home farm, and of all the plantations, fences, and drains, on Sir John's extensive estates.

In the even tenor of Mr. Stuart's life, few incidents were likely to occur worthy of being detailed in a brief notice of this kind. It deserves, however, to be mentioned, that, in 1807, considerable improvements were undertaken by the present baronet, on the grounds immediately surrounding the ancient mansion house of Pinkie. In the course of these, the site of the forcing fruit, and kitchen garden fell to be changed. Mr. Stuart determined not to sacrifice his admirable full-grown fruit trees, if they could possibly be saved by careful removal. With resolute perseverance and unremitting care, therefore, during the winters 1807-8, and 1808-9, he removed no fewer than 160 such trees, chiefly pear and apple, many of them large standard trees, and not a few wide-spreading wall-trees, and others trained to great distances on espalier rails. Some of the pear trees were of such size and evident age, that there can be little doubt that they were original inmates when the garden was laid out in 1621, as indicated by an inscription over one of the gates. So perfect was the success of this operation, that some of the removed trees bore tolerably good crops of fruit the very next season. He ascribed this remarkable success very much to the uncommon care taken in tracing out the roots to the remotest and most delicate fibres, and their terminating spongioles (of the

importance of which last, Mr. Stuart was fully aware), and in sedulously guarding against their being bruised or injured, or exposed to withering droughts, in the course of the operations. The roots and rootlets, as thus successively traced out, were laid together, in small bundles, surrounded with hypnum or sphagnum moss, or with short grass, and wrapped over all with bast matting. When the whole roots were thus secured, the tree was carried by several men to its new destination, the roots being borne by younger assistants. When it was here fixed upright, the soil of the border having been previously duly prepared, the roots were successively uncoiled, and carefully expanded; fresh loam from a pasture-field being gently kneaded in among the fibres, with a degree of patience and perseverance never surpassed. The late Dr. Duncan, senior, and the writer of this notice, having witnessed the success of this remarkable gardening exploit, prevailed on Mr. Stuart to communicate to the Caledonian Horticultural Society (instituted in 1809, chiefly by the exertions of Dr. Duncan) an account of his mode of operating. This is printed in the first volume of the *Memoirs* of that Society, p. 202. et seq. A committee (consisting of Mr. James Smith, then at Ormiston Hall, now head gardener at Hopetoun House, and the secretary, Mr. Neill,) was appointed to examine the transplanted trees at Pinkie; and, on their report, an honorary medal was awarded to Mr. Stuart. The report concludes in these terms:—"Mr. Stuart's undertaking was, perhaps, the greatest of the kind ever attempted in this country: it has been most successful; and it is to be hoped that horticulturists will know how to appreciate so excellent an example."

Mr. Edward Sang, nurseryman at Kirkcaldy, and author of the *Planter's Kalendar*, published some years ago an able pamphlet on the transplanting of large trees, in the course of which he reviewed the claims of Sir Henry Steuart to priority in that practice, and showed that some distinguished practical gardeners had preceded the baronet of Allanton in extensive and successful operations of that kind. "It seems right," says Mr. Sang, in introducing Mr. Stuart of Pinkie to the notice of his readers, "to place age, intelligence, and experience at the head of the list." The removal of the full-grown fruit trees already mentioned is then described; and it is added: "Ten years afterwards, in 1822, when Sir John Hope obtained a piece of ground between his mansion house and the town of Musselburgh, it became a desideratum to have it planted immediately with large trees, so as to exclude all view of the town. Mr. Stuart entered on his task with his wonted skill, and it would be difficult to select any instance of large forest trees having been transplanted with greater success. The trees were considerably above 100 in number, and of many sorts; oaks, Scotch and English elm, ash, horse-chestnut, beech, several of the fir tribe, and black and woolly leaved poplars. The finest trees are now (1829) from 36 ft. to 42 ft. in height; and in girt, at breast high, from 1 ft. 10 in. to 2 ft. 9 in."

It seems fair to add, that one of Mr. Stuart's gardeners, who actively assisted at the removal of these full-grown trees at Pinkie, between 1807 and 1809, was subsequently engaged as gardener at Allanton, and was the active operator in the moving of the many large forest trees, which forms the main subject of the interesting and classical work of the late Sir Henry Steuart, entitled *The Planter's Guide*.

In July, 1826, Mr. Stuart met with a severe accident, by coming in contact with a loaded coal-waggon, which was passing rapidly along a railway, leading towards Fisherrow. His right arm was so much shattered, that amputation was necessary. Although then in his 68th year, his constitution was so sound, that he speedily recovered. With characteristic modesty, he then signified to Sir John Hope his desire to retire from the responsible situation which he had so long filled, as being no longer able personally to perform many garden operations, which hitherto he had not trusted to any but his own hands. But Sir John would not listen to him; kindly saying (as Mr. Stuart once reported to the writer, with the tear glistening in his eye), "James, it is your

head I want, not your hands;" and considerately and kindly adding that he would make only one stipulation; that James should no longer mount a ladder, not even to prune his favourite peach trees.

Mr. Stuart did much for the embellishment of Musselburgh, by planting forest trees and evergreens on both sides of the river Esk, near to the town, the trees being liberally furnished by Sir John Hope; and, also, by adorning the capacious High Street with rows of trees; thus giving it the agreeable aspect of a Continental place. In acknowledgment of these public services, and in testimony of their respect, the magistrates and town council of Musselburgh, in 1829, presented Mr. Stuart with a pair of silver cups, suitably inscribed.

The Caledonian Horticultural Society is in the practice of voting honorary medals or rewards to meritorious head gardeners who have served in the same families for the greatest number of years. In 1815, Mr. Stuart received this mark of distinction; and, at his own request, the award was a piece of useful plate (a silver teapot), with an appropriate inscription. Of this memorial of his long service at Pinkie he always professed himself more proud, than of all the various prizes which, at different times, he obtained from gardening societies.

In 1834, the completion of the 50th year of his service at Pinkie (or his *jubilee*, as it was styled,) was celebrated in Menkendick's inn, at Musselburgh, when more than 50 of the inhabitants of the town and neighbourhood, and several friends from a distance, met to do him honour. After dinner, two *riddles* of claret (literally riddles [sieves], filled with some dozens of bottles of claret) arrived from Pinkie house, as a present from Lady Hope, Sir John being at that time absent from home. When Mr. Stuart's health was given from the chair, and when the whole company, standing up, congratulated him enthusiastically, the venerable guest did not for a moment lose self-possession, but proceeded, with serious composure, yet with the most complacent smile, to return thanks. The writer of this notice cannot now recall the precise expressions; but he can say that they were full of good sense and good feeling, and such as characterised the resigned Christian and benevolent friend. The mention of the family of Hope of Pinkie, however, produced a burst of gratitude from the old man, which did equal honour to both parties. On that occasion he was presented with a bust of himself, done by Mr. Alexander Ritchie, an ingenious artist of Fisherrow. Mr. Stuart's head was finely formed, and made a most beautiful bust. A copy of this bust was afterwards executed in stone, by desire of Lady Hope, and was honoured with a niche in the conservatory of Pinkie garden, where it still remains.

Mr. Stuart continued through life attached to the Secession Church, in the communion of which he had been brought up; but he adhered to that constitutional "remnant" who maintained the principles of the original Seceders (who, be it observed, *seceded* only from the then prevailing party in the judicatories of the Established Church, appealing to the first free and reforming General Assembly, and, in their own language, "looking for and longing for reunion in the truth," but who remained firmly attached to the Church of Scotland as established by the law of the land). He was a most regular attendant on the ministry of Dr. M'Rie of Edinburgh, the celebrated biographer of Knox and Melville. When the walk of five miles to Edinburgh became fatiguing to Mr. Stuart, Sir John Hope presented him with a pony, and thus enabled the worthy patriarch to wait on the ministrations of his revered pastor till the lamented death of the doctor, in August, 1835.

For a good many years, symptoms of calculous complaints had occasionally annoyed the subject of this memoir. Latterly these became aggravated, and produced considerable suffering. But, till the severe winter of 1837-8, he continued actively employed in superintending the garden and home farm. The last communication received by the writer of this notice from his worthy old correspondent at Pinkie was dated 12th December, 1837: it was autographic, having been written with the left hand, and accompanied a basket

containing a compact group of well-shaped mushrooms, measuring 3 ft. in circumference. This remarkable production was exhibited at a meeting of the Horticultural Society, held on that day, and, as the minutes bear, was much admired, and excited great interest. [See p. 59.]

In April, 1838, he suffered an attack of jaundice; and, after being bedridden for about six weeks, he expired on the 23d of May. He was then in the 80th year of his age, in the 54th of his service at Pinkie, and had been 64 years a practical gardener. The octogenarian was, therefore, it is believed, in the language of gardeners, the "father of the profession." A few days before his death, he gave some pointed directions about his funeral; particularly desiring that his coffin should be formed of timber of the growth of Pinkie, and of a favourite lime tree, that had stood behind the garden walls, and had been cut down on account of its too great proximity to the fruit-tree border. The funeral took place on the 29th of May. From Mr. Stuart's house, the procession took a circuit through the garden to the main gate, on the road leading to Newersh churchyard. This was done at the desire of the noble-minded proprietor, who thus delicately evinced his regard for the deceased, by causing his honoured remains, when on the way to their last abode, to pass through the garden which had so long been the peculiar object of his care. The chief mourner was, of course, the son of the deceased, Mr. John Stuart, land-steward to the Earl of Galloway; and several other relatives attended: but Sir John Hope, and his sons, Major Hope and Mr. Hugh Hope, bore palls; thus testifying their respect to the last. The attendance at the funeral was very numerous; more than 130 of the principal inhabitants of Musselburgh and its neighbourhood, and various friends from considerable distances, being present.

Art. IV. *Retrospective Criticism.*

The Botanical Magazine.—At p. 334. of the *Gardener's Magazine* for July, in speaking of the *Botanical Magazine*, you have committed an error (inadvertently, no doubt), the correction of which will afford an opportunity of exposing what I cannot but consider as a fraud upon the public; on that part, at least, of the public which patronises the work in question. You announce Curtis's *Botanical Magazine* to be published "in monthly numbers, each containing *eight* plates, 3*s.* 6*d.* coloured," &c. True it is, the monthly numbers *used* to contain *eight* plates, or six and one folded one, at the above price; but, for some time past (I am not, at this moment, exactly prepared to say how long), the number of plates has been reduced by one, each number now containing only *seven* plates, or five and one folded one. No notice, explanation, or apology, (so far as I am aware,) has been offered on the part of the publishers for this defalcation; but the quantity, as already stated, has been tacitly reduced, while the cost remains the same; and thus the purchasers of the work get less for their money every year, by twelve plates and their descriptions, than was guaranteed to them. Practices like this, Mr. Editor, have, I assure you, quite sickened me of taking in periodical works, unless they be such as are of a very limited extent. Who the parties are, in the present instance, who pocket this small additional profit at the expense of the purchasers, it is impossible for me to say; but I feel bound to state my entire conviction that Sir W. J. Hooker, whose honourable name stands in the titlepage of the *Botanical Magazine*, as the author of the descriptive portion of the work, has no share in the transaction. On referring back, I see you have committed the same mistake in several previous Numbers of the *Gardener's Magazine*, though it is not till lately that the misstatement has caught my eye. You will oblige me by giving a place to these remarks in an early Number of your Journal; and, if they do not lead to a discontinuance of the practice complained of, I hope they will, at least, elicit a reply or explanation from the proper quarter.—*W. T. Bree. Allesley Rectory, July* 19. 1838.

Mr. Niven on the Growth of Dicotyledonous Trees. (p. 161.) — As one of your old correspondents, I, on the present occasion, beg leave to thank you for giving publicity to Mr. Niven's excellent paper on the growth of dicotyledonous trees, read at a meeting of the British Association in Liverpool on Tuesday, September 12. 1837. I have also to congratulate your readers that that paper has been accompanied by expensive engravings of Mr. Niven's experiments, which renders the whole so clear and explicit, that "he who runs may read."

Every one acquainted with the manner in which a wound on a tree is healed, will at once agree with Mr. Niven, that his delineations of the processes are true to nature; and that the descending process is an attempt to reach the ground and to form roots; and also that the swelling, or lip, at the bottom of the wound is a natural endeavour to rise, and resolve itself into shoots. Both these circumstances are facts, and have been fully proved by Mr. Niven's experiments, as appears from his figs. 21, 22, and 23. p. 164. and 165.

That such experiments have been made before, and attended with similar results, is perfectly true; but it appears that erroneous explanations have been given of them; because the descending processes have usually been called arrested accumulations of the elaborated sap, while not a word of explanation has been given of the ascending process, although it is evidently (except so far as is excepted by Mr. Niven) a body of an exactly similar nature in texture and consistence. Yet, as no elaborated sap could descend to the lower lip, except through the solid wood (which the favourers of the doctrine of the descent of the sap say it never does), the swelling of the lower lip has remained a physiological puzzle, merely because none of the theorists could believe that any vegetable membrane could be enlarged by the accession of crude sap from the root; an idea completely in the teeth of every fact observable in the growth of vegetables.

But we are neither beguiled nor staggered by Mr. Niven's representations. He has plainly described what he witnessed, and has given proofs of the conclusions he arrived at, on careful consideration of the results. He wisely offers no theoretical opinion upon the *invisible* courses, or changes of the sap; nor does he attribute to the latter that inconceivable property of being organisable *per se*. He admits that the cambium exists between the cortical layers and alburnum in February. In May, he observes this same body increasing gradually into bark and wood, from the top to the bottom. He also sees a corresponding flow, but less rapidly, from below. He does not, however, speak of it as a liquid gushing from the upper side, or springing from the lower one; but as it actually is, namely, tender bark and wood, which gradually thicken; and, spreading, eventually cover the whole face of the scar; and which new bark and wood, he shows, are capable of emitting either roots or shoots.

If, at the commencement of his experiment fig. 20., he had deprived the tree of the whole of the cortical layers, with every vestige of the cambium, as he did in fig. 21., it is evident that no generation of bark and wood would have appeared on the naked alburnum, as it did in the first experiment. The new healing processes would have only appeared at the upper and lower edges, as Mr. Niven has so correctly represented. From all which statements, it may be fairly inferred, that the cambium is the only vital membrane of the system, and, of course, is the origin of all new accretion, whether of bark and wood only, or roots and shoots also.

With respect to what Mr. Niven has observed of the movement of the sap in the interior of his *windowed* tree, and which remains for future observation and experiment, I doubt not but that he will find the fluidity of the sap, at an early season, always more or less according to the temperature of the interior. The central parts of a trunk, and particularly of a very large one, are always much warmer than the exterior; and there the sap will be most fluid; and, moreover, when the tubular structure is so separated, oozings may

take place from either side at the outlets, without showing the real course of the sap in the perfect vessels.

I am much pleased that Professor Henslow has noticed Mr. Niven's paper; and especially as the results of the experiments of the latter are corroborated by the comparisons of the former gentleman. Mr. Niven's facts may receive much valuable elucidation from the talents and pure science of the professor. Already it is acknowledged that *the life* of a tree has "a local habitation," if it has not yet received a scientific name; and, if it be admitted that a protuberant margin of wood and bark is often formed round the stump of a felled tree, without assistance from either leaves or descending sap, the time may soon arrive when we shall hear no more of "organisable" fluids, "adventitious buds," or "equivocal generation," of wood, &c.; nor shall we be amazed by assertions that the complicated structure of plants may be formed of invisible, though "ponderable," gases!

Whatever may be hereafter elicited by the scientific attainments of Professor Henslow, and by the high practical knowledge of the curator of the Glasnevin Botanic Garden, in this branch of vegetable science (though *corrective*, as, probably, their united discoveries will be of several old points of botanical physiology), their stations and personal respectability will be a sanction to whatever they may publish, or, at least, will secure *them* from the odium of "obscurity."—*J. Main. Chelsea, May* 10. 1838.

Rhubarb Jelly. (Vol. XIII. p. 460.)—Mr. James M'Nab may have had the merit of introducing this jelly into Scotland; but the gentleman at whose suggestion it was first made is Joseph Johnson, Esq., of Northenden, near Altringham, Cheshire. Mr. Johnson, in the year 1834, having an unusual quantity of rhubarb stalks, suggested the idea to his daughter, Miss Johnson, of trying how they would make into jelly. The success was complete. In 1836, Mr Johnson mentioned this jelly to Mr. Campbell, the curator of the Botanic Garden, Manchester, and sent him a jar of it. Mr. Campbell mentioned the circumstance to Mr. M'Nab, who was on a visit at the Manchester Gardens; and this, it is presumed, led to Mr. M'Nab's making some when he returned home.—*J. J. Manchester, June* 10. 1838.

Art. V. *Queries and Answers.*

The Effect of Gas Tar on the Stems of Trees. — Can you tell me whether gas tar, or some such substance, applied to the stems of trees, in order to prevent horses and cattle biting the bark, would be injurious to their growth? Paint, I conceive, would be, if applied to any extent. I have been sorely annoyed by a tenant's horse barking some thriving young trees, which I planted in hedgerows twenty years since, and have nursed with great care, and thought they were now safe from all harm. Horses that take to this evil habit, I am told, never leave it.—*W. July* 19. 1838.

Art. VI. *The London Horticultural Society and Garden.*

April 17. 1838.—*Read.* An Account of the Vineyard at Blackheath, in the Seventeenth Century, communicated by Sir Henry Bunbury.

Exhibited. Azàlea Smíthii coccínea pulchérrima, Hòvea Célsi, Meliánthus màjor, *Cytisus* sp., from Mr. William Upright, gardener to G. C. Ridge, Esq., of Morden, Surrey. *Euphórbia* spléndens, *Cáctus* speciòsa, Azàlea índica álba, A. i. púlchra, seedling cinerarias, seedling calceolarias, from Mr. Green, gardener to Sir Edmund Antrobus, Bart. Cucumbers, from Mr. Patrick Flannagan. Sweetwater grapes, from M. Nieman, gardener to Peter Cæsar Labouchere, Esq., F.H.S. Gésnera Suttònii, from Messrs. Brown of Slough. Seedling camellia, from John Allnutt, Esq. Cucumber, from Mr. William Curtis, gardener to John Allnutt, Esq. Seed-

ling camellia, from Messrs. Chandler and Sons. A dahlia-preserver, from Mr. James M'Kay. Azàlea índica rùbra, Dillwýn*ia* cinerásceus, Pultenæ'*a* subumbellàta, Kennèdy*a* monophýlla, Leucopògon sp., Boròn*ia* pinnàta, Indigófera austràlis, Illícium floridànum, *Er*ìca transpàrens, *E.* scabriúscula, *E.* pilòsa, Gloxín*ia* cauléscens var., *Euphórbia* fúlgens (jacquini*æflòra*), Sinníng*ia* violàcea, Gésner*a* bulbòsa, G. fauciàlis, Caméll*ia* reticulàta, C. imbricàta, C. althææflòra, Oncídium Cebollèt*i*, Dendròbium aggregàtum, *Er*ìca carinàta, and *E.* aristàta màjor.

From the Garden of the Society. Azàlea índica phœnícea, Oncídium stramíneum, Burchéll*ia* capénsis, Tropæ'olum pentaphýllum, *C*orydàlis sp. (Nepal). — *Flowers:* Caméll*ia* reticulàta, C. imbrìcata, C. Colvílle*i*, *Berbéris Aquifòlium*, *Ribes* tenuiflòrum, *R.* sanguíneum, *R.* dark var. — *Apples:* Bedfordshire foundling, k.; Colville blanche d'hiver, k.; Norfolk beaufin, k.; Alfriston, k.; Rhode Island greening, k.; Winter codlin, k.; red streak, keeping, k.; General Wolfe (an American sort, allied to the reinette du Canada), cluster golden pippin, Grange's pearmain, tulip, and green nonpareil.

Medals awarded. A silver Knightian to Mr. Upright, for Hòve*a* Célsi; to Mr. Green, for azaleas; and to Mrs. Lawrence, for a collection of plants. A silver Banksian to Mr. Toward, for Phycélla biflòra; to M. Nieman, for grapes; to Messrs. Brown, for Gésner*a* Suttòn*ii*; and to Mrs. Lawrence, for a variety of Gloxín*ia*.

May 1. 1838. — *Read.* A paper on the Cultivation of Strawberries, by John Disney, Esq., F.H.S.

Exhibited. Brugmáns*ia* lùtea, Grevíll*ea* sp., *Er*ìca seedling, and yellow China rose, from Mr. Spence, gardener to R. Durant, Esq. A cucumber, from —— Crayshaw, Esq. Gésner*a* fauciàlis, from Miss Garnier of Wickham, near Fareham, Hants. Heartsease, from Mr. Mountjoy of Ealing. *Loàsa* laterítia, from Mr. Ferguson, gardener to P. C. Labouchere, Esq. Limes, produced without the aid of fire-heat, and protected by a frame composed partly of wood and partly of glass, from John Luscombe, Esq., of Coombe Royal, near Kingsbridge, Devonshire. *R*hododéndron arbòreum, Azàlea índica, *A*càcia diffùsa, and *A.* stricta, Diósma amœ'na, *Bérberis* répens, *B.* glumàcea, *Ribes* speciòsum, *A*'rbutus procèra, *Er*ìca austràlis, *E.* mediterrànea, *V*accínium ovàtum, all grown in the open air, from Mr. Booth, gardener to Sir C. Lemon, Bart., M.P., Carclew, Cornwall. *R*hododéndron Smíth*ii*, *R.* seedling, Caméll*ia* élegans, C. formòsa, E'pacris paludòsa, *A*càcia diffùsa, and *A.* lineàta, from Messrs. Chandler. Sweetwater grapes, and a black Antigua pine-apple, from Mr. Davis, gardener to Sir Simon Clarke, Bart. Tweèd*ia* cærùlea, from Mr. Beaton, gardener to T. Harris, Esq. Golden Harvey and nonpareil apples, from John Disney, Esq. Cyrtopòdium punctàtum, from Richard Harrison, Esq. Grapes, strawberries, and French beans, from M. Nieman, gardener to P. C. Labouchere, Esq. *O*'xalis floribúnda, and Wachendórf*ia* sp., from Mr. Springel, gardener to —— Grenfell, Esq., Taplow Lodge, Bucks. Double purple Azàlea índica, from Messrs. Brown of Slough. Seedling verbenas, from Her Majesty's garden at Windsor. Azàlea Hibbért*ia* var., Clíanthus puníceus, E'pacris onosmiflòra, Peristèria cèrea, Cleòme purpùrea grandiflòra, Hòve*a* Célsi, H. argéntea (Oxylòbium), Chorózema ovàta, and Indigófera austràlis, from Mrs. Lawrence.

From the Society's Garden. Candóll*ea* cuneifórmis, Kennèdy*a* Marryátt*i*, Nemóphila aurìta, Leptòtes bícolor, Begòn*ia* Drègei, *Verbèna* Tweed*iàna*, *Ribes* cèreum, *R.* níveum, *R.* aúreum præ'cox, *R.* sanguíneum, *R.* s. dark var., *N*arcíssus incomparábilis sex-lobàtus, *N.* i. double, *N.* interjéctus, *N.* poéticus, *N.* angustifòlius, *N.* tubiflòrus, *N.* odòrus, *N.* Maclèa*i*, *N.* biflòrus, *N.* propínquus, and Amarýllis sp.

Medals awarded. A silver Knightian to Mr. Spence, for Brugmáns*ia* lùtea; to Mr. Brown, for Azàlea índica; to R. Harrison, Esq., for Cyrtopòdium punctàtum; and to Mrs. Lawrence, for the collection of plants. A silver Banksian to Mrs. Lawrence, for Clíanthus puníceus; to Mr. Springel,

for *O*'xalis floribúnda; to M. Nieman, for strawberries; to Mr. Beaton, for Tweèdi*a* cærùlea; and to Mr. Davis, for the sweetwater grapes.

Award of Medals at the Exhibition in the Society's Garden, May 26. 1838. — For large Collections of Stove and Green-house Plants. The gold Knightian medal, to Mr. John Green, gardener to Sir Edmund Antrobus, Bart., F.H.S., and to Mr. Butcher, gardener to Mrs. Lawrence, F.H.S. The large silver, to Mr. George Glenny. The silver Knightian, to Mr. Redding, gardener to Mrs. Marryatt, F.H.S., and to Mr. Chandler of Vauxhall. — For small Collections of Stove and Green-house Plants. The gold Banksian, to Mr. Bannon, gardener to S. Jones Lloyd, Esq., F.H.S. The large silver, to Mr. Geo. Glenny. The silver Knightian, to Mr. Geo. Barnes, gardener to G. W. Norman, Esq., F.H.S.; to Mr. Falconer, gardener to A. Palmer, Esq., of Cheam; and to Mr. Pratt, gardener to William Harrison, Esq., F.H.S. — For Pine-apples. The large silver, to Mr. Davis, gardener to Sir S. Clarke, Bart. The silver Knightian, to Mr. Gunter, F.H.S. — For Strawberries in Pots. The silver Knightian, to Mr. Brown, gardener to Messrs. Cridland and Clewes, Turnham Green. — For Strawberries. The silver Banksian, to Mr. John Stewart, gardener to Lord Ashburton, F.H.S. — For Green-house Azaleas. The silver Knightian, to Mr. Smith of Norbiton, near Kingston. — For melon-shaped *C*ácti. The large silver, to Mr. Geo. Glenny, F.H.S. The silver Knightian, to Mr. Pratt. — For Cape Heaths. The gold Banksian, to Mr. Pratt. The large silver, to Mr. Butcher. The silver Knightian, to Mr. Gunner, gardener to G. D. Larpent, Esq. — For Collections of Orchidaceous Plants. The gold Knightian, to Sigismund Rucker, Esq., F.H.S. The large silver, to the same. — For single Orchidaceous Plants. The silver Knightian, to Mr. Bevis, gardener to J. Allcard, Esq. — For Garden Roses. The silver Knightian, to Messrs. Lane of Great Berkhampstead. — For tall *C*ácti. The large silver, to Mr. John Green. The silver Knightian, to Mr. George Glenny. — For single Specimens of Plants not in Flower. The large silver, for Araucària excélsa, to Mr. Redding. The silver Knightian, for Cèreus serpentìnus, to Mr. Geo. Glenny. — For single Specimens of Plants in Flower. The large silver, for Dryándr*a* sp., to Mr. W. Barter; and for a seedling pelargonium, to Edmund Foster, Esq. The silver Knightian, for Cèreus speciosíssimus, to Mr. Spence, gardener to R. Durant, Esq., F.H.S.; for *E*rìca propéndens, to Messrs. Lucombe and Pince of Exeter. The silver Banksian, for Kennèdy*a* nígricans, to Mr. Stewart; for Kennèdy*a* bimaculàta, to Mr. James Dunsford, gardener to the Hon. Baron Dimsdale; for Helicònia brasiliénsis, to Messrs. Lucombe and Pince; for Borò*n*i*a* serrulàta, to Mr. Douglas, gardener to Earl de Grey, F.H.S.; for *E*rìca hýbrida, to Mr. Pratt; for *V*erbèna Tweedi*à*n*a*, to Mr. Ferguson, gardener to P. C. Labouchere, Esq., F.H.S.; for Lasiopétalum *s*olanàceum, to the same; and for *C*lématis Sieb*ó*ldt*i*, to Mr. Hunt, gardener to Miss Traill of Hayes Place. — For single Specimens of New Plants. The gold Banksian, for *S*tátice arbòrea, to Messrs. Lucombe and Pince. The silver Knightian, for Siphocámpelos bícolor, to Messrs. Lucombe and Pince; for *C*lématis azùrea, to Mr. Young of Epsom; for Kennèdy*a* Marryátt*æ*, to Mr. Redding. — For Heartsease. The silver Knightian, to Mr. Lidgard of Webb's Lane, Hammersmith, and Mr. Mountjoy of Ealing. The silver Banksian, to Mr. King, gardener to Miss Fuller of Hillingdon; Mr. Hurst, gardener to J. Batho, Esq., of Cheshunt; and Mr. Gaines of Surrey Lane, Battersea. — For Pelargoniums. The large silver, to Mr. Hunt, and to Mr. R. Hamilton of Beaver Lane, Hammersmith. The silver Knightian, to Mr. Wm. Cock, jun., of Chiswick; and to Mr. Gaines. The silver Banksian, to Mr. Pratt, and to Mr. Hill of Hammersmith. — For Herbaceous Calceolarias. The large silver, to Edmund Foster, Esq., of Clewer. The silver Banksian, to Mr. J. Lane, gardener to J. H. Palmer, Esq., F.H.S. The silver Knightian, to Mr. John Green. — For shrubby Calceolarias. The large silver, to Mr. John Green. The silver Banksian, to Mr. J. Lane. The silver Knightian, to Mr. Butcher. — For Apples. The silver Banksian, to Mr. Falconer. — For Cucumbers. The silver Banksian, to Mr. S. Snow, gardener

to Earl de Grey. — For Grapes. The large silver, to Mr. Davis. The silver Knightian, to Mr. Gunter, F.H.S. The silver Banksian, to Mr. Chapman of Vauxhall. — For Melons. The silver Banksian, to Mr. S. Snow.

Award of Medals at the Exhibition in the Society's Garden, June 16. 1838.— For large Collections of Stove and Green-house Plants. The gold Knightian medal, to Mr. Butcher, gardener to Mrs. Lawrence, F.H.S. The gold Banksian medal, to Mr. John Green, gardener to Sir E. Antrobus, Bt., F.H.S.; and to Messrs. Rollinson of Tooting. The large silver medal, to Mr. Redding, gardener to Mrs. Marryatt, F.H.S. — For small Collections of Stove and Green-house Plants. The gold Banksian medal, to Mr. Falconer, gardener to Archdale Palmer, Esq. The large silver medal, to Mr. J. Lane, gardener to J. Horsley Palmer, Esq., F.H.S. The silver Knightian medal, to Mr. Coady, gardener to Henry Pownall, Esq., F.H.S. — For Cape Heaths. The gold Banksian medal, to Mr. Butcher, gardener to Mrs. Lawrence, F.H.S. The large silver medal, to Mr. Pratt, gardener to W. Harrison, Esq., F.H.S.; and to Messrs. Rollisson of Tooting. — For Grapes. The large silver medal, to Mr. John Davis, gardener to Sir Simon Clarke, Bart., F.H.S. The silver Knightian medal, to Mr. George Mills, F.H.S., gardener to Mrs. Rothschild. The silver Banksian medal, to Mr. Robert Buck, F.H.S. —For Melons. The silver Knightian medal, to Mr. Pratt, gardener to William Harrison, Esq. — For Pine-apples. The large silver medal, to Mr. Davis, gardener to Sir Simon Clarke, Bart., F.H.S. The silver Knightian medal to Mr. George Mills, F.H.S., and to Mr. Glendinning, gardener to the Right Hon. Lord Rolle, F.H.S. — For Peaches. The silver Knightian medal, to M. Nieman, gardener to P. C. Labouchere, Esq., F.H.S. — For Strawberries. The silver Banksian medal, to M. Nieman, gardener to P. C. Labouchere, Esq., F.H.S. — For Cherries. The silver Banksian medal, to Mrs. Fleming, Binstead, Isle of Wight. — For Raspberries. The silver Knightian medal, to M. Nieman. — For Apples. The silver Banksian medal, to Mr. Butcher, gardener to S. Farmer, Esq., of Nonsuch Park. — For Apricots. The silver Knightian medal, to M. Nieman. — For Collections of Orchidaceous Plants. The gold Knightian medal, to Sigismund Rucker, Esq., jun., F.H.S., and to Messrs. Rollisson. The large silver medal, to Messrs. Rollisson. — For single Orchidaceous Plants. The silver Knightian medal, to Messrs. Rollisson, for Oncídium altíssimum; to Mr. B. Fielder, gardener to William Linwood, Esq., F.H.S., for Cattlèya críspa; to the same, for Oncídium bifòlium; and to Mr. R. Abbot, gardener to J. Jarrett, Esq., F.H.S., for Oncídium Lemoniànum. The silver Banksian medal, to Mr. T. Hardy, gardener to the Rev. F. Boaden, F.H.S., for Oncídium flexuòsum. — For single Specimens of Plants not in Flower. The silver Knightian medal, to Mr. H. Pratt, gardener to William Harrison, Esq., F.H.S., for *N*epénthes distillatòria. — For single Specimens of Plants in Flower. The silver Knightian medal, to Mr. Coady, gardener to H. Pownall, Esq., F.H.S., for Pimelèa decussàta; and to Mr. Butcher, gardener to Mrs. Lawrence, F.H.S., for *E*rìca ventricòsa supérba. The silver Banksian medal, to Mr. B. Fielder, for *H*elichrỳsum sp.; and to Mr. Andrew Toward, gardener to Her Royal Highness the Duchess of Gloucester, for Clintòn*ia* pulchélla. — For single Specimens of new ornamental Plants. The large silver medal, to R. Mangles, Esq., F.H.S., for Thysanòtus sp. n.; and to Messrs. Young of Epsom, for *C*lématis Sieból*dti*. The silver Knightian medal, to R. Mangles, Esq., F.H.S., for Chorózema sp. n.; to the same, for a species of Davièsi*a*; to Mr. W. Smith of Norbiton, for Azàlea índica Daniels*iàna*; and to Mr. William Redding, for *S*piræ`a japónica. The silver Banksian medal, to R. Mangles, Esq., F.H.S., for Grevíll*ea* sp. n.; to the same, for another species of Grevíll*ea*; to Mr. Smith of Norbiton, for a hybrid Azàlea; to Messrs. Rollisson, for *H*elichrỳsum macránthum; to the same, for a new species of Azàlea from China; and to Mr. J. Lane, gardener to J. H. Palmer, Esq., F.H.S., for Azàlea índica laterítia. — For hardy Azaleas. The silver Knightian medal, to Mr. William Smith of Norbiton. — For tall *C*ácti. The silver Knightian medal, to Mr. James Lane, gardener to

J. H. Palmer, Esq., F.H.S. — For Chinese and Noisette Roses. The silver Knightian medal, to Mrs. Fleming, Binstead, Isle of Wight. — For miscellaneous Garden Roses. The silver Knightian medal, to Mrs. Fleming; the silver Banksian medal, to Mr. H. Cobbett of Horsell, near Woking, Surrey. — For Herbaceous Calceolarias. The large silver medal to Mr. J. Green, gardener to Sir E. Antrobus, Bart. The silver Knightian medal, to Mr. Falconer, gardener to A. Palmer, Esq., of Cheam. The silver Banksian medal, to Mr. Butcher, gardener to Mrs. Lawrence, F.H.S. — For Shrubby Calceolarias. The large silver medal, to Mr. John Green, gardener to Sir E. Antrobus, Bart. F.H.S. The silver Knightian medal, to Mr. Stewart, of Salt Hill. The silver Banksian medal, to Mr. R. Atlee, gardener to H. Beaufoy, Esq., of Stockwell. — For Seedling Pelargoniums. The silver Knightian medal, to the Rev. Mr. Garth of Farnham, Surrey. The silver Banksian medal, to E. Foster, Esq., of Clewer. — For Seedling Calceolarias. The silver Knightian medal, to Captain Foster. — For Heartsease. The silver Knightian medal, to Mr. Bridges of Hampton, and to Mr. Mountjoy of Ealing. The silver Banksian medal, to Mr. George King, gardener to Miss Fuller of Hillingdon Place; to Mr. Lidgard of Webb's Lane, Hammersmith; to Messrs. Lane of Great Berkhampstead, and to Mr. Gaines of Battersea. — For Pelargoniums. The large silver medal, to Mr. Cock, jun., of Chiswick; and to Mr. Catleugh of Hans Street, Sloane Street. The silver Knightian medal, to Mr. Gaines of Battersea. The silver Banksian medal, to Messrs. Colley and Hill of Hammersmith.

Award of the Judges at the Garden Exhibition, July 11. 1838. — *Gold Knightian.* To Mr. Butcher, gardener to Mrs. Lawrence, F.H.S., for a large collection of stove and green-house plants; to Mr. Mylam, gardener to S. Rucker, Esq., jun., F.H.S., for a collection of orchidaceous plants; to Messrs. Rollisson, for a collection of orchidaceous plants. — *Gold Banksian.* To Mr. Green, gardener to Sir E. Antrobus, Bart., F.H.S., for a small collection of stove and green-house plants; to Mr. Redding, gardener to Mrs. Marryatt, F.H.S., for a large collection of stove and green-house plants. — *Large Silver.* To Mr. Ferguson, gardener to Peter Cæsar Labouchere, Esq., F.H.S., for a small collection of stove and green-house plants; to Messrs. Rollisson of Tooting, for a small collection of stove and green-house plants; to Messrs. Rollisson, for a collection of orchidaceous plants; to Mr. Mylam, gardener to S. Rucker, Esq., jun., for a collection of orchidaceous plants; to Mr. Butcher, gardener to Mrs. Lawrence, F.H.S., for Cape heaths; to Edward Baker, Esq., M.P., F.H.S., for pine-apples; to Mr. J. Davis, gardener to Sir S. Clarke, Bart., F.H.S., for grapes; to Mr. J. Bruce, gardener to B. Miller, Esq., for Mùs*a* Cavendíshii; to Mr. T. Rivers of Sawbridgeworth, for fifty varieties of garden roses; to Mr. T. Sewell, gardener to R. G. Alston, Esq., F.H.S., for fifty varieties of garden roses; to Messrs. Lane of Great Berkhampstead, for miscellaneous garden roses; to Mr. Milne, gardener to C. S. Chauncey, Esq., F.H.S., for miscellaneous garden roses; to Messrs. Rollisson, for *Lí*lium venústum; to Messrs. Rollisson, for Phalænópsis amábilis; to Mr. Falconer, gardener to A. Palmer, Esq., for alstrœmerias; to Mr. Catleugh, Hans Street, Sloane Street, for pelargoniums; to Mr. Cock of Chiswick, for pelargoniums. — *Silver Knightian.* To Mr. Chapman of Vauxhall, for grapes; to Mr. Barnes, gardener to P. Grillion, Esq., of East Acton, for peaches; to Mr. Paxton, gardener to His Grace the Duke of Devonshire, P.H.S., for pine-apples; to Mr. M'Culloch, gardener to J. Dupré, Esq., of Wilton Park, Bucks, for nectarines; to Mr. Falconer, gardener to Archdale Palmer, Esq., of Cheam, for apples; to Mr. Patrick Flannagan gardener to Sir Thomas Hare, Bart., for melons; to Messrs. Rollisson, for a collection of orchidaceous plants; to Mr. Glenny, F.H.S., for a collection of orchidaceous plants; to Mr. I. Bruce, gardener to B. Miller, Esq., for a small collection of stove and green-house plants; to Mr. F. Ferguson, gardener to Peter C. Labouchere, Esq., F.H.S., for alstrœmerias; to Mr. Mylam, gardener to S. Rucker, Esq., jun., F.H.S., for ferns; to Mr. Conway, gardener

to L. Sulivan, Esq., F.H.S., for coxcombs; to Mr. Lidgard, Webb's Lane, Hammersmith, for irises; to Mr. Ferguson, gardener to P. C. Labouchere, Esq., F.H.S., for cut flowers; to Mr. John Lee of Hammersmith, F.H.S., for Fúchs*ia* fúlgens; to Mr. G. Leslie, gardener to J. Fleming, Esq., F.H.S., M.P., for Lisiánthus Russell*iànus*; to Messrs. Rollisson, for Philibért*ia* grácilis; to Messrs. Rollisson, for Huntlèy*a* melèagris; to Mr. H. Pratt, gardener to William Harrison, Esq., F.H.S., for Gésner*a* spléndens; to Mr. Glenny, F.H.S., for Cymbídium *a*loïfòlium; to Mr. S. Hooker of Brenchley, F.H.S., for fifty varieties of garden roses; to Mr. H. Pratt, gardener to William Harrison, Esq., F.H.S., for fifty varieties of garden roses; to Mr. T. Rivers of Sawbridgeworth, for Chinese and Noisette roses; to Messrs. Wood of Woodlands, near Maresfield, for miscellaneous garden roses; to Mr. Green, gardener to Sir E. Antrobus, Bart., F.H.S., for herbaceous calceolarias; to Mr. Willmer of Sunbury, for pinks; to Mr. Solomon Hale of Uxbridge, for pinks; to Messrs. Lane of Great Berkhampstead, for heartsease; to Mr. Bridges of Hampton, for heartsease; to Messrs. Colley and Hill of Hammersmith, for pelargoniums; to Mr. Butcher, gardener to Mrs. Lawrence, F.H.S., for pelargoniums. — *Silver Banksian.* To Mr. M'Onach, gardener to Edward Foster, Esq., of Clewer, for pine-apples; to Mr. R. Errington, gardener to Sir Philip Egerton, Bart., M.P., F.H.S., for peaches; to Mr. G. Shields, gardener to Lord Blantire, Erskine House, Glasgow, for peaches; to Mr. Andrew Toward, gardener to Her Royal Highness the Duchess of Gloucester, for nectarines; to M. Nieman, gardener to Peter Cæsar Labouchere, Esq., F.H.S., for grapes; to M. Nieman, gardener to Peter Cæsar Labouchere, Esq., F.H.S., for melons; to Mr. Marshall, gardener to Mrs. Langley of Kingston, for Campánula frágilis; to Mr. Thomas Jackson of Kingston, for Campánula gargánica; to Mr. Upright, gardener to G. C. Ridge, Esq., of Morden Park, for Pelargònium trícolor; to Mr. Butcher, gardener to Mrs. Lawrence, F.H.S., for Manétti*a* cordifòlia; to Mr. Pratt, gardener to William Harrison, Esq., F.H.S., for Gardoquì*a* multiflòra; to Mr. Upright, gardener to G. C. Ridge, Esq., for *Loàsa* aurantìaca; to Mr. J. Maher, gardener to the Hon. Col. Westenra, at Fifield, for Lobèl*ia* heterophýlla; to Messrs Rollisson, for Stanhòpe*a* oculàta; to Mr. Redding, gardener to Mrs. Marryatt, F.H.S., for *A*nagállis tenélla; to Mr. F. J. Buck, of Chelsea, for Crássula coccínea; to Mr. Conway, gardener to Lawrence Sulivan, Esq., F.H.S., for a collection of Crássula versícolor; to Mr. Pratt, gardener to William Harrison, Esq. F.H.S., for a miscellaneous collection of green-house plants; to Messrs. Wood of Woodlands, near Maresfield, for fifty varieties of garden roses; to Messrs. Paul of Cheshunt, for fifty varieties of garden roses; to Mr. S. Hooker of Brenchley, F.H.S., for miscellaneous garden roses; to Mr. Cobbett of Horsell, near Woking, for miscellaneous garden roses; to Mr. John Green, for a single specimen of an herbaceous calceolaria; to Mr. H. Bridges of Carshalton, for pinks; to Mr. George King, gardener to Miss Fuller of Hillingdon, for pinks; to Mr. Attwell of Uxbridge, for pinks; to Mr. George King, gardener to Miss Fuller of Hillingdon, for heartsease; to Mr. Henbrey of Croydon, for heartsease; to Mr. Conway, gardener to L. Sulivan, Esq., F.H.S., for pelargoniums; to Mr. Catleugh of Hans Street, Sloane Street, for a large collection of pelargoniums.

Omitted in the last Award. — A gold Banksian medal, to Mr. Pratt, gardener to William Harrison, Esq., F.H.S., for a small collection of stove and green-house plants.

N.B. Exhibitors are requested to state whether their medals should be prepared for them at once, or whether they prefer receiving the value in money; or whether they propose to wait until, by joining together several smaller medals, they may be able to exchange them for others of higher value.

THE

GARDENER'S MAGAZINE,

SEPTEMBER, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *Descriptive Notice of Bedford Lodge, the Suburban Villa of His Grace the Duke of Bedford, at Camden Hill.* By JOHN CAIE, Gardener there.

[*BEDFORD Lodge* is a small place, delightfully situated on an eminence, commanding an extensive prospect, bounded by the Surrey hills; and, being on a dry gravelly soil, the situation is considered remarkably healthy. By the plan (*fig.* 75.), the

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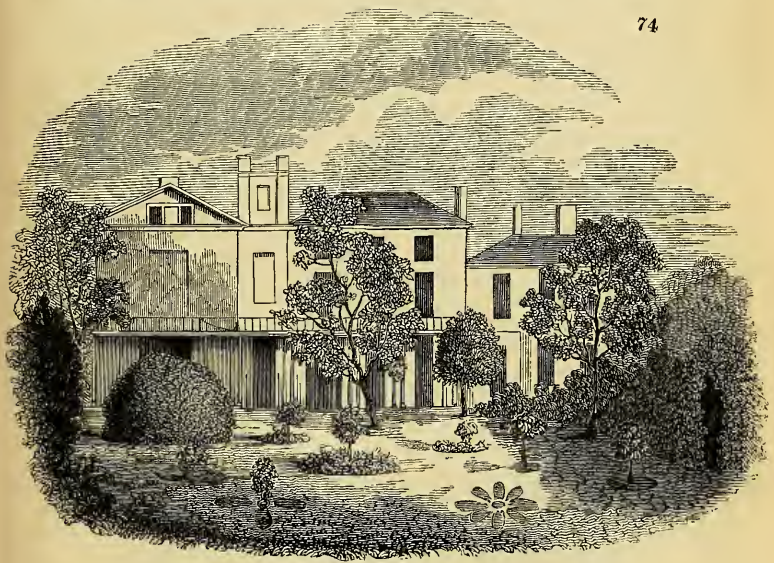

South Front of Bedford Lodge.

ground appears to be in the form of a narrow strip, the upper part of which is a piece of table-land, on a level with the ground at the entrance gate, and the remainder slopes considerably to the south. This residence is chiefly remarkable for the extent and beauty of its flower-garden, and the admirable manner in which it is cropped and managed, so as to produce a brilliant show of flowers in May, June, and July, by His Grace's gardener, Mr. Caie, whose name has already appeared in this Magazine. — *Cond.*]


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Fig. 74. is a view of the south front of the house, showing the verandas, the flower-beds, and scattered trees and shrubs on the lawn; with an ivied arbour on the right, and a large arbutus, clipped into a hemispherical form, on the left. This tree has since been cut down.

Fig. 75. shows the general plan of the entire place, and the following are references to it:—

a, Entrance gates. *b*, Entrance court. *c*, Mansion.
d, Lawn on the south front, which is entered from a veranda extending the whole length of that front. *e*, Flower-garden on the west front.
f, Orchard. *g*, Porter's lodge. *h*, Groom's room.
i, Cistern for supplying the offices. *k*, Coach-house. *l*, Stable.
m, Stable-yard. *n*, Wood and coal-shed. *o*, Servants' privy.
p, Larder. *q*, Dust-bin. *r*, Sunk area. *s*, Tool-house.

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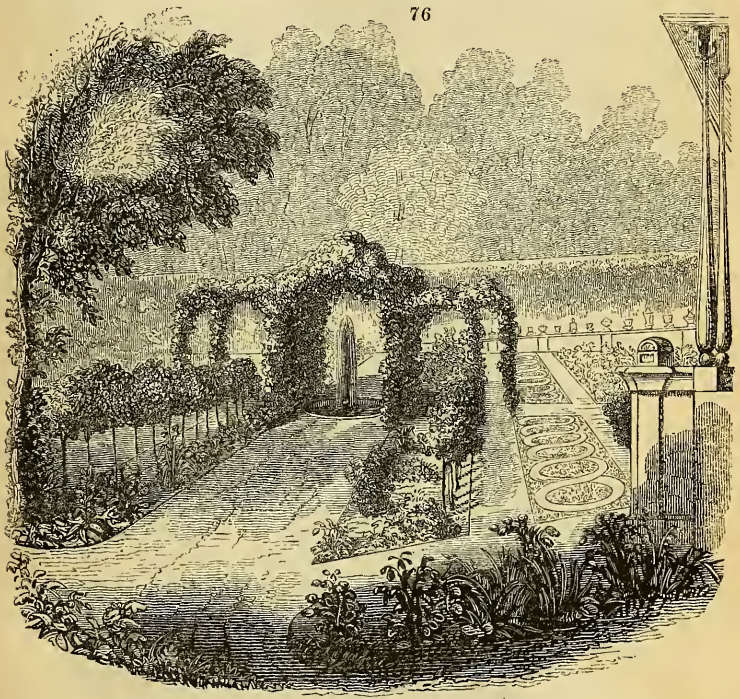

t, Gardener's working-sheds, &c. *u*, Green-house, in three divisions.
v, Rustic seat, at the back of which is a green-house, and beyond that a frame-ground, for bringing forward plants for the flower-garden.
w, Marble basin and fountain, in the centre of the flower-garden, covered with a bower of trellis-work and climbers, a view of which is shown in *fig.* 76.
x, Potting-shed and compost-ground.
y, Cistern for supplying the fountain at *w*. *z*, Rockwork.
&, Arcade of climbing roses, seen from the house.
a a, Public lane, which separates the grounds of Bedford Lodge from those of Holland House.

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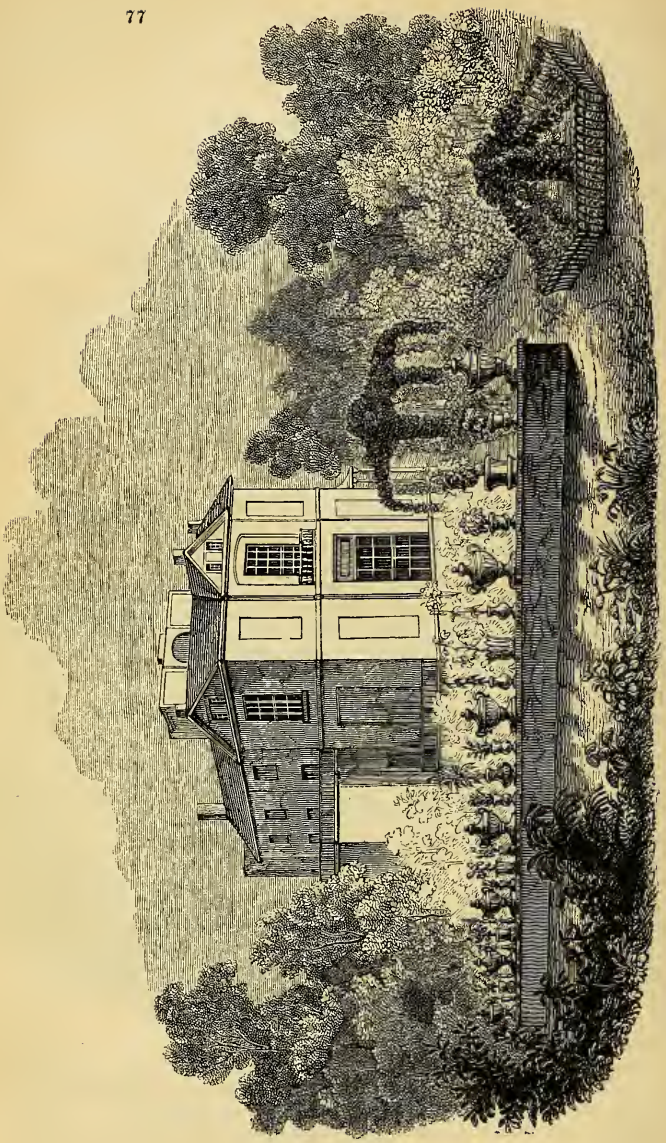

Fig. 77. shows the dwarf or terrace wall in the flower-garden; the west front, and part of the entrance front, of the house; the basket near *x* in *fig.* 75.; and the central arbour (*w*) in the same figure, and shown, also, in *fig.* 76.

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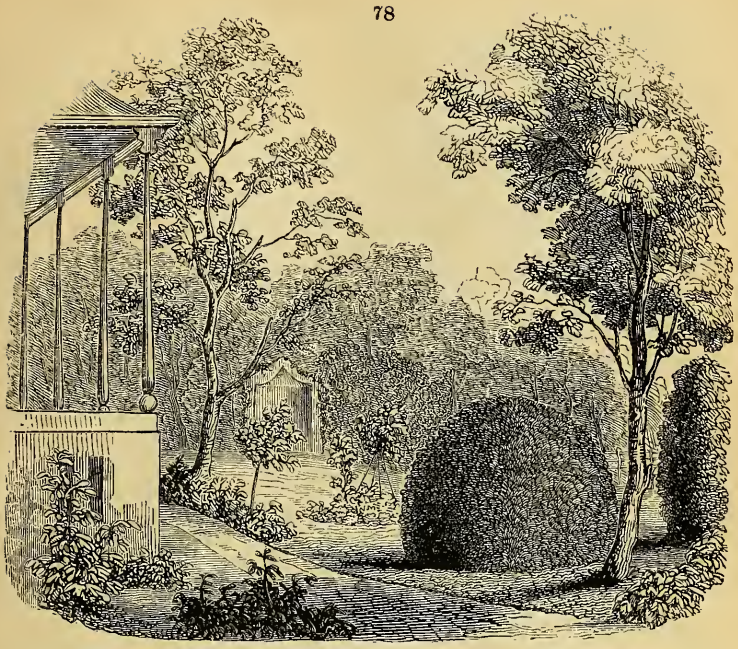


Fig. 78. is a view from the flower-garden, showing the arbutus, a front view of the ivied arbour, and part of the veranda.

Fig. 79. is a plan of the flower-garden on a larger scale, and the following are references to it: —

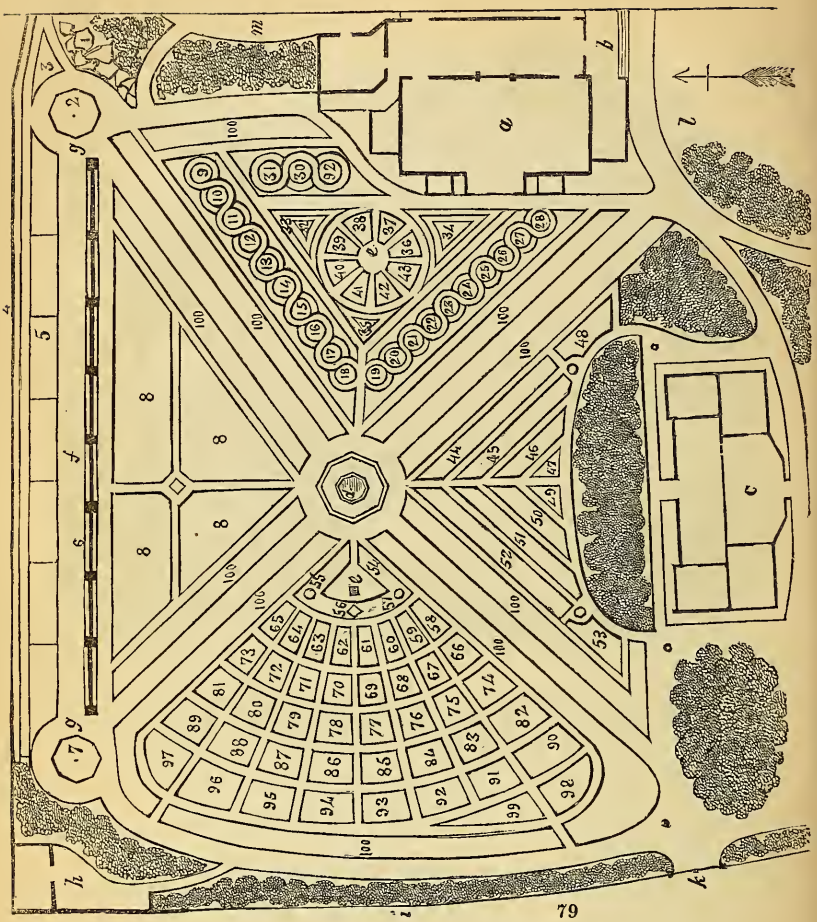
a, Grand drawingroom. *b*, Veranda. *c*, Green-house.
d, Fountain and arbour. *e e*, Pedestals and vases.
f, Dwarf or terrace wall, surmounted by vases, as shown in *fig.* 77.
g g, Flower baskets. *h*, Potting-shed and reserve ground.
i, Shrubbery. *k*, Entrance from the lane.
l, Lawn sloping from the veranda. *m*, Part of the entrance court.

1, Rockwork, on which are planted alyssums, arabises, iberises, cheiranthuses, aubrietias, campanulas, cardamines, achilleas, sedums, antirrhinums, gilias, nemophilas, lasthenias, violas, saxifrages, verbenas, nierembergias, geraniums, scillas, anagallises, helianthemums, cistuses, and pentstemons.

2, A basket filled with Provins roses, pegged on the ground, and China roses; and with iron rods from each of the angles to the centre, forming a crown, on which *C*onvólvulus màjor is trained.

3, *A*nemòne horténsis, purplish; Heliánthemum *r*òseum, pink; and Fúchs*ia* globòsa, scarlet.

4, Wall, in front of which are planted summer and autumn flowering roses, as well as green-house creepers, which are trained against it. Many of the autumn-flowering roses require to be protected from frost; but some of these were preserved throughout the severe winter of 1837–8, without protection, by having hardy roses budded on their extreme shoots; as, for example, the Brennus or Brutus rose, on the Lamarque rose. In this case, the Brennus rose (rich crimson) flowered first, luxuriantly; and was fol-



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lowed by the Lamarque (a pale yellow rose), which also flowered well; though the Lamarque rose, in all cases where the shoots were not budded, was killed back by the frost. It thus appears that the vigorous growth of the scion had thrown the Lamarque stock into a state of vigorous growth, at a time at which the Lamarque would otherwise have been quite dormant.

5, A border, formed into compartments, from the plants in it being arranged in masses, so that the flowers of the one may tend to show those of the others to the greatest advantage. The following list of plants will show more clearly the effect that is meant to be produced, by their being arranged in the list, in the same order as they were planted in the border. The first effect produced was from the following Californian annuals: — Nemóphila insígnis, blue; Platystèmon califórnicus, cream colour; Collínsia grandiflòra, purple; Collòmia coccínea, scarlet; Eschschóltzia cròcea, deep yellow; Gília tricolor, lilac, white, and black; and G. achilleæfòlia, purple. These are all annuals, and were sown about January in the compartments, where they come into flower about the beginning of May, and

continue flowering till the end of June or beginning of July, when the greater part of them should be cleared away, in order that they may not draw up, and weaken the plants which are to succeed them, and produce the second effect. The flowers for this second exhibition are all perennials, and consist of Œnothèra macrocárpa, yellow, for the first compartment, which remains there as a permanent plant, the seeds of the Nemóphila having been sown amongst it in January, as above. The next compartments contain *V*erbèna Tweedi*àna*, crimson; V. Lamberti*àna*, purple; Calceolària angustifòlia, yellow; *Petùnia* violàcea, purple; scarlet geraniums, and *V*erbèna Drummóndi. These are all half-hardy perennials, which are kept in pits during the winter, and planted out as soon as there is no danger to be apprehended from frost.

6, The dwarf or terrace wall, before mentioned, on which vases of different shapes and colours are arranged and filled with plants; those plants being chosen, the colours of the flowers of which will produce the greatest contrast with the colour of the vases in which they are planted. Different kinds of nasturtiums have been planted at the foot of this wall, on which they climb and hang over. On the south side of this wall are Scotch roses, and on the north crimson perpetual roses; the former having a border in front of it filled with the Campánula spéculum (Venus's looking-glass), and the latter with Convallària majàlis (the lily of the valley.) These borders relieve the eye, when contrasted with the green of the roses which they are in immediate connexion with.

7, A basket corresponding with that at 2, in which Calceolària angustifòlia, yellow, occupies the whole space, with the exception of a plant of Maurándy*a* Barclay*àna*, blue, which is planted in the centre of the group of calceolarias, and trained over a rod and wires in the centre, as shown in *fig.* 77. This basket is shown in the right-hand corner of *fig.* 77.

8, Rosarium, which is planted with summer and autumn flowering roses. Those the flowering of which is of short duration may, in some cases, have it prolonged, by leaving several of the shoots their whole length, and pegging them down. When thus treated, the part next the root will grow luxuriantly, and consequently be late before it comes into flower; while the extreme end, becoming comparatively stunted, will come sooner into blossom. In the following list, the first-named plant in each bed comes into flower in May and June, and the other plant or plants, in succession, in June, July, and August. There is an equal number of plants of both the early and late flowering kinds in each bed; and, as the latter come into flower before the former have done flowering, there is a constant display from May to September, which is the whole period that the family reside at, or visit, the residence. When the first set of plants begin to go out of flower, they are cleared away to make room for the second set, which are encouraged by stirring the soil and watering; and any blanks that may occur are filled up from the reserve garden. Most of the plants which come first into flower are annuals or bulbs, sown or planted in the autumn: the others are mostly half-hardy species, such as verbenas, petunias, lobelias, &c.; and they are preserved through the winter in pits.

9, Nemóphila insígnis, blue; and *V*erbèna Arran*iàna*, purplish crimson.

10, Lasthènia califórnica, bright yellow; and *V*erbèna chamædrifòlia latifòlia, brilliant scarlet.

11, Erythrònium Déns cànis (dog's tooth violet), Gíli*a* trícolor, and *V*erbèna pulchélla, pink.

12, Collòmia coccínea, and *L*òtus microphýlla, dark yellow.

13, *S*cílla amœ'na, blue; Platystèmon califòrnicus, cream-coloured; and Lantàna Sellòw*ii*, pink.

14, *S*cílla præ'cox, rich dark blue; Gíli*a achilleæfòlia*, and *S*álvia chamædryöïdes, blue.

15, *S*cílla *h*yacinth*öïdes*, blue; Cheiránthus alpìnus, pale yellow; and *V*erbèna Tweedi*àna*.

16, *N*arcíssus mìnor, yellow; and Nemóphila atomària, and Nierembérg*ia* grácilis, both white.
17, *A*nemòne apennìna, blue; Collíns*ia* grandiflòra, purple; and *V*erbèna Sabín*ii*, purple.
18, *A*nemòne nemoròsa, white; Limnánthes Douglàs*ii*, white and yellow; and *V*erbèna *c*hamædrifòlia, scarlet.
19, Erythrònium lanceolàtum, Leptosìphon *a*drosàcea, pinkish; and *V*erbèna pulchélla álba.
20, Muscàri botryoïdes, grape hyacinth, purple; Eùtoca Menziès*ii*, lilac; and *V*erbèna *c*hamædrifòlia.
21, Fritillària lùtea, yellow; Collòmia laterítia, pinkish; and Nierembérg*ia* intermèdia, purple.
22, Galánthus plicàtus, plaited snowdrop; Saponària *o*cymöides, pale pink; and *V*erbèna radìcans, pinkish.
23, *H*yacínthus amethýstinus, Lasthènia glabràta, yellow; and Lobèl*ia* lùtea.
24, Bulbocòdium vérnum, whitish; Gíl*ia* trícolor álba, and Nierembérg*ia* calycìna.
25, *A*nemòne pavònia, scarlet; *V*erbèna incìsa, pinkish; and Eùtoca Menziès*ii*, lilac.
26, *A*nemòne *Pulsatílla* and Campánula carpática, blue.
27, Prímula vulgàris plèna atropurpùrea, and *A*nagállis grandiflòra, scarlet.
28, Prímula vulgàris plèna *v*iolàcea, and *A*nagállis Phillíps*ii*, blue.
29, Collíns*ia* bícolor, pinkish lilac and white; and Alonsò*a* lineàris, scarlet.
30, *A*chillè*a* moschàta, and *V*erbèna pulchélla álba, white.
31, *I*bèris carnòsa, and *V*erbèna sulphùrea.
32, *L*upìnus nànus, blue; Fúchs*ia* globòsa and cónica.
33, Gíl*ia* trícolor, and *Œ*nothèra macrocárpa.
34, Nemóphila atomària, *Petùnia* phœnícea, and *V*erbèna Tweedi*àna*.
35, Nemóphila insígnis, and *V*erbèna pulchélla álba.
36, Nierembérg*ia* grácilis.
37, Lobèl*ia* lùtea.
38, *V*erbèna Sabìn*i*.
39, *V*erbèna *c*hamædrifòlia.
40, *V*erbèna pulchélla álba.
41, Lobèl*ia* lùtea, yellow.
42, Lobèl*ia* grácilis, blue.
43, *V*erbèna *c*hamædrifòlia latifòlia.
44 Is in two compartments; one of which is planted with Gíl*ia achilleæfòlia* and *V*erbèna Tweedi*àna*, and the other with hyacinths, Nemóphila insígnis, and *Œ*nothèra macrocárpa.
45, Collíns*ia* bícolor, and carnations.
46, Calceolària pícta, lightish.
47, *A*nemòne nemoròsa plena, and *L*ysimàchia Nummulària (moneywort), yellow.
48, Heartsease.
49, *A*nemòne apennìna, blue; and *V*ínca herbàcea (periwinkle), lilac.
50, Calceolària integrifòlia, yellow.
51, *V*erbèna pulchélla.
52 Is in compartments; one of which is planted with Calceolària rugòsa, yellow; and the other with a variety of that species, both pegged down on the ground, in order to make the plants cover the whole space of the bed.
53, *Œ*nothèra macrocárpa.
54, Nemóphila insígnis, and *V*erbèna Tweedi*àna*.
55, Isótoma axillàris.
56, *S*enècio élegans, purple.
57, Nierembérg*ia* grácilis.
58, Gíl*ia* trícolor, and Nierembérg*ia* calycìna.
59, Lasthènia glabràta, and *V*erbèna *c*hamædrifòlia.
60, Gíl*ia achilleæfòlia*, and *L*òtus microphýlla.
61, Crucianélla stylòsa, pinkish.
62, Nemóphila insígnis, and *V*erbèna *c*hamædrifòlia latifòlia.
63, Nemóphila atomària, and *V*erbèna pulchélla álba.
64, Eùtoca Menziès*ii*, and *V*erbèna radìcans.
65, Collòmia coccínea, and Nierembérg*ia* filicaúlis, whitish.
66, White ten-week stocks, and *V*erbèna Tweedi*àna*.
67, Cheiránthus alpìnus, and Eschschóltz*ia* cròcea, orange.
68, Purple ten-week stocks, and Eùtoca víscida, bright dark blue.

69, *A*lýssum saxátile, yellow ; and *Œ*nothèra macrocárpa.
70, *P*olemònium sibíricum, yellow; and Agathæ'a cœléstis, blue.
71, *I*bèris saxátilis, white; and the Frogmore scarlet geraniums.
72, Cheiránthus ochroleùcus, and *Œ*nothèra missouriénsis.
73, Scarlet ten-week stocks, and *P*hlóx Drummóndii.
74, *V*erbèna Drummóndii, light lilac.
75, Scarlet geraniums.
76, Indian chief calceolaria.
77, *Petùnia* erubéscens, whitish.
78, Scarlet geraniums.
79, *V*erbèna venòsa, purple.
80, Clárk*ia* pulchélla, purple; and Melíttis grandiflòra, whitish.
81, *L*upìnus nootkaténsis, blue; and *V*erbèna sulphùrea, yellow.
82, *L*ysimàchia verticillàta, yellow.
83, *D*elphínium grandiflòrum, and carnations.
84, *Petùnia* supérba, brilliant dark reddish purple.
85, Purple calceolarias.
86, Calceolària integrifòlia.
87, *Petùnia n*yctaginiflòra, white.
88, Calceolarias of sorts.
89, *L*upìnus polyphýllus, and Stenáctis speciòsa, bluish.
90, *L*upìnus polyphýllus, blue ; and *M*álope grandiflòra, dark crimson.
91, *Œ*nothèra speciòsa, white.
92, *G*èum coccíneum, and Linària dalmática, yellow.
93, *A*ntirrhìnum píctum, crimson and white.
94, *M*ímulus cardinàlis, and Coreópsis tinctòria.
95, Gíli*a* capitàta álba.
96, *L*ysimàchia quadriflòra, yellow.
97, *L*upìnus polyphýllus álbus, and *Œ*nothèra speciòsa.
98, Chelòne barbàta, and *S*álvia fúlgens, scarlet.
99, *A*sclèpia*s* tuberòsa, orange.
100, Borders for plants of sorts.

In the compartments next the beds are sweet peas, larkspurs, candytuft, dahlias, China pink, stocks, &c.

The following references are to the general plan (*fig.* 75.) : —

101, Hearteases of different colours, and Maurándy*a* Barclay*àna*, blue and white; Tropæ'olum peregrìnum, yellow; Sólly*a* heterophýlla, bright blue; Tropæ'olum pentaphýllum, red and yellow; Calámpelis scàber, red; Lophospérmum scándens and erubéscens, red, trained on wirework.
102, *A*lýssum saxátile, and Indian chief calceolaria, yellow ochre.
102 *bis*, *I*bèris sempervìrens, and Frogmore scarlet geraniums.
103, Stocks of sorts.
104, *P*hlóx Drummóndii.
105, *L*upìnus polyphýllus, blue ; and *L*ysimàchia verticillàta, yellow.
106, *L*upìnus nootkaténsis and nànus, with a border enclosing it of *A*chillè*a* tomentòsa, yellow.
107, Calceolarias of sorts.
108, Wallflowers, iberises, and alyssums ; clarkias, collinsias, and *A*ntirrhìnum caryophyllöìdes.
109, Wallflowers and scarlet geraniums.
110, Cheiránthus alpìnus, and clarkias, eutocas, gilias, nemophilas, and petunias.
111, Geraniums of sorts.
112, *I*bèris saxátilis, and scarlet geraniums.
113, Nemóphila insígnis, and *V*erbèna Tweedi*àna*
114, *A*lýssum saxátilis, and Calceolària angustifòlia.
115, Noisette roses.
116, Groups round trees, consisting of alyssum, aubrietia, cheiranthus, and heartsease of sorts.
117, *I*bèris saxátilis, and Gíli*a* trícolor.
118, *A*lýssum saxátile, and dwarf nasturtium.
119, Aubrièt*ia* purpùrea, and Nemóphila insígnis.
120, Collòmia coccínea, and Fúchs*ia* globòsa.

The basket in the centre of the compartment is planted with Lobèl*ia* grácilis, in the middle of which is a plant of Fúchs*ia* globòsa.

121, Small garden, with rockwork, planted with alpine plants, similar to those enumerated for the rockwork 1, in *fig.* 79.

Little difficulty will arise in procuring and preserving the plants enumerated in the foregoing list. Many of them are hardy perennial herbaceous plants; and most of the others, which are annual, will, if allowed to stand to ripen their seeds, sow themselves. The kinds which will require most practical knowledge are those which are generally termed green-house plants; but which are so hardy as to produce as splendid a show in our flower-gardens during the summer months, as they would do if they were in their native countries. As it is with this latter class of plants that we have most to do in filling flower-gardens during summer, it will here be my object to show how they may be preserved during winter, without the aid of green-houses. The pits in which such plants should be kept, will require to have their walls of 14-inch brickwork, and pigeon-holed; with tiles half-inch thick, set on edge, 2 in. from the wall inside, to be carried as high as the pigeon-holes; in which small apertures may be left, in order that a little steam may be admitted into the pit, from dung linings or dead leaves, if necessary: but no heat from dung linings will be required, except in the most severe weather, and then only just sufficient to keep out the frost. The heat of the dung or leaves, applied to the outside of the walls, will readily penetrate into the pit, having nothing to oppose it but the thin tiles set on edge. September will be quite soon enough to begin putting in cuttings. The soil in which they are to be inserted should consist of equal portions of peat earth and silver sand; and those of them that are subject to damp off may have a greater proportion of the sand. The pots or pans in which the cuttings are put should be well drained; because it was only by having the wood of the cuttings thoroughly matured, that I was enabled to preserve such plants in pits during the intense frost that we had in the winter just past (1837–8); and, for the same reason, I would recommend that no shading should be used while the cuttings are rooting, but that they should be kept sufficiently near the glass to accelerate their rooting, and yet not so close as to occasion their flagging; which distance must, of course, be regulated by the degree of obliquity at which the sun's rays strike the glass. If the lights, as well as the frames, were placed more vertically than usual, in the spring of the year, when the sun's rays are oblique, the cuttings might be potted off as soon as the very intense frost was past; which would prevent their damping off, and at the same time forward them for planting out in the flower-garden.

Bedford Lodge, June, 1838.

[We have visited this garden several times during the past year, and can bear testimony to the very excellent manner in which it is managed by Mr. Caie; and, as a result, to the bril-

liant display of flowers which it produces at the desired season. The last time we saw it, previously to writing this paragraph, was on July 28., when it was in great splendour. On entering, the parapet wall, with its numerous vases filled with choice specimens, and the wall itself varied by the masses of nasturtium, had a striking appearance; beyond which, the conservative wall, with its roses, fine specimens of Lonícer*a* impléxa, *C*lématis flórida and Siebóldt*ii*, Sólly*a*, Maurándy*a*, &c., had a fine effect. The large compartment to the right, in front of the drawing-room window (*e* in *fig.* 79.), was surrounded by a hedge of sweet peas, and immediately within that a row of Eschschóltz*ia* cròcea. All the beds in this garden were covered with species which do not rise above 3 or 4 inches from the ground, or are pegged down, so as never to exceed that height; chiefly verbenas, lobelias, and the dwarf phloxes. The drawingroom floor being 3 or 4 feet above the level of this garden, the symmetrical figure formed by the beds is distinctly recognised from it. In the borders which are on each side of the four cross walks, dahlias were already finely in flower, having been brought forward in pits; and many of the standard roses were still in bloom, and in very great beauty. *C*onvólvulus americànus, which resembles *C.* sèpium, but with a darker flower, made a fine display on the central arbour. Among plants which grow in the shade, we could not help being struck with the great beauty of Œnothèra speciòsa, white; and *L*ysimàchia verticillàta, yellow. We were not aware that the œnothera would grow so vigorously, and flower so beautifully, in the dense shade of trees; but such appears to be the case. Crucianélla corymbòsa, pale pink, is a new and very desirable plant for small beds, as are Æthionèma and Campánula gargánica; for which last species the country is indebted to Mrs. Palliser. The beds on the lawn in the front of the house struck us as having a particularly good effect; which, on reflection, we think must have been owing, not solely to their being filled with the finest flowers, all in bloom, but to their being contrasted with the naked spaces of the lawn. If the circumferential and other main walks in the large flower-garden were as broad again as they are at present, we think that, on the same principle, the effect of the rest of the garden would be improved; for all effect, whether in a picture or a garden, depends on contrast. — *Cond.*]

ART. II. *Of the Analogy between Plants and Animals.* By J. A. W.

MANY persons buy a plant and plant it in their garden, as they would purchase a piece of furniture and place it in a room, and fancy that the one requires no more after-care than the other: but,

when they understand something of the nature of a plant, and of the manner in which it obtains nourishment; and when they perceive how cultivation operates on it; they will take a degree of interest in its growth and developement, that a person totally ignorant of these subjects can scarcely form an idea of.

Plants are organised beings, that, like animals, depend for their existence on nourishment, warmth, air, and light. Their nourishment they derive from the soil, their warmth and air jointly from the soil and the atmosphere, and their light from the sun. As all men may be presumed to know something of the nature of animals, perhaps the easiest way of giving some knowledge of plants to those who have hitherto paid little attention to the vegetable kingdom will be, by first pointing out the principal points of analogy between plants and animals, and next noticing the structure and functions peculiar to plants.

Plants resemble animals in having an organic structure endowed with life, and in requiring nourishment to enable them to continue to exist. They absorb this nourishment through the small tubular fibres of their roots, in the same way as animals do theirs through the small tubes called lacteals, which convey it from their stomachs. Plants differ from animals in being fixed to one spot; in having the principles of vitality and reproduction diffused over every part, and in thus being propagated by division, as well as by ova, or seeds; in being without a brain or nervous system, and, consequently, incapable of feeling; and in light being as necessary to their existence as air is to that of animals.

The soil in which a plant grows is as essential to it as the stomach is to an animal. Food, before it can be absorbed into the system, must be reduced into a pulpy mass, consisting partly of chyle, or nutritious matter, and partly of refuse. This process, in regard to animals, is performed in the stomach, and is called digestion; and, when it is finished, the lacteals suck the chyle from the mass, and convey it to the lungs, where it is assimilated to the blood, and thence is distributed through the frame.

The food of plants is rotted (a process similar to digestion) in the soil; and is there brought, by the addition of water and gases, to a sufficient state of fluidity to enable the spongioles of the roots to absorb from it the part necessary for the nourishment of the plant. It is then carried up to the leaves, where it undergoes a process similar to that to which the chyle was subjected in the lungs, and becomes true sap, which contributes to the growth of plants, as blood does to that of animals.

When a plant or an animal is in a state of disease, no application to the leaves and branches of the one, or to the external members of the other, will be of much use, if the soil or the stomach be neglected. The stem and branches of a plant, and

the external members of an animal, may be injured, mutilated, and even diseased; but, if the soil and the stomach be invigorated, and placed in a healthy state, the whole plant or animal will soon recover from the injuries it has received, so as to perform all the functions necessary to its existence. The first step, therefore, in cultivating or in improving plants, is, to improve the soil in which they grow.

In all vertebrate animals, there is a part at the back of the neck, between the spinal marrow and the brain, where a serious injury will occasion immediate death. There is a corresponding point in plants, between the root and the stem, which is called the neck, or collar; and at this point plants may be more readily injured than any where else. Most plants, also, may be killed, by covering this point too deeply with soil. In all seedling plants, this neck, or vital point, is immediately beneath the seed leaves; and, if the plant be cut over there when in a young state, the part which is left in the ground will infallibly die. In old plants, however, and particularly in herbaceous plants which have creeping stems, and in various kinds of trees and shrubs, the roots, after a plant has attained a certain age, become furnished with buds; and, when the plant or tree is cut over by the collar, these dormant buds are called into action, and throw up shoots, which are called suckers. No sucker, however, is ever thrown up by the roots of a plant cut through at the collar while in its seed leaves. The branches of a tree may be all cut off close to the trunk, and the roots also partially removed; but, if the collar remain uninjured, the plant, in suitable soil, and under favourable circumstances, will throw out new roots and shoots, and, in time, will completely recover itself.

There are some plants of the herbaceous kind (such as the horseradish, for example) that do not suffer, even if their collar should be buried 2 ft. or even 3 ft.; but by far the greater number of plants (such as the hepatica, the common daisy, the common grasses, &c.) are killed by having the collar covered 2 or 3 inches; and nothing is more injurious to woody plants, whether large or small. It is easy to destroy a large tree by heaping up earth round the base of its trunk; and easy to prevent a small one from growing, by lifting it, and planting it 6 in. or 1ft. deeper than it was before. Hence the great importance of not planting any plant deeper in the soil than it was before taking it up. The cause why plants are so much injured by burying the collar has not, as far as we know, been physiologically explained; but it probably proceeds from the want of the action of air on the collar, or on that part of the stem which is immediately above it; or from the pressure of the soil upon that vital point.

The next point of analogy between plants and animals, which it may be useful to notice, is that between the lungs and the

leaves. An animal can no more live without its lungs than without its stomach. The stomach, as we have seen, is necessary for the turning of food into chyle, and the lungs for turning that chyle into blood. Now, a plant can no more live and grow without leaves, than an animal can without lungs. The use of the lungs is to expose the chyle to the action of the air, which they decompose, so that its oxygen may unite with the chyle, and thus change it into blood. The leaves of plants, which act to them as lungs, not only decompose air, but light, in the process of elaborating the sap; and, hence, plants can no more live without light, than without air or food, as light is necessary to turn their food into sap, or, in other words, to bring it into the proper state for affording them nourishment. Hence, in the culture of plants, the great importance of light. An important difference, however, between the circulation of the sap in vegetables and the blood in animals is, that the former have no heart.

Plants and animals agree in requiring a certain degree of temperature to keep them alive; and the warmth of this temperature differs greatly in the different kinds both of plants and animals. Hence, the constitutional temperature of any plant to be cultivated being known, that temperature must be maintained by art; either by a suitable situation in the open air, or by its culture under a structure which admits the light, and is capable of having its atmosphere heated to any required degree. The temperature which any plant requires is ascertained by its geographical position in a wild state; making allowance for the difference produced in the habits of the plant by cultivation.

Plants agree with animals in requiring periodical times of rest. In animals, these periods are, for the most part, at short intervals of not more than a day; but, in plants, they are commonly at long intervals, probably of a year. In warm climates, the dormant period of plants commences with the dry season, and continues till the recurrence of the periodical rains which are peculiar to the tropical regions. In temperate countries, the dormant season in plants commences with the cold of winter, and continues till the recurrence of spring. When plants are in a dormant state, they commonly lose their leaves, and, consequently, at that season, they are unable to make use of the nourishment applied to their roots; and hence the injury done to them when they are stimulated with nourishment and warmth, so as to occasion their growth during the period at which they ought to be at rest. Hence, also, arises the injury which plants receive, and especially bulbs, if the soil about them be kept moist by water when they are in a dormant state. Plants having no feeling, in the common sense in which the word is used, can neither experience pleasure nor pain; but they

resent injuries, either negative or positive, by slow growth, or by becoming diseased. By their being fixed to the spot where they grow, they necessarily depend for their food, heat, air, and light, on the circumstances peculiar to that spot; and, hence, to increase their growth beyond what it would be if left to nature, additional food must be brought to them, and the warmth, airiness, and lightness of the situation increased. Hence, what is called vegetable culture; which consists in stirring the soil, adding manure to it, regulating the supply of water by draining or irrigation, sheltering from the colder winds, and exposing to the direct influence of the sun's rays. If we imagine any one of these points attended to, and not the others, the plant will not thrive. Stirring the soil, and mixing it with manure, will be of little use if that soil be liable to be continually saturated with moisture, either from its retentive nature, from springs from below, or from continued rains from above; or if it be continually without, or with very little, moisture, from its porous nature, the want of moisture in the subsoil, and the want of rain and dews from the atmosphere. Improving the soil without improving the climate (that is, without communicating a proportionate degree of warmth and light) will increase the bulk of the plant, but without proportionately bringing its different parts to maturity. For example, we will suppose two plantations of trees planted at the same time, on similar soil, and in the same climate; that in the case of the one plantation the soil was trenched and manured, and in the other not; and that the trees were planted in equal numbers in both plantations, and at the same distances. The trees in the prepared soil would grow rapidly, and in the unprepared soil slowly. After a certain number of years (say twenty), we shall suppose both plantations cut down; when the timber produced by that which had grown slowly would be found hard, and of good quality; while that produced by the plantation which had grown rapidly would be found soft, spongy, and, when employed in construction, comparatively of short duration. The reason is, that in this last case the rate of nourishment to the roots exceeded the natural proportion which nature requires in plants, between the supply of food to the roots, and of light and air to the leaves. Had the trees in the prepared soil been thinned out as they advanced, so as never to allow their branches to do more than barely touch each other, they would have produced a great deal more timber than the trees on the unprepared soil, and that timber would have been of equal firmness and duration with timber of slower growth. It ought, therefore, to be strongly impressed on the minds of amateur cultivators, that though nourishment of the root will produce bulk of the top, or, at least, length of top, yet that it is only by abundance of light and air that quality can be secured.

One very remarkable point of difference between animals and plants is that which has been before alluded to, the much greater provision which nature has made for the propagation of the latter than of the former. Plants not only produce immense quantities of seeds, which are distributed by the winds and waters, by animals, and by various causes; but they extend themselves by shoots, which run on or under the surface of the ground, as in the case of the strawberry, the raspberry, &c.; and they produce buds, each of which, by human art, can be rendered equivalent to a seed, either by planting it (with a small portion of the plant from which it is taken) at once in the ground, or by inserting it in another plant of the same family. Hence, the great facility with which plants are multiplied both by nature and art; with the exception of a few, in which the process of propagation by artificial means is comparatively difficult.

Another remarkable difference, also before alluded to, between plants and animals is, the absolute necessity of light to plants during the whole period of their existence. There are many animals of the lower description, such as worms, to which light, so far from being necessary, is injurious; and there are instances of even the more perfect animals having lived for several years without the presence of light, either natural or artificial. Light is not necessary for either the functions of the stomach, brain, or lungs, in animals: but in plants, though it is equally unnecessary for the functions of the root and the collar, it is essentially so for those of the leaves; and the leaves are necessary to the elaboration of the sap, and, consequently, to the nourishment of the plant. A plant, therefore, from which the leaves are continually stripped as soon as they are produced, soon ceases to live. Small and weak plants, from which the leaves are taken off as they are produced, will die in a single season; and this practice, continued for two seasons, will kill, or nearly so, the largest tree. If, instead of stripping a plant of its leaves, the leaves are produced in the absence of light, and light never admitted to them, the effect will be precisely the same. Seeds germinated, or plants struck from cuttings, in the dark, will not exist a single season; nor will trees, or tubers, such as the potato, placed in an apartment from which all light is excluded, live more than two seasons. Hence, the importance of light to plants can scarcely be overrated; for, while it has been proved that plants, even of the most perfect kind, will live for many months, or even years, in glass cases in which very little change of air has taken place, there is no instance of plants, even of the lowest kind, such as ferns and mosses, living for any length of time without light. Without light, there can be no green in leaves, no colour in flowers, and neither colour nor flavour in fruits.

Plants agree with animals in having a sexual system; but they differ from animals in having for the most part both sexes in the same individual. In the improvement of plants, as in the improvement of animals, the sexual system is a powerful agent; and what is called cross-breeding is employed with as great advantage in the vegetable as in the animal kingdom. It is remarkable, that the general laws and results by which the process of cross-breeding in both kingdoms is regulated are the same: the two parents must be two varieties of the same species, and their qualities may be different, but must not be opposite: the preponderating influence, in point of character, is also with the male, and in point of bulk and hardiness with the female, as it is in animals. Many of the finest varieties of fruits, culinary vegetables, cereal grains, and grasses, have been produced by cross-breeding. When cross-breeding is effected between what are considered different species, the offspring is a mule, or hybrid; is incapable of maturing seeds; and generally, in the course of a few years, degenerates, or reverts to its original parentage. The purple laburnum, which was raised from a seed of the common laburnum, fertilised by *Cýtisus purpùreus*, is an example of a true hybrid. The flowers partake of the colour of that of both parents; and the plant, for two or three years, produced only flowers of this kind, which were never succeeded by seeds: but in the sixth year, in some plants, and seventh and eighth in others, branches of *Cýtisus purpùreus* were produced on some parts of the tree, and branches of the common yellow laburnum on others, the latter bearing seed. (See *Gard. Mag.*, vol. xii. p. 225.; and *Arb. Brit.*, p. 590.) It thus appears that a true mule, or hybrid, can with difficulty be propagated, even by portions of the plant, or by what is called extension; since it never can be certain whether the portion taken off for propagation will produce the mule or one of the parents. As it is uncertain what are, and what are not, very distinct species, many of the plants originated by cross-breeding, and considered mules, may not be so; and may, consequently, prove permanent and improved varieties. Some mules, also, such as that between the sweetwilliam and the common pink, are much less liable to degenerate than others. As some of the most beautiful and useful plants in cultivation are cross-bred varieties, or mules, the subject well deserves the attention of the amateur, who will find it a source of useful amusement and recreation.

Plants agree with animals in the offspring, when it is raised from seed, bearing a general resemblance to the parent; but as, in every family, the children of the same parent differ individually in features, temper, disposition, &c., so, among seedling plants from the same seed-pod, no two plants will be found

exactly alike; and some will occasionally differ considerably from all the rest. Nevertheless, it is an undoubted fact, that all seedling plants not only possess the character of the species from which they have sprung, but even, in by far the greater number of cases, some of the peculiarities of the individual. The seeds of any kind of cultivated apple, for example, will produce plants, the fruit of all of which will more or less resemble that of the parent; though perhaps some one or two among a hundred may be considerably different. Hence, by selecting from beds of seedling plants those which are in any way remarkably different from the rest, new varieties are procured; and, till within the last half century (when artificial cross-breeding began to be practised by gardeners), this was the only way in which an improved variety of any species of plant was procured.

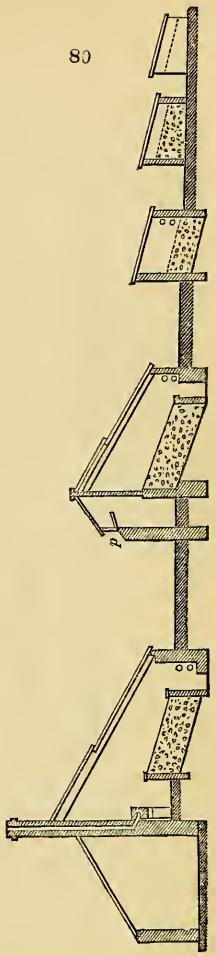
Plants, like animals, are subject to various diseases, as well as to be preyed on by insects, most of which live on plants till they have completed their larva state. Plants are also injured by being crowded by other plants, either of the same or of different species. When these spring up naturally around the cultivated plants, they are called weeds, and the cultivated plant is cleaned from them by weeding; as it is in the case of being crowded by its own species, or by other cultivated plants, by thinning. Plants are also injured by epiphytes, which grow on their outer bark, such as mosses and lichens; and by parasites, which root into their living stems and branches, such as the dodder, mistletoe, &c.

The life of plants, like that of animals, is limited, but varies in regard to duration. Some plants vegetate, flower, ripen seed, and die, in the course of a few months, and these are called annuals; while others, such as the oak and some other trees, are known to live upwards of a thousand years. In both plants and animals, decay commences the moment the life is extinct; and in both they are ultimately resolved, first, into a pulpy or other homogeneous mass, for manures, and ultimately into certain gases, salts, and earths. After death, the decay both of animals and plants may be retarded by the same means; viz. drying, exclusion from the air, or saturating with saline or antiseptic substances.

Hampstead, July, 1838.

ART. III. *Notice of some new Forcing-houses and Pits, lately erected at Pendarves, in Cornwall; with a Plan and Section.* By J. MITCHINSON.

I SEND herewith plans and sections of some new forcing-houses and pits lately built here, which, I think, may be useful to some of the readers of the *Gardener's Magazine.*



In erecting these houses, particular attention has been paid to lightness, utility, and economy. Two houses and one pit are heated by hot water from one fireplace and boiler, the pipes of which are of zinc. The details of the plan and sections (*figs.* 80. to 83.) contain some improvements by Mr. David Mac Clelland, clerk of the works, who was sent here by Henry Harrison, Esq., architect of London, the principle of which may be easily understood, by inspecting the section of the rafter in *figs.* 82. and 83.

The bars of the lights are beveled in the same way as the rafters, which adds considerably to the lightness and neatness of the whole.

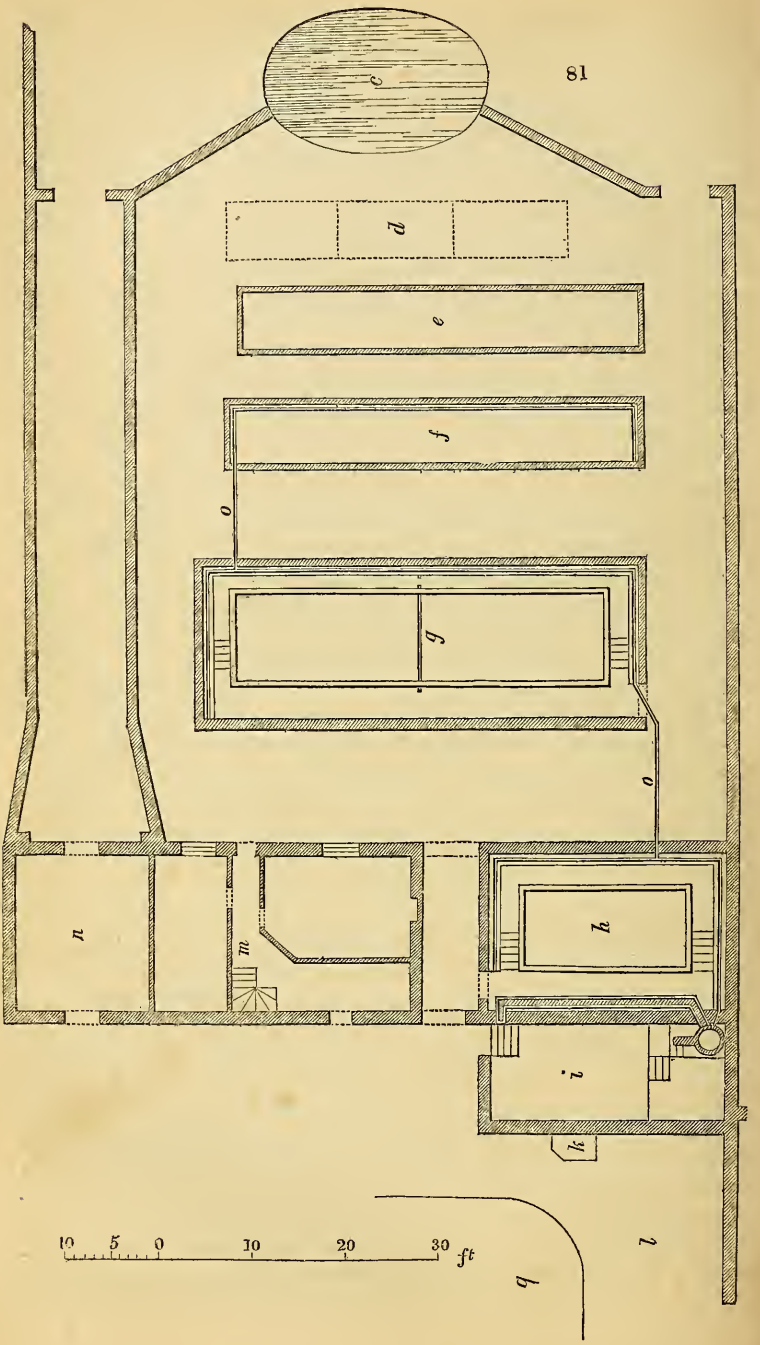
The lights are fixed, with the exception of the lower ones, which are made to move, for the purpose of taking out the vines.

The ventilation is effected in the back wall of the first two houses; and the apertures through which the air is admitted are secured from the ingress of flies and wasps by perforated zinc, which also breaks the coldness of the current of air.

In preparing the vine borders, I have put in a large quantity of uncrushed bones, old lime rubbish, and decayed weeds, with a little dung from old hot-beds, well mixed with the earth; and in this compost I find the vines grow remarkably strong. The borders are from 20 in. to 2 ft. deep, on a dry bottom.

The first house (*fig.* 81. *h.*) is intended principally for grapes forced early in pots, to be succeeded by those on the rafters; and, by planting two vines to each rafter, one on each side, and taking them in successively one after the other, a regular succession of fruit may be obtained. The second house (*fig.* 81. *g.*) is for the growth of pines and grapes; and in this house the vines trained to the rafters will be kept close, so as not to shade the pines too much. The back wall, and over the path, will be entirely covered with vines, principally of the muscat varieties, and trained as recommended by Mr. Hoare in his *Treatise on the Vine.*

Several gentlemen, who have seen our houses, have recommended me to send you a plan of them for publication in the *Gar-*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dener's Magazine; and I have accordingly complied with their wishes.

Pendarves, Oct. 28. 1837.

Fig. 81., to a scale of 10 ft. to half an inch, is a general ground plan of the houses and pits, in which *c* is a pond, which receives the drainings of the entire forcing-ground; *d* is a range of cucumber frames; *e*, pit for melons; *f*, pine-pit; *g*, house for pines and grapes; *h*, house for grapes, to be produced in successional crops, as described in the text; *i*, stock-hole and potting-shed; *k*, cesspool for liquid manure; *l*, dung-pit; *m*, gardener's room; *n*, grotto; *o*, hot-water pipes; *q*, compost-ground.

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Fig. 80., to the same scale as the preceding figure, is across section through the houses, pits, and range of cucumber frames, in which are shown the different slopes of the glass, the position of the hot-water pipes, and, at *p*, one of the ventilators in the back of the pinery, opened.

83

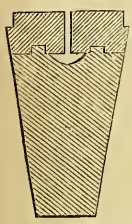

Fig. 83., to the scale of 1½ in. to a foot, is a cross section of the rafter of the vinery and pine-stove, showing a gutter for carrying off the water, and the tongues in the bed of the rafter, on which the sashes slide, by means of grooves in the lower surface of their styles.

Fig. 82., to the same scale as *fig.* 83., shows a section of the outside rafter, on which only one style rests and slides.

[We consider these plans as among the most judicious and economical that we have ever seen; and we regret that unusual pressure of matter, and especially communications with engravings, for the last twelve months, have prevented us from giving them a place sooner. — *Cond.*]

Art. IV. *An Account of the Effects of the last Winter* (1837-8) *on the Trees and Shrubs in the Botanic Garden, Birmingham.* By David Cameron, the Curator there.

On looking over our pinuses, I see *P*ìnus halepénsis is much injured by the winter; and *P.* palústris and *P. T*æ̀da are slightly injured; but all the other species look as fresh as they did last autumn. Among these are *P*ícea Webb*iàna*, *P.* nóbilis, *A*bies Menziès*ii* and Smíth*ii*, *P*ìnus Sabin*iàna*, *P.* Coúlter*i*, *C*èdrus *Deodàra*, and Cunninghàm*ia* lanceolàta. These are all small plants, and have not had a single leaf injured, though they have stood without any protection whatever. Of a larger size

are *P*ìnus ponderòsa and *A*bies Douglàs*ii*. The pines and firs in the Birmingham Garden are planted upon a sloping bank, facing the south-west, in a deep, poor, sandy loam, in an elevated situation, without any protection against the wind, which is frequently very high in this neighbourhood.

Mahòn*ia* fasciculàris is totally killed; whilst M. *A*quifòlium, rèpens, and glumàcea, all so beautifully figured in your *Arboretum Britannicum*, are uninjured, and are now nearly in full flower. *Bérberis e*mpetrifòlia, rotundifòlia, and dúlcis, are likewise uninjured. These are all in peat soil, slightly protected from the wind by hedges; but they have received no other protection.

Rìbes speciòsum and glutinòsum were cut down to the ground, but are sending up young shoots. *R. m*alvàceum is partially injured, but all the other species of the genus have escaped.

*A*rbutus *U*nedo, *A*ndráchne, and serratifòlia are nearly killed; whilst *A.* mucronulàta, and a species near it from Valdivia, in the interior of Chili, are but little injured.

*E*rìca austràlis and mediterrànea, killed: the latter species, however, was nearly dead before the cold commenced; the young shoots having all, from some cause, been killed by a very slight frost in November, not only here, but in several other places that have come to my knowledge near us, all about the same time. *E.* mediterrànea var.? hibérnica is but slightly injured. The other hardy ericas have suffered in proportion to the size of the plant: the small plants have escaped, whilst the largest of the same sorts are nearly or quite killed. I have frequently observed the same effect upon them in more mild seasons; which convinces me a supply of young plants ought to be kept up; or the spreading points of the old plants should be laid down, to enable them to endure the winter.

Cistuses of almost all sorts are killed, or nearly so; but this frequently happens in milder winters. Helianthemums are not nearly so much injured, some not even hurt. *Syrînga* Josikæ*a*, Corèma álba, *H*ypéricum Kalm*iànum*, Symphoricárpus montànus, Epigæ*a* rèpens, and Andrómed*a* tetragòna, not injured; the latter is now in full flower.

Alstrœmerias appear to be very hardy: some of them were pushing out young leaves during the latter part of the frost, without receiving any injury, and without any shelter whatever.

The different species of hydrangeas are not more cut down than generally happens every season. Collèt*ia* hórrida and Piptánthus nepalénsis appear both killed.

Laurustinuses are all nearly killed; common laurel, but little injured; Portugal laurel, not hurt with us, but almost killed in many gardens near us; *U*lex, all species much injured. Few of the other hardy shrubs present anything different in their appearance from that of other years at this season; and I do not

anticipate any change in the herbaceous ground, or in the alpine department.

Birmingham, May 6. 1838.

ART. V. *Notice of the Effects of the past Winter on the Trees and Shrubs in the Grounds of a Parsonage House in Berkshire, half way between Reading and Windsor.* By R. LOWNDES.

LAURUSTINUS. All apparently dead, without any exception. — Arbutus. Two dead; one very much injured. The latter is under the shelter of the house, facing the south, where it has stood for many years, and is a large plant. — *Rh*ámnus *A*latérnus. Injured, but not killed. It stands under the same circumstances as the arbutus. — *R. A.* argéntea is killed. — *C*ýtisus nígricans. Many killed; but others may recover, though they must be cut down. — Furze, double-flowering. Killed, I fear. — Privet. All the single plants seem to be killed; but those in a hedge are not affected. — *L*aúrus nóbilis, sweet bay. Dead to the ground. — Common laurel. All the young plants, and those that were lately transplanted, are dead: the others are greatly injured, the leaves being turned brown. — Portugal laurel. Does not seem to be hurt. — China Roses. All killed. The east front of this house was covered with them, and, twice a year, was beautiful: they will be a great loss. — *R*òsa Bánks*ia* álba, trained on the south side of the house, is dead. — *R.* purpùrea índica. Quite dead. — *I*lex (*Q*uércus *I*lex). Very severely handled, but not dead. The trees will probably lose their leaves. — Yew. The young shoots are turned quite white, and will die, if not already dead. The trees not further injured. — Pines of different sorts injured, but not killed. — Myrtle. Quite dead. — *C*istus ladaníferus. Killed outright. — *C*ýtisus, common sorts. Probably all killed: many are so. — Larch. Does not appear to be injured. — Elms. In full bloom. — Oak. The leaf-buds swelling. These appear to be all the better for the frost.

Almost every thing in the kitchen-garden killed. Sea-kale, being well covered, was not killed; but it is not good to eat, having no flavour.

It is not intended to grub up any of the shrubs till summer, that we may see whether there is any life left, and where: of which, if I live, I will send you an account.

There have been some instances of wheat, late sown, being ploughed up, and also of winter tares, in this parish. The wheat looked very sick for a long time, but it has in general recovered; and I hope the summer of 1838 may be as fruitful as the summer succeeding the great frost in 1814.

April 14. 1838.

ART. VI. *Remarks on Mr. Nutt's Collateral Beehive.* By JOHN WIGHTON, Gardener to Lord Stafford, at Cossey Hall, near Norwich.

BY the contrivance of the collateral beehive, Mr. Nutt professes to prevent the bees from swarming; but I have had two of these hives at work for several years, and the bees have always swarmed. The hive consists of three boxes united, and placed on a line with each other; the centre box having a glass placed on the top. The side boxes are separated from the centre one by tin slides, and each is furnished with a tin tube, intended to regulate the ventilation. The bees are placed in the centre box; and Mr. Nutt supposed that, instead of issuing from the centre in a swarm, the bees would settle in the side boxes. This, however, is not the case; for I have had them swarming, while both the side boxes were open and empty. He was of opinion that heat and want of room were the causes of swarming; but I have maintained, in a former article in your pages, that the bees will always swarm, if there be more than one queen bee in the hive.

Mr. Nutt supposed that the queen would not deposit her eggs in the side boxes, if they were kept cool by ventilation. I have before observed that such ventilation is impracticable, because the bees will always seal up the smallest aperture; and, if it could be effected, it would only cause more bees to remain in the boxes, in order to keep up the warmth, instead of being out at work. I have taken off boxes in July, and some of the cells were full of larvæ. I have done the same in October, and found the queen bee in them. Mr. Nutt has failed in what he proposed by this kind of hive, as it does not prevent swarming, nor deter the queen from laying eggs in the side boxes.

Two reasons may have led apiarians to suppose that the queen would not deposit her eggs in the side boxes. One, that the breeding season is often past before any cells are constructed in them; and the other, that bees make more combs than they require for breeding. The inside ones may be full of larvæ, and those outside full of pure honey; and this is sure to be the case, if the cells have been made before the end of the breeding season.

I have never had much honey from this collateral hive, as the bees have been always weakened by swarming; and they seldom filled one of the side boxes in a season. Latterly, I have adopted the old plan, when the bees sent out a swarm, and have placed them in the side boxes, so that each box formed a hive by itself. By this means, I have secured more honey. In October, I destroy the bees in the side boxes, and keep those in the centre one for the next year's swarming. I am no advocate

for destroying bees, and have tried several schemes to unite them with other hives, but with very little success.

I am aware that this is at variance with the humane plan of which Mr. Nutt has said so much: but, supposing that he could prevent the swarming, and that his side boxes were filled with honey in the autumn, how does his plan escape the objection of inhumanity? His hive consists of three boxes standing in a line. If the two outside boxes be taken, and the centre box left to contain all the bees, the boxes taken must be smoked, to enable him to remove the bees. If they are not fed, they will probably be starved to death. So that if the old plan was cruel, it produced, at least, instant death; whereas Mr. Nutt's system only causes protracted suffering.

Much objection has been raised against destroying bees, to take their honey; and various plans have been suggested for taking a part of it without injuring them. The safest way must be to place glasses on the top of the hive; for the bees will not work in them until the hive is full. The honey in the glasses, too, is always pure. Whatever method is adopted, much honey cannot be obtained in this county (Norfolk), a few places excepted, without injury to the bees; for, on an average perhaps of four years, they make no more than would suffice to keep them in a healthy condition. On the humane plan, as it is called, a little pure honey may be had, and it is pleasing to watch the bees at work; but the common straw hive is, after all, the most profitable, with the old plan of destroying the bees. Honey is, however, so little used, and foreign honey is so cheap, that the cottager has, of late years, found little inducement to keep bees.

Mr. Nutt says that the bees can be got out of the boxes without smoking them. This may be the case, provided they be taken off early in the season, in a warm day, when most of the bees are out. I have effected it under such circumstances, but never when the boxes were full of honey, and left on till the autumn.

Cossey Hall Gardens, Feb. 16. 1838.

ART. VII. *Remarks on the Roots of some of the terrestrial Orchídeæ of Australia, found in the Neighbourhood of the Swan River.* By JAMES DRUMMOND, A.L.S., Superintendent of the Government Botanic Garden, Swan River.

THROUGH the notice which you were kind enough to insert in your Magazine some time ago, I received orders for some seeds and birds, &c., which I shall have ready to send by the first opportunity which offers after Christmas next; and I purpose sending with them some bulbs of the most beautiful and curious of our

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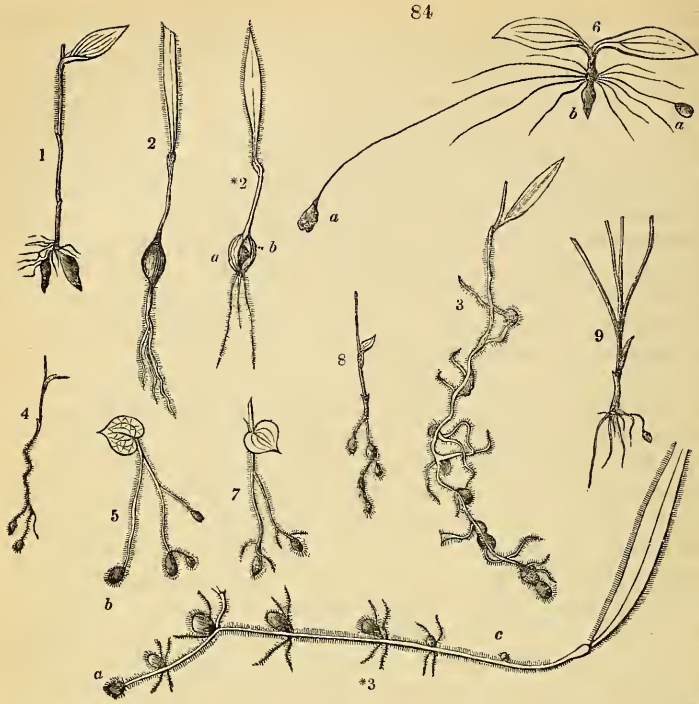

Orchídeæ, which, I have no doubt, will be admired in England. I send you a few remarks on the roots of a few of the genera of Australian Orchídeæ, which, if you can spare a corner for in the *Gardener's Magazine*, may, perhaps, assist in their successful cultivation. Many of our Orchídeæ, as the species No. 1. (shown in *fig.* 84.) *, agree in the character of their roots with the English *O*rchis mòrio, and on these it is not necessary to remark. The two species marked No. 2. and *2. (*fig.* 84.) belong to two genera, the structure of which is very curious; the bulb being renewed every year, in the centre of several layers of bast-mat-like substance, one of which layers is added every year by the decay of the old bulb. When the young bulb is dissected at the time the plant is in flower, the layer of fibrous substance, which afterwards becomes the covering, is easily perceptible: it terminates in a point, which the following season becomes a root, and another root is produced from the bottom of next year's flower-stalk. In planting these roots, the fibrous substance should not be removed, or the plant will not thrive. The layers can easily be traced back for ten or twelve

* The engravings are one fourth of the size of the dried specimens, which arrived in very bad condition.

years; and, I have no doubt, many of these Orchídeæ have continued to flourish in half an inch square of earth for ages.

In *fig.* 84. *2, *a* shows the coated root cut down the middle, the black part of which is intended to represent part of the bulb filled with the new root, as it appears at the time of flowering; and *b* shows the part of the bulb filled with the old root.

The coated orchises grow mostly on the exposed sides of the hills, where the soil is a strong loam mixed with a large portion of gravel, and where their numerous coats must be of great use in protecting their roots from the excessive heat of the summer sun. All the time they appear above ground, the weather with us is seldom warmer than it is in the month of May in England. The leaves of the hinged orchis, No. 5. (*fig.* 84. 5.) are of a livid green, somewhat reticulated, and frequently with a red margin. No. 7. (*fig.* 84. 7.) differs from it, in having the leaves shining yellowish green, the insect-like part turned in a different way, and it has some red hair, or hair-like glands, about the neck. No. 8. (*fig.* 84. 8.) I have discovered since I wrote the first part of this letter. It has five or six flowers on a spike; the leaves are oblong heart-shaped, they do not lie so flat on the ground as in the other two species; the hinge on which the insect-like part moves is sessile; the divisions of the perianth agree with the other species, four of them are turned back by the germen, and one stands up behind the upper lip. The flower-stalk is thicker towards the top, and somewhat succulent, which, perhaps, enables the plant to produce its flowers and seed, as I observe the leaves are withered at the time the plant comes into flower. The upper lip is very curious, as you will observe in the dried specimens. This species is found on exposed spots on the sides of the Darling range of hills.

The specimens No. 6. (*fig.* 84. 6., in which *a a* are the new roots, and *b* shows the old roots,) are meant to show the great distance at which some of the Australian Orchídeæ produce their new bulbs from the old roots: in one species (which I have not room for in this parcel), I have traced them for more than a foot. I can perceive no difference between the roots which end in bulbs, and those which apparently do not; but I think that, if all the roots were to end in bulbs, the plants would be more common than they are; it is a very difficult operation to take up the roots of the Orchídeæ without separating the bulbs.

We have a fine showy orchis here (a species of ? Diùrus), which propagates freely by the roots, and which, I have no doubt, would answer well in the open air in England, if the roots were treated like the roots of the Persian ranunculus, and kept in a dry warm room in winter. The roots of the flowering plants are about 6 in. long, and resemble a good deal the roots of Anthéricum Liliástrum; being thickest at the end farthest

from the stem. Two or three are produced annually, and the old ones decay. On rich calcareous soil, this orchis grows 2 ft. high; and the flowers are large in proportion, and showy: the colours are orange and purple. You will see a small starved specimen of the flower, and specimens of the root, in No. 9. (*fig.* 84. 9.) To have this species flower in perfection, the roots should be kept as entire as possible. Every bit of the root which is broken off forms a plant; but it is some years before plants so formed get large enough to produce flowers.

The specimens marked No. 3. (*fig.* 84. 3. and *3.) belong to two interesting genera of *O*rchídeæ. The knots on the roots are somewhat analogous to the knots on the roots of Hólcus *a*venàceus, and ought rather to be considered as reservoirs of nourishment, to enable the plant to flower and perfect seeds, than as true bulbs or buds. Young plants may be produced by dividing the roots; but they spring from the joints between the swellings of the root. One of these swellings, or tubers, is produced annually, or more than one when the root becomes forked, as it sometimes does; several stems and flowers are frequently produced from the same root, the plant becoming branched near the surface of the ground.

In *fig.* 84. *3., *a* shows the bulb formed during the present year; *b* shows a part of the root broken off in taking it up; and *c*, a bulb formed the first or second year after the plant was raised from seed.

In planting the roots of these genera of *O*rchídeæ, they should be put down as entire as possible. The roots, although they may appear old and decayed, are not on that account to be rejected. The large species I send you, No. 3. (*fig.* 84. *3.), has sometimes a flower 11 in. from tip to tip of the petals; and another species, with a yellow flower and dark purple lower lip, grows nearly as large, and is a very beautiful plant. The specimen marked No. 4. (*fig.* 84. 4.) is one of the most curious of sensitive plants. The lower lip, in which the anthers are placed, is a boat-shaped box; the upper lip, which I suppose to be the stigma, forms a lid which exactly fits it; the hinge on which the lid moves springs from the upper part of the flower, and is attached to its centre; and, when it opens, the upper part turns round within the box, comes out at the bottom, turns up and back; so that, when fully expanded, it stands fairly over the flower. The moment a small insect touches the point of the lid, it makes a sudden revolution, brings in the point of the lid at the bottom of the box, so that it has to pass the anthers in its way, and makes prisoner any small insect which the box will hold. When it catches an insect, it remains shut while the insect continues to move about; but, if the insect be not caught, the box soon opens again. This plant is rare; and where it does grow

it is not easily found, the leaves and whole plant having much the appearance of charcoal, among which it usually grows.

The specimens marked No. 5. (*fig.* 84. 5.) belong to a very curious genus of Orchídeæ, of which I have discovered two species, very similar in their structure and economy. The leaves, one to each plant, are round, and lie flat on the soil; the stems grow 12 or 18 inches high, each producing a single flower. The flower consists of five narrow divisions, four of which are turned back by the side of the germen; and the fifth stands up behind the upper lip, which, in this genus, contains the anthers. The lower lip resembles an insect suspended in the air, and moving with every breeze on a remarkable hinge, which you will observe in the specimens. Anything which turns the plant to one side, brings the insect-like part, which I suppose to be the stigma, in contact with the anthers. The roots of the fly-catching and hinged orchises are thick downy fibres, which terminate in small bulbs: but I rather think these bulbs act only as reservoirs of nourishment, unless they happen to be accidentally separated from the parent plant; in which case they become separate plants. They are from one to three or more in number, and spring from the stem, about half an inch below the surface of the ground.

Swan River, Oct. 18. 1837. [Received at Bayswater, July 22. 1838.]

ART. VIII. *On the best Mode of propagating the Dahlia.* By JOHN FYFFE, Gardener at Milton Rectory, Bedfordshire.

A GREAT diversity of opinion exists regarding the best mode of propagating the dahlia; some preferring cuttings, and others the roots divided into small portions. The merits of these different modes of propagating this modern favourite of the flower-garden I shall leave others to decide: what I mean to lay before you at present is, a way, by following which every gardener may secure a stock of plants for the following season. Every one, who has any knowledge of this plant, is aware how liable plants raised from cuttings are to form weak or imperfect tubers. This does not always hold good; but, in a great many instances, it will more frequently happen than from divided roots; and, when this is the case, the plants often do not start the next season: and it must be allowed to be very vexing, if it is an expensive sort, to have it only one season, and lose it the next.

The plan which I have followed to remedy this evil is this:— From all the newest sorts which have been purchased from the nursery (and which, in most cases, are cuttings), after they are established, or as soon as I can take a cutting without hurting the plant, I take the small side shoots (the more stubbed the

better), and pot them, as is commonly done with the shoots from the roots. These strike well when put in a good strong heat, and, by one or two shiftings, make nice little bulbs before autumn. These I dry completely, and allow to remain in the pots during the winter; placing them in a dry situation, not far distant from a flue, so that they may have the benefit of it in damp weather, or when sharp frosts occur. The mould in the pots should be of a light sandy nature: a mixture of leaf-mould and sand, with very little loam, is the safest compound to preserve them in. When the roots are started in the spring, they make excellent plants; and, in most cases, four roots out of six so treated start, and thus secure the rarest sorts from being lost, as is often the case with cuttings the second season.

Milton Rectory, May 14. 1838.

ART. IX. *Notices of some Plants of the Cárica* Papàya *which have fruited at Ripley Castle.* By G. M. ELLIOTT, Gardener there.

CA'RICA *Papàya* has been made by Dr. Lindley the type of a natural order, called *Papayàceæ*. In the description of its characters, Dr. Lindley has omitted to remark that the male flowers only are produced on axillary racemes; the female being produced on solitary, short, axillary peduncles. The only exception I know of is in the case of a male plant, now growing in our stove, on which three female flowers were produced at the extremity of male racemes; and these, being carefully impregnated, are now swelling, and will in due time become mature fruit.

To cultivate the papaw, it is necessary to have both sexes, and carefully to impregnate the female when in flower. The flowers of both sexes are produced nearly at every leaf, so that it is not necessary to impregnate every flower; as by doing so you would injure the plant, by causing it to overbear itself; and the fruit would not be so fine. The papaw grows vigorously in a mixture of equal parts of strong turfy loam and recent horse-droppings chopped up together, but not sifted, giving plenty of water. We keep our plants on an end flue in a pine stove, where they grow from 1 ft. to 6 in. yearly. I have never tried them in a lower temperature; nor do I think they would thrive in a green-house, with the exception of a short time during summer. I have not seen them infested with any insect, except the brown scale, which we got rid of by rubbing them off with the hand or a brush.

The reason I would asign for the singular developement of female flowers by the male plant above mentioned is, that, in 1836, I inarched a female plant into the stem of the male, where it remained for about two months; when I gradually

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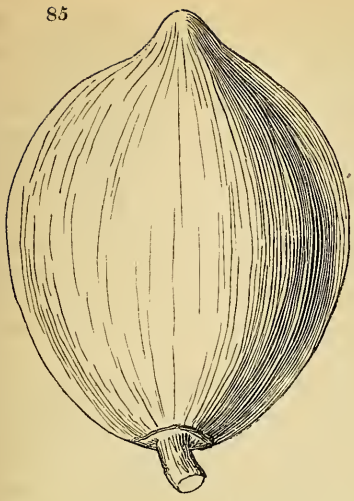

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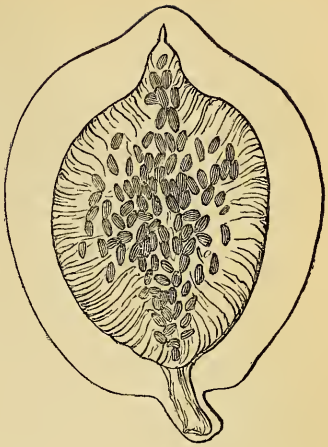

removed the connexion with the female tree, and finally cut it off entirely. The scion continued to live, but scarcely to grow, for three months longer, when it was displaced by an accident. The male plant continued to grow and flower as usual until September, 1837 (twelve months after the removal of the female scion); when it showed the female flowers before alluded to; and at present it has female flowers on axillary peduncles, like perfect females. I have no doubt whatever but this change of sex has taken place in consequence of the connexion with the female papaw, since the flowers have been produced on wood formed during the time of, or since, the connexion. This seems a very interesting subject for the vegetable physiologist, whether, with Mr. Main, we consider a real life (indusium) necessary for the developement of any part of a plant; or, with Mr. Keith, we consider the matured sap organisable. Whichever idea we cling to, true it is that an operation unseen and unknown has produced a change. I was in hopes that our female plant, that had the male inarched on it, would show male flowers; but as yet it has not. Probably, the greater vigour of the male head, from not being so much wounded, might carry with it the sap of the female; whereas the female, having no leaves at the time of the connexion, might suffer itself to be robbed with impunity.

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Ripley Castle, April 5. 1838.

[We have acknowledged (p. 195.) the receipt of some fruit of the papaw from Mr. Elliott.

Fig. 85. is a view of one of these, of half the natural size; *fig.* 86. is a longitudinal section; *fig.* 87. is a transverse section; all to the same scale: and *fig.* 88. is a view of the leaves and mode of growth of the plant, to a much smaller scale.—*Cond.*]

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REVIEWS.

ART. I. *The Suburban Gardener, and Villa Companion: comprising the Choice of a Suburban or Villa Residence, or of a Situation on which to form one; the Arrangement and Furnishing of the House; and the Laying out, Planting, and general Management of the Garden and Grounds; the whole adapted for Grounds from One Perch to a Hundred Acres and upwards in extent; and intended for the Instruction of those who know little of Gardening and Rural Affairs, and more particularly for the Use of Ladies: illustrated by numerous Engravings.* By J. C. Loudon, F.L.S. H.S. &c. 8vo, pp. 752, many Plates. London, 1838. 20*s.*

THIS work ought more properly to have been termed the *Suburban Architect and Landscape-Gardener;* but, when we commenced it in monthly numbers, about a year and a half ago, we intended to include in it not only all that related to the laying out and general management of suburban gardens, but to treat of their culture; including in the work, at the same time, all the information essential for an amateur to know, of what relates to the building and furnishing of suburban houses. In this case, the title of *Suburban Gardener and Villa Companion* would have been more suitable than it is at present; but, in order that our readers may form a correct idea of what the volume now published as the *Suburban Gardener* contains, we have given at the end of this Number, an abridged copy of the table of contents, and a list of the engravings.

That part of the work which treats of the culture of gardens, we intend to give as a separate volume, under the title of the *Suburban Horticulturist,* and it will appear early in 1839.

In the *Suburban Gardener and Villa Companion,* we followed the practice which we adopted in the *Encyclopædia of Cottage, Farm, and Villa Architecture*; viz. that of giving examples, and then pointing out the particular principles which they illustrate. In this manner, we have brought before the reader, in detached portions, and, as it were, incidentally, all the important points which occur in the discussion both of rural architecture, and of

landscape-gardening, as arts of design and taste. When these subjects are brought before the reader in a continuous and systematic form, unless his mind has been previously prepared by appropriate studies, he can hardly be expected to understand the principles laid down, in such a manner as to be able to apply them in practice; and thus the whole may be perused without any real benefit being gained by him. As a proof of this, we may refer to Whately's *Observations on Modern Gardening*, and Price's *Essays on the Picturesque*, two of the best books on landscape-gardening which have ever been written; and yet we question whether there ever was a single practical gardener who, after perusing them, could say, "Now I shall set about laying out a plantation, or forming a piece of water, in a different manner from what I have hitherto done." In the *Suburban Gardener*, one principle only is illustrated at a time; and that principle is always reduced to its very simplest form, and connected with some point of practice, in such a manner as, we think, will render it clear to every working gardener.

For example, in the *Observations on Modern Gardening*, where wood is the subject, the principles by which the disposition of this material in landscape is regulated are laid down at great length, and illustrated by the descriptions of woods in various parts of England; scarcely one page of which, we think, could be turned to account in the actual practice of a working gardener. In the *Suburban Gardener*, we have treated of woods and plantations in various places; and, to refer to the first that occurs to us, which is in p. 737., we there show by a diagram, and describe by letterpress, the difference between deformity of lines and shapes in plantations, and picturesque lines and shapes. We have, by this diagram and its accompanying description, we think, conveyed more information to the uninitiated reader, than he will be able to draw from all the profound and philosophical discussions on the subject of wood contained in the *Observations;* acknowledging, as we do, at the same time, that the latter are altogether unexceptionable in point of doctrine. We merely say that they are too profound and abstract to be reduced to practice by ordinary working gardeners, and that there is nothing in the nature of the subject which prevents it from being understood by the most ordinary capacity. All that is necessary is, to infuse the knowledge into the mind in small quantities at a time, and by degrees; beginning with those principles which are most easily understood, and never laying down a rule without referring it to a principle.

On the subject of water, there is a great deal of sound philosophical discussion in the *Observations* and in the *Essays;* but where is the gardener who can apply them? In our discussion of the question, "What constitutes an agreeable shape in a lake,

pond, or piece of still water, in p. 630., we think we have done more for the practical gardener, who has not made the subject of landscape-gardening his study, than will be found in all the writings of either Whately or Price.

Let it not be thought that we are in the slightest degree undervaluing these writings; so far from this, we have always borne testimony to their unrivalled excellence; and we freely acknowledge that it is to them, and a few other works on the same subject, that we are indebted for all we know of landscape-gardening.

Perhaps the greatest service we have done the young gardener and the amateur, in the *Suburban Gardener*, is, that of laying down the rules which, in landscape-gardening, are derived from the principle of the Recognition of Art. We claim for ourselves the merit of having been the first to show in what manner this principle is applicable to modern landscape-gardening. The first discoverer of the principle, our readers have been informed in a previous volume of this Magazine, was Quatremère de Quincy: but this author only applied it to the geometrical style of laying out grounds; and, because he could not apply it to the modern style, he rejects works in that style, as unworthy of being classed with the fine arts.

On the whole, though the *Suburban Gardener and Villa Companion* is chiefly intended for those either possessing, or intending to possess, some kind of country house and garden, yet there is no work that we have published which contains so much information that will be of use to the young gardener who proposes to excel in the highest department of his profession.

Art. II. *Botany, in Four Parts:* 1. *Structural Botany;* 2. *Physiology;* 3. *Systematic Botany;* 4. *Descriptive Botany.* Published under the Superintendence of the Society for the Diffusion of Useful Knowledge. In seven numbers, 8vo, 6*d.* each; or in one volume in boards, 4*s.* London, 1834 to 1838.

The quantity of ideas that is compressed into this work is altogether astonishing. It is attributed to Dr. Lindley, and, in our opinion, does credit even to him. The young gardener will see by the title that it contains the essence of all that is known on the subject of the principles of botany; and we assure him that, if he neglects, or even delays, procuring the work, and studying it profoundly, he will fail in an important duty to himself. We recommend, in particular, the chapter (p. 130.) "Of Species and Varieties," as likely to save the young gardener a world of trouble in puzzling himself about distinctions where none exist; or where, if they do, they are not worth attending to.

ART. III. *The Orchidaceæ of Mexico and Guatemala.* By James Bateman, Esq., F.R.S. L.S. G.S. H.S. &c. Part II. Imp. fol. Ridgway and Sons, London, 1838.

THE plates in this volume are chiefly by Mrs. Withers, and, in point of drawing, engraving, and colouring, they appear to us to surpass the plates of Part I. Indeed, the work altogether may be considered as improving rather than falling off.

The species figured in this part are:—T. 6. Cyrtochìlum bictonénse, which being a new species, and lately introduced, the details respecting it will be found in our Floricultural Notices for October. At the end of the description of this species is a beautifully engraved vignette, intended "to convey some idea of the tangled luxuriance and dismal grandeur of the forest scenery of Tropical America." This view abounds in Orchidàceæ, and various climbers and twiners. There is a serpent coiled round one tree, and a monkey scrambling up another; a cayman is seen emerging from a piece of water, and two savages preparing their food. A fallen tree, covered with epiphytes, forms part of the foreground.—T. 7. Stanhòpea tigrìna, has been already described in our Floricultural Notices. The tailpiece to this species, in Mr. Bateman's work, is a view of the plant as it appeared at the time of its flowering in the epiphyte-house at Knypersley.

"Splendid as are all the species of Stanhopea, this is unquestionably the finest of them all. Its flowers are powerfully fragrant, and larger than any that have been hitherto met with among orchidaceous plants: they are also furnished with a huge fleshy lip, of so strange and fantastic a figure, that it would rather seem to have been carved out of ivory, or modelled in wax, than to be a *bonâ fide* production of the vegetable world. Its colouring, too, is so rich and varied, that even Mrs. Withers's skill was taxed to the utmost to convey an adequate notion of it."

T. 8. Peristèria Barkèrii, has been already figured in the *Botanical Magazine*, and, consequently, recorded in our Floricultural Notices. The flowers of this species are supposed to resemble doves.—T. 9. Læ'lia autumnàlis. For the details of this species, see Floricultural Notices for September. The tailpiece to Mr. Bateman's description represents the opening of a box of Orchidàceæ, which, it is discovered, have been eaten up by cockroaches. The design is by Cruikshanks, and the engraving by Landells.—T. 10. Epidéndrum aromáticum, will be found given in detail in our Floricultural Notices for September. This is one of the most sweet-smelling of the whole tribe of Orchidàceæ; sweeter even than Aérides odoràtum, "although the latter has been designated by Professor Lindley as the sweetest of all flowers." The "rich sugary odour" of Epidéndrum aromáticum has been said by one to resemble that of the sweet scabious; by another, to approach that of Pergulària odoratíssima; while a

third has declared that it smells as angelica tastes. The tail-piece to this description is *Lycopòdium* invólvens, after a drawing by Lady Jane Walsh.

Two pages more of introductory matter are given, and of these we have extracted the essence; but we think it will be given with more effect when some future part appears, so as to present a greater mass of information on the subject at once.

ART. IV. *The Rose-Fancier's Manual.* By Mrs. Gore. 12mo, pp. 434. London, 1838.

IN the preface, Mrs. Gore informs us that she has undertaken this work "for the use of the inexperienced English amateur; and, in order to make it practically available, scientific terms have been, as far as possible, laid aside, and the simplest form of language adopted." (p. vi.) In the remainder of the preface, we are informed that, though roses are easier of propagation in France, they attain their highest perfection in England; in proof of which, reference is made to the nurseries of the principal English rose-growers. The rose attains a larger size in England, from the comparative moderation and humidity in the climate; and the blossom of any individual kind of rose remains a longer time expanded in our cloudy atmosphere, than under the intense heat and light of a Continental sun, unobscured by clouds or mists.

"The real source of the eminence of the French in the culture of roses, is the fact that it absorbs the almost exclusive attention of their horticulturists. The high price of fuel places the cultivation of the tender exotics (by which English amateurs are chiefly engrossed) almost out of the question; and, as the French adhere to the wise custom of repairing to their country seats in May, and quitting them in December, their attention and money are appropriated to the improvement of such plants as adorn the flower-garden during the summer season. They care little for any that cannot be brought to perfection in the open air; and precisely the same motive which promotes the cultivation of the dahlia in England, has brought the rose to greater perfection in France.

"The first impulse was given to the culture of the rose in France at the commencement of the present century, under the auspices of the Empress Josephine, who caused her own name to be traced in the parterres at Malmaison with a plantation of the rarest roses, at considerable expense, by Dupont, the gardener and founder of the celebrated collection attached to the Luxembourg palace.

"At the death of Dupont, Monsieur Hardy succeeded to his office; who for twenty-five years has been making annual sowings of seed obtained from all quarters of the globe, with a view to the creation of varieties; and is probably the most scientific rose-grower in Europe. The Chamber of Peers, however, and its grand referendary, by whom his services are remunerated, have lately rendered the rose school of the Luxembourg Nursery secondary to the school of vines; a matter of important national interest to the landowners of France.

"The original roses of the Luxembourg, as well as those of the royal nursery

of Trianon, are not purchasable; but are given away to respectable applicants or exchanged for other plants with eminent nurserymen, by whom they are propagated and dispersed. In this way the Rosa Hardii berberifolia, obtained this year by the accidental impregnation of that remarkable plant, the Rosa simplicifolia, or R. monophylla [Lowea berberifolia *Lindl.*] by R. microphylla growing near it, has fallen into the hands of Cels, by whom it will be shortly placed in circulation.

"This especial dedication of the Luxembourg Gardens to the cultivation of roses has done much towards their multiplication in France; while the Jardin des Plantes, under the able care of Neumann, as well as several provincial botanical gardens, have taken part in the cause. At Nantes, for instance, was produced, a few years ago, from the accidental impregnation of a Macartney rose by a Rosa indica odorata, the beautiful R. Maria Leonida, now in general favour, which flowers in great perfection till the commencement of winter; while, among the Paris nurserymen remarkable as rose-growers, Noisette has given his name to a most beautiful and prolific variety, obtained in the first instance at Charleston, in the United States, by his brother, Philip Noisette. Having amassed a considerable fortune, the Noisettes no longer continue to raise roses from seed; and this branch of cultivation is engrossed at Paris by Laffay, a most enthusiastic and intelligent gardener, and Vibert, who has written some valuable treatises on the culture of roses. Cels and Sisley-Vandael export largely to England; the latter excelling in the production of the *Rose Thé*, or scented China rose. Calvert and Prevost of Rouen also despatch large collections to England; and Sedy and Plenty, at Lyons, have obtained many curious varieties. Boursault's celebrated collection has fallen to decay; while that of one of the first growers who attained much distinction, Descemet of St. Denis, was cut up by the English troops in 1814; when the horticulturist, unable to obtain indemnification from government, proceeded to Russia, and reestablished himself with honour and success. [He has the management of the government garden at Nikitka, in the Crimea.]

"In the royal rosary at Versailles, standards may be seen which have attained 18 ft. in height, grafted with twenty different varieties of rose. The same branch of rose culture is practised with great success at Brussels and Düsseldorf. In the imperial gardens at Monza, near Milan, thirty-nine varieties of China rose have been obtained by the [late] celebrated Villaresi; and Genoa, Marseilles, and Avignon have added to the number. At Lyons, much attention has been devoted to the culture of roses; and, among other rarities now flourishing in their gardens, they have that beautiful miniature, the Lawrencean rose (which in England attains a height of between 2 in. and 6 in.), in bushes 6 ft. high, retaining all its original specific characters of inflorescence.

"The numerous varieties of our native Scotch rose are in high estimation on the Continent, as well as many others obtained in England; such as the R. Smithii, a double yellow rose, obtained by the gardener of Lady Liverpool; the George IV., obtained by Rivers, jun.; the Stanwell perpetual, an accidental hybrid, found in Mr. Lee's garden at Stanwell; and many varieties of moss roses, the greater number of which beautiful family were obtained in England. The China or Bengal rose, sent to the Botanic Garden at Kew about the year 1780, from Canton, by a botanist named Ker, did not reach France till the year 1800. The Rosa Banksiæ, and that singular rose, R. microphylla, both natives of China, also reached the Continent by means of the botanists of England.

"There is not a more perplexing or more amusing branch of horticulture, than that of sowing with a view to the production of new varieties. Every season affords valuable acquisitions; and, at the annual epoch of flowering, the excitement of the enthusiastic rose-grower is at its height. Laffay, for instance, has this season obtained a vigorous and very thorny variety of Rosa Banksiæ; which, should it fulfil his expectations, by producing, next summer, flowers of a vivid pink, will afford a highly valuable addition to the Banksian tribe.

"In addition to the interest excited by his seedlings, the attention of the rose-grower is eagerly directed to the accidental varieties produced by what is called 'a sport,' or branch losing the habit of the plant on which it grows, and assuming new specific characters. In this way the Bath moss rose, or mossy unique, was originated at Clifton; and the beautiful Rosa cristata in Switzerland. The rose unique was discovered, at the commencement of the present century, in a cottager's garden, among a plantation of roses of the hundred-leaved, or cabbage, kind, which is peculiarly subject to sport, either from the excessive vigour, or imperfect vegetation, of the subject. The mossy rose de Meaux, or pompon mousseux, was discovered, five and twenty years ago, in the garden of an old lady in the west of England, of whom it was purchased by a nurseryman for five guineas: certainly a sport, as the rose de Meaux is known never to bear seed in England. The Ayrshire roses were chiefly obtained from seed at Dundee, in Scotland. Brown's superb blush was raised at Slough, near Windsor; a seedling of the Rosa indica odorata, and the yellow sweet briar, at Pitmaston, by Mr. Williams. To enter into the origin of even the finer modern varieties would, however, be an endless task." (p. xiii.)

The first article in the body of the work is on the geography of roses. Certain authors assign the provinces of Georgia and Circassia as the native places of the older roses; and others assert that the rose only flourishes between latitudes 20° and 70°; but the rose of Montezuma, which grows in latitude 19°, and the Abyssinian rose, which inhabits latitude 10°, overturn this theory. Various countries possess species or varieties which are peculiar to them.

"Of these, some extend their growth to [over] a province, some to a smaller space of territory: some even restrict themselves to a single mountain or solitary rock. The Rosa Polliniana is peculiar to Mount Baldo, in Italy; the Rosa Lyonii, to Tennessee, in North America; while the Rosa arvensis, or field rose, is to be found in all the countries of Europe; and the Rosa canina, or dog rose, in Europe, as well as a considerable portion of Asia and America.

"The roses of North America are:—R. blanda, found on the glaciers of the most northerly provinces; its bright pink corolla unfolding itself immediately on the melting of the snows. This shrub is found only on the frozen deserts between 70° and 75° N. L. R. hudsonensis is found on the shores of the Hudson, within the polar circle, where it produces clusters of pale double flowers. R. fraxinifolia, which has small, red, heart-shaped petals, is found in Newfoundland and Labrador, along with R. blanda. R. nitida, which has deep red flowers, abounds on the northern coasts, and is used by the Esquimaux for decorating their hair and their seal-skin dresses. R. lucida is found in the marshes of Carolina. R. Woodsii is found on the banks of the Missouri; and R. carolina in the adjoining marshes. R. evratina is found on the marshy banks of the rivulets of Virginia, and is extremely difficult of culture in gardens. R. diffusa is found in the forests and stony districts of the central and southern states of the Union. R. parviflora is a diminutive shrub, found on the rising grounds of Pennsylvania; and R. stricta and *R.* rubifolia are found on the outskirts of the Pennsylvanian forests. R. setigera is found in South Carolina; and R. lævigata, a climbing species, inhabits the woods of Georgia, and is used by the Creoles to adorn their hair.

"The rose of Mexico is R. Montezumæ, a sweet-scented thornless species, which abounds on the highest parts of Cerro Ventoso, near San Pedro in Mexico, where it was discovered by Messrs. Humboldt and Bonpland. The town of San Pedro is in latitude 19°; which proves that roses are found under latitude 20°, contrary to the assertion of some authors. The total number of

American species of roses hitherto described is only fourteen, all of which, with the exception of R. Montezumæ and R. stricta, might be classed under the same section as the European *Rosa cinnamomea*. Those of France are twenty-four, and of Britain nearly that number, according to some botanists, and not more than six, according to others.

"Asia has to boast a greater variety of species of the rose than the rest of the earth united; thirty-nine that admit of accurate definition having been already established. Of these, the vast empire of China, where both agriculture and horticulture are arts in high estimation, has a claim to fifteen.

"First, the Rosa semperflorens, the leaves of which have sometimes three leaflets, sometimes only one; whose flowers are scentless, of a pale dull pink, producing a pleasing effect when half-blown. The Rosa sinensis, confounded by some botanists with the preceding, but blowing at all seasons, of a far more brilliant colour. The Rosa Lawrenceana is a beautiful little shrub, from 3 in. to 5 in. in height, but, unlike most dwarfs, whether of the vegetable or animal creation, perfect in symmetry and proportion. The R. multiflora attains, on the contrary, a growth of 15 or 16 feet; having small, double, pale pink blossoms, united on a single stem, so as to form beautiful bouquets on the tree. The R. Banksiæ extends its flexile branches over rocks and hillocks, bearing a profusion of small, very double, yellowish white flowers, remarkable for their violet-scented fragrance.

"The R. microphylla is a favourite garden shrub of the Chinese, under the name of Haitong-hong, having small, double, pale pink flowers, and a foliage of peculiar delicacy.

"Cochin-China, situated between the 10th and 20th degrees of latitude, possesses all the roses of China, and, in addition, several indigenous species; among others, the R. alba, found also in Piedmont, in France, and various other parts of Europe; and the R. spinosissima, bearing flesh-coloured flowers. Japan, between the 30th and 40th degrees of latitude, has all the roses of China, besides a peculiar species, the R. rugosa, the solitary flower of which bears some resemblance to the Kamtschatkan rose.

"The southern provinces of Asia, comprehending those of India, offer many curious species to our own observation. The north of Hindostan possesses six; two of which are also found in China, and two in Nepal. The R. Lyellii, which bears transplantation to our own climate, and is remarkable for the profusion of its milk-white flowers during the greater part of the summer, and the R. Brunonii, whose petals are of the same snowy whiteness, rank high among the roses of India. In approaching the southern provinces, we find the R. macrophylla, somewhat resembling the alpine roses of Europe; the flowers whitish, but streaked with pink towards the extremity of the petals; the R. sericea, of which the surface of the leaflets has a satin texture, and the flowers are solitary and drooping.

"The parched shores of the Gulf of Bengal are covered, during the spring, with a beautiful white rose, found also in China and Nepal. The flowers of the R. involucrata are white, solitary, surrounded with a collar of three or four leaves, out of which they seem to emerge; while in vast thickets of the beautiful R. semperflorens (a native also of China) the tigers of Bengal and crocodiles of the Ganges are known to lie in wait for their prey.

"In the gardens of Kandahar, Samarcand, and Ispahan, the R. arborea is cultivated in great profusion by the Persians. This shrub, which attains a considerable size, is covered during the spring with an abundance of white and scented blossoms. The R. berberifolia is also common in these provinces. This shrub, differing so completely from every other species of rose that botanists experience some hesitation in classing it among the number [it is now Lowea berberifolia, see *Arb. Brit.*, ii. p. 812.], has simple single leaves, and yellow star-shaped flowers, variegated, like a cistus, at the base with spots of deep crimson. The R. damascena, transported to Europe from Damascus by the Crusaders, affording to our gardens an infinite number of beautiful varieties, adorns the sandy deserts of Syria with its sweet and brightly tinted

flowers. At the extremity of Asia, towards Constantinople, the R. sulphurea displays its very double flowers of a brilliant yellow.

" The north-west of Asia, which has been signalised as the father-land of the rose tree, introduces to our admiration the R. centifolia, the most esteemed of all, and celebrated by poets of every age and country, with which the fair Georgians and Circassians adorn their persons. The R. ferox mingles its large red blossoms and thorny branches with those of the hundred-leaved; and the R. pulverulenta is also observed on the peak of Narzana, one of the Circassian chain.

" In the north of Asia, Siberia boasts the R. grandiflora, of which the corolla bears the form of an antique cup; the R. caucasea, the fruit of which is of a pulpy substance; and still adjoining the Caucasian provinces, we find a yellowish variety of the caucasea, of a dingy unattractive appearance. Advancing towards the Frozen Ocean, and beyond the Ural Mountains, grows the R. rubella, of which the petals are sometimes of a deep crimson, but often pale and colourless as the surrounding country. Still further north, flourishes the R. acicularis, bearing solitary flowers of a pale red. Ten or twelve other species grow in the Russian provinces of Northern Asia; in particular, the R. kamtschatica, bearing solitary flowers of a pinkish white.

" In Africa, on the borders of the vast desert of Sahara, and more especially in the plains towards Tunis, is found the R. moschata, whose tufts of white roses give out a musky exhalation. This charming species is also to be found in Egypt, Morocco, Mogadore, and the Island of Madeira. In Egypt, too, grows the R. canina, or dog rose, so common throughout Europe. In Abyssinia, we find an evergreen rose tree, with pink blossoms, which bears the name of the country, as the R. abyssinica. Other species are, doubtless, to be found in the unexplored countries of Africa.

"In Europe, commencing, to the north-west, with Iceland (so infertile in vegetation, that in some parts the natives are compelled to feed their horses, sheep, and oxen, on dried fish), we find the R. rubiginosa, with pale, solitary, cup-shaped flowers. In Lapland, blooming almost under the snows of that severe climate, grows the R. majalis, small, sweet, and of a brilliant colour; and the same beautiful species, as if in enlivenment of the cheerless rudeness of the climate, is to be found in Norway, Denmark, and Sweden. In Lapland, too, under shelter of the shrubby evergreens, among which the natives seek mosses and lichens for the nourishment of their reindeer, they find the R. rubella, already mentioned, the flowers of which are sometimes of a deep red colour.

" The R. rubiginosa, the pale flowers of which grow in clusters of two or three; the May rose; the cinnamon rose, the small pale red flowers of which are sometimes single, sometimes double; as well as several other hardy species; may be found in all the countries of Northern Europe.

" Six species are indigenous in England. The R. involuta exhibits its dark foliage, and large white or red flowers, amid the forests of North Britain, the leaves of which, when rubbed, giving out a smell of turpentine, as if derived from the pine trees among which the shrub takes root. In the same neighbourhood are found the R. Sabina; the R. villosa, the flowers sometimes white, sometimes crimson, blowing in pairs; and the R. canina.

" The environs of Belfast produce an insignificant shrub, known as the R. hibernica, for the discovery of which Mr. Templeton received a premium of fifty guineas from the Botanical Society of Dublin, as being a new indigenous plant, though since discovered to become the R. spinosissima in poor soils, and the R. canina in loamy land.

" Germany, though unproductive in rose trees, boasts of several highly curious species; among others, the R. turbinata, of which the very double flowers spring from an ovary, in the form of a crest; and the R. arvensis, with large flowers, red and double, in a state of cultivation.

" The Swiss mountains, and the Alpine chain in general, are rich in native roses. Besides the field rose, just mentioned, they have the R. alpina, an

elegant shrub, with red solitary flowers, furnishing many varieties in cultivation ; the R. spinulifolia, having pale pink flowers of moderate size, with thorny leaflets, that exhale a scent of turpentine. It is remarkable that two mountain roses, the Swiss R. spinulifolia and the Scottish R. involuta, should be thus alike characterised by the smell of turpentine. There remains to be cited among Alpine roses the R. rubrifolia, of which the red-tinted stems and leaves, as well as the pretty little blossoms of a deep crimson, form an agreeable variety to the verdure of the surrounding foliage.

" In the eastern and southern countries of Europe, rose trees abound; of which a considerable number remain to be examined and classed. The Crimea, for instance, is not acknowledged to contain a single species, though travellers describe the country as very productive in roses. In Greece and Sicily, we find the R. glutinosa, of which the leaflets produce a viscous matter; the flowers being small, solitary, and of a pale red. Italy and Spain have several distinct species; among others, the R. Polliniana, with fine large purple flowers, growing in clusters of two or three, and found in the neighbourhood of Verona. The R. moschata and R. hispanica flourish in Spain; the latter being at present excluded from the species established by Lindley. The flowers, of a light pink colour, appear in May. The R. sempervirens, common in the Balearic Islands, grows spontaneously throughout the south of Europe, and in Barbary. Its foliage, of glossy green, is intermingled with a profusion of small, white, highly scented flowers.

" For France, nineteen species are claimed by the *Flora* of De Candolle. In the southern provinces is found the R. Eglanteria, whose golden petals are sometimes varied into a rich orange. The R. spinosissima grows in the sandy plains of the southern provinces, having white flowers tipped with yellow, which have furnished many beautiful varieties. In the forests of Auvergne and the departments of the Vosges, we find the R. cinnamomea, which derives its name from the colour of its branches ; the flowers being small, red, and solitary. The R. parviflora, or Champagne rose, a beautiful miniature shrub, adorns the fertile valleys in the neighbourhood of Dijon with its very double, but small, solitary, crimson blossoms. The R. gallica is one which has afforded varieties of every hue, more especially the kinds known as Provins roses, white, pink, or crimson. In the Eastern Pyrenees grows the R. moschata, a beautiful variety of which is known in our gardens as the nutmeg rose. The R. alba is found in the hedges and thickets of various departments, as well as the R. canina, or eglantine, the stock of which, straight, elegant, and vigorous, is so valuable for grafting." (p. 14.)

This article, which is a translation from the French of Boitard, is by far the most interesting part of Mrs. Gore's book; as the monograph, to be hereafter noticed, and which is also after Boitard, is the latest and best that has yet been published.

The next article is on the culture of the rose, and it is exceedingly meagre: the subject of insects, for instance, is dismissed in less than half a page. Next follows " Botanical Character of the Rose;" " Hybrid Varieties of the Rose;" " Classification by Specific Character;" " Distinction of Species;" " Bibliography of the Rose ;" and " Pharmacopœia of the Rose." This brings us to p. 79., the end of Part I.

Part II. is devoted to the " Monography of the Rose," and occupies to the end of p. 408. It will, no doubt, be considered very dull reading by those who expect to find in the *Book of Roses* any of the spirit of Mrs. Gore's novels. Still the monography and the geography will be useful for reference; and

those who wish for instruction in the culture of the rose must consult Rivers's *Descriptive Catalogue*, reviewed in Vol. X. p. 509., subsequently in Vol. XII. p. 260., and in the current Volume, p. 55.; and Rivers's *Rose Amateur's Guide*, 8vo, 1837, reviewed in p. 94. It is but justice to Mrs. Gore's translation to state, that there is no English work that contains such a copious and distinct monography of both species and varieties; and we only regret that we cannot speak as favourably of the other parts of the work, always excepting, however, the geography. Should ever the work come to a second edition, a tabular analysis of the monography would be a very great improvement; and, indeed, this and the geography would form an excellent work by themselves.

ART. V. *Catalogue of Works on Gardening, Agriculture, Botany, Rural Architecture, &c., lately published, with some Account of those considered the more interesting.*

THE Flower-Garden. Part II.: *The Green-house, Hot-house, and Stove.* By Charles M'Intosh, Head Gardener to His Majesty the King of the Belgians at Claremont. Small 8vo. In monthly parts, 1*s.* each. Part VI. appeared on Aug. 1.

We noticed that part of the *Flower-Garden* which treated of hardy plants in our preceding Volume, p. 602., and we shall recur to the present work as soon as it is completed. In the mean time, the name of M'Intosh is a guarantee for the soundness of the practices recommended.

A Treatise on Roads; wherein the Principles on which Roads should be made are explained and illustrated, by the Plans, Specifications, and Contracts made use of by Thomas Telford, Esq., on the Holyhead Road. 2d edition. By the Right Hon. Sir Henry Parnell, Bart., Honorary Member of the Society of Civil Engineers. 8vo. London, 1838.

We have, in a former volume, strongly recommended this work, as by far the best that has ever appeared on the subject of roads, and one which no country gentleman or land steward ought to be without.

Flora Medica; or, a Botanical Account of all the most remarkable Plants applied to Medical Practice in Great Britain and other Countries. By John Lindley, Ph.D. F.R.S., &c., Professor of Botany in the London University College. One vol. 8vo. London, 1838.

It may be enough for us to state, respecting this work, that we understand that Dr. Lindley has been engaged on it for two or three years.

An Introduction to the Modern Classification of Insects; founded on their Natural Habits and corresponding Organisation; with Observations on the Economy and Transformations of the different Families. To which are added, a Descriptive Synopsis of all the British Genera, and Notices of the more remarkable Foreign Genera. By J. O. Westwood, F.L.S., Secretary of the Entomological Society of London, &c. In 8vo numbers, monthly, 2*s.* 6*d.* each. To be completed in ten numbers, each containing about 120 engravings on wood, and a coloured plate.

This work is intended as a sequel to *Kirby and Spence's Entomology;* and we would strongly recommend it to the young gardener, who is desirous of studying insects scientifically.

MISCELLANEOUS INTELLIGENCE.

Art. I. *Domestic Notices.*

ENGLAND.

Mr. Hogg of New York, nurseryman, is now in London, after having been absent twenty years. He is much struck with the great increase of nurserymen and florists, and with the extensive additions that have been made to the ornamental plants in cultivation. His account of the climate of New York is such as induces us to think that the neighbourhood of that city can never greatly excel in horticultural and floricultural productions. — *Cond.*

The Hot-houses at Syon. — "We have seen plans for green-houses, &c., prepared from drawings by the Duke of Northumberland; and it appears, from a practical work on this subject, just published by Mr. Thompson, formerly His Grace's gardener, that all the horticultural works at Syon are dictated by His Grace's taste, and the drawings supplied for them by his own hand." (*Month. Chron.*, Aug. 1838, p. 148.) This assertion is of a piece with the rest of the article quoted from the *Monthly Chronicle.* (See our *Ret. Crit.*) Mr. Thompson was only a few months with His Grace; and the green-houses, dome, &c., were all erected before Mr. Thompson went there, under the direction of Mr. Forrest, who designed the whole of them, and only received the assistance of Mr. Fowler, the architect, in the architectural part of the botanic range. — *Cond.*

Mr. Traill, the Paçha of Egypt's head gardener, has been for some months past in England, for the purpose, not only of seeing his friends, but of collecting seeds, plants, and books to take out with him to Egypt for his employer's garden and library. The paçha is warmly attached to gardening in all its departments, but more especially to planting; and Mr. Traill has orders to introduce every tree and shrub that he thinks has any chance of thriving in the climate of Egypt. Already a magnificent collection has been sent to Egypt from the East Indies by Mr. M'Culloch, one of the superintendents of Ibrahim Paçha's gardens, who had been despatched by that prince to India, to collect plants, seeds, &c., and arrived with a large collection about April 20. (*Mr. Waghorn* in *Morn. Chron.*, Jan. 2. 1838.)

Professor Morrin of Liège is now in England, at the expense of the Belgian government, for the purpose of studying the construction of hot-houses. *Dr. Zanth, architect, of Stuttgard,* is also in England for the same purpose. — *Cond.*

A Subscription Botanic Garden, to be devoted solely to the culture of hardy

plants, is in contemplation. The money is to be raised by shares, somewhat in the manner of the Liverpool and Hull Botanic Gardens. Wandsworth Common is talked of as the site of the garden, and not less than 100 acres as its extent. More will be made known by advertisement. In the mean time, we most cordially wish the scheme success. It is not very creditable to the botanists of the metropolis and its neighbourhood, that no one garden exists nearer London than Edinburgh, which contains a complete collection of British plants. — *Cond.*

M. Edward Otto of Berlin is about to sail from Bremen for Cuba and St. Domingo, at the expense of the king of Prussia, to collect plants for the Royal Botanic Garden and Herbarium. From the West Indies he expects to go to Mexico. It is known to be a general practice on the Continent, for all young gardeners to travel, more or less, before they are finally established in situations; and, as ordinary gardeners travel through different parts of Germany, so those destined to be curators or directors of botanic gardens visit foreign countries. — *Cond.*

SCOTLAND.

C. G. Stuart Menteith, Esq., now Sir C. G. Stuart Menteith, Bart., of Closeburn, had a splendid piece of plate presented to him by his friends and admirers of the south of Scotland, on June 27. 1838. The same day on which we received the *Dumfries Times*, containing an account of the speeches delivered on the occasion, we saw in the *Morning Chronicle* that Mr. Menteith had been created a baronet. Probably, no man ever merited better the honours conferred on him, both by his countrymen, and by his sovereign. It is necessary to have been in Dumfriesshire, to know how ardently Mr. Menteith is beloved and admired by all ranks. In the words of one of the speakers, the Rev. A. Bennet, "An individual more single-minded, more accessible, less invested with the pomp of circumstance, more patriotic and public-spirited, is not to be found throughout the length and breadth of the land."— *Cond.*

Art. II. *The Sale of the entire Collection of Pine-apple Plants, cultivated in the Horticultural Society's Garden.*

No act of the Horticultural Society has been viewed by us with more regret than the dispersion of this collection, unequalled in the world. The reason given is, that the varieties have been "completely examined," and "the result published, or reduced to a state fit for publication." Allowing this to be the case, we think a few plants of each variety ought to have been kept in the garden, for the purpose of reference from all parts of the country, in order to assist in determining names, and for the instruction of young gardeners. Among the varieties advertised for sale are, in the words of the printed *Catalogue* "the celebrated Pitch Lake or Trinidad Pine," "the rare Sierra Leone, the Buchanan, Elford, Downton, Havannah, and other valuable varieties." Now, we would ask where are young gardeners to see these varieties in future? Or, if they are shown plants with these, or other comparatively little known names, how are they to know that the names are correctly applied? It may be said that the descriptions in the *Transactions* may be referred to for this purpose, and the same remark will apply in the case of every other fruit and culinary vegetable; but we all know how frequently descriptions fail in giving a correct idea of the thing described, more especially to practical men. Our opinion of the duty of the Horticultural Society is, that it ought not only to prove the different kinds of fruits and culinary vegetables (introducing every new sort, and testing its value relatively to the sorts in cultivation), but that living specimens of all the most valuable fruits and culinary vegetables ought to be kept in their garden, as perpetual sources of reference. For this reason, we have seen with deep regret the kitchen-garden department in a great measure given up; and,

indeed, the whole establishment deteriorated as a school of instruction for young gardeners; except, however, in so far as concerns their examination, and the granting of certificates, which we consider to be by far the greatest improvement that has been introduced since the garden was formed.

It may, perhaps, be more conducive to the wealth of the Society, to change the character of the garden from that of a scientific and useful institution for the promotion of horticulture, and the diffusion of improved varieties of fruits and culinary vegetables throughout the country, to one more botanical, or more attractive for company at the season of exhibitions; but we certainly think that, in so far as this end is pursued, the grand objects for which the institution was founded have been departed from. It is true, that whatever has been done, has been done by the sanction of the council; and, therefore, no blame can attach to any individual: and it is also reasonable that the council should have a power of departing from the letter of the institution, when by doing so they can render it more effective for the ends in view; viz. the diffusion of horticultural knowledge, and improved produce. The question simply is, whether the growing neglect of horticulture, and the increasing attention to botany and general display, evinced of late years by the Society, have a tendency to promote these ends or not. We think that they have not; and we have felt it our duty to take the present opportunity of saying so; deeply impressed as we are with the great good which the Society has done, and still continues to do, and the still greater which it might do.

Art. III. *Retrospective Criticism.*

Erratum. — In p. 393. l. 16., for " Newersh " read " Inveresk."

Botanical Magazine. (p. 393.) — In the last Number of your Magazine, (p. 393.), I took occasion to complain that the editor of the *Botanical Magazine* had committed what I could not but consider a fraud on the public, by reducing the number of plates in each monthly number of that work from eight to seven, while the price remained the same; and that this reduction had taken place, so far as I was aware, without any notice, explanation, or apology, having been offered. This statement, I now feel bound to say, is not correct, nor is the charge just. Due notice, I find, was given of the alteration, in an address from the editor to the subscribers, printed on the wrapper of the *Botanical Magazine* for January last, although it had entirely escaped my observation, till my attention was subsequently directed to it by the kindness of a friend. I will thank you to insert this in the next Number of your Magazine, as I am anxious to take the very earliest opportunity of correcting an error into which I have fallen, especially as it is one which cannot fail to create painful feelings in the mind of the parties concerned. I will add, that the explanation and the reasons given in the address alluded to, for reducing the number of the plates in each fasciculus of the *Botanical Magazine*, are to me quite satisfactory, and that I have no complaint to make against the editor of that excellent work. — *W. T. Bree. Allesley Rectory, Aug.* 17. 1838.

Curvilinear Iron Roofs to Hot-houses. — " Several valuable lessons were taught the gardener by the cold east winds and extreme frost of the last winter, especially concerning the stove and the green-house; yet, even when the outward air was more than 20° below the freezing point, care and skill protected the plants ; and, as we learn from Mr. Fowler of Temple Bar, a heat of 65° was unceasingly sustained in all the conservatories heated with his warm-water apparatus. Great was the devastation wrought in the superb conservatories in Syon House; in the new buildings at Chatsworth; at the magnificent green-house of the Grange, Lord Ashburton's; at Bretton Hall, Mr. Thomas Wentworth Beaumont's; and where ranges of glass, many thousand feet in extent, are intrusted to the custody of curvilinear roofs composed of iron frames: at every contraction or expansion of the metal, crash goes the fragile tenant; and, if walls could speak, we might hear woful tales of

vegetable suffering in those proud domes between December last and the present month of July. In humbler tenements, beneath wood-framed roofs, however, the inmates of the stove and green-house have passed the winter in health." (*Month. Chron.*, Aug. 1838, p. 146.)

We shall be much obliged to any of our readers, if they will point out any instances which may have come under their observation, in which glass has been broken in "curvilinear roofs composed of iron frames." In the case of all such roofs that we are acquainted with in the neighbourhood of London, more glass has not been broken during the past winter than usual; and this is equivalent to saying that scarcely a single pane in fixed curvilinear roofs, such as those in the Horticultural Society's Garden, has been broken. There is a very large curvilinear iron-roofed house at Messrs. Loddiges's, in which not a single pane has been broken during the last winter; and, indeed, we will venture to assert that, by the frost alone, there has not been a single pane broken in any curvilinear house whatever. Our firm belief is, notwithstanding the assertions of Mr. Thompson of the Beulah Spa Nursery, (in an article which was published the same month in several botanical periodicals, and which was also offered to us, though we declined it,) that there never has been a single pane broken in any description of iron-roofed house, solely by the contraction or expansion of the iron occasioned either by frost or sunshine. There have been, of course, as in every other kind of plant-house, many panes broken in iron houses, but never by simple contraction or expansion occasioned by difference of temperature. The kind of iron house in which panes are apt to be broken is, where the roof is formed into sashes, and where these sashes are of some length, and arranged to slide, or move by some other means, in order to give air. Whenever such sashes are above 5 or 6 feet in length, and 2 or 3 feet in width, they are apt to twist when being moved; and this it is which breaks the panes; while the cause, if it happens in summer, is attributed to extreme heat, and, in winter, to extreme cold. Hence, in the iron houses of the forcing department at Syon, and also at the Grange, a number of panes have been broken every year: perhaps twice as many as in the case of wooden houses similarly constructed. Had the roofs in such houses been fixed, it is probable scarcely any panes would have been broken; and, at all events, it is certain that not one would have been broken by the contraction and expansion of the iron. We have here (at Bayswater) a glass dome, 15 ft. in diameter, which was put up, in the year 1824, for the protection of camellias, since which there has not been a single pane broken by any changes of weather whatever; and only one or two by the gardener, when pruning the vines which are trained under the roof. Finally, whatever objections there may be to iron roofs, those who assert that they break the glass by mere expansion or contraction cannot bring forward positive and definite proofs. All that is stated in Mr. Thompson's article is mere assertion, depending for its truth solely on his own authority. There is one curvilinear house open every day in the year (except Sundays) to all persons; we mean the conservatory at the Pantheon. We shall be glad to know what Mr. Thompson, or any person who coincides with him in opinion, has to say to this house, in which there has not been a single pane broken from change of temperature during the whole of last winter. We are surprised that Dr. Lardner, who is understood to superintend the scientific department of the *Monthly Chronicle*, should not have made some enquiries into the subject, before he admitted an article containing assertions so much at variance with truth; and with the known laws of the contraction and expansion of iron.

With respect to the "ranges of glass, many thousand feet in extent," with curvilinear roofs composed of iron frames, at Bretton Hall, there never was any such range. There was formerly a superb domical conservatory, formed wholly of iron framing; but it was sold and removed on the death of Mrs. Beaumont, in the spring of 1832. See Vol. V. p. 681., where a view of this conservatory is given; and Vol. VIII. p. 361., where there is an account of its sale. The magnificent conservatory now erecting at Chatsworth is neither curvilinear, nor with an iron roof; and, besides, it is not yet glazed.

The whole of the article from which we have quoted is anything but creditable to the *Monthly Chronicle*, whether we regard the matter which it contains, or the manner in which it is written. — *Cond.*

Mr. Niven's Theory of the Motion of the Sap. (p. 161.) — With reference to Mr. Niven's communication, p. 161., I may state that several branches of figs, which I ringed in 1836, have not yet healed over, but still seem quite healthy, having, in 1837, produced fruit and leaves, and again this year the same. The two principles noticed in Mr. Niven's article, (fig. 21.) are very apparent. — *G. M. E. Ripley Castle, April* 5. 1838.

Art. IV. *Queries and Answers.*

Lupinus Cruickshánksii. — We beg to send you the measurement of a Cruickshanks lupine now growing in Miss Bacon's garden at Seharunpoor, and shall feel obliged if you will compare it with similar plants of English growth. It was produced from the seed of a plant raised from seed imported from England. The flower of last year was grown in a pot: the one now described is in the free ground. The soil was not particularly good, but prepared with farm-yard manure. It is curious that seeds raised from the same plant which has produced this lupine have not succeeded at all well. Though grown in similar soils and situations, in some cases under more favourable circumstances as to soil and climate, viz. in Dezrah and Hoon, there are now a few plants not exceeding 2 ft. in height, and the side stems very scanty and poor. As neither of us ever saw this plant in England, we apply to you for information as to its relative goodness, compared with those of English growth. The measurements have been all fairly taken with a tape this day, and the seed was planted at the end of September last. Measurement:—Extreme height, 5 ft. 6½ in.; circumference, 9 ft.; round the stem at the ground, 4¾ ft. 28 spikes of flowers, including the centre one, which is 22½ in. long, with 13 rows of flowers, and 89 blossoms. — *G. Bacon, Bengal Civil Service; and F. Wheeler, Captain Brigade-Major. Seharunpoor, Feb.* 27. 1838. [We shall be much obliged to any of our correspondents, who possess information respecting the bulk which *Lupinus Cruickshánksii* attains in England, if they will let us know what relation that bulk bears to the dimensions given by our correspondents in India. — *Cond.*]

Gas-Tar, I beg to inform your correspondent W. (p. 395.), is not injurious to fruit trees, if confined to the stems and larger branches; possibly, however, it would injure the young wood. I have known it laid thickly on the stems of wall-trees (peaches, apricots, and pears) which had been barked by hares, and the wound speedily healed afterwards: it is, in fact, an effectual preservative of trees from the attacks of these mischievous vermin. I believe, also, that gas-tar is the best destroyer of the small oval coccus which is so injurious to the apple and pear tree; and yet that insect is so little known, that no notice whatever is taken of it by writers on gardening. — *J. B. W. Aug.* 12. 1838.

Art. V. *Covent Garden Market.*

The supplies to the market, during the last month, have been generally good and regular. The prevalence of wet, during the early period, prevented the ready sale of many articles; but as yet we have had little left on hand: from day to day, the market has been generally cleared. Peas continue to come to hand plentifully, and of excellent quality; French beans in great abundance, very cheap. Potatoes are furnished very freely from all parts, the quality very varied, as may be seen by the price, from 2*l.* to 5*l.* per ton. Pears are very plentiful; also plums, of most of the varieties, especially

green gages and damsons. Some of the summer varieties of apples are a crop, but, generally speaking, will be found deficient. Filberts are plentiful, and will be abundant in due season. Apricots, peaches, nectarines, and all wall fruits, are also a good crop, except grapes, which are very late and uncertain. Pine-apples and hot-house grapes are now in good supply, and of excellent quality.— *C. G. M., Aug.* 21. 1838.

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbages, per dozen:		
White	0 1 0	0 1 6
Plants, or Coleworts	0 2 0	0 3 0
Cauliflowers, per dozen	0 4 0	0 6 0
Broccoli, Cape, per bunch	0 0 9	0 1 6
Legumes.		
Peas, per sieve	0 2 0	0 3 0
Peas, per sack	0 8 0	0 10 0
Beans, Windsor, per sack	0 5 0	0 6 0
Kidneybeans, per half sieve	0 0 9	0 1 0
Tubers and Roots.		
Potatoes, per ton	2 0 0	5 0 0
Potatoes, per cwt.	0 2 0	0 5 0
Potatoes, per bushel	0 2 0	0 2 6
Kidney, per bushel	0 4 0	0 5 0
Turnips, White, per bunch	0 0 2	0 0 3
Carrots, young, per bunch	0 0 3	0 0 5
Red Beet, per dozen	0 1 0	0 1 6
Horseradish, per bundle	0 2 0	0 5 0
Radishes:		
Red, per dozen hands (24 to 30 each)	0 0 9	0 0 0
White Turnip, per bunch	0 0 1	0 0 1½
The Spinach Tribe.		
Spinach, per sieve	0 1 6	0 0 0
Spinach, per half sieve	0 1 0	0 0 0
Sorrel, per half sieve	0 0 9	0 0 0
The Onion Tribe.		
Onions, for pickling, per half sieve	0 3 0	0 0 0
Leeks per dozen bunches	0 0 9	0 1 0
Garlic, per pound	0 0 6	0 0 0
Shallots, per pound	0 0 6	0 0 8
Asparaginous Plants, Salads, &c.		
Lettuce, per score:		
Cos	0 0 9	0 1 3
Cabbage	0 1 0	0 1 6
Celery, per bundle (12 to 15)	0 0 9	0 1 6
Pot and Sweet Herbs.		
Parsley, per half sieve	0 0 6	0 1 0
Tarragon, dried, per doz. bun.	0 4 0	0 4 6
Fennel, per dozen bunches	0 2 0	0 0 0
Thyme, per dozen bunches	0 2 0	0 3 0
Sage, per dozen bunches	0 2 0	0 3 0
Mint, dried, per dozen bunches	0 2 0	0 0 0
Peppermint, per dozen bun.	0 1 0	0 0 0
Marjoram, per dozen bunches	0 2 0	0 3 0
Savory, per dozen bunches	0 2 0	0 3 0
Basil, per dozen bunches	0 2 0	0 3 0
Rosemary, per dozen bunches	0 6 0	0 0 0
Lavender, per dozen bunches	0 3 0	0 4 0
Tansy, per dozen bunches	0 1 0	0 0 0
Stalks and Fruits for Tarts, Pickling, &c.		
Angelica Stalks, per pound	0 0 4	0 0 0
Vegetable Marrow, per doz.	0 1 0	0 0 0
Edible Fungi and Fuci.		
Morels, per pound	0 14 0	0 0 0
Truffles, English, per pound	0 14 0	0 0 0
Fruits.		
Apples, Dessert, per bushel:		
Juneating	0 6 0	0 7 6
Sack and Sugar	0 6 0	0 7 6
Red Astracan	0 12 0	0 14 0
Pears, Dessert, per half sieve:		
Jargonelles	0 2 6	0 5 0
Citron des Carmes	0 2 6	0 0 0
Peaches, per dozen	0 6 0	0 12 0
Nectarines, per dozen	0 6 0	0 12 0
Apricots, per dozen	0 2 0	0 3 0
Almonds, per peck	0 7 0	0 0 0
Plums, Dessert, per half sieve	0 4 0	0 5 0
Plums, Dessert, per punnet	0 0 9	0 1 0
Green gage	0 0 9	0 1 0
Cherries, per pound	0 1 0	0 3 0
Morellos, per half sieve	0 3 0	0 3 6
Gooseberries, per half sieve	0 2 0	0 5 0
Currants, per half sieve:		
Black	0 3 6	0 5 0
White	0 2 0	0 3 0
Red, for wine	0 2 0	0 0 0
for tarts	0 2 0	0 0 0
dessert	0 4 0	0 0 0
Raspberries, Red, per gallon (2 pottles)	0 0 8	0 0 10
Filberts, English, per 100 lb.	2 10 0	3 0 0
Pine-apples, per pound	0 5 0	0 8 0
Hot-house Grapes, per pound	0 1 0	0 3 6
Melons, each	0 2 0	0 4 0
Lemons, per dozen	0 1 0	0 2 6
Lemons, per hundred	0 8 0	0 16 0
Sweet Almonds, per pound	0 2 3	0 2 6
Nuts, per bushel:		
Brazil	0 16 0	0 0 0
Barcelona	1 5 0	0 0 0
Messina Cobs	0 10 0	0 0 0

Art. VI. *Obituary.*

Francis Blaikie, M.H.S. — By a letter received from Mrs. Blaikie, dated Paris, August 6., we learn that this venerable horticulturist and excellent man died in that city on the 19th of July, in his eighty-ninth year, and was buried on July the 21st. We trust that some of Mr. Blaikie's friends will enable us to give a memorial of Mr. Blaikie's life; which, considering that he was in France during the whole period of the revolution, is one of extraordinary interest.

THE

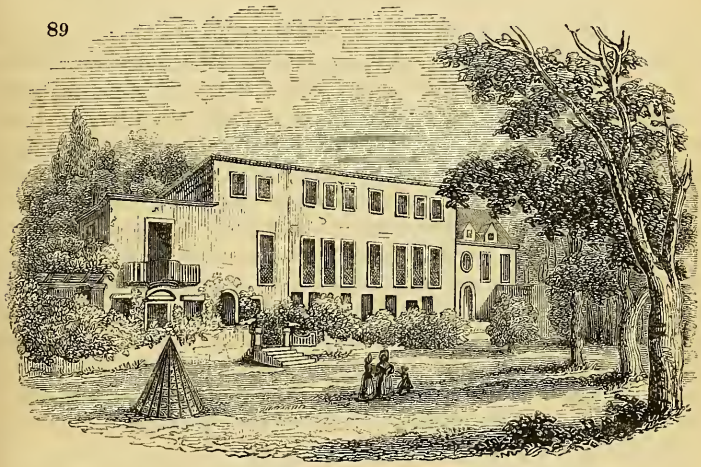
GARDENER'S MAGAZINE,

OCTOBER, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *Descriptive Notice of the Country House of Dr. Renton, in Madeira, called Quinta de la Valle (Villa of the Valley), situated near Funchal.* By Dr. LIPPOLD, Author of the "Wohlstandige Gärtner," &c., Natural History Collector in Madeira and the Canaries.

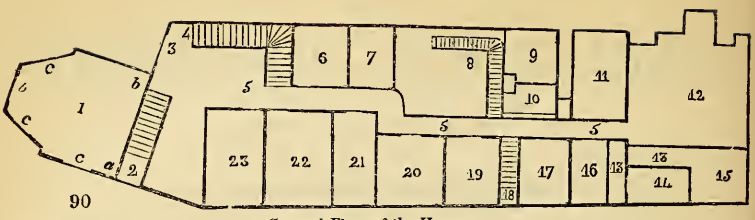
I HAVE seen many parks and many gardens, says Dr. Lippold, much larger, more ornamented, and richer in plants; but I



View of the Quinta.

The plant in the foreground, protected by a cone of bamboo rods, is a species of Coókia.

have never seen a garden better situated with respect to prospect, or more luxuriant in vegetation. Imagine a succession of terraces, almost in the centre of an amphitheatre of mountains surrounding the city and bay of Funchal, nearly 500 ft. above the sea, with the most diversified view of the mountains, ravines, forests, vineyards, the city, and the sea; and all these terraces planted as pleasure-grounds, and surrounding one of the most convenient of houses, although it is very irregular in its plan. The luxuriance of the vegetation more particularly calls forth

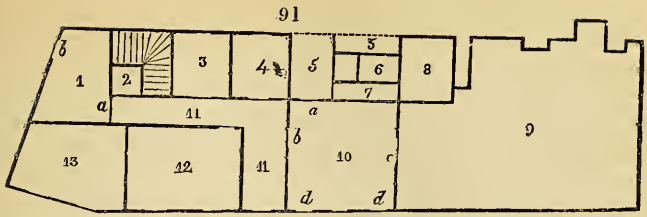


Ground Floor of the House.

1, Dining-room; *a* being the entrance door; *b*, the garden door, opening towards the parterre of flowers; and *c*, the windows.
2, Flight of steps, leading from the entrance door on the ground floor to the first floor.
3, Garden door. 4, Staircase leading to the second floor.
5, Passage leading to the offices and kitchen.
6, 7, Small rooms for stores.
8, Private staircase leading to the second floor. 9, 10, Privies for the offices.
11, Larder. 12, Kitchen.
13, Small passages leading to the store-rooms. 14, 15, Store-rooms.
16, 17, Servants' rooms. 18, Private stairs leading to the cellars.
19, 20, 21, 22, Servants' rooms. 23, Store closet.

our admiration; and this is, no doubt, owing to the facility with which an equal and constant irrigation of the whole soil may be obtained, by means of a stream of water, carried along almost the whole length of the wall at the top of the garden, where the two cisterns, C and D in *fig.* 92. are situated, from which small channels or gutters of water extend in all directions; besides which, there are pipes, furnished with cocks, laid along all the terraces, for watering the plants in detail. All the walls of the terraces are covered with climbing plants, such as *Técoma* radìcans, Passiflòra racemòsa, P. edùlis, &c.; Lonícer*a* japónica and sinénsis, Ipomœ'a bòna-nox, *R*úscus andrógynus, &c.; and other plants trained against the wall, such as *H*édera *H*èlix, geraniums, fuchsias, *J*asmìnum grandiflòrum, *C*áctus triangulàris, *T*amarix índica, Brugmáns*ia* suavèolens, *L*aúrus índica, *R*òsa sínica, *R.* bengalénsis, and *R.* multiflòra. The standard trees, however, constitute the wonder of this garden.

In *fig.* 92., P 1 is a small lawn surrounded by a wall, extending about 20 ft. with a border of roses in front, planted with *A*càcia leucocéphala, *Yúcca* glorìosa, *Bambùsa a*rundinàcea, Lantàna aculeàta, geraniums, Alpín*ia* nùtans, Brugmáns*ia* suavèolens, and *R*úscus andrógynus. There you will find four plants of *A*càcia Wallich*iàna*, from 3 ft. to 5 ft. in circumference, and from 40 ft. to 50 ft. in height. When covered with their yellow flowers, with long fringe-like stamens, and their most delicately laciniated foliage, they are superb. They ripen seeds in abundance. *C*éltis orientàlis, 30 ft. high; young *L*aúrus *Cámphora;* Stercùlia *p*latanifòlia, with a trunk 3 ft. in girt,



Plan of the First Floor.

1, The doctor's study, with a door (*a*) which opens into the corridor; and another door (*b*), leading into the garden from above.
2, Principal staircase from the ground to the first floor.
3, 4, Small rooms, each with a window looking into the garden.
5, Open corridor in front of the drawingroom, leading into the garden.
6, Small bath-room, over a private staircase leading to the offices.
7, Small passage leading from the bath-room to the water-closet.
8, Water-closet. 9, Roofs of the offices, which are on the ground floor.
10, Drawingroom, with a door (*a*) leading to the garden from above. The other door (*b*) is the entrance door of the drawingroom: the fireplace (*c*) has a window above it, commanding a view of the mountains; *d d* are windows overlooking the town and the sea.
11, Inner passage. 12, 13, Best bed-room and dressing-room.

and 40 ft. high; *P*érsea gratíssima (avocado, or alligator pear), trunk 3 ft. in girt, and 40 ft. high; Gledítsch*ia* hórrida, trunk 3 ft. in girt, and 50 ft. high; Erythrìna velutìna, trunk 3 ft. in girt, and 40 ft. high, superb when in flower; young *H*ibíscus heterophýllus, 10 ft. high; two *M*ýrtus pedunculàta, large bushes, (Pitanga), 20 ft. high; Magnòl*ia* purpùrea, bushy, 12 ft. high; Coók*ia* punctàta, trunk 2 ft. in circumference, and 20 ft. high. One side of this terrace is separated from the poultry-yard by a wall and iron railing. This railing is from 30 ft. to 40 ft. long, covered with the climbing branches of a Cæsalpín*ia Sáppan*, planted in the poultry-yard; the trunk of which is only 8 in. in circumference. The flowers, which are in the form of a pyramidal thyrsus, and of a very shining yellow, are magnificent: the leaves are like those of the acacia. Unfortunately, the branches are covered with thorns as far as the flowers. The seeds are like those of the ricinus, but rounder, and of a darker marbled brown. I have never seen this splendid tree in green-houses in Europe. Its light foliage would form, I think, a very good shade from the sun; but, no doubt, the thorns would occasion some trouble, as the branches grow very rapidly. Lastly, an immense Erythrìna *p*oiánthes, with a trunk 5 ft. in girt, quite bent, and hanging over the wall, concludes the list of trees on this small terrace.

Above it, there is another larger terrace (E), planted with orange trees (thirty trees), 12 ft. high. Camél*lia* japónica, with single flowers, with a trunk 2½ ft. in circumference, and

15 ft. high. All the ground under the trees is planted with strawberries, which bear very well; but sixty or seventy pine-apple plants, in stone cases along the top wall, do not succeed so well as is generally the case in Funchal. At F is a plant of Hàke*a* pugioniformis, with a trunk 10 in. in circumference, and 13 ft. high; many specimens of *Cajànus* bícolor, *A*'loe arboréscens, *P*olýgala *m*yrtifòlia, Cèreus brasiliénsis, *Bambùsa*, &c. The wall is covered with *C*áctus triangulàris, Ipomœ'a bòna-nox, Passiflòra edùlis, Peréski*a* aculeàta, &c. The hedge which separates this terrace from a neighbour's vineyard, is formed of roses, *Bambùsa*, Peréski*a*, &c.

At the end of these terraces, there is a considerable declivity all along the north side of the house, marked in the plan by the letters G A, and divided into four terraces. The fourth (P 3) does not slope, but is almost on a level with the walk: it is laid down in turf, and surrounded with dahlias. These terraces together contain the following plants: — Magnòli*a* grandiflòra var. ferrugínea, trunk from 3 ft. to 3½ ft. in circumference, and 30 ft. high; *L*aúrus *Cámphora*, 6 ft. in circumference, and from 50 ft. to 60 ft. high; Eugèni*a Jámbos* (rose apple), 3½ ft. in circumference, and 30 ft. high; *C*éltis orientàlis, 4 ft. in circumference, and 50 ft. high; young *L*aúrus fœ'tens, 1½ ft. in circumference, and 25 ft. high; *Q*uércus *S*ùber (the cork tree), 7 ft. in circumference, and from 60 ft. to 70 ft. in height. Under the latter, and much too near, Dracæ'na Dràco, 4 ft. in circumference, and 25 ft. high. *M*yrìca *Fàya*, 3 ft. in circumference, and 30 ft. high; *C*upréssus fastigiàta, 2½ ft. in circumference, and 50 ft. high; *C*upréssus lusitánica, 5 ft. in circumference, and 40 ft. high; *C*eratòni*a S*íliqua (St. John's bread), 11½ ft. in circumference!, and 40 ft. high; *L*aúrus fœ'tens (til tree), 2 ft. in circumference, and 40 ft. high; *M*yrìca *Fàya*, 5 ft. in circumference, and 30 ft. high; *A*càcia, unknown species, 7 ft. in circumference, and 35 ft. high, magnificent (the leaves rather resemble those of a cassia than of an acacia, and are of a very dark green, approaching to black; the flowers are yellow, and very large); *C*upréssus lusitánica, 5½ ft. in circumference, and 35 ft. high; *A*càcia dealbàta (young) 2 ft. in circumference, and 25 ft. high; *C*upréssus fastigiàta, 2, ft. in circumference, and 35 ft. high; Pittósporum coriàceum, bushy, 7 ft. high; young Magnòli*a* umbraculífera; Lonícer*a* japónica; *I*'*nga* Houstoni Dec., bushy, with beautiful crimson flowers, 12 ft. high; Xylophýlla falcàta, 1 ft. in circumference, and 12 ft. high; *M*ýrtus commùnis, microphýlla, and macrophýlla, 3 ft. in circumference, and 25 ft. high; Fúchs*ia* arbòrea, bushy, 8 ft. high; *A*càcia verticillàta, bushy; *E*rìca arbòrea, 10 ft. high, &c.; Stercùlia *p*latanifòlia, 5 ft. in circumference, and 50 ft. high; *L*aúrus fœ'tens, 5 ft. in circumference, and 40 ft. high.

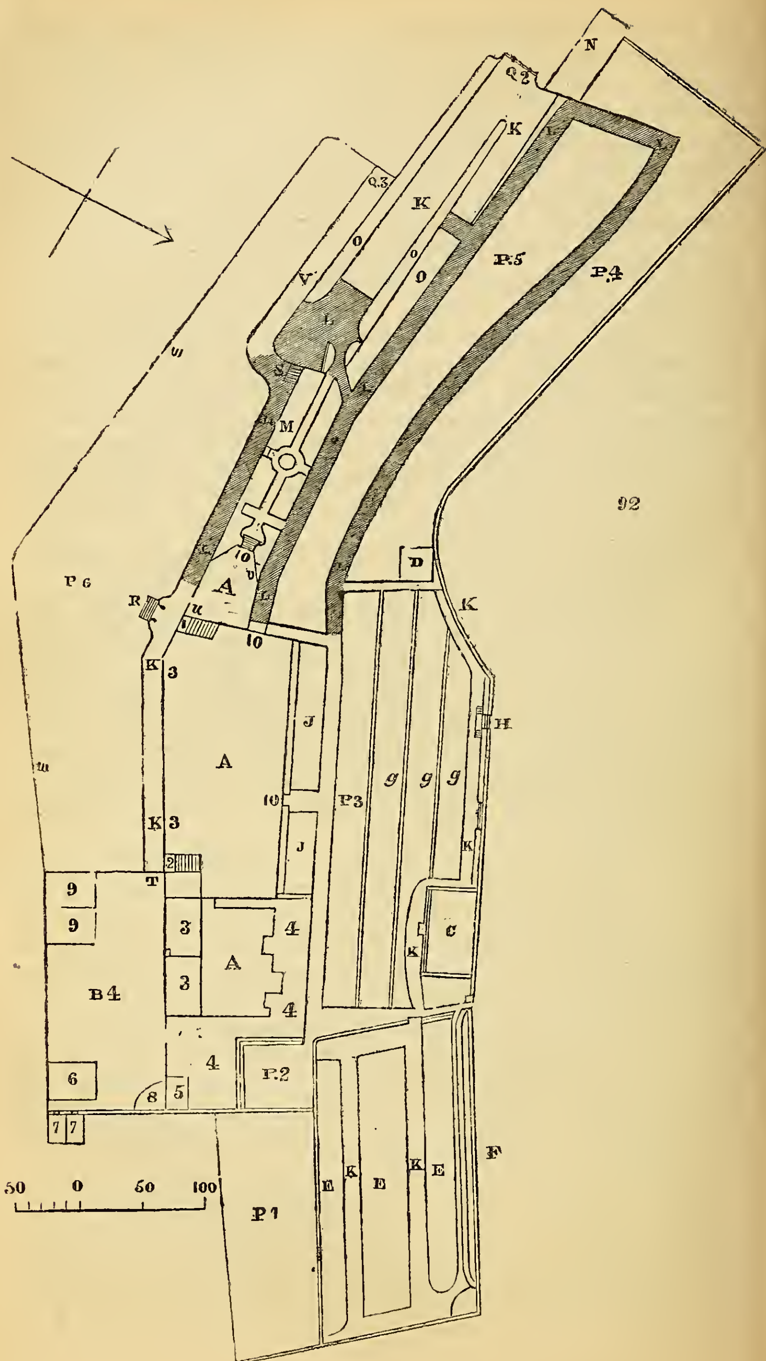
The ground marked P 4 and P 5 is almost level, and is separated

by a magnificent trellis of vines (L L), formed by pillars of stone, with wood for the trellis. The long bunches from this trellis, as early as the month of August, fall almost into one's mouth. The ground is also laid down in turf, and planted with trees as follows: — *C*upréssus lusitánica, 3 ft. 9 in. in circumference, and 35 ft. high; Justí*cia Adhatòda*, bushy, 20 ft. high; *N*èrium Oleánder, 1½ ft. in circumference, and 20 ft. high; *T*hùja orientàlis, 2 ft. in circumference, and 20 ft. high; Cunninghàm*ia* lanceolàta, from 1 ft. to 1½ ft. in circumference, and from 15 ft. to 20 ft. high; Eucalýptus robùsta, 6½ ft. in circumference, and 60 ft. high; Melaleùca *e*ricifòlia, 1 ft. in circumference, and 12 ft. high; *F*àgus sanguínea, 2 ft. in circumference, and 25 ft. high; *C*ércis *S*iliquástrum, 8½ ft. in circumference, and 40 ft. high; Magnò*lia* grandiflòra, 3½ ft. in circumference, and 30 ft. high; *C*upréssus lusitánica, 4½ ft. in circumference, and 50 ft. high; *C*éstrum vespertìnum, 30 ft. high (several young ones); young Robín*ia* Pseùd-*A*càcia, *H*ibíscus mutábilis, &c.; *L*aúrus fœ̀tens, 6½ ft. in circumference, and 60 ft. high; *C*upréssus lusitánica, 7 ft. in circumference, and 40 ft. high.

The porter's lodge (N) is surrounded and covered with *Técoma* radìcans, and other climbing shrubs. On the same ground, and on the same level, you will also find *A*càcia Wallich*iàna*, 4 ft. in circumference, and 40 ft. high, supporting *Técoma* radìcans, climbing at the bottom; Sapíndus Saponària, 3 ft. in circumference, and 30 ft. high; Metrosidèros *c*ítrinus, 1½ ft. in circumference, and 10 ft. high; Calycánthus flóridus, 10 ft. high; *P*sídium pyríferum, 12 ft. high (guava tree); Cecròp*ia* palmàta, 20 ft. high; *S*chìnus *t*erebinthinàcea, 12 ft. high; *P*y̆rus lusitánica [?]; *M*éspilus japónica (young); and many shrubs which I do not know.

The trellis of vines extends as far as the porter's lodge; returns to the house by a lower and narrower terrace, and ends near the dining-room (V A). There is no grass there, but parterres of flowers, in which are also some fine trees: *M*y̆rtus microphýlla, 2½ ft. in circumference, and 20 ft. high; Eugèn*ia Jámbos*, 3½ ft. in circumference, and 40 ft. high; *M*y̆rtus macrophýlla, 2½ ft. in circumference, and 20 ft. high; *C*upréssus fastigiàta, 4½ ft. in circumference, and 50 ft. high; *T*hùja orientàlis, 3½ ft. in circumference, and 30 ft. high; *A*càcia scándens, 1½ ft. in circumference, and 40 ft. long; Eucalýptus robústa, 7½ ft. in circumference, and 60 ft. high; Mangífera índica, 3 ft. 3 in. in circumference, and 20 ft. high.

Still lower down, near the principal entrance door (Q 2), are several shrubs, such as *A*loe arboréscens, *P*hiladélphus grandiflòrus, Volkamèr*ia*, Perésk*ia*, *R*úscus andrógynus, Brugmáns*ia*, *S*álvia cærùlea, *C*ássia lævigàta, *L*aúrus índica, and *H*eliotròpium; two *Yúcca* gloriòsa, 2 ft. in circumference, and from 15 ft. to


N
Q2
K
Q3
K
P5
P4
V
W
M
92
D
P6
R
A
10
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K 3
A
J
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P3
g g g
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C
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A
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B4
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P2
6
8 5
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E K E K E
50 0 50 100
P1

20 ft. high; two Cèreus brasiliénsis, nearly 2 ft. in circumference, and 10 ft. high, &c.

Descending to the very bottom of the garden, below the flower-garden in front of the dining-room, and between the two little flights of stairs (R, S), there is a trellis covered with an enormous *Tamarix índica*, 3 ft. in circumference, *Rosa sínica álba*, and *Jasmìnum grandiflòrum*. Before descending the small flight of stairs R, opposite the house, towards the south, into the lawn (P 6), we must look in the poultry-yard at a beautiful group of *Bambùsa*, 30 ft. high; the Cæsalpín*ia* before named; Cèreus brasiliénsis, 8 in. in circumference, and 10 ft. high; Erythrìna *poiánthes*, 2½ ft. in circumference, and 20 ft. high; three old orange trees, from 2 ft. to 3 ft. in circumference, and 20 ft. high; fine black mulberry, 5 ft. in circumference, and 30 ft. high, &c.

Explanation of the Ground Plan of the House and Garden (fig. 92.).

A A A, The house. 1, 2, Steps at the entrance.
3, Cellars and store-houses for wood and coal, on the ground floor.
10 10 10, Garden gates.
B, Poultry-yard, surrounding the offices on three sides (4 4 4).
5, Small basin of water for the poultry. 6, The stables.
7, Privy for the servants. 8, Dung-pit.
9, Poultry-yard, properly so called, surrounded and covered with rods of bamboo.
C, Large cistern of water at the upper part of the garden D, Small ditto.
E, Large terrace, planted with orange trees and strawberries.
F, Stone boxes, planted with pine-apples. [The main crop of pine-apples is grown in the kitchen-garden, which is not shown in this plan. They succeed very well, but suffer somewhat in the rainy season, from excess of moisture. Mr. Wm. Christy, jun., suggested to Dr. Renton the idea of protecting them by glass sashes during excessive rains.]
g g g, Three terraces, one above another, planted with ornamental trees and geraniums.
H, Door opening towards the levada, or water conduit.
J J, Parterres of flowers behind the house.
K, Walks in the garden, and before the house.
L, Walks covered with trellises of vines.
M, Parterre of flowers before the dining-room. N, Porter's lodge.
O, Parterre of flowers.
P 1, 2, 3, 4, 5, 6, Lawn, planted with exotic trees and shrubs, and more or less in terraces.
Q 1, Entrance door from the garden to the lower part of the house.
Q 2, Principal door higher up, leading straight from the street, through the garden, to the dining-room.
R, Small flight of steps, leading from the entrance-door of the house to the large lawn in front.
S, Small staircase, with a closed door, to descend from the garden into the corridor before the house.
T, Door of the poultry-yard.
u, Small staircase and cellar, below the dining-room, for keeping cool the liquids for drinking.
v, Closet for the palanquins, below the dining-room.
W, Small iron grating, surrounding the lower terrace before the house.

It may be proper to observe that the ground slopes so much behind the house, that the ground floor and first floor both open to it without descending steps.

Lastly, in the lawn, all along in front of the house, there are two Erythrìna *poiánthes*, 2 ft. in circumference, and from 10 ft. to 20 ft. high; Fúchs*ia* arbòrea, 8 ft. high, bushy; Liriodéndron Tulipífera, 8½ ft. in circumference, and from 70 ft. to 80 ft. high; Metrosidèros *c*ítrina, 1½ ft. in circumference, and 8 ft. high; two Magnòl*ia* grandiflòra, from 4 ft. to 6 ft. in circumference, and from 30 ft. to 50 ft. high; star-apple (Chrysophýllum sp.), 4½ ft. in circumference, and 40 ft. high; *M*ýrtus *Piménta*, 4½ ft. in circumference, and 40 ft. high; custard apple (*Anòna* sp.), 3½ ft. in circumference, and 20 ft. high; *C*ỳcas, or Zàmia ?, 7 ft. in diameter (measuring the place whence the leaves proceed); another custard apple, 3 ft. in circumference, and 25 ft. high; Erythrìna *C*rísta-gálli, 30 ft. high, and 5 ft. in circumference; two *C*upréssus fastigiàta (headed down), from 3 ft. to 4 ft. in circumference, and from 30 ft. to 35 ft. high; Liriodéndron Tulipífera, 10 ft. in circumference, and from 80 ft. to 90 ft high.

Art. II. *Some Account of the Garden of Mr. Abel Ingpen, A.L.S., &c., Upper Manor Street, Chelsea.* By Mr. Ingpen.

[The garden of Mr. Ingpen is decidedly the most interesting of its class, which we know of, in the suburbs of London. We had often heard of it from our friends, Mr. Anderson of the Botanical Garden, Chelsea, and Mr. Main; and, in November, 1837, we had the pleasure of seeing it, when the chrysanthemums, which clothe the walls, were in full bloom. We were so much gratified, that we applied to Mr. Ingpen for some account of his plants, and mode of management, and for a plan of his garden; and he very kindly sent us what follows.]

The garden consists of a strip of ground, running east and west, 73 ft. long by 15 ft. wide: a wall 6 ft. high runs on each side, and one 10 ft. high encloses the bottom: the house stands at the west end. A border, 2 ft. wide, skirts the north and south walls, and the centre is divided into two beds, with a gravel walk on each side, 2½ ft. wide. This border is planted entirely with bulbs; and, as soon as the foliage begins to decay, annuals are planted between the rows. The eastern bed is reserved for tulips, and the western bed is devoted to miscellaneous plants. The eastern end of the south-aspected border contains a frame, with two lights, hung on hinges for letting up and down; and also three frames, with oiled calico covers, for the winter quarters of auriculas and half-hardy bulbs. One hundred feet of the wall, north, south, and east, are reserved for chrysanthemums, trained to it with one or three stems; but on the south wall, alternately with the chrysanthemums, are generally planted out, pelargoniums, monthly roses, and fuchsias.

Among the miscellaneous plants in the western bed are roses, peonies, narcissuses, fuchsias, lilies, crown-imperials, martagon lilies, tulips, hyacinths, gladioluses, irises, campanulas, and other perennials, with a few annuals; and round the edge of the border are Dutch varieties of crocuses, planted in clumps, alternately with auriculas, daisies, polyanthuses, primroses, hepaticas, &c. So soon as the bulbs are ready to be taken up, other plants, brought forward in pots, are ready to supply their place; and, by means of tying up and thinning out, no one plant is ever allowed to overrun another.

The tulip bed at the eastern end contains 49 rows, with 7 bulbs in each row, and is surrounded by a narrow border, with a brick edging. The border is entirely covered by various species of Sèdum, amongst which are planted several Dutch varieties of crocuses, in clumps, 10 in. apart, which push up through the sedums, and bloom profusely. The tulip bed has a frame and awning, for shading the flowers; and, as soon as the bulbs are taken up, a portable stand is placed on the bed for the reception of the carnations, which are sheltered by the same awning. When the bloom of the carnations is over, and the awning taken down, 21 pots of dahlias (planted in quincunx), which have been brought forward by various shiftings, from thumb pots to thirty-twos (the largest size allowed them), are sunk in the pots in the tulip bed to bloom, and immediately tied to stakes. About the last week in October, the dahlias are taken up and suffered to dry for a few days, before they are put away in the pots, into a dry cellar. The tulip bed is then prepared by turning over the surface every day or two for ten days, in order to sweeten it, and then trenching in old carnation and auricula compost, which is also well dug over three or four times. The bulbs are planted about the middle of November.

The auriculas, when in bloom, are placed on a shaded stage at the bottom of the garden; and, during the summer, on double narrow strips of wood placed on brickbats, along the edge of the shaded path. The carnations, when out of bloom, and the chrysanthemums in pots, are also intruders on the edge of the opposite pathway. The glazed frame, which, in winter, holds the largest and best auriculas, is applied as soon as possible, in the spring, for raising cuttings of chrysanthemums, geraniums, fuchsias, dahlias, &c. In February, a few pots of annuals are sown, and covered occasionally with hand-glasses till ready to transplant.

The materials for making compost (loam, peat, very rotten dung, and leaf mould) are kept at the bottom of the garden, under cover; and, being always ready for use, are quickly mixed, as circumstances require.

Among the common tools, I find a small three-pronged fork extremely useful, not for taking up tulips, for a worse instrument

for that purpose could not have been devised, but for lifting and lightening the soil among the bulbous plants. For planting tulips, a tin tube, with a handle of the shape and size of a strawberry pottle, is the best tool I am acquainted with for the purpose, as a blunt dibber presses the earth into a solid mass at the bottom, which renders it difficult for the young fibres to penetrate; and, consequently, they do not get sufficient nourishment for their support.

I shall not enter into any detail of my mode of management of the plants which I cultivate, which I have no reason to think essentially different from that of others. Attention to the nature of each species, and its habit and soil, as far as possible, joined to care in its preservation, and particularly cleanliness, are the essential points; and these, kept constantly in view, will obviate many of the difficulties felt by the occupiers of small gardens in the vicinity of London.

My chief object is, to become acquainted with, and to cultivate, in the best manner which a bad situation allows, as great a number of plants as possible; principally hardy and half-hardy bulbs and tubers, to which I am more particularly attached. Engaged in London during the greater part of each day, I have but little time to devote to gardening; yet that little, constantly employed, produces a large sum of enjoyment, which is much augmented by the pleasure arising from the power of adding to the enjoyment of others, by presents of plants, which, small as my garden is, I have been able to do to the extent of not less than 500 plants and cuttings during the past season; and, not to mention gratifications of a higher nature, I know of no natural science, and I have been a dabbler in several, that furnishes the mind with such pure and unalloyed pleasure as that of botanical floriculture.

I subjoin a list of my plants, and a ground plan of my garden. — *Dec.* 12. 1837.

Aúcuba japónica.
Agapánthus umbellatus.
*A*llium *M*òly.
ursìnum.
Amaryllis *Belladónna.*
*A*nemòne nemoròsa.
Pulsatílla.
Anthéricum Liliástrum.
Aquilègia vulgàris, vars.
Armèria vulgàris.
*A*rum maculàtum.
*A*sphódelus lùteus.
taúricus.
*A*ster multiflòrus.
Brodiæ*a* congésta.
*C*áctus (Cèreus) speciòsa.
speciosíssima.
Campánula *p*ersicifòlia.
2 máxima.
3 flòre plèno.
4 flòre álbo.
5 flòre álbo plèno.
pùmila.
2 flòre álbo.
*C*aprifolium *P*ericlýmenum.

Chrysanthemums.

Adonis.
Blush ranunculus-flowered.
Brown purple.
Buff, or Copper.
Calypso.
Celestial.
Champion.
Changeable, pale buff.
white.
yellow.
Cleopatra.
Clustered blu
pink.
Conqueror.
Conspícuum.
Coronet.
Countess.
Curled blush.
lilac.
Diadem.
Dwarf pale rose.

Early blush.
E'legans.
Exímium.
Expanded crimson.
light purple.
Flat pink.
Formòsum.
Gem.
Golden yellow.
Goliath.
Gránde.
Grove's light purple.
Imperial.
Incurved pink.
Indian yellow.
Insígne.
Invincible.
King.
Large lilac.
quilled orange.
Late pale purple.
Lùcidum.
Marchioness.
Marquis.
Mirábile.
Pale buff.
flame yellow.
pink.
Paper white.
Park's small yellow.
Penelope.
Perfection.
Perspícuum.
Pulchérrimum.
Queen.
Quilled flame yellow.
salmon.
white.
yellow.
Reeves's pale buff.
Rose, or pink.
purple.
Sanguíneum.
Semi-double quilled orange.
pale quilled orange.
quilled pink.
quilled white.
Small yellow.
Spanish brown.
Starry blush.
purple.
Sulphùreum.
Sulphur yellow.
Superb clustered yellow.
Surprise.
Tasseled lilac.
white.
yellow.
Triumphant.
Two-coloured incurved.
red.
Unique.
Venus.
Vesta.
Warratah.
Windsor yellow.

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*C*lématis.
*C*ólchicum autumnàle.
2 flòre álbo.
3 flòre plèno.
bizantìnum.
variegàtum.
tessellàtum.
grandiflòrum.
And varieties.
Commelìn*a* cœléstis.
Convallària majàlis.
Crássula spinòsa.
*C*ròcus susiànus.
aúreus.
sulphùreus.
2 cóncolor.
3 álbidus.
4 stellàris.
5 lagenæflórus.
6 álbicans.
biflòrus.
2 stigmatòsus.
3 præ'cox.
versícolor.
2 plumòsus,
3 élegans.
4 vittàtus.
5 pectinàtus.
6 morlèon.
7 propínquus.
8 aff'ìnis.
9 urbànus.
vérnus.
2 grándis.
3 concínnus.
4 violàceus.
5 neapolitànus.
6 striàtus.
7 pectinàtus.
8 álbus mìnor.
(And several Dutch varieties.)
officinàlis.
nudiflòrus.
speciòsus.
serótinus.
*C*yclamen pérsicum.
p. albiflòrum.
*h*ederæfòlium.
*C*yclamen còum.
Dáhl*ia* (24 garden varieties.)
Dégraphis *a*rundinàcea var. variegàta.
*D*elphínium grandiflòrum flòre plèno.
Diánthus Caryophýllus.
Carnations (30 garden varieties).
*D*odecàtheon Meàd*ia*.
2 var.
Erythrònium déns cànis.
2 albiflòrum.
Fritillària imperiàlis.
2 rùbra.
3 flàva.
(9 Dutch varieties.)
pérsica.
nìgra.
latifòlia.
melèagris.
2 var.
præ'cox.
Fúchs*ia* coccínea.
grácilis.
globòsa.
macrostèmon.
Gàge*a* lùtea.
Galánthus nivàlis.
2 flòre plèno.
Gastronèma vittàta.
*G*ladìolus psittacìnus.
floribúndus.
cardinàlis.
byzantìnus.
commùnis.
*H*édera *H*èlix.
Heliánthus multiflòrus.
2 flòre plèno.
*H*elléborus nìger.
víridis.
*H*emerocállis fúlva.
flàva.
Hepática cærùlea.
nívea.
*H*yacínthus amethýstinus.
(12 Dutch varieties of orientàlis, the common hyacinth.)
*I*ris Pseùd-*A*'corus.
ochroleùca.
fœtidíssima.
susiàna.
pùmila.
lùrida.
*s*ambùcina.
squàlens.

I'ris germánica.
xiphiöides.
Xíphium.
lusitánica.
I'xia viridiflòra.
longiflòra *rósea.*
Leucójum æstìvum
pulchéllum.
Lílium cándidum.
2 variegàtum.
bulbíferum.
2 umbellàtum.
chalcedónicum.
Pompònium.
tigrìnum.
Mártagon (6 Dutch varieties).
Lýchnis chalcedónica.
Flosculi fl. pl.
Muscàri moschàtum.
comòsum.
2 monstròsum.
botryöìdes.
racemòsum.
*My*osòtis palústris.

Narcissíneæ.

Corbulària Bulbocòdium.
tenuifòlia.
A'ja*x* pùmilus.
mìnor.
nànus.
2 màjor.
lorifòlius.
bícolor.
álbicans.
cérnuus.
moschàtus.
Pseùdo-*Narcíssus.*
2 var.
lobulàris.
Telamòniu*s.*
2 grandiplènus.
propínquus.
2 màjor.
máximus.
màjor.
Assáracu*s* càpax fl. pl.
Ganymède*s* pulchéllus.
Diomède*s* mìnor.
Tró*s* poculifórmis
galanthifólius.
Quélti*a* aurántia.
2 flòre plèno.
Goúani ?
incomparábilis.
semipartìta.
álba.
Philógyne odòra.
campanélla ?
regulòsa.
interjécta.
Curtísii.
heminàlis.
calathìna.
tríloba.
mìnor fl. pl.
Jonquílla mèdia.
símilis.
Hermìone compréssa.
tereticaúlis.
multiflòra.
cupulàris.
Trew*iàna.*
flexiflòra.
subcrenàta.
crenulàta.
Tazétta
fistulòsa.
floribúnda.
cítrina.
Lùna.
præ'cox.
subálbida.
tenuiflòra
papyràcea.
dùbia.
Helèn*a* grácilis.
tenùior.
Narcíssus ornàtus.
angustifòlius.
álbus.
biflòrus.
recúrvus.
poéticus.
patellàris.
stellàris.

Operánthus lùteus.
Opúntia.
O'rchis mácula.
máscula.
Ornithógalum umbellàtum.
odoràtum.
pyramidàle.
pyrenàicum.
nùtans.
O'xalis Acetosélla.
Pancràtium illýricum.
Prímula vèris.
vulgàris.
elàtior vars.
marginàta.
lùtea.
Pr. (90 garden varieties of Aurícula.)
Ribes sanguíneum.
Rósa rubiginòsa.
Cabbage.
Damask blush.
Monthly red.
Saxífraga umbròsa.
nivàlis ?
hypnöides.
Scílla itálica.
peruviàna.
amœ'na.
sibírica.
vérna.
autumnàlis.
bifòlia.
2 álba.
cérnua.
campanulàta.
2 álba.
3 *rósea.*
non-scrípta.
Jacquìni.
Sèdum álbum.
àcre.
grandiflòrum.
Sempervìvum tectòrum.
Sparáxis trícolor.
grandiflòra.
versícolor.
Sprekè*lia* formosíssima.
Stìpa pennàta.
Syrínga vulgàris.
pérsica.
Tigrídia pavònia.
Tradescánti*a* virgínica.
Trichonèma Bulbocòdium.
Tritònia víridis.
Tùlipa sylvéstris.
cornùta.
óculus-sòlis.
(Besides 150 varieties of Gesneri*àna*, various parrot and double tulips.)
U'lex europæ'a fl. pl.
Verbèna Melíndres (chamædrifólia).
*Veróni*ca longifòlia.
2 álba.
Vieusseùxi*a* pavònia.
Víola odoràta.
trícolor.
(Heartsease, many garden varieties.)
Vítis (Black Hamburg).
Zephyránthes cándida.

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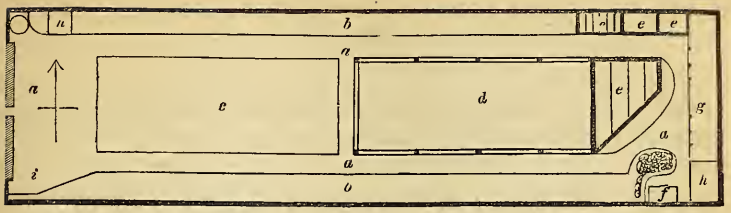

Fig. 93. is the ground plan, to which the following are references: — *a*, Gravel walks. *b*, Bulbs. *c*, Miscellaneous plants. *d*, Tulip-beds. *e*, Frames. *f*, Potting-board. *g*, Shed. *h*, Pit. *i*, Back door of the house.

P.S. I beg to offer one or two hints for the *Suburban Horticulturist*, so much wanted, which have just occurred to me, though I doubt of their being any novelty to you. — 1. Training dahlias against a wall. I have tried this with a few this year, and find it quite successful, both in the sun and shade. 2. Training chrysanthemums against a shady wall. With me, some, on which the sun never shines, grow and bloom as early as those in a sunny aspect. 3. Training heartsease against a wall. I have tried a few of the tall sorts along a shady wall, to fill up vacancies between the chrysanthemums, and find they do extremely well. I shall pursue this plan more extensively next season. 4. The use of the chimney corner for starting some of the bulbs. I tried the Jacobæan lily last winter, and it afterwards bloomed very splendidly; watering it every morning, and filling the pan beneath the pot with tepid water. I tried the same plan for a short time with Commelìn*a* cœléstis, and never before has it bloomed so finely with me. I have raised tamarind plants from the stones in the same way.

I hope you will especially recommend cleanliness to the London gardeners. Evening waterings over the foliage I deem of the utmost importance.

Under your head of striking plants from cuttings, I would first hint that it would be very useful to state what plants strike best from tender cuttings, and which from more ripened wood. For instance, chrysanthemums strike much the best from tender shoots, about the third joint; but heartseases require the stem to be more ripened, and, consequently, to be taken off near the root. Much time is saved with cuttings, by planting them close round the edge of a pot, and putting a pinch of silver sand with each. Hand-glasses, of course, are indispensable. — *A. I.*

Aug. 24. 1838.

ART. III. *Notice of the Gardens of Norman MacLeod, Esq., Morayshire.* By THOMAS REID.

THROUGH the liberality of my masters, I have been a reader of the *Gardener's Magazine* for the last three years; and I have derived so much useful information and so many important hints from it, that I wish it were in the hands of every gardener in Scotland. My design in writing to you now is, not to make known any new experiment, or important discovery, in horticulture, but merely to give a slight notice of a garden lying in a part of Scotland which is but little known in the horticultural world; and to give you what I am sure will be welcome intelligence, viz. that, through the joint effect of horticultural societies, and the increasing anxiety of gentlemen to secure the services of good gardeners, a general love of floriculture is spreading through the country.

Norman MacLeod, Esq., of Dalvey, has been among the first to introduce into Morayshire the modern improvements in gardening; and his garden is becoming the centre of attraction to all those who delight in the pursuit. His collection contains some of the newest and rarest plants in this remote part of the country. The houses, three in number, including a vinery, contain about 30 varieties of Camél*lia*, 60 of the newest pelargoniums, 40 superb varieties of calceolarias, and 55 species and varieties of heaths, as the commencement of a heath-house.

The garden is undergoing a thorough repair; and the improvements made in 1837 include a flower-garden laid out after the plan given in the *Gardener's Magazine*, as having been executed at Dropmore, but on a smaller scale. In this garden was flowered a splendid collection of pansies, and other showy flowers. The tulip bed, which is 40 ft. in length by 4 ft. in breadth, contains above 500 roots, and seldom fails to produce a fine bloom: it is, I suppose, the best collection in the north of Scotland. The greatest attention is paid to the culture of tulips; and the bed is protected by a covering, from the time the plants make their appearance above ground, till they come into flower; when a frame and awning is placed over them, of sufficient height and width to admit of spectators walking round on all sides of the bed, as they do round Mr. Groom's at Walworth.

The Forres and Nairn Horticultural Society held its first meeting in June last, and its second will be held in September. There is every reason to expect that the Society will do much good to this part of the country.

Dalvey, July 31. 1838.

ART. IV. *Description of a Rustic Fountain and Rockwork lately erected in the Garden of Mr. Thomas, at Peckham, by Mr. Benjamin Andrews.* Communicated by Mr. ANDREWS.

THIS rockwork, of which *fig.* 94. is a view, and the jets of water which are intended to add to its interest, are on a small

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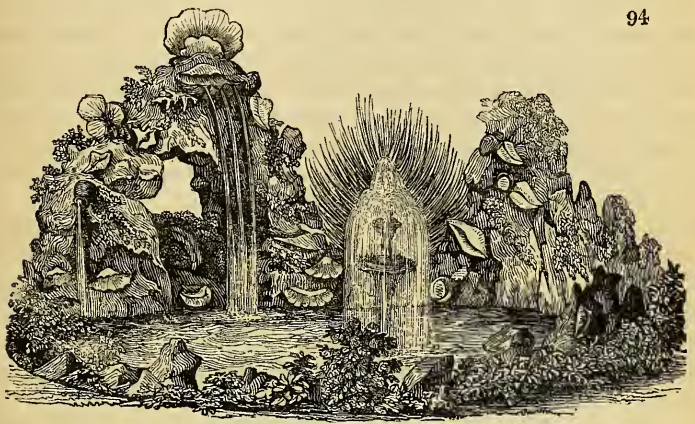

scale, and have no pretensions to rank high as works of art. The chief value of this communication is to show to your readers what may be done by very common materials, put together with little or no other artistical knowledge, than that of what constitutes the difference between grouping objects, and indiscriminately scattering them about. The basin which contains the water is about 12 ft. long, and is of an irregular shape, somewhat approaching to that of an oval; with a jet of water rising in its centre by means of a leaden pipe, carried up through a convolvulus-shaped figure. Above this, and springing from its centre, is a second smaller convolvulus, to conceal the extremity of the pipe. Various adjutages in brass, forming different devices for throwing out the water, and which may be screwed on the leaden pipes, may be obtained in great variety from the plumbers. The rockwork round the basin is composed of vitrified bricks, flints, spars, &c., partly projecting into the water; and it is contrived so as to present as rough and inartificial an appearance as possible. Creeping plants are introduced in some places; and a large *Yúcca* gloriòsa occupies the space between the two principal masses of rockwork.

As soon as the frosts in autumn commence, all the pipes which lead the water to these jets are emptied by turning cocks placed for that purpose in the lowest points of their course; and not a drop of water is allowed to enter them till the following April or May. The supply cisterns are so large as not to be liable to

be frozen to the bottom; otherwise they also should be emptied, and kept empty during the winter.

6. *South Grove, Peckham, Surrey, April,* 1838.

P.S. We have since received from Mr. Andrews a sketch of a summer-house or grotto, which he has lately erected in the garden of Mr. Low of Edmonton. "It is," says Mr. Andrews, "of an octagonal form. The lower part is composed of burs, flints, shells, &c.; and the upper part is divided into Gothic compartments, formed of ash hooping with the bark on, cut into short pieces, and bradded upon deal boards well tarred; the Gothic arches are covered with the same material, which has a very pretty effect. The roof is put on square, as thatching does not look well, unless the angles are acute. The porchway, composed of vergeboard pendants and shells, is supported upon four pillars of spruce fir with the bark on, and is brought out far enough to allow the door to open within it. On the side opposite to the door, are two windows. A fan-like madrepore is placed on the upper part of the porch; and the inside of the grotto, above the seats, is covered with shells, spars, corals, madrepores, moss, &c." We have inserted this notice, chiefly for the sake of making known that Mr. Andrews is a garden artist in the department of rockwork, fountains, summer-houses, &c.

ART. V. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 14. APPLE INSECTS.

THE almost total destruction of the apple crop in the chief cider counties, during the present season, has naturally caused attention to be directed to the cause of the failure, with the view to the discovery, if practicable, of the precise circumstances in which it has originated, and of remedies for its prevention in future seasons. It would lead me into a very wide field, to attempt to prove the importance of this fruit in the domestic economy of our island. Much interesting matter relative to the cider manufactory has been collected in the *Arboretum Britannicum;* but I have not yet met with what may be termed the statistics of this branch of our national resources, of which a sketch would, I have no doubt, show that it far exceeds the ordinary notions entertained respecting it; moreover, as the exportation of cider is carried on to a considerable extent, it must be evident that the failure of the apple crop must have an effect, not, indeed, comparable with that of the hop crop, but still very prejudicial both to the grower and the revenue.

At the meeting of the Entomological Society on the 7th of August, 1838, Mr. Spence called the attention of the members to the circumstances which he had observed connected with the destruction of the apple crop during the past spring; and suggested, without, indeed, stating that it was directly attributable thereto, that the plant lice (aphides) might be the chief cause of the mischief, as great numbers of one of the species of these insects had been observed upon the young shooting leaves which enveloped the blossom buds previously to the bursting forth of the latter; the effect of which would be, that these leaves would be stopped in their growth; and, as their agency in the developement of the blossom bud is necessarily very great, the latter would be so much weakened as to be unable to burst forth. Mr. Spence, however, deemed it advisable to direct attention more precisely than had hitherto been done to the circumstances connected with the flowering of the apple, so that the real cause of the mischief might be detected.

At Hammersmith, a great failing of the apples has taken place, some of our trees not having a single apple left on them at the present time. This has been produced in two different modes. The apples blossomed beautifully; but no sooner was the blossom gone, than the young apple, with its long stem, fell to the ground; and, in the case of those which did attain some size, they were attacked, when about one fourth of their full size, by a hymenopterous insect, of the economy of which no account has hitherto been given, neither has it been supposed to feed upon this fruit. When my observations upon it are sufficiently perfected, I hope to lay it before the readers of this Magazine, as a very interesting article in my series. As far as my own observations upon the earlier state of the flowers and leaves extend, I did not notice any aphides; and I cannot but attribute the falling of the very young fruit to causes distinct from the attacks of insects, as I could observe no traces of their action in the multitudes of fallen embryo apples, or upon the stems from which they had fallen. I have shown at *fig.* 95. B the state of the fruit as it almost universally appeared when fallen; and I noticed that, at this time, the slightest touch was sufficient to cause the young fruit to drop from the twig. Two causes have, indeed, been suggested for this, independently of the work of insects; namely, the action of cold or rain, which, as in the last long cold spring, would either have the effect of so much weakening the stamens as to render them unable to burst, or, supposing them actually to have burst, the rain would wash the pollen away, and so prevent the impregnation of the fruit. This is not a novel idea, being, I believe, already assigned in works as one of the causes of the failure of the setting of the fruit: the other cause, suggested by Mr. Ingpen, was, that, as last year was a very abundant apple

crop, the present would therefore be a very small one; the overbearing of one season preventing the full crop of the next, and thus maintaining the equilibrium. Direct observations seem, however, to have negatived this suggestion.

In conducting future enquiries into this subject, it will be requisite to observe at what period the injury is committed; whether, as in the case supposed by Mr. Spence, the blossoms are prevented from expanding; whether the fruit falls immediately after the corolla; whether the fruit has attained a small size before falling; or whether, as in the case of the codling moth, whose history forms the twelfth number of my series (*Gard. Mag.*, May, 1838), the fruit has reached its full growth. At all these periods the crop may be affected; and it must be evident, that, as the causes of the injury vary according to the period at which it takes place, the remedies must be equally various.

I have not yet been able to complete my observations upon the moth, the larva of which burrows into the apple before it has attained the size of a nut. In the mean time, the natural history of an equally destructive insect, which devours the apple bud, and which has been omitted in Major's work on fruit trees, and in the *Arboretum Britannicum*, accompanied by figures of the insect in its different states, will not be without interest.

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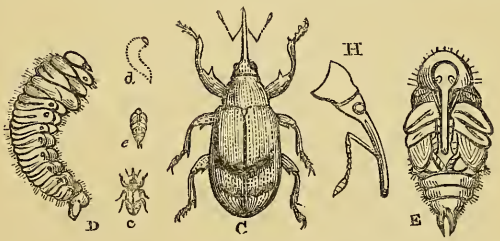
At the period when the apple is in flower, one or more of the buds (*fig.* 95. *c c*) in a bunch of blossoms (A) may be observed unexpanded, and presenting an appearance quite unlike their beautiful neighbours (*d*). The effect of this is soon perceived in the faded rusty brown colour and withered appearance of the bud; and its cause is the presence, in the interior, of an insect in different states of maturity. In the bright sunny days of March and April, a small brown beetle (*fig.* 95.*a;* and *fig.* 96.*c*, natural size; c, magnified), with a moderately long snout, may be seen crawling up the stems of the apple tree, in search of the unexpanded blossom buds, into each of which the female (after coupling with

the male on the stems of the tree) deposits an egg, having first (according to observations too precise to doubt the fact) bored a hole for its reception in the heart of the bud with her rostrum, at the extremity of which the parts of the mouth are placed. The operation of boring the hole, and depositing an egg, occupies, according to Schmidberger, three quarters of an hour. The female then repeats the process in an adjoining bud; the entire process of oviposition occupying from eight to twenty days, according to the weather. It would appear, from an observation of Ratzeburg (*Forst-Insecten*, 1837), that cold weather does not prevent the beetles from pursuing their work, as he states that, in the cold season of 1836, he had never seen more beetles, and fewer apples. The deposition of the eggs does not prevent the growth of the bud; but, as soon as the egg is hatched, the work of destruction is begun. The young insect produced from this egg is a little white footless maggot (*fig.* 95. *b*, a bud cut open to show the larva enclosed), closely resembling in its shape the maggot of the nut, only rather more slender towards the extremity of the body. The head is dark-coloured, and horny; but the rest of the body is fleshy; the three segments following the head being fleshy, and the remainder furnished with a row of fleshy tubercles, or warts, along the sides of the body. As the creature is in the midst of its food, where, in fact, there is enough, but not to spare, for its consumption, legs would be useless. *Fig.* 96. *d* represents the larva of the natural size; and D, magnified, after Ratzeburg.

This little creature, "directly it is hatched, begins to devour the young and tender stamens; next to these the style is



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attacked, and eaten down to the fruit, the upper part of which is quickly consumed: the maggot is then full fed." (*Rusticus* in *Ent. Mag.*, No. 1.) The injury thus done to the essential parts of the flower prevents the petals from expanding; and these remain unconsumed, serving as a sort of dome over the enclosed insect (*fig.* 95. *b*), which now throws off a thin pellicle, and becomes an inactive pupa, nearly resembling the beetle in its shape, but with the wings, legs, and rostrum laid along the breast; the former not yet having attained their full size. The body is terminated by a rather long forked appendage (*fig.* 96. *e*, pupa, natural

size; and E, magnified). The pupa state is but of short duration, as it requires but four or five weeks from the period of laying the egg, for the insect to arrive at perfection. As soon as the latter period is arrived (in the early part of June), the perfectly formed weevil makes its escape from its cell, by gnawing a hole in the side of the withered blossom. Throughout the summer, they may be found occasionally in woods and gardens; and they are not unfrequent in the blossoms of the white thorn and other plants (according to Stephens), upon which, I presume, they must subsist, as they are destined to live through the autumn and following winter, hybernating under and in the crevices of the bark of apple trees. Mr. Curtis gives the following dates of the appearance of the insect in its different states: — "The larvæ were found, the 8th of May, in *pear* and *apple* blossoms, eating out the whole inside, and leaving only the petals and calyx: they were observed to be in pupæ on the 21st; and on the 25th they hatched." (*British Entomol.*, fol. 562.)

The insect is systematically known under the following names: —

Order, Coleóptera.
Section, Rhyncóphora (Snout-bearers or Weevils).
Genus, Anthónomus *Germar.* (Derived from the Greek *anthos*, a flower, and *nome*, food; or Flower-feeder, &c.) Syn., Rhynchæ'nus *Fab., &c.* Curcùlio (part) *Linnæus.*
Species, Anth. pomòrum *Germar* (Curcùlio pomòrum *Linn.*). Anthonomus of the apples.

The very extensive tribe of weevils having required much subdivision, those species which agree in structure with this species have been separated from the rest, and have the rostrum slender, and longer than the thorax; the antennæ strongly elbowed, and 12-jointed, inserted beyond the middle of the snout (H); the thighs robust, with a strong tooth near the tips on the under side; and the elytra large and elongate-ovate. The following is a description of this species: — Pitchy brown, dotted, and thickly clothed with ochreous and ash-coloured scales; the antennæ and legs reddish; the thighs having the middle darker coloured; the elytra are dotted in rows, and of a dusky red colour, slightly clouded with darker brown, having near the extremity a pale very oblique bar, densely clothed with white scales, and meeting together at the suture, forming a white V on the back, edged with a broad bar of black, both in front and behind, the latter being less strongly marked than the front black bar; the rostrum is pitchy. The weevil is ordinarily about one sixth of an inch in length. This insect is extremely shy, falling to the ground, and counterfeiting death, on the slightest approach of danger; so that any attempt to prevent the destruction of the fruit by capturing the beetle in its perfect state must

be attended with difficulty, if not absolute impossibility. Ratzeburg, indeed, thinks that, if they are not too numerous, they are useful to trees, as they secure them from being overburdened with fruit. If they are too numerous (and it is worth while to look closely at the buds in the spring months to ascertain the fact), they should be disturbed whilst laying their eggs by shaking the trees. Ratzeburg also recommends that bandages of tar should be applied, early in April, round the stem of the trees, whereby, as the beetles always creep up the tree, they would be captured and killed. It is only in the hottest spring weather that they fly from tree to tree; and it has been decidedly proved that trees which have been thus bandaged have not been so much infested as those which have not. Frisch, also, says that the trees must be cut and manured, as from experience he found that the weak trees have the greatest number of insects, and that healthy trees, the buds of which have not suffered by cold, had few or no insects. Moreover, in standard or low trees, it is advisable to pick off the withered buds, taking care to do this before the beetle has escaped; and, if done at a still earlier period, the remaining healthy buds will acquire greater energy of growth. The buds must then be carefully destroyed, and thus much mischief in the following year will be prevented. I presume the insect described in M. Lyonnet's posthumous memoirs (4to, p. 120.), under the name of "Scarabée à trompe, dont le ver nuit à la fertilité des *poiriers*," pl. xii. f. 13—19., is identical with the Anthónomus pomòrum.

Bouché, in his various works, states that the petals of the apple blossom are tied by threads spun by the larva, so as to prevent their expansion; but this I do not think is the case, at least with the insect in question. Bouché was probably led to make this observation, by mistaking the attacks of some of the web-spinning caterpillars for those of the Anthónomus. The genus in question comprises several other species which infest the buds of fruit. A. *pe*diculàrius, a pretty red species, has been found by Mr. Curtis on the crab tree when in flower; and I presume it is of this species which Salisbury speaks, as a small red weevil, which lays its eggs in the bloom buds of the apple; he adds, however, that the larvæ draw up the whole bunch of blossoms into a cluster by means of their web, and that the grub, when full fed, falls to the ground, in which it passes the pupa state. These two circumstances differ materially from the habits of A. pomòrum; nor do I think that the former of them is applicable to any species of Anthónomus, but has its origin in the proceedings of a species of moth. The small brown weevils, A. drupàrum and A. incúrvus, are very destructive to the birdcherry, and other stone fruit; and A. úlmi inhabits the elms, in the buds of which the larvæ live, and may be found at the end of May.

ART. VI. *Hints on Potato Culture.* By JOHN ROBERTSON, F.H.S.

I AM persuaded that a great proportion of the failures in potato crops, so much complained of, proceeds from the careless or injudicious treatment of the potatoes intended for seed or sets, or from late planting. If stored in houses during the winter, the potato sets will lose much of their succulency and sap, or will vegetate prematurely; from which, at the season of planting, they will be found to be, in a great degree, exhausted of that saccharine pabulum which was stored up in their tubers for the nutrition of the young shoots; and the germ, consequently, pushes feebly, or decays before it can establish fibres for its support. Seed potatoes should, at the period of getting up, be selected of the best; and, to preserve them fresh and in vigour, should be kept, during the winter, mixed with a little earth, in narrow and shallow pits, well protected, and in a dry situation, until the period of their vegetation; and then, to retard it, they should be removed into cool sheds or out-houses till the season for planting, which should not be deferred later than April, or as much earlier as the order of their growth requires. An occasional change of seed for some of a different soil is necessary; as, when the same stock is used in the same ground for several successive seasons, it degenerates in quality and produce; and I have found the produce of a new stock, from fresh ground, exceed that of my own full one third, under similar circumstances; and, though the latter was well chosen, and apparently superior, it even was above ground ten or twelve days before it. Repeated successive croppings of the same ground with potatoes produce a similar effect. When potatoes are planted in drills, about 2½ ft. asunder, I have found from 9 in. to 12 in. the best distance to place the sets apart; and sets of two or three eyes each preferable to whole potatoes; placing the manure over the set, as the shoots pushing upward strike into it, and receive immediate nourishment when in their feeblest state.

I apprehend that the tillage the potato receives is, in general, too shallow and coarse. The fibres of the potato plant, though weak and delicate, spread widely and run deep when the soil admits it: in alluvial ground, I have traced them to the depth of 4 ft., and they run across from drill to drill. Earthing potatoes high in a dry soil is more prejudicial than useful, withdrawing the mould from the roots out of their reach. It has always been my practice, when the loose earth between the drills has been returned on the stems, to dig the intervals between them as deeply and finely as the spade will admit, and earth no more than sufficient to support the stalk. At my suggestion, a friend has tried this plan on a large scale, tilling with the plough until the plants were to receive the last earthing, and then sending,

instead of it, men with spades, who dug the intervals well, and earthed the plants no more than as above. The result was, on each of these three acres, a produce of 200 barrels of 20 stone each; while, on an acre tilled entirely with the plough, in the ordinary way, the produce did not amount to one half of that quantity. The extra expense of digging, instead of ploughing, was 40*s.* an acre; leaving an excess of profit, in favour of the spade culture, of at least 20*l.* the acre.

Kilkenny, Aug. 20. 1838.

ART. VII. *Botanical, Floricultural, and Arboricultural Notices on the Kinds of Plants newly introduced into British Gardens and Plantations, or which have been originated in them; together with additional Information respecting Plants (whether old or new) already in Cultivation: the whole intended to serve as a perpetual Supplement to the "Encyclopædia of Plants," the "Hortus Britannicus," the "Hortus Lignosus," and the "Arboretum et Fruticetum Britannicum."*

IT was originally our intention to give the supplementary notices to the *Hortus Lignosus* and *Arboretum Britannicum* by themselves, in occasional articles; but, on farther consideration, we think it will be better to combine them with the Floricultural Notices, for two reasons: first, they will sooner be made known to the reader, because a single notice (as that respecting *Aúcuba*, in p. 475.) will be published, without waiting for as many as would suffice to form a separate article; and, secondly, because such information as may fall in our way will be less likely to escape our memory, when it is to be published every month, than if we had to lay it by for, perhaps, two or three months.

As we do not intend to confine ourselves, in these notices, to the information obtained from books, we invite all our readers to contribute towards them, by sending us notices of whatever species or varieties, or synonymes, they may think we have omitted in the *Hortus Lignosus*; and whatever information they can add to what we have given in the *Arboretum et Fruticetum Britannicum*; including, of course, corrections of errors in both works.

A Supplement to the Encyclopædia of Plants is in preparation; and we should be glad of hints for that work, premising that we intend confining it to the more common and popular species, so as to form a pamphlet of not more than six or seven sheets, which may bind up with the volume.

A Second additional Supplement to the Hortus Britannicus is in the press.

Curtis's Botanical Magazine; in monthly numbers, each containing seven plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, new series, each containing six plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Maund's Botanic Garden, or Magazine of Hardy Flower Plants cultivated in Great Britain; in monthly numbers, each containing four coloured figures in one page; large paper 1*s.* 6*d.*, small 1*s.* Edited by B. Maund, Esq., F.L.S.

Paxton's Magazine of Botany, and Register of Flowering Plants; in monthly numbers; large 8vo; 2*s.* 6*d.* each.

The Floral Cabinet; in monthly numbers, 4to; 2*s.* 6*d.* each. Conducted by G. B. Knowles, Esq., M.R.C.S., F.L.S., &c. and Frederick Westcott, Esq., Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo, large paper, 2*s.* 6*d.*; small paper, 1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

DILLENIA`CEÆ.

1597. HIBBE`RT*IA* Cunninghàm*ii* Hook.
Synonyme: Candóll*ea* Cunninghàm*ii* Bot., No. 85.

"That the plant figured under the name of Hibbért*ia* Cunninghàm*ii* t. 3183. of the *Bot. Mag.* cannot remain in that genus without a considerable modification of the generic character, is evident, as the stamina of Hibbért*ia* are expressly given as 'æqualia,' in contradistinction to those of Hemistémma; in which, as in the species in question, the external ones are abortive, and reduced to filiform rudiments. It is not, however, a Hemistémma, as in that genus all the stamina are inserted on one side of the ovaria. The habit and foliage of our plant brings it nearer Candóll*ea*; and, although the stamina are but very slightly connected together, yet they are distinctly grouped into five bunches; and it may require less change in the character of Candóll*ea*, than in that of any other genus, to include it, provided the seeds are not essentially different." (*The Botanist*, Sept.)

Berberidàceæ.

+ Bérberis [*Mahònia Arb. Brit.*] *tenuifòlia* Lindl. Seeds of this plant have been sent by M. Hartweg to the Horticultural Society, from the neighbourhood of Vera Cruz. "It is an evergreen bush, with thin, smooth, rather glaucous, pinnated leaves, entirely free from all spinosity. As an addition to the beautiful section of ash-leaved berberries, it must be considered a very interesting plant; but it cannot be expected to prove more hardy than *B.* [M.] fasciculàris, if so much so." (*B. M. R.*, Sept., No. 121.)

390. *EPIME`DIUM* [of bot. v. p. 153]
*macránthum *Paxt.* large-flowered ♃ Δ or 1 ap.my W.V Japan 1837 C p.l Paxt. mag.
Synonyme: E. grandiflòrum *Hort.*

This species bears some resemblance to *E. viol*àcea, but is of a stronger and bolder habit of growth; the leaves and flowers are larger, and the latter are produced more numerously on the spikes, and are nearly white. It appears perfectly hardy, as it bore the late winter, at Chatsworth, in the open air, with no "other protection than a slight additional covering of light soil." It is very ornamental, and produces abundance of flowers in April and May. (*Paxt. Mag. of Bot.*, Aug.)

Polygalàceæ.

1931. COMESPE'RMA
*grâcilis *Paxt.* slender ⅄ ⌊ or 3 ap B ? Australia 1834 C p.l Paxt. mag. of bot. v. p. 145.

"This pretty species was raised in the Epsom Nursery, in the year 1834," from seeds probably from Australia. It produced its first flowers in 1836; but they were far inferior to those of April, 1838, when Mr. Paxton's drawing was taken, and when the profusion of its dark blue and purple flowers was "truly astonishing." "It is an extremely slow-growing plant, the specimen raised in 1834 not being at the present time more than 3 ft. high; and another peculiarity is, that the leaves, which are never very conspicuous, progressively decay, leaving the base of the stems entirely naked." It is a twining species; and, if not properly trained when young, the slender stems will become entangled so as to form a confused mass. It should be potted high, like a heath, to prevent the water from rotting its fine hair-like roots. It ripens seeds tolerably well, but is generally propagated by cuttings struck in sand, in a gentle heat. (*Paxt. Mag. of Bot.*, Aug.)

Tiliàceæ.

+ *Entelèa palmàta* Lindl., syn. Sparmánn*ia* palmàta *Hort.* A green-house shrub, the native country of which is unknown: "it grows about 3 or 4 feet high, and bears umbels of rather small white flowers." (*B. M. R.*, Sept., No. 126.)

*Camelli*àceæ.

2038. CAME'LLI*A* 18166 [japónica 45] Prêss*ii* ròsea *Paxt. Mag. of Bot.*, p. 171.

"A garden subvariety, with rich, rose-coloured, double flowers, the petals of which are sparingly striped with red, and irregularly disposed." (*Paxt. Mag. of Bot.*, Sept.)

*Malpighi*àceæ.

+ *Banistèr*ia *ténuis* Lindl. This is a genuine species of Banistèr*ia*, in its recently limited form. It is a green-house climber, from Buenos Ayres, with small bright yellow flowers, and reddish green winged fruit. (*B. M. R.*, Sept., No. 131.)

Leguminòsæ.

+ *Psoràlea cinèrea* Lindl. in Major Mitchell's *Australia* ined. "An erect, apparently annual plant, with grey toothed foliage, and small purple flowers in long, stalked, erect racemes." (*B. M. R.*, Sept., No. 106.)

2102. *A*STRA'GALUS 18899 Laxmánn*i* Jac., Flor. Cab., 2. p. 83.

This species, though a native of Siberia, was found, in the Birmingham Botanic Garden, not to bear the severity of the winter of 1837-8 in the open air. "It should be planted in rather a strong soil, and may be increased by division in spring, or by seeds when they ripen." (*Flor. Cab.*, Aug.)

2144. KENNE'DY*A* monophýlla *Vent.*, var. longiracemòsa.
Synonyme: Hardenbérg*ia* monophýlla *Benth.* in *Hilgel Enum. Plant. Novæ Hollandiæ*, p. 41., *Botanist*, No. 84.

Hardenbérg*ia* is the name proposed by Mr. Bentham to be given to a group of six species of climbers, which he has separated from the old genus Kennèdy*a*. These six species are "all found in extra-tropical Australia: all of them are very much alike in the general appearance and colour of their flowers; and all are highly ornamental, from the great profusion of their flowers when under proper treatment. Next to the zichyas, they form the handsomest of the groups of which the old Kennèdy*a* consisted, and which are still known under that name in our gardens." The flowers are small, of a bluish pink, very numerous, and disposed on many-flowered racemes. The plant is named in honour of Frances Countess Hardenberg, sister of Baron Charles Von Hügel of Vienna; "a lady most zealous in the promotion of botany and horticulture." (*Botanist*, Sept.)

Melastomàceæ.

ARTHROSTE'MMA versícolor *Dec. Prod.*, 3. p. 137., *Bot. Mag.*, t. 3678.
Synonyme: Rhéxia versícolor *Lindl.* in *Bot. Reg.*, t. 1066.

Crassulàceæ.

+ *Echevèr*ia *secúnda* Booth in Litt. "Plants of this curious succulent were received by Sir Charles Lemon, Bart., M.P., in 1837, and again, in 1838, from Mr. John Rule, superintendent of the Real del Monte mines, in Mexico, of which country it is believed to be a native." (*B. M. R.*, Sept., No. 112.)

+ *Sèdum míserum* Lindl. "An inconspicuous annual, raised from Mexican seeds, imported by G. F. Dickson, Esq. It grows about 9 in. high, or rather long, for it falls prostrate if not supported: its flowers are green, and almost hidden among the fleshy leafy sepals. It multiplies itself by seeds, and by fragments of its brittle branches, which drop off the parent, and strike root into the ground." (*B. M. R.*, Sept., No. 122.)

*Cunon*iàceæ.

1207. WEINMA'NNI*A* L. [2. p. 81.
*venòsa *Knowl. & West.* veined ✱ ⌊⌋ or 6 my.jn R N. Holland 1836 C s.p.l Flor. cab.

This very distinct and handsome species was raised from seeds collected in New Holland, and sent to the Birmingham Botanic Garden in 1836. "It is a plant of slow growth, and of a rigid habit. It possesses a pleasing and singular appearance; having its dense spike of flowers crowned with purple leaves, its stem red, and its leaves strongly varied with red." It requires the protection of the green-house during winter, and may be propagated by cuttings; though, "from its very slow growth and peculiar habit, that mode of propagation must be very tardy; and, if it should not perfect seeds, it will, of necessity, be a scarce plant in collections." (*Flor. Cab.*, Aug.)

Compósitæ.

Chrysánthemum índicum var. pùmilum. This variety, which is figured in *Maund's Botanic Garden*, No. 656., grows to the

height of 2 ft., is very hardy, and flowers profusely, under common treatment, in October. Mr. Maund states that it was introduced into British gardens so lately as "1835?" We have not seen the plant; but Mr. Maund says it is "a most desirable addition to our autumnal gaieties." (*Bot. Gard.*, Aug.)

Loranthàceæ.

Aúcuba *japónica*. Mr. Forrest, gardener at Kinmel Park, Flintshire, finds this shrub remarkably hardy, and considers it much superior to the rhododendron as undergrowth in woods for the protection of game. It flourishes, he says, best in shady situations, and succeeds well under deciduous trees. It will grow in almost every kind of soil, "provided it be well shaded by trees." "It is with the greatest confidence," he adds, "that I recommend the plant in question, as twenty years' experience has convinced me that it is one of our hardiest evergreens; for, while most of our other evergreens have suffered more or less from the late severe winter, the *Aúcuba* japónica has sustained no injury whatever." It is readily propagated by cuttings, which, if planted in sand under a hand-glass, will seldom, if ever, be found to fail. (*Caernarvon and Denbigh Herald*, July 28.)

Rubiàceæ.

352. SPERMACO'CE *L.* 3087 rùbra *Jac.*
Synonymes: S. strigòsa *Sims Bot. Mag.*, t. 1558.; Crùsea rùbra *Cham. & Schlect., Linn.*, 5. p. 165., *Dec. Prod.*, 4. p. 567., *Botanist*, No. 82.

A stove annual, erect, and rising to the height of 5 or 6 feet, with pinkish flowers, somewhat resembling those of a pimelea. A native of Mexico; introduced into Europe in 1797, and flowering profusely in October and November. A specimen raised by Mr. Niven of the Glasnevin Botanic Garden, from Mexican seed, was "a plant of very handsome growth, being regularly furnished with opposite side shoots from the surface of the pot upwards." The plant produced upwards of 300 heads of flowers, of great beauty. It seeds freely, and may be struck from cuttings." (*Botanist*, Aug.)

Compósitæ.

+ P*ìcris barbaròrum* Lindl. An erect branched plant, nearly 3 ft. high, used parboiled as food by the natives of the interior of Australia. It was raised in the Horticultural Society's Garden, from Major Mitchell's seeds. (*B. M. R.*, Sept., No. 107.)

+ P*ìcris aspérrima*. A native of Van Diemen's Land, with long narrow leaves, large flower-heads, and an exceedingly rough surface. (*B. M. R.*, Sept., No. 108.)

+ *Carpèsium pubéscens* Wall. Cat., No. 3199., Dec. Prod., v. 281. "This plant has lately flowered in the garden of the Horticultural Society, where it was raised from seeds received from Dr.

Falconer. It is certainly a mere variety of Carpèsium cérnuum, and hardly so much; nor does there appear any good character to distinguish from our European plant the C. nepalénse of Lessing." (*B. M. R.*, Sept., No. 123.)

+ *Podólepis contórta* Lindl. "A native of Van Diemen's Land, whence seeds of it were sent to the Horticultural Society by Mr. J. Bunce. It is a pretty perennial, with dark green fleshy leaves, a flower-stem from 6 in. to 9 in. high, and solitary golden flower-heads." The flowers are about the size and form of those of the sweet sultan; but all the florets of the ray have "a distinct twist to the left," which gives the flower-head the appearance of a Catherine wheel. (*B. M. R.*, Sept., No. 120.)

Lobeliàceæ.

609. LOBE'L*IA*
*Bridgèsii Hook. *Mr.* Bridges's ♃ ⊔ or 4 jn Pk Chile 1836 S p.l Bot. mag. 3671.

An extremely handsome species of Lobèl*ia*, which was discovered by Mr. Bridges, near El Castello de Amorgos, Valdivia, in the south of Chile. (See *Hook et Arn. Contr. S. Am. Bot.* in *Bot. Journ.*, p. 278.) The plant was raised from seeds at Kew, and thence sent to the Botanic Garden, Glasgow, where it flowered in the green-house in July, 1837. It grows 3 or 4 feet high, and is somewhat suffruticose below. The flowers are large, showy, and of a beautiful pink; and the leaves are 5 or 6 inches long, lanceolate, much acuminated, and closely and acutely serrated. (*Bot. Mag.*, Aug.)

*fenestràlis *Kunth* window ☉ pr 3 jn.s P Mexico com.s. Bot. reg. n. s. t. 47.
Synonyme: Rapúntium fenestràle *Presl.*

"A half-hardy biennial, growing from 2 ft. to 3 ft. high, and flowering freely from July to September. Found by Humboldt and Bonpland in the temperate parts of Mexico, near the city itself, on Chapoltepec and Pazcuaro, at the height of 6600 ft. Its seeds have recently been obtained by G. F. Dickson, Esq., from the same country, and have been presented by that gentleman to the Horticultural Society of London." (*Bot. Reg.*, Aug.)

Ericàceæ.

Eríceæ. In Paxton's *Magazine of Botany* for August (a work in which we are happy to see the plates have recently been very much improved in execution), it is strongly recommended to keep Cape heaths in a house by themselves, and to shade them from the scorching rays of the summer's sun with thin canvass, so contrived as to be rolled on and off the house at pleasure. One of the best modes that we know of doing this is that which was adopted by Mr. Forrest at Syon, and which will be found described in the *Gardener's Magazine*, vol. v. p. 510. Cultivators of Cape heaths frequently find some plants killed during a hot summer's day, though the house in which

they were placed was kept well ventilated, and even the pots well supplied with water. This, no doubt, arises from the transpiration from the leaves being greater than can be supplied by the roots; and no remedy can be better than shading.

1339. *RHODODE'NDRON*
*albiflòrum *Hook.* white-flowered ❀ or 2 jn W N. Amer. 1835 C s.l Bot. mag. t. 3670.

An upright-growing shrub, but not more than 2 or 3 feet high; which was first described, named, and figured in *Hook. Fl. Bor. Am.*, ii. p. 43. t. 133. "This extremely interesting and distinct species of a very favourite genus was discovered by Mr. Drummond in the alpine woods of the Rocky Mountains;" and, from seeds sent by the officers of that expedition to Dr. Graham, plants were raised, which, in July, 1837, produced their delicate cream-coloured blossoms. (*Bot. Mag.*, Aug.)

Apocynàceæ.

TANGHI'NIA Poir. [p. 85.
venenifluа *Poir.* poison-flowing ♆ ▭ or 30 my Pk Madagascar 1826 C s.p.l Fl. cab. 2.
Synonyme: Cérbera *Tánghin* Bot. Reg., t. 2968.

This very remarkable plant is the celebrated ordeal tree of Madagascar. In its native country it is an evergreen tree, 30 ft. high; but the largest plant as yet seen in England does not exceed the height of 6 ft. It has smooth coriaceous leaves, and small pink flowers, somewhat resembling in form those of the common periwinkle, but which are produced in terminal and somewhat corymbose panicles. The fruit is yellow, ovate, drupaceous; and encloses a fibrous stone, or nut, acute at both ends, and cloven on one side. The kernel enclosed in this stone, or nut, is said by some to be the part used for the ordeal, and to be infused, after being bruised on a stone, in liquid which the accused person is made to drink: others say the infusion is made of the entire fruit. The following passage on this subject is copied from Don's *Miller*: — "The custom of administering tanghin as an ordeal, in Madagascar, has become far more universal during the present reign, than at any former period of the Huwa government. When her present Majesty, in the beginning of 1830, came to the resolution of cleansing her lands from sorcerers, an ordeal was commanded in every town and village; and in Tonnanarivoo scarcely any class of inhabitants escaped. On the 9th of May, 1830, in compliance with the sovereign's mandate, a notable administration of tanghin took place. The accused persons amounted to about thirty, including some of the highest rank in the kingdom. All the nobility recovered; while the unknown plebeians, who, according to the common jugglery, had been compelled to drink with them, died. The former made the usual triumphant entry into the town on the 17th, borne in open palanquins, amongst the shouting, dancing, and grimaces of many thousands of people. In the following month, about an equal number of Malagassy ladies submitted to

the same ordeal; but all survived, and, in due course, made a grand entry into town." (*Don's Miller*, vol. iv. p. 98.)

The tanghin was introduced into this country by Charles Telford, Esq., who sent seeds of it to his friend, the late David Barclay, Esq., at Bury Hill, where the original plant was raised. Several plants were afterwards struck from cuttings, one of which was presented to the Birmingham Botanical and Horticultural Society, by Charles Barclay, Esq., M.P., along with many other valuable plants, when the Society's gardens were first formed in 1831. This plant recently flowered in great perfection, and in all probability for the first time in England. It grows freely in peat, loam, and sand, well drained, and is readily propagated by cuttings of the old wood taken off with a heel; "otherwise they will rot, as the pith is of considerable diameter, which, with the milky juice, soon causes them to decay. The cuttings should be put into sand, and covered with a bell-glass." (*Fl. Cab.*, Aug.)

A*sclepia*dàceæ.

\+ *Morrènia odoràta* Lindl., syn. Cynánchum odoràtum *Hook. et Arn.* "This plant has been raised in the garden of the Horticultural Society, from seeds obtained from Buenos Ayres by the Hon. W. F. Strangways; and it flowers in August and September in the green-house. In habit it is similar to Oxypétalum Bánks*ii*; and, like that species, it twines round sticks or trelliswork, with some rapidity, to the length of a few feet." The flowers have nearly as much fragrance as those of Pergulària odoratíssima, and are of almost the same colour. The genus is named by Dr. Lindley, in honour of "Professor Charles Morren of Liège, the discoverer of the manner of cultivating vanilla, so as to make it produce with certainty a crop of its aromatic fruits, and one of the most distinguished vegetable anatomists of the present day." (*B. M. R.*, Sept., No. 129.)

C*onvolvulàceæ.*

Calystègia sèpium. This plant has lately been raised in the Horticultural Society's Garden, from seeds collected by Major Mitchell in Australia; and it does not appear to Dr. Lindley to "present any valid marks of distinction" from the common bindweed of the European hedges. "The flowers are pink, and rather larger, and the posterior angles of the leaves more rounded." (*B. M. R.*, Sept., No. 104.)

B*oragíneæ.*

E*chium gigantèum.* "With the great majority of the plant cultivators of this country, the preference for particular flowers is almost as fleeting and inconstant as that for dress; and, as in that fickle propensity, the objects which at one time excite the most lively interest, and are held in the highest estimation, are,

after a time, displaced by other favourites, and sink into apparent oblivion, till, on a sudden, they are again elevated to their former position, are invested with their previous, or even additional, charms, and carry away the minds of men willing and enthusiastic captives to their attractive influence. The primary notice, and subsequent neglect, of *E*'chium gigantèum, as well as many of its allies, prove that it has passed through two of the changes above delineated; but, with regard to the reaction of public opinion in its favour, we are not aware that any such circumstance has transpired." (*Paxton's Mag. Bot.*, Aug., 1838, p. 149.) This splendid plant, a native of the Canary Islands, has been in our green-houses since 1779. It is so hardy, that it may be kept through the winter in a cold-pit; and, in many parts of Devonshire and Cornwall, it might be treated as a border shrub. If half the attention were bestowed on its culture that is given to some of the new plants, it would make a splendid show at our exhibitions, and richly deserve a handsome prize.

+ *Cynoglóssum grandiflòrum* Benth. in Royle's Illust., p. 305. "A beautiful herbaceous plant, first found by Dr. Royle in Cashmere." It grows nearly 3 ft. high, with a strong, branching, erect, purple-coloured stem, and racemes of flowers, the corolla of which is of a bright blue, bordered with white. (*B. M. R.*, Sept., No. 127.)

Solanàceæ.

+ *Nicot*iàna *rotundifòlia* Lindl. This is a hardy annual, with white flowers, which give out rather a pleasant perfume in the evening. It is a native of Swan River. (*B. M. R.*, Sept., No. 110.)

591. *SOLA'NUM*
*campanulàtum *Brown* bell-flowered ♃ ⊿ or 3 jn B N. S. W. ?1836 C co Bot. mag. 3672.

A very beautiful herbaceous species of *S*olànum, with pale blue flowers, and very spiry leaves and stems. It was discovered by Dr. Brown, at Port Jackson, and was described by him in his *Prodromus*, p. 446. It flowered in "the green-house of the Edinburgh Botanic Garden in July, 1837." (*Bot. Mag.*, Aug.)

Scrophulariàceæ.

+ *Collíns*ia *heterophýlla.* This new species has lately been raised in the Caledonian Horticultural Society's Garden by the superintendent, Mr. James M'Nab, who has received instructions to make a drawing for publication. (*Ed. Advert.*, July 17.)

Labiàtæ.

3380. *Physostègia imbricàta* Paxt. Mag. of Bot., p. 173. The figure given here differs materially from that of the same plant given in the *Bot. Mag.*, t. 3386.

Verbenàceæ.

15687. CLERODE'NDRON
frâgrans *Ven.* fragrant ✱ ▭ or 6 au Pk China 1794 C s.l Bot. reg. n. s. 41.

In this country, says Dr. Lindley, this species "is usually met with in the double state represented in the *Bot. Mag.*, t. 1834.; but the single-flowered kind, now figured, is much more beautiful, and scarcely less fragrant. It is a conservatory plant, of the easiest cultivation; and, if placed in the open border, in a warm place, during summer, it will remain healthy, and flower abundantly; but it is killed by the first frost." Dr. Lindley adds that a damp stove seems to suit it very well; that it grows luxuriantly, and requires abundance of syringing over the head, as otherwise it is apt to be infected with insects. The soil should be a rich loam, mixed with leaf mould and sand. It may be easily propagated by cuttings of the half-ripened wood, struck in sand. (*Bot. Reg.*, Aug.)

Primulàceæ.

455. *Cyclamen neapolitànum* Tenore, Bot. Reg. n. s. t. 49. "This cyclamen, which should more properly be called autumnàle, has long been known to our gardens, and is even wild or naturalised in the county of Kent. It is, however, most abundant in the countries near the Mediterranean, particularly in Italy, south of the Apennines. The name neapolitànum has been given to it by Professor Tenore, who was the first to distinguish it critically from its congeners, with which it has long been confounded under the names *h*ederæfòlium and europæ'um, which belong to two very different plants." (*Bot. Reg.*, Sept. 1. 1838, p. 49.)

Polygonàceæ.

+ *Polýgonum amplexicaúle* Don Prod. Fl. Nep., 70. "This charming herbaceous plant, inhabiting the mountains in the north of India, with long graceful racemes of the most brilliant ruby-coloured flowers, has lately made its appearance among some plants obtained from seeds sent from India by Dr. Hugh Falconer, of the Botanic Garden, Saharunpur." (*B. M. R.*, Sept., No. 117.)

+ *Ampelýgonum chinénse* Lindl. "This plant has lately flowered in the garden of the Horticultural Society, where it has been raised from seed received from Dr. Falconer of Saharunpur. It forms a spreading herbaceous plant, from 1½ ft. to 2 ft. high, with ovate-lanceolate, acuminate, stalked leaves, coarsely bearded along the midrib on the under side, and with small heads of yellowish-white fleshy flowers, which are succeeded by a black succulent fruit." (*B. M. R.*, Sept., No. 118.)

Thymelàceæ.

+ *Pimelèa crinìta* Lindl. A pretty species of the genus, with snow-white flowers, smelling slightly of heliotrope. It forms a small shaggy green-house bush, and is a native of Swan River. (*B. M. R.*, Sept., No. 109.)

Euphorbiàceæ.

1460. *EUPHO'RBIA*
fúlgens. *Synonyme:* Jacquiniæflòra Bot. Mag. 3673.
*rìgida *Bieb.* rigid ♃ ⎦ or ½ my.jn Y.R S. Europe 1829 D ru Bot. reg. n. s. 43.
Synonymes: E. biglandulòsa *Desf. Cor. Tourn.*, p. 88. t. 66.; *Gussone Fl. Sic.*, 1. 555. ? Tithymalus *Myrsinìtes* legitimus *Clus. Hist.*, 2. 189. ic.

A prostrate, rigid, glaucous-leaved plant, introduced from Italy by the Hon. W. F. Strangways. It lived through the late severe winter on warm dry rockwork, and at the foot of a south wall, well secured from rain. It is a very handsome species, and easily increased by division at the roots. (*Bot. Reg.*, Aug.)

Zygophyllàceæ.

+*Rœ'pera aurantìaca* Lindl. in Major Mitchell's *Australia*, inedit. "A curious species of this small and well-marked genus." The flowers are small, with orange-yellow petals, and they are placed upon long, erect, solitary peduncles. "It was found by Major Mitchell in his latest journey into the interior of New Holland, and was raised in the garden of the Horticultural Society, where it flowers in the open border in July." (*B. M. R.*, Sept., No. 105.)

O*rchidàceæ.*

2553. CATTLE'Y*A*
*Móssiæ Hook. *Mrs.* Moss's £ ⊠ or 1 jn.au P S. Amer. 1836 D p.r.w Bot. mag. t. 3669.

A very splendid species; the flower measuring 7½ in. from the tip of the upper sepal to the tip of the labellum, and 8½ in. from tip to tip of the two opposite petals. Each petal is about 4 in. long, and 2½ in. in breadth; and the circumference of the entire blossom is 24 in. This plant was introduced by George Green, Esq., of Liverpool, in September, 1836, from La Guayra, "a country which," Sir W. J. Hooker observes, "were it properly investigated, would amply reward a collector by many other novelties." (*Bot. Mag.*, Aug.)

2532. ZYGOPE'TALUM
*Murray*ànum* Gardner MSS. Murray's £ ⊠ cu ½ G.W Brazil 1837 D p.r.w Bot. mag. [367

"This new zygopetalum has been lately discovered, with many other treasures, in the Organ Mountains of Brazil (at an elevation of above 4000 ft.), by Mr. Gardner, and has been named by him in compliment to his steady friend, Mr. Stewart Murray, of the Glasgow Botanic Garden." (*Bot. Mag.*, Aug.)

2537. MAXILLA'RIA
*Rollissòn*ii* Lindl. Rollisson's £ ⊠ or ½ au Y Brazil 1836 D p.r.w Bot. reg. n. s. 40.

"A curious little species, inhabiting the woods of Brazil, whence it was imported by Messrs. Rollisson, with whom it flowered in August, 1837. In many respects, it is very like M. stapeliodes; and, when out of flower, the two species might be mistaken for each other; but the blossoms are strikingly different in colour, and in the form of the curious crest which stretches across the lip from one side to the other." (*Bot. Reg.*, Aug.)

+ *Maxillària vitellìna* Lindl. "It is a native of Brazil, whence it was imported by Messrs. Loddiges; and is remarkable

for having a rich deep brown spot in the middle of its yellow lip." (*B. M. R.*, Sept., No. 116.)

2476. CORY'CIUM 22441 *orobanchöides Sw.*, Bot. reg., n. s. 45.

The plant from which this drawing was taken flowered in October, 1837, in the collection of John Rogers, Esq., jun., at Streatham. "It is," Dr. Lindley adds, "as far as I know, the first instance of a corycium having blossomed in Europe." (*Bot. Reg.*, Aug.)

ONCI'DIUM [t. 48.
*ranîferum *Lindl.* frog-bearing £ ⍁ pr 1 au.s Y Brazil 1838 D r.w Bot. reg. n. s.

"Rather a pretty species of this extensive genus, with a very peculiar habit. It evidently hangs down from the branches of trees, instead of growing erect, as is most usual." Its specific name is derived from the form of the tubercles which grow at the base of the lip, and which are supposed to bear some resemblance to the figure of a frog. "The species is a native of Brazil. It occurs among Mr. Gardner's Organ Mountain plants (No. 637.); and M. Descourtilz met with it in damp forests near Bananal. This traveller observed that it fixes itself to branches not exceeding 12 ft. in distance from the earth. Such pieces of information are invaluable to the cultivator, who rarely has any idea of the precise circumstances under which his plants grow naturally; and who, consequently, can only learn after long and dear experience how to treat them. For this reason, I hope the following additional particulars concerning the habits of other species of Oncídium, extracted from M. Descourtilz's MSS., will prove acceptable.

"*O. divaricàtum.* Trunks of the most lofty trees, on the high mountains of the Serra das Agoâs, in the district of Ilha Grande.

"*O. ciliàtum.* Common in the woods which cover the low plains among the hills near Bananal.

"*O. iridifòlium.* Branches of orange and lemon trees only. Very common in the neighbourhood of the town of Bom Jesus de Bananal. It prefers dry places, exposed to the sun.

"*O. pùbes.* Thin forests clothing the table land near Bom Jesus de Bananal." (*Bot. Reg.*, Sept.)

+ *O. pulvinàtum* Lindl. A very fine plant, resembling O. divaricàtum, with a panicle 8 or 9 feet long, imported from Brazil by Richard Harrison, Esq., of Aighburgh, near Liverpool. (*B. M. R.*, Sept., No. 115.)

+ *O. hìans* Lindl. Messrs. Rollisson of Tooting received this plant from the vicinity of the gold mines of Brazil. "It has small yellow and brown flowers, with an extraordinary appendage to the lip; erect, white, fleshy, as long as the column, parallel to that organ, and resembling the four fingers of the hand; a little hollowed out, and closed together." (*B. M. R.*, Sept., No. 124.)

2547. DENDRO'BIUM [bot. p. 169.
*Gibsònii Paxt. *Mr.* Gibson's £ ☐ or jn.o O.Y Khoseea 1837 D p.r.w Paxt. mag. of

This is a new and highly beautiful species of the genus Dendròbium, which was discovered by the Duke of Devonshire's collector, Mr. J. Gibson, on the Khoseea Hills, in India. The flowers, which are extremely beautiful, "are produced in long racemes, each bearing from ten to fifteen of them, and are somewhat similar to those of D. chrysanthum, but of a much deeper orange colour." The plant "was found growing upon rocks, at an elevation of about 3000 ft., so situated, that, during the rainy season, water, in its course down the mountains, washes completely over the tops of the plants. This fact should not be lost sight of in its cultivation, as it shows the propriety of frequently syringing the plant while in a growing state, in addition to the usual practice of keeping the atmosphere of the house in a state of humidity." (*Paxton's Mag. of Bot.*, Sept.)

Phàius álbus Paxt. In p. 377., where the name of this plant occurs for the first time, we noticed Mr. Paxton's promise to communicate, at some future period, his mode of cultivating it; and this he has done in the *Magazine of Botany* for August. It seems that the shoots, which are produced in June and July, remain dormant for a year, and then other shoots are produced from the base of the first shoots, which are perfected in November or December, while those of the preceding year's growth perish. Hence, the stems of this plant last only eighteen months. It flowers in May, previously to the period at which the shoots begin to grow; and its dormant season is from December to April. When it becomes dormant, it sheds its leaves, and the bark of the stems turns brown. It should then be placed in a temperature not higher than from 45° to 50° Fahr. After the dormant season, when it begins to shoot from the base of the stems, and "when the young shoot is about half an inch in length, the plant should be repotted into heath soil, well drained at the bottom, and mingled with an abundance of finely broken potsherds." It should then be placed in a humid atmosphere, at the usual temperature of growing Orchídeæ, and liberally watered at the roots. As it grows, the plant should be syringed once or twice a day, till the flowers begin to appear; when syringing must be left off, but water still supplied liberally to the roots. "Like most orchidaceous plants, it requires to be well shaded during the growing season." When the flowers expand, it may be removed to a cooler house, or to a drawingroom; and, if kept well shaded, the flowers will continue in perfection three weeks or longer. When the flowers are over, the plant should remain in a cool house, "and be sparingly watered till the leaves begin to turn yellow, when it must be removed into a still cooler situation, and kept moderately dry, in which state it may be

preserved until it again commences growing in the following spring." (*Paxt. Mag of Bot.*, vol. v. p. 166.)

+ *Paxtò*nia *ròsea.* "One of the most curious plants sent from Manilla by Mr. Cuming." "The leaves are long, narrow, and slightly plaited, and proceed from an oblong pseudo-bulb, which is marked with circular scars, indicating whence they fell. The flowers are a purplish lilac, rather larger than a shilling, and grow on a stem about a foot high, in a somewhat corymbose raceme. They look like those of a thelymitra, but the structure of their column is entirely different." It is named in honour of Mr. Paxton, "whose claim to be permanently associated with the Orchidaceæ will be readily admitted by all who know anything of the admirable collection of such plants at Chatsworth." (*B. M. R.*, Sept., No. 113.)

+ *Catasètum atràtum* Lindl. "A curious dark-flowered species, obtained from Brazil by Messrs. Loddiges." (*B. M. R.*, Sept., No. 114.)

+ Vánda *lamellàta* Lindl. "A fine species of epiphytal Orchidaceæ, received by Messrs. Loddiges from Manilla. It has pale yellow flowers stained with red, and as large as those of Vanda Roxburghii." (*B. M. R.*, Sept., No. 125.)

+ *Physosìphon carinàtus* Lindl. "A plant resembling Physosiphon Loddigesii in the colour of its flowers and form of its leaves, but differing in a serrated labellum, whose surface at the point is broken up into little sharp teeth." (*B. M. R.*, Sept., No. 132.)

+ *Spirànthes diurética* Lindl. This little plant is a native of the mountains of Chili; and it has lately been received from Valparaiso by Capt. James Mangles, R.N. "It is a green-house orchidaceous plant, and flowers in August." (*B. M. R.*, Sept., No. 119.)

LÆ'LI*A*
*autumnàlis *Lindl.* autumnal £ ▭ or 2 s R Mexico 1836 D p.r.w Bate orch. 9.

The genus Læ'li*a* may be regarded as one of the most ornamental of its tribe; the colour of the flowers being pleasing, their perfume delicious, and their duration considerable. The habit of the plant is, also, graceful. The species may be treated like the cattleyas; "in winter very sparingly watered, and kept in almost a dormant state." (*Batem. Orchid.*, part 2.)

EPIDE'NDRUM
aromáticum *Bate.* aromatic £ ▭ or 2½ my Y Guatemala 1835 D p.r.w Bate. orch. 10.

A free-flowering highly odoriferous species. See our notice of Part II. of Bateman's *Orchidaceæ*, in p. 435.

CYRTOCHI'LUM *Hum. & Kunth.* (*Kurtos*, convex, *cheilos*, a lip; form of labellum.)
*bictoniénse Bicton £ ▭ or 2 n R Guatemala 1836 D p.r.w Bate. Orch. t. 6.

An elegant species, sent to Mr. Bateman from Bicton, near Exeter, the well-known seat of Lord Rolle, and "named as an

acknowledgment of the many obligations which botany owes to the noble proprietor and his accomplished lady." This plant "has already blossomed twice under the care of Lord Rolle's gardener, Mr. Glendinning, who is known to have but few rivals in the management of the tropical Orchidaceæ." (*Batem. Orchid.*, p. 2.)

Iridàceæ.

GLADI'OLUS

*Mortòn*ius Herbert MS. *Mr.* Morton's ☿ or 1½ S. Africa 1837 O s.p Bot. mag. t. 3680.

A very beautiful species, from the east coast of South Africa, which seems to have some affinity to Gladìolus oppositiflòrus, but which is not half so tall. It flowered with Messrs. Rollisson of Tooting, and was named and described by the Hon. and Rev. W. Herbert, "who, we are happy to say, is devoting the same attention to the Iridaceæ, which he lately paid to the Amaryllidaceæ." (*Bot. Mag.*, Sept.)

+ *Cypélla plúmbea* Lindl. "A Mexican plant, raised from seeds imported by G. F. Dickson, Esq." It is like a tigridia, but taller and more glaucous, with smaller flowers, which are extremely fugacious. (*B. M. R.*, Sept., No. 130.)

+ *Hydrotæ`nia melèagris* Lindl. A native of the mountain pastures near the Real del Monte mines, in Mexico, whence it was received by John Rogers, Esq., jun., of Seven Oaks. "It looks something like a tigridia, bearing the flower of a fritillary. The stem is about 18 in. long, and bears a single, straight-veined, plaited leaf. The spathe is leafy, convolute, 2½ in. long, and contains from four to five flowers, which open in succession: each is, in colour and form, very like a Fritillària pyrenàica, but smaller. The petals, which are slightly unguiculate, and marked with a few broken bands of crimson, have at their base a triangular glandular bar, the point of which is directed upwards, secreting honey, and, when fresh, slightly excavated into hollows, resembling a row of pearls placed on a pale yellow ground. The name of the genus refers to this circumstance of a band secreting fluid." (*B. M. R.*, Sept., No. 128.)

*Amaryllid*àceæ.

935. ISME'NE [Bot. mag. t. 3675.

Macleàna Herb. in Litt. *Mr.* M'Lean's *Amancaes* ☿ □ or 2 jn. W Lima 1837 O s.p

This is one of the plants celebrated by the Peruvians, under the name of Amancaes; and at the foot of the mountain on which it grows is held one of the greatest festivals of the Portuguese church at Lima, called the Festival of the Amancaes; during the celebration of which, every person appears ornamented with its flowers. It was sent to the Glasgow Garden by John M'Lean, Esq., of Lima. "It flowers readily in the stove, and makes a very handsome appearance." (*Bot. Mag.*, Sept.)

Liliàceæ.

1005. AGAPA'NTHUS 8208 umbellàtus *L'Hérit.* var. 3 albiflòrus *Bot.*, No. 86.

A new variety of a well-known plant, which only differs in the colour of the flowers.

1017. *TU'LIPA* 8427 Gesneriàna L., Bot. Reg. n. s. t. 46.

"This species, interesting as the parent of the innumerable garden varieties with round petals, is the largest of all the wild tulips. Its tall, strong, tough scape, and its broad round petals (in the wild plant, uniformly red), sufficiently distinguish it, at first sight, from all its congeners. It is perfectly smooth all over." It is found, without any disposition to vary, in fields at three places near Florence. For the notice of this plant, Dr. Lindley informs us, he is indebted to the Hon. W. F. Strangways. "No synonymes beyond those of Linnæus are quoted, because they are both uncertain and uninstructive." (*Bot Reg.*, Sept.)

Asphodelàceæ.

1050. THYSANO'TUS
*tènuis *Lindl.* slender △ or my L Swan River 1836 C l.p.s Bot. reg. n. s. t. 50.

A new species of this curious genus, obtained from the Swan River, by Robert Mangles, Esq., in whose collection it flowered in May, 1837. "It grows very well in a green-house, and would, probably, succeed if planted out in a pit which is well protected during winter." (*Bot. Reg.*, Sept.)

\+ *T. intricàtus.* "A curious new species of this pretty genus, obtained from the Swan River, by Robert Mangles, Esq., of Sunning Hill." (*B. M. R.*, Sept., No. 111.)

REVIEWS.

ART. I. *A practical Treatise on the Construction of Stoves and other Horticultural Buildings; and on the Principles of Heat as applied to Hot-houses, Conservatories, Green-houses, and all other Horticultural Erections; with useful Remarks and Suggestions on the Fluid employed, and the Apparatus best adapted to their Applications.* By J. W. Thompson, Nurseryman, Landscape-Gardener, and Hot-house Designer, near Beulah Spa, Croydon, Surrey. Illustrated with twenty-six wood-engravings. London, 1838. Pamph. 8vo, pp. 48. Price 2*s.* 6*d.*

BEFORE we give our opinion on this pamphlet, we shall quote the first four paragraphs, as a fair specimen of the style and manner in which the whole is written.

"Knowing that the materials generally used in the construction of all horticultural erections, viz. wood and cast iron, has been a controverted subject, and that a great diversity of opinion exists as to what description of materials are of most avail, it is my intention in this brief Treatise to point out, 1st, the advantages of wood over cast iron in the framework, for all horticultural designs; 2dly, the superiority of hot water over heated air and steam as a medium for conveying genial heat to plants; 3dly, the consumption of fuel; 4thly, in time and labour of attendance; 5thly, the advantage gained by water

heating more rapidly, and cooling more slowly, than steam; 6thly, the superiority of the egg-shaped boiler.

"Directions to prevent disappointment in the use of the hot-water apparatus, by preventing, first, the accumulation of air in the angles of the pipe, by taking care that the water in the boiler and the supply cistern shall not sink beneath the level of the top pipes; secondly, by allowing space for the expansion of the metal in the various places when the pipes have to pass through solid bodies of brick, stone, &c.

"Directions respecting the proper caliber of the conducting pipes, and of the boiler, warning against suffering the accumulation of calcareous or other deposits in the pipes, by he use of unclean water, with an analysis of five different kinds of water (kindly favoured by Mr. Budd, the chemist, for this publication; see *Appendix*); caution against over-confidence in this changeable climate, and against employing improper persons, i. e. non-practical men, to give designs for houses, &c. Necessary care should be taken to have a proper sized furnace door, and of the pipes when ascending and descending under doorways, &c.; the effect of arid air being detrimental, of humid air beneficial, to the health of plants; noxious gases evolved from heated air and steam, nutritious gases evolved from hot water, &c.

"Knowing that both gentlemen and gardeners are hourly subjected to much inconvenience from the bad situation and construction of their green-houses and other horticultural buildings, as well as from the various modes of heating such erections, in consequence of no practical directions having been published for their assistance or guidance by men practically acquainted with the subject, and who, like Hercules, have actually put their shoulders to the wheel, I am induced, from having devoted several years to the subject now under consideration during my practice in Her Majesty's Botanic Garden at Kew, and in several other departments of the Royal Gardens, as well as in many private establishments, where fruits and plants have been extensively and successfully cultivated, to offer for the assistance and consideration of all persons interested, a few practical remarks after the result of fifteen years' observation and calculation, all of which have been gleaned by dint of personal labour, during which time, I regret to say that I have not only witnessed the destruction of fine crops of grapes, and other forced fruits, from badly designed houses, but also from the escape of smoke, of carbonated, hydrogen, and other destructive gases which are evolved from common flues when over-heated; a circumstance that must always occur on cold nights in forcing, and in other glass-roofed houses where a large cooling or radiating surface, such as glass, is exposed to the action of the external atmosphere; the escape of these noxious gases is caused by the unequal expansion and contraction of the materials used in their construction, which leaves apertures between the joints of the bricks, and other parts of the flue. Moreover, it is a fact too well known to gardeners to require comment, that brick flues, after having been in use for a few years, become very unsafe for early forcing, when strong fires are applied, from their liability to burst."

We ask if it is to be expected that a man who could commit himself to print in terms such as the above is likely to have clear and distinct ideas on any subject? Assuredly, if iron is a dangerous material in the construction of hot-houses, Mr. Thompson is not the man to show why it is so. We have no doubt that he has long entertained a prejudice against iron-roofed hot-houses, from having found, as he says, p. 11., "the strength of three men insufficient to force down the sliding lights for the admission of air;" the cause being the "powerful action of the sun's rays in expanding the iron rafters and lights of a large

iron roof on a hot day." This may be perfectly true, without its following, as a general conclusion, that all iron roofs are bad. There can be no doubt whatever that iron sashes, tightly fitted in between iron rafters, will be extremely difficult to move in hot weather, and the act of moving them will be in great danger of breaking the glass; but may not this be avoided, by not fitting them in so tightly between the rafters, or, as Mr. Thompson elsewhere (p. 21.) recommends, "having the sides of the lights made of wood, with small rollers affixed to the under side, to make them run easy?" In some remarks on this subject in our preceding Number (p. 446.), we have recommended that, where sash-frames are formed of iron, either wholly or in part, they ought invariably to be small, on account of the difficulty of moving them, and the consequent danger of breaking the glass while so doing. For this reason, we would never employ iron sashes in pits or frames at all; and in the roofs of larger structures, we would have the sashes narrow and short, with the side styles, and top and bottom rails, of wood.

It is generally supposed among gardeners, that we advocate iron hot-houses; but we never advocate anything absolutely and exclusively. We would decidedly employ iron in many cases; and, in many cases, would also as decidedly employ wood. The great error in the "practical men," as they call themselves, is in being too exclusively in favour of either the one or the other. Mr. Thompson states that Mr. M'Intosh, head gardener to the King of the Belgians, and Mr. Paxton, gardener to the Duke of Devonshire, think with him on the advantages of wood over iron. That may be the case; but we have a higher opinion of both, than to suppose that either of them is exclusively in favour of either the one mode or the other. All Mr. M'Intosh's opinions against iron houses and curvilinear roofs, backed by the authority of Mr. Atkinson, will be found quoted in our Fifth Volume (1829), p. 185, 186, and 187. We should be sorry to suppose that Mr. M'Intosh has not since seen reason to alter his opinion; at all events, we hope that, if he still retains it, he is enabled to raise it on a better foundation.

One object of the pamphlet before us is, to recommend a boiler invented by Mr. Thompson, and which he calls an "economic, oval-shaped, wrought-iron boiler." This he says "has not only received the direct approbation of every engineer who has witnessed its operation, but is considered by them, and by all who have adopted it, as the most simple and economical of all the plans yet submitted to the public." We should like to see a list of the engineers alluded to. This invention is anything but simple, though we have no doubt it will act very well for three years; a time respecting which Mr. Thompson says, "I always offer a guarantee to all who may employ me to fix it, that

I will keep it in repair, and take the responsibility of its acting properly for three or more years, provided that it is fairly used." (p. 26.) The time during which such a boiler will act properly will depend on three things: 1. the number of times in the year which it is used; 2. the degree of heat to which the water is raised while in the boiler; and, 3. the quantity of earthy matter held in solution by the water. In all cases of heating by hot water, unless the water used has been distilled, a deposit of earthy matter takes place on the bottom of the boiler, in direct proportion to the quantity of water evaporated, and, consequently, to the heat used. Hence the difference in the deposition in a boiler employed to heat a stove, and one employed to heat a green-house. The deposition of this earthy matter on the bottom and sides of the boiler diminishes the conducting tendency of the metal; and hence boilers that have been some months in use are never so easily heated as those that are newly erected, or newly cleaned out. Boilers constructed like that of Mr. Thompson do not admit of being cleaned out; because, to be cleaned, the metal must be scraped by the hand; and, consequently, as, from the moment such a boiler is put up, a coating of the earthy matter which is deposited begins to be formed, which increases every day, after a certain point the boiler will cease to be so economical as the commonest form of open boiler that admits of being cleaned out readily, and is so cleaned frequently.

In our opinion, no boiler deserves to be employed, that does not admit of being frequently and thoroughly cleaned out by scraping, and that with ease. We can conceive such a coat of earthy matter being deposited on the bottom of a boiler as would admit of the metallic part of the bottom of the boiler becoming red-hot; and every engineer knows that this does happen sometimes, when an explosion is the never-failing consequence. Gardeners, therefore, ought to be strongly impressed with two facts: first, that, whenever a boiler is in use, a constant deposition of earthy matter is taking place on its bottom and sides every day; and, secondly, that unless this earthy matter be constantly removed as it accumulates, the heating powers of the fuel employed will be greatly diminished.

We shall take no farther notice of this pamphlet, than to express our regret that Mr. Thompson has published it; for, to those who know anything of the different subjects which are mentioned in it, it exhibits a degree of ignorance and presumption, that one would hardly have considered would have been given utterance to in the present day. We can only account for it by supposing (what, indeed, is but too obvious) that Mr. Thompson does not know the precise degree of knowledge which he has attained on the subjects on which he treats, relatively to that which has been attained by others. We are sorry to be so

severe; but we have not written a single word which we would not have said in Mr. Thompson's presence.

ART. II. *Hortus Lignosus Londinensis; or, a Catalogue of all the Ligneous Plants, Indigenous and Foreign, Hardy and Half-Hardy, cultivated in the Gardens and Grounds in the Neighbourhood of London: with all their Synonymes, Scientific and Popular, including their French, German, and Italian Names; and with their Native Country, Habit, Habitation in the Garden, &c. To which are added the Prices of Hardy Trees and Shrubs in the principal Nurseries of London and Edinburgh, and at Bollwyller in France, and in Hamburg.* By J. C. Loudon, F.L.S., &c. 8vo, pp. 170. London, 1838.

THIS work consists of a part of the contents of the *Arboretum et Fruticetum Britannicum*, and of the priced lists in the appendix to that work. It occurred to us that some impressions of these sheets, done up as a thin pocket-volume, might be useful to gardeners and amateurs, even though they were already in possession of the *Arboretum;* the bulk of that work rendering it inconvenient for use in the garden or the shrubbery. The priced catalogues, it is thought, will be extremely useful, as showing the kinds of trees and shrubs of which seeds or plants may actually be purchased in British seed-shops and nurseries, and the retail prices of them. Many gentlemen are deterred from purchasing the rarer kinds of trees and shrubs, from an idea that exorbitant charges will be made for them by the nurserymen; but they will see by these lists how many fine things are to be got at a shilling and eighteen pence each; that the whole of the species and varieties of *C*ratæ`gus, *P*ỳrus, *P*rùnus, &c., are to be had, standard high, at 2*s.* 6*d.* each; and, in short, that, unless large plants are wanted, a purchaser need seldom or never exceed 5*s.* a plant for the most rare or beautiful hardy tree or shrub. The real cause why gentlemen are frightened at the high prices of rare trees and shrubs is, that, in their impatience to procure them, they apply for them to the nurserymen on their first introduction, when, of course, the price is very high; but, were they to wait three or four years, till the plant has been generally propagated, they would seldom fail to be able to get it for as many shillings as they were first asked pounds. Thus *Pæòn*ia *Moútan p*apaveràcea was, in 1825, six guineas a plant; but, for the last six or eight years, it might have been procured for half-a-crown or upwards, according to its size. Wistàr*ia* sinénsis is now eighteen pence a plant, though it was, a few years ago, two guineas. *A*bies cephalónica, rooted cuttings of which are now selling at a guinea each, and plants 18 in. high at twenty gui-

neas, is so easy of propagation, that, should there be a demand for it, it will, in a few years, be down to half a crown.

But the most important uses of this *Hortus* will be, its copious synonymes, and its priced lists of tree and shrub seeds. Foreigners, and gentlemen at a distance from London, who are, perhaps, fully occupied on their country estates, will be surprised to find, from Mr. Charlwood's catalogue given in the *Hortus Lignosus*, what a very great number of varieties of trees and shrubs they may procure seeds of at from 6*d.* to 1*s.* a parcel. What can be a more interesting pursuit to a gentleman of leisure, than forming a nursery, raising all these seeds, and afterwards distributing the plants through his shrubberies and plantations!

Art. III. *Literary Notice.*

The whole Works on Landscape-Gardening and Landscape-Architecture of Humphry Repton, Esq., with notes by J. C. Loudon.

This volume will comprise the following of Mr. Repton's works: — *Sketches and Hints, &c.;* fol. 1795; 52*s.* 6*d.* — *Observations, &c.;* 4to, 1803; 105*s.* — *Changes of Taste, &c.;* 8vo, 1806; 5*s.* — *Pavilion at Brighton, and Changes in Architectural Taste, &c.;* fol. 1808; 120*s.* — *Fragments, &c.;* 4to, 1816; 120*s.*

The above works, the publishing prices of which amount to upwards of 20*l.*, by reducing the engravings so as to come within an 8vo page, and by printing in the same type as that used for the *Gardener's Magazine*, will be comprised in one octavo volume, which will be sold at 20*s.* or 25*s.* The copyright of such of Mr. Repton's works as had not expired in 1838 was purchased by Mr. Loudon in June in that year; and the engravings have been in hand since that time; so that it is expected the work will appear in February or March, 1839. Mr. Repton's taste as a landscape-gardener is universally acknowledged; and the publication of the whole of his works, at such a price as will enable every gardener to possess them, cannot fail to serve the cause of landscape-gardening.

Should this volume prove successful, it will be followed by another of the same price, but in a much smaller type, entitled the *English School of Landscape-Gardening;* and that will be succeeded by a third, entitled the *Continental School of Landscape-Gardening*, and including translations of *Morel*, *Girardin*, *Hirschfeld*, *Sckell*, *Pückler Muskau*, *Pindemonte*, *Sigismondo Silva*, &c. The three volumes will form a complete *Library of Landscape-Gardening.*

Our readers will recollect that, some time ago (in 1834, see Vol. X. p. 51.), we proposed to publish a *Library of Landscape-Gardening*, in three 8vo volumes; and they will see by the above that we intend commencing with the works of the late Humphry Repton, Esq. In these works there are a great many references to country seats, as being places where Mr. Repton was employed, or where scenery was in existence at the time when the work in which it is referred to was published, illustrative of his remarks. Now, we give a list of these places, with the names of the counties in which they are situated, and of their proprietors at the time the work in which they were mentioned was published, as a part of this article; and we shall be greatly obliged to any of our readers who will send to us any particulars respecting the changes which these places have undergone since Mr. Repton's time. Even the name of the present proprietor will be of use. For all such services, we shall be happy to let our correspondents have copies of the volume at 5*s.* under the selling price, whether that price be fixed at 20*s.* or 25*s.*

List of Gentlemen's Seats referred to in the Works of the late Humphry Repton, Esq.

Place.	County.	Seat of	Present Proprietor.	Book in which the Place is referred to.
Abington Hall	Cambridgeshire	John Mortlock, Esq.	—	Obs.*
Adlestrop	Gloucestershire	J. H. Leigh, Esq.	—	Obs.
Altingham	Shropshire	Rt. Hon. Lord Berwick	—	Obs.
Antony House	Cornwall	Rt. Hon. R. P. Carew	—	Obs.
Antony House	Cornwall	E. Pole Carew, Esq., M.P.	—	Sketches.†
Ashridge	Buckinghamshire	Earl of Bridgewater	—	Pav. ‡
Ashton Court	Somersetshire	Sir Hugh Smith, Bt., M.P.	—	Obs.
Aston	Cheshire	Hon. Mrs. Harvey Aston	—	Obs.
Babworth	Nottinghamshire	Hon. J. B. Simpson, M.P.	—	Sketches, Pav., and Obs.
Bank Farm	Surrey	Hon. Gen. St. John	—	Obs.
Barningham Hall	Norfolk	J. T. Mott, Esq.	—	Frag. §
Bayham	Kent	Earl Camden	—	Obs.
Beaudesert	Staffordshire	Earl of Uxbridge	—	Frag.
Bessacre Manor	Yorkshire	B. D. W. Cook, Esq.	—	Sketches
Betchworth	Surrey	Hon. W. H. Bouverie, M.P.	—	Obs.
Blaize Castle	Gloucestershire	J. S. Harford, Esq.	—	Obs.
Blenden Hall	Kent	John Smith, Esq., M.P.	—	Frag.
Bowood	Wiltshire	Marquis Lansdown	—	Obs.
Bracondale	Norfolk	P. Martineau, Esq.	—	Obs.
Brandsbury	Middlesex	Hon. Lady Salusbury	—	Enq. ‖
Brentrey Hill	Gloucestershire	Wm. Payne, Esq.	—	Obs.
Brocklesby	Lincolnshire	Rt. Hon. Lord Yarborough	—	Sketches.
Bromley Hill	Kent	Rt. Hon. C. Long	—	Pav.
Brookmans	Herts	S. R. Gaussen, Esq.	—	Sketches.
Buckminster	Leicestershire	Sir Wm. Manners, Bart.	—	Obs. and Sketches.
Bulstrode	Buckinghamshire	Duke of Portland	—	Obs. and Enq.
Burleigh on the Hill	Rutlandshire	Earl Winchelsea	—	Obs.
Cashiobury	Hertfordshire	Earl of Essex	—	Obs.
Castle Hill	Middlesex	H. Beaufoy, Esq., M.P.	—	Sketches.
Catfrench	Cornwall	Fran. Glanville, Esq., M P.	—	Sketches and Obs.
Chatsworth	Derbyshire	Duke of Devonshire	—	Pav.
Catton	Norfolk	Jer. Ives, Esq.	—	Obs.
Chilton Lodge	Berkshire	John Pearce, Esq.	—	Obs.
Clayberry Hall	Essex	James Hatch, Esq.	—	Sketches and Obs.
Cobham Hall	Kent	Earl of Darnley	—	Sketches, Obs., and Frag.
Condoner Park	Shropshire	Owen Smyth Owen, Esq.	—	Obs.

* Observations, &c. 4to. 1803.
† Sketches and Hints, &c. Fol. 1795
‡ Pavilion at Brighton, and Changes in Architectural Taste, &c. Fol 1808.
§ Fragments of Landscape-Gardening, &c. 4to. 1816.
‖ Enquiry into the Changes of Taste, &c. 8vo. 1806.

Place.	County.	Seat of	Present Proprietor.	Book in which the Place is referred to.
Coombe Lodge	Berks & Oxfordsh.	Samuel Gardener, Esq.	—	Obs.
Corsham House	Wiltshire	Paul Cob Methuen, Esq.	—	Obs.
Cote Bank	Gloucestershire	Wm. Broderip, Esq.	—	Obs.
Courteen Hall	Northamptonshire	Sir Wm. Wake, Bart.	—	Sketches and Obs.
Crewe Hall	Cheshire	John Crewe, Esq., M.P.	—	Sketches, Obs., and Enq.
Croome	Worcestershire	Earl of Coventry	—	Enq.
Culford	Suffolk	Marquess Cornwallis	—	Sketches and Obs.
Donnington Park	Leicestershire	Earl Moira	—	Sketches, Obs., and Enq.
Downham	—	—	—	Pav.
Downton Vale	Shropshire	R. P. Knight, Esq.	—	Enq.
Dullingham House	Cambridgeshire	Colonel Jeaffreson	—	Obs.
Dulwich Casina	Surrey	Richard Shawe, Esq.	—	Obs.
Dyrham Park	Gloucestershire	William Blathwayte, Esq.	—	Obs.
Endsleigh	Devonshire	Duke of Bedford	—	Frag.
Ferney Hall	Shropshire	Late Sam. Phipps, Esq.	—	Sketches.
Finedon Hall	Northamptonshire	J. English Dolben, Esq.	—	Sketches.
Fort	Bristol	T. Tyndall, Esq.	—	Obs.
Frome House	—	—	—	Frag.
Garnons	Herefordshire	J. G. Cotterell, Esq.	—	Sketches and Obs.
Gayhurst	Buckinghamshire	George Wright, Esq.	—	Sketches and Obs.
Glemham	Suffolk	Dudley North, Esq., M.P.	—	Obs.
Glevering	Suffolk	Chaloner Arcedeckne, Esq.	—	Sketches.
Grange	Hampshire	H. Drummond, Esq.	—	Enq.
Grove, The	Southgate	Walker Gray, Esq.	—	Obs.
Hanslope Park	Bucks	Edward Watts, Esq.	—	Sketches.
Hardwick	Derbyshire	—	—	Pav.
Harewood House	Yorkshire	Rt. Hon. Lord Harewood	—	Obs.
Hare Street	Essex	H. Repton, Esq.	—	Frag.
Harford	—	—	—	Pav.
Harlestone Park	—	—	—	Frag.
Hasells	Bedfordshire	Francis Pym, Esq.	—	Sketches, Obs., and Enq.
Heathfield	Sussex	Francis Newberry, Esq.	—	Obs.
Herriard's House	Hampshire	G. Purefoy Jervoise, Esq.	—	Sketches.
Higham Hills	Essex	John Harman, Esq.	—	Obs.
High Hall	Essex	Sir Wm. Smyth, Bart.	—	Obs.
Highlands	Essex	C. H. Kortright, Esq.	—	Obs.
High Legh	Cheshire	G. J. Legh, Esq.	—	Obs.
Holkam	Norfolk	T. W. Coke, Esq., M.P.	—	Sketches and Obs.
Holme Park	Berkshire	Richard Palmer, Esq.	—	Obs. and Sketches.
Holwood	Kent	Right Hon. William Pitt	—	Sketches and Obs.
Hooton	Cheshire	Sir Thomas Stanley, Bart.	—	Obs.
Hurlingham	in Fulham	John Ellis, Esq.	—	Obs.
Kenwood	Middlesex	Earl Mansfield	—	Obs.
Kidbrook	—	—	—	Enq.
Lamer	Herts	Lt.-Col. C. Drake Garrard	—	Sketches.
Langley Park	Kent	Sir P. Burrell, Bart., M.P.	—	Sketches and Obs.
Langleys	Essex	W. Tuffnel, Esq.	—	Obs.
Lathom House	Lancashire	Wilbraham Bootle, Esq.	—	Sketches and Obs.
Little Green	Sussex	T. Peckham Phipps, Esq.	—	Sketches.
Livermere Park	Suffolk	N. Lee Acton, Esq.	—	Sketches and Obs.
Longleate	Wiltshire	Marquess of Bath	—	Enq., Pav., and Frag.
Luscombe	Devonshire	Charles Hoare, Esq.	—	Obs.
Magdalen College	Oxford	President and Fellows	—	Obs.
Maiden Early	Berkshire	E. Golding, Esq, M.P.	—	Obs.
Manning's Villa	Totteridge	—	—	Pav.
Merly House	Dorsetshire	W. Willet Willet, Esq.	—	Obs.
Michel Grove	Sussex	Richard Walker, Esq.	—	Obs.
Milton Abbey	Northamptonshire	Earl W. Fitzwilliam	—	Obs.
Milton House	Cambridgeshire	Samuel Knight, Esq.	—	Obs. and Sketches.
Milton Park	Northamptonshire	Earl Fitzwilliam	—	Sketches and Enq.
Moccas Court	Herefordshire	Sir G. Cornewall, Bt., M.P.	—	Obs.
Mulgrave	Yorkshire	Rt. Hon. Lord Mulgrave	—	Obs.
Nacton	Suffolk	P. B. Broke, Esq.	—	Sketches.
Newton Park	Somersetshire	W. G. Langton, Esq., M.P.	—	Obs.
Normanton	Rutlandshire	Sir G. Heathcote, Bt., M.P.	—	Obs.
Northreps	Norfolk	Bartlet Gurney, Esq.	—	Sketches.
Oldbury Court	Gloucestershire	T. Græme, Esq.	—	Obs.
Old Manor House	—	—	—	Enq.
Organ Hall	Hertfordshire	W. Towgood, Esq.	—	Obs.
Ouston	Yorkshire	Bryan Cook, Esq.	—	Sketches.
Panshanger	Hertfordshire	Earl Cowper	—	Obs.
Pavilion	Brighton	Prince of Wales	—	Pav.
Plasnewyd	Anglesea	Earl of Uxbridge	—	Obs.
Port Eliot	Cornwall	Rt. Hon. Lord Crags Eliot	—	Sketches and Obs.
Prestwood	Staffordshire	Hon. Edward Foley, M.P.	—	Sketches and Obs.
Purley	Berkshire	Anthony M. Storer, Esq.	—	Sketches and Obs.
Rendlesham	Suffolk	P. Thelluson, Esq., M.P.	—	Obs.
Rüg	North Wales	Colonel E. V. W. Salisbury	—	Obs.
Riven Hall	Essex	C. C. Western, Esq., M.P.	—	Sketches.
Rudding Hall	Yorkshire	Lord Loughborough, Lord High Chancellor	—	Sketches.

Place.	County.	Seat of	Present Proprietor.	Book in which the Place is referred to.
Sarsden	Oxfordshire	J. Langston, Esq., M.P.	—	Obs.
Sesincot	Gloucestershire	S. P. Cockrell, Esq.	—	Pav.
Scarrisbrick	Lancashire	T. S. Eccleston, Esq.	—	Obs.
Scrielstry	Lincolnshire	Hon. Champion Dymock	—	Sketches.
Shardeloes	Buckinghamshire	William Drake, Esq., M.P.	—	Obs.
Sheffield Place	Sussex	Right Hon. Lord Sheffield	—	Sketches and Obs.
Sherringham Bower	Essex	——	—	Frag.
St. John's	Isle of Wight	Edward Simeon, Esq.	—	Obs.
St. Leonard's Hill	——	General Harcourt	—	Pav.
Stapleton	Gloucestershire	Dr. Lovell, M.D.	—	Obs.
Streatham Villa	Surrey	Robert Brown, Esq.	—	Obs.
Stoke Farm	——	Earl Sefton	—	Pav.
Stoke Park	Herefordshire	Hon. E. Foley, M.P.	—	Sketches, Obs., and Enq.
Stoke Pogies	Berkshire	John Penn, Esq.	—	Sketches and Obs.
Stoneaston	Somertshire	Hippesley Coxe, Esq.,M.P.	—	Sketches and Obs.
Stratton Park	Hampshire	Sir F. Baring, Bart., M.P.	—	Obs.
Sufton Court	Herefordshire	James Hereford, Esq.	—	Obs.
Sundridge Park	Kent	Claude Scott, Esq., M.P.	—	Sketches and Obs.
Sunninghill	Berks	James Sibbald, Esq.	—	Sketches.
Suttons	Essex	Charles Smith, Esq , M.P.	—	Obs.
Tatton Park	Cheshire	Wm. Egerton, Esq., M.P.	—	Sketches.
Thoresby	Nottinghamshire	C. Pierrepont, Esq., M.P.	—	Sketches.
Trewarthenick	Cornwall	F. Gregor, Esq., M.P.	—	Sketches.
Tyrringham	Essex	William Praed, Esq., M.P.	—	Sketches.
Uppark	Sussex	Sir H. Featherstone, Bart.	—	Frag.
Walwood House	Essex	——	—	Frag.
Waresley	Bucks	Sir G. A. Winn, Bart., M.P.	—	Sketches.
Welbeck	Nottinghamshire	Duke of Portland	—	Sketches and Enq.
Wembley	Middlesex	Richard Page, Esq.	—	Sketches.
Whersted	Suffolk	Sir Robert Harland, Bart.	—	Sketches.
Widdial Hall	Herts	J T. Ellis, Esq.	—	Sketches.
Wilderness	Kent	Earl Camden	—	Pav.
Wilton Park	Wiltshire	The Earl of Wilton	—	Enq.
Wingerworth	Derbyshire	Sir Henry Hunloke, Bart.	—	Frag.
Woburn Abbey	Bedfordshire	Duke of Bedford.	—	Enq., Pav., and Frag.
Woolerton Hall	Nottinghamshire	Lord Middleton	—	Enq.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

The Slimy Grub may readily be destroyed by a decoction of tobacco-water thrown over the leaves by a syringe. The proportion of tobacco may be 2 oz. to a gallon of water; and, after the liquor has remained a few minutes on the upper surface of the leaves, it may be washed off with clear water, thus freeing the leaves from every appearance, either of the slimy grub, or of the tobacco used to destroy it.—*John Jennings. Shipston on Stour, Aug.* 21. 1838.

Liquid Manure.— Some few years ago, Mr. Cameron, curator to the Birmingham Botanical and Horticultural Society, made experiments on the effects of liquid manure obtained from pigeons', fowls', sheep's, and deer's dung mixed together. They were kept dry until wanted for use, by which means their virtues were better preserved than if they had been kept in a moist state.

The proportions used by him were as follows: — To forty gallons of water he put half a peck of the above manure mixture, and let it stand for twenty-four hours, after which time it was fit for use.

This mixture he found particularly beneficial to some sorts of plants cultivated in pots, particularly those whose roots possessed strong spongioles; such as balsams, pelargoniums, chrysanthemums, mimuluses, fuchsias, salvias, and pansies. Its beneficial effects upon plants possessing such roots he considered to be owing to its hot nature destroying the tender points of the spongioles; and that the stimulus given to the soil caused fresh spongioles to spring out from around those destroyed, in the short space of a day or two. By these means, the feeders of the plants were increased at every successive

watering. It ought to be stated, however, that he found its beneficial effects not universal; and that if he had used it indiscriminately, it would have been certain destruction to some tribes of plants, particularly those with fine fibrous roots, such as the Epacrídeæ, *Ericàceæ*, and *Rhodoràceæ*; and, according to the experiments then tried, it would also have had a similar effect upon all plants potted in *peat*.

Cow urine, as a manure, is the most powerful of all the manures we are at present acquainted with, and should be used with the greatest caution; for, though diluted with four parts of water, we have seen much injury arise, even by watering with it the *Brássica* tribe. But, notwithstanding the great caution requisite when used for watering *plants*, it may, nevertheless, be used with great advantage in agriculture and horticulture, by being spread over the soil before or after digging or ploughing, and, of course, before the ground is either sown or planted. (*Fl. Cab.*, June, p. 59.)

Art. II. *Foreign Notices.*

FRANCE.

The Galactodéndron speciòsum, or cow tree, has attained the height of 15 ft. in the hot-house of an amateur at Rennes. During the summer, it stands without injury in the open air; and, in the course of April and May in 1835, it grew 2½ ft. (*M. D. C. Lanscreur aîné, Horticulteur à Rennes.*) *Communicated by W. Hamilton, M.D. Aug.* 1838.

NORTH AMERICA.

A South Sea Exploring Expedition has just been fitted out by the American government, and will sail on the 12th of August, 1838. The expedition consists of two frigates, two store ships with crews, amounting in all to about 500 men. The flower of the American naturalists are engaged in it; some being selected from every branch of natural history. Mr. W. D. Brackenridge is engaged as the horticulturist. In short, this expedition is got up with great spirit; and the results, it is expected, will be highly creditable to the country. The expedition is expected to be absent about three years.—*W. D. B. Philadelphia, Aug.* 8. 1838.

The New York Horticultural Society is defunct. This has arisen from a sort of apathy that prevails in those parts with respect to every thing that does not bring in money. In Boston, horticultural and other societies succeed to a charm. When the exhibition of dahlias took place in New York in 1836, it was advertised in six of the most widely circulated papers in the city every day for a week, with twelve white flags flying on twelve omnibuses, stating when and where the exhibition was, and after four days' toil the produce was 163 dollars. My friend, Mr. Samuel Walker of Boston, this spring (1837), by exhibiting his bed of tulips four days, made over 150 dollars, at 25 cents each admittance, and his garden is at Roxbury four miles from Boston. The exhibition of dahlias in Boston this year (1837) produced in four days, taken at the doors, 850 dollars and 25 cents. Philadelphia is especially successful with exhibitions. So much for the diffusion of taste.—*W. Neale. New York, Dec.* 30. 1837.

Art. III. *Domestic Notices.*

SCOTLAND.

The New Burying-Ground at Dundee is now much frequented, as a promenade, both by town's people and strangers; though, from the severity of

the winter, and the lateness of the spring, the annuals, &c., were late in coming into flower. As we formerly noticed, the borders along the walks are planted with trees and shrubs, according to the natural order of Jussieu. This arrangement is now attracting considerable interest, from the name of each tree being placed in front of it, upon tallies of patent zinc, written with ink that resists the action of the atmosphere. Each tally contains the botanical and common name, the family it belongs to, the native country, the height it attains when full grown, and the year it was planted in this ground, with its height at that time; thus: —

Salix babylonica. Weeping Willow. Amentaceæ.	
Levant.	1837.
40 ft.	3 ft.

Populus macrophylla. Ontario Poplar. Amentaceæ.	
North America.	1837.
70 ft.	7 ft.

The shrubs belonging to each family, which are planted between the trees, are to be named with tallies of rather a different appearance. By attending to these explanations, a considerable degree of popular knowledge of botany may be very easily attained. The public are indebted for this rational enjoyment to the advice and assistance of Mr. Daniel Urquhart of Blackness Nursery, whose attention to this department has been unremitting. (*Dundee Courier*, Aug. 21. 1838.)

[We should be much obliged to Mr. Urquhart for a list of the trees and shrubs planted in this burial-ground; and, if not inconvenient, for a ground plan of it, showing their arrangement. Any particulars respecting the soil, draining, &c., would be very acceptable. See what we have said on the subjects of laying out and planting churchyards, in the *Architectural Magazine* for July. — *Cond.*]

IRELAND.

The Belfast Botanic Garden contains a number of araucarias and other South Sea Island plants; among which are several specimens of phyllocladus, a most remarkable tree, bearing in its foliage some resemblance to salisburia, and never before, we believe, seen in a living state in this country. We should feel much obliged to the curator, if he will send us some details respecting these, and other rare plants in his garden. In the *Belfast Northern Whig* for August 30th, it is stated that Professor Morren of Liege (see p. 443.) found the Belfast Garden superior to any other in Ireland. — *Cond.*

Art. IV. *Queries and Answers.*

A Mining Grub, very injurious to pear trees, abounds in this neighbourhood. It differs from some species of leaf miners, in not making a circuitous or zigzag tract; but the leaves appear blotched with roundish dark-coloured spots, from a quarter to half an inch in diameter. This species of insect is very difficult to destroy, on account of the cuticle of the leaf protecting the grub from every kind of external application. If a few leaves with the insect will be of any use, I shall be happy to forward them to you. — *John Jennings. Shipston on Stour, Aug.* 21. 1838. [We have written to Mr. Jennings for specimens, and, having received them, we hope, through the assistance of Mr. Westwood, to be able to give some account of the insect in our next Number.—*Cond.*]

THE

GARDENER'S MAGAZINE,

NOVEMBER, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *Notes on the Brighton and Shoreham Gardens; and on the Garden and Grounds of William Borrer, Esq., F.L.S., at Henfield: with some preliminary Remarks on Tawdriness in Flower-Gardens.* By the CONDUCTOR.

THERE is no fault that we find more frequent in flower-gardens, than that of tawdriness, which we regard as a greater abomination than neglect, or even than slovenliness. Tawdriness, as applied to individual plants, is the opposite of neatness; and it is the result, sometimes, of crowding plants together, and after they have been drawn up to a considerable height, suddenly thinning them out, and leaving a few straggling stems leaning in all directions, and generally naked, or, at all events, not symmetrically furnished with side branches and flowers. Often, tawdriness is the result of placing plants in confined situations, where there is not a sufficiency of light and air; such as close under the north side of a wall or fence of any kind, without training against that wall or fence; under the shade of trees, or under the shade of any object which excludes from them the free influence of the sun and the atmosphere. There are some plants which naturally grow in the shade, even under the shade of trees; but these, in a state of nature, are never found tawdry; because the soil in natural woods is not sufficiently rich and moist to cause that rapid growth and elongation of the parts, which is ever attendant on tawdriness in a state of culture.

One of the grand causes of tawdriness in a flower-garden is, the ambition of crowding a great many sorts into a little space; and another is, the want of selection in the kinds of flowers cultivated. There are various species that, both in a state of nature and art, assume a neat bushy form; such as the sea pink and the primrose, among perennials; some of the œnotheras and stocks, among annuals; and the wallflower and double rocket, among biennials. These, and other plants of the kind, will assume a neat bushy appearance, even when left to themselves; while tall rapid-growing plants; such as some of the mallows, lupines, chrysanthemums, &c., either require a great deal of room, so as

to form bushes of width proportionate to their height, or they should be neatly tied up to stakes, and pruned, so that their sides may be regularly furnished with branches.

Tawdriness in plants in pots is, if possible, still more objectionable than in plants in the open garden. It is produced by growing them crowded together in pits or green-houses, at a distance from the glass, instead of keeping them at all times quite near the glass; never so close as to touch one another, and always admitting abundance of air in the daytime.

When tawdriness exists, the only remedy for it is cutting in, and neatly tying up to stakes; allowing no plant to be so near another as to touch; but, on the contrary, allowing such a distance between them, as that every plant may not only stand distinct, but have room to become clothed with foliage from the ground to its summit. We have been led to these remarks on tawdriness, as contrasted with neatness, distinctness, and bushiness, by observing some of the front gardens to the street houses at Brighton. In many of these there is a degree of neatness, select planting, and high keeping, which is far from being common, in the same proportion, in the street gardens of London.

In the management of plants (we are not now speaking of their propagation and culture), whether in the open air or under glass, the first point to attend to is neatness as opposed to tawdriness; the second order, as opposed to confusion, or disorder; the third is regularity, or a succession of similar parts; and the last, symmetry, or a correspondence between the parts which compose the two sides of an object.

Brighton Gardens, Sept. 17. 1838. — We were particularly gratified by the high style of planting and keeping exhibited in the front gardens of some of the houses facing the London Road. Not only did they contain many of the finest hardy and half-hardy annuals, but pelargoniums, fuchsias, calceolarias, lobelias, salvias, and other green-house plants. Scarcely anything can surpass the neat manner in which many of these were tied up; and all appeared remarkably healthy, and free from insects. In some of the gardens were stages of choice plants in pots; and we observed, in one or two, framework of green-painted wire of different forms for containing plants; but, instead of these frames, or cases, being filled with pots in the ordinary manner, they were lined with turf, the green side outermost, and the grass kept closely clipped, as it protruded beyond the wire. We noticed particularly the front gardens to the following houses, all on the London Road, and within a few yards of St. Peter's; a very handsome church, erected, a few years ago, from the design of Mr. Barry.

Marlborough Place. — No. 15. In a plot not containing more than two square yards, dark and light-flowered nasturtiums,

*C*onvólvulus màjor, and mignonette, were thriving with the greatest luxuriance, and climbing up the walls of the house, and over the surrounding fences. The convolvulus and nasturtiums made a showy appearance; and the mignonette spread a delicious fragrance. No. 21., a plot about 3 yards long, and 1 yard wide, contained four tall sunflowers, up the stems of which, to the very summit of the flowers, a profusion of dark and light nasturtiums had been trained.

Gloucester Place. — No. 16. A plot, about 4 yards wide, by 5 or 6 yards in depth, contains a dug bed in the centre, and a surrounding border, separated by a gravel walk, with box edgings. In the bed and borders pelargoniums, verbenas, balsams, Lobèl*ia* grácilis, Jacobæ`*a*, China aster, clarkias, Calliópsis, zinnias, fuchsias, heartseases, sweet peas, and various other plants, were all beautifully in flower. The plants in the centre bed were kept quite distinct, and tied up to neat rods, painted green, so as scarcely to touch each other. The plants in the surrounding border were partly tied up in the same manner, partly trained, and partly clinging naturally to the surrounding fence. The luxuriance and wild grace exhibited by the sweet pea, the nasturtium, and the greater convolvulus, formed a fine contrast to the trimness of the plants in the central bed, and gave the idea of great richness and vigour of growth. Slight touches of uncontrolled nature, in this way, add wonderfully to the effect of extreme art.

St. George's Place. — Almost all the gardens here were interesting, commencing with No. 4. No. 15. contained some remarkably fine petunias, with *M*álope, Jacobæ`*a*, stocks, pelargoniums, and other plants, in great luxuriance.

York Place.—No. 14. The centre bed was surrounded by turf, with a marginal border; and the soil, both of the central bed and the border, was raised at the rate of about 4 in. in a foot, so that the central bed formed an oblong cone, perhaps 8 ft. by 5 ft. at the base, and 2 ft. high. This was, perhaps, the richest front garden that we saw in Brighton. In the central bed were *S*álvia coccínea, and Physostègia imbricâta, most splendidly in flower; *V*erbèna *c*hamædrifòlia and Tweedi*àna*, Fúchs*ia* longiflòra and microphýlla; 6 or 8 varieties of heartsease, pelargoniums, and various other plants. In the surrounding border were Eccremocárpus (Calámpelis) scàber, Potentílla atrosanguínea, chrysanthemums, and 10 or 12 distinct varieties of heartsease. The heartseases, both in the bed and border, were of most extraordinary luxuriance and beauty; all trained to single green-painted rods, and forming blunt-pointed cones, covered with flowers from the base to the summit; one or two of them nearly as high as 3 ft.! Among the shrubs in the border were

numerous Bengal and other roses; and a most luxuriant plant of *Ribes* sanguíneum. No. 16. A very selectly planted garden, in which Lobèl*ia* grácilis, *A*nagállis coccínea grandiflòra, and verbenas, made a conspicuous appearance. No. 17. A garden in the same style of keeping as that of No. 14. The pyramids of heartseases were remarkably fine. Bartòn*ia* aúrea was trained to a rod, and petunias and *M*imulus moschàtus were conspicuous. This garden, and the garden at No. 14., were two of the most beautiful gardens that we saw in Brighton. No. 19. A plant of Lonícer*a* gràta, on the side of the house, had reached the cornice, and was magnificently in flower from the ground to that height; the pendent shoots terminating in bunches of blossoms, hanging down in the most wild and graceful manner. *C*lématis Vitálba, slightly intermixed with the larger convolvulus, had been trained by means of a few packthreads, from the side fence to the balcony on the first floor. The clematis was covered with its white fragrant blossoms, and, with the large flowers of the convolvulus, looked like a piece of flowered muslin drapery, put up to shade the parlour window. Here the heliotrope was in very great luxuriance. At No. 21. was a fine assortment of dwarf China asters.

St. Peter's Place.—No. 4. The front gardens here are of larger dimensions, being between 20 ft. and 30 ft. in width, and 40 ft. and 50 ft. in depth. This one contained a splendid collection of dahlias, beautifully in flower. Among the shrubs in the surrounding border, we observed roses of different kinds, *C*ydònia japónica, *Mezèreum*, and other shrubs, and herbaceous plants, for display in early spring, and during summer.

Waterloo Place. — No. 3. The front garden consisted of a piece of turf about 10 ft. square ; the bed in the centre was in the form of a many-rayed star, with the mould raised up so as to give it a very striking relief from the grass. It was planted with small plants, all beautifully in flower, and forming distinct little bushes. At No. 2. were the grass-baskets, mentioned in in the introductory observations. For extreme care, and high keeping, this little garden may be ranked with those of Nos. 14. and 17. York Place.

Richmond Place. — No. 5. The central bed, and the surrounding border, were edged with brick, and within this was an edging of mealy-leaved auriculas in luxuriant foliage. The walk which separated the bed from the border was paved with pebbles. The separation hedge was of roses ; and in front, immediately within the fence, there was a low hedge of variegated periwinkle. No. 14. had an entire border of auriculas, mixed with colchicums just coming into flower. Nos. 23. to 25. were rich in dahlias, neatly trained to skeleton framework. No. 26. had zinnias, and Salpiglóssis, Calceolària, Fúchs*ia*, Potentílla

Hopwood*iàna*, and Tigrídia, conspicuously in flower; and also hepaticas, auriculas, and other plants, for early spring show.

There were many other front gardens of the very smallest size that, perhaps, equally deserved notice; but the above will show what may be accomplished in a locality by no means favourable for gardening, where there is a desire to excel. A number of these gardens, we were informed, belong to retired London tradesmen, who look after them themselves; and scarcely any of them are under the care of jobbing gardeners.

Among the Brighton gardens, we must not pass over some of those directly facing the sea, more particularly in Kemp Town. The great value of the French tamarisk is there strikingly conspicuous: it grows with the greatest luxuriance and vigour, and assumes a beautiful light green foliage, protecting roses and smaller shrubs, and numerous kinds of annual flowers. The sweet bay, the arbutus, the laurustinus, rosemary, lavender, myrtle, and sea ragwort, which have been killed to the ground about London, have here escaped uninjured. There are several small commercial gardens in and about Brighton, chiefly for the culture of flowers. The most complete, and the best kept, appeared to us to be one at Rose Hill, belonging to Mr. Evans, who has erected, and continues to erect, a number of houses for growing early grapes, strawberries, and salading. The vegetable market at Brighton is principally supplied from London; but the commoner vegetables are sent to it from Chichester and Portsmouth; and some fruits of inferior quality are from Havre and Dieppe. The article which we found best was the potato. Several varieties are grown, and all are excellent, both in flavour and mealiness.

The Villa of W. Borrer, Esq., Henfield. — The road to Henfield, for the first six or eight miles, is through those naked downs, which mark the vicinity of Brighton to the traveller arriving from London; but suddenly, on turning out of the London Road, the country becomes varied, and richly wooded. Mr. Borrer's villa, which is close to the town of Henfield, occupies a piece of table land in an elevated situation, and exhibits extensive views in every direction. It is neatly laid out, and richly stocked with trees, shrubs, and herbaceous plants, which it would require two or three days to examine properly. There are green-houses, hot-houses, a vinery, pits, and numerous frames; and, what is unique, a house for growing exotic ferns, consisting of a number of caves, formed by stone arches, and disguised by rustic masonry; the walls, also, being covered by the same material, and every part of them adapted for receiving plants. The idea, Mr. Borrer informs us, was suggested by the fern-caves in Mr. Ward's back garden, in Well-

close Square, London; which we had the pleasure of examining in detail, on the 4th of October. We there found three houses containing caves, in the back yard; and one projected from the window on the staircase; all richly stocked with ferns, mosses, some palms and scitamineous plants, and some bamboos; all in a thriving state.

In the open garden of Mr. Borrer's villa, there are very complete collections of British roses; and of all the more rare British herbaceous plants. In short, the number of species of rare herbaceous plants is so great, that we do not know any garden in the neighbourhood of London that can be compared with it. The locality seems particularly favourable to alpines, which thrive in small pots admirably. There are a good many of the finer kinds of hardy trees and shrubs; and, among these, some raised from seeds, which will probably be found new. We noticed a male tree of *Negúndo fraxinifòlia*, so different from the female in habit of growth, and in the form and colour of the foliage, and bloom of the young shoots, that it might pass for a different species. All the trees of this species in the neighbourhood of London, that we know of, are females.

Mr. Borrer has rendered himself celebrated by his knowledge of the genus *Sàlix*: his arrangement of which has been followed by Sir W. J. Hooker, in the *British Flora;* and by ourselves, through Mr. Borrer's kind assistance, in our *Arboretum Britannicum*. Mr. Borrer cultivates an extensive collection of willows, principally in a field at some distance from his garden. We also saw there the collection of American willows sent to Mr. Borrer by Dr. Barratt of Middletown, Connecticut (see *Arboretum Britannicum*, vol. iii. p. 1457.), most of which are alive, and making vigorous shoots. We expected to see the British willows in groups, and assuming the character of large bushes or trees, but they are merely planted in rows, for the purpose of being studied botanically. It remains for some botanical amateur to plant a collection of willows in a proper soil and situation; allowing ample room for each species to attain its natural size and shape. Something has been done towards this object at Woburn Abbey; but the situation, in our opinion, is not sufficiently open and airy, nor the extent sufficiently great. The soil, also, ought to be of the same nature throughout, and level; whereas the new salictum at Woburn Abbey is in a narrow valley, with a moist peaty bottom, with clayey sides.

Mr. Borrer had a number of half-hardy ligneous plants trained against a wall, many of which have been cut down by the late severe winter, but scarcely one has been killed. The *Aúcuba* japónica, however, which, about London and at Brighton, has generally escaped untouched, has here been cut down to the ground, but is springing up again. The same may be said of

the escallonias, the Banksian or other roses natives of India or China, Benthàm*ia* fragífera, &c.

The genus *C*ratæ`gus seems to thrive remarkably well at Henfield; and we have strongly recommended Mr. Borrer to complete his collection. We scarcely know a genus of trees calculated to give so much satisfaction: they are so hardy; grow so freely for five or six years, till they assume their characteristic shapes; and then last so many years more without growing too large, or assuming lumpish forms. Add to this, that they come into flower the second or third year, flower profusely, and bear abundance of fruit; which, besides being very ornamental, forms excellent food for thrushes, blackbirds, &c.

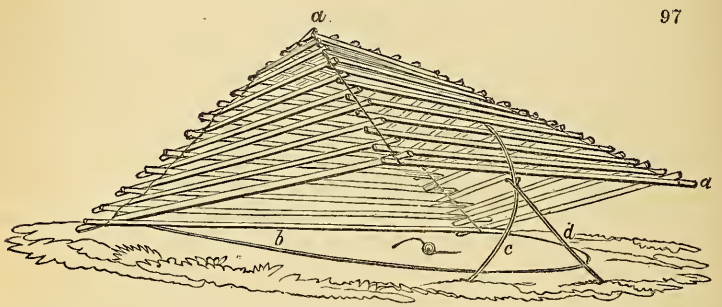
In leaving Mr. Borrer's entrance gates, to return to Brighton by Shoreham, we descended a steep winding road, with a picturesque thatched cottage, or rather group of cottages, crowning a precipitous bank to the right; the garden of which came down to the road, and exhibited an extensive collection of the genus *A*ster, then in flower. One of the cottages is occupied by Mr. Borrer's head gardener, and the other contains a collection of stuffed birds belonging to his son. The road to Shoreham is varied by hill and dale, native woods, corn fields, and level meadows, in part overflowed by the sea at spring tides, which form the valley through which flows the river Steyne.

The Swiss Garden at Shoreham is the property of a spirited shipbuilder in that town, of the name of Bally. It is a flat piece of ground of several acres in extent; and owes its interest entirely to some rustic buildings, a piece of water, an archery-ground, a place for roundabouts, swings, balances, &c., and a prospect-tower. The plants are of good kinds, very carefully planted and managed, and in vigorous health. Such a scene might receive a very valuable addition, if an acre were allotted to the imitation of Swiss scenery, in the manner of Lady Boughton's garden at the Hoole. (See p. 353.) It is gratifying to find that the Swiss gardens at Shoreham are well frequented by persons from Shoreham and Brighton, who pay a shilling each for entrance; and we trust that their success will encourage other spirited individuals, in other parts of the country, to follow the example set them by Mr. Bally. It was suggested to us, while we were at Brighton, that, if these gardens were opened, one or two days in every week, at sixpence a head for grown persons, and half that sum for children, a great number of Brighton people would frequent them, who are now precluded by the expense, more especially as they have to pay in addition that of an omnibus from Brighton.

Brighton, Sept. 1838.

ART. II. *A Description of a very simple Kind of Trap for catching Birds.* By ROBERT ALEXANDER, Under Gardener at Kiplin, near Catterick, Yorkshire.

FIG. 97. represents a trap which is used here, and in the neighbourhood, for the purpose of catching blackbirds and



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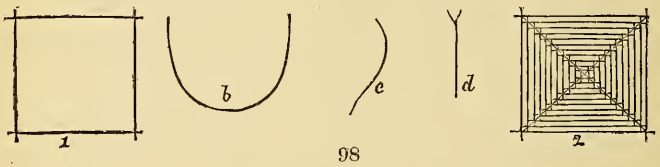
thrushes. In form, it resembles a pyramid; and the dimensions of the one used here are, 18 in. square at the base, and 10 in. high in the centre of the trap from the ground to the top. It is made of straight hazel rods, about three quarters of an inch in diameter. To begin, two rods are laid upon the ground in a parallel direction; and then two more, of exactly the same length, are laid upon them, so that the ends overlap each other about an inch, as shown in *fig.* 98. at 1. Two rods are then laid



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upon those, parallel to one another, and then two on the other sides; continuing in the same manner to the top, but diminishing an inch each time in the length of the rods, as in *fig.* 98. at 2. They are fastened down by a cord (*a a* in *fig.* 97.), which is tied to the four corners of the bottom square, and passes outside between the ends of the rods to the top, where it is made tight. *b* is a bow, which is placed between the two bottom rods of the trap; *c* is the spring; and *d* is a small forked stick, which supports the trap. It is baited with a cherry, placed within the bow, which stands an inch from the ground. The bird, in reaching the cherry, displaces the bow; the spring flies up, and the bird remains a prisoner. It can be taken out by moving one of the rods.

Kiplin, July, 1838.

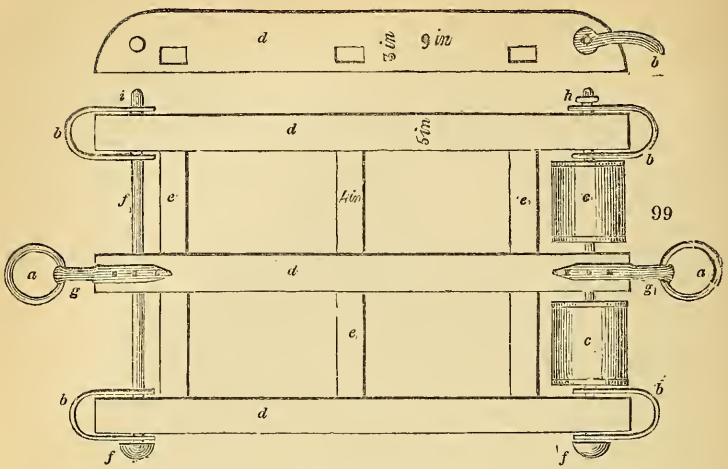
ART. III. *On the Management of Shrubberies.* By GEO. GEGGIE.

THE errors committed in the planting and after-management of shrubberies, as these operations are generally performed, have been so often pointed out in the *Gardener's Magazine*, that it would be superfluous to repeat them. From the time, however, that most of your valuable remarks on the subject have been before the public, and from the rules there laid down being so clear, and derived from principles which have never been controverted, it is rather a matter of surprise that they seem to be so little appreciated in practice. This arises, in many cases, no doubt, from the shrubberies being old, and having grown up with all their faults: they are considered past reclaiming, and so left to "have their way," till some one of more taste, or more energy, undertakes their renovation. Another reason of shrubberies being allowed to grow up too thick arises from the indiscriminate stuffing adopted in their formation, without any system being followed in the arrangement of those plants which ought ultimately to form the plantations; since, to keep the shrubberies sufficiently thin, some of the most valuable plants would require to be destroyed at every thinning, and in the end they would very likely be deprived of many of the most valuable species altogether. In this case, it is obvious that the advantages of thinning are very questionable. Example, however, in this, as in every thing, must act as the greatest stimulus in the general adoption of a superior system of management; and such an example, to be efficient, should be open to the public. Such an example, I am sorry to say, we are not likely soon to possess in this neighbourhood, as the Manchester Botanic Garden, originally faulty in this respect, exhibits most of the blemishes so often pointed out, in a greater or less degree. This is strikingly exemplified in the bank opposite the entrance gates, which, for want of timely thinning, has assumed the appearance of a lumpish thicket, without the least variety of outline, and which will, in a short time, defeat the object for which it was planted; viz. as a screen.

Bury, Sept. 8. 1838.

ART. IV. *On Moving and Replanting large Trees, as practised at Arlington Court, near Barnstaple, Devonshire.* By JOHN NASH, Gardener there.

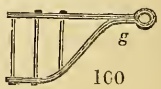
ACCORDING to promise, I herewith send you a short account of the method we practise here in moving and replanting large-sized trees. Our first object, after having determined on a place for a group or a single tree, is to select as good plants as we can for the situation; and for this purpose we choose



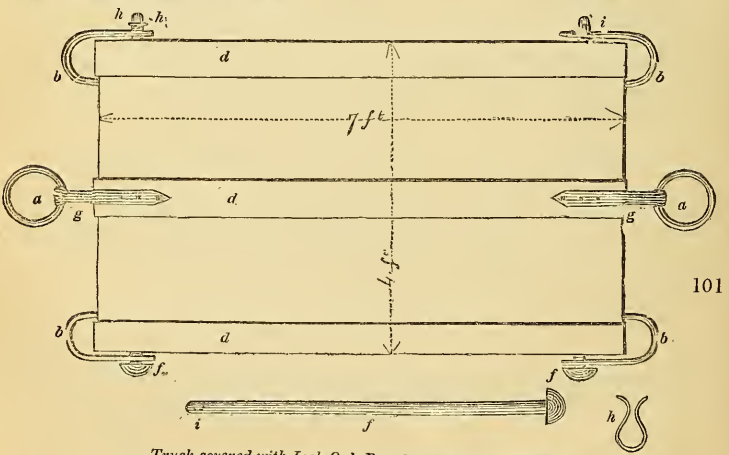
Frame of Truck.

Explanation of References in figs. 99. *to* 101.

a, Rings, 6 in. diameter, of half-inch round iron, for securing the trees to when loaded.
b, Collars, 6 in. span, 1½ in. by ½ in., with holes for receiving bolts, for drawing truck by.
c, Rollers, 1 ft. diameter, 1 ft. long, bound with iron hoop at each end, receiving bolt at front of truck.
d, Sides and centre of truck, 9 in. by 5 in., 7 ft. long.
e, Top, middle, and bottom rails, 4 in. by 3 in., 4 ft. long, mortised into sides and centre 1 in. below their top surface; so that, when the boards are on, the surface may be quite smooth.
f, Bolts, 1¼ in. diameter, passing through the collars and washers, rollers and truck, tying all together, and taking the strain off the horses in drawing.
g, Irons to receive the rings, bolted to the ends of the centre piece, and about the same substance as the collars.
h, Key, or linchpin, for securing the bolts.
i, Holes for receiving the key, or linchpin.



100



Truck covered with Inch Oak Boards, ready for working.

All the timber used for making the truck was of good seasoned oak, except the rollers, and they were of elm. The truck, when finished, was 7 ft. by 4 ft.; quite large enough for general purposes, and even too large for some places.

them from an exposed place, where the plants stand rather thin, and are possessed of the following properties; namely, a good stout stem, strong thick bark, and plenty of branches from the ground to the top; or, in other words, what Sir Henry Steuart calls protecting properties; and, when we find these, we never despair of the trees being furnished with plenty of good roots, another essential for insuring success.

After having selected our trees, we proceed to prepare them for moving; or, as we call it, we proceed to root them, which we do in the following manner: — First, we tie up all branches that are likely to be in the way, and dig a trench round the tree, 10 or 12 feet from the stem, or as far as we think the roots have penetrated, and also as deep, preserving with great care even the minutest fibres; then, we proceed round and round the tree with a slice of earth, carefully working it out from among the roots, coiling them up, and pegging them to the top of the ball as we go on, till we have reduced the ball to a size that we think will adhere to the tree: for you must know, if we chance to be too covetous, and attempt to take too large a ball, its own weight will tear it asunder; dragging with it a great many of the most valuable roots; and ten chances to one but the plant dies. We therefore prefer a small compact ball to a large loose one. After proceeding so far as to be within 1 ft. or 1 ft. 6 in. of the stem, and quite under it, if the plant will stand we cover up the roots with straw, &c., if it will not stand we previously lay it to one side, and then cover the ball on the exposed side; and so on, serving them all in like manner, till we have enough ready for a day's drawing. Whilst we have been engaged in rooting the plants to be removed, others have been preparing the holes into which they are to be put. These holes must be rather large (for some, 20 or 25 feet in diameter), and just deep enough for the ball to rest on the bottom, when the top of it is rather above the level of the adjoining ground. They must also be made with two inclined planes, opposite each other; the one for drawing the plant in at, and the other for drawing the truck out. This truck is the implement we bring them on, and it is very much like those used by the brewers in London for taking small casks on without wheels; and a sketch of it is shown in *figs.* 99. to 101. We have also a timber Bob (carriage), with two large wheels and a long shaft, which we use, on particular occasions, for the largest-sized trees. The one we generally use is a simple parallelogram with two rollers in front, a collar at each corner, and a ring in the centre of each end for drawing it by, and for lashing the plant to after loading. Previously to moving any plants, we must provide a quantity of levers of different sizes, two or three binding ropes, one loading

rope, $1\frac{1}{2}$ in. in diameter, chains, &c.; three good stout poles, 5 or 6 inches in diameter, two of which must be 15 or 16 feet long; six or eight men, and as many horses. Then we proceed to load; the first step of which is to cut an inclined plane down to the plant, for getting it on the truck; then we lay one of the long poles on each side of the ball, and bend its top forward; then we lay the other pole across the first two, immediately behind the ball, as close as we can get it, and pass the loading rope two or three times round it. The next step is to raise up the tree, and lean it backwards a little, so that the cross pole may take the greater part of the weight of the ball. We then push back the truck, between the two poles that lie on the ground, and as far under the ball as we can; and we raise the tree nearly perpendicular, bringing the ends of the loading rope to the fore part of the ball, and tying them together so as to form a stay, on which to hook the traces of the horses. The tree is then made steady with the binding ropes, previously fastened to its top. All being ready, we hook on the horses to the bight of the loading rope, tighten the traces, and move gently forward, till we get the ball into the centre of the truck, which is easily done, as the cross pole, with the ball on it, will slide freely enough on the other two; then we adjust it, if needful; make it fast with the binding ropes from the top to the rings, &c.; and it is properly loaded.

When all is so far ready, we hook the horses to the collars of the truck; tighten the traces again, which must be done (if the horses are not steady) by a man at the head of each; and then move gently on towards the hole in which the plant is to be deposited. We generally have to make several halts before our arrival; we have also to determine on the future position the plant is to take, and to place it so that it may be drawn into the hole as nearly in that position as possible; that is, with the most branchy side next the strongest wind, which, with us, is south-west. Being satisfied on this point, we lead the horses down one of the inclined planes into the hole, and stop as near the centre as we can, cast off all the ropes from the truck, steady the tree by them, lay a good pole, like those used in loading, in front of the ball, letting each end bear against the side of the hole, which will prevent the tree moving forward; when we draw the truck from under it up the other inclined plane, leaving it behind nearly in its proper place. Then we adjust and proceed to plant it, which we do by throwing in small quantities of good earth (rejecting all the sour subsoil, &c.) round about the ball, being careful to work it, with small-pointed rammers, into every crevice and cavity, till it stands quite firm. We now uncoil some of the lower roots, and lay them down regularly

all over the hole, covering them, and working the earth in amongst them, and ramming it down well as we proceed, until we have laid them all out, tier above tier, and filled our hole to its proper level, which is about 6 in. above the undisturbed ground. We never find it to settle much in this process of planting. Should any of the roots be too long for the hole, we dig trenches, and lay them out their full length, often as long as 25 or 30 feet, never cutting intentionally either root or branch at the time of planting, but what are bruised, dead, or rival leaders. By the above method we move large trees, at almost any season, from the end of August to the end of May, with very good success: but I think the best time is when they are in a dormant state. We give very little water, this being a very moist climate compared with that of London: the plants do very well without it. I also like to plant when the earth is rather dry. Some talk of puddling; but I disapprove of it altogether, and always find trees to do best when the earth is in a good working state. Would a farmer like to puddle in his wheat? I always find that earth which has been worked in a wet state becomes very hard and unkind when dry; and also cracks very much, to the great detriment of the roots.

In securing the plants against the wind, we use various methods; such as pegging down the roots, laying four poles, forming a square, round the stem, and nailing each extremity to a strong stake previously driven into the ground, just below the surface, and propping with forked props: but more depends on selecting proper plants, and good planting, than on all the contrivances put together. Forming cradles round the stems, to protect the bark, is good.

We have moved plants of oak, beech, elm, ash, and sweet chestnut, from 2 ft. 6 in. to 3 ft. 6 in. in circumference of stem, at 1 ft. from the ground, from 20 ft. to 35 ft. high, with heads in proportion, and of every intermediate size, down to a quarter of an inch in diameter, and 2 in. high; Portugal laurel, 2 ft. in circumference of stem, 20 ft. high, and 50 ft. in circumference of head; common laurel, with 5 or 6 stems, each from 1 ft. to 18 in. in circumference, and from 20 ft. to 30 ft. high, and the branches, taken collectively, forming heads from 30 ft. to 40 ft. in circumference; evergreen oaks, deciduous cypresses, common cedar and holly, quite as large in proportion as the above; rhododendrons, box, &c., 30 ft. to 40 ft. in circumference of head, and 10 or 12 feet high; balm of Gilead, silver, and spruce firs, larch, and Scotch pines, from 1 ft. to 18 in. in circumference of stem, 20 ft. to 30 ft. high, and branched to the ground; all of which have done remarkably well, and have as good effect the day after planting, as small plants would

have in ten or twelve years. Indeed, in some of the situations, small plants would never attain the size; and here is where the large planting has the advantage over the small: for by the former method as much effect may be produced in a year or two, as by the latter in twelve or fourteen years.

No doubt, many will say, Where are such large plants to be obtained? To which I answer, Not from a nursery, or from a dug shrubbery, or the plantation of a London garden; but some from a natural wood, common hedgerow copse, &c.; such as Highgate, Hornsey, Norwood, and clumps in the Regent's Park, near London; and in similar places in most parts of the country. Where there are no woods from which trees can be obtained, I would recommend plants of the size for common planting, that is 2 ft. to 4 ft. high, according to the sorts, being obtained of the nearest nurseryman, and planted in a reserve plantation, at 3 ft. apart each way, for a few years, as they would grow twice as fast in such a situation as they would do in a park, whilst so small; and I would neither dig nor hoe the ground between them, but just cut the grass and weeds, about twice in the summer, with a common reaping hook, by which means the earth becomes more compact, and the plants grow much faster, and carry better balls when transplanted; while by digging or hoeing deep the best roots are annually killed, and the plants much retarded in their growth.

Arlington Court, near Barnstaple, Devon, Jan. 7. 1838.

ART. V. *On the Effects of the severe Winter of* 1837-8, *at Bicton, Devonshire.* By R. GLENDINNING, Gardener there.

I HAVE withheld my promised notice of the ravages of last winter thus late, in consequence of a multiplicity of callings; but it may be even now not uninteresting to many of your readers, who may wish to draw comparative inferences of the destruction effected by the condensed atmosphere of last and other winters. With a view to aid such investigation, I have appended a copy of my meteorological register, which may be interesting, as showing the state of the weather in this south-western part of England during an intensely cold month. It will tend, also, to prove what we may expect to accomplish in exotic acclimatising. The plants enumerated below were no way protected, and were, therefore, fairly tested, as regards their respective hardiness.

Plants killed. — Coronílla glaúca. Extending over a wall 9 ft. by 8 ft., planted five years, and cut off in full flower. — Begòn*ia* grandiflòra. Planted, five years ago, against a wall. — *Ac*àcia

armàta. Planted five years, against a wall, 9 ft. high. — Pomadérris ellíptica, *Thèa Bohèa*, *Acàcia* venústa — Doryánthes excélsa, planted five years. — Clianthus puníceus, against a wall, 9 ft. high. — Dodon*æ'a* (species). Wall. Five years planted. Calámpelis scàbra. Wall. — Virgíl*ia* frutéscens. Wall. — *Co*lùtea frutéscens. Wall. — Magnòl*ia* pùmila. — *Teùcrium* latifòlium. Wall. — Erythrìna *l*aurifòlia. Wall. — E. *Crísta-gálli*. Wall. — Eucalýptus robústa. Wall. — E. pulverulénta. Four years planted. — Benthàm*ia* fragífera, *Acàcia* dealbàta. — Cassín*ia* *r*osmarinifòlia. Although this beautiful plant survived the severity of the winter, still, from the damage it sustained, it died in June. — *A'*rbutus canariénsis, Edwárds*ia* grandiflòra, E. chrysophýlla. — Hedýchium, four species. Four years planted.

Plants killed to the Ground. — *P*hórmium tènax. Six years planted, and never before suffered. — Azàlea índica coccínea, Casuarìna *e*quisetifòlia, Edwárds*ia* microphýlla. — Araucària brasiliénsis. Five years planted, 10 ft. high. It made an effort; but, I fear, is now dead. — Several plants of *Acàcia* dealbàta, and many kinds of Fúchs*ia*.

Plants which have suffered in either Foliage or Branch. — Fúchs*ia* excorticàta. Wall. — *C*eratònia *S*íliqua. Wall. — Virgíl*ia* intrùsa. Wall. — Vést*ia* *l*yciöides. Wall. — Escallòn*ia*, four species. Four years planted. — *Acàcia* dealbàta. Six years planted, and probably the finest plant in the country. It measured, on September 8. 1837, 24 ft. high; diameter of the stem, at 1 ft. from the ground, 1 ft. 7½ in.; diameter of the space covered with branches, 24 ft.

Plants which have not sustained the least Injury. — Edwárds*ia* microphýlla. Many years planted, at the corner of a stove. — Araucària imbricàta. In open situations; one a very splendid specimen. — Magnòl*ia* fuscàta (wall), and twenty other kinds in the open ground. — *A'*rbutus procèra, a fine plant. — *A. An*dráchne, a fine plant. — *A.* hýbrida, a fine plant. — Azàlea índica álba. Five years planted. — Caméll*ia*, five double varieties, and the single red; the former apparently the hardiest. — Hàke*a* macrocárpa. Wall. — Alstrœmèr*ia* ovàta. Wall. Planted six years, and now 12 ft. high, in full flower. — A. pulchélla, A. psittacìna. — Blèt*ia* verecúnda. At the foot of a wall. — *Dàis* cotinifòlia, *Thèa* víridis; Metrosidèros, two species. — *C*èdrus *Deodàra*, and all the *P*ìnus tribe we have yet out. — Mahòn*ia* fasciculàris, and others. — *Bérberis* *e*mpetrifòlia, and others.

The following table is copied from the Meteorological Register kept at Bicton Gardens, Devonshire; long. 3° 20″ W., lat. 50° 40″ N., 2½ miles from the sea, and 83 ft. above it. The instruments denoting the temperature are kept in a sheltered situation, 5 ft. from a north wall, and 5 ft. from the ground.

January, 1838.	Morning, Nine o'Clock.					Observations once a Day			Evening, Nine o'Clock.				
	Barometer.	Thermometer.	Wind.		Weather.	Register Thermometer.		Rain in 24 hours in Inches and Parts.	Barometer.	Thermometer.	Wind.		Weather.
			Direction.	Force.		Max.	Minim.				Direction.	Force.	
1.	29·75	48	S.	Little	Cloudy	50	35	·05	29·82	35	S.	Little	Fair.
2.	29·69	48	S. W.	Brisk	Showery	49	32		29·44	44	S.	Violent	Stormy.
3.	29·5	44	S. W.	Little	Cloudy	44	37	·43	29·75	38	S. W.	Little	Fair.
4.	29·84	36	N. W.	Little	Cloudy	48	33		30·1	33	N. W.	Little	Fair.
5.	30·1	31	N.	Little	Cloudy	45	29		30·15	45	S. E.	Little	Cloudy.
6.	30·13	40	E.	Little	Foggy	42	35		30·11	35	N. E.	Little	Fair.
7.	30·16	35	N. E.	Little	Cloudy	39	34		30·19	35	N. E.	Little	Cloudy.
8.	30·19	31	N. E.	Brisk	Cloudy	31	26		30·15	26	N. E.	Brisk	Fair.
9.	30·1	23	N. E.	Brisk	Fair	29	22		30·9	25	N. E.	Brisk	Cloudy.
10.	30·5	28	N.	Little	Fair	33	24		29·98	27	N.	Little	Fair.
11.	29·93	24	N.	Little	Cloudy	33	21		30·4	31	N. W.	Little	Cloudy.
12.	30·18	23	N. W.	Little	Fair	33	22		30·24	25	N.	Little	Fair.
13.	30·15	28	N.	Little	Cloudy	32	21		30·9	21	N.	Little	Fair.
14.	29·93	25	N.	Little	Cloudy	33	20		29·88	27	N. E.	Little	Cloudy.
15.	29·72	33	N. E.	Brisk	Cloudy	35	24		29·68	32	N. W.	Brisk	Snowing.
16.	29·88	27	N.	Little	Cloudy	34	26		30·1	29	N.	Brisk	Fair.
17.	30·16	24	N.	Little	Hail.	34	18		30·15	29	N.	Brisk	Cloudy.
18.	29·94	26	N.	Little	Cloudy	27	23		29·81	23	N.	Brisk	Snowing slightly.
19.	29·71	22	N. E.	Little	Cloudy	29	18		29·73	20	N. E.	Brisk	Fair.
20.	29·76	29	E.	Brisk	Cloudy	39	18		29·71	35	E.	Boisterous	Cloudy.
21.	29·64	39	S. E.	Brisk	Cloudy	45	35		29·52	44	S.	Brisk	Cloudy.
22.	29·48	45	S.	Little	Cloudy	46	42	·16	29·51	42	E.	Brisk	Fair.
23.	29·49	41	E.	Brisk	Cloudy	43	39		29·44	40	N. E.	Brisk	Cloudy.
24.	29·49	31	N. E.	Brisk	Cloudy	31	26		29·54	26	N. E.	Violent	Cloudy.
25.	29·43	27	N. E.	Little	Cloudy	30	25		29·29	30	N. E.	Brisk	Snow Storms.
26.	29·2	30	N. E.	Brisk	Cloudy	33	28		29·2	30	N. E.	Brisk	Cloudy.
27.	29·19	29	N. E.	Little	Cloudy	36	27		29·22	31	N. E.	Brisk	Snow Storms.
28.	29·22	36	N. E.	Brisk	Cloudy	45	28		29·23	42	S. E.	Brisk	Rain.
29.	29·24	44	S.	Little	Showers	47	41	·67	29·44	42	S. W.	Little	Cloudy.
30	29·48	39	N. E.	Little	Cloudy	40	36		29·54	37	N. E.	Little	Cloudy.
13.	29·64	36	N. E.	Little	Cloudy	37	35		29·84	35	N. E.	Little	Misty.

ART. VI. *Report on the Effects of the Winter of* 1837-8 *on the Exotic Trees and Shrubs in the Kilkenny Nursery, and in that Neighbourhood generally.* By JOHN ROBERTSON, F.H.S., &c.

MEETING your wish to procure reports on the effects produced by last winter's frosts amongst our exotics, I forward you some memoranda I had made on the subject in this neighbourhood. The old half-hardy shrubs, in the open air, such as alaternus, laurustinus, &c., received not the slightest injury under any circumstances; neither were the following, of more recent introduction, hurt: —

New or valuable Plants, in the open Ground, which stood uninjured.

Benthàm*ia* fragífera
O'lea excélsa
*D*áphne Dauphín*ii*
collìna
neapolitàna
Magnòl*ia* conspícua
Soulang*iàna*
purpùrea
Cunninghàm*ia* lanceolàta
*C*upréssus lusitánica
péndula
Juníperus chinénsis
lýcia
bermudiàna
*P*istàcia *T*erebínthus
Eriobótrya japónica
Yúcca gloriósa
supérba (heart leaves slightly hurt)
glaucéscens
dracònis (protected by a cap-glass)
Mahòn*ia* *A*quifòlium
Berberis dúlcis
Maclùr*a* aurantìaca
*S*olànum críspum
Hàke*a* aciculàris
linearis
Callistèmon lophánthus
*A*càcia longifòlia
armàta
*l*entiscifòlia
marginàta

Ac. decúrrens
melanóxylon
dealbàta
verticillàta
Leptospérmum obovàtum
Escallòn*ia* rùbra
glandulòsa
Fuchsias, of sorts
Chinese roses, of sorts
Chrysanthemums, of sorts
*S*ìda sp., Van Diemen's L.
*Er*ìca arbòrea
Psoràlea glandulòsa
Chimonánthus frágrans
Melaleùca
Corræ*'a* álba
*S*âmolus littoràlis
Camél*lia* japónica, of sorts
Mesembryánthemum australe and uncinàtum (both on the top of a wall)
Photínia serrulàta
Lonícer*a* flexuòsa
*L*ìnum monógynum
Francò*a* appendiculàta
Lobèl*ia* fúlgens
*O'*xalis crenàta
*G*ladìolus natalénsis
Billardièr*a* longiflòra
*J*asmìnum revolùtum
Catopògon pulchéllus

Plants which stood against Walls with Southern Aspects; but which were left uncovered, and remain unhurt.

Callistèmon speciòsus
Aloý*sia citriodòra*
Eucalýptus pulvígera
Magnòl*ia* grandiflòra
Mag. g. ferrugínea
*J*asmìnum Wallích*ii*
Passiflòra sp., Van Diemen's Land
Hybrid passion flowers
*H*emerocállis japónica
Alstrœmèr*ia* Sims*iàna*
*G*ladìolus cardinàlis

Plants on Southern Aspects, which were covered.

*L*aúrus *Cámphora*
*C*eanòthus azùreus
Técoma sp., N. S. Wales
Bouvárd*ia* triphýlla
*I'*xia, a variety
*O'*xalis, a variety.

The most severe degree of cold here last winter was on the 17th of January, when Fahrenheit's thermometer fell to 20°. Kilkenny is distant about forty English miles from the sea, and is elevated above it, by computation, about 500 ft. It is seated on a dry calcareous soil.

Kilkenny Nursery, August 20. 1838.

Art. VII. *Botanical, Floricultural, and Arboricultural Notices on the Kinds of Plants newly introduced into British Gardens and Plantations, or which have been originated in them; together with additional Information respecting Plants (whether old or new) already in Cultivation: the whole intended to serve as a perpetual Supplement to the "Encyclopædia of Plants," the "Hortus Britannicus," the "Hortus Lignosus," and the "Arboretum et Fruticetum Britannicum."*

Curtis's Botanical Magazine; in monthly numbers, each containing seven plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, new series, each containing six plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Maund's Botanic Garden, or Magazine of Hardy Flower Plants cultivated in Great Britain; in monthly numbers, each containing four coloured figures in one page; large paper 1*s.* 6*d.*, small 1*s.* Edited by B. Maund, Esq., F.L.S.

Paxton's Magazine of Botany, and Register of Flowering Plants; in monthly numbers; large 8vo; 2*s.* 6*d.* each.

The Floral Cabinet; in monthly numbers, 4to; 2*s.* 6*d.* each. Conducted by G. B. Knowles, Esq., M.R.C.S., F.L.S., &c. and Fre-

derick Westcott, Esq., Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo; large paper, 2*s.* 6*d.*; small paper, 1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

RANUNCULA'CEÆ.

1599. DELPHI'NIUM 14154 intermedium var. sapphírinum *Lindl.* sapphire-blue intermediate.

A variety, interesting from the intense blue of its flowers, which, in consequence of a light violet stain on the back and in the middle of each sepal, have somewhat the appearance of shot silk. "All plants of this description," says Dr. Lindley, "are seen to the greatest advantage on the skirts of shrubberies, or on banks where it is required to produce a wild and rough effect. If it can be so contrived, that their flowers are shaded during the day, and brightly illuminated by the setting sun, or that they are placed so as to droop over streams of water, where the freshness and moisture of the air prevent their rapid fading, a brilliancy of colour is afforded by masses of them, which we shall in vain attempt to procure in any other way." Dr. Lindley concludes by remarking, respecting the identity of some supposed species of *D*elphínium, that Professor Koch says that he has raised *D.* alpìnum of W. and Kit., *D.* montànum, palmatífidum, and hýbridum of De Candolle, *D.* cuneàtum of Steven, *D.* urceolàtum of Jacquin, *D.* Clusi*ànum* of Host, and innumerable others, from the seeds of one and the same species. (*Bot. Reg.*, Oct.)

Violàceæ.

701. *VI'OLA*
palmaénsis *Bot. Gard.* Palma ⁂ ⎽ or 1½ my P S. Europe 1836 C p.l Bot. gard. no. 663.

A native of the south of Europe, quite shrubby in its habits, and bearing pale purple flowers. (*Bot. Gard.*, Oct.)

Malvàceæ.

Lavátera marítima Gou. Reintroduced by Mrs. Marryat, having long been lost. "Although called a lavatera, it is, in fact, a malva." (*B. M. R.*, Oct., No. 140.)

Galiàceæ.

356. CRUCIANE'LLA
*stylòsa *Trin.* long-styled ♃ or 1½ jn.au P Persia ? 1836 D co Bot. reg. 2d s. 55.

"A beautiful little herbaceous hardy plant, well adapted for growing in beds, so as to form a mass of colour. Thus treated, its numerous heads of bright pink flowers are extremely ornamental. It flowers during the months of June, July, and August, growing about 1 ft. 6 in. high in any good garden soil. It was found by the Russians upon rocks, among the mountains of the province of Ghilan, in Persia." (*Bot. Reg.*, Oct.) It seems

to be the same plant as that named by Mr. Caie C. corymbòsa. (See p. 411.)

Compósitæ.

2363. DA'HLIA
excélsa var. *a*nemonæflòra *Botanist* Anemone-flowered tall ♌ ⊔ or 30 n L Mexico 1830 [C s.l Botanist, no. 88.

This magnificent plant has been noticed, Vol. XI. p. 680., and Vol. XII. p. 715. It was first introduced accidentally by Messrs. Loddiges; who, receiving some thick stakes with a basket of Mexican plants, put them into the open ground, where they grew to the height of 10 ft. the first year, but were destroyed by the winter. The plant was reintroduced in 1834, and sent to Liverpool, where it was planted in the Botanic Garden and in Mr. Skirving's nursery. It is a handsome plant, growing, in the border of the conservatory, from 12 ft. to 20 ft. high, very rapidly, and producing a spreading crown of flowers at its summit. It appears to require very little care in its cultivation, except protection from the frost; and it is readily increased by cuttings. (*Botanist*, Oct.)

*Bignoni*àceæ.

*SPATHO'DEA
pentándra *Hook.* five-anthered ♃ □ or 20 jn Pk India ?1830 C s.l Bot. mag. 3681.

Seeds of this very magnificent tree were received from India by Mr. Murray, of the Glasgow Botanic Garden, under the name of Bignò*nia* pentándra; but Sir W. J. Hooker refers the plant to Spathòdea, on account of the structure of the calyx. The plant figured did not flower till June, 1838, when it was nearly 20 ft. high. The flowers are large, and are produced in a panicle, so compact as to form a thyrsus. (*Bot. Mag.*, Oct.)

Ericàceæ.

ERI'CA
Willmòre*i* Knowl. & West. *Mr.* Willmore's ♌ ⊔ or 3 jl Pk. Hyb. 1837 C p.s [ii. p. 115. Flor. cab.

A hybrid erica, raised by Mr. John Williams, gardener to John Willmore, Esq., of Oldfield, near Birmingham; and "interesting, as affording a proof of the possibility of obtaining hybrid varieties between heaths with tubular, and those with globose, flowers." This erica has rather transparent pale red flowers; mouth 4-parted, with the divisions rounded, and "of a beautiful green, with a delicate white margin." (*Fl. Cab.*, Oct.) The month in which it flowers, and its height, are not given; points which we are sorry to see so often omitted in the *Floral Cabinet.*

Solanàceæ.

591. SOLA'NUM
*fràgrans *Hook.* fragrant ♌ □ cu 14 jn P South Brazil 1835 C p.l Bot. mag. 3684.

A native of South Brazil, from which country it was sent by Mr. Tweedie to the Glasgow Botanic Garden. Its flowers, which are produced in racemes, are of a dingy purple, but their fragrance "is peculiarly powerful and agreeable." It flowered

in the stove, after it had attained a height of from 12 ft. to 14 ft. (*Bot. Mag.*, Oct.)

+ S. *vernicàtum* Lindl. An annual, or a perennial, raised in the Horticultural Society's Garden, from Buenos Ayres' seeds. It looks as if every part of the plant were covered with varnish, whence the name. "The stem is covered densely with a crowd of long, slender, dark purple prickles. The flowers are small, pale greenish yellow, and of no beauty. The leaves are dark green, with a stain of deep purple on the veins." (*B. M. R.*, Oct., No. 137.)

CA'PSICUM
ustulàtum burnt [O] cul 1½ n W Chile 1837 S l Paxt. mag. of bot. v. p. 197.

This species was received by Mr. Paxton, under the name of the "true Chili capsicum;" and the pods are much longer, and of a more brilliant scarlet, than any of the kinds usually in cultivation. Decidedly the most valuable species for culinary purposes.

Scrophularíneæ.

45. *VERO'NICA*
419 prostràta var. *saturejæfòlia Hook.*, Savory-leaved prostrate.

"A hardy perennial; a native of France, Germany, Italy, and Switzerland, and well deserving of cultivation on account of the very brilliant blue of the flowers, in conjunction with their large size and constant succession from a very long raceme. It blossoms during the summer months." (*Bot. Mag.*, Oct.)

PENSTE'MON [ii. p. 117.
Mackayànus Knowl. & West. *Mr.* Mackay's △ or 1 au 1834 P.W.Y Ohio D co Flor. cab.

A very beautiful and delicate-looking herbaceous perennial, found at Ohio, in 1834, by Mr. Drummond, who sent the seeds to Mr. Mackay, Trinity College Botanic Garden, Dublin. Mr. Cameron, who received one of the plants raised by Mr. Mackay, is fortunate in having preserved it, as the plants in the Dublin garden all perished last winter. The corolla of the flower is of a fine violet colour, or rather pale purple, with a white or cream-coloured mouth; and the beard of the sterile filament is pale yellow. (*Flor. Cab.*, Oct.)

Thymelàceæ.

1197. *DA'PHNE*
*australis *Cyrill.* southern ✱ or 3 ap.au P Naples. 1838 C s.l Bot. reg. 2d s. 56.

This daphne has "remarkably hairy leaves, and very fragrant flowers, which appear in spring and autumn." It also differs from the *D.* collìna and *D.* neapolitàna of the British gardens, in its longer and more attenuated leaves. *D.* australis is a native of Naples, where it was brought by the Hon. W. F. Strangways, who observes that the only other species which grow near Naples are, *D.* Laurèola, *D.* Gnídium, and *D. Tartón-raíra.* (*Bot. Reg.*, Oct.)

PIMELE'A
*cérnua *R. Br.* nodding ✱ ⌊ or 3 jl Y Australia 1835 C p.s.l Flor. cab. ii. p. 113.

A pretty little green-house shrub, 2 or 3 feet high, with whitish, or very pale yellow, nodding flowers. It was raised, about three years ago, from seeds presented to the Birmingham Botanic Garden by J. Hodgson, Esq., and received by him from the east coast of Australia. (*Flor. Cab.*, Oct.)

Orchidàceæ.

2554. EPIDE'NDRUM [Bot. reg. 2d s. 53.
*Schombúrgkii Lindl. *Dr.* Schomburgk's £ ⍁ or 1 jl.au S Brit. Guiana 1837 D p.r.w

A very beautiful species, which Dr. Lindley considers as forming "one of the most striking of the elongated division of the large genus Epidendrum." The colour of the flowers is a "brilliant vermilion red." The plant is a native of British Guiana, where it was found by M. Schomburgk in his second expedition into the country; and it has blossomed at Messrs. Loddiges's. (*Bot. Reg.*, Oct.)

+ *E. dichótomum.* A native of Demerara, found also in the Organ Mountains of Brazil by Mr. Gardner. It has green flowers, and "is remarkable for its hard, wiry, forking stem." (*B. M. R.*, Oct., No. 146.)

+ *E. pùmilum* Lindl. Gen. et Sp. Orch., p. 68. A plant with small capitate flowers, membranous, and slightly tinged with pink. It "flowered with Messrs. Loddiges, who received it, without a name, from the Botanic Garden, Calcutta." (*B. M. R.*, Oct., No. 147.)

+ *Cattlèya bícolor* Lindl. Sert. Orch., t. 5. f. 1. "This beautiful species has just flowered with Messrs. Loddiges. It agrees perfectly well with the figure above quoted." (*B. M. R.*, Oct., No. 148.)

3513. BOLBOPHY'LLUM [2d s. 57.
*bracteolàtum *Lindl.* bracteolated £ ⍁ or 1 jl R.Y.P Demerara 1836 D p.r.w Bot. reg.

"A most curious little epiphyte, a native of Demerara, whence it was obtained by Messrs. Loddiges, with whom it flowered in July, 1837." The flowers are very small and inconspicuous; but, when magnified, appear curiously formed, and beautifully variegated in colour. (*Bot. Reg.*, Oct.)

+ *Pleurothállis vittàta* Lindl. A Mexican species, imported by Messrs. Loddiges, somewhat like P. áphthora, "from which it differs in the perfect smoothness of the sepals on their inside, in their form and proportion, and in the form of the petals." (*B. M. R.*, Oct., No. 133.)

+ *Dièmia cordàta* Lindl. A native of Mexico, whence it was procured by Mr. Barker. "It is a plant of no beauty." (*B. M. R.*, Oct., No. 134.)

+ *Cleisóstomaròseum* Lindl. "This little plant has small pale straw-coloured flowers, with a pink lip;" and resembles in habit Sarcánthus rostràtus. It was sent from Manilla to Messrs. Loddiges by Mr. Cumming. (*B. M. R.*, Oct., No. 150.)

2564. *VA'NDA*
*tères taper-*leaved* £ ☐ or 2 jn P.v Silhet 1837 D p.r.w Paxt. mag. of bot. p. 93.

This is a most remarkable plant; the leaves being so perfectly cylindrical as to have the appearance of branches. The flower is very large, and of extraordinary beauty; the petals being of a most brilliant light purple, and the labellum bright dark yellow, spotted in lines with brown and red. "It is, indeed, an object that is scarcely surpassed in beauty by any of the splendid family to which it belongs." It is, "in the strictest sense of the term, an epiphyte;" that is to say, it requires no soil to its roots, "but merely to be secured to a block of wood, and its lowermost roots protected with moss." Messrs. Loddiges have plants of it for sale. It is of slow growth, and difficult to propagate.

PERISTE'RIA [vol. ii. p. 99.
*guttàta *Knowl. & West.* spotted £ ⍁ or ½ au R.Y S. America 1837 D p.r.w Flor. cab.

This species is nearly allied to P. cérina, of which it may possibly be only a spotted variety. It was imported by Mr. Knight of the Exotic Nursery, King's Road, from Rio, and flowered, for the first time in Europe, in the stove of George Barker, Esq., Springfield, near Birmingham. (*Flor. Cab.*, Sept.)

+ *Bryòbium pubéscens* Lindl. A little green-flowered East Indian orchidaceous plant, found in many collections, a short character of which was given by Dr. Lindley in his *Natural System of Botany*, but which he has here described more at length. (*B. M. R.*, Oct., No. 145.)

+ *Catasètum Milleri Loddiges.* This plant, which is a native of Brazil, has a stem 2 ft. high, and dull spotted flowers, with a half green lip. It was named in honour of Dr. Miller of H. M. ship Victory, a zealous collector of rare plants. (*B. M. R.*, Oct., No. 149.)

+ *Cirrhopétalum cornùtum* Lindl. A native of the Khoseea Hills, where it was found growing on rocks by the Duke of Devonshire's collector, Mr. Gibson. The leaves are 6 or 8 inches long, and the flowers dull purple, "with the lateral sepals united above their base into a kind of horn." It flowered at Chatsworth in August last. (*B. M. R.*, Oct., No. 138.)

+ *Saccolàbium calceolàre* Lindl. Gen. et Sp. Orch., p. 223. Found by Mr. Gibson on the Khoseea Hills, growing on trees 400 ft. above the level of the sea. It has flowered at Chatsworth, where it produced "small yellow flowers, blotched with reddish brown." (*B. M. R.*, Oct., No. 139.)

+ *Polystàchya ramulòsa* Lindl. "A native of Sierra Leone, whence it was imported by Messrs. Loddiges, who flowered it in Sept. 1838. It is a small green-flowered plant, with the habit of P. lutèola, but more branched, and with branchlets at the base of its ramifications." (*B. M. R.*, Oct., No. 142.)

REVIEWS.

ART. I. *Transactions of the Agricultural and Horticultural Society of India.* Vol. II. 8vo. Calcutta, 1836.

WE noticed the first volume of these *Transactions*, which appeared in 1828, in the *Gardener's Magazine*, some years ago; the present comes before us with increased interest, from the much greater number of contributions which it contains, and from the superior style in which it is got up. From the introduction it appears that a garden was obtained by the Society in 1827; and an appendix contains the regulations of this garden, and reports on its management. As matter of gardening history and statistics, we might quote much that is interesting from these reports, but we cannot spare room. One article, which we must notice, as of considerable interest, is on the culture of the asparagus in the Mauritius, by J. Newman, Esq., superintendent of the Royal Botanical Garden there. The essence of it has already appeared in this Magazine, vol. vi. p. 484.; and the whole shows a beautiful adaptation of practice to a particular purpose and climate.

In a paper in these *Transactions*, by Mr. Newman, on raising plants from seed, he says: —

"I find that all seeds, particularly those that have come a long voyage, ought to be sown in moist, but not wet, earth, and not watered for three days after sowing. In wet weather, it is advisable to have matting to cover the seed-beds, until the plants have appeared above ground; when they may be watered as is usual. By this simple precaution, even many old seeds will vegetate; whereas seeds sown in wet earth, or watered immediately, frequently rot, by having so much water at first. I have tried seeds from the same packet, in a dry place and a wet one at the same time; and it requires only one trial to prove the superiority of the former. There are, of course, many large seeds, as peas, beans, &c., that do not require such treatment; however, I adopt the same plan even with them." (p. 76.)

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Though these remarks have reference to a warm climate, yet the British gardener will know how to extract some profit from them, even in hardy, but more especially in hot-house, culture.

The mango is generally propagated by inarching; but side grafting is also employed, the end of the graft being inserted in a phial of water, as in grafting camellias in this country. See our Vol. II. p. 33. and fig. 12., which we here repeat, viz. *fig.* 102.

On the whole, these *Transactions* bear testimony to the intelligence and activity of European gentlemen, in a country where the climate invites to

repose rather than action; where almost every one is occupied in the pursuit of fortune; and where every European considers himself as only a temporary resident, anxiously looking forward to the time when he can return to a distant home. Vols. III. IV. and V. of this Society's *Transactions* have been published, and we shall notice them at some future opportunity.

ART. II. *Reise durch die östlichen Bundestaaten in die Lombardey, und zurück über die Schweiz und den Oberen Rhein, in besonderer Beziehung, u. s. w. A Journey through the Western States of Lombardy, and back again by Switzerland and the Upper Rhine; with particular Reference to the Information of the People, Agriculture, and Political Economy.* By G. Fr. von Rumohr. pp. 236. Lubeck, 1838.

THE author has interspersed a good many references to books throughout his narrative, which affords an opportunity, to such as desire it, to enter more deeply into those subjects on which he has only slightly touched. One topic he has treated historically, and at considerable length; viz. irrigation as practised in Lombardy. The following extract is among the most interesting of those which respect gardening: —

"Potsdam and its environs, which, at present (the winter of 1837), resemble wintry deserts, are well known to me by frequent visits in summer. The scenery of the extensive Royal Gardens, which are partly laid out in a grand, but more frequently in an ornamental, style, is separated by fields and forests, to which a very pleasing appearance could easily be given by introducing variety in the cultivation. The contrast afforded by passing from ornamental, and nicely kept grounds, to carelessly cultivated fields, is strikingly felt. There might be hedges along the road sides, which would give to the Royal Forests adjacent a less prosaic and sombre appearance. Small farms, with the fields surrounded by hedges, with ornamental trees scattered here and there, would give an irresistible charm to the valleys in the Royal Forests. Where views are desirable, the forest might be thinned, or completely laid open; and the soil, which, on the heights, is generally very dry and sandy, might be thickly planted with different species of broom, heath, Ononis spinosa, and similar plants; which would form a beautiful and durable blossoming surface, and would grow here in great perfection. Where the firs (Scotch pines) have been thinned in time, in the district called the Mark, they grow to a wonderful size and romantic wildness; but these very trees, which the English and the Danes plant in their parks, are hardly known in the neighbourhood of Berlin. We seldom value what we have, or can easily procure. At Dresden, likewise, where the firs assume a pine-like appearance, they are very much valued.

"At present, the fir only adorns high and dry places; and, on the contrary, limes, elms, maples, ashes, and oaks of the greatest beauty, are found in those places that lie low. Sometimes the soil requires thick planting: but a varied culture would secure a moderate degree of moisture in the atmosphere. Hedges and scattered trees on open cultivated spots, and deciduous trees mixed with the firs in the woods, would evidently have a great effect in improving the climate.

The sides of the valley about Potsdam, in some places reach to the height of about 300 ft. Repeated borings, made to a considerable depth, on these

high grounds, have only produced fine and coarse sand. In the low-lying parts, on the contrary, even extending to the Havel Lake, there is an extensive bed of loam, where the largest brick-works in the country afford an opportunity to the neighbouring agriculturists of improving the soil by the loam. I was told that its proprietor, a short time ago, purchased another estate close by, and that the inhabitants of the old removed with the owner, and settled on the new; which affords another example of the decrease of the feudal practice of the middle ages, by which the peasant was bound to the soil, effected by means of capital, and great habits of industry. A brick manufactory among fields is not unpicturesque, when interspersed with trees, orchards, and plantations; and it appears to me that both the inhabitants and the passers by are benefited by the change.

"The little town of Werder, in this neighbourhood, is very remarkable for the cultivation of fruit and vegetables. It supplies Berlin with a great part of its vegetable productions; and the river affords an opportunity of conveying the fruit and vegetables fresh and cheap to market. The women row the boats up and down from the capital, and take charge of their sale, while the men remain in the fields employed in harder labour. It would be worth the trouble of enquiring whether Werder may not have been a German gardening colony; like those established by the princes and bishops of Silesia, in the thirteenth and fourteenth centuries. It is cheering to see the fruit tree plantations extending down the sandy declivities, and over the plains to the margin of the public road; the soil, to all appearance, having been improved by the loam above mentioned." (p. 29.)

Art. III. *Flora Abredonensis: comprehending a List of the Flowering Plants and Ferns found in the Neighbourhood of Aberdeen; with Remarks on the Climate, the Features of the Vegetation, &c. &c.* By George Dickie, A.M., Member of the Royal College of Surgeons, London; Fellow of the Edinburgh Botanical Society, and Lecturer on Botany in Aberdeen. Small 8vo, pp. 70. Aberdeen, 1838.

The author has contrived to render this little work extremely interesting, by some preliminary remarks on climate. The average number of cloudy days in Aberdeen is about double the number of clear days, and every third day, or oftener, it rains. Notwithstanding this, the mean temperature of January, the coldest month in the year, is as high as 37° 29″; the mean temperature of July, the warmest month, is 59° 12″; and the mean temperature of the year, 47° 18″. The mean temperature of summer is only about 10° above, and that of winter about the same number below, the annual mean. The following quotation gives a very interesting view of the climate of Aberdeen relatively to vegetation: —

"The influence of climate on the different periods of vegetation must be admitted by every one who has paid any attention to the subject. Thus, in the north of Europe (Upsal), the opening of the leaf is later by one month and a half than that of the same plants at Naples; and, according to Mr. Watson, in Britain the same flowers expand at Barnstaple seventeen days earlier than at Elgin. Humboldt remarks that, in that month whose temperature reaches fifty-one degrees, the birch pushes out leaves: now, in this neighbourhood, this tree generally expands its leaves about the beginning of May; and we have seen already that the mean temperature of this month attains

upwards of fifty-one degrees. Here, however, our remarks will be confined to the time of flowering, and a few examples from our registers will be given and compared with those at other places. Times of flowering of

	Upsal.	Naples.	Aberdeen.
Draba verna,	April 25.	Feb. 1—15.	March 19.
Anemone nemorosa,	May 30.	—	April 19.
Oxalis Acetosella,	May 10.	—	April 19.
Ranunculus Ficaria,	May 1.	Jan. 16—31.	Feb. 14—Mar. 10.
Tussilago Farfara,	April 22.	Jan. 16—31.	April 6.
Viola canina,	April 27.	Mar.16—31.	April 19.

"From this it appears that, in general, our early spring plants are in flower about one month sooner than at Upsal, and that the same species at Naples are generally more than a month earlier than at Aberdeen. But the first date of flowering of the same plants varies in this neighbourhood according as the winter and spring months have been favourable or otherwise. Thus, in 1837, Ranunculus Ficaria was first seen in flower on the 14th of February; and, in the same locality (one well sheltered), in 1838, this species was first observed in flower on March 26th, and this only in the neighbourhood of a copious spring, whose temperature at the time of observation was about 44° F. This difference in the date is accounted for, when we consider that, in 1837, the mean temperatures of January and February were respectively 36·6° and 38·7°, and in 1838 they only reached 33·5° and 31·1° respectively; and in the latter year the ground was covered with snow from the 7th of January to the first week of March.* The effect produced by the water of copious springs is very striking: they retain in winter a higher temperature than that of the air; and, consequently, plants growing under their influence are *forced*, and become earlier than the same species growing in a less favourable locality. On the 20th of April, 1837, Ranunculus hederaceus was first seen in flower growing in water, whose temperature at the time was forty-two degrees (this came from a neighbouring spring), while the mean temperature of the month only reached 39·6°: in other localities this plant is much later. The facts now mentioned are true regarding the spring and early summer plants. It has, however, been stated, that the opposite effect is produced upon those which naturally come into flower toward the end of summer or beginning of autumn; because, as such make most progress during summer, and since springs are colder in that season than the surrounding air, these plants will consequently be retarded in their development.

"The true character of a climate is much more faithfully indicated by the natural products of the country, than by any instrumental observations whatever. The following foreign plants are said to bear exposure in the open air during the whole year at Penzance, in Cornwall; and those marked with an

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* We have observed the fact, that the nature of the previous winter and spring exercises less influence over the time of flowering of those plants which naturally appear in June and July than on those which flower in March, April, and May. Thus, in 1836, Vicia sylvatica, Epilobium angustifolium, and Eupatorium cannabinum, were gathered near each other in full flower on the 12th of July; and in 1837, about the same date, the two first were in full flower, and the last was just beginning to show its flowers: the mean temperature of the spring of the former year exceeded that of the latter by 5°·5. These observations lead us to remark, that the dates of flowering, given in the general Floras of Hooker and others, cannot be considered as applicable to the whole of Britain, and this district presents, among others, one striking example. The Hydrocotyle vulgaris is stated in the *British Flora* to flower in May and June: we have never seen it here in this state earlier than the end of July, and generally not till August or September. However, as this species mostly grows in marshy places, it is therefore much exposed to the influence exercised by the neighbourhood of copious springs.

asterisk, at Cove, in the south of Ireland: those in italics also grow without protection during the whole year at Aberdeen; those not so distinguished require shelter, some in the winter, and others during the whole year: —

*Agave americana.
*Amaryllis revoluta.
Amaryllis vittata.
**Aloysia citriodora.*
Azalea indica.
**Buddleia globosa.*
Coronilla glauca.
*Calla ethiopica.
*Cineraria aurita.
**Chrysanthemum indicum.*
Cyclamen persicum.
Canna indica.
*Dracocephalum canariense.
Eucomis striata.
**Fuchsia coccinea.*
*Hemerocallis japonica.
Hemerocallis alba.
Hydrangea discolor.
Houstonia coccinea.
*Ixia crocata.
Lobelia fulgens.
Myrtus communis.
Mesembryanthemum deltöideum.
*Melianthus major.
**Mimulus viscosus.*
Olea fragrans.
*Oxalis caprina.
Punica nana.
Protea argentea.
**Rubus rosæfolius.*
*Salvia cærulea.
Verbena triphylla.

"The mean temperature of the whole year at Aberdeen is several degrees lower than at Cove and Penzance; and the reason why several of the plants enumerated require no shelter seems to be, because, in winter, the temperature never falls so low here as to destroy their life, and the extremes of heat throughout the year are not very distant, but no doubt also some of them have become acclimated. Hence, the *mean* distribution of heat throughout the year is less important than the *mean* distribution through each month. Many plants which live in the open air here would perish during the severer winters of more southerly countries; and, many which can stand lower degrees of heat than those to which they are exposed at Aberdeen, require, also, greater heat than they experience here in the summer, to enable them to continue healthy and ripen their fruit.

"Humboldt informs us, that, in reference to the culture of useful vegetables, we must discuss three things for each climate; the mean temperature of the entire summer, that of the warmest month, and also that of the coldest. Also, that, by adding the *mean* temperatures of the months which exceed 51·8°, that is, of the months in which trees with deciduous leaves vegetate, we shall have a sufficiently exact measure of the strength of vegetation. From the tables already given, it will be seen that here the months from May to September inclusive exceed the temperature referred to: the number of months in which this happens is the same as in the environs of London; but with us the temperature never rises so high.

"In this district, the grains principally grown are oats and barley. The latter, in order to be cultivated to advantage, requires (according to Humboldt), during ninety days, a mean temperature of from 47·3° to 48·2°. Mr. Playfair (*Trans. Royal Soc. Edinb.* 1800) proposed to date the vegetating season from 20th March to 20th October; and he assumes 40° as the lowest temperature at which corn will vegetate, and he considers 56° as the mean temperature of a good vegetating season. The same author gives an interesting comparative table of the mean temperature of different years—that of the vegetating season, and of the price of meal per boll in these years. A similar table had been prepared as applicable to this neighbourhood, but our limits will not allow its insertion. We have mentioned that the staple products here are barley and oats: wheat and rye also come to perfection, but are not general." . . . .

"On reviewing our observations on the plants of this district, we can only specify two instances in which certain species are confined to the neighbourhood of particular rocks, and this we are inclined to consider as accidental.

The examples are, Orchis mascula, which occurs at the Bridge of Don, and upon the coast toward Stonehaven, at both which places the old red sandstone predominates; the other is a fern, Asplenium Trichomanes, which has only yet been detected upon serpentine rocks at Belhelvie. This last plant is found with Asplenium Adiantum nigrum; but this species is frequent on the coast from Aberdeen to Stonehaven, upon several different kinds of rock. We believe that vegetation is less affected by the chemical nature of the rock than by its particular variety: by this last is meant its greater or less capability of absorbing or reflecting heat, its tendency to become decomposed, and its power of attracting, absorbing, and permitting the passage of moisture.* In noting the connexion between rocks and plants, we must observe whether the soil, in which the former grow, has been produced by the debris of the latter, or transported from some other part. It is stated in a paper, in the 5th volume of *Mem. of the Wernerian Society*, that, in Yorkshire, the Astragalus hypoglottis and Helianthemum vulgare are confined to the chalky districts: there is no chalk in this neighbourhood, and these plants are abundant near granite, gneiss, and other rocks. In the same paper, Pinguicula vulgaris and Empetrum nigrum are said to occur on sandstone. With us, the former is found indifferently over other rocks; and the latter, which ranks among our common plants, we have seen growing in peat, gravel, and, at Belhelvie, in pure sand, along with Ammophila arundinacea, Carex arenaria, and others.

"Cromer of Hanover says, "When the proportion of clay, in any soil, does not exceed sixty per cent, Trifolium arvense may be found; if the clay reach eighty per cent, you will search for it in vain.' Until every botanist becomes also a practical chemist, we cannot expect to arrive at such precision as this regarding every individual species."

Of the vegetation, a number of species are enumerated peculiar to different regions.

"The surface of the country is interspersed with marshes or bogs, lakes or lochs, woods and moors, and these are very productive of the plants producing the varieties of peat named by M'Culloch (*Ed. Phil. Journ.* vol. ii.), mountain, marsh, forest, and lake peat. In our marshes and bogs, the plants which mostly contribute to the formation of this very important natural production are, several species of Carex, as C. dioica, C. pulicaris, C. ampullacea, C. curta, and sometimes C. teretiuscula; also Erica Tetralix, Eriophorum angustifolium, and E. vaginatum; also various species of Juncus, Menyanthes trifoliata, Caltha palustris, Pedicularis sylvatica and palustris, Comarum palustre, and, more rarely, Drosera anglica, Schœnus nigricans, and many others. In such places, and also on the borders of lochs, we find what are called quaking bogs, consisting of a semifluid mass of peat, the surface of which is covered with vegetation. The adventurous botanist, whose ardour leads him into such situations, entirely owes his safety to the matted roots and stems of the different plants.

"In lochs, the following plants principally contribute to the formation of peat: — Scirpus lacustris, Arundo Phragmites, the yellow and white water lilies, Sparganium natans, Phalaris arundinacea, &c.; and about their edges, in shallower water, Littorella lacustris, Scirpus setaceus, Peplis Portula, and, more rarely (in this district), Subularia aquatica, Pilularia globulifera, Lobelia Dortmanna, Utricularia intermedia, and others. The variety called mountain peat is produced in drier places, and is of a loose texture; the different heaths, the crowberry (Empetrum nigrum), various species of Carex, as C. binervis, C. pilulifera, Nardus stricta, and many grasses and others, all

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* This opinion was maintained by the late talented author of the *Northern Flora*, who published a paper on this subject, some years ago, in Loudon's *Magazine of Natural History*.

assist in the formation of this variety. Our woods abound in Erica cinerea and E. Tetralix, Trientalis europæa, Galium saxatile, Goodyera repens, many grasses and other plants, whose remains, mixed with decayed leaves and branches of trees, all contribute to the formation of forest peat. Many of the plants enumerated, however insignificant they may appear to be, have contributed, in no mean degree, to modify the nature of the surface of the district, and perhaps also its climate, by the filling up of lakes and marshes (by the formation of peat), a process still going on. Some of these remarks may appear foreign to this work; but a notice of the vegetation in different stations naturally led us to this subject.

"From the considerable extent of sea coast included in our range, it will be proper to add some account of the plants occurring in this part of the district.

"Toward the mouth of the Ythan, there is a capacious basin filled by the tide: it is named the Slitch, or Sleeks of Tartie, and is almost the only part where a true salt marsh occurs. In this place we find the variety of peat called Marine, and principally produced by the decay of the following plants:—Glaux maritima, Triglochin maritimum, Scirpus maritimus, Chenopodium maritimum, Blysmus rufus, and Salicornia herbacea, which are found here along with many others frequent in such stations. The sandy coast south from the Ythan principally abounds in Carex arenaria, Arrhenatherum avenaceum, Festuca (var.) hirta, Triticum junceum, Cakile maritima, Salsola Kali, and others. The Elymus arenarius, abundant in many other parts of the country on sandy coasts, is exceedingly rare in this district. At the mouth of the Don, there is a part which may be considered as a salt marsh, and here we find Poa maritima, Scirpus maritimus, and others. On the sand hills near this, we meet with Myosotis collina, Vicia lathyroides, Fedia olitoria, and, more rarely, Tragopogon pratensis; and, in moist places, Carex incurva, Blysmus rufus, &c. Crossing to the south of the Dee, we reach that part of the coast of Kincardineshire contained within our range. This coast is almost entirely rocky, and presents a varied and luxuriant vegetation. This last fact, we believe to have but little connexion with the different kinds of rocks (already mentioned) found here, but depending more on the presence of numerous springs issuing from crevices of the rocks, and of small rivulets passing over them. By this last means, a rich impalpable mud is washed down from the high grounds, accumulates on shelves of the rocks, and on the narrow beach, and thus affords a place of growth suitable to a great variety of plants."

The reader will see, by the length of our quotations, how much we prize this little work. It does great credit to the author, and seems to us a fit model for other local floras. It is surely much better to introduce in that class of botanical publications preliminary discussions on climate and soil, than to load the work with botanical descriptions, copied out of some larger flora.

ART. IV. *Catalogue of Works on Gardening, Agriculture, Botany, Rural Architecture, &c., lately published, with some Account of those considered the more interesting.*

DR. URE's Dictionary of Arts, Manufactures, and Mines, &c. Parts I. and II. 8vo. London, 1838.

This is a most original and valuable work, and one which all our readers, who can afford it, ought to possess as a book of

reference. The articles in the parts already published which will be found interesting to gardeners are, Artesian Wells, including the mode of boring for water, the situations where the process is likely to be attended with success, the different tools used, &c.; and Acetic Acid, including the mode of distilling pyroligneous acid, or wood vinegar, from the spray of broad-leaved trees, the needle-leaved or resinous trees not affording this article in such abundance. Independently of such articles as these, there are innumerable articles of general interest, such as Bread, Beer, Blacking, &c.; and others of chemical interest, such as Alkali, Ammonia, &c.

In an advertisement prefixed to each part, Dr. Ure "offers his services publicly, which he has long done privately, to manufacturers, as an engineer and counsellor, in erecting, improving, or new-modelling their works. . . . His fee for a chemical analysis, and for advice on the above subjects is from one guinea to five guineas. Letters, post paid, enclosing a fee, will receive the best attention, and an immediate answer.—13. *Charlotte Street, Bedford Square.*"

We think the above an excellent idea; and we have given it somewhat in detail, because there are some of our readers who might probably be glad to have soils analysed for them by such an eminent chemist as Dr. Ure. We also mean to adopt the idea ourselves, by announcing publicly, that our advice or opinion may be obtained, on the same terms as those stated by Dr. Ure, on all subjects treated of in the *Gardener's Magazine*, the *Architectural Magazine*, and the *Suburban Gardener;* and we shall, like Dr. Ure, keep a standing advertisement to this effect on our wrapper, or in our advertising sheet.

Treatise on the Culture of the Red Rose, Strawberry, Brazil Gooseberry, Peach, Mango, and Grape Vine. By W. Ingledew, Esq. Published under the Direction of the Madras Agricultural and Horticultural Society. With Notes by R. Wright, M.D., F.L.S., &c. Pamph. 8vo. pp. 40. Madras, 1837.

Both text and notes are chiefly extracts from the *Encyclopædia of Gardening*. The difficulty with the European fruits in India is, to procure for them a moderate temperature, and a season of rest. For the former purpose, the vine is planted in the side walls of large wells, 16 ft. or 18 ft. in diameter; where the shade of the sides keeps the plant cool; and the shoots, being trained round the sides, enjoy the perpendicular light, and produce "liberal supplies of excellent grapes." (p. 38.) This practice prevails on the shores of the Red Sea, and in the Persian Gulf. The Brazil gooseberry (Phýsalis peruviàna), which is occasionally cultivated on the back walls of some of our vineries,

produces fruit in the Mysore country all the year. It is grown in bushes; and the wood, when it has done bearing, is cut down like that of the raspberry. The mango is propagated by inarching, and sometimes by ringing the branches, and applying a ball of clay kept moist, in the Chinese manner. The strawberry is grown in the shade, and kept cool by irrigation. The rose is wintered by exposing the roots to the action of the sun for ten days or more, "in order that they may be well dried." The roots are afterwards covered with a rich composition of red earth, sheep's dung, and common dunghill manure, covered with the soil that had been removed, and watered liberally every six or seven days, until the crop is finished. "When not in bearing, they should have barely sufficient water to keep them alive; they will then have a stunted appearance, and little, but well-ripened, wood, which is exceedingly favourable for producing an abundant crop of flowers." (p. 2.) Much moisture induces the rose tree to grow rapidly, and to a great size; but the branches do not ripen, and fail to bear blossom buds. The first rose buds will make their appearance about thirty days after the plants have been pruned; which period coincides remarkably with that required for forcing Provence roses in February and March, in British forcing-houses.

Art. V. *Literary Notices.*

A Floral Guide for Faversham, and the contiguous parts of Kent, is in preparation by M. H. Cowell. It will be in two divisions; the first including Faversham and its vicinity, and the second the Isle of Thanet. It will be illustrated with a map, quotations from poets, &c.

The Gardener's Annual Register for the Year 1838; comprising an Epitome of the Improvements made in Gardening, in all its Departments; Descriptive Catalogue of the Plants newly introduced, or figured in the Botanical Periodicals during the Year; and a List of the Nurserymen, Seedsmen, and Florists, in Great Britain and Ireland. This work will appear in January next, price 5*s.*, and will be continued annually.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Corbett's Hygrothermanic Apparatus. — A printed prospectus of this mode of heating has recently been sent to us. It differs from all the various modes

hitherto made public of heating by hot water, in circulating the fluid in open gutters instead of pipes. Hence, it can only be applied in cases where the gutters can be conducted on a level; but the water may be easily carried over a door, on the siphon principle, or under it, on the principle of water always finding its level. The advantages of this mode, Mr. Corbett says, are cheapness, simplicity, and efficiency. Cheapness, because iron gutters are cheaper than iron pipes; simplicity, because water running in open gutters has less of mystery about it than water concealed in pipes; and efficiency, because it produces a moister heat than any other mode. We should have thought it would produce too moist a heat for many purposes, particularly in the autumn; but Mr. Corbett says that this is not the case. "There never can be a superabundance of moisture, provided the gutters are of the proper shape; but, should it be considered advisable at any time to prevent the escape of vapour altogether, this may at once be effected by placing along the top of the gutter any flat substance, such as slates, tin plate, &c.: the water never being in a boiling state, the vapour is not forced out, but will condense on any substance with which it comes into contact. For forcing vines, pines, &c., it is admirably adapted; and, with broader and shallower gutters, to produce more moisture, there is reason to conclude that this system will come into general use for the cultivation of cucumbers, melons, &c. For hot-house plants, and particularly Orchideæ, gutters as broad or even broader than deep, are proved to be the most suitable. For the green-house it will be of incalculable service. Every description of artificial heat without moisture has been found by sad experience to injure green-house plants, when hard weather has compelled its introduction. To many, and particularly to Cape heaths, it is almost certain death; because the air in frosty weather, containing, perhaps, not one grain of moisture per cubic foot, and raised by fire heat to 40°, and sometimes even higher, becomes so intensely dry and oppressive, and acquires such an affinity for moisture, even at this low temperature, that the rapid absorption while the plants are in a dormant state causes their juices to be elaborated too quickly for their powers of secretion."

Not content with recommending his mode as the best of all modes for heating houses in which plants are grown, Mr. Corbett makes a long quotation from Dr. Ure's article published in the *Transactions of the Royal Society*, and, with some variations, in the *Architectural Magazine*, vol. iv. p. 161., on the effects of dry air on the officers engaged on duty in the long room of the Custom-House, London; and he arrives at the following conclusion: —

"It is evident, then, that the great desideratum for heating apartments, &c., is, an apparatus capable of circulating, in any direction, and to any extent required, any quantity of artificial heat without the malaria of the stove and pipes, so as to maintain a genial warmth and wholesome ventilation throughout the building. Such a system is now placed before the public, capable of such modifications as to become every way suited to effect these desirable objects; equally adapted to horticultural purposes generally, and to public buildings, offices, and domestic apartments; calculated alike to maintain the healthy and vigorous tone of the animal as well as the vegetable economy; and on a principle whose operations are more assimilated to Nature's own atmosphere than any other method hitherto discovered."

It is quite right that this mode of heating plant-houses should, like every other, have a fair trial; but the idea of heating apartments to be occupied by human beings, with hot water in open troughs, is too palpably absurd to deserve a moment's consideration. Others, however, entertain a different opinion on this subject from what we do. At a meeting of the Plymouth Horticultural Society, held July 19., the Rev. C. T. Collings in the chair, "a neat model of Mr. Corbett's Hygrothermanic apparatus, for heating hot-houses, &c., was exhibited; an invention which the late president of the Plymouth Horticultural Society, Thomas Woollcombe, Esq., says 'will do more for the advancement of horticulture, than anything which has been produced for the last century.' The peculiar characteristic of this invention (for which the Plymouth

Society awarded their gold medal) is its completely obviating the disadvantages usually attending the production of artificial heat; viz., a hot desiccated atmosphere, which, elaborating the juices of plants more rapidly than they can be secreted, is always injurious, and frequently destructive. To remedy this evil, which has always been a barrier to the success of exotic horticulture, Mr. Corbett produced his apparatus, the action of which so closely resembles the operations of nature, that an imitation of whatever climate is required may be obtained. The machine consists of two connected vessels, a boiler, and an upright tube, with a continuation of open troughs or gutters. Heat is applied to the boiler, the water rises and traverses the gutter, giving out moisture in direct proportion to its heat. The density of the fluid being increased in its passage, it returns again to the bottom of the boiler, and by this means a constant circulation is effected. The apparatus is as simple as it is complete and economical, and will, without doubt, be very generally adopted in horticultural buildings. Mr. Corbett is foreman at Mr. Pontey's nursery, Plymouth, where the apparatus is in operation. (*Western Times*, Sept. 29. 1838.)

Preserving Fruit, and other Botanical Specimens, in a moist State. — At a meeting of the Botanical Society of Edinburgh, held April 12. 1838, "Professor Christian presented some observations on the preservation of fruits and other botanical specimens in the moist state; and remarked that, after numerous experiments, made for a series of years, with various fluids, he had found none which served so well to preserve both the consistence and colour of fruits, leaves, and flowers, as a concentrated solution of common salt. Numerous specimens were exhibited which had been preserved in this way for one, two, three, and five years; among which were sprigs with leaves, and ripe and unripe fruit of Myrística moschàta, Xanthochỹmus pictòrius, Garcínia *Cambògia*, G. *Mangostàna*, Habradéndron *cambogiòides*, Alpínia Cardamòmum, Mangífera índica, *Ricinus* commùnis, Flacoúrtia inérmis, &c. In the greater part of these, the green tint of the leaves, and the peculiar colour of the fruit, seemed to have undergone little alteration. When the fruit, however, is very pulpy, as in *Solànum* Lycopérsicum, or lemons and oranges, a solution of salt is comparatively inapplicable, because the fruit shrivels by exosmosis of its fluids, and diluted pyroligneous acetic acid is found to be preferable." (*Annals of Natural History*, vol. ii. p. 141.)* At the same meeting of this Society, a paper was read on the gardens of the ancient Hebrews, which we should like much to see.

Protecting Grapes from Sparrows, by Means of black Thread or Worsted. — It has been very satisfactorily proved, this summer, under my own observation, that Mr. Anderson's (of the Botanic Garden, Chelsea) discovery of *black* thread being a far better protection against the depredations of the house-sparrows in gardens than thread of any other colour, is much more serviceable than it was first found to be by Mr. Anderson himself. That indefatigable guardian of his plants could not secure the flowers of his extensive collection of crocuses from the attack of sparrows by any means he could devise, until he employed black lines, stretched over the flowers; which proved a complete defence.

But this coloured thread, or worsted, protects *fruit* as well as flowers. A next door neighbour of mine has a very fine sweetwater grape-vine trained upon the wall of a bakehouse, and which is not only very fruitful, but very early, in consequence of the constant heat from the oven. These early grapes attract the cupidity of the sparrows, and which, in former years, used to devour or disfigure every bunch. Six weeks ago, they had begun their work of spoliation; when I advised the owner to try Mr. Anderson's black lines,

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* We have tried salt for the preservation of kidneybeans, and other vegetables, but have invariably found them become of a dingy brownish green.

which he immediately had recourse to, and stretched black worsted across and across the tree in different directions; thereby saving a fine crop of grapes, now nearly all ripe, and excellent of their kind.

Mr. Anderson attributes the effect of black lines to their *invisibility* till the birds are seated under them; but, looking up, they are terrified at what they fear is a snare impending over them, and immediately fly away. — *J. M. Chelsea, Sept.* 24. 1838.

Art. II. *Foreign Notices.*

GREECE.

Cypress of Patrass. — Have you ever had any account of the enormous cypress which formerly stood (and stands now, for aught I know to the contrary,) a little to the south of the town of Patrass, in the Morea? Spon and Wheeler measured its circumference in the year 1676. Spon (*Voyage de Grèce*) calls it "peut-être bien le plus vieux et le plus gros du monde." "Son tronc est de 18 pieds de tour; il étend ses branches à 20 pieds de diamètre," &c. I enquired for this tree when I was at Patrass in 1820, and measured the circumference on the 12th of Jan. of that year, at the height of 4 ft. 2 in. from the ground. The girt was 22 English feet 2 in. Spon's feet were French feet, of course; but from this you will perceive the increase in the lapse of 144 years. I hope this extraordinary cypress has escaped the effects of the revolution. The diameter of the branches appeared to me far more extensive than that given by Spon. Its growth, however, resembled that of a spreading larch more than a cypress. — *H. L. Long. Hampton Lodge, July*, 1838.

Art. III. *Domestic Notices.*

ENGLAND.

Proposed Botanic Garden. — "The interior portion of the Regent's Park, late the nursery of Mr. Jenkins, will shortly be laid out as botanical gardens, the Commissioners of Woods and Forests having granted a lease to a society newly formed, under the title of the Royal Botanic Society of London, at the head of which is the Duke of Richmond, as president. The object of this Society is, the formation of an extensive botanic garden, with a library, museum, and conservatories, so that medical and scientific, as well as merely ornamental, botany will respectively receive attention commensurate with their importance. Public exhibitions and lectures will also be given periodically during the season. On the council are the names of the Duke of Devonshire, Lord Teignmouth, Sir George Staunton, Sir Astley Cooper, Professor Don, &c." (*Morn. Chron.* Oct. 4. 1838.) [We have seen a prospectus printed for private circulation, and an engraving, entitled a plan of these gardens; but, we must confess, we have but faint hopes of seeing the project realised. A great deal too much, in our opinion, is aimed at; and, although the situation is singularly favourable, yet we do not suppose there is a more unsuitable soil for a botanic garden within ten miles of London. — *Cond.*]

Great Oak at Tilford, in the Parish of Farnham, Surrey. — The perambulation of the lands of the Abbey of Waverley are described in a charter of Henry de Blois (brother of King Stephen, and Bishop of Winchester, who was the builder of the original Castle of Farnham, and died in 1171), quoted in the *History of Surrey*, by Manning and Bray, vol. iii. p. 145., from the *Monast. Anglic.*, vol. i. p. 703. The bounds of the monastery are stated in this instrument to commence "from the oak at Tilford, called the King-hoe (King's oak), along the King's Highway to Farnham, &c."

"On the green between the two bridges at Tilford, stands a venerable oak,

of great size, but in full vigour, which is supposed to be the oak described in this charter, being at this day called the King's Oak." (*Manning and Bray*, vol. iii. p. 141.)

This oak, which is said still to contain seventeen or eighteen loads of timber, stands upon the waste belonging to the see of Winchester, and, many years ago (in the time, I believe, of Bishop North), was marked to be felled. The workmen were about to commence, but their hearts failed at the thought of destroying so magnificent a tree; and one of them, by name Novel (a common name among the labourers hereabouts), proposed adjourning to a neighbouring public-house, to prepare their spirits for the execution, by sundry draughts of ale. These potations continued some time; and, while they were so engaged, a messenger arrived at full speed to reprieve the tree! Had not Novel's proposal been assented to, the bark would have been stripped round the trunk, and the tree irrecoverably ruined. From this circumstance, it has always, within my recollection, borne the name of Novel's Oak; whence Manning and Bray derived their name of King's Oak, I know not.—*H. L. Long. Hampton Lodge, near Farnham, July*, 1837.

SCOTLAND.

Highland Society of Scotland. — At the general show of this Society, held at Glasgow, on Sept. 27., the display of agricultural implements, roots, and seeds, was very interesting, from the great quantity exhibited, as compared with former years. Messrs. Peter Lawson and Son, of Edinburgh, displayed an immense variety of seeds, roots, &c. Amongst them was a specimen of Dyer's buckwheat (*Polýgonum tinctòrium*), a substitute for indigo. It has been proved that the leaves, which alone are useful, can be grown in this country in abundance. It has been successfully introduced into France, where the government is taking steps to extend its cultivation. The Messrs. Lawson also exhibited two new varieties of Italian ryegrass, remarkable for their bulk and herbage, with two new varieties of annual clover, much superior in bulk of herbage to the Italian clover already known. From the new seed-shop of Messrs. Drysdale and Lawson, in Queen Street, a very fine collection of seeds and plants was produced; amongst which were rare specimens of barley, wheat, oats, and potatoes. From Messrs. Drummond and Son's Agricultural Museum in Stirling, there was also a whole warehouse of implements and seeds; a new variety of Annat barley, with wheats, clover, turnips, and Siberian cow parsnep (*Heraclèum* sibíricum), grown at Callendar House, 13 ft. high, which is cultivated in Sweden for cows. There were likewise specimens of one hundred and twenty-four varieties of the potato, from seed sown in May, 1837, planted first in June, 1838, by John Gray, gardener, Islay House; with giant oats, &c., from the shop of Thomas Cleghorn and Co., Edinburgh. Mr. William Skirving, nurseryman, near Liverpool, also showed a great number of turnips of immense size, with a variety of wheats. There were likewise Siberian cow parsneps, grown by Mr. Smith of Westbank, 12 ft. high. Amongst the agricultural implements, a great variety were shown by Mr. Smith of Deanston, amongst which was a machine for reaping grain. There were also, on the new and spacious ground allotted for the purpose, an immense display of ploughs; drain ploughs on a new construction, with a windlass for working; a churning mill, by Mr. Smith of Paisley, and other implements. The display of wool, cheese, and butter, was likewise very attractive. An exceedingly elegant carriage, built by Messrs. John Buchanan and Co., and exhibited in the yard, attracted much notice; and two very neat tandems also came in for a share of observation. Several specimens of drain tiles were also noticed: those of Mr. John Coulter, Gallowgate, were highly approved. (*Edinburgh Evening Courant.*)

At the first show here, in 1826, there were 5522 persons who paid for admission; at the second, in 1828, there were 8000; on the 27th instant, the receipts were 846*l.*, which, at a shilling a head, makes the number 16,920.

(*Glasgow Chron.*) This, we trust, will operate as a stimulus to the English Agricultural Society, lately established.

Ancient Oak Tree. — For many years it has been known that a large oak was lying submerged in a marsh near the side of the river Esk, about one mile north from Cortachy Castle, in the parish of Kirriemuir, Forfarshire, and which, having been recently drained, has permitted the tree to be dug out. Mr. Blackadder, having been requested to examine it, reports that it is not entire, the root end of the trunk, apparently to the extent of one third of its length, having been destroyed by fire, which had also penetrated up through its heart to the forks, where the principal limbs branch off; two of which were found lying in the position as they had fallen, and were broken over at that point. Some portions, which had been most deeply submerged, are in a fresh state, particularly the greater part of the largest limb, which may be cut up into planks. The trunk is the most decayed part, it having been a very long period since it was partially uncovered by the digging away of the peat, during which it has been exposed to the alternate action of the air and moisture. The portion of the trunk yet remaining is 13 ft. in length, and girts 25 ft. at its top end, and 18 ft. at the other, which, from the direction of the fibres, appears to have been the smallest part of the bole. The two limbs are each 20 ft. in length; the one girths 6 ft., and the other 9 ft., exhibiting in the whole, the skeleton of nearly 600 cubic feet of timber. But, from the rotten state of the trunk, it is obvious that it is now much reduced in its girts, and, as is the case with such trees, the but-end, which is burned off girts always considerably more than any other part of them; therefore, taking that portion of the bole still remaining as not containing more than two thirds of its original quantity of timber, and making an allowance for the smaller limbs, proportioned to the average of such kind of trees, which, although not now to be seen, have evidently existed to some extent, and may have been wasted away, or perhaps destroyed by the fire, or carried off at its original discovery, it is not improbable that it may have contained, at one period, fully 1000 cubic feet of timber. Such a tree, like some of the kind still existing in a growing state in England, may have exceeded one thousand years old before it was burned down, and may have been long previously rotten and hollow in the heart, near the ground, and have occasionally afforded shelter to the hunter or wanderer, and at last been destroyed by their fires kindled within it, as indicated by the charred portions being up through its heart, and none on its exterior: but whether this, and the other inferences, as to its original size be just or not, the visible remains excite much interest; for, although there have been, and still are, various oaks much larger in England, yet the remains of this show it to have been the largest oak tree hitherto generally known to have grown in Scotland, and afford an additional proof, to a few others, of the gigantic size which the native oaks had formerly attained within the Grampian Glens; in some of the more eastern of which, as actually obtains in this particular glen, not a shrub of them now exists naturally, in a growing state, the whole of the existing species having been planted; which fact rests upon the respectable authority of its former owner, the venerable father of the present Earl of Airlie. (*Dundee Chronicle*, Sept. 6. 1838.)

[This tree appears far to exceed in dimensions any oak now growing in Scotland. The largest we have ever found any account of in that country being one mentioned by Dr. Walker, which grew in Lochaber, and measured 24 ft. 6 in. in circumference at 4 ft. from the ground. (See *Arb. Brit.*, vol iv. p. 1772.)]

Farmers versus Rooks. — A pamphlet with this title, by J. S. Monteith, Esq., son of Sir Charles Stuart Monteith of Closeburn, in Dumfriesshire, has just been published at Ayr. The object of the author is to show that rooks, so far from being injurious to the farmer, by eating his newly sown corn, render him the most essential service, by eating the grubs, which not only destroy newly sown corn, but the roots of grass and growing plants of every description. Our only wonder is, that the farmers of Ayrshire should not be

aware of this already: but we hope Mr. Monteith's pamphlet will be copied into all the Ayrshire newspapers, so that in future they may remain inexcusable. — *Cond.*

IRELAND.

A Guide to Ireland has just been published, which promises to give a more accurate account of the gentlemen's seats of that country than any similar work that has hitherto appeared. It is drawn up by Mr. James Fraser, landscape-gardener, the author of several communications to this Magazine, which appear in our first volume. A new Guide through Ireland was much wanted; and, as far as we are aware, there is scarcely any other person who could have drawn it up so well as Mr. Fraser, who, for the last twelve years, has been incessantly travelling from one point to another, in the exercise of his profession, as landscape-gardener, drainer, road-engineer, &c. Scotch or English gardeners, about to fill situations in Ireland, will find this work extremely useful. It contains a map, ten beautifully engraved views, various statistical tables, and an outline of the mineral structure, together with a view of the indigenous botany of the country. — *Cond.*

Mr. Niven has, we understand, resigned the superintendence of the Royal Dublin Society's garden, and he has offered his services to the public as a landscape-gardener. The following is an extract from his circular: —

"N. Niven purposes to include, under the above title, the following branches of his profession; namely, landscape-gardening in all its details; the designing and superintending the laying-out of botanical and horticultural gardens. He will also give designs for the arrangement of public buildings, squares, promenades, &c. &c.; also professional advice as to the planting and thinning of trees, and foresting operations generally, draining, &c.

"He also intends to make such arrangements as will enable him to take one or two annual tours through the country, one in spring, the other in autumn, when he will wait upon such noblemen and gentlemen as may wish to have his professional advice on their estates. In like manner, he hopes to be able to devote a certain portion of his time for the purpose of making periodical professional visits to places where he may be required, within the immediate neighbourhood of Dublin, which, he hopes, will still continue to be more especially the centre of his field of action. With these views, he will be happy forthwith to receive early communications, so as to enable him to make the necessary arrangements previous to the more active engagements of the spring.

"By pursuing such systematic course, N. Niven hopes to be able to act, not only more satisfactorily, as well as profitably, for the interests of those who may employ him, but also more creditably for himself, than by any desultory method that might be adopted." — *Sept.* 22. 1838.

A National Arboretum, in the Phœnix Park, which has long been a favourite object with Mr. Niven, will now, we trust, receive his utmost attention, and command that of the government.

A public Garden at Kingstown is in contemplation: indeed, we believe the ground is already procured. — *Cond.*

Art. IV. *The West London Gardeners' Association for mutual Instruction.*

Nov. 27. — *Read.* An Essay on the Cultivation of the American Cranberry (Oxycóccus macrocárpus), by Mr. Adamson. He stated that it was introduced to the country in 1760, and was first cultivated by Sir Joseph Banks, at Spring Grove, who grew it beside and over water, knowing that it naturally flourished in moist and swampy situations: but Mr. Adamson, having lived at Spring Grove for five years, was convinced it could be grown equally well in a dry as

in a moist situation, provided it were well watered in the hot months of summer. He instanced, as motives to its cultivation, not only the utility of the fruit for pies and tarts, but that it was also now so much in demand, that thirty thousand gallons were annually imported, which paid at the rate of 6*d.* a gallon duty. If plants are scarce, cuttings, taken off in March, two inches long, placed in pans of peat earth, in a slanting position, put in a gentle bottom heat, and kept moist, will be fit to plant out in May; or seeds sown from imported fruit in February, and pricked out under hand-glasses in autumn, will be fit for planting out in Spring. Where many are wanted, make a bed in the kitchen-garden, 6 ft. wide, and as long as necessary. Dig it out to the depth of a foot, fill it with peat earth to the depth of 11 in., plant 3 ft. apart, or thicker if plants be plentiful; and all the attendance necessary is weeding and watering. A clump might be formed upon the lawn, or in the American ground, upon the same principle, fencing the sides of it with brick on end, to prevent the ingress of weeds, and placing rough stones for the plants to run over. Gather all the berries not wanted for present use, before they are touched by frost, and preserve them in bottles perfectly dry, or washed, and put into bottles with water; and, if well corked, they will keep a considerable time.—Mr. Fish had seen the plant flourish by the side of water, and had seen it planted in kitchen-gardens, but did not know the result. He thought the subject of considerable importance, not merely on account of the value of the fruit, but because one of the great generalising principles of the Society was evolved by it, being confessedly a subject of which the generality of the members were ignorant.—Mr. Keane was sorry that a fruit so agreeable was not better known; blamed gardeners for their apathy; lamented that they knew so little of the use of fruits and vegetables, and earnestly advised his bachelor brethren, in choosing partners for life, to make their knowledge of cookery an indispensable qualification.

Mr. Henry Knight entered at considerable length into the circumstances in which he had seen the cranberry flourish in America, the purport of which was, that it was most prolific in those half-marshy situations that were covered with water at one season and dry at another, and by the sides of streams, where the plants were overflowed for one part of the year, and left exposed for the other. He was convinced that there were thousands of acres in our commons where it would flourish, and where the gathering of its fruit might become a profitable employment for cottagers living in the neighbourhood.—Mr. Russel dwelt on the advantage which the poor man would derive from its cultivation; spoke of the miserable condition of the peasantry who gathered the wild English cranberry in the vicinage of the lakes of Cumberland; lamented that thousands of acres were lying waste, which, if properly cultivated, might minister to the enjoyment of man; and drew an analogy between the carelessness evinced towards the cranberry, and that exhibited towards the potato, on its first introduction.—Mr. Judd considered the English cranberry preferable, in point of flavour, to the American cranberry.—Mr. Fish was anxious to see the labouring man elevated in his condition, but did not think that the cultivation of the cranberry would be greatly productive of such a result; he wished, however, to see a small bed of it in every cottage garden, that the labouring man might have his cranberry tart as well as his gooseberry pie, as a wholesome variety of food tended much to promote the happiness of social enjoyment.

Mr. H. Knight showed specimens of the *Vaccínium Arctostáphylos*, a beautiful evergreen shrub, with black berries, which he considered equally or more useful than the cranberry, as it was very prolific, and much used for jellies in America.

Dec. 11.— General Meeting, at which all the business of the Society was transacted, a new committee chosen, &c.

Jan. 8. 1838.— Mr. Temple not being present, Mr. Fish read his essay on the cultivation of the peach. After noticing the methods of propagating, he gave an account of his practice in different counties of England, and in Banff-

shire, in Scotland. In the north, he was led to adopt spur-pruning out of doors, in order that the buds might be well ripened; and was so successful, as to obtain the first prizes at Edinburgh and Inverness. In the summer pruning, when a shoot is at the fruit, and not wanted, he pinches it off, leaving about an inch, to draw the sap to the fruit, and leaves sufficient to shade it from the sun. He picks off part of the leaves, when the fruit is swelling, to give it colour and flavour. He gathers all the fruit by hand, trying them round the stalk with the middle finger every other day; and, if placed on stone or marble shelves, they will keep good for a week or a fortnight. Insects he destroys by syringing with lime and tobacco water, before and after the trees are in blossom. For mildew, he wets the part with a solution formed of 1 lb. of soap, and five gallons of water, and dusts with sulphur vivum. In forcing, he also leaves a few spurs, as it gives a double chance. The borders being examined, houses cleared, &c., he lights a fire in the morning for the first two weeks in January, leaving plenty of air; he lights a fire in the evening in the third week, keeping a temperature of 45°, until the trees are coming into bloom; when he increases it to 50° and 55°, until the fruit are the size of marrowfat peas; but never allows the house to be higher than 58° with fire heat. When farther advanced, he gives air when the house is at 70° sun heat, but never allows it to exceed 80°. He fumigates the house when the fruit is set, and syringes every morning, unless when in flower, until the nights become mild, when it is done before the house is shut up. He frequently looks over and thins the fruit before stoning. He thins the leaves when the fruit is half swollen, gives air night and day, and very little fire during the last stage. He takes off the sashes when the fruit is nearly ripe, and places them on when the fruit is gathered, for the purpose of ripening the wood properly. The soil he used was a strong clayey loam, mixed with rotten dung and decayed leaves, to keep it open; and, finally, he attached great importance to cleanliness, for promoting the success of all his operations.

Mr. Russel disapproved of the essay, as it did not treat upon the whole subject, as many of the omissions were of much importance, and as several of the statements were liable to mislead; as he was confident Mr. Temple never took prizes for peaches grown on the open wall in Banffshire, without the assistance of fire heat. He stated he had seen peaches 30 miles to the north of Cullen Castle, where Mr. Temple lived, ripen well on the open wall, and ascribed this difference to soil, the subsoil in Banffshire being a cold rock and clay, while, beyond the river Spey, the soil was light, and on a sandy bottom. —Mr. Fish regretted Mr. Temple's absence, but considered that was no reason for finding fault with what the essay wanted, instead of what it contained; he also contended that an essay was not intended to be a complete treatise on a subject, and was sure, if this one had been much longer, Mr. Russel would have been the first to complain of its length.—Mr. Keane stated there was nothing said respecting the time of planting. He gave, and stated why he gave, the preference to autumn planting, instead of winter and spring. He also stated that the formation of the borders was of great consequence, and that they ought never to be more than 2 ft. deep. He advocated the use of fresh loam, but not much dung, as it made the wood too luxuriant; and stated that the best peaches in America were grown on shallow soils, and on wood-like goosequills. In forcing, he recommended equalising the temperature of the roots and top of the tree, by watering with warm water, covering, &c.— Mr. Russel still contended that the statements in the essay were made in too general terms to be of much utility, and that there was not an original idea upon the subject; adding that, when he came to a society like this, he expected to receive new ideas, or what was the use of meeting at all?—Mr. Fish agreed with Mr. Keane, but thought that borders might be deep, provided they were not crammed with decomposing vegetable or animal matter, which soured when beyond the influence of sun and air; but, if the requisite manure were placed upon the surface, there would be little danger of the roots going down. He was afraid Mr. Russel would not be long among them; he would be satisfied

with nothing but a profusion of new ideas, and contended that, while the gaining fresh facts was one great object of the Society, it was none of the least of its aims to bring into operation, and generalise, facts already known. He then argued that there were excellent points in the essay, such as spur-pruning for the north, and the system pursued in ripening the wood in houses.—Mr. Russel entered upon the different methods of protecting peach walls, spoke of certain substances as being more attractive of frost than others, and, finally, gave his preference to bunting, placed upon rollers, so as to draw up during the day.—Mr. Fish entered into the principles of protection, and showed how the radiation of heat from the wall was radiated back again by the protecting agent.—Mr. Caie dwelt upon the importance of properly fecundating the blossoms; that, for this purpose, care should be taken to proportion the branches to the strength of the roots, and to thin out the blossoms accordingly, exposing them fully to the sun, and then thinning out the fruit before stoning.—Mr. Ayres saw that Mr. Temple approved of fan training, and was surprised that Mr. Fish had not disapproved of such a system, as he was so anxious to work upon fixed principles. He highly extolled Seymour's system, and wondered that one so simple, so beautiful, and so worthy of consideration, was not more prevalent. He considered the soil recommended by Mr. Temple was fit only for high airy situations; thought that the borders ought never to be more than 18 in. deep; and stated that Hayward grew fine peaches on a border that had not more than 6 in. of soil. He contended that spur-pruning was not applicable in-doors and out of doors alike, and that errors in pruning often took place from the state of the tree being overlooked; and that it was a good plan to disbud weak trees before the buds expanded.—Mr. Fish considered that Seymour's system was merely fan training reduced to a system; but, notwithstanding its great beauty, he was doubtful if attention to first principles were exhibited in the one case more than in the other. It was of importance, in a fruit-bearing tree, to have all the branches as nearly alike in vigour as possible; and, to effect this, a weak shoot should be elevated, and a strong one depressed. In making additional remarks upon pruning, he dwelt upon the importance of disbudding, instead of cutting with the knife.—Mr. Caie had seen the largest peaches grown upon standards in a house, and pruned when in blossom. When the fruit was safely stoned, the borders were well watered with manured water, and the greatest attention paid to giving air. He also stated that, having been beyond the Spey last autumn, he was surprised to find such beautiful fruit, and so full of saccharine matter.—Mr. Adamson stated that, at a place where he lived in Fifeshire, the hot walls were heated by burning faggots for an hour or two, which heated the wall quickly and equally; and then a coal fire was put on to prevent the heat lowering; and that, without any covering, they had splendid crops; and he recollected measuring a fruit 11¼ in. in circumference.—Mr. Thorburn approved of spur-pruning in cold or wet situations, but it was a bad system if generally adopted.—Mr. Adams approved of shallow borders, autumn planting, and hot walls; and entered into the importance of studying the principles of phytology, confident that the more we studied the nature of plants, the more would we become united in opinion.

Jan. 22. 1838. *Forcing the Apricot.* — The forcing of the apricot was introduced by Mr. Ayres, who stated that he was only aware of one house for the cultivation of the apricot, and that was at Mr. Labouchere's; but that he had seen them grown in a peach-house. He approved of a house pretty wide, with a circular terrace in front, and trees upon the back wall. The slope of the roof to have an angle of 45°, or less; and the front wall, and also the flues, to be built on arches, so that the borders might be both inside and outside the house. He advised using fermenting dung and leaves inside the house, to save the application of much fire heat. The trees being prepared four years, he would commence forcing in February. He would disbud according to circumstances; and, in pruning and training, keep as closely to Seymour's system as possible. He would keep the temperature the first fortnight at 40°, increasing it to 45°, 50°, and 55°, until the fruit was set; raising

it to 60° when stoned, and 70° and 75° sun heat. He advised syringing, unless when the trees were in bloom, or the fruit ripening, when he would take off the lights to give the fruit the full benefit of sun and air to flavour them; and, finally, he stated that he had seen an apricot tree taken from the open wall and planted in a peach-house, after it had been forced six weeks, which bore four dozen of fruit the first season, and twelve dozen the second.— Mr. Fish said that, however correct Mr. Ayres might be in his routine of culture, he considered there was a discrepancy between that and the instance he concluded with mentioning; an instance which would seem to controvert all his former propositions, and establish a new fact; namely, that the apricot was easily forced.— Mr. Russel thought that the stoning would be the most difficult period, and recommended shading the house from the sun at that time. He corroborated this practice by referring to the open wall, stating that the fruit often dropped upon a south aspect, when it stood upon an east and west; and then he endeavoured to show that it delighted in a humid atmosphere, resting this conclusion on the evidence of individuals who had seen it flourish in several parts of Africa. — Mr. Thompson would prefer forcing on the apricot chiefly after it was securely stoned.— Mr. Adams had seen apricot trees introduced into a peach-house, and the result was only one or two apricots for two years. He also showed that fruit forced were sweetest, as they came to perfection when the sun was most vertical. It was computed that half the rays were lost at 45° degrees from the equator; and that, therefore, fruit ripened in June were sweetest, possessing more saccharine matter. — Mr. Fish approved of Mr. Russel's ideas respecting shading, and thought it might be advantageously extended to the open wall. As mention had been made of the apricot flourishing in a humid atmosphere, he wished to know if it had been noticed to flourish in a wet retentive soil. He then entered at some length upon Mr. Adams's statements, the purport of which was, that the want of saccharine matter in our forced fruits was as much owing to our modes of cultivation, as to the absence of a more vertical sun; that the sweetness of fruit was owing to the changing of its acid into sugar, effected chiefly by the agency of the sunbeams; and that, therefore, the practice of keeping the plants in an atmosphere saturated with moisture, though favourable to the production of large fruit, was not equally favourable to the presence of saccharine matter in it; as the sun was not powerful enough to evaporate its watery, and change its acid, constituents.— Mr. Russel was confident an excess of moisture at the roots would be very prejudicial to the apricot.— Mr. Caie never saw the apricot properly matured in Scotland on the open wall, and understood it would not ripen any better in some parts of England. He had seen it forced with great success in Scotland, with the assistance of glass only, when the fruit ripened in June. The house was of large dimensions; the roof sloped at an angle of 45°. The trees were standards, planted in the centre of the house; their boles were 4 in. in diameter; the diameter of the head, 9 ft. through; and height of the tree, 13 ft. The soil was brought fresh from a meadow, and no dung added. The blossoms were thinned out, so as to leave those most exposed to the light. The head of the tree was about 4 ft. from the glass. Caterpillars were troublesome, but were destroyed by hand-picking. The crops were uniformly good; and, though he had tasted apricots from walls in England, they bore no comparison in flavour, or size. There was also another house, formed by placing sashes about 6 in. from the top of the wall, and 7 ft. from the bottom, and having the trees planted against the wall.— Mr. Stormont had seen the apricot flourish in a place in Forfarshire, where it was very damp, being surrounded with meadows; and the fruit ripen well.— In relation to damp borders, Mr. Ayres stated that he had seen a beautiful wall of apricot trees, at the back of which ran a rivulet, 4 ft. below the level of the border; but that, owing to some alterations, the water was raised 2 ft.; and the consequence was, that the trees gradually decayed, and young ones planted in their stead shared the same fate.— *R. F.*

Art. V. *Retrospective Criticism.*

The Flower-Garden at Bedford Lodge. — The details which show the excellent management of the beautiful flower-garden of the Duke of Bedford at Camden Hill, must be extremely interesting to all admirers of such an exquisitely arranged parterre, and it reflects great credit on Mr. Caie. Therefore, the few observations which follow are by no means intended to detract from that praise which is so justly his due; neither could anything which I might write affect his well-deserved reputation.

In fig. 74., the shrub with the spherical lumpy head, on the left side, wants relief by the introduction of some conical plant in the foreground. At fig. 75., on the lawn, in front of the veranda, at *d*, and also in front of the green-house, at *a*, the equidistant distribution of the beds does not admit of sufficient breadth of turf to show anything like light and shade, or artistical design. There is, also, at the one side of *d*, an abrupt and unintelligible termination of a grove walk, which begins again at the other side of it, in an equally abrupt manner. The general effect of fig. 76. is very good; but it might be improved by removing all the vases or flower-pots on the terrace wall, except those supported by piers. This leads me to object strongly to the appearance of the terrace wall in fig. 77. I hold it to be an absolutely indispensable architectural principle, that every vase, urn, &c., placed upon a wall, should have a projecting pier to support it; and I object entirely to placing pots with plants in them on walls: I cannot see what business they have there. The remarks made in respect to fig. 74. will apply, with increased force, to fig. 78., where the round-headed shrub again appears like an enormous hedgehog. — *R. Glendinning. Bicton, Sept.* 1838.

Growth of the Stumps of the Silver Fir. (Vol. XIII. p. 142.) — Among many interesting subjects contained in the *Gardener's Magazine* for 1837, I perceive, at p. 142., some remarks of M. Dutrochet, upon the growth of the stumps of the silver fir, which are said to increase in diameter after the tree is felled. I was on one occasion led to some observations upon the same appearance in the stump of a silver fir cut down here; but, although at that time unacquainted with M. Dutrochet's investigation upon the subject, it gave me an opportunity of reflecting upon Theophrastus's account of similar appearances, in the stumps of the same tree (ἐλάτη), when felled, in Greece. If M. Dutrochet has not adverted to Theophrastus, perhaps you may be interested in reading the following passage from that author, in the sixth chapter of the third book, where he particularly describes what he calls the ἄμφανξις, or ἀμφιφύα, of the silver fir after decacumination. From this hard circular substance, the Arcadians made bowls. — *H. L. Long. Hampton Lodge, Sept.* 6. 1838.

The passage sent us by Mr. Long is as follows: — After remarking that the roots of the πεύκη and ἐλάτη (the spruce and silver firs) perish as soon as the trees are cut, Theophrastus adds: "A peculiarity occurs with regard to the Elate; for, when felled, or broken off by the wind or anything else, a substance grows round the smooth part of the trunk; for, up to a certain point, it is smooth, branchless, and uniform, like the mast of a vessel; μικρὸν ὑποδεέστερον εἰς ὕψος, 'little inferior in height.'* Some call it ἄμφανξις, others ἀμφιφύα.† In colour it is black: it is excessively strong. From this the Arcadians form their goblets. In breadth, it is as much as the tree might happen to have been; but it is stronger, more sappy, and thicker." (*Hist. Plant.*, iii. 6.)

The occasional Fruit-bearing of the Male Papaw. (p. 430.) — I beg to offer a few remarks on the interesting communication of Mr. G. M. Elliott respect-

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* I do not know what Theophrastus means by this μικρὸν ὑποδεέστερον εἰς ὕψος, of which I have given the translation literally: perhaps there may be some error in the text. — *H. L. L.*

† Ἄμφανξις, ἀμφιφύα, literally "round growth." — *H. L. L.*

ing the papaw, which has been so skilfully managed, and successfully fruited, at Ripley Castle.

Mr. Elliott's account of the treatment he bestows will be very acceptable to those who, having the plants, may be desirous of fruiting them; and they have only to imitate Mr. Elliott's practice to insure success. He is surprised that the male plant should bear fruit; and accounts for it in the only rational way he can; namely, by attributing it to an intermixture of the juices, in his attempt to inarch the one upon the other. But the explanation of the phenomenon is this: — The Cárica is a genus which connects Linnæus's two classes Monœ'cia and Diœ'cia, as an intermediate link; and as exemplified in several other genera belonging to the same class; as the hemp (*C*ánnabis), for instance.

This departure from the usual habits and structure of the plants is much more conspicuous in their native country than with us. At Madras, Pondicherry, and other towns in the Carnatic, single plants of the papaw from 10 ft. to 15 ft. high, are seen in almost every court-yard. As fruit trees, the Linnæan botanist wonders how these single plants can answer the purpose of the planter, unless he also imagines that the pollen is so volatile as to be carried by the wind from one street to another; but which would be nothing strange as respects the impregnation of the female plants. But it is the fertility of the male individuals which puzzles the botanist, unless he happens to be aware that this incident is a constitutional property of the male papaw.

It is remarkable, too, that the fruit produced by the male plants are invariably found to be the largest and best. This is, no doubt, owing to the paucity of the crop; the females being much more prolific, and, consequently, the fruit are smaller. Neither are much valued as fruit for the dessert in India: they are mostly used green, as a culinary vegetable. — *J. M. Sept.* 1838.

Nutt's Beehives. — I trouble you with a few observations, which appear necessary, in defence of my former communication (p. 180.), in which I made objections to Nutt's beehives. The Rev. T. Clark, in p. 350., begins some rather severe remarks upon my article, by asserting that my failing to prevent swarming was in consequence of my having departed from Mr. Nutt's directions. If this were true, I should certainly not be entitled to find fault with Nutt's system: but it is not true. The pages of the *Gardener's Magazine* will testify that I gave Nutt's system a full and patient trial for five years; and only for the last three have I departed from them. If Mr. Clark has so far succeeded in the prevention of swarming, by following Nutt's method, he has been more fortunate than myself: but it must be remembered that the statement comes from the editor of Nutt's work.

Mr. Clark gives three quotations from Nutt's work, which he considers to contain a complete refutation of my observations. The first is introduced, apparently, under the persuasion that I had ventilated empty boxes. This was not the case, for most of the swarming took place after the bees had taken possession of them. If I had ventilated empty boxes, the tin tubes would have had very little effect on their temperature, and, certainly, could not have rendered them so cold and disagreeable as the places which bees often choose for themselves; such as a branch or trunk of a tree, or an old chimney full of holes, admitting of very free ventilation.

To the second quotation, recording the success of Mr. Nutt's own fourteen stocks at Moulton Chapel, I must observe that it would have been much more satisfactory to have referred to the results in some others of his apiaries, established in various places. In this county of Norfolk, his system has failed to prevent swarming, though attended to by better apiarians than myself.

If, by the third quotation, Mr. Clark would insinuate that I have failed to prevent swarming, from not having relieved them *at the proper time*, I can only consider this *proper time* as a convenient subterfuge, devoid of any real foundation. After all these quotations from Nutt, which are by no means new to me, I repeat the assertion, from my own experience, that no expulsion of

queens takes place till after the third or fourth swarms : this is the case in common hives, and equally in the new. This shows the instinct of bees to propagate their species by swarming, which never takes place after the expulsion.

Mr. Nutt proclaims his humane system as differing from all others, in enabling us to procure pure honey without destroying the bees : but this is nothing new. Pure honey is obtained from common hives on the storifying plan, without injury to the bees. When Mr. Nutt calls out against this practice, he forgets that his own system is the very same except as regards his collateral boxes ; for the glasses on the top of his inverted hives are on the same plan of storifying, and so is the glass on the collateral hives. A glass on the top of a common straw hive differs in nothing from one on a wooden box, except in not being dignified with the fine name of the *Pavilion of Nature*. The collateral boxes were new, and would have deserved praise, if they could have prevented swarming, and if the queens did not deposit their eggs in them. The tin tubes are a mere fancy. They might be of use in hives crowded with bees and combs; but they are speedily rendered useless by the bees sealing them up.

The difference between the three collateral boxes, and three common hives, is, that the three boxes ought to be full of bees all under one queen, while the three hives would each be under a separate queen. But it will be urged in favour of the collateral boxes, that the honey in the side boxes is pure, because the queen does not deposit her eggs in them, and the cells are not discoloured, as in brood combs. To this, I have to observe that, if the bees enter the side boxes early in the season, the honey will be no purer than that made by a second or third swarm in a straw hive of the same age. Last year, I put a swarm into one of the side boxes of two collateral hives ; but the bees did not enter the other end boxes, from the centre stocks. I destroyed the bees in one of the side boxes, and united the other to the centre stock, after destroying their queen. They fought, and there was great loss of life; yet not enough, for I soon found that I had more bees than could be supported ; for, though the centre was full of honey, I was obliged to feed them. They were, after all, weak, and died in the following spring: the other centre stock is doing well.

Bees may be united, at swarming time, without much loss of life, as they have not taken full possession of the hive ; but, when strange bees are added to an established hive, fighting will always ensue, and often with great loss of life. These observations prove that, if the end boxes were full of honey and bees, the centre box would not contain enough to support the whole colony during the winter ; and little would be gained by taking food from the bees at first, if it became necessary afterwards to feed them. This season, I put a swarm into one side box of each of two sets of collateral hives, where each worked with its own queen. The bees from the centre stock entered the opposite ends at the same time. I took the boxes off, and examined them on the 2d of August. Those boxes with separate swarms had a little pure honey in the outside combs, the inside ones containing brood ; and the same was found in the other ends, entered from the centre stocks.

After this, the question will occur, what advantage is gained by having a large colony of bees under one queen, since weaker hives produce as pure honey as the stronger. To procure the honey from the weaker hives, on the old plan, the bees must be destroyed, so far the other mode has the advantage; but, on the other hand, there is a danger of too much robbery in the stronger hives; and the bees must be fed; and, if this be not practised successfully, the bees must perish from starvation. But, when the honey is collected, there is little difference in the result of either system : if profit is wanted, the old is preferable.

Mr. Clark pronounces me no apiarian ; to which, indeed, I lay no great pretensions. But he has decided upon singular grounds, if, as it would appear, he rests his verdict chiefly upon my acknowledgment that I doubted the maternity of the queen-bee, till I had ocular demonstration. My confession is termed

" bungling," and exposed in italics, because I happened to say, without due accuracy, that I had seen the mother-bee *laying an egg in several of the cells*, where, of course, I should have said *depositing an egg in each of several cells*. I have no inclination to dwell on this small criticism, nor to be at the pains of vindicating my " crude production," or the justice of designating as " rank folly " the attempt to destroy the natural instinct of bees. Such peevish censures will reflect no credit on the writer; and, for my own part, being much more solicitous to promote sound knowledge on the subject of bees, than either to attack others or defend myself, I am content to leave my communications to the impartial judgment of your respectable readers. — *John Wighton, Gardener to Lord Stafford. Cossey Hall Gardens, Aug.* 18. 1838.

Rhubarb Jelly and Jam. (p. 395.)—I see, by the last Number of the *Gardener's Magazine*, that Mr. Joseph Johnson of Northenden, Cheshire, is giving himself much uneasiness about the rhubarb jelly, and evidently wishes to be considered the original inventor of it. He may be; but I do not see what right he has to say that I got the hint at Manchester. Such was not the case. Indeed, I never heard of such an article till June, 1837, when we were making trial of a tart of Buck's new early scarlet rhubarb, the juice of which was quite as high-coloured as that of red currants. Finding this, I suggested the making a trial of it as jelly, which was done on the 16th of June, 1837. Afterwards, it was tried in the form of jam; and both turned out uncommonly well, and in both instances the colour was preserved fully as rich and clear as that made from red currants. On the 20th of October, 1837 (three months after the date of the paper noticed in your Magazine, July 19. 1837), I visited Manchester; and some rhubarb jelly was then shown me by Mr. Campbell, probably the remains of the jar given him by Mr. Johnson. The sample shown was made with green rhubarb and brown sugar; and I suppose it was from this frightful specimen that Mr. Johnson supposes that I was led to the making of it. If so, I beg to inform him that he was never more mistaken. I was lately informed by a gentlemen from Shetland, and which I state for Mr. Johnson's information, that the practice of making jelly from green rhubarb has been carried on there for many years; as, unless the seasons are fine, no other preserve can be made. — *J. M'Nab. Edinburgh, Aug.* 20. 1838.

[Mr. M'Nab sent us, with this communication, pots of both the jelly and the jam. The latter was most excellent, having a beautiful colour, and a fine flavour: the former was equally good in colour and flavour, but it had not formed a jelly, being of the consistence of rich syrup. — *Cond.*]

Art. VI. *Queries and Answers.*

Gas Tar not injurious to Trees. (p. 395.) — In reply to the enquiry of W. respecting the effects of gas tar, I beg to inform him that I have reason to believe gas tar is not injurious to trees; on the contrary, that, in particular cases, it would seem to be rather beneficial than otherwise. On making a similar enquiry of a superintendent of some gas-works, he took me into his garden to show me some apple trees to which the tar had been applied, as he informed me, merely for experiment, the trees having been in the last stage of disease. The trunks of these trees indicated the existence of a very active state of disease prior to the application of the gas tar; but they were producing young wood of the greatest apparent health and vigour. I saw them when the tar had been applied in some cases three years, in others two years; and the owner was about to apply it to all the trees in his garden. Having an apple tree in my own garden, very much affected by what is commonly known as the American blight, which had burrowed into the bark, and was evidently affecting the health of the tree, I applied the gas tar with a brush freely into every unsound part of the bark. The insects were, in a few days, destroyed; the bark threw out granulations soon afterwards, and, in the course of a year, became

perfectly sound, and has continued so to the present time. I applied the tar only to the unsound places. I cannot speak from actual experience further than I have stated, and I cannot be sure that the improvement in the apple trees before recorded resulted from this application; but such was the impression of the owner. I would recommend W. to use the tree guard, of which a description was given in a former volume of this Magazine (vol. xiii. p. 166.), as the only effectual protection against animals having the very vexatious propensity of which he complains, and which, at the same time, never injures the trees. The cows referred to in that article, having been completely foiled by the guard recommended, began to attack the bark of some elms of large growth. As soon as this was observed, the gas tar was applied to the wounded parts, and they did not proceed any farther that season; but the following spring, as soon as they were turned out, they began their attacks again on the new bark formed over the former wounds; exposure to weather having, it is presumed, destroyed the offensive qualities of the application. I would not, therefore, recommend any one to depend on the tar alone, as it would require frequent renewing, and irreparable mischief might result from inattention to this in time. — *Charles Lawrence. Cirencester, Sept.* 23. 1838.

*The Genus Corræ*a. — How many species of Corræ*a* are there; and are all of them natives of New South Wales? Are Corræ*a* rùfa and C. Milnèr*ii* distinct species, or merely seminal varieties; and where are the two latter to be purchased, and at what price? Have any seedlings been raised in this country; and, if so, have any varieties been produced by that means? I should be greatly obliged to any of the readers of the *Gardener's Magazine*, if they would answer these queries, or such of them as they can. — *S. Kensington, Sept.* 28. 1838.

Mr. Westwood's Answer to various Questions respecting Insects. — The insects in the pear leaves just received, are dead larvæ of a small lepidopterous insect, which I presume are the young of Argyrómyges Clerck*élla* (*T*ínea Cl. *Linn.*), described in the *Gardener's Magazine*, vol. xiii. p. 524.

The little blue beetles, found feeding on the willow leaves, are Chrysomèla (Phæ*d*o*n*) vitellìnæ, a very common species, of which the larvæ feed in company, forming little regiments, and keeping in a line.

It is impossible to make anything out, decisively, respecting the grubs sent from the cauliflowers at Oxford. They are evidently dipterous, and, most likely, belonging to one of the *M*úscidæ; perhaps a species of Anthomỳia, allied to A. cepàrum, the onion fly, described in my series.

The insect which perforates the deal laths from Petersburg, sent by W. H. Baxter, is *S*irex *J*uvéncus, female, in the larva state. See *Arb. Brit.*, art. *P*ìnus, p. 2140.

The insects sent by Larix from Neath, South Wales, which attack the transplanted larches, are Hylòbius abìetis. See *Arb. Brit.*, p. 2140. I shall probably make this species one of my series. — *J. O. Westwood. Oct.* 4. 1838.

Art. VII. *Proceedings of the Horticultural Society of London.*

A paper was read "On the Cultivation of the Strawberry," by John Disney, Esq., F.H.S. The author stated that, having found the ordinary modes of preserving clean the fruit of the strawberry, while growing, ineffectual, he had devised the following method. He first raises the bed into ridges, from 4 in. to 6 in. high, and 24 in. apart at the upper edge; planting the runners in the valleys, at the distance of 12 or 15 inches. Then, when the flowers appear, he paves the whole of the ground with the large flat pebbles easily procured in gravel-pits, selecting such as are 3 or 4 inches in diameter, and about 1 in. thick. From this plan the author finds that he derives the following advantages: —

1. The rain water runs in between the pebbles, and readily finds its way to

the roots of the strawberry plants; while, on the other hand, it is not lost by evaporation.

2. The surface of the stones is always clean; no soil, therefore, is splashed upon the fruit.

3. The surface of the stones becomes sensibly warm, and furnishes reflected heat to the fruit. At the same time, no obstacle is offered to the production of strong and healthy runners.

Exhibited. — From Mr. Beaton, gardener to Thomas Harris, Esq., F.H.S., Tweèdi*a* cærùlea; a new half-hardy perennial, with beautiful deep sky-blue flowers, recently introduced from Buenos Ayres. From Mr. Thomas Brown, F.H.S., nurseryman, Slough, a beautiful specimen of the double purple Azàlea índica, and another of the white variety of A. *l*edifòlia. The former, from its size, and the profusion of double pink flowers with which it was loaded, formed a most attractive object. From Messrs. Chandler and Sons, nurserymen, Vauxhall, a small collection of green-house plants, among which were E*r*pacris paludòsa, a seedling *R*hododéndron arbòreum, and the two varieties of Camél*l*i*a* japónica called élegans and formòsa. From William Hasledine Pepys, Esq., F.H.S., a remarkably fine cucumber, grown upon the trellis inside a forcing-house. From Mr. John Davis, gardener to Sir Simon Clarke, Bart., F.H.S., of Oak Hill, near East Barnet, a black Antigua pine-apple, weighing 3¾ lb., and some white sweetwater grapes, so well grown as to resemble fine specimens of the muscat of Alexandria. From John Disney, Esq., F.H.S., very fine fruit of the golden Harvey and nonpareil apples, in illustration of his manner of keeping fruit of this description. The apples were found, upon trial, to have preserved their flavour in great perfection. From Mr. D. Ferguson, gardener to Peter Cæsar Labouchère, Esq., F.H.S., a plant of *Loàsa* laterítia, a stinging, twining, green-house herbaceous plant, with brick-red flowers, recently introduced from Tucuman, by Mr. Tweedie. From Miss Garnier of Wickham, near Southampton, a specimen of an Amarýllis, or Hippeástrum, from Brazil, and a variety of Gésner*a* Douglàs*ii* (*Bot. Reg.*, t. 1110.). The latter had larger flowers than the original species, but they were paler externally, and the markings inside the corolla were of a less vivid brown. These were accompanied by a small specimen of Gésner*a* fauciàlis (*Bot. Reg.*, t. 1785.), one of the most brilliantly coloured of Brazilian herbaceous plants. From Richard Harrison, Esq., Aighburgh, near Liverpool, a specimen of Cyrtopòdium punctàtum. This was a very beautiful orchidaceous plant, with a panicle of long bright yellow flowers, stained and mottled with crimson: even the large reflexed bracts were coloured in a similar manner, and contributed to the general richness of the inflorescence. It was much more brightly marked than the specimen from which a figure was published in the *Botanical Magazine* (t. 3507.), and had acquired all the depth of colour which the species gains in St. Domingo and the continent of equinoctial America, of which it is a native. From Mr. Ingram, F.H.S., three beautiful seedling verbenas, raised in Her Majesty's garden at Windsor, between *V.* chamædrifòlia and *V.* Tweedi*àna*. From Mrs. Lawrence, F.H.S., a collection of thirty green-house and stove plants. The most striking species were the following: — a large specimen of Cliánthus puníceus; *E*rìca aristàta màjor; a very fine plant of the white variety of Gloxín*ia*; E*r*pacris onosmæflòra (*Bot. Mag.*, t. 3168.), a very pretty green-house plant from New Holland; Peristèria cérina, a curious orchidaceous plant, whose flowers lie upon the ground in clusters, like little cups of yellow wax; a leucopogon and an oxylobium, apparently new; a very fine specimen of the variety of Azàlea índica called Hibbérti; and a cleome, with large deep purple blossoms. From Sir Charles Lemon, Bart., M.P., F.H.S., some specimens of plants in flower from the open ground at Carclew, in Cornwall; they having completely resisted the severity of the late winter, in that mild part of England. Among them were the New Holland *A*càcia diffùsa and stricta, Azàlea *l*edifòlia, with purple flowers; *E*rìca austràlis and mediterrànea, all which were completely destroyed in the neighbourhood of London; and, what was still more remarkable, shoots,

in full flower, of *R*hododéndron arbòreum, which, Sir Charles Lemon stated, was becoming a tree at Carclew. From John Luscombe, Esq., of Coombe Royal, near Kingsbridge, Devonshire, a basket of lime fruit, apparently of the sweet kind. Mr. Luscombe stated that these fruits had been produced without the aid of fire heat in winter, having been only protected by a glazed frame; and that he had found the trees, although considered by some to be more tender than the orange, lemon, or citron, not to have sustained the slightest injury from the unusual severity of the winter. From Mr. Mountjoy, nurseryman, Ealing, a large collection of heartsease. From Mr. Thomas Naylor of Brixton, a collection of auriculas and hyacinths. From Mr. Nieman, gardener to Peter Cæsar Labouchère, Esq., F.H.S., of Hylands, near Chelmsford, black Hamburgh grapes, kidneybeans, and some remarkably large Keen's seedling strawberries. From Mr. Spence, gardener to R. Durant, Esq., F.H.S., of Putney Hill, a beautiful specimen of the yellow variety of Brugmán*sia* sanguínea. The specimen measured 15 ft. in circumference, and had upwards of forty-two of its large yellow flowers expanded upon it. It was accompanied by a yellow China rose, one of the flowers of which measured 13 in. in circumference, a species of lime, and a pretty pink variety of Grevíll*ea* serícea. From Mr. Springall, gardener at Taplow Lodge, in Buckinghamshire, a specimen of *O*'xalis floribúnda, completely covering a basket 12 in. in diameter, in which it was placed. From the Society's Garden, a collection of *N*arcíssi and *Ribes*, together with several green-house plants; among which was Habránthus cóncolor, a new species, sent from Mexico by Mr. Hartweg, the Society's collector in that country. It may be described as follows:—Bulbs round, black. Leaves several, glaucous, obtuse, 1 ft. and more long, fully half an inch wide, longer than the scape, which bears a single, pale green, whole-coloured flower. Spathes bifid, cylindrical, fitting the base of the peduncle tightly. Peduncle erect, slightly compressed, nearly 3 in. long. Perianth campanulate, nearly erect, rather spreading at the point, 2 in. long; segments obtuse. Faucial ring composed of six short fringed lines, of which one belongs to each segment of the perianth, and the whole form an apparently continuous line at the back of the base of the filaments. Stigma 3-parted, with narrow recurved divisions.

The following medals were awarded: — The silver Knightian, to Richard Harrison, Esq., for Cyrtopòdium punctàtum; Mr. Thomas Brown, for his double purple Azàlea índica; Mr. Spence, for the yellow Brugmán*sia* bícolor; Mrs. Lawrence, for that part of her collection which consisted of Cleòme purpùrea, Peristèria cérina, the species of Oxylòbium, Hòve*a* Célsi, and E'pacris *o*nosmæflòra. The silver Banksian, to Mr. John Davis, for his grapes; Mr. Beaton, for his Tweèdi*a* cærùlea; Mrs. Lawrence, for Cliánthus puníceus; Mr. G. H. Nieman, for forced fruit; and Mr. Springall, for *O*'xalis floribúnda.

May 15. — Thomas Andrew Knight, Esq., the President of the Society, having died on the 11th instant [see a biographical notice, p. 303.], it was considered by the council a proper mark of respect to the memory of this lamented gentleman, not to hold any public meeting of the Society until after his funeral, and consequently no meeting was held this day.

May 26. — *Exhibition at the Garden.* This, the first meeting at the Society's garden for the year 1838, was remarkable for the extraordinary number and beauty of the objects exhibited. Although the weather was very cold for the season, the visiters were more numerous than usual, the number passed through the gates having been 2,966, exclusive of exhibitors.

The flowers and fruit were arranged in five tents, and extended altogether to the length of nearly 700 ft.; and it was estimated at least 900 specimens of plants, 26 boxes of cut flowers, and 47 dishes of fruit, were brought together for competition. The medals awarded have been already given: see p. 352.

THE

GARDENER'S MAGAZINE,

DECEMBER, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *A summary View of the Progress of Gardening, and of Rural Improvement generally, in Britain, during the Year* 1838; *with some Notices relative to the State of both in Foreign Countries.* By the CONDUCTOR.

IN a summary like the present, it seems desirable to set out by noticing the characteristic features of the year, should there be any. These features may be sought for in the influence which the climate or weather of the year has had on garden productions; in the records of inventions or discoveries, either directly or indirectly applicable to garden purposes; and in the acts of public bodies, or wealthy individuals, who devote themselves to the advancement of gardening.

The weather of the early part of the year 1838 was so severe as to kill to the ground many kinds of trees and shrubs, some species of which had not suffered so much, in this country, within the memory of man. When we mention that the common arbutus, common laurel, Portugal laurel, laurustinus, sweet bay, and *R*hododéndron pónticum, were killed to the ground, or severely injured, in the climate of London, it will easily be understood that the more tender trees and shrubs, most of which are generally planted against walls, suffered severely. We refer to the section of Arboriculture, in our table of contents, for the details of what happened at particular places in Britain and Ireland, and in some parts of the Continent; and shall here confine ourselves to a few general remarks.

The weather, during the latter part of 1837, up to Christmas, was unusually mild, and kept a number of half-hardy plants, especially those against walls, almost in a growing state. Early in January, the frost set in suddenly with great severity; the thermometer, which had, for some weeks before, ranged between 40° and 50°, suddenly falling to zero, and, in some places, even below it. In one night, the foliage of many evergreens, including even the *Q*uércus *I*lex and the common furze, was blackened, and the plants apparently killed. This effect took place to very different degrees of extent, according to the soils and situations in

which the plants were growing. In all valleys and confined places, where the air was charged with moisture, and in all situations where the soil was deep and rich, the effect was most conspicuous; and not only were the leaves destroyed, but the greater part of the young shoots. On the contrary, in high, dry, open exposures, more especially where the soil was poor rather than rich, not only the young shoots (which, being short, were well ripened), but even the leaves, escaped uninjured. For example, while the laurels, sweet bays, ilexes, and many others, were killed to the ground, or nearly so, in the vale of London, and, in general, where they grew upon the low moist clays of Middlesex, they escaped in a great measure unhurt on the high gravelly ridge of Totteridge, about ten miles to the north of the metropolis. In all parts of the island where the air during winter is comparatively dry, even though the temperature be lower than that of the climate of London, plants have suffered comparatively little, to what they have done where it is moist; and many in the former circumstances, when cut in, have completely recovered themselves during the summer. On the other hand, Portugal laurels, arbutuses, and peach and almond trees, in low moist situations; for example, in the lower parts of the pleasure-grounds and of the kitchen-garden at Bromley Hill (examined by us with Colonel Long's permission, November 8.); appear wholly uninjured in their bark and foliage, and in the young shoots of the current year, yet when the older wood is cut into, it is found quite brown and dead; and, hence, it is easy to predict that the plants cannot live above a year or two longer.

It may readily be conceived that so striking an effect of weather has led to some useful experience; and afforded hints and rules which may be of great use, not only on similar occasions, but in general practice. There are perhaps none of these rules which the scientific gardener could not have deduced beforehand, from his knowledge of structure and physiology, and the geographical range of species, had he reflected on the subject: but, even to him, to notice the results cannot fail to be useful, as establishing principles; while, to the mere empirical practitioner, it is of the greatest importance, as supplying rules.

The sap in woody plants circulating further within the surface than in such as are herbaceous, and being protected by a thicker covering of bark, which is, moreover, from its dry suberous nature, a non-conductor, is on that account less liable to be injured by cold, than the sap of herbs, which circulates close to the surface as well as in the interior of the stems, and has scarcely any protecting bark. Hence, the leaves of a woody plant may be blackened, and even a portion of the young shoots injured, without the older branches being destroyed. This points out the propriety of not immediately cutting down

such trees or shrubs; and, when it is considered that wounding branches, by cutting off a portion of them, has at all times a tendency to dry and kill back some part of the branch which remains, it follows, that even cutting in trees and shrubs that have had their leaves and branches injured, immediately after the injury, or even at any period during the dormant season, must be hurtful. The correctness of these theoretical views has been proved in many places, where gardeners, in order to remove the unsightly appearance of blackened foliage, have cut the trees down in February or March, before any activity could take place in the sap, and, consequently, before it could be known how far the branches would revivify by the effect of temperature. From this rash practice, many trees and shrubs have been altogether lost, that would have otherwise recovered; though it is allowed that some which had been so treated have sent up shoots from the stool or root. On the other hand, those who neither cut in, nor cut down, the woody plants which were injured, till July, August, or even September, saved most of them, and particularly those planted in dry soil, against walls. *

* Whilst such caution in heading down is here recommended, in order that rare and valuable species, or specimens remarkable for their size, may be preserved, yet, in the case of many common evergreens, not only cutting down, but entirely rooting up, and replacing with fresh plants, may be the most proper mode to adopt. Although some entirely evergreen species will rush up with great vigour, after being cut down under ordinary circumstances, when the leaves, and consequently the stems, are in a fresh and sound state; yet, it is evident that, in very many instances, such vigorous growth has not resulted after the severe frost of last January, neither when the plants were cut down, nor when they were allowed to break without being cut down. In fact, the growths, in many cases, will have been observed to be the reverse of vigorous. This is, most probably, to be accounted for by the circumstance of the roots losing their energy, or having their functions impaired, in consequence of the privation of the usual supply from the leaves, which the evergreens of mild climates are in the habit of constantly receiving, in a greater or less degree; for, although at certain seasons the interchange of matter between the roots and leaves of evergreens may be extremely limited, still there can be no doubt that the communication is beneficial; and, consequently, that a suspension for so protracted a period as that between the middle of January, when the tops were destroyed, and midsummer, when some only commenced to push, and others had only made a few shoots, must be injurious. The roots, although not directly affected by the immediate contact of frost, appear to have lost their energy to a very great extent; and the proportionably small extent of foliage brought into action in the latter part, as it may only be termed, of the present season, will afford but a scanty elaboration, compared with the great extent of old roots requiring a supply. The latter must, therefore, continue, it is to be feared, in a lingering state.

Temperature, with regard to vegetation, being in a great measure relative, it becomes necessary, in tracing the effects of the extreme depression which occurred in the early part of the season, to advert to the temperature which was previously experienced; for not only the extreme, but also the vicissitude, has, doubtless, contributed to the disastrous consequences, with regard to the tender, half-hardy, and even such vegetable subjects as, under ordinary degrees

Every scientific gardener knows that the great art of inuring the plants of a warm climate to a cold one, consists in adjusting the growth of every season to the power of that season and climate to ripen that growth. Hence, all plants which it is intended to acclimatise should be placed in a poor dry soil, and in a situation freely exposed to the influence of the sun and air. The trees and shrubs of countries where the winter is extremely severe, such as that of British North America, may be fully exposed to any cold ever experienced in this country, during the winter season, provided they have ripened the shoots which they made

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of cold, have been found so completely free from injury, as to be considered quite hardy.

The months of October and November of 1837 could not be said to have produced any exciting effect on vegetation; on the contrary, their temperature was below the average. Yet this circumstance, combined with a want of sun, tended to prevent the hardening of the wood, which is so essentially necessary, in order to render it capable of withstanding the effects of frost. Hence, the weeping willow, when its shoots are duly matured in a climate where the summers are hot, will retain its character, even although the winters of such climate be cold; but, where the summers have not much warmth, although the cold of winter be by no means intense, it assumes a stunted appearance.

December, instead of a depression of 3° Fahr., which it usually averages below its predecessor, was distinguished by a rise of 1°. In fact, the temperature was little below that of May of the same year. It increased after the middle of the month; south and south-west winds were prevalent; the thermometer, in the shade, was generally between 50° and 55° through the day; never at freezing, and rarely below 40° at night. January commenced still mild; but, on the 8th, the maximum temperature was only 30° Fahr.; and it never reached higher till the 21st. On the 20th, the maximum was only 12°; the minimum, on the same morning, was, over a great part of England, from 36° to 44° below freezing. Vegetation thus experienced a vicissitude of 60°, within the space of three weeks, without taking into account sun heat, for which 10° more may be allowed. Neither in the present nor past century, is there evidence of a frost so severe in its effects on vegetation; for subjects that had existed throughout that period yielded to the more irresistible attack of the intense frost above mentioned. Frosts of longer duration can be remembered, but any extreme, much out of the ordinary course of nature, is inconsistent with long duration; so that we may conclude that such continued frosts were not intensely severe. Howard, in his *Climate of London*, records 5° below zero, as happening in Feb. 1816. In the latter case, the intensity at that season was probably of short duration, and would, consequently, only take effect on the more herbaceous parts of vegetation.

The mean temperature of February was 8° below the average; but no frost of extraordinary severity was experienced in England (in Scotland, it was, however, more intense than it was there in January). Nearly an average temperature was maintained in March; but April fell more than 4° below the mean. Leaves and blossoms were three weeks later than usual in expanding; still, there was danger; for sharp frosts occurred between the 10th and 19th of May, sometimes as much as 6° below freezing. Of the class of fruit trees, apples suffered most, and the failure of that crop has been general in most situations. The summer, from this time, was, on the whole, congenial, but rather below the average heat; and, as in 1837, the solar influence has been much less powerful than usual. — R. T.

during the preceding summer. Thus the Magnòl*ia* tripétala and the common catalpa, both of which, in our gardens, make long shoots of soft spongy wood, which seldom thoroughly ripen, if planted on the sides of hills or mountains, where the soil is thin and dry, and the air dry and clear, would produce shoots only a few inches in length, and ripen them thoroughly. On the other hand, there are spongy-wooded plants which belong to climates having mild winters, and these it is impossible to acclimatise in this manner; because, however well ripened the wood might be during summer, the severity of our winters, if the plants stood in an elevated exposed situation, would destroy it entirely. The common fig, and the different varieties of *R*òsa semperflòrens, are plants which belong to this class. Supposing both of these to ripen their wood in dry soil, on a mountain side, they would not be able to resist the winter there; but, if they can be made to ripen their wood (which they do) in plains, they will live through ordinary winters in such situations, without any protection; and through severe ones, with a slight covering, or when closely trained to a wall.

The common mode of acclimatising tender exotics is, to plant them against walls; and this is undoubtedly preferable to every other mode; because the wall, in the season for ripening the wood, affords greater heat, and the shoots being spread out against it, their leaves are more completely exposed to the light. But, to render a wall effective in the process of acclimatising, two things (unfortunately generally neglected) are essential: 1., to employ such a soil as will not cause the plant to produce much more wood than it will ripen; and, 2., to have such an arrangement as will give the power of preventing rains from falling on the soil in which the plant grows, during great part of the autumn and winter; in short, which will enable the gardener to retain no more moisture in the soil, when the plant is not in a growing state, than may be found necessary to prevent the spongioles of the fibrils from shriveling.

It is almost unnecessary to mention, that, by the expression "acclimatising," we do not mean to infer that it is possible to alter the constitution of the species, but merely the habit of the individual, so as to render it somewhat hardier. Thus, common hardy annuals sown in the beginning of autumn in rich soil, in a sheltered situation, will produce plants much more easily injured by the winter's frost, than if they had been sown in a dry poor soil, and in an exposed situation. In like manner, annual plants raised in autumn, whatever may be the soil and situation, will, if repeatedly transplanted, through the check they receive by that process, grow slower, and become less spongy, than if allowed to remain undisturbed. This is the whole extent to which the process of what is called acclimatising can go. No species

can, by any process whatever, be made hardier in any climate, than when first introduced into that climate, except by altering its nature; and this cannot be done by any process but one, and that a process which renders the plant no longer the same species, viz. cross breeding.

The effect of the preceding winter on hybrid plants has led to some interesting results respecting cross fecundation. It is known to scientific gardeners, that, in the case of hybrids generally, the progeny takes the constitution of the female parent, while its characteristic features are those of the male. Hence, it might have been foreseen, that a cross between *R*òsa semperflòrens and the Ayrshire rose, the latter being the female parent, would produce a much hardier progeny, than if the crossing had been reversed. It might also have been anticipated, that a cross between the tree rhododendrons of Nepal and the *R*hododéndron pónticum of the temperate parts of Asia, the latter species being the female parent, would produce a much more tender progeny, than a cross between the Asiatic tree rhododendrons and those of North America, the latter being the female parent. Hence, we are able to account for the apparently anomalous circumstance of some of the Bengal hybrid roses having been destroyed altogether by last winter's frost, while others have been only partially injured; and hence, also, we discover the reason why the progeny of *R*hododéndron catawbiénse, *R*hod. máximum, *R.* caucásicum, &c., fecundated by *R*hododéndron arbòreum, have stood the last winter, scarcely, if at all, injured; while the progeny of *R.* pónticum, fecundated by *R.* arbòreum, has invariably been killed down to the ground, or totally destroyed. While the loss of some hybrid arbutuses is to be accounted for on this principle, the mode of producing, by cross fecundation, a number of others which shall be nearly as hardy as the common species, is clearly pointed out. In short, the confirmation of the general principle, that, in cross fecundation, the constitution of the female parent prevails in the progeny, is, we think, the most important gardening feature that has transpired during the past year.

It has long been known, that, among plants raised from seed, whether the parent has been cross fecundated, or otherwise, there is frequently considerable constitutional difference in the progeny; some being hardier than others, and some being earlier or later than the average of the species, of coming into leaf or flower. These differences in seedlings may be seen on an extensive scale, in every hawthorn hedge and oak wood; and, in a more limited way, they are exhibited in seedlings of different sorts of evergreens, such as the arbutus, *Q*uércus *I*lex, Portugal laurel, Magnòl*ia* grandiflòra, &c. The causes of this difference never have, and, probably, never will be, discovered; but, nevertheless,

any facts which bear on the subject are worthy of record. Thus, it has been found that the severe frost of last winter produced a much more injurious effect on the narrow-leaved varieties of *R*hododéndron pónticum, such as *R.* p. salicifòlium, than on the varieties with broad leaves. The same remark applies to the narrow-leaved varieties of Magnò*lia* graudiflòra, M. g. lanceolàta having had the foliage more injured than any other variety.

It is worthy of remark, that all deciduous trees and shrubs of the colder parts of North America, that had ripened their wood, have escaped wholly unhurt; while some natives of Siberia, such as Lonícer*a* tatárica, though, when in a dormant state, they are capable of resisting the most severe cold of the British winter, were, from being in a growing state when the severe frost suddenly took place, severely injured. Even the evergreen magnolia of North America, M. grandiflòra, in places where it was exposed as a standard tree, in the free air of the climate of London, only had its leaves injured, and that, in most places, but partially; the buds having broken out in the course of the summer, in every case that we have seen or heard of. On dry gravelly soil, in Hertfordshire, such as at Totteridge and Cheshunt, even the leaves of standard evergreen magnolias have escaped without the slightest injury; thus placing the hardiness of this fine tree beyond all doubt. Most of the beautiful species of Mahòn*ia* (evergreen berberries), from California, have also stood the winter, without their beautiful foliage having sustained the least injury. Gárry*a* ellíptica, an evergreen from California, proves to be of the same degree of hardiness as the common laurustinus. *Aúcuba* japónica, like many other Japan plants, ligneous and herbaceous, proves to be quite hardy. Wistàr*ia* sinénsis, Magnò*lia* conspícua, and Illícium *a*nisàtum, from China, and Chimonánthus frágrans from Japan, are also as hardy as any of our natives, and will, in consequence, in all future time, prove conspicuous ornaments in British gardens. The lesson which the young gardener has to learn from these facts is, that it is not enough for him to know the general principles of plant culture, as taught in books, and practised in British gardens; but that it is nearly equally necessary for him to have a knowledge of the geographical range, and of the soil, and the elevation above the sea, as far as these can be obtained, of every foreign plant which is committed to his care. We acknowledge that it is not easy for him to procure this information, unless he has access to local Floras, or to the botanical periodicals, as published; but he will find a help of some importance in our Floricultural Notices, and everything that he could wish for on the subject, as far as hardy and half-hardy ligneous plants are concerned, in our *Arboretum Britannicum*. Many New Holland plants endure our winters

when they are moderate, with the shelter of a wall; but all those which do, at least as far as our information goes, are found beyond 33° of south latitude: where, on the more elevated parts of the country, snow often lies for weeks, and ice is frequently met with of from a sixteenth to an eighth of an inch in thickness. Most plants from the Cape of Good Hope are more tender than the New Holland plants, although indigenous in the same latitude; but the reason is, the plants from the Cape of Good Hope are chiefly from the immediate vicinity of Cape Town, which, with the exception of Table Mountain, lies low, and hence the mildness of the climate and tenderness of the plants. In general, whether we take the northern or the southern hemisphere, we must look either to high latitudes, or high elevations and low latitudes, for plants which will endure the open air in Britain.

In the *Hortus Britannicus*, and in similar catalogues, the young gardener will find one country mentioned as the native place of each particular species. This is all that could be done in the restricted limits of a catalogue, and is, so far, of great use; but, if it could be accomplished, the entire range of the plants, both geographically and physically, ought to be made known. This point, we think, ought to be attended to, in the naming of all species in botanic gardens; at all events, to a greater extent than it is at present. For example, the elevation in feet, and the latitude in degrees, might often be given, in addition to the name of the country, and such words as woods, meadows, marshes, &c., might often be introduced. To stimulate young gardeners to acquire this kind of knowledge, we recommend all their employers, and others, who ask them the name of any plant, to ask also for its native country, and the kind of habitat in which it is found.

Among the inventions of the year, more or less applicable to garden purposes, Joyce's stove for producing heat without smoke, and Dr. Arnott's stove for regulating the consumption of fuel, and preventing the iron casing of the stove from ever being heated to a higher degree than the temperature of boiling water, stand conspicuously forward. Joyce's stove, of which notices will be found at p. 57., p. 95., and p. 302., when first made public in December, 1837, created an extraordinary sensation, from the products of combustion containing, to all appearance, no carbonic acid gas and no visible smoke: the vapour which escaped from it was also found to be tasteless. In consequence of these properties, it was thought that this stove might not only be employed in plant-houses, but even in living-rooms, without the use of chimneys: and it was considered particularly adapted for small rooms or cabinets having no fireplaces; for carriages; for water-closets; for occasional use in bed-rooms; and, as the

stoves are quite light, and portable by hand from one part of the house to another, for communicating extra heat to any room or part of a house, at a few minutes' notice. The fuel is burned in a vertical cylinder, three or more inches in diameter, and eighteen inches or more in height; the air which supplies combustion entering in at the lower end of the cylinder, and the products of combustion escaping at the upper end. Attached to the upper end is a regulator, for adjusting the escape of vapour, and consequently the rate of combustion, to the heat required. On applying the mouth close to the upper orifice of the cylinder, and inhaling the vapour which proceeded from it, nothing offensive whatever could be perceived. On December 5. 1837., when the stove was exhibited at the Horticultural Rooms, in Regent Street, it was seen by from 50 to 100 persons, perhaps more; a number of whom, as well as ourselves, inhaled the air or vapour which escaped by the upper orifice or chimney of the tunnel, and none of us experienced the slightest inconvenience from doing so. The merits of the stove were lauded to the skies.* The inventor informed us that about this time he was offered 100,000*l.* for his invention; but he had already made his arrangements, and formed a partnership with Mr. Harper, and hence the apparatus is commonly called Harper and Joyce's stove. The chemical world, after being puzzled for some weeks, in endeavouring to discover what description of fuel was used, were at last informed that it was charcoal prepared in a particular manner, and it was soon ascertained that this preparation consisted in burning it more thoroughly, and afterwards saturating it with an alkali, by steeping it in lime water. The stove now suddenly fell in public estimation, and was decried by some as a deception, and asserted by others to be little more than a common charcoal stove. The fuel was analysed by various chemists. One of the stoves was sent to Paris, and there an analysis of the fuel was made by M. Gay-Lussac, and reported on to the Institute. This report was dated April 9.; it was published in England, in the *Athenæum* for April 28. 1838, and from that report the following is an extract.

"The fuel employed [in Joyce's stove] is a very little charcoal, impregnated, it is said, with carbonate of soda, to retain the carbonic acid produced in burning. I have found an authentic specimen of this fuel to contain, carbonate, not of soda, but of potash, yet in so minute a quantity, that I am certain it

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* Lord Brougham is said to have exhibited one on his breakfast table every morning; to have carried it about with him in his carriage; and to have pronounced that its inventor would be inadequately rewarded by the transfer of the national debt to his name." (*Mech. Mag.*, May, 1838, p. 73.) We expressed ourselves in almost an equally sanguine manner; questioning "if any thing so remarkable had occurred, in a practical point of view, since the invention of gunpowder." (p. 57.)

does not amount to one four thousandth part of the weight of the charcoal; hence it burns with as much facility as the charcoals of other light woods.

"It is therefore quite evident, that this charcoal must diffuse in the apartment as much carbonic acid during its combustion, as an equal weight of any other charcoal, that it must vitiate the air in the same degree, and that the same accidents may be produced by it as in other cases; it is equally evident, that it can produce no more heat than the same quantity of common charcoal, as it contains no more combustible matter."

M. Gay-Lussac, having ascertained that the combustion of this charcoal produced no unpleasant odour, next tried some experiments to discover the cause of this, and he found it to be, that it was prepared from fir-wood. He therefore prepared some charcoal from pieces of deal; and the result was a very light, and sensibly more alkaline, charcoal, than that employed in Joyce's stove. The economy of Joyce's apparatus, M. Gay-Lussac observes, cannot be disputed; since it diffuses all the products of combustion throughout the apartment in which the stove is placed: but he adds that this economy is gained at the expense of vitiating the air of the apartment.

Soon after the publication of M. Gay-Lussac's report, the subject was brought before the Westminster Medical Society, by Professor Everett, whose analysis agrees in every respect with that of M. Gay-Lussac. He also states that he discovered the prepared fuel "to be only well-burnt wood charcoal, with, perhaps, a little additional alkaline carbonate; not containing, as common charcoal often does, portions of wood half-charred, which, when the charcoal is lighted, give off some smoke and certain vapours irritating to the eyes and nose; but, as respects the quantity of carbonic acid and heat produced during the burning of a given weight of this, and the same weight of well-prepared charcoal, there is no appreciable difference." (*Mech. Mag.*, vol. xxix. p. 75.)

About the same time Joyce's stove was exhibited at a meeting of the Royal Society of Edinburgh; when, in order to place the deleterious effects of the fuel beyond all doubt, Sir John Robison, one of the secretaries, held a lighted taper above the orifice whence the products of combustion escaped, when, notwithstanding the absence of smell from the vapour, and its being quite clear and tasteless, the taper was speedily extinguished.

It is stated in the *Mechanic's Magazine*, on the authority of Mr. Everett, that, "as soon as Mr. Harper, Mr. Joyce's partner, was acquainted with the positive results arrived at by Mr. Everett's investigation, he expressed his determination to attach to all stoves which he should in future sell, contrivances for carrying out of the apartment all the products of combustion; and that Mr. Everett produced a box, or stove, where this was already effected. He farther begged to say that Mr. Harper expressed his readiness to adopt any suggestions which might tend to avoid

the slightest injurious effects arising from the application of the invention."

After all the experiments that have been made by French and English chemists on the fuel consumed in Joyce's stove, nothing ever surprised us more than a certificate, a copy of which we give in a note* below, by Professor Brande, of the Royal Institution, stating, on the authority of experiments made in his presence, by Professor Cooper, an eminent consulting chemist and chemical lecturer, that Joyce's stoves "may be employed with perfect security for all the purposes for which they have been proposed."!! (See the certificate below.) It would appear from this, that the common charcoal burnt in chafingdishes, by which persons are so frequently suffocated, is a very different article from pure charcoal; which, according to Mr. Cooper's experiments, will produce, when burned, a little less than two cubic feet of carbonic acid gas per ounce. Mr. Cooper further states that two of Argand's lamps of the ordinary size, burning together, will produce nearly as much carbonic acid in the same time, as one of Joyce's stoves, the internal cylinder of which is 6 in. in diameter, and 15 in. high, and which will warm an apartment, containing about 2000 cubic feet of air! (See Cooper's *Report*, a copy of which is delivered by Mr. Harper to purchasers of Joyce's stove, and which will be found entire in the fifth and last volume of the *Architectural Magazine*.) It thus appears, that, if we can make sure of having pure charcoal, Joyce's stove may be employed for heating any kind of apartment, and the whole of the products of combustion may be allowed to escape into that apartment, with as much impunity as are the ordinary products of lamps and candles.

* "Having been present at the experiments made at Mr. Cooper's house, with a view of determining the degree of deterioration which the air suffers by the employment of Joyce's stoves in close rooms, and having examined, in conjunction with him, the composition of the atmosphere under such circumstances, I can certify, that, after burning for twelve hours in a close room of the dimensions above stated, less than one per cent of carbonic acid was, in all cases, found in the air of the room; that such proportion of carbonic acid cannot be considered as deleterious, or in the least degree dangerous, in reference to respiration; that it falls short of the relative quantity of carbonic acid found in crowded and illuminated rooms, or in buildings in which many persons are congregated, such as churches, theatres, and assembly rooms, in which ventilation is generally imperfect, and in which, as far as my experience goes, the relative proportion of carbonic acid always considerably exceeds one per cent. I am therefore of opinion that the said stoves, which are so constructed as to consume only a little quantity of pure charcoal in a given time, may be employed with perfect security, for all the purposes for which they have been proposed, and I consider the grounds of this opinion sufficiently detailed by the experiments above given.

"*London, June* 14. 1838. (Signed) W. Thos. Brande.

"To Mr. Harper, 58. King William Street, London Bridge."

With respect to the use of Joyce's stoves in warming plant-structures, there can be no doubt that they may be employed with perfect safety; an excess of carbonic acid gas being much less injurious to plants than to animals; but, the expense of charcoal being so much greater in this country, than that of any other kind of fuel, such stoves can only be recommended for plant-cabinets; and there they ought always to be accompanied by water, so as to communicate moisture to the atmosphere as well as heat. For this purpose, copper water basins are sold along with the stoves.

The conclusion to be drawn from the history of the stove up to the present time appears to us to be, that it is a more safe, neat, and economical apparatus for burning charcoal in apartments, than any of those hitherto in use; and that, if the charcoal have been properly burned, and no more fuel be employed in a room, than is necessary during a London winter to raise it to the temperature of 60°, the whole of the products may be allowed to escape into the apartment, without greater danger than attends the use of several lamps in rooms containing several persons. With the safety pipes for carrying off the products of combustion, either common or prepared charcoal may be used; but, in this case, great part of the heat, perhaps one half, must necessarily escape by the pipes out of the room. In no mode of employing charcoal, however, can the ventilation be so good, or the atmosphere of the room so healthy, as when open fire-places are used.

In the course of the summer of 1838, Mr. Joyce applied charcoal in a copper stove, for the purpose of generating steam; the steam-tube serving at once for circulating the steam, and conveying away the products of combustion. The object of this invention is to form a salutary heat for plant-houses. We have given an account (p. 370.) of this apparatus and its action, as examined by us in Mr. Joyce's own garden; but here, as in most other cases of the use of this stove for gardening purposes, the expense is the greatest objection. Mr. Harper, since he became sole proprietor of Mr. Joyce's patent, has also contrived a mode of generating and circulating steam, and also of heating and circulating water, by the application of Joyce's stove; and these apparatuses he applies to culinary purposes, and also to the heating of plant-houses. We have seen an apparatus of this sort erected in Mr. Harper's own green-house, at Kensington, which has a very neat appearance, and answers admirably, as far as the production of a genial moist heat is the object in view.

Dr. Arnott's stove is an invention, or rather perhaps an improvement on former inventions, of the merits of which there can be no doubt. It is described in p. 302., though the engraving there given does not exhibit a correct view of the proportions of the different parts of the stove, as adopted by the manufacturers

of it for the public. The stove consists of two parts: a firepot, or firebox, made of fire-brick or fire-stone, with a grating in the bottom, in which the fuel is consumed; and an iron case enclosing the firepot, but at the distance of some inches from it on every side. The process of combustion is carried on in the firepot, the sides of which being nonconductors, the fuel is thoroughly consumed. The smoke and other products rise into the body of the stove, give out their heat through its sides and top, and escape by a small pipe to the nearest chimney. The progress of combustion is regulated by a thermometer, or by an expansion rod, in such a manner, as that no more fire is produced, than is sufficient to raise the casing of the stove to the temperature of boiling water.

The characteristic of Arnott's stove then is, that the supply of air to support combustion is regulated with the greatest nicety by a thermometer or expansion rod; or, where the greatest degree of nicety is not required, by a valve connected with a screw, which can be adjusted by hand at pleasure, so as to burn the fuel with greater or less rapidity, according to the quantity of heat required to be produced. There can be no doubt that when this stove is properly constructed, and more especially when there is an ample space allowed between the firebox and iron casing, in order to allow the products of combustion to give out their heat before escaping by the chimney pipe; it will produce more heat from a given quantity of fuel than any other stove at present in use, except that of Mr. Joyce. For this reason, and because, if properly managed, it will never raise the temperature of the case much above that of boiling water, we think it particularly well adapted for small green-houses and plant-cabinets, where the object is to do little more than keep out the frost; and we have shown in our *Suburban Gardener* (p. 688. fig. 295.) how it may be formed into a small hot-water apparatus, in order to insure a moist heat. For heating dwelling-houses, however, this stove has the great disadvantage of providing no means for ventilation. For all carefully constructed apartments, therefore, it is totally unfit, unless some efficient means for ventilation be put in operation along with it; but, though such means have been described by Dr. Arnott in his book, and attempted in various ways, and by various persons, we have not seen or heard of a single instance in which the result has been successful. For imperfectly constructed houses, in which the joints of every door and window are thoroughfares for the weather; and especially for old roomy cottages, this stove is admirably adapted, because if anthracite coal is used, it requires very little attention, and burns very little fuel. It is a remarkable fact, that the inventor of this stove, though a scientific man, and well acquainted, as his writings show, with pneumatics and every other branch of na-

tural philosophy, should yet be so far infatuated with his invention, as, in his publication describing the stove, *On Warming and Ventilating, with Directions for making and using the Thermometer Stove,* reviewed p. 154., to argue in favour of so slight a degree of ventilation, that it would be next to death to many persons in this country to endure it. The merit of first having pointed out these great errors in Dr. Arnott's otherwise very ingenious work is due to Mr. Jeffrey, the inventor of the respirator; whose articles on the subject in the *Medical Gazette* are, with that gentleman's permission, in great part copied into the fifth volume of the *Architectural Magazine.* They are of intense interest, and well deserving the perusal of all who seek for information on the subject of ventilation. Dr. Arnott is at present employed by government to warm the long room of the London Custom House, and we hope he will there introduce some mode of ventilating as well as warming, which will be satisfactory to the public. We have seen at the doctor's own house, a model of an apparatus to be worked by clockwork, which will act on the principle of Jeffrey's respirator, and which, if it does not prove too expensive, promises to answer well, even for small rooms; but we consider it unsafe to recommend this, or any other apparatus, before having seen it in use for some time.

Thus, then, the two principal inventions of 1838, applicable to gardening, appear, when carefully examined, to be of but moderate value with reference to that art. Joyce's stove, it can never be worth while to employ in plant-houses, except very small ones, because it will cost more than the ordinary modes of heating by flues or hot water; and Arnott's stove can only be employed in very small green-houses, because its heating powers are of a very limited nature, and by no means adequate to supply the waste of heat from a large surface of glass, during a long and severe winter's night. To fit it for this purpose, it must be made on a very large scale, or several stoves must be employed in the same house; and to have recourse to either of these modes would be found much more expensive than a system of smoke flues or hot-water pipes. In the warmer parts of England, one of these stoves, or of Joyce's, might be employed to keep out the frost from an old-fashioned green-house or an orangery, with an opaque roof; but where there is a roof wholly of glass, we would by no means recommend trusting to either of them. Any gardener who can calculate how many superficial feet of hot-water pipe will be required to heat a house, may easily calculate the number of superficial feet of the iron casing of Dr. Arnott's stoves that will be required for the same purpose; because the heat produced by the two surfaces is, or ought to be, of about the same degree.

We cannot refer to any remarkable feature, as characterising the proceedings of any of our institutions for the promotion of

horticulture, during the past year; or, at all events, we know of none of a favourable description.

Some attempts have been made by different parties, to establish botanical gardens in the neighbourhood of the metropolis; but none of these have hitherto been attended with any success, notwithstanding the desirableness of such an institution, or even two or more of them, for the suburbs of this immense metropolis. One of these schemes is for forming a botanic garden in the central circle of the Regent's Park; where it is well known to gardeners, that no plant of any delicacy will thrive in the open air, on account of the smoke. The soil is also peculiarly unfavourable, being a strong clay, on a retentive bottom. We allow, however, that palms, ferns, and other plants, will thrive under glass in the Regent's Park, as well as they do under glass at Messrs. Loddiges, at Hackney: though we are far from considering this enough to justify any scheme, the object of which is to produce well-grown plants of all kinds. The following is an extract from the prospectus issued by the projectors of the gardens: —

The garden is to contain "extensive botanic gardens, library, museum, studios, hot-houses, conservatories, &c. The ground, which contains 18 acres, will be appropriated for the reception of the plants indigenous to the several divisions of the globe, and disposed in imitation of the gardens in different countries. Conservatories, which are so essential in this country, will be erected upon a scale commensurate with this undertaking. Extensive lawns, terraces, and promenades, interspersed with parterres, fountains, statues, vases, and other works of art, will be introduced. There will also be a lake of sufficient magnitude for the growth of aquatic plants, and likewise artificial rocks, for the disposition of mountainous productions."

The ignorance of the subject displayed in the above extract, will be sufficiently obvious to those who possess experience in matters of this kind. Nevertheless, the prospectus contains a long list of names of the nobility and gentry, with the queen as patroness.

The piece of ground proposed to be occupied as this garden is well situated for a sort of modern Ranelagh, such as Mr. Walker, the projector of the Pantheon Bazaar, proposed to form in it some years ago; but for a general botanic garden, enclosed as it is on three sides by houses, which, though at some distance are constantly on the increase, it is totally unfit.

The immense amount of prizes which continue to be given away by the provincial horticultural societies is not a little surprising. Among the smaller commercial florists, the contention for these prizes amounts almost to a species of gambling; and, like that passion, must sometimes, we fear, lead to unfair practices. This has always been the case more or less with prize exhibitions; but as horticulturists become more refined, and the consciousness of having produced what is in itself excellent shall be felt to be a sufficient reward for having done so, the baser feelings will

give way. We are happy to see indications of this in different parts of the country, by gentlemen and their gardeners, and the more respectable of the nurserymen, sending articles for exhibition, but not to compete for prizes. This can hardly be expected from small commercial gardeners; who, in many cases, require the stimulus of a prize to compensate them for the loss of their time, as well as for the injury sometimes done to their plants. As to a gentleman himself competing for a prize, we cannot consider it as proper, and consistent with high feeling; since the real merits which the plant possesses must, in almost every case, be due to the care and skill of his gardener.

Having noticed what we think may be considered the leading gardening features of the year, we shall next glance at those of a less prominent nature.

History, Description, and Statistics. — Under this head, in our table of contents, will be found the names of some villas of more than ordinary interest, among which may be mentioned Hendon Rectory, Mrs. Lawrence's villa at Drayton Green, the Duke of Bedford's, at Camden Hill, and the garden of Mr. Abel Ingpen, in Upper Manor Street, Chelsea. Hendon Rectory is remarkable for its pine and fir trees grown in pots; and for the strictly gardenesque manner in which the greater number of the plants are cultivated, as well as for general high keeping. Mrs. Lawrence's villa affords a most exquisite example of the effect of small groups in increasing the apparent extent of a place, and in filling it with a variety of views; and the keeping is of the very highest kind. Here also is exemplified the union of statuary with picturesque groups of trees and shrubs; which, though it may seem to a stranger at first sight to distract attention, and destroy repose, yet to the proprietor, or to any person well acquainted with the spot, doubtless enhances the interest; and the perfection of all the details is such as to disarm criticism. At the same time, we consider it necessary to remark, that this manner of introducing statuary in natural-looking groups of trees and shrubs cannot be justified on sound principles of composition, because it destroys unity of expression. It does so in a small suburban garden, and it would equally do so in the most extensive park, or in the finest scenery in uncultivated nature.

The only garden in which statuary can be freely and abundantly introduced, is one in the geometrical style, and bearing an architectural character in the general disposition of the surface into platforms and terraces, the edgings to the walks, the margins of the ponds, and, in short, in all the forms and lines. However, as we have remarked in p. 322., great allowance must be made for individual taste, and for that devotion to the subject, which leads a person to think that they can never do enough. In viewing the gardens of other persons, we think only of

the effects produced; but in our own we are too much occupied with the details, too anxious about the means of attaining excellence, to be able to stop when we have accomplished it, and hence we either do not go far enough, or we go too far. That just and correct taste which tells the operator when he ought to stop, and when he ought to go on, is much less the result of a richly stored imagination, and a strong feeling for the beautiful or the artistical, than it is of sound judgment and practical experience; and this impartiality of judgment is much more likely to be found in a stranger who sees the place for the first or second time, than in either the operator or the possessor, or in any of their intimate friends.

The garden at Bedford Lodge possesses little beauty in point of design, but it is a useful example on account of the mode in which it is managed, so as to present a splendid display of flowers, during a certain season of the year. Mr. Ingpen's garden is a gem of great beauty and value, as showing how many hundred sorts of plants may be cultivated and brought into flower in the course of the year, in a mere speck of ground; affording at the same time occupation to the owner throughout the spring, summer, and autumn, during the hours not spent in business.

In our forthcoming volume, we hope to be able to describe three suburban gardens which we consider to be very instructive examples. The first of these is Mr. Harrison's at Cheshunt, which forms a striking contrast to Mrs. Lawrence's villa at Drayton Green; while, at the same time, in its natural features it closely resembles it. In both, the extent is limited, and the surface of the ground is nearly flat; and, in both, the house has its living-rooms low, rather than elevated and commanding. In both, the variety is produced by innumerable groups, on a lawn facing the drawingroom front; but at Cheshunt the groups of trees and shrubs are wholly without statues. A neutral observer might profit much by studying the different effects produced on his mind, while walking through these two gardens. The next place that we should like to describe is Mr. Harris's of Kingsbury. This gentleman has only been a worshipper at the shrine of Flora for two or three years; but, during that short period, he has astonished every body by his collections of the rarest plants, more particularly those of the tropics. Mr. Harris's collection of *Cactàceæ* we believe to be altogether unrivalled; he is almost equally rich in *Orchidàceæ*; and he has many stove dicotyledonous plants of the greatest rarity; some not having been yet named by botanists, and others not having flowered in England. The third place to which we allude is much smaller than either of the preceding: it is situated at Blackheath, not far from Lee in Kent, and belongs to Mr. Sheepshanks. This gen-

tleman is also a convert of not more than two years' standing; but he assists, generally from morning to night, in the cultivation of the flowers with his own hands, and produces most extraordinary specimens. Such a gentleman may honourably compete for prizes with any gardener whatever.

Among the gardens described in this volume, which are at a distance from London, the most remarkable is, without doubt, that of Hoole House, near Chester. The idea of imitating alpine scenery on a large scale is new in gardening, and it has been carried into execution at the Hoole, under Lady Broughton's directions, with the most complete success. In general, artificial rockwork presents the appearance of a mere heap of stones, without any attempt at stratification, natural expression, or appropriate character; but here we have the most marked expression of alpine character completely worked out. The contrast between the level flower-garden, with its beds all circular, and all of the same size, and the rough irregularity of the surrounding rockwork, is at once striking and pleasing. A collection of the more beautiful alpines is grown among the rocks, and another of the finest garden flowers in the circular beds. It has been objected by some to the rockwork at the Hoole, that it has been introduced into a rich flat country, and on a flat surface, where no such rockwork was ever known to exist. This would be a valid objection, provided the rockwork were to be seen in connexion with the general scenery of the country by which it is surrounded; but, on the contrary, the rockwork scene here is altogether an episode, to be seen and enjoyed by itself, and the more powerfully it contrasts with the surrounding country, the greater will be its effects, both on the mind of the spectator, who sees it for the first time, and on the mind of a constant resident. No one would ever think of introducing such rockwork in a mountainous country, among the Cumberland and Westmoreland lakes, or in the Highlands of Scotland, for example, where it would be considered quite natural: but how delightful it is at the Hoole, where it contrasts so powerfully with every thing around it; and would be in Middlesex, or any other flat country, for the same reason! The only objection that we have to the rocky scenery at the Hoole is, that in some places it appears mixed up with full-grown trees, which, being higher than the rockwork, have a tendency to destroy the illusion, by deranging the scale of the rocks. For this reason, no trees, or other objects higher than rockwork of the kind at the Hoole, ought to be observed in the same scene with it, more particularly when looking from within.

The account of the gardens of Herefordshire, by J. B. W. (p. 209.), is interspersed with many excellent remarks on the subject of culture; and the notes on the Brighton and Shoreham gardens (p. 497.) show what may be done by amateurs, even

in a most unfavourable situation. Mr. Nesfield's visit to Allanton (p. 15.) will be read with interest by the admirers of the late Sir Henry Steuart; as will the notice of the gardens of Norman M'Leod, Esq., in Morayshire, by those who delight in seeing the luxuries of gardening extending in all directions. The state of gardening in the south of Ireland (p. 65.) affords but a melancholy picture of that country; but we may be allowed to hope, that, from the extraordinary attention now paid by government to that part of the empire, improvement will at no distant time become obvious throughout the country. Dr. Lippold's account of the principal villa of the Island of Madeira is interesting, as giving some idea, to a person who has never been out of Britain, of terrace culture, combined with irrigation; and also as showing the thriving state of the trees of Australia, and those of most other warm countries, in the fine climate of Madeira. Among other notices of foreign villas, we must not omit to call attention to that of the garden of M. Rosenblad in Stockholm (p. 199.); to a visit to Hammerby, the country seat of Linnæus (p. 98.); to the state of gardening in the United States (p. 97.); and to the account of the Pennsylvanian horticultural exhibition (p. 188.). An account of the state of gardening and planting in Greece, which we have recently received from M. A. Baumann of Bollwyller, from the nurseries at which place many trees and shrubs have been supplied to the government of King Otho, is necessarily deferred to our next volume.

The Science of Gardening. — Nothing, as far as we are aware, has been added to what was previously known on this subject; but some useful articles on different points will be found in this Magazine, and also in Paxton's *Magazine of Botany.*

Among the articles in our own volume, we may refer to that on the germination of seeds (p. 74.) as highly instructive; and we much wish that the writer would favour us with some further communications on the same subject. Mr. Niven's experiments (p. 161.) and Mr. Munro's conjectures (p. 118.) also deserve attention. In Paxton's *Magazine of Botany*, a work which has greatly improved both in its plates and letterpress during the last three months, there is a series of articles on the influence of light on plants. In the first article (vol. v. p. 110.), it is argued that it is not sufficient to ascertain the soil and temperature in which plants are found growing in a wild state; but that the other circumstances of the climate in which they are found are often of nearly as great importance as the soil and temperature. "The gardener or amateur," says the writer, "naturally enquires whether the new plants which have been sent him were collected in tropical, temperate, or cold regions, in order that he may determine whether they should be placed in the stove, the greenhouse, or the open ground; but he forgets to seek information

as to the humidity, dryness, lightness, or shadiness of the localities in which they were found. Hence, plants of the most contrary habits are crowded together in our plant-houses, or all exposed to an equal degree of the influence of the sun in the open garden." The writer then goes on to show that succulent plants, and those "which produce a great abundance of leaves, and consequently expose a large extent of leafy surface to the atmosphere," require intense light; while those which have scanty foliage, or leaves with very porous surfaces, and which are consequently liable to great evaporation, are generally found in shady places. The gardener, if he be well acquainted with physiological botany, may often determine from the structure of the plant, what degree of light is best adapted for it; but, in default of this knowledge, he must have recourse to the collectors who discovered the plants in their native habitats. In the second article (p. 131.), the importance of light to the *Cáctus* tribe, and to the genera Mesembryánthemum, Agàve, Stapèl*ia*, &c., is pointed out, and enforced by stating the fact (by no means an uncommon one), of large plants of cactuses being found growing in the back part of stoves, where they get no direct light, and where, though they have attained a large size, they show no signs of flowering; while the same species in the front of a stove, and trained close under the glass, will flower profusely, when of a comparatively small size, and at an early age. In a third article on the same subject (p. 155.), the injurious effects of the sun's rays on various species of Cape heaths under glass are remarked on; and, as we have stated (p. 476.), a canvass, for occasionally shading these plants, is strongly recommended. The influence of light on orange trees, the writer finds a matter of greater difficulty to determine; but he thinks the houses intended for this tribe should admit more light than they generally do at present, and that the plants should be retained in them throughout the year. The fourth article (p. 179.) treats of the camellia with reference to light, condemns the practice of growing it in mixed collections, and recommends a shaded position, in which the camellias "are naturally, or can be artificially, screened and protected from the more violent rays of the sun." Pelargoniums, like the heath and the camellia, require a house for themselves, but they must be supplied with a great degree of solar light. Under the head of miscellaneous green-house plants, the writer classes the genera *Acàcia*, Bánks*ia*, Pròte*a*, Fúchs*ia*, and "all those green-house plants which possess no affinity in character or habit" with the five classes already treated of; viz. succulents, heaths, orange trees, camellias, and pelargoniums. Most of the plants of this miscellaneous class will thrive best in a house where abundance of light is supplied. Objections, it will be said, will be made to having five houses for five kinds of green-house plants,

and a sixth for miscellaneous ones, on account of the expense; but in that case, rather than sacrifice the collections by growing so many kinds together, it is recommended to confine the attention to the culture of plants of the same habits; or, if the greenhouse should be long, to divide it by glass partitions. On the whole, we consider these articles as among the best which have appeared in Paxton's *Magazine*.

It is gratifying to observe, that, in the writings of young gardeners, and especially in the discussions carried on at such meetings as the West London Gardener's Association, attempts are making to found horticultural practices on nature and reason; and not, as hitherto, on mere empirical experience. It is easy to foresee, that, in a few years, this tendency to progress in scientific knowledge will render the greater number of existing books on the practice of gardening (our own *Encyclopædia* not excepted) in a great degree defective. In treating of the culture of any particular plant, in future, the first step will be to trace its geographical range, and its physical history in a state of nature; the next, to show how these conditions may be imitated by art; and the third, how particular products of the plant may be increased, or may be modified, so as to suit the purposes for which it is grown. All culture must necessarily be either imitative, in which the object is to produce the plants in gardens as nearly as possible in the state in which they are supposed to be found in wild nature; or ameliorative, in which the object is to produce the plants, or a particular part or parts of them, in a state adapted to some want or wish of man in a state of civilisation. We do not say that this mode of treating of the culture of plants will occasion a revolution either in gardening or in gardening books; on the contrary, the greater part of modern practice will be found to remain as it is; but, every part of it will be founded on reason and nature, and many new points, which, taking this view of the subject, it will be found necessary to attend to, will occur, which were never thought of before. The father of this mode of treating horticultural subjects, as far as we have been able to ascertain, was the late Professor André Thouin of the Jardin des Plantes, as appears by the *Cours de Naturalisation*, &c., published by his nephew Oscar Le Clerc. In England, about the commencement of the present century, the late Thomas Andrew Knight pursued the same system in his papers in the *Philosophical Transactions*, and subsequently in the *Transactions of the Horticultural Society;* though Mr. Knight, for the most part, reasoned from the structure and physiology of plants generally, and from experiment, rather than from the habitats of the particular species which he treated of. After Mr. Knight followed Dr. Lindley, in the introduction to his father's book, the *Guide to the Orchard and Kitchen-Garden*,

published in 1831; and unless we refer to a short article in our *Encyclopædia of Gardening*, second edition, published in 1824, entitled, "Origin of Culture, as derived from the Study of Vegetables," we scarcely know of any other author who has made any attempt of the kind.

In the *Penny Cyclopædia*, the gardening articles, as well as the botanical ones, are understood to be written by Dr. Lindley, and they are all treated scientifically. These articles alone, in our opinion, give this *Cyclopædia* a decided claim to the preference of the gardener, independently altogether of its extraordinary excellence in other respects, and its low price.

Mr. Westwood's valuable papers on insects injurious to gardens are continued through the present volume; and, under our articles headed General Notices, will be found many interesting paragraphs on the subject of vegetable physiology, and on other topics which belong to the science of gardening, for the details of which we can only refer to the table of contents.

New Agents of Culture. — A simple and economical trap for catching birds is described in p. 504.; a mode of protecting grapes from sparrows by means of black thread is noticed in p. 529.; and a new turf-racer and verge-cutter in p. 176. A flower-pot, with exterior ribs, or bands, pierced with holes for the insertion of wires, so as to form a circular trellis or cage for training climbers, has been invented by Mr. Halliday, and will be figured and described in our next volume, as will a new ventilator for hot-houses, by Messrs. Daft, hot-house builders.

Joyce's mode of heating by steam, described in p. 370., and Corbett's mode of heating by circulating hot-water in open gutters, described in p. 147., may be referred to, though in our opinion they are neither of them likely to prove of any value. Gas tar has been proved not to be injurious to trees of the commoner kind, (see p. 542.); and may, therefore, sometimes be employed to deter animals from barking them, or rubbing against them. At best, however, it is but a palliative for an evil, which can only be effectually prevented by proper tree guards, such as that invented by Chas. Lawrence, Esq., and described in our preceding volume. Jauffret's new manure (p. 184. and 299.) may be referred to, not as deserving to be manufactured in this country, where manure is comparatively abundant, but as affording some useful hints for the management of putrescent manures generally. At p. 341. something further will be found on dry-rot, and on the Kyanising process; though the latter promises to be superseded by the use of the sulphate of copper (see *Architectural Magazine*, vol. v. p. 284.), which does not cost above a tenth part of the expense of the corrosive sublimate. A bituminous mastic or cement, under the name of asphalte, has lately been introduced from France; and, among numerous other

uses, such as covering roofs, lining water-cisterns, &c., it has been recommended for forming garden walks. The material is laid down in a hot and semifluid state, and having been brought to the proper form of surface, is next strewed with fine gravel or sand, or broken fragments of stone, which are firmly beaten into it with wooden mallets. It appears to us, that this mastic promises well for walks in districts where gravel is scarce, or where the surface is so steep that it is liable to be washed away by rains; but it has not yet been fairly tried for this or any other purpose in England. Dr. Ure says (*Dictionary of Arts*, &c., article Bituminous Mastic) that boiled coal tar, with dry chalk, or bricks ground and sifted, will, when well mixed together, and heated in a cast-iron boiler, answer equally well as the asphalte received from Puy de Dome, in France; but in all artificial compositions of this kind, the smell is most offensive at first, and continues so more or less for a year afterwards, while the true asphalte of Seyssel, whether in the process of preparation, or when complete, has no smell at all disagreeable. (See on the subject of Asphalte, *Repository of Arts*, vol. x. p. 34. new series.) The preservation of iron and copper from oxidising, by a coating of zinc, is one of the inventions of the year, which promises immense advantages wherever iron is used. In agriculture and gardening, all iron implements, fences, gates, &c., may be protected by it; the zinc being reduced into powder, and then applied with oil like common paint. The infallibility of this mode of protecting iron and copper has been questioned, and we must, therefore, before finally determining on its value, wait the result of experience. (*Ibid.*, vol. ix. p. 289.) The manufacture of a fibrous substance from the leaf of the pine-apple, which can be formed into a cloth of greater fineness and delicacy than any hitherto obtained from flax, silk, or cotton, may be mentioned as a recent discovery; though it is one not likely to be of much use to the British gardener. (*Ibid.*, p. 221.) A new mode of building garden walls, with bricks moulded on purpose, the invention of Mr. Hitch of Ware, promises to be a very great improvement, by producing a better wall, with a saving of from 20 to 40 per cent in expense. There are some walls of this kind in the Royal Garden at Hampton Court, and several have been erected in the neighbourhood of London, under the direction of Mr. George Godwin, jun., architect, who has given some account of them in the *Architectural Magazine*, vol. v. p. 580. We have examined several garden walls, and also the walls of some dwelling-houses, erected of Mr. Hitch's bricks, under Mr. Godwin's directions, and we shall take an early opportunity of furnishing our readers with farther details. The great advantage which these walls promise is, a saving in the first cost, of from 20 to 40 per cent.

It is scarcely necessary to remind our readers, that but a very small proportion indeed, of the new agents of culture that are yearly brought forward, is likely to come into general use. Many of them are the inventions of persons who know little or nothing of gardening; but who, being tradesmen, think they can produce a better article out of the materials with which they are most conversant, than the gardener can out of those to which he has been long accustomed. As an example of this, we may give the metallic wire, offered as a substitute for ties made of bast matting. Cast-iron flower-pots or vases, cast-iron frames as well as sashes for growing cucumbers, cast and wrought iron wheel-barrows, &c. One of the latest attempts of this kind is what the inventors call the seed-protector; being a bottomless box of cast-iron, from 3 in. to 6 in. on the side, to be put down over a patch of seeds, and covered with a pane of glass, and, of course, a small stone to prevent this pane from being blown off, to protect the seeds from sparrows and snails. All this expensive affair is meant as a substitute for a common garden pot, which, wherever there is danger from slugs or sparrows, need only be whelmed over a patch of seeds, and taken off as soon as the plants are fairly above ground. Many kinds of plant-labels have been brought into notice, during the last ten or twelve years. The last of these, that we recollect, is what the inventors call the menogramme, which is a substitute for the common wooden name-stick, cut by gardeners with their knives out of common laths, and rubbed over on the part to be written on with a little white lead, before using the pencil. To recommend such articles is to recommend an expensive mode of doing that which has hitherto been done equally well, and much cheaper, with common materials which every gardener has always at hand. Nevertheless, it is not advisable to prevent all attempts at improvement, even though some of them should be of the most preposterous nature; because it may happen, that amongst numerous failures, there may be one successful result, which may stand the test of ages. Read's syringe is an example.

Landscape-Gardening and Garden Architecture. — There are but few papers in the present volume expressly devoted to landscape-gardening, though, in the descriptive part, there are interspersed, among the accounts of different villas, many remarks which we trust will be found useful. On garden architecture, there are some valuable papers, particularly the notice of the new forcing-houses and pits (p. 418.), the article on portable glazed structures (p. 122.), and that on the use of fire and water in forcing (p. 623.). The plan designed for the intended Leeds Zoological and Botanical Garden (p. 239.) is elaborate and ingenious; but, at the same time, we consider it in a great degree impracticable, on account of the strictly

scientific arrangement proposed for the miscellaneous collection of hardy ligneous and herbaceous plants. However proper such arrangements may be in books, they are but ill adapted for the garden, which, unless of very great extent, requires that we should divide the trees and shrubs from the herbaceous plants, and arrange each separately. It is true, that an arrangement might be formed, exactly as shown in the plan in p. 242., and the whole might thrive for a few years; but, as soon as the trees attained the height of 20 ft. or 30 ft., many of the beds of herbaceous plants would be so overpowered by their shade and shelter, and the ground so exhausted by their roots, that the herbaceous plants would no longer exhibit that health and beauty, accompanied by neatness, and bushiness, without which, a collection of herbaceous plants ceases to be gardenesque; and, in public gardens, becomes, a nuisance instead of a beauty. The hardy trees and shrubs, where there is nothing adverse in the soil and character of the surface, may be scientifically arranged, according to the natural system, by themselves; and there can be no obstacle to such an arrangement in the case of the herbaceous plants, when kept in a compartment by themselves also. The arboretum, however, in all moderate-sized botanic gardens, forms the boundary plantation, and is, of course, expected to afford shelter from prevailing winds in some parts of that boundary; and to exclude exterior objects not desirable to be seen in others: it must also be so contrived as to admit occasional views of exterior objects that are agreeable, and sometimes to form a foreground to them; and at other times it should be kept so low as to throw little or no shade on the ground. This being the case, the principle of utility requires that the strict succession of the orders, as given in books, should, when necessary, be departed from, in order to effect these purposes. Indeed, provided each order is kept by itself, it is often a matter of no great consequence what orders adjoin it.

Arboriculture.—There are a number of very interesting papers on this subject in the present volume, which may be divided into two classes; viz., those which relate to the culture of trees, and their after-management and uses; and those which record the effects of the past winter on the more tender species. Among the first, the remarks on the annual rings of a larch, by Mr. Gorrie (p. 132.), deserve notice, as showing the connexion between the increase of a tree and the seasons.

Mr. Blackadder's mode of measuring growing timber by an instrument of his own invention (p. 257.), and the specimen of his mode for valuing woodlands (p. 266.), are papers of great practical value; as is the article on the method adopted in the government plantations in the New Forest, of raising and pro-

tecting oak trees. We refer the reader to the table of contents, for the titles of the numerous remaining papers included under this head; remarking only, that the notices of the principal pinetums in Britain (p. 29.) and in France (p. 28.), which have been prepared with great care and labour, show the increasing taste, both in Britain and on the Continent, for the culture of the *Abiétinæ*.

With respect to the influence of the last winter on the *Abiétinæ*, it appears to have injured many species, but killed only a few. *Cèdrus Deodàra*, though a native of Nepal, is proved beyond all doubt to be as hardy as the cedar of Lebanon; and Araucària imbricàta appears, at all events, to be sufficiently hardy to stand through the winter without the slightest protection, both in the climate of London and that of Edinburgh. The *Abies* cephalónica, that interesting species described p. 81., is, according to the experience of Mr. Long, to whom the seeds were first sent by Major-General Sir Charles Joseph Napier, fully as hardy as the silver fir.

Floriculture. — There are a variety of interesting papers on this subject, for the titles of which we must again refer the reader to the table of contents. The article on the culture of the mignonette by Mr. Cuthill, though it may seem to treat only on a well known topic, is yet of considerable importance, since every one must have observed the bad state of mignonette plants during winter, in country gardens generally. The article on exotic ferns (p. 252.), it is hoped, may lead to an extended culture of this tribe of plants, which are rendered doubly interesting from the facility with which they can be cultivated in boxes under glass cases; or in larger houses in caves, or among rockwork, with less trouble than any other kind of plant whatever. By far the greatest extent of floricultural information will be found under our article Floricultural Notices; wherein, not only all the new plants are popularly described, but their culture is given from the different periodicals in which they have been figured. There are, in particular, among these notices, many excellent directions for the culture of Orchidàceæ, taken principally from Paxton's *Magazine of Botany*, and the *Floral Cabinet*.

Horticulture.—The most interesting circumstance which comes under this department, in our opinion, is, the spread of the culture of Mùs*a* Cavendísh*ii*, M. *Dácca*, and other dwarf species or varieties of banana. We refer to p. 58. and 105. for an account of the success with which the Mùs*a Dácca* has been cultivated in the Botanic Garden at Edinburgh, and to Mr. Paxton's communication (p. 104.) respecting his success with the M. Cavendísh*ii* at Chatsworth. We have ourselves seen the Mùs*a* Cavendísh*ii* thriving with great luxuriance in the stove of Mr. Harris at Kingsbury, in that of Mr. Harrison at Cheshunt, and

in some of the public nurseries; and we hope soon to see it at least as much cultivated as the pine-apple. Mr. Thompson's report on the fruits and culinary vegetables in the Horticultural Society's garden, will not be ready for us before January next; so that it is necessarily postponed till our succeeding volume. Some useful experience, we believe, has been gained with regard to the best manner of keeping fruits in a fruit-room. Through a great part of the late severe winter, Mr. Thompson stopped up all the windows with matting, and stuffed hay in the openings for ventilation in the roof, of the Horticultural Society's fruit-room; in consequence of which, he prevented any change of air whatever in the room, retained a temperature in it somewhat above the freezing point, and preserved his apples and pears with the same success as in ordinary winters.

Rural and Domestic Improvement generally.— Increased attention seems to be paid to procuring improved varieties of agricultural seeds of every kind, not only by the agricultural museums established in different parts of Scotland, but also by the principal London seedsmen. (See p. 531.) It is gratifying to see particular regard paid to the different varieties of wheat; for drawing attention to which, the public are indebted to Professor La Gasca, Colonel Le Couteur, M. Vilmorin, Mr. Lawson, and some others. The establishment of an English Agricultural Society, comprising the richest landowners, will, we have no doubt, contribute to the improvement of field culture in England; for which there is ample room, the greater part of English farmers not being aware that they are behind the Scotch cultivators at all, much less that they are so immeasurably distanced by them as they are. It is gratifying to us to be informed from various quarters, that the improvement of labourers' cottages is now attended to by almost every country gentleman, to a greater degree than it ever was before; because we can trace this in a great measure, as indeed is generally acknowledged, to the influence of our *Encyclopædia of Cottage, Farm, and Villa Architecture*, which continues to circulate extensively. Nutt's bee-hives have created some discussion in this Magazine, in the course of the past year; Mr. Nutt and his party contending that they prevent swarming, and fulfill all the promises held out in Mr. Nutt's book; and the other party affirming that they do not prevent swarming, and, consequently, cannot fulfill the most important of all the conditions characterising Mr. Nutt's system. It is certain, that these hives thrive very differently under the care of different persons; but, probably, this may be from comparative want of care on the part of some, and from ignorance or error on the part of others. In domestic economy, the greatest improvement is the manufacture of jam and jelly from the stalks of Buck's red rhubarb, which will prove a valuable

resource in districts where, and seasons when, currants, and the other fruits commonly used for these purposes, are scarce. Three new agricultural plants have been brought into notice in the course of the year: the *Polýgonum tinctòrium*, a native of China, which affords an excellent dye; Péganum *Hármala*, a native of Tartary, which affords a dye of a red colour, equally adapted for silk, wool, cotton, and linen, and capable of producing every shade from rose to crimson; and the *Màdia* satìva, the seeds of which afford an oil said to be fit for every purpose to which that of olives is now applied.

Garden Literature. — In some of the garden periodicals, during the past year, there has been a decided improvement. The *Botanical Register* adds to its descriptive and geographical notices of the new species which it figures, remarks on culture, propagation, &c.; and each number contains a monthly register of new plants, which have come to the knowledge of the editor; but which have not yet flowered, or which he has not yet found time to figure. Paxton's *Magazine of Botany* is much improved, both in the colouring of the plates and in the letterpress; and it is no longer disfigured with bad designs of flower-gardens and tasteless garden ornaments. There is still, however, a considerable degree of inferiority in the plates of this work, when compared with those of the *Floral Cabinet;* but, considering that so much has already been done, we trust the editor will not rest satisfied till he reaches the highest degree of perfection. The *Floral Cabinet*, during the past year, has contained some papers on the subject of garden culture; most of them by Mr. Cameron, and of a very superior description. The *Botanist* continues to be got up with the same care and neatness which distinguished its first numbers. In order to tempt purchasers, the small edition contains, every now and then, a leaf of a glossary, by Professor Henslow; and the larger edition, a leaf of an introduction to botany, it is presumed by the same scientific author. Those excellent works, Sowerby's *English Botany*, and Baxter's *British Flowering Plants*, continue their course; and as both are now not far from completion, they will soon form standard works of unrivalled excellence, and, we may add, cheapness. We cannot too strongly recommend these publications. Of the garden books which have been published in the course of the year, we may point to our own *Arboretum*, as being one of the most important. It is gratifying to us to find that it has been well received by all our more eminent public critics. It was first kindly hailed by Dr. Lindley, in the *Botanical Register*, when we began to publish it in 1835; and, subsequently, most favourably noticed by him in the *Athenæum* for September, 1838. It has been reviewed at length, and in a manner most gratifying to our feelings, in the *Quarterly Review*, the *Quarterly*

Journal of Agriculture, the *Edinburgh Philosophical Journal*, the *Times*, *Morning Chronicle*, and other daily and weekly papers, as well as by the provincial press. The *Suburban Gardener and Villa Companion*, which has also appeared during the current year, is a work on which we have bestowed much pains, and it also, we are happy to say, has been well received. Rivers's *Rose Amateur's Guide*, and Paxton's *Treatise on the Cultivation of the Dahlia*, are good practical works; and the *Sertum Orchidaceum* of Dr. Lindley, and the *Orchidaceæ of Mexico and Guatemala* by Mr. Bateman, are the most splendid botanical works of the year. One of the most practically useful books is Hood's *Treatise on Warming Buildings by Hot Water* (see p. 50.). For the agriculturist, we have Professor Low's *Elements of Practical Agriculture*, a work which gives a very complete view of the most improved kind of Scotch farming. In rural architecture there is nothing new worthy of notice; but we have drawn to a close the *Architectural Magazine;* and that work, which now forms five 8vo volumes, contains such a mass of popular architecture, that is, papers on architecture calculated for the improvement of the general reader, as never was brought together before in any one publication. We can strongly recommend it to all those who wish to improve their taste, not merely in architecture and furnishing, but even in the art of laying out grounds, as it contains much that bears, both directly and indirectly, on that subject.

Gardening and Rural Improvement in Foreign Countries. — We have very little to offer under this head. On the Continent of Europe, gardening is certainly in a far more prosperous state in Germany, than it is in any other country, notwithstanding the temporary check which may have been given to the ardour of some German arboriculturists, by the effects of the last winter on trees and shrubs forming the collections in the gardens of Berlin and Munich. We have alluded in a preceding page to the taste for gardening exhibited by a distinguished individual in Stockholm; and in a future number we shall publish an article, showing the progress now making in gardening and planting in Greece. In North America and Pennsylvania, gardening seems to be in a prosperous state, at least judging from the splendid horticultural exhibition mentioned in p. 188.

Obituary. — It is remarkable, that, as in the preceding year we lost Mr. Sabine, so in this year we have lost Mr. Knight; unquestionably two individuals who have done more for gardening in this country, than any others that either have existed or do exist. A short biographical notice of Mr. Knight, by Dr. Lindley, was given in the *Athenæum*, which we have copied at p. 303.; but Mr. Knight's active and ingenious life will be best understood from his numerous papers published in the *Philosophical Transactions of the Royal Society*, and in the

Horticultural Society's Transactions; and these, we are happy to learn, will soon be collected into one volume, and sold at the lowest possible price; so that they may come into the possession of all gardeners whatever.

ART. II. *An abridged List of Ornamental Plants introduced into British Gardens during the Year* 1838; *with References to the Works in which they have been figured or described, and to the Pages of the current Volume of the "Gardener's Magazine," in which some Account is given of their Mode of Culture, &c.*

Sect. I. *Notices of new Ornamental Plants figured in the Botanical Periodicals for the Year ending Oct.* 1. 1838.

HARDY ANNUALS.

*Mi'mulus rò*seo-cardinàlis Hódson*i* of Vol. XIII. p. 333.	Botanist, 51.	Eng. hybrid	p.141
Neme'sia floribúnda	Bot. reg. n. s. 39.	C. G. H.	379
Spheno'gyne speciòsa	Maund bot. gard. 625.	S. America	139

HARDY PERENNIALS.

Amphi'come argùta	Bot. reg. n. s. 19.	Himalaya M.	279
Antirrhi'num màjus caryophyllöides	Paxt. mag. bot. v. 55.	Garden var.	280
Campa'nula barbàta 2 cyànea	Swt. Br. fl.-gard. 409.	Garden var.	45
Cinera'ria renifòlia	Maund bot. gard. 619.	Russia	47
Cruciane'lla stylòsa	Bot. reg. n. s. 55.	Persia	514
Delphi'nium laxiflòrum	Bot. reg. n. s. 30.	? Siberia	334
Echina'cea Dícks*oni*	Bot. reg. n. s. 27.	Mexico	278
Epime'dium macránthum *viol*àceum	Paxt. mag. bot. v. 151. Paxt. mag. bot. v. 123.	Japan Japan	472 374
Fu'nk*ia* álbo-marginàta	Bot. mag. 3657.	Japan	338
Lia'tris boreàlis	Paxt. mag. bot. v. 27.	N. America	277
Lobe'l*ia* Bridgès*ii*	Bot. mag. 3671.	Chile	476
Mi'mulus lùteus Wílso*ni*	Swt. Br. fl.-gard. 406.	Hybrid	46
Pentste'mon crassifòlius Macka*yànus*	Bot. reg. n. s. 16. Fl. cab. ii. 117.	N. America Ohio	280 516
Sa'lvia canéscens	Bot. reg. n. s. 36.	Caucasus	376
Spiræ'a barbàta	Bot. reg. 2011.	Nepal	44

HARDY TUBEROUS PLANT.

Co'smos [? Co'smea Hort. Brit. p. 358.] diversifòlius	Fl. cab. ii. 47.	N. America	277

HARDY TREES AND SHRUBS.

Cle'matis flórida var. Sieb*ó*ldt*i* syn. *C.* f. bícolor *Lindl.*	Bot. reg. n. s. 25.	Japan.	274
Da'phne austràlis	Bot. reg. n. s. 56.	Naples	516
Rhododе'ndron albiflòrum	Bot. mag. 3670.	N. America	477

FRAME PLANT: HERBACEOUS.

Lobe'l*ia* heterophýlla	Bot. reg. 2014.	V. D. Land	44

LIGNEOUS.

DI'PLACUS puníceus	Bot. mag. 3655.	California	p. 280
*V*I'OLA parmaénsis	Bot. gard. 663.	S. Europe	514

HALF-HARDY ANNUALS.

CA'PSICUM ustulàtum	Paxt. mag. bot. v. 197.	Chile	516
CO'SMUS [? Cósmea] tenuifòlius	Bot. reg. 2007.	Mexico	47
LISIA'NTHUS Russell*iànus* glaucifòlius *Nutt.* not of Jacq.	Bot. mag. 3626.	Mexico	140
MO'RN*A* nívea	Bot. reg. n. s. 9.	N. S. Wales	139
*P*APA'VER gariepìnum	Bot. mag. 3623.	S. Africa	43

HALF-HARDY BIENNIALS.

LOA'SA laterítia	Bot. mag. 3632.	Tucuman	138
LOBE'L*IA* fenestràlis	Bot. reg. n. s. 47.	Mexico	476

GREEN-HOUSE PLANTS: HERBACEOUS.

AGAPA'NTHUS umbellàtus var. albiflòrus	Botanist, 86.	Garden var.	485
ANIGOZA'NTHUS Manglès*ii* var. angustifòlia	Bot. reg. 2012.	N. Holland	49
FU'NK*IA* Sieboldt*iàna*	Bot. mag. 3663.	Japan	380
*S*OLA'NUM campanulàtum	Bot. mag. 3672.	N. S. Wales	479
THYSANO'TUS ? prolíferus	Bot. reg. n. s. 8.	N. S. Wales	146
ténuis	Bot. reg. n. s. 50.	Swan River	486
TWEE'D*IA* cærùlea	Swt. Br. fl.-gard. 407.	Buenos Ayres	46
versícolor	Bot. mag. 3630.	Buenos Ayres	140
*V*ERBE'NA incìsa	Bot. mag. 3628.	Panama	141

TUBERS.

CO'SMOS [? CO'SMEA Hort. Brit. p. 358.] scabiosòides	Bot. reg. n. s. 15.	Mexico	278
TROPÆ'OLUM Jarrátt*ii*	Paxt. mag. bot. v. 29.	Santiago	275

LIGNEOUS.

CALLISTE'MON microstàchyum	Bot. reg. n. s. 7.	N. Holland	137
CHORO'ZEMA cordàtum	Bot. reg. n. s. 10.	N. S. Wales	137
*C*HRYSO'COMA squamàta	Bot. mag. 3625.	N. S. Wales	47
CINERA'RIA *t*ussilaginòides var. Waterhous*iàna*	Baxt. mag. bot. iv. 219.	Hybrid	47
COMESPE'RMA grácilis	Paxt. mag. bot. v. 145.	? Australia	473
*E*RI'CA chlorolòma	Bot. reg. n. s. 17.	C. G. H.	279
flòrida var. campanulàta	Bot. mag. 3639.	Hybrid	279
Willmòre*i*	Fl. cab. ii. 115.	Hybrid	515
FU'CHS*IA* fúlgens	Bot. reg. n. s. 1.	Mexico	137
PIMELE'A cérnua	Fl. cab. ii. 113.	Australia	516
STYPA'NDRA frutéscens	Fl. cab. 63.	N. Holland	280
WEINMA'NN*IA* venòsa	Fl. cab. ii. 81.	N. Holland	474

HOT-HOUSE PLANTS: HERBACEOUS.

*C*A'NNA Reevès*ii*	Bot. reg. 2004.	China	49

BULBS, TUBERS, AND CORMS.

BOUSSINGAU'LT*IA basello*ìdes	Bot. mag. 3620.	S. America	47
GE'SNER*A* refléxa	Fl. cab. 61.	Valparaiso	375
rupéstris	Paxt. mag. bot. v. 53.	.....	278. 375
GOVE'N*IA* *l*iliàcea	Bot. reg. n. s. 13.	Mexico	282

Isme'ne Knìghtii	Fl. cab. 59.	Florida	p. 337
Macleàna	Bot. mag. 3675.	Lima	485
Epiphytes.			
Anœctochi'lus setàceus	Bot. reg. 2010.	Java	49
Barke'ria élegans	Fl. cab. 49.	Mexico	282
Bolbophy'llum bracteolàtum	Bot. reg. n. s. 57.	Demerara	517
Bra'ssia cochleàta	Fl. cab. 53.	Demerara	281
macrostàchya	Sert. orch. 6.	Demerara	282
Cattle'ya Móssiæ	Bot. mag. 3669.	S. America	481
Perrínii	Bot. reg. n. s. 2.	Brazil	146
pùmila	Bot. mag. 3656.	S. America	335
Cirrhæ'a obtusàta	Bot. reg. 2005.	Rio Janeiro	48
Cirrhope'talum Thouársii	Bot. reg. n. s. 11.	Society Isles	143
Corya'nthes macrántha	Paxt. mag. bot. v. 31.	Caraccas	284
Cryptochi'lus sanguínea	Bot. reg. n. s. 23.	Nepal	282
Cyrtochi'lum bictoniénse	Bate. orch. 6.	Guatemala	484
maculàtum	Fl. cab. 57.	Mexico	283
Dendro'bium densiflòrum	Paxt. mag. bot. v. 121.	Nepal	377
Gibsònii	Paxt. mag. bot. v. 169.	Khoseea	483
nóbile	Sert. orch. 3.	China	145
Epide'ndrum aromáticum	Bate. orch. 10.	Guatemala	484
floribúndum	Bot. mag. 3637.	Mexico	142
ochràceum	Bot. reg. n. s. 26.	Mexico	143. 285
papillòsum	Bot. mag. 3631.	Mexico	142
Schombúrgkii	Bot. reg. n. s. 53.	Brit. Guiana	517
tessellàtum	Bot. mag. 3638.	Guatemala	142. 285
virídi-purpùreum	Bot. mag. 3666.	Jamaica	376
Gove'nia Gárdneri	Bot. mag. 3660.	Organ Mts.	336
Læ'lia autumnàlis	Bate. orch. 9.	Mexico	484
Maxilla'ria aúreo-fúlva	Bot. mag. 2789.	S. America	141
Henchmánni	Bot. mag. 3614.	Mexico	48
pùmila	Bot. mag. 3613.	Demerara	48
Rollissònii	Bot. reg. n. s. 40.	Brazil	481
Onci'dium deltöídeum	Bot. reg. 2006.	Peru	48
intermèdium	Fl. cab. 60.	Cuba	335
raníferum	Bot. reg. n. s. 48.	Brazil	482
Periste'ria guttàta	Fl. cab. ii. 99.	S. America	518
Pha'ius álbus	Bot. reg. n. s. 33.	Nepal	336
	Paxt. mag. bot. v. 125.	Khoseea	377. 483
Phalæno'psis amábilis	Bot. reg. n. s. 34.	Manilla	376
Stanho'pea devoniénsis	Sert. orch. 1.	Mexico	144
quadricórnis	Bot. reg. n. s. 5.	Spanish Main	143
Ste'nia pállida	Bot. reg. n. s. 20.	Demerara	282
Va'nda tères	Paxt. mag. bot. v. 93.	Silhet	518
Zygope'talum Murrayànum	Bot. mag. 3667.	Brazil	481
Succulents.			
Ce'reus pentálophus			
2 subarticulàtus	Bot. mag. 3651.	Mexico	277
Echinoca'ctus Eyrièsii			
var glaúca	Bot. reg. n. s. 31.	?Mexico	335
tubiflòra	Bot. mag. 3627.	Mexico	139
Mammilla'ria atràta	Bot. mag. 3642.	?Mexico	276
floribúnda	Bot. mag. 3647.	Chile	277
Lehmánni	Bot. mag. 3634.	Mexico	139
Ligneous.			
Brugma'nsia Waymánnii	Paxt. mag. bot. iv. 241.	S. America	46

Hibi'scus liláciuus	Bot. reg. 2009.	N. Holland	p. 43
Passiflo'ra nigelliflòra	Bot. mag. 3635.	Buenos Ayres	138
tucumanénsis	Bot. mag. 3636.	Chile	138
Sola'num frágrans	Bot. mag. 3684.	S. Brazil	515

Sect. II. *New Plants mentioned in the Botanical Periodicals, or heard of through other Sources, not figured, which it is desirable to cultivate.*

HARDY ANNUALS.

Colli'nsia ? heterophýlla	Ed. advert., July 17.	.....	479
? *Helichry'sum scorpioïdes*	B. M. R., June, No. 84.	N. Holland	335
Nicotia'na rotundifòlia	B. M. R., Sept. No. 110.	Swan River	479
Panæ'tia fúlva	B. M. R., June, No. 83.	Swan River	335
Psora'lea ? cinèrea	B. M. R., Sept. No. 106.	.....	473
? *Sola'num* vernicàtum	B. M. R., Oct. No. 137.	Buenos Ayres	516

HARDY PERENNIALS.

Cynoglo'ssum grandiflòrum	B. M. R., Sept. No. 127.	Cashmere	479
Delphi'nium intermèdium			
var. sapphírinum	Bot. reg. Oct.	Garden var.	514
Hoi'tza mexicàna	Bot. reg. n. s. March	Mexico	279
Podo'lepis contórta	B. M. R., Sept. No. 120.	V. D. Land	476
Vero'nica prostràta			
var. *satureiæfòlia*	Bot. mag. Oct.	France	516

HARDY TREES AND SHRUBS.

? Maho'nia tenuifòlia	B. M. R., Sept. No. 121.	Vera Cruz	472
Rhododende'ndron pónticum			
hyacinthiflòrum	Gard. mag. xiii. 537.	French var.	61

FRAME BULB.

Phyce'lla biflòra	B. M. R., June, No. 72.	.....	337

GREEN-HOUSE PLANTS: Herbaceous.

Ampely'gonum chinénse	B. M. R., Sept. No. 118.	China	480
Bata'tas bonariénsis	B. M. R., July, No. 99.	Buenos Ayres	375
Bulbi'ne suàvis	B. M. R., June, No. 78.	N. S. Wales	337
Commeli'na orchioïdes	B. M. R., July, No. 96.	Mexico	380
Morre'nia odoràta	B. M. R., Sept. No. 129.	Buenos Ayres	478
Poly'gonum amplexicaúle	B. M. R., Sept. No. 117.	India	480

Bulbs.

Ornitho'galum gemmiflòrum	B. M. R., July, No. 100.	Lima	380

Ligneous.

Baniste'ria ténuis	B. M. R., Sept. No. 131.	Buenos Ayres	473
Echeve'ria secúnda	B. M. R., Sept. No. 112.	? Mexico	474
Entele'a palmàta	B. M. R., Sept. No. 126.	.....	473
Fu'chsia cylindràcea	B. M. R., July, No. 96.	Mexico	375
Pimele'a crinìta	B. M. R., Sept. No. 109.	Swan River	480
Trima'lium odoratíssimum	Bot. reg. n. s. April	N. Holland	275

HOT-HOUSE PLANTS: Herbaceous.

Brome'lia díscolor	B. M. R., June, No. 85.	S. America	338
Schube'rtia gravèolens	Bot. reg. n. s. 2.	Brazil	140
Ipomœ'a Schiedi*àna*	Bot. reg. n. s. March	.....	279

Bulbs.

Bravo'a geminiflòra	B. M. R., July, No. 98.	Mexico	379

Elise'na longipétala	B. M. R., June, No. 79.	Lima	p. 337
Thysano'tus intricàtus	B. M. R., Sept. No. 111.	Swan River	486

Epiphytes.

Acanthophi'ppium striàtum	B. M. R., June, No. 78.	Nepal	336
Ble'tia havanénsis	Bot. reg. n. s. April	Havannah	282
Shephérdii	B. M. R., June, No. 73.	.....	337
verecúnda var.			
Bolbophy'llum setígerum	Bot. reg. n. s. March	Demerara	282
umbellàtum	B. M. R., July, No. 102.	Calcutta	379
Brasavo'la angustàta	B. M. R., June, No. 67.	Demerara	336
Bryo'bium pubéscens	B. M. R., Oct. No. 145.	E. Indies	518
Cœlo'gyne prolífera	B. M. R., June, No. 75.	.....	337
Cala'nthe bícolor	Bot. reg. n. s. April	? Java	286
Amblyglóttis flàva of Blume			
díscolor	Bot. reg. n. s. April	? Java	286
furcàta	Bot. reg. n. s. April	Luzon Islands	286
Catase'tum atràtum	B. M. R., Sept. No. 114.	Brazil	484
Milleri	B. M. R., Oct. No. 149.	Brazil	518
Cattle'ya bícolor	B. M. R., Oct. No. 148.	.....	517
Chæna'nthe Bárkeri	Bot. reg. n. s. May	.....	283
Cirrhope'talum cæspitòsum	Bot. reg. n. s. May	E. Indies	283
cornùtum	B. M. R., Oct. No. 138.	India	518
Cleiso'stoma ròseum	B. M. R., Oct. No. 150.	Manilla	517
tridentàtum	Bot. reg. n. s. May	N. Holland	283
Cymbi'dium viréscens	Bot. reg. n. s. May	Japan	283
Cyrtochi'lum mystacìnum	Bot. reg. n. s. April	.....	283
Dendro'bium cándidum	Bot. reg. n. s. May	India	283
formòsum	B. M. R., July, No. 86.	India	378
stupòsum	B. M. R., July, No. 94.	India	379
Die'mia cordàta	B. M. R., Oct. No. 134.	Mexico	517
Epide'ndrum altíssimum	Bot. reg. n. s. May	Bahamas	285
ásperum	Bot. reg. n. s. April	.....	285
aurantìacum	Bot. reg. n. s. 8.	Guatemala	142
Boothiànum	Bot. reg. n. s. 7.	Cuba	142
cauliflòrum	B. M. R., June, No. 82.	Rio Janeiro	336
chloránthum	Bot. reg. n. s. April	Demerara	285
cucullàtum	Bot. reg. n. s. May	Para	286
dichótomum	B. M. R., Oct. No. 146.	Demerara	517
équitans	B. M. R., June, No. 76.	Vera Cruz	336
fucàtum	Bot. reg. n. s. Feb.	Havannah	143
ionósmum	B. M. R., July, No. 87.	Essequibo	379
lívidum	B. M. R., July, No. 91.	Columbia	379
longicólle	Bot. reg. n. s. May	Demerara	286
pachyánthum	Bot. reg. n. s. April	Guiana	285
pastòris	Link & Otto abbild. 12.	Mexico	142
píctum	Bot. reg. n. s. April	Demerara	285
pùmilum	B. M. R., Oct. No. 147.	Calcutta	517
rhizóphorum	Bot. reg. n. s. 8.	Guatemala	142
sellígerum	B. M. R., June, No. 66.	.....	336
smarágdinum	Bot. reg. n. s. April	Demerara	285
tibícinis	Bot. reg. n. s. 8.	Honduras	142
tridáctylum	B. M. R., June, No. 81.	Brazil	336
varicòsum	Bot. reg. n. s. April	Guatemala	285
vesicàtum	B. M. R., July, No. 89.	Brazil	379
Grammatophy'llum multiflòrum	B. M. R., June, No. 80.	Manilla	337
Gu'nnia pícta	B. M. R., June, No. 77.	Sydney	337
Huntle'ya melèagris	Bot. reg. n. s. March	.....	283

Lissochi'lus parviflòrus	Bot. reg. n. s. Feb.	Algoa Bay	p. 143
Lui'sia alpìna	B. M. R., July, No. 101.	India	379
Masdeva'llia infrácta	Bot. reg. n. s. May	Brazil	282
Maxilla'ria Boóthii	B. M. R., July, No. 95.	Guatemala	379
mádida	B. M. R., June, No. 74.	Brazil	337
variábilis			
var. unipunctàta	Bot. reg. n. s. March	.....	284
vitellìna	B. M. R., Sept. No. 116.	Brazil	481
Micro'stylis excavàta	B. M. R., July, No. 93.	Mexico	378
Milto'nia cándida	Bot. reg. n. s. April	.....	283
Octome'ria grácilis	Bot. reg. n. s.	Rio Janeiro	283
Odontoglo'ssum cordàtum	B. M. R., July, No. 90.	Mexico	378
Onci'dium confragòsum	B. M. R., July, No. 92.	.....	378
hìans	B. M. R., Sept. No. 124.	Brazil	482
pulvinàtum	B. M. R., Sept. No. 115.	Brazil	482
stramíneum	Bot. reg. n. s. May	Vera Cruz	283
Paxto'nia ròsea	B. M. R., Sept. No. 113.	Manilla	484
Pesome'ria tetragòna	Bot. reg. n. s. 4.	Isle of France	146
Physi'nga prostràta	Bot. reg. n. s. April	.....	283
Physosi'phon carinàtus	B. M. R., Sept. No. 132.	.....	484
Pleurotha'llis aphthòsa	B. M. R., June, No. 71.	Mexico	337
circumpléxa	Bot. reg. n. s. March	Mexico	284
marginàta	B. M. R., June, No. 70.	Guatemala	336
ophiocéphala	Bot. reg. n. s. March	Mexico	284
vittàta	B. M. R., Oct. No. 133.	Mexico	517
Polysta'chya ramulòsa	B. M. R., Oct. No. 142.	Sierra Leone	518
Saccola'bium bífidum	Bot. reg. n. s. 3.	Manilla	146
calceolàre	B. M. R., Oct. No. 139.	India	518
gemmàtum	B. M. R., July, No. 88.	India	378
Sarcochi'lus parviflòrus	Bot. reg. n. s. May	N. Holland	286
Speckli'nia ciliàris	Bot. reg. n. s. April	Mexico	284
orbiculàris	Bot. reg. n. s. April	Demerara	284
Spira'nthes diurética	B. M. R., Sept. No. 119.	Chile	484
Stanho'pea Lindlèyi	Bot. reg. n. s. 3.	Mexico	144
Ste'lis trístyla	B. M. R., June, No. 69.	Brazil	336
Va'nda lamellàta	B. M. R., Sept. No. 125.	Manilla	484
Vani'lla bícolor	Bot. reg. n. s. May	Guiana	283

Sect. III. *Showy or desirable Plants, for general Cultivation, which have been for some Time in the Country, but which are now figured for the first Time, or otherwise brought into Notice.*

HARDY PERENNIALS.

Aconi'tum chinénse	Paxt. mag. bot. v. 1.	China	136
Delphi'nium intermèdium			
var. palmatífidum	Bot. reg. n. s. 38.	Siberia	374
E'chium gigantèum	Paxt. mag. bot. Aug.	Canaries	478
Hemeroca'llis Siebóldti	Paxt. mag. bot. v. 25.	Japan	286
O'robus pisifórmis	Maund bot. gard. 634.	S. Europe	275
Rudbe'ckia aspérrima	Maund bot. gard. 647.	N. America	335

HARDY TREES AND SHRUBS.

Ci'stus lusitánicus	Maund bot. gard. 649.	S. Europe	375
Hype'ricum verticillàtum	Maund bot. gard. 630.	C. G. H.	136
Philade'lphus Gordoniànus	Bot. reg. n. s. March	Columbia Riv.	276
speciòsus	Bot. reg. 2003.	N. America	45
triflòrus	Bot. reg. n. s. May	Himalaya Mts.	276
Plagia'nthus Lampènii	Arb. Brit. 363.	N. Holland	275
Ri'bes Menzièsii	Bot. reg. n. s. May	California	277

Ro'sa índica Blaíri	Swt. Br. fl.-gard. 405.	Hybrid	p. 44
lùtea Hóggii	Swt. Br. fl.-gard. 410.	Garden var.	43

FRAME PLANTS: Corm.

Cy'clamen neapolitànum	Bot. reg. n. s. 49.	Italy, Britain	480

Ligneous.

Eupho'rbia rígida	Bot. reg. n. s. 43.	S. Europe	481
Lava'tera marítima	B. M. R., Oct. No. 140.	S. Europe	514
Rœ'pera aurantìaca	B. M. R., Sept. No. 105.	N. Holland	481

GREEN-HOUSE PLANTS: Hebbaceous.

I'ris defléxa	Fl. cab. 51.	Nepal	286

Ligneous.

Aca'cia cultrifórmis	Bot. reg. n. s. May	.....	276
Boro'nia crenulàta	Paxt. mag. bot. iv. 267.	K. G. Sound	137
Da'hlia excélsa			
var. *a*nemonæflòra	Botanist, 88.	Mexico	515
Drymo'nia bícolor	Jac. sc. 3. 290.	W. Indies	140
Beslèr*ia* serrulàta	*Jacq.*		
Pimele'a lanàta	Botanist, 61.	V. D. Land	281
*Poly'gala m*yrtifòlia			
2 grandiflòra	Bot. mag. Nov. 1837.	S. Africa	46

Bulbs and Tubers.

Li'lium speciòsum	Bot. reg. 2000.	Japan	49
Trito'nia fucàta	Bot. reg. n. s. 35.	C. G. H.	379
Tropæ'olum tuberòsum	Maund bot. gard. 633.	Peru	275
Stenome'sson cròceum	Bot. mag. 3615.	Peru	48
chrysiphìala crò cea *Hort. Brit.*			

HOT-HOUSE PLANTS: Tubers and Corms.

Ge'snera Douglàs*ii*			
2 verticillàta	Bot. mag. 3612.	Rio Janeiro	45
Ipomœ'a bonariénsis	Bot. mag. 3665.	Buenos Ayres	376

Epiphyte.

Zygope'talum maxillàre	Paxt. mag. bot. iv. 171.	S. America	141

Ligneous.

Aristolo'chia saccàta	Bot. mag. 3640.	Silphet	281
Clerode'ndron frágrans	Bot. reg. n. s. 41.	China	479
Dombe'ya cannábina	Bot. mag. 3619.	Mauritius	43
Passiflo'ra onýchina	Bot. reg. n. s. 21.	Bu. Ayres	138. 276
Sulivàn*i* Booth MS.			
Poinse'ttia pulchérrima			
var. álbida	Botanist, 70.	Mexico	281
Spatho'dea pentándra	Bot. mag. 3681.	India	515
Tanghi'nia veneníflua	Fl. cab. ii. 85.	Madagascar	477

ADDITIONAL.

The following plants are in Messrs. Low's nursery, where they have lately been raised from Mexican seeds: —

Spigèli*a* sp. with scarlet flowers, an annual.
*V*erbèna pulchérrima, an annual. Chelòne sp., an annual.

Galárd*ia* sp. annual. Díplacus puníceus.
*S*álvia pàtens, a tuberous-rooted species, with large and beautiful blue flowers.
*S*álvia, two new species. Gardoquì*a* sp. Mentzèl*ia* stipitàta.

ART. III. *Report on the new Species and Varieties of Hardy Trees and Shrubs, raised in the Horticultural Society's Gardens since the Completion of the MS. of the "Arboretum Britannicum."* Drawn up for the "Gardener's Magazine" by Mr. GORDON, Foreman of the Arboretum, by Permission of the Council of the Hort. Soc.

BERBERA'CEÆ. — Bérberis *tenuifòlia* Lindl., Bot. Reg. Miscell., No. CXXI. Syn. Mahòn*ia* sp., *Arb. Brit.*, p. 308. Plants of this very beautiful evergreen shrub were raised from seeds sent to the Society by M. Hartweg, the Society's collector in Mexico. The leaves are pinnate, entire, and quite smooth, on very long slender footstalks; the plants are, probably, about as hardy as *Bérberis* dealbàta or *B.* fasciculàris, and form one of the most interesting introductions since that of *Bérberis Aquifòlium*.

ACERA'CEÆ. — *A'cer hyrcànum* Fischer. A distinct species of *A'cer* introduced by the Society, from the Botanic Garden at St. Petersburg. It seems intermediate between *A.* campéstre and *A.* ibéricum, and quite hardy.

Also the following acers were raised from seeds presented to the Society: —*A.* obtusifòlium *Baron Jacquin*, Arb. Brit., p. 430. *A.* obtusàtum *Baron Jacquin*, Arb. Brit., p. 430., *A.* ibéricum *Dr. Fischer*, Arb. Brit., p. 431.

CORIA'CEÆ. — *Coriària nipalénse* Wallich. Plants of this curious shrub were raised from seeds presented to the Society by Capt. Morse Cooper.

? *CELASTRA'CEÆ.* — *Géblera suffruticòsa* Fischer. This small shrub resembles in habit *Euónymus* obovàtus, *Arb. Brit.* 501., and is only fit for planting on rockwork. It was raised from seeds presented to the Society by Dr. Fischer.

RHAMNA'CEÆ. — *Rhámnus Pallàs*ii *Fischer.* Plants of this species were raised from seeds received from the Botanic Garden, St. Petersburg. They seem very distinct, resembling, in their present young state, the narrow-leaved variety of *R.* Erythróxylon, *Arb. Brit.*, p. 534.

R. subsempervìrens of Messrs. Booth seems to be the same as *R.* hýbridus.

AQUIFOLIA'CEÆ. — *I'lex* ciliàta *Booth* is *I'lex Aquifòlium* recúrvum, *Arb. Brit.*, 506., and *Hort. Lig.*, 20.

LEGUMINO'SÆ § *LO'TEÆ.* — *Cýtisus Weldèn*ii *Strangways.* The Society is indebted to the Hon. W. F. Strangways for the seeds from which the plants were raised. It seems a strong free-growing species, having, in its present young state, a great resemblance to the purple laburnum.

Spártium ætnénse Strangways. Plants were raised, in the garden of the Society, from seeds presented by the Hon. W. F. Strangways. It is a very distinct species, and quite hardy, not being much injured by the last extremely severe winter, though but slightly protected.

Rosa`ceæ* § *Amygda`leæ. — *Prùnus* Marásca *Jac.* — This species has been raised from seeds presented by Baron Jacquin to the Society. This is, in all probability, the small black cherry from which the liquor Maraschino is manufactured; see *Arb. Brit.*, p. 697., where an account is given of the tree, and also of the mode of preparing the liquor.

Prùnus effùsa Jacquin. Plants were raised in the garden of the Society, from seeds presented by Baron Jacquin.

§ *Spiræ`æ.* — *Spiræ`a decúmbens* Booth. A plant of this very distinct dwarf little spiræa was given to the Society by Messrs. Booth of Hamburg; it appears quite new and distinct.

The following names have proved to be synonymes: —

? *Po`meæ.* — *Cratæ`gus Celsiàna*, from Messrs. Baumann and Messrs. Booth, is *C.* Oliver*iàna*, Arb. Brit.: *Cratæ`gus flabellàta*, from Messrs. Baumann and Messrs Booth, is *C.* flàva, *Arb. Brit.*

Philadelpha`ceæ. — *Philadélphus triflòrus* Wallich, Bot. Reg. Miscell. No. li. Plants of this species were raised from seeds presented to the Society by Dr. Royle, under the name of *Philadélphus*, or Deùtz*ia*, corymbòsa, *Arb. Brit.*, p. 950. (which last name it is generally sold by in the nurseries); but, when the plants in the Society's collection flowered, they proved to be the *P.* triflòrus of Dr. Wallich, and very distinct from *P.* tomentòsus, both being supposed to be the same by Dr. Royle. Both species are in the Society's collection, and prove quite hardy, having stood out last winter unprotected.

Deùtzia canéscens Dr. Sieboldt. A plant of this very distinct species was presented to the Society by Mr. H. Low of the Clapton Nursery, who, I believe, imported the plants. It has much larger and finer foliage than *D.* scàbra, and is worthy of a place in every choice collection of hardy shrubs.

Grossula`ceæ. — Rìbes *Menzièsii Pursh.* This very distinct species of *Rìbes* was raised from Mr. Douglas's last parcel of Californian seeds, and resembles *Rìbes* speciòsum; and, like that species, is sub-evergreen, and comes into leaf in the autumn. It has proved quite hardy, having stood last winter unprotected.

Also, the following species of *Rìbes* were raised from seeds this season, presented by Baron Jacquin and Dr. Fischer, and seem distinct: — *R.* opulifòlia *Jacquin*, *R. Dakúscha* Fischer, *R.* heterótrichon *Ledebour.*

*Caprifolia`ceæ* § Lonice`*reæ.*—*Lonícera Pallàsii* Ledebour. A plant of this rare species was raised from seed presented

to the Society by Dr. Ledebour; it seems quite distinct, with rather long narrow leaves.

L. tatárica var. fructu lúteo. This variety differs in nothing except the colour of the berries, which are yellow when ripe.

Symphoricárpus montàna Kunth. Syn. *Symphòria mexicàna* Lodd., *Lonícera montàna* Lee. Plants of this very hardy shrub were given to the Society by Messrs. Lee and Messrs. Loddiges, under the above names; it was also raised in the garden of the Society, from seeds presented by Mr. Bentham. S. montàna is quite hardy, having stood out last winter unprotected.

BETULA'CEÆ. — *A'lnus barbàta* and A. *obcordàta* Bunge. Plants of both species were raised in the Society's garden, from seeds presented by Dr. Bunge.

CORYLA'CEÆ. — *Quércus xalapénsis* Humb. et Bonp., *Arb. Brit.*, 1941., *Hortus Lignosus*, p. 113. Plants of this species were raised from nuts sent to the Society by M. Hartweg, the Society's collector at Mexico. It has large flat nuts, depressed in the middle like the flat peach of China, and altogether very different from any that I have seen.

Q. *mexicàna* Low, Humb. et Bonp., *Arb. Brit.*, 1941., and *Hortus Lignosus*, 113. A plant of this species was presented to the Society by Messrs. Low. It has some resemblance to the willow-leaved oak (*Q. Phéllos*) in its present young state, but with larger and broader leaves; and it will probably be evergreen. This species belongs to the *Phéllos* section, *Arb. Brit.*, 1894., and *Hort. Lig.*, 111. Messrs. Low have raised several species of Mexican oaks from seed; but they had no names with the seeds, and the plants are not large enough at present to ascertain their names from descriptions in books. They have also presented the Society with plants of two other species of Mexican oaks, which probably are *Q. laúrina Humb. et Bonp.* and *Q.* ellíptica *Willd.*, *Arb. Brit.*, 1941., and *Hort. Lig.*, 113. The *Q. laúrina* belongs to the Viréntes section, and the *Q.* ellíptica to the section *Phéllos*.

There have also been six or eight species of *Quércus* raised from Mexican nuts presented to the Society by the Hon. W. F. Strangways; but they are without names. They are, however, very distinct from Mr. Low's plants.

GNETA'CEÆ. — *E'phedra mìnor* Jacquin. Plants of this singular species were raised from seeds given to the Society by Baron Jacquin, in 1837.

CONI'FERÆ § ABIE'TINÆ. — *Pìnus neglécta* Low. A small plant under this name was presented to the Society by Messrs. Low; it seems to be one of the numerous varieties of *P. Pináster*, with imbricated non-resinous buds.

§ CUPRE'SSINÆ. — *Juníperus macrocárpa* Strangways, *Arb. Brit.*, p. 2352. and 2494. Plants of this very desirable species

were raised from seeds presented to the Society by the Hon. W. F. Strangways. It bears some resemblance to *J. Oxýcedrus*, and belongs to that section, having open leaves.

Hort. Soc. Garden, Chiswick, Oct. 22. 1838.

Art. IV. *Provincial Horticultural, Botanical, and Floricultural Societies.*

The number of Provincial Societies noticed in the present article exceeds those given on any former occasion, and affords a most gratifying proof of the general diffusion of gardening knowledge and taste in the British Islands. In our volume for 1836, the number of societies is 95; in that for 1837, 131; and in that now brought to a close, 172. Some of the notices are not so satisfactory as we could wish them; but this arises from the neglect of the societies, in not sending us copies of the local newspapers which contain accounts of their shows; we should be glad to see this defect remedied in future. It is not our wish to give lengthened accounts of what passes at the meetings of Provincial Horticultural Societies; but we should consider the *Gardener's Magazine* deficient as a "Register of Rural and Domestic Improvement," if it did not contain such a summary view of the proceedings of these societies as appears annually in the closing Number of our volume. Such a summary can never, perhaps, be rendered quite complete, but our wish is to render it as nearly so as possible.

ENGLAND.

Bedfordshire. — *Bedfordshire Open Horticultural Society. — May* 8. The show, especially the greenhouse plants, was first rate. (*Gard. Gaz.*, May 26.)

Biggleswade Horticultural Society. — Aug. 3. The show was principally for picotees and carnations, but the dahlias also were very fine. (*Ibid.*, Sept. 1.)

Berkshire. — *Abingdon Horticultural Association. — Sept.* 22. *First Exhibition.* The room was beautifully and tastefully decorated with various kinds of green-house plants, which were kindly lent to the committee by several ladies and gentlemen residing in the town and neighbourhood. Several very beautiful devices (amongst others, the arms of the borough) were placed in different parts of the hall, which, together with the flowers and fruit, presented a very splendid appearance. Several cottagers exhibited various productions of the garden, among which were some very fine specimens of the vegetable kind. The principal prizes were for dahlias, and we observed the names of Mr. J. Peyman and Mr. T. Collingwood occur most frequently among the successful candidates. The names of the plants, &c., gaining prizes, are not given. (*Reading Mercury*, Sept. 22.)

The Royal Berks Horticultural Society. — Sept. 11. This exhibition, which was a splendid one, was held at Wallingford. A spacious tent having been fitted up in a picturesque situation, affording an extensive view of the surrounding country, was tastefully decorated; over the front entrance, which was festooned and adorned with flowers, appeared the device, beautifully displayed by dahlias, "Victoria R.," on an elliptic arch surmounted by a crown of large dimensions. The interior exhibited the choicest specimens of Flora and Pomona; and, to add to the effect, contained a number of cases of stuffed birds and beasts, from the collections of W. S. and R. M. Clarke, Esqrs. At the farther end of the tent was also displayed, in honour of the Queen Dowager, "Adelaide R." in floral device. Though it may appear invidious to select from any of the day's productions, we cannot but remark on the excellence and great beauty of the Fúchs*ia* fúlgens from the gardens of the Archbishop of York,

and the magnificent collection of stove plants, from the Rev. Mr. Keene's, Swincombe House. The show of dahlias was very splendid, and the numerous collections called forth expressions of universal approbation.

The cottagers' tables were laid out with the productions of fruit and vegetables usually displayed by that industrious class, and were considered superior to any before exhibited; the zeal and perseverance which had been excited in the culture of vegetables, was plainly to be observed, on viewing the display sent for competition on this day: there were about 160 different entries of fruit, vegetables, and flowers, to sixty of which the Society's prizes were awarded; among others, we observed an immense bouquet, shaped as a globular flower vase, consisting chiefly of dahlias, of extensive variety, the production of Matthew Freeman, an industrious cottager of Cholsey.

At the dinner of the members, which followed the show (and at which Lord Barrington presided), it was stated, that the president of the Society, Benyon de Beauvoir, Esq., had promised to contribute to it 1000*l.* every year for six years, and of this 6000*l.*, one half had been already received. (*Reading Mercury*, Sept. 15.; and *Salisbury Herald*, Sept. 22.)

Farringdon Horticultural Society. — *Sept.* 20. The first exhibition took place in the park of William Bennett, Esq. The elegant marquee belonging to this Society contained, in addition to the specimens exhibited for the first class prizes, most elegant devices. Ornamented baskets of cut flowers, in almost endless variety. A very splendid crown, composed of dahlias, 6 ft. in height, exhibited by Mr. Gregory of Cirencester; also, a crown and cushion, by Mr. James Reynolds; and a balloon and car, formed of dahlias, by Mr. Milne, gardener to W. Bennett, Esq., were much admired. The specimens of potatoes, onions, parsneps, and carrots, produced by the cottagers, were remarkably fine, and very numerous. The marquee in which they were exhibited, was excessively pretty. The company consisted of upwards of 800 persons. (*Reading Mercury*, Sept. 22.)

The Windsor and Eton Royal Horticultural Fête took place, by permission of H. R. H. Princess Augusta, on the grounds of Her Royal Highness, at Frogmore; it was very fashionably attended, and the arrangements, generally, were of a description which must have gratified both the visitors and the exhibitors. The show of flowers, fruits, and vegetables was very fine; and the scene was enlivened by the attendance of the bands of the 1st Life Guards and Scots Fusileers. (*Ibid.*)

BUCKINGHAMSHIRE. — *Aylesbury Horticultural Society.* — This Society has held its usual shows during the year, but we have not received any account of them.

Buckingham Horticultural Society. — *July* 8. Principally for fruit.

CAMBRIDGESHIRE. — *Cambridge Florists' Society.* — *May* 30. The tulips were not so numerous as we have seen on many former occasions; but they were of excellent quality and well grown. (*Gard. Gaz.*, June 23.)

Cambridgeshire Horticultural Society. — *June* 23. The show of geraniums, though not so large as usual, was excellent. Before the prizes were announced, the chairman informed the meeting that the cottagers' fund was still eight pounds in arrear, without providing any prizes this year. (*Ibid.*, July 7.)

Wisbeach Floral and Horticultural Society. — *Sept.* 20. *Dahlias.* The show of these splendid flowers was exceedingly good; and the competitors more numerous than formerly. The judges had considerable difficulty to decide in some cases; and in one (namely Mr. Harrison's prize for the best twenty-four, grown by a person not a dealer), was decided in favour of Mr. Perry Ward, but afterwards altered to Mr. Freestone of Watlington. The merits of Mr. Ward's dahlias, however, stand high, as he had the prize for the best and twelve best, and was second for the twenty-four best; all of which, we understand, were cut from thirty-eight plants. The decorations of the hall were very good; and the Royal Arms, by Mr. P. Ward, commanded universal admiration. It was about 9 ft. long, by 6 ft. high, and

the figures, though in flowers, were well defined, and the proportions good. The trouble of getting it up must have been immense, and the taste evinced was excellent. (*Star in the East*, Sept. 22.)

Cheshire. — *Chester Floricultural and Horticultural Society. — June.* The neat and tasteful manner in which the plants were staged, reflected much credit on the parties. (*Gard. Gaz.* July 7.)

Altrincham Floricultural and Horticultural Society. — June 8. This show was for tulips, plants, fruits, and vegetables. (*Ibid.*, Aug. 25.)

Cornwall. — *Gwennap Cottage Gardening Society. — Aug.* 7. *Third Annual Exhibition.* The display of cottagers' fruits and vegetables far excelled, both in quality and quantity, either of the previous exhibitions, and gave a convincing proof of the growing zeal, industry, and generous emulation, displayed among the cottagers of the neighbourhood, for the numerous rewards so liberally subscribed for the occasion. The avenues leading to the room of exhibition were tastefully decorated with evergreens and ornamental arches, the voluntary work of the cottagers themselves; while the interior was elegantly fitted up with flags, flowers, and ornamental devices; among which, the name of our youthful queen, formed of choice dahlias, was very conspicuous. The centre tables were filled almost entirely by the cottagers' specimens; while the end of the room, fronting the entrance, was filled with choice plants, from the well known gardens of the gentry of the parish, The Rev. T. Phillpotts, president of the Society, in an address, which we regret we are not able to report at length, congratulated the Society on its improved prospects, and on the advantages which the neighbourhood were deriving from its establishment. It appeared, that not only had the competitors greatly increased, but that many cottagers had been induced, by the distribution of seeds, and the patronage of the Society, to pay more attention to the cultivation of their gardens, and to devote hours, which would otherwise have been spent in the beer-shop, to the comforts of their homes. At four o'clock, an excellent band of music, which had been in attendance during the exhibition, gave notice of the approach of the children of the National Sunday Schools of the parish, with their teachers, amounting to nearly 800. This interesting group, arranged with the flags of the several schools, after marching through the grounds of the vicarage, were conducted to the scene of the intended fête, and were there regaled with a liberal supply of tea and cake. Among the prizes, we noticed one, which we were glad to see, for the best climber in front of a labourer's cottage. (*Royal Cornwall Gazette*, Aug. 17.; and *West Briton*, Aug. 17.)

Western District Cottage Gardening Society. — This meeting was most numerously and fashionably attended; and, notwithstanding the unfavourable influence of a cold and changeful season, the display of fruits, vegetables, and flowers was such as had never been witnessed upon any former occasion. Numerous prizes were awarded; after which, the Rev. H. E. Graham addressed the meeting in a most eloquent speech, in the course of which he observed: — "Notwithstanding the peculiar advantages of climate and soil which render this part of the county capable of producing fruits, flowers, and vegetables of the very first order, we cannot conceal the fact, that the beneficent purposes for which this Society was formed, and which, for two years, it has actively promoted, have not yet been attained to the extent its friends could wish. This partial failure is not attributable to any want of energy on the part of this institution; and it has been to me a subject of anxious enquiry, Why the vast population of this district neglect the pleasing and useful occupation of cottage gardening? Why it is that we find the manure pile and the pig in front of the house, where the useful vegetable and the ornamental flower ought to be growing? The only answer I have been able to obtain, has been, that it is not the habit of the miners; that they care little or nothing about their gardens; and that, for the most part, they return from their work exhausted, and unfit for any further labour." The reverend gentleman then proceeded to describe the comforts enjoyed by the cottagers in Wales, from the cultivation of their gardens; and drew a contrast between the Welsh labourers and the

miners of Cornwall. Notwithstanding the inferior state of the latter, he was happy to find that they were in a progressive state of improvement, as respected gardening; for he had been informed by a respectable seedsman in the neighbourhood, that he had, that season, sold more seed to the cottagers, than he had in the three previous years. (*Royal Cornwall Gazette*, Oct. 12.)

Redruth Cottage Gardening Society.— Aug. 8. *The Second Annual Meeting.* The Rev. J. W. Hawksley, president of the Society, addressed the meeting, and declared the awards of the premiums and prizes. The supply of fruit and vegetables was very satisfactory, as regards the merit of the competitors; and we are sorry not to have it in our power to say as much of the arrangements for the exhibition. No attempt was made to decorate the tables, or to show the cottagers' fruits and flowers to such advantage as the taste and industry which had led to their cultivation seemed to have deserved. (*West Briton*, Aug. 17.)

Trecan-gate Cottage Gardening Society. — Aug. The prizes were for the neatest and best-stocked gardens, and the best fruits, vegetables, and flowers. (*Royal Cornwall Gazette*, Aug. 17.)

Cornwall Horticultural Society. — Sept. 20. The large room was well supplied with fruit, and the cottagers' side was largely furnished with vegetables; the size and quality of which afforded a most convincing proof of the progress of the science of gardening among the poorer classes of the county. The show of plants was very meagre, and the room presented rather a naked appearance. This may in part arise from the total want of all decoration; a practice which prevails, we believe, in few other show-rooms in the country. In the centre of the large room there was a fine specimen of Amarýllis regìnæ, Gésnera Súttoni, Clerodéndron speciosíssimum, Fúchsia fúlgens, two or three good amaryllises, an *O*'xalis Bowiei, a very fine specimen of Trevirà*na* coccínea, a Melaleùca fúlgens, and a striped Camél*lia*. On the left of the room stood a very large specimen of *P*hlóx Drummóndi, and a large fine Fúchs*ia*. In the miscellaneous collection, there were some cut specimens of ericas, particularly two of *E*rìca Irby*àna*, and some fine specimens of *G*ladìoli. There were some fine boxes of cut flowers, which contained a very pretty display of asters and hollyhocks. Among the vegetables, we noticed some fine cucumbers, spinach, celery, onions, and carrots. On the right, there were some large baskets of vegetables, grown by cottagers, of a very superior description. All were good, particularly the potatoes, cabbages, parsneps, and turnips. On the same side of the room there were some pretty bouquets, and, in the whole, a large number of dahlias, many of which were fine and rare specimens. Among the fruit we observed fine pines, good trays of grapes, and very fine peaches. There were, also, some fine morello cherries and alpine strawberries; and a specimen of the curious fruit called the *Jambòsa* vulgàris, or rose apple. The melons and lemons were very fine. The supply of apples was not at all limited, and they were very good in quality. There were some fine collections, all named, and some excellent kitchen apples, the royal russet, Cornish gillyflower, &c. The pears were not at all plentiful, but those shown were good.

At the end of the room was placed a neat model of Mr. Corbett's hygrothermanic apparatus for heating hot-houses, &c. (see p. 527.) In the card-room were displayed the collections of the nurserymen. In that of Mr. Pontey of Plymouth, we observed a fine collection of dahlias, of all the newest varieties. Amongst the miscellaneous collection were several species of *Babiàna*, *S*tátice foliòsa, *C*ampánula hóstis, Clerodéndron speciosíssimum, Pentstèmon Murray*ànus*, *C*lématis azùrea grandiflòra, Chorózema ovàtum, several new species of *G*ladìolus, and a fine collection of cut herbaceous plants and annuals. Mr. Fox of Penzance had a beautiful new dahlia of his own, with a fine collection of German asters and dahlias: his marigolds and other annuals were very handsome. Mr. Rendle of Plymouth had a very fine collection of dahlias, including the Glory of Plymouth, certainly one of the finest flowers of the season. There were also some specimens of *C*lématis

Siebóldti, Penstèmon gentianoïdes, Delphínium Barlòwii, Lychnis Bungeàna, with a good collection of annuals and herbaceous plants. A cut flower of Crìnum amábile was very beautiful. Messrs. Veitch and Son of Exeter had the largest collection of dahlias, including that beautiful flower Dr. Mendroth. Among the rare plants were a Clématis grandiflòra, Bignònia Chamberlàini, Fúchsia fúlgens, the pitcher plant, and a splendid collection of zinnias and other annuals. (*West Briton*, Sept. 21.)

Cumberland. — *The Whitehaven Horticultural Society. — May* 17. *Auriculas.* The chief prizes of the day were awarded to the finest specimens in the different classes of auriculas and polyanthuses; but, besides a beautiful show of these flowers, there was a fine show of green-house plants and early vegetable productions. In the vegetable department, there were many articles shown which commanded exalted eulogiums; but the first stalks of rhubarb were a bunch of unblanched, produced by Mr. Mann of Corkikle. Among the flowers, the best for which prizes were given were : — Auriculas : green-edged, Taylor's victory, R. Elliott, gardener to M. Hartley, Esq., Rose Hill; grey-edged, Kenyon's ringleader, J. Gaitskell; white-edged, Leigh's bright Venus, R. Elliott; self-coloured, Whittaker's true blue, R. Elliott; alpine, Eclipse, R. Elliott. Seedlings : best self, R. Elliott; best alpine, J. Gaitskell. Best pan of auriculas, one flower of each class : 1st pan, Archer's triumphant, highland chief, Black Prince, volunteer, Queen of May, R. Elliott. Polyanthus : dark ground, Pearson's Alexander, J. Gaitskell; light ground, George the Fourth, J. Gaitskell. Seedlings : best dark ground, J. Clarke, gardener to the Earl of Lonsdale; light ground, ditto. Hyacinths, in glasses : double, Passe-Virgo, E. Dawson, Esq. Polyanthus Narcissus : best white, Luna, J. Steel. Pelargoniums : Queen Anne, J. Clark. Green-house or stove plants, except pelargoniums : Verbèna Tweedìana, J. Clark. Hardy plant, rarest and best bloomed : Pulmonària virgínica, R. Elliott. British plant : Scílla vérna, R. Elliott. (*Whitehaven Herald*, May 19.)

June 2. *Tulips.* Not fewer than 400 of the different varieties of tulips were upon the stages; and in one bouquet, got up by Mr. Steele of Parton, about 250 flowers of the same sort were tastefully arranged. Mr. Robert Elliott's bouquet, however, obtained the principal prize in that department; and for brilliancy, richness, and beauty, it was well deserving the eulogiums which it received. The hardy herbaceous plants, green-house plants, geraniums, and heaths, were numerous and excellent; particularly the latter, of which Miss Lowther exhibited some most delicate and delightful specimens. In an ante-room, where the fruits and vegetables were shown, the apples commanded general approbation, by their beauty and fine state of preservation. Thomas Falcon, Esq., of Workington, took a decided lead in potatoes grown in the open air. The first specimens of rhubarb were shown by Mr. Davidson, a market-gardener at Corkikle; and here we cannot but express our regret that so few exhibitors of Mr. Davidson's rank were to be found competing for prizes. Among the best flowers were : —Tulips, first pan, Miss Fox : Prince de Conde, Trafalgar, Rose Unique, Compte de Vergennes, Black Prince, Washington, min d'or. Feathered bizarres : Trafalgar, Miss Fox. Feathered bybloemens : Atlas, Rev. J. Fox. Feathered roses : Comte de Vergennes, Miss Fox. Flamed bizarres : Abercrombie, Miss Mossop. Flamed bybloemens : Black Baguet, Miss Smith. Flamed roses : rose unique, J. Gaitskell. Selfs : min d'or, J. Clark. Best double tulip : De Lisle, double yellow, J. Gaitskell. Heaths : Erìca odoràta, Miss Lowther. Pelargoniums : Fastuòsa, R. Elliott. Green-house or stove plants, neither ericas nor pelargoniums : Manéttia glàbra, J. Clark. Apples : nonpareil, J. Gaitskell; kitchen apples, of two years' keeping, J. Gaitskell. (*Ibid.*, June 9.)

Sept. 20. *Carnations and Dahlias.* Though the exhibition, upon the whole, was not equal to many former ones, it was more numerously attended than it ever was on any other occasion. The best flowers which obtained prizes were : — Carnations : scarlet bizarre, 1st prize, J. Steel, Rawson's Eliza; purple flakes, 1st, W. Thornton, Keswick, President; purple bizarre, 1st, W.

Gird, Duke of Leeds; scarlet flake, 1st, W. Thornton, Potter's Belmont; rose flake, 1st, H. Gird, Gird's Captain Heatly. Seedlings: best scarlet bizarre, W. Gird; best purple ditto, W. Gird; best purple flake, A. Spittall; best rose ditto, W. Gird. Picotees: purple, 1st, H. Gird, Harley's seedling; red, 1st, H. Gird, Pufton's Will Stukeley. Seedlings: best purple, no competitors; red, W. Gird. Dahlias: dark maroon and puce, 1st, J. Gaitskell, Lady Harcourt; crimson and ruby, 1st, W. Thornton, Keswick, Springfield rival; purple, 1st, J. Clark, Lord Derby; rose, 1st, W. Thornton, Sir Henry Fletcher; orange and buff, 1st, W. Thornton, Maid of Judah; lilac, 1st, W. Gird, Widnall's Paris; white, 1st, J. Clark, Mrs. Wilkinson; yellow, 1st, J. Clark, Mr. Cobbett; variegated, 1st, W. Thornton, Dod's Mary; globe, 1st, R. Elliott, crimson globe. The model of a moss house, exhibited by Mr. Elliott, was a beautiful piece of workmanship, and displayed much skill and ingenuity. (*Cumberland Pacquet*, Sept. 25.)

Derbyshire. — *Derby and Derbyshire Floricultural Society.* — The first meeting of this Society took place on the 1st of May, and, although there were not a great many flowers, the species were splendid. (*Gard. Gaz.*, May. 19.)

Devonshire. — *Devon and Exeter Botanical and Horticultural Society.* — *June* 8. This, as regards flowers, was considered one of the finest exhibitions witnessed for several years. From the nature of the season, no one will be surprised to hear that it fell off in fruits. There were, however, some good grapes, and a dish of three fine citrons. Among the flowers were three baskets resplendent with roses, being of the choicest kinds, and of various hues, red, pink, white, purple, and yellow. These were from the garden of Mr. L. Ponsford; and the first prize for this class was awarded them. There was also a tray containing six anemones, from the garden of Mr. J. Clark, that were much admired, and obtained the first prize of this class of flowers. A collection of pansies, likewise, and of ranunculuses, attracted great notice. Of pelargoniums, the display was of a very superior description; not a few of which were sent by the Rev. J. Gilbert of Bodmin, for the first time entering the lists among us for the premiums given by this Society. From the conservatory of this gentleman, twenty varieties of this plant were contributed. All these were of the most splendid kind, and two of them spoken of as unrivalled for beauty: these were named Gain's king and Lownde's perfection; the latter of which was said to be worth five guineas, and the former exceeding that in value. Among the contributors, also, were Lord Rolle, Mr. Buller, Mr. Arundell, Mr. Granger, Mr. Sanders, &c. &c.

Messrs. Veitch, C. Sclater, and Hewett, nurserymen, likewise largely contributed; indeed, so liberal were the contributions of Mr. Veitch, that they occupied one side of the spacious room; and among these were, *Cl*ématis Sieb*ó*ld*t*i, F*ú*chs*ia* f*ú*lgens, 50 choice ericas, a pitcher plant, several very choice specimens of *O*rchidàceæ, about 100 sorts of pelargoniums, among which those called Climax, F*ó*ster*i* r*ò*sea, Al*í*c*ia* splendidíssima, deserve particular notice; also, some fine calceolarias, an Azàlea índica variegàta, a Stapèl*ia* grandiflòra, three beautiful specimens of *C*áctus senilis; a superior collection of stove and green-house plants, of ranunculuses, anemones, pansies, &c. Mr. Veitch's collection was much and justly admired. Mr. Sclater, who occupied a large portion of the left side of the room, exhibited some of the finest pansies, in 200 varieties (among which were some brilliant seedlings), ever seen in this county; also, amongst others, a Cypripèdium spectábile; calceolarias; Napoleon, a very splendid and beautiful flower; a Ceropègia élegans, *V*erbèna leucántha; also, a collection of *G*ladìoli; of the cactus tribe, a fine Russèl*ia* *j*úncea. Of the pelargoniums, two very fine were called the Conqueror of Europe and Victoria Regina. There were, also, a variety of tender annuals, cockscombs, and balsams, double anemones, ranunculuses, and roses, and some fine ericas; among which were, *E*rìca silvéstris, ventricòsa cárnea, ventricòsa supérba, coccínea, Bowie*à*na, &c. We also observed

Pimelèa decussàta, fuchsias of sorts, Andrómeda buxifòlia, cactuses of every variety, and green-house plants of various kinds.

The exhibition of vegetables by cottagers was of a fine description, consisting of broccoli, cabbage, carrots, beet root, rhubarb, parsneps, beans, &c. (*Trewman's Exeter Flying Post*, June 12.)

July. The extensive and varied specimens of choice and beautiful plants and flowers were unusually splendid. There was a large collection from the conservatories of J. W. Buller, Esq. of Downes, among which were some new and rare specimens; Sir T. D. Acland also contributed some new and very superb plants. The nurserymen, Messrs. Veitch, and C. Sclater, again displayed large collections of almost every novelty; the exhibition being greatly indebted to them. Of fruits there was an excellent contribution, considering the backwardness of the season; and the vegetables were highly creditable, particularly to the cottagers. Mr. Veitch's collection was truly splendid; it completely filled the whole of one side of the room, and comprised fine varieties of pelargoniums, Cape ericas, splendid fuchsias, and many new plants; together with a beautiful collection of roses and annuals, very fine pansies, and numerous stove, green-house, and hardy plants. (*Woolmer's Plymouth Gazette*, July 28.)

Horticultural Fête. — A novel fête of this kind was given Oct. 2. in the splendid gardens of Messrs. Lucombe, Pince, and Co., adjoining this city, by Mr. Pince, which excited great interest among the gardeners in the West of England. The scene of this truly unique affair was the magnificent conservatory, built by Mr. Pince, solely for the culture of camellias, which is, in fact, the largest building ever erected for that especial purpose, being 200 ft. in length, 22 ft. in width, and 16 ft. high. At one end of this temple of Flora, for such most truly might it be called, a table was spread, at which upwards of eighty of the principal gardeners of the nobility and gentry of the West of England sat down to an excellent and well-served dinner. The other end presented a splendid horticultural exhibition, consisting of rare and fine specimens in various departments of horticulture, for which prizes, which had been previously offered, were adjudged by judges chosen from among themselves. We do not give the list of prizes, as the names of sorts are not stated: among them, however, we observed a dish of peaches, one of apricots, and one of plums, which drew much attention, and were considered remarkable, having been grown on the borders of Dartmoor. The display of flowers and plants was of the most gorgeous description; and not the least interesting part of the whole was the circumstance, that from choice plants, tastefully arranged on the table, were suspended the gold and silver medals adjudged to the worthy host at the metropolitan and other exhibitions; while the silver cups won by him at the horticultural exhibitions in Exeter teemed with generous wine. On this pleasing and, among horticulturists in the west, memorable occasion, Mr. Pince presided; and Mr. Nott, his foreman, filled the vice-president's chair. The best feeling prevailed, and much professional conversation took place. (*Trewman's Exeter Flying Post*, Oct. 11.)

North Devon Horticultural Society.—*June* 20. The finest specimen we noticed was a vine (of the white muscat of Alexandria species) in a pot, profusely laden with clusters of grapes, as magnificent in their appearance as, we have no doubt, they were delicious in their flavour: this splendid plant was contributed from the hot-house of Capt. C. Hole. The flowers were considered by several floricultural amateurs to equal or surpass the product of any previous season. The pelargoniums from the conservatory of Capt. Williams were particularly fine; the cockscombs from Castle Hill had lost nothing of their accustomed splendour; the green-house plants, cactuses, and calceolarias, from the gardens of Charles Roberts, Esq., of Bickingtom Cottage, attracted considerable notice; our resident nurseryman, Mr. Burge, displayed many superb specimens, including green-house and hardy herbaceous plants, calceolarias, roses, &c.; and Mr. Bale of Westacott contributed an imposing collection of American shrubs, a beautiful bouquet, &c. But the most remarkable

and novel feature in the floral exhibition was a collection of no less than twenty-four rare species of *C*áctus; two curious specimens of the manita, or hand plant; and two wooden flowers, a very singular formation, resembling a bark, composed apparently of the excrescences of trees; all of which have lately arrived from Mexico for the gardens of Thomas Downes, Esq. The vegetables were very good: the asparagus and rhubarb produced by Mr. Nash, gardener to J. P. B. Chichester, Esq., M.P., were uncommonly luxuriant. But in ordinary vegetables, as well as in common fruits, we thought the cottagers far excelled the exhibition in the upper room. In the nurserymen's department, Mr. Veitch more than usually distinguished himself. (*North Devon Journal*, June 21.)

Sept. 20. The general show of fruit, flowers, and vegetables was of a very superior description; indeed, far exceeding what had hitherto been produced in Barnstaple. The room was also beautifully adorned with devices, in addition to the grand display of plants and flowers. On the stand in the centre of the room, appropriated for plants and vegetables, there was a great variety of things deserving notice; but the *M*ùsa coccínea, contributed by the Hon. Newton Fellowes, attracted particular attention. The Society was indebted to Mr. Burge for a splendid device of flowers, representing a crown and the initials V. R., which was very elegant and tasteful. There were several bouquets in the large room and in the cottagers' apartment, exceedingly beautiful. (*North Devon Advertiser*, Sept. 21.)

The Royal Devon and Cornwall Horticultural and Botanical Society. — *May* 17. Among the most rare and beautiful plants exhibited, we may mention the following from Mr. Pontey:—Green-house Plants: Pimelèa decussàta, with about two thousand trusses of flowers; Tropæ'olum tricolòrum, clothing a trellis 9 ft. high and 4 ft. wide, covered with beautiful bloom; Chorózema, E'pacris, Lasiopétalum, Kennèdy*a*, &c., of various species; *Loàsa* laterítia, a splendid climber, with beautiful orange flowers hanging gracefully on long peduncles, nicely trained on a wire trellis. [This plant is now found to be quite hardy, and as it ripens its seed abundantly, will doubtless soon be grown as an annual, in every collection. The only objection is its stinging properties.] Siphocámpylos bícolor, a beautiful lobeliaceous shrub, about 5 ft. high, covered with scarlet and yellow flowers; one of the best conservatory plants known, a free grower, and in bloom nearly all the year [see vol. xiii. p. 362.]. *V*erbèna, new pink, new scarlet, Arran*iàna*, &c., in a group, intermingling their bright rosy and crimson flowers; *Petùnia*, in almost every variety of shade and colour; *E*rìca, of this class there were 78 distinct species; Passiflòra kermesìna, on neat wire trellis. Hot-house plants: *C*ombrètum purpùreum, 16 ft. high, with its wide spreading branches, covered with flowers, trained along the ceiling above the collection of hot-house plants; *C*rìnum amábile, and *C.* canaliculàtum, with their large fragrant flowers; Erythrìna *C*rista-galli, and E. *l*aurifòlia, a very large specimen, the single shoots of which measured 7 ft. in length, very strong, and completely clad with flowers and foliage; amongst a superb collection of *C*ácti were very fine *C.* Mallissòn*ii* and *C.* spléndens, and a splendid collection of that curious tribe Mammillària; Gésner*a* Griffíths*ii*, a most beautiful specimen; *Pandànus*, or screw pine, a well known plant; Maxillària, a new species, resembling M. Harrisòn*ii*; Mùs*a* Cavendísh*ii*, &c. The pelargoniums were exceedingly brilliant, showing plenty of flowers, and among them many of the newest and most valuable sorts. The florist's flowers, comprising the tulip, anemone, ranunculus, heartsease, iris, ixia, gladiolus, &c., were all exceedingly fine, particularly the tulips. Among the chief objects of attraction at this exhibition, was the superb collection of pelargoniums exhibited by Mr. William Rendle, of the Union Road Nursery, as a decoration to the room, and not for competition, which was admitted to be the most splendid display of that favourite flower ever witnessed in this neighbourhood. The dwarf growth of the plants, combined with the largeness and beauty of the flowers, called forth general admiration. Among the collection (which was very numerous, comprising more than a hundred of the newest varieties in cultivation), was a

beautifully grown plant of the king of geraniums, finely in bloom; next to the king was a small seedling plant (just named Rendle's rival king). The great similarity of these two plants is very striking; the king has rather a larger spot, but the colour and form exactly correspond; and the flowers of the rival are much larger, and the trusses finer, being from six to eight pips on each truss, while the king scarcely produces more than four; and its habit is more free in growth than the king's. There were also two fine plants of Rendle's Sir Robert Newman, thickly covered with superb blossoms: this is a very great improvement on the Speculum Mundi, it being of a fine round form, but possessing the tasteful spot and pencilings of speculum in the upper petals. Rendle's Lady Elizabeth Bulteel claimed particular notice: the beautifully delicate colour of this flower, together with its fine form, spot, and habit, renders it one of the best of show flowers. A good specimen of Rendle's Bride of Abydos, of a beautiful rose colour, and first-rate form, and very profuse bloomer. A fine plant of Rendle's Daniel Lambert, the largest flower of a good form, perhaps, ever witnessed; it is of a very bright purple, with a fine spot in the upper petals, and as free a blooming pelargonium as any known. There were also some fine plants of Rendle's alarm and Helen M'Gregor, two established favourites in the country. Among the other sorts exhibited by Mr. Rendle, were the following new and expensive varieties, viz.: Lord Auckland, Lady Bridport, Climax, Hodge's Queen Victoria, Fóster*i* *r*òsea, Emma, Foster's Alicia, Garth's Criterion, Ulysses, Magnet, Chef d'œuvre, Standard, Pictum, Memnon, Duke of Devonshire, Geraldine, Adonis, Ianthe, Splendidíssimum, Nosegay, Maid of Athens, and many of the beautiful favourites of last year's cultivation. He also exhibited a very choice collection of Cape ericas, or heaths, which were universally admired. Among his assemblage of florist's flowers was a beautiful collection of that favourite flower the pansy, comprising some new and expensive sorts; some excellent varieties of tulips and ixias; and a great quantity of very fine ranunculuses and Dutch anemones. Also, a very fine specimen of Tropæ'olum tricolòrum, covered with thousands of blossoms; a beautifully trained specimen of Rhodochìton volùbile; likewise two fine large specimens of Azàlea índica álba; two beautifully grown plants of *F*ìcus elástica, upwards of 14 ft. high, feathered with leaves from the pot; some fine plants of Passiflòra Bonapárte*a* and kermesìna Grevíll*ea* punícea, E'pacris grandiflòra, Beaufórt*ia* decussàta, Chorózema Henchmánn*ii*, and ovàtum; three fine plants of Gésner*a* Coopèr*ii*, finely in bloom; a very large *O*púntia brasiliénsis, upwards of 6 ft. high; many varieties of Echinocáctus, comprising senìlis (old man's head), oxygònus, *Tùna*, &c. (*Devonport Chronicle*, May 19.)

July 26. There was a very fine display of novelties, and, among others, a beautiful seedling Canterbury-bell, belonging to the Rev. C. T. Collings of Ham. A seedling pelargonium, somewhat resembling that splendid flower the king, reared by S. Topping, Esq., Stoke, excited great attention; as did also a stove climber, belonging to the same gentleman. Mr. Luke, gardener to the Earl of Morley, displayed a very fine collection of dahlias. Fúchs*ia* fúlgens was exhibited by Mr. Rendle, nurseryman, of Plymouth, who had also a very fine collection of annuals. Mr. Pontey's varieties of roses was very fine. (*Devonport Telegraph*, July 28.)

Sept. 13. Mr. Rendle and Mr. Pontey contributed greatly to the beautiful and rich appearance displayed, by their extensive and splendid collections of rare and valuable plants and flowers. Mr. Wood, and several other gardeners, also contributed. Amongst the objects which particularly struck the attention, was a very large bouquet of flowers, in the form of a garland, sent by Mr. Rendle; and a splendid bouquet most tastefully arranged by Mr. Pontey. John Luscombe, Esq., of Luscombe Royal, exhibited a dish of tous les mois. This substance is prepared from the roots of the *C*ánna coccínea, when eight months old. The preparation of it is more tedious than that of arrow-root. The *C*ánna coccínea flowers every month, and this has led the French to call it tous les mois, and a corrupt English term in popular use is toulemong. It is

prepared only in the island of St. Kitts, and sold in London by Mr. Pearce, Pedlar's Acre, Lambeth.

Mr. Corbett's model of his apparatus for heating hot-houses, &c., created much interest; and the Society voted him their gold medal for his invention.

The chairman, G. W. Soltau, Esq., in his address, expressed his regret at the loss of Mr. Bastard, "who had, in conjunction with Dr. Hamilton, founded the Society." (*Plymouth Herald*, Sept. 15.; and *Chronicle*, Sept. 15.)

Devonshire Floral Society. — *July* 12. Pinks were the chief attraction.

Dorsetshire. — *Dorsetshire Horticultural Society.* —*Aug.* 28. A Horticultural Society has, under the immediate auspices of the nobility, gentry, and clergy, been established in the county of Dorset. The collection of greenhouse plants, dahlias, cockscombs, and other flowers, was so various and splendid, that it is almost invidious to particularise; but, as an erroneous impression has hitherto prevailed that the county of Dorset has no taste for horticultural pursuits, it is exceedingly gratifying to refute the assertion by adducing the following list of contributions, and their contributors: — Fúchs*ia* élegans, Túrner*a* élegans, Russèl*ia* *j*úncea, Rev. H. Austen; Brugmáns*ia* Wymánn*ia*, *Catálpa syringæ*fòlia, Lord Portman; Aponogìton distàchyon, Amarýll*is* vittàta, *Ly*chnis Bunge*àna*, Russèl*ia* *j*úncea, J. Farquharson, Esq.; Trevirà*na* coccínea, Sir J. Smith, Bart.; Tristà*nia* *n*eriifòlia, *Loàsa* aurantìaca, Edw. Doughty, Esq.; scarlet egg plant, G. Harris, Esq.; Magnòl*ia* grandiflòra, Rev. T. Rackett, &c. The Hùme*a* élegans and Fúchs*ia* globòsa màjor, exhibited by Mr. Gill (who was indefatigable in his endeavours to assist the committee), excited universal admiration; and a collection of dahlias and German asters, belonging to Mr. C. Barfoot, attracted much notice. It would be an act of injustice to the subscribers to close these cursory remarks without alluding to one part of the exhibition, which was exceedingly interesting, and the theme of general commendation; namely, the vegetables (especially some large Battersea cabbages) exhibited by cottagers for prizes. (*Salisbury Herald*, Sept. 15.)

Dorchester, Sherborne, and Yeovil Horticultural Society. — *July* 28. The show of fruits and flowers was remarkably good; and there were many rare and valuable plants, balsams, heaths, &c. The Leweston and the other conservatories of the neighbouring gentry furnished an admirable supply, which reflected the utmost credit on the skill and care of their respective gardeners. (*Ibid.*, Aug. 4.)

Durham. — *South Durham and Cleveland Horticultural Society.* — *Sept.* 27. This meeting was very numerously and respectably attended. Joseph Pease, Esq. jun., M.P., occupied the chair, and, with his usual ability, dilated upon the advantages of these societies. The show of fruit and flowers was very extensive. The hon. chairman's gardener, Mr. Stephenson, had, we understand, the largest number of prizes awarded to him. We are sorry to learn this Society is not supported so well as it should be. (*The Yorkshireman*, Sept. 29.)

Sunderland Friendly Florists. —Auriculas and polyanthuses.

Essex. — *South Essex Horticultural and Floricultural Society.* — *Sept.* 27. This meeting was held in Wanstead Park, and was for fruit and greenhouse flowers. (*Gard. Gaz.*, Sept. 29.)

Hadleigh Horticultural and Floricultural Society. — *Sept.* 12. The show was splendid. (*Ibid.*)

Chelmsford and Essex Floricultural and Horticultural Society. — *May* 29. This exhibition reflected great credit on those who contributed to it. (*Ibid.*, June 16.)

Colchester Floral and Horticultural Society. — *July* 25. There was not so full an attendance of company as on former occasions. (*Ibid.*, Aug. 11.) At a subsequent meeting in October, Mr. Mallet, gardener to Sir G. H. Smyth, was deprived of the prize that had been awarded to him, because it was discovered that he had coloured the eyes of two dark dahlias. (*Morning Chronicle*, Nov. 13.)

Gloucestershire. — *Cirencester Horticultural Society.* — *July* 29. The show was rather too early for the garden fruit, and the productions of the hot-house had probably been sent to London for the coronation festival which took place the preceding day. (*Gard. Gaz.*, Aug. 11.)

Gloucestershire Zoological and Botanical Society. — *July* 31. This show was for garden and forced fruit, green-house plants, and vegetables. (*Ibid.*)

Pittville, near Cheltenham, Horticultural Meeting. — *Aug.* 1. This show was for carnations and other flowers, fruits, and vegetables. (*Ibid.*)

Cheltenham Floricultural and Horticultural Society. — Among the early fruits and vegetables there were some excellent specimens. (*Ibid.*, May 12.)

Thornbury Horticultural Society. — *July* 27. This was the first exhibition of the Society. (*Ibid.*, Aug. 11.)

Kingscote Horticultural Society. — *July* 4. The fruits were splendid; and one pine-apple, white providence, weighed 9¼ lb. (*Ibid.*, July 28.)

Hampshire. — *Chichester Grape Show.* — *Nov.* 10. 1837. We were never more surprised than at the splendid display of fruit which we saw when we entered the show-room. The table was fairly groaning under ponderous bunches of the juicy grape. Those of Mr. Joy, which gained the first prize, were exceedingly fine, and he well deserves the premium, from the close attention he has paid to the culture and improvement of the vine. We were the more astonished at the quantity, variety, and condition of the grapes, from the very short summer which we have had, barely two months; and if, labouring under all the disadvantages of short seasons and unfavourable weather, fruit may be brought to such a high state of perfection, what may we not anticipate, when all the advantages of fine weather, and increased experience, shall be superadded. This Society, at present but in its infancy, has yet done much in improvement and culture, exciting competition, and attracting attention to this hitherto much neglected fruit in England. It has proved to demonstration, how much may be done by care and experience, assiduity and attention; and to no one is the country more indebted than to our talented neighbour, Mr. Clement Hoare, the author of the popular *Treatise on the Culture of the Vine*, a work which has rendered his name familiar to every horticulturist in Great Britain.

After the dinner, Mr. Hoare, who was in the chair, in replying to some obsalvations of Mr. Joy, said that although they were extremely anxious to meet the suggestions of the different competitors as much as lay in their power, yet he differed from Mr. Joy in supposing that the grapes would have been better had the show been held a fortnight earlier. With respect to the black grapes, which were very thick-skinned, they could not be kept too long on the vine, provided they were properly sheltered; and the longer they hung the sweeter they became, as the watery part of the juice evaporated, and the saccharine part remained. He spoke from experience, when he said that grapes would be found to be better in the middle of the month of November. He had himself kept grapes on the vine till Christmas. The objection might, perhaps, apply to white grapes, which would not hang so long.

Mr. Hoare gave the company his receipt for making *Tendril wine*: he said that 5 lb. weight of tendrils, leaves, and toppings, might be placed in a tub, in the proportion to 1 gallon of cold water, which should be occasionally stirred; it should stand from fourteen to fifteen days, and would, during that time, ferment; it should then be strained off, and 3 lb. of the best sugar should be added to 1 gallon of the liquor. It would be fit to put in the cask about three days after, and in the course of two or three years, if properly made, would equal in flavour the finest sherry wine; for it was a well known fact, that every part of the vine contained portions of the juice which was collected in so large a proportion in the berry. He had not only one sample, but twenty, of tendril wine at home; and, had he known there would have been so little produced this day, he would certainly have brought some as a specimen. (*Hants Advertiser*, Nov. 25. 1837.)

Southampton Horticultural and Floricultural Society.—This was a dahlia show.

Hampshire Horticultural Society. — *Nov.* 14. 1837. The display of chrysanthemums was unusually splendid. A fine collection of stove and green-house plants, with a great variety of grapes, pears, apples, and other fruits of the season, contributed to the gratification of a numerous and respectable assemblage of subscribers and admirers of horticulture. Liberal rewards have been given on the present, as well as at former meetings, to industrious cottagers. The show of vegetables was deserving the highest commendation. Nearly all the gentlemen of the neighbourhood were contributors to the exhibition. (*Hampshire Advertiser*, Nov. 20. 1837.)

March 15. 1838. The show of flowers, fruits, and vegetables was splendid, considering the severe weather we have lately experienced. The room was crowded with visitors from all parts of the country, and the fineness of the day added much to the hilarity of the scene. (*Salisbury Herald*, March 17. 1838.)

October 10. The display of both fruits and flowers was exceedingly good, and that of the dahlias was never surpassed at any of the previous meetings of the Society. (*Ibid.*, Oct. 13.)

Winchester Annual Carnation Show. — *July* 31. There were five pots of beautiful flowers sent up for competition. The first prize was awarded to Mr. W. T. Foster of Winchester. The seedling prize was adjudged to Mr. White. Mr. Foster has this season flowered a number of seedlings, one of which he has named Victoria, which promises to rank as one of the best flowers ever seen. (*Salisbury Herald*, Aug. 4.)

Romsey Horticultural Society. — *Oct.* 11. To increase the attractions of this exhibition, Mr. Page of Southampton sent a great number of rare and beautiful plants. Mr. Ingram of the same town, besides 200 blooms of dahlias, exhibited drawings of 3 seedling geraniums, raised in 1838; namely, Mrs. Rous Dottin, Duchess of Sutherland, and Garnier*ànum*. The candidates for the cottagers' prizes were not so numerous as was expected. We are much pleased to conclude our report by stating that the funds of the Society are in a most satisfactory condition, so that the committee will be enabled to offer many more prizes another year. (*Salisbury Herald*, Sept. 15.)

HEREFORDSHIRE. — *Hereford Society of Horticulture.* — *July.* The specimens for competition exceeded those of the corresponding season last year by eighty-four. (*Gard. Gaz.*, Aug. 11.)

Ross Horticultural Society. — *July* 4. The exhibition, considering the season, was excellent.

HERTFORDSHIRE. — *Hertford Horticultural Society.* — *Jan.* 27. An annual report was read, by which it appeared that nearly 250 prizes, or above 80*l.* in money, had been given away in prizes during the previous year. (*Hertford Reformer*, Feb. 3.)

North Hertfordshire and South Bedfordshire Horticultural Society. — *Aug.* 2. The exhibitions of fruit, plants, and flowers were very numerous, and excited general approbation. Lord Dacre, president, honoured the meeting with his presence, and expressed himself highly satisfied with the first efforts of this infant Society. A very fair collection of plants and flowers was exhibited from the garden of Chicksands Priory, Bedfordshire, by Mr. Ayres, who very liberally declined offering them for competition. The success of this first exhibition must be highly gratifying to Mr. Wilshere, with whom, we believe, the Society originated; and to Mr. Lucas of Hitchin, whose exertions have been most assiduous in its support, and who has kindly acted as the honorary secretary. Mr. Francis of Hertford (to whose judicious arrangement of the flowers at the exhibition the Society is much indebted) exhibited a very choice collection of geraniums, heartseases, &c.; but not for competition. Mr. Paul of Cheshunt also exhibited a fine and extensive collection of roses, for which a prize was adjudged; but the award was left for the decision of the committee. (*Ibid.*, Aug. 4.)

Sept. 20. The flower-room was decorated with numerous devices in dahlias; among the most prominent of which, at the head of the room, was the crown, supported by V. R., covering a space of 10 ft. wide. The show of dahlias was

very splendid; those of J. Marshall, Esq., which carried off the premier prize, we never saw surpassed, either in size, colour, beauty, or regularity of form: the different stands from Messrs. Lucas, Sharples, and others, were very fine, as were those from the gardens of Delmé Radcliffe, Esq., and W. Wilshere, Esq. Among the nurserymen, beautiful stands of 50 were exhibited by Paul and Son of Cheshunt, Francis of Hertford, and Hodgson of Hitchen; the latter, however, carried away the prize through Mr. Paul declining to compete, and Mr. Francis's stand being disqualified. A unique collection of perpetual or autumnal roses, exhibited by Mr. Dimsey, gardener to D. Radcliffe, Esq., was also disqualified, through not being shown according to the rules of the Society. The cockscombs of Mr. Carter were much admired; and the miscellaneous collections of plants exhibited by Mr. Snow and Mr. Ford were remarkably fine and well grown; among the former, we noticed fine plants of Russèlia *júncea*, Gloxínia speciòsa, Nerìne curvifòlia, and Linària triornithóphora. Mr. Ford's collection contained fine specimens of Hòy*a* carnòsa, Lophospérmum scándens, *O*'xalis floribúnda, and *Loàsa* laterítia. Mr. Snow and Mr. Ford also carried off the prizes for specimen plants; the former with a finely bloomed Manéttia cordàta; the latter, with well grown and fine specimens of Brugmán*sia* sanguínea and *O*'xalis Bòwii. To the admirers of the floral productions of our own country, or the studious in botanical nomenclature, the collection of named British plants exhibited by Mr. John Ransome were fraught with considerable interest in this collection. We noticed, in addition to the common flowering plants of the season, beautiful specimens of Clavària fusifórmis, *G*entiàna camerélla, *C*hlòra perfoliàta, and Erythræ'a *C*entaúrium. The collections of fruit from the gardens of Lord Dacre; Earl de Grey; W. Wilshere, Esq., M.P.; W. H. Whitbread, Esq.; &c., were very fine. Mr. Ayres, gardener to G. H. Ackers, Esq., of Chicksands Priory, exhibited (not for competition) five kinds of grapes, three of plums, three of melons, peaches, nectarines, &c. At the dessert, the queen mother plum, an old and almost forgotten variety, from Mr. Ayres's collection, called forth universal plaudits of admiration. The prizes for cottagers, both in flowers and vegetables, were spiritedly contested for; and the specimens of potatoes, onions, dahlias, &c., were very creditable to the growers. Not less than from 1000 to 1500 persons were present. (*Bedford Mercury*, Sept. 22.)

Barnet Horticultural Society. — *June* 26. This was the first show of the Society, and there was an excellent display of flowers. (*Gard. Gaz.*, July 7.)

Huntingdonshire. — *St. Neots Horticultural Society.* — *May* 1. The best green-edged auricula was Page's Clapham; the best grey, privateer; and the best white, conqueror. (*Ibid.*, May 19.)

Huntingdon Horticultural Society. — *July* 31. The gooseberries atracted particular attention; and one of them, young wonderful, a red, weighed 30 dwt. 16 gr. (*Ibid.*, Aug. 25.)

Odiham Dahlia Exhibition. — *Sept.* 17. This was a very good show.

Isle of Man *Horticultural Society.* — *June* 1. Taking into consideration the infancy of the Society and the ungenial spring, the exhibition was most creditable. (*Gard. Gaz.*, June 23.)

Kent.—*Dover Horticultural Society.*— *June* 12. The show was uncommonly good, and called forth the admiration of all present. Among the company were the Earl and Countess of Guildford, Col. Baldwin, and other distinguished personages. Among the fruit, a prize was given to J. Bailey, Esq., for the best twelve apples of 1837. Among the vegetables, a prize was given to Mr. Finnis, for the best half peck of potatoes of 1837; and to the Earl of Guildford, for the best of 1838; and to the Rev. G. Farbrace, for the best fifty heads of asparagus seven inches in length. (*Dover Chronicle*, June 16.)

July 31. The show was, as usual, excellent, and elicited the admiration of the visitors. Among the prizes were several for floral devices. (*Ibid.*, Aug. 4.)

Sept. 18. The show of fruits and flowers was exceedingly good, and the floral devices were generally admired. There was one, however, among these

devices, the design of which was not altogether to our taste, though we admit it was got up with considerable ingenuity. It was a dreadful representation of a dragon, or some such ideal animal, which hung suspended over the heads of the visitors, and, with extended jaws and glaring eyes, looked fearfully down upon them as they approached the upper end of the hall. (*Dover Chron.* Sept. 22.)

Faversham Horticultural Society. — *June* 21. The productions of the cottagers were in some instances infinitely superior to those of the wealthy competitors. (*Gard. Gaz.*, July 7.)

Tunbridge Wells Horticultural Society. — *July* 13. This show was for roses.

Wingham Horticultural Society. — *Sept.* 27. This show was principally for dahlias and fruits.

Kent and Canterbury Floricultural and Horticultural Society. — *October* 6. A fine show.

Lancashire. — *Lancaster Floral and Horticultural Society.* — *June* 18. The exhibition was a very good one, if the lateness of the season, and the late unfavourable weather, are taken into account. The show was originally fixed for Tuesday, but was postponed to Friday, in the hope of a change of the weather. Owing to the continual rains, however, on the intervening days, the tulips presented a worse appearance than they would have done had the show been held on the day originally named. The weather, yesterday, being rather dull, the attendance, although highly fashionable and respectable, was hardly so numerous as usual. The hardy herbaceous plants, green-house plants, pelargoniums, and heaths, particularly the latter, were very superior. The best flowers were: — Tulips: the best pan, one in each class, Mr. Richardson: Catafalque O. D., Crown Prince, Partout, Princess of Wirtemberg, Walworth, Unique. Feathered bizarres: Duke of Lancaster, Mr. T. Connelly. Feathered bybloemens: Ambassadeur Hollande, Captain Wilkinson. Feathered roses: Lady Crew, Mr. J. Walmsley. Flamed bizarres: Potter's Albion, Mr. Hargreaves, jun. Flamed bybloemens: sable rex, G. Gardner, Esq., Sion Hill. Flamed roses: rose unique, John Stout, Esq. Double tulips: mariage de ma fille, Captain Wilkinson. Pelargoniums, the property of ladies: Lord Brougham, Mrs. Knowlys. (*Lancaster Guardian*, June 23.)

Manchester Botanical and Horticultural Society. — *June* 6. A very choice selection of plants was exhibited, and some splendid pelargoniums, of great value, were very attractive. A *Cáctus speciosíssima*, belonging to C. Tayleur, Esq., was greatly admired. The variety of pansies arrested the attention of almost every passer by. Among the fruits, we were much struck with the pines and grapes, both of which were of such great size and beauty, as we have never seen surpassed. The vegetables were nothing extraordinary, with the exception of the asparagus, which was extremely fine. The specimens were exhibited in a spacious marquee, erected for the purpose, immediately in front of the hot-houses; and the garden, which at all times affords an agreeable walk, presented a very lovely and animated scene.

The 20*s.* subscription cup, awarded to Mr. Samuel Ogden, with the following: — Lady Barbara, rose unique, Rowbottom's incomparable sans joie, Trafalgar, and heroine. The first breeder cup, consisting of six varieties, by Richard Dixon, Esq., with the following: — Lady Crew, Duchess of Newcastle, charbonnier noir, Napoleon, Buckley's beauty, and old Dutch catafalque. Feathered bizarres: the first prize, by Mr. William Fletcher, with goud beurs, and four others. Flamed bizarres: the prize by Mr. Ralph Lowe, with lustre, and fourteen others. Feathered bybloemens: the first prize by John Shelmerdine, Esq., with baguet, and four others. Flamed bybloemens: the prize by M. Potter, Esq., with bienfait. Feathered roses: the first prize by Mr. Ralph Lowe, with Queen Boadicea. Flamed roses: the first prize by M. Potter, Esq., with rose unique. Bizarre breeders: the first prize by Richard Dixon, Esq., with a seedling. Bybloemen breeders: the first prize by John Shelmerdine, Esq., with a seedling, from Louis XVI. Rose breeders: the prize by John Shelmerdine, Esq., with Lady Crew. Selfs: the best white

self by Mr. Peter Dean, with white flag. Selfs: the best yellow self by Mr. Peter Dean, with min d'or. Orchideous plants: the premier prize by the Rev. John Clowes, with Myánthus cérnuus, and one other. Stove plants: the premier prize by James Barker, Esq., with Calánthe veratrifòlia, and two others. Green-house plants: the premier prize by Mr. Richard Gorton, with Chorózema Henchmánni, and three others. Ericas: the premier prize by P. Lucas, Esq., with Odoràta, and three others. Pelargoniums: the premier prize by Mr. William Lodge, with perfection, and three others. Herbaceous plants: the premier prize by P. Lucas, Esq., with *P*hlóx Drummóndi. Hardy shrubs: the premier prize by Messrs. Cunningham and Co., with Kálmia latifòlia, and two others. (*Manchester Guardian*, June 11.; and *Manchester Times*, June 9.)

Darton Tulip Show. — *July* 8. The flowers were very good, and they were allowed to remain two or three days for public inspection. (*Gard. Gaz.*, July 7.)

Middleton Gooseberry Show. — The largest red, Loudon, weighed 25 dwt.

Little Moss Gooseberry Show. — Loudon was again the largest, and weighed 25 dwt. 15 gr.

Clayton Gooseberry Show. — Loudon was still the victor, and this time weighed 28 dwt. 16 gr.

Hadley Hill Horticultural Society. — *June* 9. This show was for tulips.

Blackburn Floricultural and Horticultural Society. — *July* 18. This show was for pinks and carnations.

Blackley Gooseberry Show. — *August* 8. The largest red was wonderful, 22 dwt. 6 gr.; the largest yellow, leader, 21 dwts. 1 gr.; the largest green, peacock, 19 dwt. 17 gr.; and the largest white, freedom, 19 dwt. 3 gr. (*Gard. Gaz.*)

Bolton Floricultural and Horticultural Society. — *May* 16. This meeting was for the exhibition of auriculas, and other plants. The best green-edged auricula was imperator; the best grey, privateer; and the best white, reform. (*Ibid.*, May 19.)

Lincolnshire, — *Grantham Horticultural Society.* — *Aug.* 9. The specimens of carnations were not fine; but the fruit and vegetables exceeded those exhibited on any former occasion. (*Gard. Gaz.*, Sept. 22.)

Middlesex. — *Hampstead Floricultural Society.* — *June* 13. A very good show, principally for pansies, (*Ibid.*, July 21.)

Middlesex Society of Florists and Amateurs. — *Sept.* 17. This was a dahlia show.

Uxbridge Horticultural and Floricultural Society. — *Sept.* 22. A dahlia show.

Metropolitan Society of Florists and Amateurs. — *Sept.* 27. This was the annual dahlia show.

Stamford Hill Floricultural Society. — *Sept.* 25.

Highgate Horticultural Society.—This Society was established in November, 1838.

Hampton Floricultural Society. — *May* 28. This was the annual tulip show.

Kentish Town and North London Floral Society. — *Sept.* 19. This show was for dahlias.

Royal Society of Horticulture. — *Aug.* 18. This was a dahlia show.

Royal South London Floral Society. — *Sept.* 11. A dahlia show.

South London Amateurs' Floral Society. — *Sept.* 19. A dahlia show.

Norfolk. — *Norfolk Horticultural Society.* — *August* 8. Carnations, picotees, and early dahlias. There were 120 dishes of fruit.

Norfolk and Norwich Horticultural Society. — *August* 6. The display of roses, geraniums, cactuses, and balsams, was most beautiful. (*Gard. Gaz.*, Aug. 11.)

Diss Horticultural Society. — This was the first meeting for the season, but the number of specimens was not so great as formerly.

Northamptonshire. —*Northampton New Horticultural Society.*—*Aug.* 20. This show was for carnations.

Kettering Horticultural Society. — *July* 26. This show was for fruit.

Northumberland. — *Newcastle Horticultural Society.* — *June* 15. The exhibition was most excellent, and the prize bouquet was much admired, as was also a seedling geranium, from the garden of J. G. Clark, Esq., named by him the Grainger seedling. Among the prizes was, for the best exotic plant in flower, Gésnera faucialis, the silver medal to W. A. Surtees, Esq. (*Newcastle Courant*, June 29.)

July 20. Among the prizes, we noticed one for the best double rose, Scott's ranunculus, the bronze medal to Mr. James Scott, gardener to E. Charlton, Esq., Sandhoe. The sum of three guineas, to the gardener who could produce the best testimonials of his abilities, and of the greatest length of servitude in one family, to Mr. James Scott, gardener to H. Lamb, Esq., Ryton, he having been in the service of that gentleman for fifteen years. (*Ibid.*, July 27.)

Alnwick Horticultural Society. — *August* 28. This show was principally for carnations.

Nottinghamshire. — *Chilwell and Beeston Florists' Society.* — *May* 14. This was the annual show for auriculas and polyanthuses. The best green-edged auricula was Pearson's Badajoz; the best grey-edged, Kenyon's ringleader; and the best white-edged, the pillar of beauty. (*Gard. Gaz.*, June 2.)

Kirklington Gooseberry Show. — *July* 30. The heaviest was a red wonderful, and weighed 21 dwts. 4 grs.

Oxfordshire. — *Henley Horticultural Society.* — *Sept.* 18. The show was very good, particularly in fruit; the peaches and grapes so tempting, that, doubtless, many a looker on wished to cultivate a nearer acquaintance with them. The dedication, on the exterior of the tent, to Flora, was beautifully executed in dahlias, and many very tasteful designs ornamented the interior; the most elegant was a column of wreathed China asters, on a mossy pedestal, surmounted by a model of Canova's Venus treading on roses; for this a prize was awarded to Mr. Stubbs. A pyramid, in the centre of the table, composed of some pretty specimens of zoology, intermixed with shells, was greatly admired; it forming a pleasing contrast to the fruit and flowers around. The collection of asters occupying the whole extent of the bottom of the table, exhibited by Messrs. Sutton of Reading, was much admired; to these gentlemen, and Mr. Halfacre of Sonning, were awarded the extra silver medals, for the best stands of dahlias. The exhibition of this splendid flower was altogether superior to what it has been any preceding year, and the season has closed as triumphantly as the warmest advocate could wish. The cottagers' table was, as usual, excellent; and the increased number of competitors indicate that the benefits already conferred on this industrious class are duly appreciated. (*Reading Mercury*, Sept. 22.)

Oxford Grand Dahlia Show. — *Sept.* 5. Mr. Bates exhibited the best pair; but the prize was not adjudged to him, because he had two flowers in it of the same kind. (*Gard. Gaz.*)

Shropshire. — *Salop Horticultural Society.* — *Aug.* 15. This show was principally for carnations.

Market Drayton Horticultural and Floricultural Society. — *May* 5. Auriculas.

Oswestry Floricultural Society. — *Sept.* 17. Dahlias.

Newport Horticultural Society. — *Sept.* 13. There were some good dahlias, but the number was limited.

Somersetshire. — *Bath Royal Horticultural and Botanical Society.* — *June* 8. The upper tent contained some beautiful auriculas, polyanthuses, hearts-ease, hyacinths, and cut flowers; while in the two circular tents were to be found the fruit and vegetables, consisting of apples of various sorts, cucumbers, cherries, strawberries, pine-apples, grapes, potatoes, asparagus, rhubarb, sea-

kale, &c. The fruit and the vegetables, more especially the rhubarb, excited the astonishment of every individual who was at all acquainted with the backwardness of the spring, or conversant with the details of the kitchen-garden. In connexion with the vegetables shown for competition by subscribers to the Society, we may here mention that the cottagers' prizes attracted general admiration, as showing the effects of careful culture alone, unaided by any of the expensive expedients of the art of horticulture. In some articles, the cottagers actually excelled the gardeners of our neighbouring gentry.

The chief object of attraction was the centre tent. Here, some of the choicest specimens of the floral world — choice, both for variety and beauty — had been arranged with great skill by Messrs. Salter and Scammel, of the Victoria Nursery, who had actually covered from their own conservatories the entire half of the stage down the centre of this large saloon, without sending a single plant for competition. These gentlemen have ever acted in the same spirit of generosity towards the Society, and their disinterestedness is beyond praise. Among their contributions were observed two new cinerarias; two specimens of the E'pacris grandiflòra in flower, very much larger than they usually grow; a new seedling amaryllis; and several new camellias. The proprietor of the Durdham Down Nursery had sent a fine basket of very choice seedling pelargoniums; and also two or three seedlings of adonis. A basket of pelargoniums, very finely in bloom, considering the time of year, belonging to Mrs. Clement; and a similar basket from Mrs. Knatchbull, containing a seedling calceolaria, were much admired. C. Batsford, Esq., contributed a fine collection of stove and green-house plants; as well as a specimen of Cliánthus puníceus, which was regarded quite as a curiosity, it being in bloom throughout its entire length. From the conservatory of J. Jarrett, Esq., of Camerton House, a most liberal contributor of rare and splendid exotics to the Society, were remarked, Dendròbium densiflòrum, Dendròbium fimbriàtum, an Azàlea sinénsis, possessing a splendid yellow blossom; Andrómeda floribúnda; Cosmèlia rùbra, the blossoms of which exactly resembled drops of liquid blood; and a costly basket of stove plants. *Ac*àcia *j*unipérina, *C*áctus Jenkinsòni, and a striped seedling amaryllis, were very much prized. Among the contributions of S. Barrow, Esq., was a specimen of *F*ícus elástica. It excited universal admiration; it was about 6 ft. high, and the leaves nearly a foot long. Mrs. Knatchbull of Babington contributed very extensively towards the good effect of the exhibition. Among the plants she sent were, a very fine Deùtzia scàbra; and a Russèlia *j*úncea, which had attained the height of more than 6 ft., and was covered with beautiful scarlet blossoms. We can only specify a few more attractions of the large tent; a *R*hododéndron arbòreum, the property of H. Nugent, Esq., and a basket of stove and green-house plants, sent by C. C. Elwes, Esq., in which it was difficult to decide whether the skill of the cultivator, or the tact of the arranger, was preeminent. Mr. C. Empson sent, for exhibition only, eight specimens, of which we copy the various labels, viz. — 1. Drawing of the Victòria regìna, copied by permission of Mr. Baxter, of the Botanic Garden, Oxford. 2. Specimen of the wax of which candles are made near Caraccas, South America, the product of a laurel, called by the inhabitants La Sébo. 3. Section of a box tree, from Mount Caucacus, diameter 22 in. 4. Various specimens of wood from China, named in Chinese characters, by a native botanist. 5. A pitcher of the *N*epénthes distillatòria, from the conservatory of His Grace the Duke of Devonshire, at Chatsworth. 6. Section of the *A*ristolòchia sìpho. 7. Truffles, recently gathered in Wiltshire. 8. Transverse sections of the stem of tropical tree ferns, from Australia, India, and South America. These ferns reach, in tropical regions, to the extraordinary height of 70 or 80 feet, and present the appearance of palms. The circumference of the Australian specimen now sent for exhibition is 54 in. (*Bath Herald*, June 9.)

Weston Annual Geranium Show. — *June* 13. A very brilliant display.

STAFFORDSHIRE. — *Uttoxeter Horticultural and Floricultural Society.* — *June* 7. The great point of attraction was the exhibition of tulips; 600 were

staged for competition, and among them were a great number of splendid flowers (*Gard. Gaz.*, June 23.)

Stafford Horticultural Society. — *Aug.* 8. The company was not numerous, but the flowers were very good.

Lichfield Floricultural and Horticultural Society. — *Aug.* 23. This was a most splendid show of carnations.

Westhampton and Staffordshire Horticultural and Floricultural Society. — *July* 3. This show was for fruit.

Tamworth Horticultural Society. — *May.* A splendid show of auriculas.

Burton upon Trent. — *May* 8. A good show.

North Staffordshire Horticultural Society. — *June* 9. This was for hyacinths and auriculas.

Wolverhampton Floricultural and Horticultural Society. — *Sept.* 18. This was a grand dahlia show.

Burton under Needwood Horticultural Society. — *May* 15. The best green-edged auricula was the ploughboy; grey, Kenyon's ringleader; and the best white, pillar of beauty. (*Gard. Gaz.*, June 2.)

SUFFOLK. — *Stowmarket Horticultural Society.* — *Sept.* 14. The exhibition was of a superior character. (*Ibid.*)

SURREY. — *Kingston Royal Floricultural and Horticultural Society.* — *Sept.* This was a dahlia show.

SUSSEX. — *Chichester Horticultural Society.* — *Aug.* 28. The dahlias were remarkably fine, and there were some splendid new varieties. (*Ibid.*, Sept. 22.)

Hurst Horticultural Society. — *Aug.* 7. Many rare plants were exhibited, but the gooseberries formed the chief attraction.

WARWICKSHIRE. — *Warwickshire Floral and Horticultural Society.* — *July.* The following is a list of the principal prizes awarded at the third exhibition of this Society: — Roses: premier prize, crimson moss, Mr. Coudrey; purple, scarlet, and crimson, 1st prize, royal purple, J. Pope and Sons; 2d, seedling, J. Pope and Sons; blush, pink, and lilac, 1st prize, Provence, Mr. Coudry; shaded, mottled, striped, or edged, 1st prize, Rosa Mundi, J. Pope and Sons; white, cream, and yellow, 1st prize, Madame D'Aubray, W. C. Burman, Esq.; moss roses, 1st prize, blush, Mr. J. Moore; roses, in pots, 1st prize, sweet-scented China, Mr. Coudrey; cluster, 1st prize, Russell*iàna*. — Pinks: premier prize, Duke of St. Albans, Mrs. Haslope; purple laced, 1st prize, Duke of St. Albans, Mrs. Haslope; red laced, 1st prize, seedling, Mr. Coudrey; plain, 1st prize, seedling, Mr. Barnes. — Ranunculus: premier prize, Princess Charlotte, J. Pope and Sons; purple, crimson, and scarlet, 1st prize, Mr. Phillips; orange, yellow, and pale colours, 1st prize, Mr. Wilcox; white ground, striped, spotted, and edged, 1st prize, Mr. Phillips; yellow ground, striped, spotted, and edged, 1st prize, Mr. Wilcox. — Stove plants: 1st prize, Gloxín*ia* speciòsa, D. Houghton, Esq. — Orchideous plants: 1st prize, Cycnòches Loddigès*ii*, J. Pope and Sons; 2d, Epidéndron frà̀grans var., D. Houghton, Esq. — Green-house plants: 1st prize, Pimelèa decussàta, J. Gough, Esq. — Plants of commerce: 1st prize, *Thèa Bohèa*, D. Houghton, Esq. — Ericas: 1st prize, Gemmífera, Mrs. Haslope—Calceolarias: 1st prize, C. guttàta J. Gough, Esq. — Frame plants: 1st prize, Cypripèdiun spectábile, J. Pope and Sons. — Herbaceous plants: 1st prize, *D*elphínium Barlòw*ii*, Mr. Dickenson. — Tender annuals: 1st prize, Clintòn*ia* pulchélla, Mr. Dickenson. Hardy annuals: 1st prize, Collíns*ia* bícolor, Mr. Whale. (*Midland Counties Herald*, July 26.)

Birmingham Horticultural and Botanical Society. — The following summary will show the progress that this Society has been making, during the past year; it is from the Report of the Committee: —

"Your committee, in submitting to the members of the Society a statement of their proceedings during the past year, cannot but congratulate them on the increasing celebrity of the gardens, which are daily attracting the attention of the most distinguished British and foreign botanists, many of whom during the last few months, have honoured them with a visit, and expressed

their admiration at the extent and value of the collection of plants which they contain; a collection which is well known to be superior to that of many similar and older establishments, and which, by the unceasing exertions of your excellent curator, is continually increasing.

" During the past year, the collection has been augmented by plants received from John Allcard, Esq., of London ; W. C. Alston, Esq. ; Edward Armfield, Esq. ; Mr. Atkins, nurseryman, of Northampton ; Charles Barclay, Esq., of Bury Hill; George Barker, Esq. ; Woodhouse Crompton, Esq., of Liverpool; Mr. W. Chapman; Mr. Cooper, at Wentworth House ; Mr. Henderson, at Milton House; the London Horticultural Society; Mr. Low, of Clapton Nursery ; Messrs. Loddiges, of Hackney Nursery ; Mr. Paxton, at Chatsworth ; Mr. Murray, of the Botanic Garden, Glasgow ; Mr. Mackay, of Trinity College Garden, Dublin ; Mr. Riley, of Nottingham ; Messrs. Young, of Epsom Nursery ; Mr. J. Young, of Taunton Nursery ; M. Otto, of the Royal Botanic Garden, Berlin, &c. &c. A great number of rare seeds have also been received, through Mr. John Hunneman, of London ; from Dr. Fischer, of Petersburg; M. Otto, of Berlin ; Professor Jacquin, of Vienna ; Professor Bunge, of Dorpat, in Russia ; and from various other individuals, both in this country and upon the Continent.

" It is also peculiarly gratifying to find, from Mr. Cameron's report, that the severity of last winter has proved the situation of the gardens to be admirably adapted for the preservation of an extensive collection of rare and hardy plants ; the trees and shrubs in the arboretum having, with a few exceptions, escaped almost uninjured, while the loss of herbaceous and alpine plants was not more than in ordinary winters. Mr. Cameron further reports that the trees and shrubs have grown so vigorously during the present season, that it has been necessary to take out a number of laurels and other nursery plants ; and that many more must be removed during the ensuing winter, to allow room for the specimen plants. The apple and pear trees in the orchard have likewise grown vigorously, and have been perfectly free from blight. Several footpaths have been made in the interior of the arboretum, to afford partially shaded walks during hot weather.

" Upwards of ten thousand packets of seeds have been distributed during the last winter and spring ; twenty-six packets of various sorts having been given to each shareholder upon applying for them. About 300 dahlias, tubers of Tropæ'olum tuberòsum, and a number of strawberry plants, have also been distributed." (*Aris's Birmingham Gaz.*, Nov. 5.)

Grand Dahlia Show. — Sept. 12. This show was a very splendid one, though the competitors were not so numerous as might have been desirable. The blooms were many of them perfect; we speak as uninitiated admirers. There are in respect to dahlias, as other flowers, certain technical rules of judging, the reasons for which are not obvious, perhaps because, like other technical rules in more important departments, reason had very little to do with the framing of them. The prizes, as on the last occasion, went, with hardly an exception, to competitors from a distance ; and those stands sent in by nurserymen were very greatly superior to those sent in by amateurs ; confirming a special and general observation made by us on a former occasion : 1st, that the florists of Birmingham are by no means so advanced as they had, previously to these open competitions, been led to believe; and 2d, that there is no department of art, high or low, difficult or simple, which is not best filled by those who make a trade of it. The nursery growers here will, we have no doubt, contrive — they must do it — to attain to an equality with those of Cambridge, Oxford, and other places ; but we believe that the amateurs will, as hitherto, best show their love of the art, by encouraging those who cultivate it on the ordinary principles of traffic.

The following is the list of the principal prizes : — Premier Prize : Twenty-four Blooms : Mr. Widnall, Granchester, near Cambridge; Widnall's Ne Plus Ultra, Duke of Devonshire, Rienzi, Cambridge Hero, Horatio, Conductor ; Royal Standard, Suffolk Hero, Dod's Mary Queen of Scots,

Variabilis, Unique, Rhoda, Topaz, Lady Kinnaird, Glory of the West, St. Leonard's Rival, Ruby, Springfield Rival, Conqueror of Europe, Ovid, Eva, and Brown's Sarah. — Amateurs: Twenty-four Blooms: first prize: Mr. Searle, Cambridge; Countess of Mansfield, Kingscote Rival, Rienzi, Widnall's Perfection, Squibb's Purple Perfection, Conqueror of Europe, Knight's Victory, Sir H. Fletcher, Topaz, Ruby, Springfield Major, Rosa Elegans, Blandina, Etonia, Jeffery's Triumphant, Suffolk Hero, Middlesex Rival, Sarah, Countess of Torrington, Beauty of Lullingston, Dod's Mary, Royal Standard, and Conductor. — Seedlings: First Prize: Cup, Mr. Smith, Worcester. — Device or Group: First Prize: Mr. Coudrey, Edgbaston; Second Prize: Master William Pulling. (*Birmingham Journal*, Sept. 15.)

Coventry and Warwickshire Horticultural and Floricultural Society. — *May* 24. This show was for fruit, vegetables, and exotic plants. (*Gard. Gaz.*, July 7.)

Wiltshire. — *Wilts Horticultural Society.* — *April* 3. The forced shrubs particularly merit our notice. There were seedling azaleas so laden with blooms, that the branches were entirely concealed, and the kalmias and hybrid rhododendrons were superior as specimens to any we have ever seen exhibited. The stove plants, though not numerous, were of a choice description; and amongst the green-house plants we observed several species of very difficult culture, in a state of great perfection. The plants not for competition were supplied by Mr. Squibb (of the Fisherton Nursery), and to him the Society is indebted for the exhibition of a splendid stove plant, Gésnera Coopèrii, the flowers of which are of an intense scarlet. Mr. Squibb also exhibited a new seedling variety of rhododendron, and a plant of the Mahònia Aquifòlium.

The names of the principal exhibitors appear in the subjoined list of a few of the chief prizes: — Plants. To Mr. Dodds, gardener to Col. Baker, M.P., for the best stove plant, Oncídium flexuòsum; to Mr. Alford, gardener to T. King, Esq., for the best green-house plant, Podolòbium chorozemæfòlium; to Mr. Brown, gardener to the Hon. S. Herbert, M.P., for the best specimen plant, Deùtzia scàbra; to Mr. Dodds, second ditto, seedling azalea; to Mr. Imber, gardener to A. B. Lambert, Esq., for Ipomœ'a Horsfálli. (*Salisbury Herald*, April 7. 1838.)

July 19. The display of plants was not abundant; but, to compensate for deficiency in number, there were many choice specimens of great merit. The green-house plants were principally of recent introduction, and the collections of cut roses, which were very numerous, comprised varieties of great beauty and rarity. But the most attractive and curious object in the show-room was a new specimen of cactus, resembling a lady's muff, exhibited by A. B. Lambert, Esq., the president of the Society; and lately procured (together with another specimen of the same kind, also in the possession of Mr. Lambert) from some Indians, at a distance of 400 miles within the interior of Mexico. The supply of fruit was very great, and we never recollect to have witnessed so much variety and excellence in this department. The cottagers' productions were very meritorious, and many of their vegetables were scarcely inferior to those exhibited by their more wealthy neighbours. The plants not for competition were supplied by Mr. Squibb of the Fisherton Nursery, and consisted of an extensive assortment of many of the most interesting species of stove and green-house plants. He also exhibited a collection of 40 beautiful varieties of German stocks, and a stand of heartsease containing 50 of the most recent varieties. From Mr. Wheeler of Warminster there was a fine collection of cut roses, consisting of 104 varieties; and also a dish of Elton strawberries. This strawberry, from its enormous size, and being a late bearer, bids fair to be generally cultivated. (*Ibid.*, July 21.)

Sept. 11. There was a large and most fashionable attendance of visitors, and the collection of plants was not deficient for the autumnal season. The display of fruits and vegetables was abundant, and of excellent quality; and it would be unjust to pass over the cottagers' productions, without bestowing

upon them unqualified approbation. Several interesting species of very rare cacti were exhibited by the president, A. B. Lambert, Esq., including dried specimens of Cèreus senilis, from the unrivalled herbarium of the same distinguished individual. The show of dahlias was excellent, and comprised many of the best varieties. The plants not for competition were supplied by Mr. Squibb of the Fisherton Nursery; and amongst them we especially noticed a collection of curious cacti, consisting of 100 recent species. In addition to these, and an extensive assortment of calceolarias, Mr. Squibb also exhibited some stands of splendid dahlias, the superior excellence of which elicited general admiration. (*Salisbury Herald*, Sept. 15.)

Calne Horticultural and Floricultural Society. — Sept. 12. The exhibition of flowers and fruit was of the very first description; and the taste with which it was arranged was the subject of universal admiration. The dahlias formed the leading attraction in the room, and the principal prizes consisted of handsome silver cups. There could not be a finer display of vegetables than was exhibited by the cottagers. (*Ibid.*, Sept. 22.)

The Sutton Benger Floricultural and Horticultural Society. — Sept. 15. Notwithstanding the unfavourable state of the weather, and the dahlias having suffered from being cut while wet, still there was a fair show of those autumnal flowers, and some of the specimens were of great beauty. The profuse, yet neat decorations, were highly creditable to the taste of those who superintended the arrangement of them. There was also a splendid display of vegetables, fruits, &c., which appeared to give great satisfaction to a numerous and most respectable assemblage of visitors. (*Ibid.*)

Chippenham Horticultural Society's Exhibition. — Sept. 14. On entering the splendid room wherein the show took place, an endless variety of superb devices met the eye. On the right side of the spacious apartment was a handsome device, the groundwork of which was composed of evergreens, bearing the name of our gracious queen, formed with beautiful dahlia blooms, and surmounted with the arms of the borough. Opposite to this appeared a representation of the bible, crown, and sceptre, surmounted by a cross, the lower part corresponding with that on the right side, but bearing the name of Flora. The centre window was filled with beautiful specimens of exotics and green-house plants, some of which (from the gardens of Joseph Neeld, Esq., M.P., the Marquess of Lansdowne, and Messrs. Salter and Co.) were particularly deserving of notice. Over the central entrance door appeared a splendid floral crown, with the initials of Her Majesty the work of Mrs. Poole. The centre tables were also covered with superb devices; while the tables around the room were spread with the most exquisite productions of the fruit, flower, and vegetable garden. The most interesting part of the exhibition, and what attracted a great deal of attention, was the unrivalled collection of vegetables shown by the cottagers, which, for quality and quantity, has not been surpassed by any show in the West of England. The dahlias shown by the cottagers were very good, as were the baskets containing collections of vegetables. The prizes given for these by the Society were liberal, independently of a variety of garden and other tools presented by Joseph Neeld, Esq., and Mr. Bailey, surgeon, of Chippenham. It is the general opinion that, owing to the liberal and spirited conduct of this Society, especially towards the cottagers, it will in future rank amongst the first in England, as upwards of 300 first-rate specimens were exhibited by that industrious and well-deserving class, of which the town and vicinity of Chippenham can so justly boast. (*Ibid.*, Sept. 22.)

The Grand Dahlia Show on Salisbury Plain. — Sept. 7. The extreme fineness of the weather, the exquisite display of flowers, and the immense attendance of beauty and fashion, altogether formed a scene which words are inadequate to describe. The interest was heightened by the barren locality in which this magnificent fête took place, and which gave rise to reflections and contrasts most favourable to the pleasures of the day. There were at least 500 carriages and other vehicles at one time on the ground. (*Ibid.*, Sept. 8.)

The Annual Marlborough Pink Show. — *June* 13. The following prizes were awarded : — First prize, to Mr. James Hillier, for his Marlborough rival, a seedling, Victoria, ditto, Lady Ackland, one of the ring, Barrett's Conqueror, Westlake's hero ; second prize, to Mr. Edward Vaisey, for his Lady Ackland, Royal William, one of the ring, Marlborough rival, Barrett's conqueror, Earl of Uxbridge ; third prize, to Mr. John Wentworth, for his Zelf's Mary-Anne, Lady Ackland, Hibbet's triumphant, Barrett's conqueror, regent, one of the ring. (*Salisbury Herald*, June 21.)

The Salisbury Cucumber Show. — *April* 26. This show was a very good one, and very well attended. (*Ibid.*, April 27.)

Kintbury Melon Show.—*August* 21. The largest green-fleshed melon weighed 10 lb. 4 oz., and was of excellent flavour.

Chippenham Dahlia Show. — *Sept.* 13. An excellent exhibition, with the room very tastefully decorated.

Worcestershire. — *Worcestershire Horticultural and Floricultural Society.* — *June.* This show was for flowers.

Yorkshire. —*Beverley and East Riding Floral and Horticultural Exhibition.* — *June* 13. The marquee and assembly-room were well filled, though far from crowded. The exhibition itself (we mean of flowers and fruits) amply sustained — in some respects, much increased — the great celebrity the Society has attained. We question whether any horticultural society could vie with the East Riding in the display of green-house plants; the pelargoniums and calceolarias exceeding anything we had before witnessed. The pelargoniums were principally from the green-houses of the Rev. L. Thoroton, and E. H. Reynard, Esq.; they were in splendid bloom, and excited universal admiration. Among the calceolarias were several superb varieties sent by Mrs. Bethell of Rise, who takes a warm interest in the Society, and ever enriches the exhibitions with some of the choicest exotics and other flowers in bouquets. Among the rarer plants we noticed Clintònia pulchélla ; a very fine specimen of the elegant Cinerària Victòria, from the Hull Botanic Garden ; the Tropæ'olum tricolòrum var. màjor; some splendid rhododendrons ; excellent ericas, principally from Captain Shaw's; several gorgeous azaleas ; a good variety of tulips ; cut pæonies ; and last, but not least in the admiration obtained, some delicious moss roses, the queen of flowers in our estimation. Amongst the ornamental part of the exhibition was a bouquet of exotic and hardy plants, formed in pilasters, sent by Captain Shaw. This had a novel and most pleasing appearance. We saw also a basket of splendid pelargoniums, sent by E. H. Reynard, Esq. Preeminent in beauty were the collections of pansies sent by the Rev. F. Best. This gentleman is a most successful cultivator of this lovely flower; he produces every year new and most beautiful varieties, and on each occasion appears to eclipse himself. Messrs. Forsyth and Ward of Anlaby sent a couple of trays of very excellent pansies, and Mr. Press of Beverly a stand of beautiful plants. The decorations of the marquee were this year novel and well varied, though not so magnificent as in the autumn. At the extreme end was the word "Victoria," each letter composed of a different variety of tulips, anemones, pelargoniums, and other flowers, Over the president's place were the royal arms, formed, one compartment of white, and the other of lilac, flowers, the upper part and crown, which surmounted the whole, being composed of exotics, pansies, and herbaceous plants. We also observed a very splendid imperial crown formed of exotics and herbaceous flowers ; both, we believe, furnished by Mrs. Bethell. At the opposite end was the word "Flora," each letter formed of varied-coloured pansies, upon a moss ground ; this was particularly neat and beautiful. From the top of the marquee festoons of laburnum and other flowers fell gracefully, and added much to the lightness and beauty of appearance. On the principal table was exhibited the splendid service of plate, so worthily presented to the zealous and able secretary, the Rev. Luke Dennis, which excited general admiration. The fruit and vegetables were also very

good. At three o'clock, R. Dennison, Esq. of Kilnwick Priory, addressed the company, and, after enumerating the objects of the meeting, &c., observed in conclusion, that he had bought a new green-house, and thought, to prevent it decaying, he would put it in Kyan's tank; to obviate danger arising from the corrosive sublimate, he got the boards covered 8 in. with gravel; the use of the composition was likely, however, to be very detrimental to plants, for he was only just in time to save his heaths and calceolarias from being killed. He met with a person the other day who told him a mode of killing the wire-worm, and they knew what mischief these things did, especially in carnation beds; they knew that mustard seed sowed in beds would kill them, but this person said that the refuse sold at the mustard mill would effectually do it. He mentioned these things for their information, for he thought a president ought to make every thing beneficial known to those he addressed (*Hull Advertiser*, June 15.)

Sept. 5. The assembly-room and marquee were very elegantly decorated with festoons of evergeens and flowers, &c. At the south end of the room, immediately above the principal entrance, was a design in coloured lamps, consisting of a crown in the centre, having on either side the initial letters "V. R.," with stars. Over the door communicating from the marquee to the room, the words "Success to the Society" were very tastefully worked in flowers of different kinds. At the north end of the marquee was displayed alarge star, composed of a variety of floral productions. The station assigned to the president was surmounted by the royal arms of England, with a crown worked in flowers, consisting of double featherfew, phloxes, dahlias, and African marigolds.

The collection of plants, flowers, fruit, &c., was considered by competent judges, to be superior to that exhibited at any former show. The dahlias, especially, were of the most splendid description, and in almost endless variety. Our attention was particularly attracted by a very elegant design, consisting of a classic temple, composed of evergreens and flowers most tastefully arranged, sent by Mr. R. Harrison, gardener to E. H. Reynard, Esq. There were also exhibited some very fine specimens of stove and green-house plants. Among these were a *Loàsa* laterítia, from the garden of R. Bethell, Esq., M.P.; *Lýchnis Bungeàna*, bearing nearly 100 flowers, also from the garden of Mr. Bethell; Pentstèmon *gentianöides*, from W. Marshall, Esq. of South Cave; Manéttia glàbra, from the garden of R. F. Shawe, Esq., of Brantinghamthorpe; and a number of very beautiful ericas, from the same gentleman. Several very handsome verbenas attracted a good deal of attention. A collection of cut flowers, from the Botanic Garden at this place, furnished by Mr. Smith, the curator, was greatly admired.

The following is a list of the various species of dahlias exhibited: — White, Bride of Abydos, King of the Whites; Rose, Widnall's perfection; Maroon, Suffolk hero, rival Sussex; Yellow, Girling's topaz; Primrose, Sulphùrea élegans, Dray's goldfinden; Dark Crimson, Springfield rival; Light Crimson, Marquess of Lothian; Dark Purple, Ne plus ultra, S. purple perfection; Light Purple, Sir Henry Fletcher; Ruby, Girling's ruby; Red, Simmond's alpha, paragon of perfection; Scarlet, Lord Lyndhurst; Orange, Sir Walter Scott; Salmon, Etonia; Striped, Lady Dartmouth, giraffe, Hon. Mrs. Harris; Spotted, Dod's Mary; Dark Lilac, lilac perfection; Light Lilac, Widnall's Sylvia, Plaistone rose; Globes, crimson globe; Anemone, flowered; Painted Lady, Widnall's comet. The first pan of twelve dahlias consisted of W. Ne plus ultra, Suffolk hero, Quibb's purple perfection, W. Duke of Devonshire, W. Lady Dartmouth, Dod's Mary, Girling's ruby, Marquess of Lothian, rival Sussex, W. Rienzi, beauty of Kingscole, and Foster's Eva. The second pan of twelve dahlias included, W. Ne plus extra, Ansell's unique, Oxoniensis, Marquess of Lothian, Suffolk hero, Widnall's perfection, Sir Henry Fletcher, Springfield's rival, conqueror of Europe, rival Sussex, and Dod's Mary. The third pan of twelve dahlias consisted of Dod's Mary, Hon. Mrs. Harris, metropolitan perfection, Sir Walter Scott, rival Sussex, Sim-

mond's alpha, Stone's yellow perfection, Springfield's rival major, Widnall's perfection, Countess of Torrington, giraffe, and Widnall's conductor. The first pan of twenty-four dahlias consisted of the following varieties : — Stone's perfection, metropolitan perfection, King Otho, topaz, Rienzi, Cambridge hero, Foster's Eva, Suffolk hero, Sir W. Scott, Countess of Orkney, beauty of Dulwich, ledling, beauty of Kingscole, Sir Henry Fletcher, Miss Elphinston, Hon. Mrs. Harris, criterion, Springfield's rival, Dod's Mary, Duke of Middlesex's rival, Girling's ruby, W. conductor, giraffe, and Duke of Devonshire. The second pan of twenty-four dahlias consisted of the following varieties : —Metropolitan perfection, sterling gold, Neptune, Sulphùrea élegans, Countess of Torrington, Hon. Mrs. Harris, Mrs. Broadwood, beauty of Dulwich, lilac perfection, Lady Dartmouth, Suffolk hero, queen of dahlias, Girling's ruby, Countess of Moreton, Hadleigh champion, Corinne, Springfield's rival, Bride of Abydos, Dr. Halley, Sir H. Fletcher, King of the Whites, Knight's victory, gem, Lord Lyndhurst. The pan of dahlias which obtained the first extra prize for twenty-four varieties contained : — Hon. Mrs. Harris, alpha, Springfield's major, conqueror, giraffe, Sir. W. Scott, Dod's Mary, Springfield's rival, criterion, Oxoniénsis, Lady Borer, W. conductor, Metropolitan perfection, buff, Allen's flora, topaz, Lady Dartmouth, crimson perfection, Shakspeare, rival Sussex, Pícta formosíssima, Lady Mary, and Sir H. Fletcher. The pan of dahlias to which was awarded the second extra prize, for twenty-four varieties, consisted of Countess of Orkney, Rienzi, topaz, beauty of Kingscote, giraffe, Sir Walter Scott, Foster's Eva, metropolitan perfection, Springfield's rival, Mrs. Broadwood, Girling's ruby, Lord Lyndhurst, Hon. Mrs. Harris, Stone's perfection, Suffolk hero, Widnall's perfection, Dod's Mary, Jeffery's triumphant, criterion, Ansell's unique, Lady Dartmouth, Marques of Lothian, rival Sussex, Hon. Mrs. Ashley. (*Hull and East Riding Times*, Sept. 7.)

Conisborough Horticultural Society. — *August* 27. The productions gaining the prizes at this meeting were not named. (*Gard. Gaz.*, Sept. 22.)

Doncaster Horticultural Society. —This was the first meeting of the Society, and the show was a very good one. (*Ibid.*, May 19.)

Pontefract Horticultural Society. — *Sept.* 27. This was principally for fruit.

Sampton Carnation Show. — *Aug.* 30. The flowers were excellent.

Halifax Horticultural Society. — *August* 8. The display of fruit and vegetables was very fine and tempting, considering the lateness of the season. (*Gard. Gaz.*, Aug. 25.)

Grand Floricultural and Horticultural Exhibition in the Museum Gardens, Hull. — *Aug.* 30. Arrived within the iron gates, our attention was first drawn to a very elegant floral device, supported by a wooden framework, fixed inside the gate, which presented the inscription, " Success to Horticulture," beautifully executed in flowers. Above this were the letters " V. R.," surmounted by an elegant floral crown, composed of dahlias of every variety of shade. The next object worthy of remark was a new fountain, presented by Mr. Bradwell of Hull, and only placed in the gardens a few days since: it is of a very elegant construction, and delighted the spectators by throwing to a great height a stream of water which fell into the reservoir in which it is fixed. A few yards further on stood a smaller fountain, which was presented to the institution by Mr. Walker.

We are now arrived at the spacious marquee, the property of the Beverley and East Riding Society, which, on this occasion, was the great centre of attraction; the beautiful flowers and plants being there exhibited. Over the entrance was suspended another elegant decoration, the word " Flora," in large letters, composed entirely of flowers, and extremely appropriate to the situation in which it was placed, the entrance to a floral temple. This spacious erection, which was 136 ft. long, and 32 ft. broad, was, during the whole of the day, filled with admiring spectators. A series of tables extended along the middle, from end to end; and these were occupied by a splendid collection of stove, green-house, hardy, orchideous, and annual plants. Tables

were also placed against the sides of the tent; and these were occupied by dahlias, single and in trays, roses, carnations, picotees, &c. The brilliant hues of the first-named flower produced a most beautiful effect in the trays of forty-eight blooms each. At the further end of the tent stood a very splendid floral arch, supporting the words, "Success to the Floricultural and Horticultural Exhibition." This was surmounted by a richly wrought crown, composed entirely of dahlias. Other parts of the tent were also adorned in a variety of ways; and even the cords by which the awning was suspended were covered with flowers and evergreens.

Quitting the marquee at the further end, we came to a tent of smaller size and humbler appearance, which stood near to the ruins of St. Mary's Abbey. The vegetables were here exhibited in great profusion; and, from their enormous size, attracted numbers of admirers. A large and handsome bouquet ornamented the upper part of this tent. Near to its entrance was stationed the excellent band of the 5th Dragoons. The specimens of fruit were exposed to view in the theatre of the Museum, which was fitted up for the occasion, by boarding over the seats, so as to bring the whole on a level with the uppermost tier. A large table was placed in the centre; and some very rich plates of fruit were exhibited.

Amongst the great variety of specimens that were exhibited, it would scarcely be possible to select any paramount articles of merit. One great object of these societies, but which is too much neglected in their proceedings, is the cultivation of fruits and vegetables; and, in the show of these, there was much to admire in this exhibition. In culinary vegetables, the cauliflowers, cucumbers, and beans, of which there were some most gigantic specimens, could not bear comparison. The fruits were particularly fine, and the grapes were much admired: one bunch of sweetwater grapes weighed about nine pounds, and others displayed great skill in the management. The dahlias were some of the best specimens that could be offered to view, and there were several very pretty seedlings. The carnations and picotees were also good, and in excellent variety. There were a few orchidaceous plants, but not of the most showy and striking kind. The different portions of the tent and rooms were ornamented with flowers, in very tasteful forms. The large marquee, which contained the prominent specimens, was scarcely ample enough for the brilliant display which it exhibited. (*The Yorkshireman*, Sept. 1.)

Huddersfield Horticultural Society. — *July* 27. A very good show.

Malton Floricultural and Horticultural Society. — *July* 3. Principally for fruit and vegetables.

Retford and Bawtry Horticultural Society. — *July* 5. The display of flowers was very good.

Whitby Floricultural and Horticultural Society. — *July* 5. Principally for tulips.

Leeds Horticultural and Floricultural Society. — *June* 6. A splendid display.

Kingston Floral Society. — *Oct.* 3. and 4. A most excellent collection of dahlias, fruits, and vegetables was exhibited. (*Hull and East Riding Times*, Oct. 5.)

York Horticultural Society. — *Sept.* 25. Owing to the great number of dahlias exhibited, it was found necessary to set out the fruits in the council room, and the vegetables in the room below. The show was of the most splendid character: we cannot particularise any department as excelling another. The prize specimens being labelled, to show who were the successful candidates, a public announcement of the prizes, which is always a very tedious business in a large company, was rendered unnecessary. Among the prizes were: — Dahlias: Pink, 1. Mrs. Thompson, Skelton, for Miss Scroope; Dark maroon, Mr. C. Aspinall's Dr. Halley; White, 1. Mr. Edwards, Layerthorpe, for York and Lancaster; Light scarlet, Mrs. Thompson's Harris's conqueror; Yellow, Mr. Edwards's topaz; Yellow ground edged or tipt, Mr. Edwards's unique; Ruby, 1. Mr. Backhouse's Levick's triumphant; Dark

crimson, 1. J. Richardson, Esq., for Suffolk hero; Salmon, 1. and 2. Mr. Edwards's Etonia; Lilac, 1. J. Richardson, Esq., for lilac perfection; bronze, 1. J. Richardson, Esq., for Brown's bronze; orange, 1. J. Richardson, Esq., for Sir Walter Scott; Light purple, 1. Mr. Edwards's beauty of Beaufort; Buff, 1. S. Tuke, Esq., for Sir Robert Peel; Light crimson, 1. and 2. Mr. C. Aspinall's Springfield rival; Primrose, or sulphur, 1. Joseph Buckle, Esq., for Sulphùrea élegans; Puce, or dark purple, 1. W. H. Hearon, Esq., for purple perfection; Blush, 1. and 2. W. H. Hearon, Esq., for conqueror of Europe; Dark scarlet, 1. Admiral Preston, for alpha; Light ground mottled, 1. Mr. Etches's Dod's Mary; Dark ground tipt light, 1. H. Baines, Esq., Bell Hall, for Levick's incomparable; Light ground tipt dark, 1. the Dean of York, for the Queen; Dark ground striped, 1. and 2. Mr. Robinson's Mrs. Harris; Light ground striped, 1. H. Baines, Esq., for Bishop of Winchester; Shaded, of any colour, 1. Mr. Edwards's Duchess of Montrose; Globe, 1. and 2. Mr. R. Bearpark's globe crimson; best seedling of 1837–8, 1. Mr. Edwards. Best tray of 36 blooms, open for dealers only: Mr. J. Edwards, for Dod's Mary, Countess of Morton, Duke of Devonshire, Springfield major, Salmon's perfection, Addison, Sir Henry Fletcher, Widnall's perfection, King Harold, Lord Byron, conqueror of Europe, Miss Cooper, Sulphùrea élegans, Stone's perfection, Middlesex rival, Suffolk hero, alpha, Ansell's unique, Conducta, royal standard, beauty of Kingscourt, Knight's victory, Marquess of Northampton, Rienzi, reliance, Etonia, purple perfection, Countess of Radnor, Sir Walter Scott, York and Lancaster, Miss Johnson, Springfield rival, maid of Judah, Duchess of Montrose, crimson perfection, and rector of Ackworth. Best tray of 24 blooms, for gentlemen's gardeners: Mr. Metcalfe, gardener to Mrs. Thompson, for Springfield rival, Corunna, Harris's conqueror, conqueror of Europe, Vicar of Wakefield, Marchioness of Tavistock, Marquess of Lothian, Dod's Mary, Stone's yellow perfection, Miss Scroope, queen, Mrs. Harris, Bride of Abydos, crimson perfection, Duchess of Sutherland, Queen of Selwood, Countess of Morton, Lady King, Stuart Wortley, the gem, Girling's ruby, Levick's Shannon, and Clio perfecta. Best tray of 18 blooms, for amateurs: J. Richardson, Esq., for conqueror of Europe, Springfield major, the gem, Jeffries's triumphant, Springfield rival, beauty of Dulwich, Marquess of Lothian, Sulphùrea élegans, Harris's conqueror, Suffolk hero, lilac perfection, Sir Walter Scott, Dr. Halley, king of whites, hero of Wimbourne, Levick's triumphant, Dod's Mary, Duchess of Montrose. — Pelargoniums: White, 1. P. B. Thompson, Esq., for Micránthum; Dark, 1. W. H. Hearon, Esq., for Lucifer; Scarlet, 1. and 2. P. B. Thompson, Esq., for fire-king; Pink, 1. W. H. Hearon, Esq., for Lavínia supérba; Purple, 1. J. Prest, Esq., for Hermèii grandiflòra; Red, 1. and 2. Mr. Backhouse's Hericartiànum; Clouded, 1. E. Horner, Esq., for Yeatmaniànum grandiflòrum. — Plants. Stove plants: 1. E. Hornor, Esq., for Hedýchium coronàrium. Green-house plants: 1. Joshua Oldfield, Esq., for Begònia capénsis. Fuchsias: 1. Mr. Backhouse's Fúchsia fúlgens; 2. Mr. Robinson's seedling; 3. P. B. Thompson, Esq., for a seedling. Green-house annuals: 1. Mr. Baines's Trachymène cærùlea. Hardy plants: 1. Mr. Backhouse's Penstèmon gentianöìdes. Best hardy British plant: J. Prest, Esq., for Campánula Rapúnculus. China asters: 1. J. Buckle, Esq. Several trays of China asters, having above twelve specimens, were inadmissible for competition, being contrary to the conditions in the schedule. (*Yorkshireman*, Sept. 29.)

York Amateur Florists' Society. — Sept. 25. Among the prizes were:—Premier prize for the best dahlia of any colour, Mr. Hepton's rival Sussex; Dark puce and maroon, 1. Mr. Hepton's rival Sussex; White, or blush, 1. Mr. Thomas Duck's metropolitan blush; Light scarlet, or orange, 1. Mr. Dove's Douglas's glory; Purple, 1, 2, 3, 4, and 5. Mr. Todd's perfection; Yellow, or sulphur, 1. Mr. Todd's Sulphùrea élegans; Dark crimson, 1. Mr. Todd's Springfield rival; Yellow ground striped or edged, 1. Mr. Hepton's Pícta formosíssima; Pink, or rose, 1. and 2. Mr. Duke's Widnall's perfection; Globes, 1. Mr. Wilkinson, crimson globe; Dark scarlet and red, 1. Mr. Todd's

Harris's conqueror; Light ground spottled, mottled, or edged, 1. Mr. Todd's Dod's Mary; Light crimson, or ruby, 1. Mr. Pearson's chance; Dark ground, white tip or edge, 1. Mr. Pearson's king of tips; Lilac, 1. Mr. Chaplin's Lady Borer; Dark ground striped or edged, 1. and 2. Mr. Duke's Frederica; Salmon, or buff, 1. Mr. Hepton's exquisite; Seedlings, 1837–38, 1, 2, 3, and 4. Mr. Pearson; 5. Mr. Todd. (*Ibid.*)

The York Ancient Florists' Society. — *Sept.* 27. Among the prizes were: Dark purple, 1. Mr. Beane's Widnall's ne plus ultra; White, or blush, 1. Mr. Beane's Foster's Eva; Dark puce, or maroon, 1. Mr. Edward's Girling's Suffolk hero; Pink, or rose, 1. Mr. Beane's Turner's carmine perfection; Light scarlet, or orange, 1. Mr. Edwards's Widnall's reliance; Yellow, or sulphur, 1. Mr. Bell's Sulphùrea élegans; Globes, 1. Rev. H. Chaloner's crimson; Dark scarlet, or red, 1. Mr. Beane's Dray's glory of the west; Light ground spotted, mottled, or edged, Rev. H. Chaloner's Dod's Mary; Lilac, 1. Mr. Beane's Neville's hope; Dark crimson, 1. Mr. Edwards's Knight's victory; Yellow ground striped or edged, 1. Mr. Edwards's Ansell's unique; Dark ground white tipped or edged, 1. Mr. Beane's star of Buckland; Light crimson, or ruby, 1. Mr. Edwards's Girling's ruby; Dark ground striped or edged, 1. Mr. Parker's Frederica; Salmon, or buff, 1. Mr. Beane's Kingston's maid of Judah. (*Ibid.*)

North Riding Horticultural and Floricultural Society. — *May* 25. Among the prizes awarded by the judges were: — Fruits: Black grapes, Mr. Whiting, gardener to the Earl of Tyrconnell; white grapes, Mr. Whiting. Vegetables: — Cucumbers: 1. Mr. Ellinor, gardener to J. Hutton, Esq. Flowers: —Stove plants in pot: 1. Sinníng*ia* guttàta, Mr. Ellinor. Green-house plants: 1. Azàlea índica Smíth*ii*, Mr. Ellinor. Heaths: Eutáxia *m*yrtifòlia, Mr. May. Pelargoniums, 1st class, 1. Reform, Mr. Ellinor; 2d class, 1. Pavònium máximum, Mr. Ellinor; 3d class, 1. Mollifòlium, Mr. Ellinor; 4th class, 1. Queen of Scots, Mr. Ellinor; 5th class, 1. Britoniénsis, Mr. Ellinor; 6th class, 1. Ne plus ultra, Mr. Ellinor. Calceolarias: 1. Justí*cia* bícolor, Mr. Ellinor; 2. Crenàta spléndens, Mr. May; 3. Elegantíssima supérba, Mr. May; 4. Paxtòn*ia* supérba, Mr. Ellinor; 5. *C*actiflòra spléndens, Mr. May; 6. Kelly*àna* grandifòlia, Mr. May. (*York Herald*, June 2.)

July 27. *Flowers.* Stove plants in pot: 1. Fúchs*ia* fúlgens, Mr. May; 2. Russèl*ia* júncea, ditto. Green-house plants in pot: 1, 2. *G*ladìolus, Mr. May. Exotic bouquet: 1. Mr. Ellinor. (*Ibid.*, Aug. 4.)

Sept. 21. The fruits and vegetables were of the very first order, and the display of dahlias beautiful beyond description. Two of the judges, who attended from York, declared they had never seen a finer collection. The chair was taken by the Rev. T. W. Morley, who, after addressing the company with reference to the objects of the day, read to the company a very elegant treatise on the nature and the culture of the dahlia, which had been drawn up by Mr. Wood, one of the judges from York, and which was much admired and approved of. About twenty cottagers' prizes were given by the Earl of Tyrconnel. Among the prizes was one for a stove plant in pot, Gloriòsa supérba, Mr. Ellinor. (*Yorkshireman*, Sept. 29.)

West Riding Horticultural Society. — *July* 25. This show is principally for fruit and vegetables.

Sheffield Horticultural Society. — *Sept.* 26. On no former occasion was there ever a richer display of plants, fruits, and vegetables. (*Ibid.*)

Ripon Florists' Society. — *Sept.* 22. The following were among the prizes awarded: — Dahlias: 1st class, Dark, 1. Mr. P. Gregg's Beauty of Bedford; 2d class, Purple, 1. Mr. P. Gregg's Lord Liverpool; 3d class, Sulphur, 1. Mr. Binn's Sulphùrea élegans; 4th class, Rosy crimson, 1. Mr. Binn's Springfield rival; 5th class, Blush, Mr. Binn's beauty of Cambridge; 6th class, Scarlet, 1. and 2. Mr. W. Hebden's scarlet perfection; 7th class, Yellow, 1. Mr. T. Harrison's unknown; 8th class, Purple-edged, 1. Mr. T. Harrison's unknown; 9th class, Crimson, 1. and 2. Mr. W. Gregg's Black Prince; 10th class, Spotted, 1. Mr. W. Grayson's Dod's Mary; 11th class, Whites, 1.

Mr. W. Grayson's Mrs. Wilkinson; 12th class, Rosy-edged, 1. and 3. Mr. W. Grayson's Duchess of Buccleuch; 13th class, Orange striped, 1. Mr. W. Grayson's seedling; 14th class, Reds, 1. and 2. Mr. W. Grayson's Cassini; 15th class, Crimson edged, 1. and 2. Mr. Binn's gem; 16th class, Rosy, 1. Mr. W. Hebden's ruby; 17th class, Buff edged, 1. Mr. Binn's Sir Robert Peel; 18th class, Purple, 1. and 2. Mr. W. Grayson's purple perfection; 19th class, Orange, Mr. W. Grayson's Aurora; 20th class, Purple striped, 1. and 2. Mr. W. Grayson's Frederica; 21st class, 1. Mr. Gregg's water witch; 22d class, Purple shaded, 1. Mr. T. Harrison's Falstaff; 23d class, Lilac, 1. and 2. Mr. W. Grayson's rosy lilac; 24th class, Salmon, 1. and 2. Mr. T. Harrison's Anna Maria; 25th class, Crimson edged, 1. and 2. Mr. T. Harrison's unknown; 26th class, Tipped, 1. Mrs. Williamson; 27th class, Orange globe, 1. Mr. T. Harrison; 28th class, Red globe, 1. and 2. Mr. P. Gregg; 29th class, Crimson globe, 1. and 2. Mr. Binns; 30th class, Scarlet anemones, 1. and 2. Mr. T. Harrison; 31st class, Painted lady, 1, 2, and 3. Mr. W. Grayson. The premier prize for the best dahlia of any class was awarded to Mr. Binns, for the Sulphùrea élegans. China asters: 1. and 2. Mr. W. Grayson. (*Yorkshireman*, Sept. 29.)

WALES.

DENBIGHSHIRE. — *Wrexham Horticultural Society. — Sept.* 25. Principally for dahlias.

GLAMORGANSHIRE. — *Swansea and Neath Horticultural Society.— Dec.* 1837. The funds of the Society are improving; but we are sorry to learn there are still several defaulters. The challenge snuffbox was gained by Mr. Vivian; two of the fancy prizes by Mr. D. Llewelyn, the other by Mr. Vivian. The pruning knives were awarded to Mr. Llewelyn's gardener, for the best baskets of vegetables. The honorary secretary has informed us that it is the intention of the president not to compete for prizes, but to send his plants, as usual, for exhibition; the effect of this will be, that possessors of smaller collections of plants will be enabled to compete with each other with more certainty of success. Mr. Llewelyn has also handsomely expressed his desire to do every thing he can to forward the Society; and, having been one of the most successful competitors, he has intimated to the secretary that he will act in accordance with Mr. Vivian, and send his plants, as before, for exhibition, but not as a competitor. The show was principally for chrysanthemums; but there were, also, the following stove and green-house plants, which gained prizes: — Poinsétt*ia* pulchérrima, Stenorhýnchus speciòsus, Goódyer*a* díscolor, Epidéndron cochleàtum, Cypripèdium insígnis, and Myánthus barbàtus, Mr. D. Llewelyn; Azàlea índica álba, and phœnícea Smíth*ii*, Mr. Vivian; Ceropègia élegans, Mr. Dillwyn; set of green-house plants, Corræ*a* pulchélla, C. speciòsa, *E*'pacris imprèssa, and Cròwe*a* salígna, Mr. Vivian. (*Cambrian*, Jan. 20., 1838.)

CHANNEL ISLANDS.

Guernsey Horticultural Society. — July 26. The prominent feature of this exhibition was the carnation, and for this lovely flower Mr. W. Mellish obtained the principal prizes. The green-house plants of Mr. P. B. Dobrée; the varieties of amaranthus and German stocks exhibited by Capt. Appleton; the splendid geraniums of Mr. Harry Dobrée; and the dahlias and vegetables of Mr. Harris, Royal Yacht Club Hotel, were very fine. The great object of this institution was to encourage the country people to improve the culture of fruits and vegetables; and the last exhibition proved that, within the short space of four years, a considerable amelioration has taken place. We were sorry, however, that the prizes awarded to the cottagers were doled out with such a niggardly hand, for we conceive that all the money received for admission should be expended in premiums for this class of competitors. It has been stated to us, that one man exhibited three cabbages, each weighing

18 lb., and of a good quality, and that he did not receive a prize. The list of cottagers' prizes has not been forwarded to us, though we have applied for it, which circumstance prevents our making such detailed remarks as we otherwise should have done. (*The Star*, July 29.)

The Jersey Agricultural and Horticultural Society. — *May* 30. The room was most tastefully arranged, and the spectators more numerous and fashionable than, perhaps, on any preceding occasion. We were particularly struck with the large devices in artificial flowers; namely, the crown in pæonies, V. R. in heartsease, and a star in anemones, all furnished by Mr. B. Saunders, the nurseryman, for which the judges very properly awarded to him an extra prize. It was apprehended that, owing to the very unfavourable weather, and lateness of the season, the hardy products of the garden would be very few; but we were agreeably surprised, not only to find the exhibitors numerous, but the tables well covered; indeed, more loaded than at any previous spring show, particularly with articles from the cottagers' gardens.

The flowers from the green-houses of Mr. Dupré (the queen's advocate), and Mr. C. De Quetteville, were not only very numerous, but of the best classes, and in the greatest beauty and perfection. Mr. Dupré's contributions to these exhibitions have on former occasions ranked him as a highly successful horticulturist; but we are particularly gratified on the present occasion by his splendid show of calceolarias, especially a variety of seedlings, which occupied a considerable portion of his large stand. Mr. C. De Quetteville's hot-house plants were particularly noticed, and the geraniums of both these gentlemen were deserving of the highest eulogium.

The bouquets of hardy cut flowers were not so numerous as usual, owing to the season, and the very heavy rains of the two previous days. We must, however, notice a very splendid bouquet of flowers in the device of a basket, which was sent by Mrs. Owen, to which the first prize was awarded. It must have occupied its composer many hours to display her beautiful flowers in such excellent array; and, although a device of this kind does not generally set off flowers to advantage, Mrs. Owen's bouquet was an exception to the rule. The only ripe strawberries that were sent came from the garden of Captain Peter Clement of St. Lawrence. They were Keene's seedlings, very fine, and reared entirely in the open ground.

Mr. Lemprière of Rosel sent some very large lemons, which appeared in all respects as good as any imported: and the oranges from Mr. Robin's deserve the same notice. This latter gentleman's grapes were the only fruit of this kind exhibited, and obtained a prize. Mr. James Hammond exhibited some excellent keeping apples, and his asparagus still maintained its character of superiority. In this department Mr. Jarvis was also successful, and we particularly noticed the very fine baskets of vegetables from the gardens of Mr. Dupré and Mr. Patriarche of St. Lawrence.

The nurserymen have very considerably improved in their contributions, and we saw very respectable kinds of flowers from the green-houses of Mr. Turgis and Mr. Hirst, who have recently entered into business in that line. In the early part of our notice, we mentioned Mr. Saunders's contribution of flowers for devices; but even that was surpassed by two large stands, loaded with the rich contents of his green-houses. It would be invidious to draw a comparison between him and Mr. René Langelier, who also contributed a very splendid collection of green-house plants. The exhibition of each was highly creditable, and the list of prizes proves that the judges entertained the same opinion. The Rev. T. Jarvis has, we understand, recently established his gardener as a nurseryman, and from his collection some splendid pelargoniums and calceolarias were exhibited.

It was highly pleasing to see the very numerous and creditable contributions, both in flowers and vegetables, from the cottagers' gardens. We regret that we have not space to dilate on this part of our subject; but we beg to record our opinion, that the Society has worked extremely well in this particular department. It has not only set an example for industry, economy, and neat-

ness among a very useful class of society, but contributed very much to the public comfort, by an improved supply of vegetables throughout the year.

There was an exhibition of poultry, in the open space in front of the arsenal; but our reporter has not supplied us with the means of particularising its merits.

We understand that the cattle show was not only more numerous than on any former occasion, but the cattle showed very evident marks of improvement. Indeed, the prices now offered for Jersey cows and heifers prove the great improvement, and exemplify, in a most important manner, the valuable services rendered to the island by means of this truly national institution. (*Jersey Times*, June 1.)

SCOTLAND.

Caledonian Horticultural Society. — June 7. For the prize offered for the six finest shrubby plants in flower, four amateur or gardener competitors appeared; and the medal was awarded to Mr. David Brewster, gardener to Colonel Lindsay of Balcarres, who exhibited Pimelèa *rò*sea, *C*actus speciosíssima, *C.* Jenkinsò*nii*, E′pacris heteronèma, Kennèdy*a* bimaculàta (very fine), and Burchél*ia* capénsis. A separate medal was offered for the best collection from a nursery-garden; for this there was no proper competition, but the plants sent by Mr. James Kelly, foreman to Messrs. James Dickson and Sons of the Inverleith Nurseries, were deemed highly deserving of the premium; they were *C*lématis bícolor, Deùtz*ia* scàbra, Azàlea phœnícea, Borò*nia* denticulàta, Alonsò*a* élegans, and a seedling cactus, allied to C. Jenkinsò*nii*, copiously studded with flowers. The premium for the six finest herbaceous plants was also voted to Mr. Kelly; the specimens consisting of *S*tátice foliòsa, Begò*nia* parviflòra, *V*erbèna Tweedi*àna*, Amarýlli*s* Adiánte, *A*nagállis grandiflòra, and *Loàsa* laterítia. Two premiums were awarded for fuchsias; the first to Mr. Brewster, Balcarres, for fine seedling varieties, named Bréwster*i* and Thómson*i*. For Cape heaths, two premiums were also given; the first to Mr. Robert Watson, gardener to David Anderson, Esq., of Moredun, the kinds being *E*rìca tenélla, Bonplánd*ia* rùbida, and vérnix coccínea.

The finest verbenas exhibited were those produced in the Society's own garden, under the management of Mr. James M'Nab, including several novelties, particularly new varieties of Tweedi*àna*, called grandiflòra and latifòlia, and a very choice seedling raised by Mr. Macintosh, at Archerfield, and named after Mrs. Ferguson: but these not being allowed to compete, the premium was voted to Mr. Watson, Moredun, whose collection consisted of *V.* Arrani*àna*, Tweedi*àna*, *Melíndres*, incìsa, Drummóndi, and pulchélla álba.

Two competitors produced calceolarias, and both collections were fine. The medal was awarded to Mr. John Young, gardener to Thomas Oliver, Esq., Newington Lodge; the varieties being Earl Dalhousie, Solomon, Shankly*àna*, Julià*na*, Venus, and new scarlet. Mr. Brewster, gardener to Col. Lindsay of Balcarres, received a medal for very fine seedling cinerarias, the offspring of C. cruénta or hýbrida. One having dark purple flowers, named Cinerària regìnæ, was particularly admired.

The prize offered for the finest twenty-four pansies seemed to excite the greatest emulation, no fewer than seventeen competitors appearing, exclusive of nurserymen or dealers. Several of the collections approached each other very nearly in merit. Only two collections from nursery-gardens were exhibited; and the medal was assigned to Mr. William Shankly, Leith Walk Nurseries, a very successful cultivator. Two most superb and tastefully arranged bouquets of cut flowers ornamented the smaller tent on the lawn. Premiums were awarded for both; the highest for one which included a vast profusion of the blossoms of rare exotics, from the never-failing garden of Balcarres.

Among the extra articles produced were two beautiful seedling pelargoniums, from the garden of James Tytler, Esq., of Woodhouselee; and, on the motion of Sir Henry Jardine, the vice-president, a premium was unanimously voted to Mr. David Fowlis, gardener at Woodhouselee, who raised them.

The large tent on the lawn was completely filled with beautiful plants; indeed, they were, perhaps, too numerous or crowded. The most magnificent were from the Royal Botanic Garden, particularly Davièsia latifòlia, Grevíllea acanthifòlia, Erìca odòra ròsea, ovàta, and flórida, Bánksia Cunninghàmi, a noble orange tree in full bearing, and an incomparable Lílium exímium.

A handsome glazed case, designated a "portable conservatory," and occupied by rare plants in a growing state, attracted much attention. It had been prepared by Mr. James M'Nab, for Daniel Ellis, Esq., the distinguished writer on vegetation. After being once well watered, the portable conservatory is shut close, so as to be nearly air-tight; and it may remain so for months, or even years, the plants still continuing to flourish. It must be exposed to the full light, and as often as possible to the sun's rays, so as to enable the plants to produce oxygen for themselves. The evaporation being restrained by the glass covering, an equable local atmosphere is maintained, thus possessing at once the quality both of purity and moisture. In this way, alpine plants have been successfully cultivated by Mr. Ward of Wellclose Square, in the very middle of the city of London; and delicate plants have been transported in safety through tropical climates to the banks of the Thames.

We can only very briefly allude to some of the other productions of the day. A splendid specimen of *E*chium gigantèum, from the garden of Miss Gilchrist of Sunnyside, was much admired. A large branch of *Rìbes* speciòsum, richly clothed with its fuchsia-like blossoms, was from the garden of Sir George Suttie of Prestongrange. A fine plant of *S*tátice arbórea was from the botanical nursery garden of Mr. Cunningham, Comely Bank. Various beautiful flowering exotics, particularly Eutáxia *m*yrtifòlia and Pultenæ*a d*aphnöides, were from the garden of the Duke of Buccleuch, at Dalkeith, the president of the Society. Some fine exotic herbaceous plants, such as *C*rìnum americànum and Glóxin*ia* speciòsa, came from Dalmeny Park, the seat of the Earl of Roseberry; and others, of equal rarity and loveliness, from the nursery-garden of Mr. Sang, at Kirkcaldy. Plants of uncommon beauty were also contributed, from the gardens of David Falconer, Esq., of Carlowrie; Professor Dunbar, Rosepark; and Dr. Neill, Canonmills. (*Scotsman*, June 13.)

Sept. 24. *Fruit and Dahlia Competition.* The specimens produced were equal in quality, and exceeded in number, any exhibited on former occasions, and, in so unfavourable a season, this may be regarded as just matter of gratulation. We shall now detail the various awards, and it will be observed that the competitors belong to various districts of Scotland; so that this is truly a national society, deserving the support of all who are fond of gardening, and worthy of the honour lately conferred on it by Her Majesty, in becoming its patroness.

For the best two sorts of peaches, raised under glass (eight competitors), a first premium was awarded to Mr. William Newton, gardener to Sir David Baird, of Newbyth, the kinds being the galande and Royal George. For the best three sorts of peaches from open wall (also eight competitors), the first premium was found due to Mr. John Robertson, gardener to Lord Gray, Kinfauns, the kinds being galande, noblesse, and Royal Kensington. For the best two sorts of nectarines from glazed house, there were five competitors; and the first premium was given to Mr. John Robertson, Kinfauns, the kinds being elruge and scarlet. Best two sorts of nectarine from open wall, premium voted to Mr. Peter Thomson, gardener to J. J. Hope Vere, Esq., of Craigiehall, the kinds being the white and the red Roman. Best two sorts of apricots, to Mr. George Brown, gardener to the Earl of Lauderdale, Dunbar House, the kinds being the Breda and Moorpark. For the best three sorts of plums, there being eight competitors, two premiums were given; the first, to Mr. John Young, at Riccarton, for the Washington, Orleans, and white magnum. For the best twelve greengage plums, there were no fewer than fifteen competitors: two premiums were given; the first to Mr. Arthur Calder, gardener to George Sligo, Esq., of Seacliff. Best eight figs, to Mr. James Smith, gar-

dener to the Earl of Hopetoun, Hopetoun House, the kinds being the brown Ischia and black Ischia. Best three sorts of summer pears, to Mr. James Mackintosh, Archerfield, the kinds being the jargonelle, Duhamel, and early beurré. For the best two bunches of black Hamburg grapes, there were fourteen competitors, all producing large and beautiful specimens: two premiums were voted; the first to Mr. James Dobson, gardener to the Marquess of Tweeddale, Yester House. For the best two bunches of any variety of Frontignac grape, two premiums were also given; the first to Mr. James Macintosh, Archerfield. For the largest cluster of dessert grapes, to Mr. John Hogg, Ratho House, the kind being the white Syrian. For the best Enville pine-apple, to Mr. Alexander Muirhead, gardener to Colonel Belshes, Invermay. For the largest pine-apple of any other variety, to Mr. William Cuthbertson, gardener to the Earl of Roseberry, Dalmeny; the kind not named, but regarded as Ripley's new queen. Premiums were offered for the best green-fleshed and also for the best scarlet-fleshed melons, and both were awarded to Mr. James Falconer, gardener to Sir David Erskine, Cambo House. Two gardeners contested for the prize offered for the greatest variety of different kinds of ripe dessert fruits, and both collections were excellent. A premium was assigned to each, viz. Mr. Macintosh, Archerfield, and Mr. Robert Watson, gardener to David Anderson, Esq., Moredun.

Among the extra articles produced was a remarkable branchlet of black Hamburg grape, showing five clusters proceeding from one eye. For this a premium was voted to Mr. George Brown, gardener at Dunbar House. Two beautiful specimens of queen pine-apple, from Hopetoun House garden, though not intended for competition, but marked "for the dessert," were considered deserving of an honorary premium, which was accordingly voted to Mr. James Smith, gardener to the Earl of Hopetoun.

The prizes for dahlias were then awarded; but we do not notice them, as the names of the winning kinds are not given.

Several cultivators exhibited seedling dahlias raised in Scotland within the last two years, and the silver medal was assigned to Mr. Alexander Smith, gardener to William Forbes, Esq., Callender House, who produced the three finest.

Some splendid bouquets of autumnal flowers were exhibited. For the richest and most tasteful, the silver medal was voted to Mr. David Brewster. A small reward was likewise voted to Mr. W. Ferguson, Dunfermline, who exhibited a fanciful pagoda, constructed with much care, and covered with moss and heath. Collections of various fine flowers, not specified in the prize list, were, on this occasion, exhibited. The beauty of the hollyhocks, sent by Mr. Fowlis, from Woodhouselee, attracted particular attention. The petunias, from Wemyss Hall, could scarcely be surpassed; and the African and French marigolds, from Mr. Patison's garden, at Williamfield, greatly excelled, in size and splendour, the specimens usually seen in gardens. Some rare and curious plants, from the garden of Mr. Falconar of Carlowrie, were interesting to botanical cultivators. (*Scotsman*, Sept. 29.)

ABERDEENSHIRE. —*Aberdeenshire Horticultural Society.* — *June* 20. Among the prizes awarded was one for the best twelve preserved apples, to John Dallachie, gardener to the Right Honourable the Earl of Aberdeen, Haddo House. An extra prize was awarded to David Gairns, gardener, Glenbervie, for a box of geraniums, raised from seed by him; and a second ditto to William Findlay, Castle Fraser, for a handsome specimen of Brugmánsia sanguínea, in flower. Numerous other prizes were awarded, but we do not insert them, as the names of the kinds of plants winning them are not given. (*Aberdeen Journal*, June 27.)

Aug. 29. Notwithstanding the unseasonable weather which has prevailed of late, there was one of the largest, most rare, and early displays of fruits, flowers, &c., which have been witnessed for some years. The attendance, too, was excellent; a large majority were of the aristocracy. In proof of the interest which these exhibitions are now creating, it need only be mentioned

that, exclusive of privileged tickets, the receipts, in sixpences taken at the door, exceeded that of the five shows of last year put together. The names of the plants obtaining prizes are not given, except an extra prize awarded to John Dallachie, gardener to the Right Honourable the Earl of Aberdeen, Haddo House, for a handsome plant of Passiflòra kermesìna, in flower; a second ditto to William Findlay, Castle Fraser, for a plant of Erythrìna *Crísta-gálli*, in flower; and a third ditto to David Gairns, Glenbervie, for cockscombs. There was also presented, by Mr. Gairns, a splendid box of dahlias, allowed to be the best in the hall; but the judges considering them not to be distinct varieties, they were not permitted to compete.

After the dinner, Mr. Massie proposed "the memory of the late Mr. Crombie of Phesdo, and Dr. Dyce," both gentlemen having done much to advance the interests of the association. Mr. Massie, in introducing the toast, alluded particularly to the anxiety which Mr. Crombie had evinced to get a botanical garden near Aberdeen. He (Mr. M.) hoped that this question would again be agitated, and that such a garden would soon be established. The toast was drunk in solemn silence. It was stated, both by the chairman and the croupier, that measures were now in progress for having a botanical garden in connexion with the association. (*Aberdeen Herald*, Sept. 1.)

Ayrshire. — *Kilmarnock Horticultural Society.* — *June* 15. A very good exhibition.

Banffshire. — *Banffshire Horticultural Society.* — *July* 20. Among other prizes, were one for rhubarb, to W. Knowles, gardener to W. Bisset, Esq., of Lessendrum; and another for preserved apples, to A. Skinner. There was also an extra prize to James Adam, for a collection of seedling heartsease. (*Stirling Journal*, July 27.)

Berwickshire. — *Berwick upon Tweed. Eastern Border Horticultural Society.* — *July* 17. The number of competitors was not great; but there was a good display of flowers. (*Gard. Gaz.*, Aug. 11.)

Clackmannanshire. — *Clackmannanshire Horticultural Society.* — *July* 19. The rooms were, as usual, tastefully ornamented with evergreens and flowers, by Mr. Williamson, and the porch or entrance to them both, elegantly adorned by means of pillars, supporting wreaths of foliage, and festoons of flowers, under the direction of Mrs. John Paterson, who suggested this very material improvement. Among other attractive decorations of the exhibition room, not the least was a portrait (a transparency, and which ought to have been placed in a window as such) of her most gracious Majesty the Queen, surrounded by evergreens and flowers, kindly lent for the occasion, by Mr. Thomas, of the Royal Oak Hotel.

Although the morning was rainy, the meeting was honoured with the presence of most of the distinguished families of the town and neighbourhood, including parties from Airthrey Castle, Alva House, Powis House, &c., and of a considerable number of strangers. In consequence of the long-continued unfavourable weather, the committee postponed this meeting two weeks: and now the numerous company all appeared much pleased in witnessing so plentiful a supply of excellent articles, fruits and flowers, as well as vegetables, few of which were in perfection a fortnight ago. There were exhibited, by Dr. Walker, 150 herbaceous plants and flowering shrubs, named; also 25 varieties of roses: by Mr. Ramsay, from Dollar Botanic Garden, 50 hardy herbaceous plants, 24 stove and green-house plants, and 21 hardy shrubs, all in flower; besides a number of rare annuals, &c.: by Mr. Paxton, Kennetpans, early potatoes, very fine; *Cáctus* speciòsa, and apples (red cluster) in excellent preservation: by Mr. Drummond, several green-house plants, together with a variety of new half-hardy annuals, among which were Nemóphila insígnis, *Phlóx* Drummóndii, Leptosìphon densiflòrus, L. *androsàceus*, Eùtoca Wrangeliàna, Eschschóltzia *cròcea*, &c.: by Mr. Cathie, from Airthrey Castle, *Verbèna Melíndres*, *V.* venòsa, *V.* Tweediàna, *V.* Drummóndii, *Mímulus* cardinàlis, A'nna Bolèyna pink (rare and fine), a large assortment of very splendid dahlias; also brown Portugal onions, and American early potatoes, both very

huge, and the latter completely ripe, being raised by a new method, whereby all superfluous moisture is drained from them during the time of their growth: by Mr. Smith, from Powis House, five varieties of apples, in the finest state of preservation; also cucumbers, pansies, and several varieties of peas: by Mr. Trotter, from Alva garden, a quantity of cut flowers, and very fine peaches from hot-house: by Mr. Taylor, from Dunmore Park, a great quantity of shrubs and flowers: by Mr. Weir, from Kennet garden, specimens of Hóya carnòsa *Lythrum grandiflòrum*, a collection of hardy flowers, three varieties of apples, and three large fruit of the pound pear, in a very superior state of preservation: by James Christie, Esq., Shaw Park, a great variety of cut flowers and shrubs: by Mr. William Williamson, several new pelargoniums, Fúchs*ia* globòsa, *Petùnia* nyctaginifòlia; also twenty sorts of calceolarias. Mr. Cobban exhibited a splendid collection of seedling pansies, and also of seedling pinks, both of which were intended for competition, but were accidentally too late in being brought forward. It was, however, the opinion of the judges, and of all who examined them, that they would have obtained first prizes. The display of that universal favourite the pansy was much admired, both for their number, and beautiful variety of tint. The pinks were comparatively but few; it being still too early for their full blooming, in the present late season. (*Stirling Journal*, July 27.)

Sept. 13. Notwithstanding the long-continued rain and high winds, a great profusion of very excellent fruits, flowers, and vegetables, was brought forward; so that, altogether, this autumnal exhibition was at least not inferior to any of the preceding. Both the large rooms were tastefully adorned, as usual, under the direction of Mr. W. Williamson; and the porch, as at the summer exhibition, was ornamented agreeably to the directions of Mrs. John Paterson. The elegant terra cotta vase, presented to the Society by Mr. Alexander Bald, was at the head of the upper room, filled with the choicest flowers; and the whole getting up of the exhibition appeared to give universal satisfaction. Although the morning was unfavourable, the company present was both numerous and respectable, consisting of many of the nobility and gentry of the town and neighbourhood, as well as the subscribers and their friends. Of the many articles exhibited, only an imperfect account has been obtained. The following are a few of them: —There was exhibited, by Mr. Niven, from Keir gardens, forty varieties of very fine dahlias; by Dr. Walker, Woodut, Dollar, two hyacinths, which have been for the last twelve years in the open garden, without shelter; that is, taken up every autumn, and planted again in November of each year. The larger one measured 8½ in. in circumference, and weighed 4½ ounces; the smaller, 8 in., and 4 ounces in weight. By Dr. Walker were also exhibited a quantity of the uncommonly beautiful red plum, *Prùnus cerasífera*: by Mr. Somerville, from Kippenross garden, apples (Gogar pippin), crop 1837; also by Mr. Weir, from Kennet garden, apples of crop 1837, all in the finest state of preservation: by Mr. Taylor, from Dunmore garden, grapes, apricots, peaches, and plums: by Mr. Paxton, from Kennetpans garden, Francò*a* appendiculàta (in pot), and a fine specimen of Hydrángea Hortén*sia*: by Mr. Fraser, Alloa Nursery, Fúchs*ia* globòsa Neíll*ii*, an abundant and constant flowerer: by Leslie Meldrum, Esq., Devon Iron Works, three very large drumhead cabbages: by Mr. Drummond, Alloa, dahlias, China asters, and a fine plant of Fúchs*ia* microphýlla, in flower: by Miss Ramsay, a variety of flowers: by Messrs. Clark, Roy, Syme, Paton, and Williamson, a large quantity of flowers. Mr. Syme also sent several fine dahlias; and Mr. Williamson, superior plants of Fúchs*ia* recurviflòra, and *Loàsa* laterítia. The fine plants, *Loàsa* laterítia, which obtained the first prize, were from the garden at Airthrey Castle; and those which obtained the second were from the garden at Cambus, being Agapánthus umbellàtus and Begòn*ia* bícolor. Among the prizes were the following.—Wine, best sparkling home-made: 1st, Mr. Stewart. Wine, best of any other sort, from fruits or herbs raised in Scotland: 1st, Mr. Finlayson. Cider, best, from apples raised in Scotland, Mr. Finlayson (no competition). Moss house, best model

of, by a journeyman or apprentice gardener: Mr. James M'Gruther, journeyman gardener, Alva House. (*Stirling Journal*, Sept. 21.)

Dumfriesshire. — *Upper Annandale Horticultural Society.* — *July* 20. Highly creditable to the district.

Dumfriesshire and Galloway Horticultural Society. — *Sept.* 27. *The Anniversary Meeting.* The show of fruits and vegetables was abundant, and rich in quality, considering the character of the season. After the prizes had been awarded, the rooms, which were tastefully adorned, were opened to the public, and during the day there was a vast concourse of visitors. Among the prizes were, for apples of 1837, to Mr. Wales, gardener at Woodlands; basket of foreign fruit, Mr. Leighton, Dumfries. There were exhibited by Mr. M'Diarmid, Courier office here, a small tree of the mother apple, in a pot, with a dozen apples; as also several almonds, from a tree in his garden. A very large jargonelle pear, as well as a large peach, from the open wall, were shown from the garden of Roger Kirkpatrick, Esq.; and a seedling peach by Mr. Haining, Kerfield. Silver beet, Mr. Webster, Munches; new love lies bleeding, and seedling pinks, Mr. Kellock, Craigielands; group of *Lýchnis Bungeàna*, *Phlóx Drummóndi*, and *Loàsa* alàta, petunias several varieties, and new fuchsias, Mr. Clerk, Raehills; and Portuguese cabbage stalks, a substitute for sea-kale, Mr. Hennan, Drumlanrig.

Fifeshire. — *Fife Horticultural and Floricultural Society.* — *June* 13. The principal flowers were tulips.

Colinsburgh Horticultural Society. — *Sept.* 19. 1837. There was an unusual and beautiful display of fruits, flowers, and vegetables, of every variety, and a keen competition amongst the members for superiority in the different articles competed for. It was, in fact, one of the best exhibitions the Society ever had since its commencement, and particularly as related to dahlias, which were uncommonly rare and beautiful, and far exceeded anything of the kind ever produced in Fife. Besides the dahlias for competition, there were produced for exhibition only, the following, all very much admired: — 65 dahlias from Balcarres; 6 seedling ditto from Mr. Nicol, Dura Vale; 6 ditto from Kingsdale; 7 heartseases from Dura Vale; 27 dahlias from Mr. Balfour, Leven Mills; 26 ditto from Balbirnie; 50 ditto from Gibliston; 50 ditto from Pitscorthie; 30 ditto from Largo Gate; 12 ditto from Cambo; five carnations from Gibliston; 11 different kinds of hardy annuals from Grange; four seedling apples from William Black, Kilconquhar; pine-apple from Grangemuir; and two sorts of apples from ditto, crop 1836. (*Fifeshire Journal*, Oct. 5. 1837.)

Cupar Horticultural Society. — *Sept.* 18. 1837. The doors were opened to the public at two o'clock, when a considerable number of the beauty and fashion of the town and neighbourhood graced the room, contrasting finely with the varied beauties of Flora and Pomona. All seemed to take a deep interest in the admirable display before them; and, from the attention of the members of the Society, our shows are rendered exceedingly interesting to the visitors, as at once imparting great satisfaction and instruction. (*Ibid.*)

St. Andrews Horticultural and Floricultural Society. — *Sept.* 27. 1837. This institution has steadily increased since its establishment in 1833. We are exceedingly glad of this, because such societies diffuse generally a taste for one of the most agreeable and humanising of pursuits; spread improved varieties of fruits and culinary vegetables, and new varieties of flowers and shrubs, &c., which have been lately introduced from different parts of the world, and bring into personal communication many individuals, gardeners and others, who, but for assemblages of this sort, might have for ever remained unknown to one another. "In general, whatever has a tendency to bring men together, so as to enable them to think and act in masses, is favourable to human improvement. The farmer confined to his farm, and the gardener within the walls of his garden, could never have any influence on society, either in the way of disseminating agricultural or horticultural improvement, or in ameliorating the condition or manners of the two classes; but let them meet together two or three times a year, first thought, and afterwards action, will be the result."

The show of dahlias was most splendid, embracing small select numbers of every variety of this most fashionable flower. The calceolarias, salvias, stocks, phloxes, fuchsias, and green-house plants, were very fine; but the principal and most inviting feature in the whole exhibition was the rich and abundant display of the fruit of the vine. There were twelve varieties of grapes, all beautiful specimens of their respective kinds, which reflected great credit on the science and skill of the husbandman. The melons, peaches, apricots, and plums, were also very good specimens, but not so numerous as on some former meetings. The culinary vegetables were most excellent, and at once showed that neither labour nor skill had been spared in their production. There were shown from St. Leonards some richly laden boughs of currants, purple Ischia figs, and purple carrots. From the Priory, black Hamburg grapes, grown without fire-heat; the berries averaged in weight 105 grains each. From Largo House, splendid specimens of the dahlias, Lady Dartmouth and rival king. The best-managed amateur member's garden: Mr. Bousie, Baillie Gibson, and Dr. Cook, were considered to be equal (*Fifeshire Journal*, Oct. 5. 1837.)

Kirkaldy Horticultural Society. — *Sept.* 21. 1837. *The Annual Meeting.* Though the articles produced for competition and exhibition were worthy of admiration, as well as highly creditable to those under whose superintendence they had been reared, we cannot fail to express our deep regret that the characteristic spirit of emulation which once existed amongst its members should now exhibit such palpable marks of decline. Among the prizes was one to Mr. Kellock, gardener of Craigielands, for a model of a summer-house, which was much admired. (*Ibid.*)

Dunfermline Horticultural Society. — *Sept.* 19. 1837. We were glad to see that the fruits, flowers, and vegetables were in abundance, and, for splendour, equal to any of the former exhibitions of the Society; each member seemingly having vied to surpass his neighbour in contributing whatever he had rare and fine. The devices were original and ingenious, and the articles exhibited by the cottagers received great praise. Prizes were awarded to the following members:—To Mr. John Gavin, gardener, Danibristle, best bunch of Alexandria grapes, best ditto Hamburg grapes; Mr. Hogg, Pitfirrane, best heaviest six apples, for a device of flowers, heaviest gourd; Mr. Robert M'Nie, apprentice, Dollar gardens, largest and best herbarium of native plants; Mr. James Kellock, gardener, Craigielands, best model of a summer-house. James Ferguson, apprentice to Mr. Foulis, Fordel, best design of a house-garden.

Forfarshire. — *Forres and Nairn Horticultural Society.* — *June* 29. *First Exhibition.* It was with more than common gratification that we witnessed the establishment of a Society like this, so long a desideratum in this part of the country, where a love of horticulture, in all its branches, is so generally diffused; where there are so many good gardens, so great a number of intelligent gardeners, and amateurs of gardening; and where we have a climate equal, if not superior, to any in Scotland, for bringing to the highest perfection all the productions of the garden. We understand that the list of members already comprehends the names of about twenty practical gardeners, and nearly forty amateurs, the latter all resident in Forres and its neighbourhood. The lateness of the season, and other causes, prevented the exhibition taking place earlier in June, as was first intended; one consequence of which was, that the show of green-house plants, such as heaths, calceolarias, &c., was not so good as it would have been two or three weeks sooner. The tables, however, presented a very splendid and gay appearance, and contained a very choice and varied collection of plants in pots, cut flowers, bouquets, &c., arranged with a taste that did great credit to the committee of gardeners.

Considering the lateness of the season, the show of culinary vegetables was highly creditable to the assiduity and skill of the gardeners who exhibited these productions; to many, we dare say, not the least interesting part of the show. We regret we can only specify a few of the plants on the tables, and in other parts of the room. Among them was a fine plant of Fúchs*ia*, from Brodie House, 11 ft. high, one stem, and the growth of this season. Heaths and

other plants from Relugas. Some very good seedling pansies, from Dunphail. China roses, and several species of *Cácti*, from the collection of Mr. John Gillan (an enthusiastic lover of plants and successful cultivator), Forres. Some choice pelargoniums, from Dr. Brands. From Moy, some good calceolarias and balsams, and a plant of common mignonette, two years old, 4 ft. high. From the choice collection at Dalvey, were exhibited several fine pelargoniums, calceolarias, pansies, and exotics; among the latter, a finely grown plant of the coral tree (Erythrìna *Crísta-gálli*), and a Tropæ'olum, beautifully trained, were much admired. Also, a seedling rhubarb, of a very large size, and peculiarly formed leaf. From the garden of Burgie, we observed several amazingly large lettuces; and from Culmony, some early cabbage, well hearted.

The finest cucumbers were from Kilravock; we believe the variety was Masson's white spine; they were 17 in. long. Apples, of 1836, were sent by the Rev. Mr. Brander, Duffus, for exhibition; they looked more plump and fresh than any at the competition, variety not known. The judges recommended that a prize for these should be awarded by the Society. (*Forres, Elgin, and Nairn Gazette*, July 4.)

Montrose Horticultural Society.— Sept. 12. This was principally for carnations.

Kincardineshire. — *Kilmadock and Kincardine in Monteith Cottage Garden Society.— Sept.* Among the prizes were some for the neatest-kept cottage and garden, 1st, James Stewart; best-cultivated garden, 1st, John M'Kinlay; best-kept cottage interior, 1st, James M'Arthur.

There were sent for exhibition from Blairdrummond garden, Altringham, Dutch, and Malta turnips and carrots, German greens, several varieties of apples, a bouquet of Œnothèra Drummóndii and Œnothèra missouriénsis. From Ochtertyre garden, dahlias, hardy annuals, cauliflowers, &c. From Deanston garden, a bouquet of flowers, and an assortment of violas. From Newton garden, Fúchsia floribúnda and globòsa, *Cy*clamen autumnàlis, Cinerària *popu*liflòra alba, double nasturtium, *V*erbèna Tweediàna, ericas, calceolarias, antirrhinums, and a collection of annuals. From Mr. James M'Farlane, architect, Doune, an alum basket, ornamented with flowers, and filled with apples, pears, and peaches. From Mr. George Bryce, smith, Doune, a parcel of excellent lecks. From John Buchanan, Blairdrummond, onions; and from Old Newton, dahlias, &c. &c. The entrance to the hall was tastefully decorated with flowers and evergreens, from the neighbouring gardens; and the handsome bouquets of flowers, interspersed with fine plants of myrtles, hydrangeas, fuchsias, and pelargoniums, tastefully arranged round the hall, had an enlivening appearance, and drew forth general approbation from the numerous and very respectable visitors who honoured the exhibition with their presence. (*Stirling Journal*, Sept. 21.)

Kirkcudbrightshire. — *Kirkcudbright Horticultural and Floricultural Society. — July* 14. A good show, principally of vegetables.

Renfrewshire — *Paisley Floral and Horticultural Society. — Sept.* 6. Among the prizes we observed one, for the most ornamental bouquet, to James Scotland, gardener, Blackston; and another, for the twelve heaviest turnips, to be competed for by agriculturists, to Thomas Taylor, farmer, Mossside. At the same time and place, a competition took place for a first prize of ten guineas; a second prize of four guineas; and a third prize of one guinea, for the twelve best varieties of dahlias (four variegated, and eight selfs), when the judges awarded the first prize to Peter Thomson, gardener, Craigiehall, Edinburgh. The names of the flowers were, Forrester's Eva, Marquess of Tavistock, conqueror of Europe, Dod's Mary, Widnall's conductor, Marquess of Lothian, Suffolk hero, Sir Henry Fletcher, Widnall's Rienzi, Girling's ruby, Girling's topaz, and Springfield rival. There were also exhibited a great variety of dahlias from Messrs. Handyside of Musselburgh, and others; a beautiful egg plant, from Castle Semple; 24 varieties of plums, from William Futt, gardener to Peter Montgomerie, Esq., Port-Glasgow,

which were much admired; two large clusters of pears, and a melon weighing 9¼ lbs., exhibited by Daniel Robertson, gardener, Paisley. (*Glasgow Chronicle*, Sept. 10.)

Roxburghshire. — *Roxburghshire Horticultural Society.* — *Sept.* 19. This show was principally for dahlias.

Stirlingshire. — *Auchenbowie and Plean Horticultural Society.* — *Sept.* 7. Among the prizes we observed some for the following flowers and ornamental plants not generally contended for: — Daisies, 1st, John Stewart; violets, 1st, William Taylor; sweetwilliam, 1st, William Taylor; hydrangea, 1st, Andrew Johnson; myrtle, 1st, John Miller; ornamental bouquet, 1st, J. Stewart; ornamental bouquet of wild flowers, 1st, Hugh Ferguson. (*Stirling Journal*, July 27.)

Sept. 15. Among the prizes were some for: — Hollyhocks, 1st, Henry Drysdale; stocks, 1st, John Miller; asters, 1st, John Miller; marigolds, 1st, William Stevenson; salvia, 1st, John Stewart; fuchsia, 1st, John Stewart; collection of house plants, 1st, William Stevenson; ornamental bouquet, 1st, William Stevenson; flower clump, best arranged and kept, 1st, William Stevenson; gardens, most tastefully laid out, and neatly kept during the season, 1st, William Stevenson; sweepstakes for ornamental bouquet, 20 subscribers at 6*d.* each, 1st, John M'Lachlane. A splendid bouquet of this class, given in by John Stewart, was reluctantly set aside by the judges, as being above the specified height. An extra premium (half a boll of oatmeal), offered by Mr. Thomas Smith to the member who gained the greatest number of first prizes during the season, was declared due to William Stevenson, who had carried off *eight* first prizes. John Stewart, John Miller, and Andrew Johnston, had gained *seven* each. (*Ibid.*, Sept. 21.)

Stirling Horticultural Society. — *Sept.* 18. *The Annual General Meeting.* The day proving most propitious, the exhibition was thronged by a very numerous and respectable assemblage, while the attendance of so many practical gardeners, with their journeymen, indicated the most unabated zeal on their part. As anticipated, from the nature of the season, the show in the flower and vegetable department was considerably behind those of former years; the display of fruits was varied and extensive, though in some of them a deficiency of flavour was observed. One of the principal objects of attraction on this occasion was a lofty bouquet of flowers from Polmaise, by Mr. Carmichael, gardener there, which was remarkable for its simplicity and elegance of design, as well as taste displayed in the decoration.

Besides the plants which gained prizes, and which were not named, there were presented for exhibition as under: — From Major Baird of Park, shrubs and flowers, and clusters of grapes grown in the open air; from Ardoch House, verbenas in pots, curiously trained, dahlias, and several rare flowers, red currants, and cucumbers; from Blairdrummond, a collection of herbaceous flowers, melons, grapes, fruit of the *Pyrus japónica*, Heligoland beans, and francfoin, a new variety of pasture grass; from Meiklewood, violas, apples, and pears; from Wester Livilands, dahlias; from Craigfort, cockscombs, fuchsia, and apples; from Newton House, rare annuals and large Swedish turnips; from Deanston House, pears; from Drylaw House, near Edinburgh, German stocks, carnations, and picotees; from Barnton, grapes and plums; from James Colquhoun, Esq., Stirling, a large plant of Indian corn in pot, and ears of the same nearly ripe; from Laurel Hill, flowers, cauliflower, and cabbage; from the Gart, cauliflower; from Mrs. Alexander, Stirling, a collection of gourds, onions, &c.; from Western Plean, a collection of flowers; from Touch, hollyhocks; from Messrs. Cleghorn, and Co. nurserymen, Edinburgh, an extensive collection of double named dahlias; from Robert Campbell, Esq., Stirling, cockscombs, &c. (*Ibid.*, Sept. 21.)

IRELAND.

Northern Horticultural Society. — *April* 26. The display of stove and green-house plants was most abundant, and very fine; decidedly superior to

those of any preceding spring show. The auriculas, primroses, hyacinths, narcissus, and other plants which must come to perfection without peculiar artificial means, were, of course, from the backward nature of the season, deficient; but the new potatoes (some specimens large and fine), sea-kale, asparagus, mushrooms, lettuces, early cabbages, &c., exhibited, were all excellent, and proved how far skill and care will, in some measure, overcome the opposition of a backward spring. A very beautiful bouquet, from the gardens of Mr. M'Calmont of Abbeylands, attracted much admiration, and shed lustre and brilliancy around that part of the room which it adorned. The greenhouse plants from Ardoyne were exceedingly beautiful; and one of them, Cliánthus puníceus, a splendid plant, full 6 ft. high, and covered with flowers, very deservedly obtained the prize of the silver cup, which was got up for private competitors. A great variety of pelargoniums from Abbeylands (Campbell, gardener), and a number of valuable and peculiarly fine plants from Purdysburn (Walker, gardener), and from Shane's Castle (Mr. Hume), deservedly obtained premiums. The nursery grounds of Mr. Farrell produced their accustomed portion of very excellent plants (particularly a variety of the Camél*lia* japónica), which were deservedly rewarded with premiums. The fruits were in admirable preservation; and, altogether, it was a very superior and very choice exhibition, and such as reflects honour on the skill and enterprise of our northern gardeners. Besides the usual kinds of articles, prizes were given for agricultural productions. Mangel wurtzel, for the best three roots, F. D. Finlay, Esq.; rye-grass (sheaf, six inches round), for the best, Robert Grimshaw, Esq.; clover (sheaf, six inches round), for the best, H. M'Calmont, Esq.; vetches (sheaf, six inches round), for the best, James M'Calmont, Esq.; rape: for the best three plants, Alexander Montgomery, Esq.; turnips, for the best three Swedish, of any sort, W. A. Moore, Esq. Subscription silver cup, for the best green-house plant (to be won twice), adjudged to Michael Andrews, Esq., Ardoyne; first time of winning, for Cliánthus puníceus. (*Northern Whig*, April 21.)

June 1. Prizes were given for stove plants: for the best six, Hugh M'Calmont, Esq., Abbeylands, (gardener, Alexander Campbell,) for Calánthe *v*eratrifólia, *C*áctus Jenkinsón*ii*, Blèt*ia* Tankervíll*iæ*, Epidéndrum cochleàtum, Gésner*a* Coopèr*ii*, and Oncídium ampliàtum: for the best three, Michael Andrews, Esq., Ardoyne, (gardener, Patrick Campbell,) for Ardísia crenulàta, *O*púntia vulgàris, and Sinníng*ia* guttàta. Green-house plants (not comprehended in any other class: for the best six, Hugh M'Calmont, Esq., for Anthrocércis viscòsus, Bánks*ia* formòsa, Chorózema ovàtum, Diósma fràgrans, Kennèdy*a* ovàta, and *Loàsa* laterítia. Pelargoniums: for the best six, Hugh M'Calmont, Esq., for Admiral Nelson, eclipse, gem, General Washington, Hector, and perfection; the best three, William G. Johnson, Esq., for Diomede, gem, and Gowèr*ii*; for the best seedling, there were five specimens, but the judges considered them all deficient in merit. Calceolarias: for the best six, Hugh M'Calmont, Esq., for British queen, Earl of Dalhousie, Miss Gladstone, Purpùrea pícta, Rugòsa, Coccínea, and Queen Mary. Tender heaths: for the best six, Robert Langtry, Esq., for Odòra *r*òsea, Perspícua, Rubricàlyx, Shanón*ii* var. tricolor màjor, and Vérnix coccínea. Fuchsias: for the best four, William G. Johnson, Esq., for Atkins's F. gigantèa, grácilis, globòsa, and microphýlla.

The following sketch of the exhibition, by one of the judges, Mr. Niven of Glassnevin, may be useful to the Society, and interesting to the public at large. He states: "It is always pleasing to have an opportunity of witnessing the progressive advances that may be making in any of the institutions, connected with the improvement of our country. There is, perhaps, none that indicates more the increase of social happiness and civilisation, than those connected with her agricultural and horticultural interests. It is, therefore, with no small satisfaction, that the establishment of horticultural societies is received throughout the land. The Northern Society, as one of the parent societies in Ireland, has, consequently, done much towards the diffusion of that taste,

which so generally pervades, at the present time, all classes of the community. I cannot help congratulating the Northern Horticultural Society on the interesting exhibition of Friday; when, notwithstanding the backwardness of the season, and the trying severity of the late winter, so much was presented that was creditable and interesting. The arrangements for facilitating adjudication, as well as displaying to the public the numerous productions of the season, were, as usual, highly creditable and satisfactory. The stove and green-house plants were, in general, remarkably well-grown, and the species select and well-chosen. The prize groups of pelargoniums were particularly so; but the manner in which the second prize six were *flowered* deserves especial notice, and these, but for a very fine single truss of 'the gem,' in the next group, would have obtained the first prize. In the exhibition of these very beautiful show-plants, an improvement may be suggested, in point of *classification* of colours. Passing over the numerous minor groups of ornamental plants, and florists' flowers, which were all more or less creditable to the respective candidates, it is with peculiar satisfaction that mention is made of the excellent selection of vegetables that graced the upper end of the long exhibition table. The cucumbers were, certainly, more numerous and finer than any thing I ever before witnessed. Nor can I refrain from stating that a gentleman, who had, a few days before, witnessed the London Society's exhibition at Chiswick, stated that they were far superior to any thing he had seen there. The prize baskets of asparagus were, also, very fine; and, what added not a little to the general interest of the show, were the neatly put up and excellent specimens of various agricultural productions, such as vetches, rye-grass, &c. The fruits and cut flowers, from cottage gardens, were, also, creditable productions. Much improvement may be accomplished in the arrangement and form of the bouquets exhibited; namely, instead of such large, unwieldy, stiff, pyramidal masses of flowers, handsome vase or basket specimens would be much more likely to suit the present taste, as well as to obtain the prizes. It may, likewise, be suggested, that prizes for choice herbaceous plants should also be introduced, a class of plants of very general interest and beauty. These observations and suggestions I submit, at the request of some of the officers of the Society, with much respect; happy in thus having had another opportunity of witnessing so much of improvement, and zealous honourable competition." (*Northern Whig*, June 5.; and *Ulster Times*, June 14.)

Practical Horticultural and Floricultural Society. — *July* 12. Principally for pinks and roses.

Louth Floricultural and Horticultural Society. — *July* 31. A very interesting exhibition.

Cork Horticultural Society. — *May* 3. A very excellent exhibition.

ART. V. *On the Effects of Fire and Water, as applied to Plant Culture under Glass; including the Subject of covering Vine Borders; the different Systems of Heating by Flues and by Hot Water; Remarks on managing Hot-house Fires, &c.* By ALEX. FORSYTH.

As fire and water are two of the most influential elements that are brought to bear upon garden productions, I beg leave to offer the following remarks upon their application to gardening under glass.

Now, let us take, for example, a vinery; and, leaving out what such a structure frequently is and has been, I will come at once to what I think it ought to be. A vinery, in my opinion, ought to be a house and border, where the vines should luxuriate

in a rich congenial soil, and enjoy an artificial climate, equal to, if not surpassing, the finest natural climate on earth. To accomplish this, the vine border must not be left to the excesses of our variable climate at any time, much less whilst the vines are excited, in winter, or even in spring. The most efficient, and, I may say, the most economical, way to defend the vine border is, to have it covered with glazed lights on light rafters, a few inches above the soil; this glass should be covered with a tarpawling, and the air under this covering should be heated by means of hot-water pipes, placed under a flagged footway, in front of the vine border. During sunshine, the fire under the boiler might be banked up, the tarpawling rolled off, and the lights kept close, in order to secure as much sun heat as possible; always taking care that the border be well moistened with rich manured water, at an agreeable temperature. Late in spring, when the foul and frosty weather may be considered gone, the lights might be removed, and employed over melons, or to ripen grapes, till the heavy autumnal rains made it again necessary to have them put on. By this simple, and by no means extravagant, process (since the same glass would mature a crop of grapes or melons far above the interest of the capital on its first cost), the excess of rain and the want of heat would be counteracted in a manner far superior to the practice at present adopted in the best gardens, of covering the early-forcing vine border with litter and leaves, subject to all the vicissitudes of the season, which frequently chill and drench them when their aid is most wanted. This covering in of the vine border would also remove another fruitful cause of failure in grape culture; namely, the practice of having the stems of the vines above ground before they enter the vinery, thereby placing the plant in three very dissimilar mediums: the roots in a temperature perhaps equal to that of melted snow; the stem in the ever changeful open air, which may be still lower than the temperature of the earth; and the body of the vine, spray and leaves, treated like a delicate exotic; not to mention that many vines, through excessive rains, frosts, &c., lose the young roots of the previous summer, and become blackened stumps in the earth, without feeders. One great care ought, therefore, to be, to encourage the vine to make as many feeders as possible, as near to the surface as possible, and endeavour to preserve them in winter, if possible.

A vine, or, indeed, any other plant, will seldom send out roots near the surface, unless that surface be rendered *dark*, *firm*, and *moist*. To accomplish this, I should cover the border all over with turfs, black side uppermost. Many vine borders are deficient in width, and that frequently from a very curious reason; namely, that the line of a gravel walk must bound them. Now, a gravel walk may be carried over an immense length of border,

at a very trifling expense, by having brick piers (not arches), on which coarse slabs of wood or stone may be laid, and grouted to a level with clay or lime mortar, and covered with a layer of gravel. Your readers will be kind enough to forgive me for this lengthened dissertation on the vine border, as I considered it indispensable to strike at the *root* of the evil; and surely I need not say how much superior rich manured water, at a mild temperature, is for a vine border, compared with cold rain or melted snow, nor how much warmer a vine border would be by having only a tarpawling over it, to throw the rain off; dry earth being such a powerful non-conductor of heat or cold, and, moreover, such an excellent medium in which to preserve the young feeders of the vine from rotting in winter. Now, let us consider the expense of covering a vine border with tarpawling, say 12 yards long by 8 yards wide; that is, something less than 100 square yards, which is only a small rick-cloth. Now, the rich farmer that is too niggardly to provide himself with a rick-cloth is justly considered undeserving of pity, in the event of loss from rain on his haystack; how much more, then, are the rich and noble amateurs of early grapes undeserving of sympathy, if they fail to obtain handsome desserts, from a niggardly supply of the necessary means.

But, to return to the subject of heat and water; if you will bear with me a little, I will endeavour to explain the practical working of *some* of the various systems by which hot-houses are heated; and, in order that your readers may take some notice of these practical hints, I must inform them that, for the last thirteen years, a good deal of my living has depended upon my conduct with the fire-shovel and lantern; that is to say, I have been more or less a stoker in various establishments during that period. Now, the common fire-flue, of bricks and mortar, is by no means so bad as many people imagine: it certainly gives out a dry sulphureous heat, by no means congenial to vegetation, but (leaving out fermentation) no system that I am acquainted with (except Kewley's open boiler, of which more by and by) gives out moist heat. The sun heat is certainly dry, and, were it not for the damp that it draws from all moist substances on which its rays fall, it would be as free of moisture as the flame of a furnace; yet every one knows that no heat for a forcing-house equals the sunbeam. In getting a house heated, therefore, all that I should desire of the builder would be, to secure me a sufficiency of pure dry heat; and I should moisten it to my own medium as circumstances might require. The continued vapour arising from water charged with mineral oxides, as must be the case with open copper boilers full of water that is continually circulating through rusty cast-iron pipes, or where vapour is raised from water kept in the rusty panels of unpainted

flat pipes, is certainly, in the culture of grapes, highly detrimental. I do believe that, in houses of moderate size, with continued careful management, almost all descriptions of garden produce may be obtained in great perfection by the use of well-built brick flues. On the other hand, however, I should say that no system of heating can be more dangerous, if carelessly attended to; for, if the fire burns too fiercely, the flue is liable to get so heated at the fire end as to parch, and even burn, every thing near it; and, by imprudent conduct in moistening it, to raise vapour, in that state, the greatest danger is to be apprehended, as well from breaking the flue as from scalding the fruit and foliage, This unequal heating of the flue is one of the greatest evils of the system; not only as being dangerous, but also inefficient in producing the necessary equal temperature at both ends of the house.

As regards moisture in the atmosphere of a house thus heated, I tried panelled flue covers, and found that a great deal of the water that I put into the panels did not evaporate in the house, but was drawn by the heat into the soot, on the inner side of the flue cover, and consequently went up the chimney; and thus, not only was the benefit of the vapour lost to the house, but the fire would not draw so well, having to pass through a damp flue. I therefore had the panels painted, and found that the same quantity of water in the panels, now stopped from filtering into the flue, lasted twice as long in supplying vapour to the house.

Before I leave this subject, I would just throw out a few hints, that may be of some service to inexperienced stokers. Now, there is nothing more common than to see such persons with the *wrong end of the fire foremost;* that is to say, with coals, dust, or scoria (clinkers), forming a bank behind the fire, that is between the blaze and the flue; and yet having the furnace door red, from a blazing fire in front. Now, with a proper double furnace door, having a vacuity between the plates, and a flue, or other heating apparatus, anything like sufficient for the space to be heated, there can be no necessity for burning the furnace door in this manner. But here, lest my brethren of the fire should think that I am insulting their common sense, by attempting to instruct them how to make a fire; I must be allowed to confess, that I have made blazing fires for years, and burnt many a furnace door off the hinges, before I was shown how to make a fire that should act with greater force upon the flue, and with very little, if any, upon the furnace door. As soon in the morning as the sunshine or the mildness of the weather would permit us to withdraw the fires, the grates were cleaned of every particle of live coal, clinker, dust, &c.; these being well soaked with water, were afterwards riddled, the clinkers picked out, and the ashes and cinders placed in separate

bins, (for it is against the established rules of stoking, to carry any ashes out of a stokehole, provided the flue draws properly to make them into clinkers,) then a few pieces of rotten pea-sticks, or any other spray, with a small portion of old bast-mat, or the like, were laid in the furnace whilst it was hot, and this generally got as dry as tinder in the course of the day, and required only to be touched with a lighted candle, and have a shovelful of lumpy coal put in front, and partially over it (not behind it), to make a powerful fire almost immediately. Instead of ever placing any coals behind the blaze, we always placed them between the blaze and the furnace door; and, when the fire began to burn strong, a layer of wet ashes was laid over the coals, which answered the purposes of confining the draught, and forming a lasting fuel, the action of which was more regular, and required less attention, than coals unmixed, not to mention a great saving both in fuel and furnace doors.

There is a very slovenly and dangerous system of kindling fires often practised in gardens, to save the trouble of laying them with wood, &c.; I allude to the carrying of a shovelful of live coals from one furnace to another: but, as every gentleman's house and premises either are, or ought to be, insured; and as it used to be contrary to the insurance regulations to have a candle or lamp out of doors without a lantern over it; I doubt not but it will be considered doubly dangerous, to allow shovels full of flaming coals to be carried from house to house.

But the principal way in which fire and water are made subservient to gardening under glass remains to be detailed; I mean the warming of hot-houses by heated water, circulating through iron tubes, the various modifications of which have now become such a profitable speculation, that a perfect mania seems to have taken hold of a certain class of men, who, for want of any shorter appellation, I must beg leave to designate the *Hot-water-system-mongers*. These gentlemen have favoured us with the fruits of their ingenuity, by which they have endeavoured to mystify, and render quite marvellous, a thing in itself as simple as the very teapot. It can therefore be no wonder that failures frequently occur; but, to explain all the faults, and causes of failure, in heating by means of hot water would be a very unpleasant and laborious task; and one, forsooth, not to be tampered with, since it would expose the writer to the malice of many respectable men, in whose systems errors and imperfections might be found; yet I must not be deterred from showing some of the more flagrant errors, that have caused so much dissatisfaction. I will, therefore, endeavour, as briefly as I can, to show where the ironmonger is to blame for certain failures, and also where he is not. Now it is certain, many excellent gardeners have not had the opportunity of becoming acquainted with the

proportions that the square feet of hot-water pipe should bear to the cubic feet of air to be heated; and it is equally certain, that they are often so tied down to false economy, as not to be allowed more than the cost of a certain quantity of pipe, which they know to be too little: and now, for the sake of such, I will, before I conclude this article, put these proportions in a practical shape, from my own measurement and experience. I have just now measured two houses heated by Fowler of Temple Bar, London, which are side by side; the one, a vinery for early forcing, contains hot-water pipes to the extent of 1 square foot of surface to every 10 cubic feet of air to be heated, the laps of the glass being closed, and only one glass gable end exposed. The other house contains 1 square foot of surface of hot-water pipe to every 33 cubic feet of air; and this, with one gable end against a stove, defended the green-house plants from frost, during the late severe winter. But, should the proprietor, at any future time, turn this house to the same use as its neighbour, the ironmonger certainly would not be to blame, if it did not answer as well, with 230 per cent more air to heat. Another house, heated by Cottam and Hallen, contains 1 square foot of pipe for every 13 cubic feet of air; but this house is exposed on all sides, and occupied with early forced peaches. Another, an early vinery exposed on all sides, heated by Kewley, on the siphon principle and open copper boiler, has 1 square foot of pipe for every 11 cubic feet of air. Now, I consider 1 ft. in 10 ft. necessary for pines; 1 ft. in 12 ft. for grapes; 1 ft. in 15 ft. for peaches; and 1 ft. in 24 ft. to keep the frost from green-house plants, when the thermometer in the open air falls to zero: and this, I am prepared to say, is perfectly practicable with Fowler's wrought-iron boilers, in the shape of a drain tile, whose sides form the furnace on all sides, thereby losing no heat. His method has this superiority over every other that I am acquainted with, that his narrow long furnace is equally adapted to burn with advantage half a peck of fuel on a mild evening, or to contain at once a barrowful of coals and coke mixed, on banking up for a stormy night: and here consists its superiority over many which are beautifully calculated to burn fuel to the greatest advantage; and which, were the supply of heat to be the same at all times, would certainly answer most admirably. But the case practically stands thus: to counteract the midnight blast in the month of March, and maintain 75° in an exposed vinery, where a valuable crop of grapes is in flower, which the least chill would ruin, is a test for which few of our own new-fangled apparatuses are calculated, and, to do it with a small furnace, the attendant must be all night at his post, like a mariner at the helm: whereas, I have kindled a body of fuel on the bars of Fowler's furnace, and pushed that back on a second tier of bars, which had no draught

under them; then kindled another quantity to join the former, till the furnace was one body of live coals, which, being properly compacted with coals and wet ashes, and the damper regulated, retained a heat in the pipes, regular and lasting, till the morning dawned. Now, the only fault that I find with Cottam and Hallen's boilers is, that the cross bar or bridge curtails the power of extending this furnace and renders it perhaps rather too limited in severe weather: yet, in every respect, Cottam and Hallen's apparatus gives satisfaction, and is neat and workman-like.

Kewley's boiler for his siphon apparatus is a large copper caldron, set upon a circle of bricks, with a very contracted surface of bars, yet plenty of room in the furnace under the caldron. This makes the fire draw well, but the fuel has to be passed through a narrow entrance porch with two doors connected by an iron rod, so that when the outer door folds back, forming a semicircle, the inner one stands open after forming a quadrant. This is done the more effectually to prevent any supply of air to the fire, except through the bars below. The following are a few of the appendages of Kewley's apparatus. Two leaden pipes, being the leading and return air-pipes, connected with a handsome brass gin-palace pump and brass stopcock, placed in the stock-hole: a leaden siphon and brass stopcock for emptying the boiler, which siphon, every time the boiler is dried and filled, must be filled by a force-pump; or, as Mr. Kewley showed me, have the air sucked out by the mouth till the siphon gets filled with water: a cast-iron cistern or feeder, with leaden pipe and ball-cock over the boiler; as the water expands with the heat, or in case of its boiling, this ball-cock is forced up beyond its range, thereby flooding the fire, from an overflow of water from the boiler. But the best part of the invention still remains; for, lest these intricacies might at any time become uncontrollable, Mr. Kewley has wisely provided bridles for his pipes, which, when screwed on their mouths, prevent the water from circulating, and, by keeping on the fire, the water in the caldron is made to boil and give out vapour to any extent. Hence, to give Mr. Kewley his due, if there were no other way of raising vapour to excess for orchideous plants, his system might and does answer well for that purpose; but, in his apparatus that I had the misfortune to work, the pipes cracked at almost every joint, and ever and anon admitted air, which emptied the pipes of water; and one night, when pumping (for we had to pump the pipes full every night), a piece of lead about the size of half a pea, having been sucked into the pump about the valves, put us all to our wit's end, for the cracks had emptied the pipes and flooded the stock-hole, and the pump would not fill them again; and, though the water boiled in the caldron, the pipes being empty remained

as cold as an anchor in the bottom of the sea. The boiler of this apparatus has, however, at last got burnt through, after a tormenting trial of three years, and put the finishing stroke to this the most unnecessarily intricate and impracticable apparatus for heating that ever I have seen. From the contraction and expansion of his exposed boiler, a crack emitted smoke more or less all round it, especially when the draught was checked; which, by the by, was done by a handsome cast-iron scientific damper, with an index hand and notched wheel, half-way up the chimney.

I have worked some very excellent boilers of Bailley's, and only complain of the large fire-bricks, called Welch lumps, placed at the sides of the fire, instead of making the boiler form the sides of the furnace: not only do these Welch lumps in the course of time get burnt out, and require to be renewed, but the heat that goes to burn them is lost to the hot-water pipes. However, there is no impracticability about Bailley's boilers, nor any intricacy about any part of his apparatus; every thing is simple, substantial, and efficient, and the quality of the workmanship is not to be surpassed.

I have seen Weeks's boilers, composed of wrought-iron tubes fastened into semicircular cast-iron heads, and covered in with an arch of brickwork; on which arch, I should say, the principal part of the heat of the fire was expended, since the flame only passes through two rows of tubes, in the same manner as it would through the bars of a gridiron; but, as I never worked one of these, I would not venture an opinion on their practical operation from hearsay.

The most extraordinary boiler I ever saw was being set up the other day at a member of parliament's seat, in the vicinity of London. It was, in shape, like a huge hat of cast-iron, and contained nearly four-score gallons; and, being very thick, its weight was almost incredible. This was a Mr. H.'s idea of a boiler; and, much against the will of the men who were setting it up, and the gardener who had to set it to work, and whose reputation it would affect, it was ordered to be erected in the place of another of the same improved, or rather unproved, cast, which had been pronounced a failure, and pulled down.

So much for a few of the best of the various systems of heating by hot water, and one (at least in my opinion) of the worst. Now, if gardeners would be kind enough to favour the world with a full and unbiassed account of the merits and demerits of the systems of heating which they have practically proved, it would tend much to advance the science of gardening; as it must be very discouraging indeed for ladies and gentlemen, as well as gardeners, to have their plant-houses injured by the weather, from the want of a sufficient supply of heat, and every now and then to have them pulled to pieces for repairs, when it is well

known, and may be seen on application in the proper quarter, that persons are to be found, who, for a proper compensation, will build an apparatus substantial as a piece of ordnance, and simple as the teakettle, on a principle that has stood the test of ten years hard forcing, with no more than a couple of potfuls of water poured into it every year.

Now, as regards vapour in hot-houses, though its use is generally acknowledged, scarcely an instance is to be met with where the necessary supply can be commanded. The mere sprinkling of the flue or pipes with water now and then is by no means adequate to the wants of vegetation; neither is a potful or two of water left standing on the flue, for syringing the plants with, or to mix with a quantity of cold water to be applied to their roots, anything like a summer shower, which is the natural provision adapted to the wants of vegetation. All this may be remedied by the following arrangement. The hot-water boiler should be either in the stock-hole, or in such a convenient part of the house, as to allow a cistern built of bricks and cement over it, containing water from the eaves, and having also a pipe connected with a pump or reservoir for a supply in dry weather; and from this cistern a lead pipe or an iron one (but, if iron is used, the holes must be bushed with brass, otherwise the rust would soon close them), having bristle-sized holes bored in its upper surface, about 12 in. apart, laid perfectly level over the top of the flues or pipes, and this supply of water regulated by a cock, which will give vapour to any extent, and the cistern will give a supply of soft warm rain water for the roots; the very thing that nature would have supplied in the proper season for watering them in their native countries.

London, September 21. 1838.

ART. VI. *An Account of the Effects of the severe Winter of* 1837-8 *on the Pinetum at Dropmore.* By Mr. FROST, Gardener there.

I HAVE now found time to send you a list of plants that suffered from the intense frosts of last winter. *Pinus insignis* is dead. — *P. mitis*, after living several winters, quite dead. You remark, in your *Arboretum Britannicum*, this is not mitis, which, probably, is the case. — *P.* longifolia is dead, under a very thick covering. — *P. Pinea*. Many plants much injured, where exposed to the east wind. — *P.* leiophýllum. Dead, after living out several winters; and one plant, which was protected, is much injured. — *P.* canariénsis. Under cover, branches killed back to near the trunk, breaking from the trunk and thick part of the branches. — *P.* halepénsis. An exposed plant; started in the spring, but has very recently died: those in more sheltered situations are much injured, particularly the branches near the

ground. — *P.* excélsa. Quite hardy, not the least injured. — *P.* palústris. Suffered towards the points of the branches; quite exposed, and is now looking tolerably healthy. — *P.* Llaveàna. Covered with dry fern during the most severe weather, is quite recovered, though it at first showed symptoms of being much injured; growing in an exposed part of the grounds. — *P*icea Webb*iàna*. Not injured, and is growing fast; a younger plant, not above 1 ft. high, lost all its leaves, but has since recovered. One plant, not protected in May, after it had begun to grow, lost all the points of the branches from frost. — *P.* grándis. Young shoots killed in May. — *P.* amábilis. Some of the young branches killed in May, but has since made a vigorous shoot. — *P.* nóbilis. Young shoots destroyed in May; has since made fresh shoots, and looks well. — *A*bies Smith*iàna*. Also a little injured. — *A. Morínda*, which is different, not injured. — Araucària imbricàta. Plants of this species, though not protected, and some growing in exposed situations, have scarcely suffered; only a few of the leaves on the branches near the ground having been a little discoloured; and the whole of the trees are growing vigorously. I am now convinced this very splendid tree is perfectly hardy, and ought to be on every gentleman's lawn or in his pleasure-ground. — A. brasiliénsis has lingered the whole season till now, and, at last, is quite dead. I had great hopes, at first, this species would have recovered; and, if I had made a report earlier, I should have been doubtful, as the uppermost branches were looking well, but they have since died off gradually towards the top, and are now all dead. A. excélsa. Dead. — A. Cunninghàm*ii*. Dead. — Cunninghàm*ia* lanceolàta. Where exposed, the points of the branches were killed; but, in very sheltered situations, were not injured in the least. — *A*bies cephalónica. Young shoots destroyed in May, but are now growing very strong. — *P. Pichta* Fischer. Growing vigorously, though quite exposed during winter; but the young shoots were killed in May. — *C*èdrus *Deodàra* proves to be quite hardy. Some plants, growing quite exposed to the north wind, were not injured, and have made vigorous shoots this summer; some that I have worked on the larch are growing with vigour, and were in very exposed parts of the grounds, without the least protection. I find, at present, that the larch stock increases in size quite as fast as the deodara that is inarched on it; and I have rather a favourable opinion of this mode of propagating the deodara. Should I have proofs to the contrary, I will make known the result to you, as soon as possible after I have discovered a failure. I trust, however, that this will not be the case, the larch stock being more plentiful than the common cedar, and not so valuable to a cultivator. — The arbutuses were much injured, but are now recovering. — The laurustinuses were killed

nearly to the ground, where exposed; but, in more sheltered situations, not much injured. — *Quércus Ilex.* Lost all their leaves, but have grown freely since the spring. — The common laurels have suffered in the two-years-old wood, where exposed; in sheltered situations, not hurt. — *Ligústrum lùcidum.* Killed, in a sheltered situation. — Chinese and Noisette roses. Killed to the ground; those on standards, quite dead. — *Magnòlia grandiflòra.* Lost many leaves, and had some of the young shoots killed, where exposed; but are now looking healthy. — Pomegranates. Growing against the south wall, were much injured, but are now growing freely. — *Chimonánthus fràgrans.* One plant, growing on an open border, killed; another, nailed against the wall, growing freely. — Bay trees. Very much injured, but have again broken thickly several feet from the ground; I fully expected all were dead, as they were very late before they broke. — *Erìca mediterrànea, austràlis, arbòrea,* and *vàgans,* were killed to the ground, but are now growing freely.

Dropmore, Sept. 12. 1838.

ART. VII. *List of Ligneous Plants which have stood the Winter of* 1837-8 *at Highlands, near Chelmsford, Essex.* By J. A. FERGUSON, Gardener there.

ACCORDING to my promise, I send you a list of plants, some of which have stood the last winter better here than in many other places.

Photínia serrulàta. Wall, east aspect; 12 ft. high, 23 ft. broad; not the least injured, having flowered this spring unprotected. One, planted out in the open garden, nearly dead. — Two plants of *Eriobótrya japónica.* Wall, south aspect; one 12 ft. high by 18 ft. broad, the other 14 ft. by 23 ft.; not injured. A slight covering of one mat. These plants have flowered in December for this last four or five years, but have never set fruit. — *Magnòlia grandiflòra.* In varieties, on the same wall as the Eriobótrya, with the same protection. In a fine healthy state, having flowered freely, and still flowers appearing. From 12 ft. to 14 ft. in height, and about the same in breadth. — *Acàcia Julibríssin.* Wall, south aspect; 15 ft. in height by 14 ft. in breadth; in flower at present. There are two plants, one of which is trained on trelliswork, and both are in a very vigorous state of growth. Not the least injured, though unprotected. — *Chimonánthus fràgrans.* Wall, south aspect; 13 ft. in height by 17 ft. in breadth; not the least injured. Ivy covering the top of the wall, and projecting about 1 ft. out, having been all the protection. — Myrtles, pomegranates, escallonias, camellias, &c., stood very well, with a single mat for protection. South aspect.

— Amongst the American plants, I have some of the Illícium flóridum: one, 5 ft. high, diameter of the branches 9 ft., which stood without any protection. I believe it to be hardier than the common laurel. — Sweet bay, arbutuses, aucubas, laurustinuses, common laurels, and Chinese privet have not suffered. — *Catálpa syringæfòlia* has been much injured on the top of the trees: and a very vigorous-growing plant of *Cèdrus Deodàra*, 9 ft. in height, was killed; though another, but 200 yards from it, was not injured at all. — Virgíli*a* lùtea. 26 ft. high, a fine specimen, was not at all hurt. — *Rhododéndron* arbòreum. Killed, after standing out for six or seven winters. — Roses have suffered very much; such as Lamarck, Banksian, &c. — A plant of Trichília cærùlea stood very well; and a few varieties of *Cánna* índica, with a little tan thrown over them, also stood well. — There is a plant of Pàv*ia* macrostàchya, only 6 ft. 6 in. in height, and the head 11 ft. in diameter, that we counted 390 flower-spikes upon about four weeks since. This is a plant which I think well deserving a place in every collection.

Highlands, Sept. 14. 1838.

Art. VIII. *Effects of the Cold of the Winter of* 1837-8 *on the Trees and Shrubs in the open Air in the Botanic Garden, Berlin.* By Frederic Otto. From the "Garten Zeitung" of May 5. 1838.

Most of the old cultivators agree that we have not had so severe and continued a winter as the last, for a great many years; nor, at the same time, one which has had so bad an effect on plants in the open air. It cannot be denied, that, of late years, gardeners have become somewhat bold in cultivating plants but newly introduced, and which could not stand a great degree of cold in their native country, without a sufficient protection and covering. Small shrubs may be protected in many ways, but it is often found impossible to protect trees and shrubs which have attained a considerable size. Much depends on the situation, exposure, and soil; which has been proved this winter, by many small shrubs not suffering the least from the frost, though protected only by a slight covering; such as, for example, all the species of *Yúcca*, the Nepal mahonias, Epigæ`a, Mitchélla, &c.

The reason that so many trees and shrubs have died here, certainly appears to be the variableness of the weather. The branches were moistened by the continued fog, and became covered with ice like glass; and, when severe cold came on at repeated intervals, they were completely frozen. When the cold set in, the ground was not covered with snow, and the frost penetrated 18 in. in the ground; consequently, it was to be

expected, that the woody plants would suffer severely; which, upon examination, I found to be the case. In places where trees and shrubs were exposed to the sun, they were generally frozen; whereas, on the contrary, those which were in situations on which the sun could not have any power, such as with a north aspect, in many cases remained uninjured.

The trees and shrubs which were destroyed by the frost here were not those that were very young, and only lately planted; but rather those that had stood in the open air six, and, in some cases, even thirty, years; and, during that time, had supported every degree of cold. This is the more remarkable, as the wood had had sufficient time to form and ripen during the preceding long autumn, and, therefore, appeared strong enough to brave the rigours of the winter. The effect of the frost on plants was very different in the year 1836. (See the *Allgem. Zeit.*, 4th year, p. 129.)

The effects of the winter have, unfortunately, made many gaps in groups of trees and shrubs; and the loss is evidently seen, and much felt. The production of many years' labour and trouble has been all at once annihilated; and, as undoubtedly many arboretums have suffered in German gardens, it will be difficult to replace what is lost; not to mention the time which must elapse before the trees grow up, and show their proper character. Many will certainly shoot out well from the root; but, on the contrary, many will also come up imperfectly.

Those specimens which have suffered most, or have been entirely destroyed, are: a great part of the *C*ratæ'gi, such as *C.* orientàlis, Olivier*iàna*, vîridis, *Azaròlus*; *A*mýgdalus argéntea, and bronchiàlis; *P*yrus lanàta, crenàta, and nepalénsis; *C*ydònia sinénsis; Cotoneáster affînis, acuminàta, frígida, and *Páshia*; *S*órbus nepalénsis; several species of *P*rùnus; *S*piræ'a bélla, nepalénsis, *c*eanothifòlia; and *R*osàceæ without number.* The strongest trees of Bignòn*ia* radîcans, *Catálpa syringæ*fòlia, Broussonèt*ia* papyrífera, *C*éltis austràlis, lævigàta, and sinénsis. Several acers, such as *A.* oblóngum, (*A.* neapolitànum, uninjured,) palmàtum, and *o*pulifòlium; *T*ămarix gállica and germánica, *P*látanus cuneàta and orientàlis, *M*òrus, *C*ércis; large stems of the beautiful *Q*uércus *Tòza*, Thomàs*ii*, &c.; *P*ópulus heterophýlla, Liquidámbar Styracíflua, many rare *U*lmi, Plánera Richárd*i*, Pterocàrya caucásica, &c. *Pæòn*ia *Moútan* var. *p*apaveràcea, which was never destroyed by the frost before, is killed down to the roots this year, although under a covering. The species of *Bérberis*, such as *B.* aristàta, canadénsis, sinénsis,

* The woody *R*osàceæ seem to have suffered the most in other places, as we are informed by the *Anhalt Gartenbau Zeitung*, Nos. 10. and 12., in which it is stated that the fruit trees and roses are generally frozen.

and asiática; also *Spártium*, *Genísta*, and *Cýtisus*.* The *Ulex* is frozen as far as it was above the snow. The small plants, such as the North American caprifoliums, *Clématis*, *Vitis*, Ampelópsis, Periploca, and even the ivy with its varieties, are frozen down to the root.* The species of *Córnus*, such as *Córnus paniculàta*, *asplenifòlia*, *Ribes* sanguíneum, speciosíssimum, *Clèthra*, *Vibúrnum cassinoìdes*; *Rhús* vérnix, élegans, copállina; *Rhámnus*, &c., have all more or less suffered.

All the evergreen shrubs, some of which used to stand the open air in our garden, are either completely killed, or have suffered so much from the frost that they are unsightly, or have assumed a sickly appearance. All the species of *Ilex*, *Ephedra*, *Dáphne* altàica, Gaulthèria *Shállon*, *Aúcuba*, and *Búxus* are killed. The Coníferæ have suffered very much; indeed, large trees of *Pinus* Larício are killed. *Cèdrus* Libàni; *Táxus* canadénsis, and baccàta; *Thùja* pyramidàlis, orientàlis, nepalénsis, &c., have suffered considerably: also the Californian species of *Pinus*, which were planted in the open air for experiment. Groups of *Rhododéndron*, which had stood in the open air twenty-two years, are, for the greater part, killed, although they were well covered. Magnolias, azaleas, kalmias, andromedas, and vacciniums, were not covered, and are uninjured.

This is a short sketch of those plants, which appear to be dead, or which are very much injured by the frost. It is to be feared that many more such will be found, which it is not possible to ascertain at present.

I should be very glad to receive information of the effects of the winter in other gardens; and I therefore entreat the friends of gardening, nurserymen, and collectors of plants, to send me such communications. It would be of general use, and much instruction would be derived from it. — *Berlin, May 5.*

MISCELLANEOUS INTELLIGENCE.

Art. I. *Foreign Notices.*

GERMANY.

Garden Improvements in Hanover. — "Around a considerable part of the town, runs a new street, in the place of the old rampart, with handsome houses on one side of it, and a broad walk, with rows of trees, on the other side; beyond these trees, beautiful park-like gardens are laid out, which would do credit to a larger or richer city than Hanover. The land on which all these improvements have been made belongs to the city, and the present stadt-director, M. Ruhmann, whom I have mentioned to you as one of the most violent opponents of King Ernest, is the great promoter of all the plans for embellishing

* According to the *Anhalt Gartenbau Zeitung*, *Cytisus* purpùreus, well protected, is the only species that has been injured by frost; *C. Labúrnum*, and the variety *quercifòlium* had not suffered.

† The ivy is completely killed at Anhalt, also *Vinca màjor*, and some plants of *Vinca minor*.

the city and its environs, and he is ably assisted by a clever landscape-gardener, a Hessian by birth, who has been for the last twenty-five years in the king's service. This man, whose name is Schaumburg, has very great taste, and is the only man of his calling in the north of Germany; he has travelled both in France and England, and is consulted by all possessors of gardens or parks." (*Morn. Chron.*, Oct. 12. 1838.) Should M. Ruhmann, or M. Schaumburg, or any of their friends, see this, we beg to say that we shall be happy to receive further details of these improvements, accompanied, if convenient, by a general plan, or bird's-eye view, such as we have given, in a preceding volume, of the public gardens of Frankfort on the Maine. — *Cond.*

AUSTRALIA.

Australian Wine. — As any improvements of the colony must be gratifying to the public, I beg to apprise you that the district of the Hunter has this year produced many thousand gallons of wine. As my observations have not extended to the upper districts, I can only speak of them from report; but, at Patrick's Plains, or the adjacent country, there have been above thirty pipes, or 3,600 gallons. It would be unfair to judge severely of its quality, as it is an established fact, that young trees never do in any country, or under any system of culture, produce a valuable article. But, to adduce a proof of what may be expected from it, a bottle of Sauterne was purchased at a dealer's, to compare the respective qualities, and it was decided, that the growth of the colony, although only produced from plants of five years old, was the more agreeable liquor. In fact, Capt. Pike, and some few others, have been so successful in this branch of husbandry, that they have had (if I mistake not), offers of 40*l.* per pipe, for as much as they could produce, which will demonstrate to you that there is no great mystery, as many have supposed, in the production of this article. The points of prime importance are, to select a suitable soil, to let the fruit be thoroughly ripened before pressing, and to preserve cleanliness in the vessels and casks which are used. I am certain that, these essentials being attended to, the colony may soon become independent of foreign countries for this article; every country has a different mode of procedure; and their success, or the want of it, may be attributed chiefly to their attention to, or non-observance of, these few rules. (*An Observer* in the *Colonist* Newspaper of April 28. 1838.)

Art. II. *Domestic Notices.*

ENGLAND.

An old Apple. — There is now in the possession of Mr. Daniel Harvey, residing in the parish of Exminster, an apple which was growing in St. Sidwell's in the year 1787. It was presented by the father of the possessor to his grandson, at his christening in the May following. It was grown in a bottle, the latter being fastened to the branch, and the mouth was closely sealed as soon as it was cut. It is now as fresh as ever, and may be seen by any one who will call on Mr. D. Harvey. (*Sherborne Journal*, as quoted in the *Times*, May 30. 1838.)

A gigantic Field Pea. — I send you two stalks of the field pea, about which we have corresponded. I sowed one land ridge of a ploughed field, and I staked three or four rows experimentally. The stalk that has the blossom yet upon it is one of those that were staked; the other was not staked, but lay on the ground. The haulm generally measures from 6 ft. to 8 ft. in length. It is a late pea, as you will perceive, by none of the pods being yet ripe, and by so much blossom being yet to expand. This is a delicious pea to be eaten when young; it has a fieldy taste, which I like, and, to my surprise, a "southron" ate them, and liked them also. I mean to have the land measured, and also the produce. — *Richard Lowndes. Binfield, Bracknell, Berks, Aug.* 21. 1838.

We sent the two stems to Mr. Lawson, Edinburgh, for his Museum, who, in his letter dated Oct. 12., is anxious to thank Mr. Lowndes, and expresses

a wish to have a sample of seed, which he says, "we will take care to grow, and compare with the other varieties in our collection, so as to ascertain their comparative merits." — *Cond.*

Agricultural Kidney. — Five specimens of this variety of potato were received by us from Mr. Lowndes, at Binfield, Oct. 24. The largest measured 10 in. in length, and 11 in. circumference at the middle, and weighed 2 lb. 6½ oz. The next largest was 10 in. in length, and 10 in. in circumference, and weighed 2 lb. 2½ oz. Two of the others weighed 1 lb. each, and the third somewhat less. The two large specimens, Mr. Lowndes informs us, were grown in Lady Wilder's garden, in very rich and light soil, and the three others in the garden of the parsonage at Binfield, in ground that had been depastured for a century, and was very foul, and out of condition. Mr. Lowndes recommends roasting this kind of potato; and we, accordingly, had one of the smaller ones roasted, and one of them boiled. They proved both very white and mealy, and better flavoured than we could have expected, in the case of so large-growing a variety. We cannot say, however, that the taste or flavour was equal to that of the smaller-growing varieties of potatoes generally; and more particularly of a small-sized roundish potato grown in Kent, and known in London as the "American natives." These we had at table at the same time as the others, so that we had a fair opportunity of making the comparison. As the flavour of all tubers and fruits resides chiefly a short distance within the skin, it follows theoretically, that, where the flavour of a small potato is good, there must be a greater proportion of flavour in a given quantity of potato, than in the case of a large one, which is a great argument with us in favour of potatoes of a small, or at least of a moderate, size; always supposing, however, that they have been grown freely, and not stunted or checked in any way, either for want of nourishment or water; or crowded and etiolated for want of light and air. The potato requires a moist atmosphere, and a light sandy soil; and hence the excellence of those grown along the sea coast of Lancashire, and of Ayrshire and Dumfriesshire; and, in general, along all sea coasts, in situations which are low, and exposed to the west or south wind. Potatoes grown in the dry upland districts of England are not nearly so good as those grown in low situations; and those grown in the interior of France and Germany are, in size and flavour, like quite a different vegetable.

If our readers will turn to Vol. XII. p. 132., they will find an article by Mr. Lowndes, on the culture of the potato, in which he states the result of planting whole kidney potatoes, as compared with that of planting sets. The loss by the latter mode of planting, he puts down as 7*l.* an acre. Mr. Lowndes, in that article, says, "I take it for granted, that you know that the agricultural kidney is decidedly the best potato for a gentleman's table, though not so productive as many others." The agricultural kidney, in 1834, produced, with Mr. Lowndes, 572 bushels per acre, the bread fruit 689 bushels, and the poor man's profit 636 bushels. The bread fruit is a somewhat ovate potato, with the eyes rather deeply sunk; the poor man's profit is round, with the skin varied with purple and white; and the great beauty of the agricultural kidney is, that the eyes are almost level with the general surface; in large specimens, so much so, that they can scarcely be perceived, except on close inspection.

We have sent the two large specimens to Mr. Lawson, at Edinburgh, to be by him placed in the Highland Society's Museum, should he think them deserving of that honour. — *Cond.*

Bread without Yeast. — A baker in London has just taken out a patent for the manufacture of a light bread, the qualities of which depend neither upon leaven nor yeast. He substitutes for these materials bicarbonate of soda and hydrochloric acid, in such quantities as to enable the acid to combine with the soda, and thus form common salt; while the carbonic acid is disengaged, swells the dough, and gives it that spongy appearance which characterises light bread. The following is the manner of operating: —

To 7 lbs. of wheaten flour mix from 350 to 500 grains of bicarbonate of soda, and nearly a bottle and a half of distilled water. In another

vessel, the necessary quantity of acid (420 to 460 grains of muriatic acid of the shops are, in general, necessary) is mixed in about half a bottleful of water. It is indispensable to dilute the dough well with the solution of soda; and, when all is well prepared, the acid is poured on it. Pastry may be treated in the same manner: the quantity of bicarbonate used varies with the degree of lightness required for the paste.

SCOTLAND.

Mùsa Dácca.—Some fine specimens of the ripened fruit of this East Indian banana have been kindly sent us by Mr. M'Nab, jun. The flavour is exquisite, and equal, if not superior, to that of the Mùs*a* Cavendísh*ii*. As this musa has not yet been figured, we wait with anxiety for its appearance and history in some of the botanical periodicals, or, probably, in the Caledonian Horticultural Society's *Transactions*. In the mean time, the reader will find some information on the subject of this new kind of musa in p. 106.—*Cond.*

The Siberian Cow Parsnep (*Heraclèum* gigantèum).—A plant in the garden at Callendar, near Falkirk, is stated in the *Scotsman* of July 21. 1838, to have attained the height of 11 ft., with a stem above a foot in diameter near the ground; and the circumference of the entire plant 49 ft. This is not so high, by a foot, as one which flowered with us two years ago; but the Callendar plant had seven stems, whereas ours had only one. The correspondent of the *Scotsman* seems to think that the magnificent foliage of this heracleum promises to be of value to the farmer; but this, from its coarseness, appears to us very doubtful. If in this we should be mistaken, we shall be very much obliged to Mr. A. Smith, the intelligent gardener at Callendar, to supply us with information on the subject. We have elsewhere mentioned that we have furnished different friends with seeds of the gigantic cow parsnep to scatter in suitable parts of the margins of woods in different parts of Great Britain and Ireland, and also in Sweden and Norway.—*Cond.*

Art. III. *Retrospective Criticism.*

Wooden Sashes often contract and expand as much as Iron ones.—Mr. Thompson (p. 486.) has got some strange ideas about metal hot-houses expanding and contracting. If he had observed narrowly, he would have seen wooden ones swell and shrink even more than those of metal; as, however well-painted wooden sashes may be, long continued dry hot weather will make them shrink considerably, while long continued wet weather will cause them to swell. As to metal sashes not sliding well, I may say that our houses have been up nearly seven years, during all of that time the sliding sashes have run without any trouble: they are upon casters. Not a square of glass was broken in them during last winter, by the frost. Whatever may be said for or against metal houses, none of the above faults can be substantiated, if the houses are properly constructed.—*D. Cameron. Bot. Gard., Birmingham, Oct.* 6. 1838.

Art. IV. *Queries and Answers.*

New Celeries and Cucumbers.—Can you tell me where, in London, I can procure the Manchester gigantic white celery, and the large new purple Russian celery; also the defiance cucumber, and the Syon free-bearer cucumber? I understand there is a spurious gigantic white celery, the stalks of which are pipy.—*Henry Brook. Crane Street, Salisbury, Oct.* 22. 1838.

Do decaying Leaves absorb, and assist in evaporating, the Sap? (p. 206.)—The subject of the queries and answers (see Vol. IV., second series, p. 206.) is one, in my opinion, of considerable interest, and I shall be glad to see it fully discussed; I hope, therefore, that some one or more of your scientific contributors will enlarge upon it. The object I have in view is, to determine upon the safest method to pursue, in reference to eve green trees and shrubs that may

at any future period suffer from intense frost. It is lamentable to witness the havoc that is made through the intensity of last winter: there are doubtless many thousands of evergreens irretrievably lost, and there are vast numbers but partially injured, having only their leaves and a part of their branches killed. The question, therefore, which I should like to see discussed, refers to the latter. It has been the practice of many gardeners, under similar circumstances, to let the dead leaves and parts of branches remain, until it be seen from what parts of the tree or shrub fresh shoots are protruding, and then to cut back accordingly. Now, the question is, whether or not it would be the better way to at once divest the plant of, at least, its dead leaves; and, should the question "Do decaying leaves absorb, and assist in evaporating, the sap of the plant," be answered with truth in the affirmative, all doubts upon the subject would be obviated, as, in that case, the sooner the dead leaves are removed the better. — *T. Rutger.* 63. *Portland Place, April* 3. 1838.

Art. V. *Obituary.*

Died, at Moncrieffe House, February 7., *Mr. John Mitchell*, gardener, in his 77th year. His attentive and faithful services secured him the confidence of the honourable family with whom he so long resided. The extent of his practical knowledge, and the urbanity of his manner, made him respected by all of the same profession in many and distant parts of the country; whilst his unaffected piety, and kindly disposition, endeared him to his family and neighbourhood. He was considered the oldest servant in his profession, under the same family, of any in Perthshire. (*Perthshire Advertiser*, Feb. 28. 1838.)

The above was sent us by our valuable correspondent, Mr. Cameron, on Oct. 6.; who expresses surprise that some of our Perthshire correspondents had not anticipated him. Mr. Mitchell, he says, was reckoned a first-rate gardener in his day; he was held high in estimation by the Caledonian Horticultural Society, who awarded him many prizes for various productions, exhibited at different times. About thirty years ago, there was a very select collection of stove and green-house plants, which were well grown, at Moncrieffe House. Mr. Mitchell also excelled in growing carnations, and raised many good sorts from seeds. These he used to ripen by placing his plants on the top of the stage of his circular green-house. Mr. Murray, of the Glasgow Botanic Garden; Mr. Forbes, Woburn Abbey; and Mr. Shillinglaw, Duplin; with many other good gardeners, were pupils of Mr. Mitchell. — *D. Cameron. Bot. Gard., Birmingham, Oct.* 6. 1838.

Art. VI. *Literary Notice.*

The Ladies' Flower-Garden of Ornamental Annuals, by Mrs. Loudon, will be published on January 1. 1839, by W. Smith, 113. Fleet Street. This work will appear in monthly numbers, and will be completed in one volume 4to. Each number will contain three lithographed coloured plates; each plate containing a group of three or four annual flowers of the natural size, by the same artists as those employed on the *Floral Cabinet*. The letterpress will be arranged on the same plan as that of the *Arboretum Britannicum*, and will include a full account of all the annual flowers cultivated in British gardens; distinguishing such as are truly ornamental, from the numerous sorts that scarcely deserve culture.

END OF THE FOURTEENTH VOLUME.

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