ones will probably not be long in making their appearance. As to O. Alexandræ, though strictly speaking it belongs to 1865, still we could never have formed any idea of its real beauty until we had seen the specimens that Mr. PATERSON and Mr. Anderson sent during the past season from 'ayont the Tweed.' To this brigade also belong Oncidium obryzatum and O. serratum,

to which we shall shortly revert.

We cannot now dwell upon the multitude of small fry exhibited at one or other of the South Kensington gatherings, but of these Mr. WILSON SAUNDERS will give a good account in his forthcoming work, in which all such will find a permanent "Refuge." In the meantime the more gorgeous varieties of established favourites are worthily represented in Mr. WARNER'S "Select Orchidaceous Plants," of which we are glad to see a new series has been commenced. Another useful work, a "Second Century of Orchidaceous Plants" (a republication by REEVE & Co., in a popular form, of the best species figured in the "Botanical Magazine" is making rapid progress. The same publishers announce another part of Mr. BATEMAN'S "Monograph of Odontoglossum." Thus much for England; and if we look abroad we find that in addition to his more catholic "Xenia Orchidacea," Professor REICHENBACH has in the press, 'just ready,' a most important work on the 'Orchids of Central America." So that what with new plants and new books, there seems but little fear that the Orchid-fire will soon burn itself out for lack of fuel.

We shall resume next week our comments on sundry other new plants of various kinds introduced in 1866.

Among the Evergreens that are annually in great request at this season of the year, there are none more ancient than the MISTLETO, and none with which so many pleasing incidents are associated. It is in itself a remarkable example of a true vegetable parasite, as it never grows like other plants in earth, but entirely depends for its nutriment and support on one or other of the numerous kinds of trees on which it is found—such as the Apple, Hawthorn, Lime, Sycamore, Poplar, Willow, Scots Fir, and occasionally the Oak. So rarely, however, is it met with growing on the latter, that it was at one time considered doubtful whether it had ever been seen on the Oak at all; but of late years several instances of the fact have been recorded, sufficient to place the question beyond dispute. In the time of the Druids this parasite was regarded with extreme veneration. Celtic priests are said to have collected it for charms, and cures, and religious ceremonies with solemn formalities, when it was found growing on their sacred tree—the Oak; and to this latter circumstance it owed all its supposed mystic influences. Many of the early converts to Christianity in Britain, we doubt not, looked upon the Mistleto with reverence while they knelt and offered up their prayers amidst Pagan altars and hideous images; for although it hung above the heads of the idols, they knew it was not the work of the image maker, but a natural production of their own forests, that had sprung from the grey Oaks under which the Roman legions had marched, and was, perhaps, the only remnant of their idolatry—the only link between Christianity and Heathenism.

Besides being an object of worship, the Mistleto has been from a very early period highly extolled for its medicinal properties; and even so late as 1719, Sir John Colbatch, a member of the College of Physicians, wrote a treatise on "The Mistletow of the Oak," which he says, "the plant has been designed for further and more important purposes than to feed thrushes, or to be hung up surreptitiously in houses to drive away evil spirits;" and he further adds, that "he has found it efficacious against epilepsy, chorea sancti viti, and other diseases of the nervous system." But after all that has been said about its reputed virtues, they were more imaginary than real, and it is now discarded from the Pharmacopæias.

Although the Mistleto failed to produce the wonderful effects that superstition or charlatanism had ascribed to it, still it was always considered perfectly harmless, and no one ever suspected that its tiny berries were likely to be swallowed by a human creature so as to destroy life. We regret to say, however, that its fair

there are in reality many varieties, and the finer | Commercial Road, London, and of which the | following particulars were given at the inquest. The victim was a child 15 months old, whom its mother placed in the care of its little sister, only six years old, to nurse. Whilst looking at a greengrocer's shop she picked up some Mistleto berries, fancying they were white Currants. Finding they tasted bitter, and not able to eat them herself, she unfortunately gave them to the baby until it became quite ill. As soon as the mother heard what had been done she sent for a doctor, who prescribed an emetic that caused the infant to throw up nearly a tea-cup full of the berries—but all efforts to save its life were of no avail, for after passing the night and part of the next day in extreme suffering, the little thing expired. The jury returned a verdict of "Accidentally poisoned by Mistleto berries."

This instance shows the great danger of committing an infant to the care of a young child who was not of an age to be intrusted with

such a charge. B.

- Among Almanacs specially useful to those taking an interest in garden matters, may be mentioned that of the Royal Horticultural Society just issued. It is of small size, but utility is not to be measured in this case by magnitude.

PLANT PORTRAITS.

[Under this head we propose to record the figures published from time to time in periodical or other works of such plants, flowers, or fruits as may be interesting to horticulturists.]

Combretaceæ. A magnificent stove climber, with opposite oblong leaves, and axillary, spreading or refracted, unilateral racemes, 4 or 5 inches long, bearing crowded flowers having a green calyx, minute petals, and long yellow stamens with orange-coloured anthers. Native of Brazil. Flowered at Glasnevin, in a green-

house.

CYPELLA CŒRULEA.—Bot. Mag., t. 5612. Iridaceæ. A fine old stove herb, better known as Marica cœrulea. The fine handsomely-marked Iris-like flowers are supported on tall ensiform scapes, closely resembling the true leaves. Native of Brazil. Flowered at Kew. CYPRIPEDIUM SCHLIMIL.—Bot. Mag. t. 5614. Orchidaceæ. This is sometimes called Selenipedium Schlimii. It is a pretty stove herb, with ligulate coriaceous leaves, and a tall, often branching stem, bearing about half a dozen rather small flowers, which are white the senals and petals snotted, and the line are white, the sepals and petals spotted, and the lip heavily blotched with deep crimson. Native of New Grenada. Flowered by Mr. Bull.

DELPHINIUM TRIOMPHE DE PONTOISE.—Floral Mag. t. 314. Ranunculaceæ. A fine hardy perennial, with palmatifid leaves, and double flowers, remarkable for their great regularity and button-like appearance, and of a pale azure blue with a good deal of white. Raised in the south of France. Flowered by Mr.

Heliconia humilis.—Bot. Mag. t. 5613. Musaceæ. A beautiful stove herb with oblong lanceolate leaves on slender petioles, 2 to 3 feet long, and a shorter scape, bearing pale green flowers supported by large distinctions scarlet spathes. Native of Guiana. Flowered

HELIOTROPIUM CONVOLVULACEUM. - Bot. Mag. t. 5615. Boraginaceæ. A free-blooming much branched annual, 1 to 2 feet high, with linear oblong leaves, and axillary flowers having a salver-shaped white corolla, an inch across, and nearly flat. Native of New Mexico, Arkansas, &c. The flowers are sweet-scented, and open towards the evening. Flowered by Mr. Thompson.

LOBELIA PROGRESS.—Floral Mag., t. 316. Lobeliaceæ. A remarkably fine variety of the fulgens section, producing very large flowers of a rosy purple colour. Flowered by Mr. Bull.

LYCASTE GIGANTEA.—Bot. Mag., t. 5616. Orchidaceæ. A stately sub-terrestrial Orchid, with very large pseudobulbs, plicated oblong-lanceolate leaves, and large solitary flowers terminating the radical scapes; the sepals and petals are long, warm yellowish-olive, the lip serrated, velvety maroon, bordered with orange.
Native of Central America. "With the exception of
L. Skinneri, L. gigantea is perhaps the best of its race,"
though the colours are not very brilliant. Flowered
by Messrs. Veitch & Sons.

PASSIFLORA FULGENS.—La Belg. Hort. xvi., 193,
12 Passifloracea A very handsome stove shrubby

Passifloraceæ. A very handsome stove shrubby climber, with terete stems, oblong ovate lobato-dentate leaves, somewhat like those of an Oak, and axillary peduncles, bearing three ovate-lanceolate entire bracts. and supporting each a solitary flower of a rich scarlet, the linear oblong segments of which are at length reflexed; the filaments of the coronet are white, barred transversely with orange red; the fruit is large, eggshaped. Native of Brazil, in the region of the Amazon. Flowered by M. Linden.

Pelargonium (Nosegay) Duchess of Suther-Land.—Floral Mag., t. 315. Geraniaceæ. A fine variety of bedding Pelargonium, belonging to the Nosegay section. The leaves are plain green, without zone, while the flowers are well formed, of a bright cerise rose, and grow in large showy trusses. Raised at Cliveden. Flowered by Mr. Turner.

SAPRANTHUS NICARAGUENSIS-Seem. iv. 369, t. 54. Anonaceæ. A middle-sized tree, with oval acuminate leaves, and large bell-shaped green flowers, 4 or 5 inches long; these gradually change to a fame has been greatly sullied by a lamentable dark bluish black, and then emit a powerful carrion-case which lately occurred in Duke Street, like odour. Native of Nicaragua. "It is strange that

the carrion-like smell peculiar to Sapranthus, should always accompany a dark brown or dark blue colour, and it would be worth while to ascertain the chemical principle here at work." Not yet introduced, but principle here at work." worthy of being so.

SIPHOCAMPYLUS FULGENS-Floral Mag. t. 313. A free-flowering and handsome stove Lobeliaceæ. herb, with branching stems, ovate acuminate leaves, and axillary long-stalked tubular flowers of a rich

and axillary long-stalked tubular flowers of a rich orange scarlet with a yellow throat. Native of South America. Flowered by Mr. Bull.

CHERRY, LUDWIG'S BIGARREAU. — Florist and Pomol. v. 257. An Early Bigarreau ripening just after the Early Red Bigarreau at the end of June or the beginning of July. The fruit is long and acutely heart-shaped, deep red, and the flesh is pale yellow, very melting and juicy, and much more tender than Bigarreaus usually are. Fruited by Mr. Rivers.

Pear, Fondante du Comice—La Belg. Hort. xvi., 309, t. 17. A handsome-looking variety, said to be

PEAR, FONDANTE DU COMICE.—La Belg. Hort. xvi., 309, t. 17. A handsome-looking variety, said to be of the first quality, ripening in October and November, or in some seasons rather earlier. The fruit is pyramidal ovoid, with a long stalk somewhat laterally inserted, and a small sunk eye. The colour is greenish yellow dotted with brown, and having an orange shade on the sunny side; the flesh is white and firm, but melting and without grittiness, the juice abundant, sugary, and agreeable. Raised at Angers in the Garden of the Horticultural Society of that place. Fruited by M. Galopin. by M. Galopin.

INSULAR FLORAS.

THE following is the substance of a Lecture delivered before the British Association for the Advancement of Science, at Nottingham, on the 27th of August last. It is a mere fragment of the subject its title indicates, treating, and in outline only, of but a very few of those groups of oceanic islets, the Floras of which have long engaged my attention. The gratification which the favourable reception of this lecture afforded me, has something to do with my wish to extend a knowledge. something to do with my wish to extend a knowledge of it; I may, however, further plead other motives, as the of it; I may nowever, further plead other motives, as the wishes of many friends who did or did not hear it; and one unexceptionable one—a desire to see its statements and methods investigated by others, and more facts accumulated, which would much aid me in my project of treating the whole subject of Oceanic Floras comprehensively at a future time. J. D. Hooker, Royal Gardens, Kew, Dec. 9.

The subject which I bring before you to-night is that of Insular Floras, in their relations to one another and to the great continents from which they have or appear to have derived their plants. And as my treatment of the subject is partly descriptive and partly theoretical, I have cast it in the form of a written

I must warn you that the term 'Insular Floras' is a technical one, and, like so many technical terms, is apt to mislead till explained. In a botanical sense I have limited it to the Floras of those islets that rise as mere points of land from out the broad breasts of the great oceans. With few exceptions all are volcanic, all mountainous, and so small that no man has realised their smallness who has not sailed in search of them.

Our largest maps of the world give us no idea of the diminutive size of such islets as Madeira and St. Helena, any more than Bradshaw's map gives any notion of the size of the railway lines as compared with the counties they traverse. The only contrivance I know of that ever did give me an approximate idea, was Wyld's Great Globe in Leicester Square. This was owing partly to the great scale of that admirable contrivance, and partly to the omission of names—names which approach are more degrees in our mans, than the islets sprawl over more degrees in our maps, than the islets

themselves occupy seconds.

The relationships between these oceanic island Floras are of two kinds, that must not be confounded: one a relationship of analogy between themselves, due to the relationship of analogy between themselves, due to the physical conditions common to them all—to their climate, exposure, limited area, distance from continents, &c. Thus they are rich in Ferns, Mosses, and other flowerless plants; and they possess many evergreen, but comparatively few herbaceous plants, and fewer or no indigenous annuals. Plants which are herbs on continents, often either themselves become shrubby in islets, or are represented by allied species that are shrubby or arboreous. Species are few in proportion to genera, and genera in proportion to orders. The mountains, however lofty, present few alpine or The mountains, however lofty, present few alpine or sub-alpine species; and the total number of species is usually small compared with what a continental area of equal size and conditions would contain. The other is a relationship of affinity, a bond fide kinship, which the Floras of islands display in common with one another or with certain continents: as is shown by Madeira, the Azores, and Canaries containing many plants in common that are not found on any continent; by the Canarian Flora being in the main a Mediterranean one; the St. Helenan being an African, and so forth. It is with the consideration of these affinities that I shall occupy your attention to-night.

But before proceeding to abstract considerations, it may help you to a clearer insight into my subject if you will voyage in imagination with me over some of the great oceans, visit a few groups of their islands, and

look with me upon the principal features of their Floras.

It was my good fortune to be attached, early in life, to one of those expeditions of discovery that have added so much to the naval renown of our have added so much to the haval renown of our country. This was the Antarctic Expedition of Sir James C. Ross, which originated with the British Association of 1838, held at Newcastle, and which circumnavigated the globe for the double purpose of making magnetic observations, and prosecuting geographical discovery in high southern latitudes. These objects required our visiting many oceanic islands, including some of the most remote and inaccessible, a circumstance which gave me a special interest in these Floras.

And for the purpose of better illustrating the subject I have here hung before you Sir Henry James' new 10-foot projection of two-thirds of the sphere on a plane, which includes all the islets whose Floras I shall touch on to-night. This map is constructed so as to carry out the idea of looking at a globe from the inside. The eye is supposed to be directed towards central Africa, not from the centre of the sphere, but from a point so far in the point so far in the opposite direction to central Africa that two-thirds of the sphere is embraced by the vision. By this arrangement you will see that the relative positions of the islands and continents in the Atlantic and Indian Oceans, with whose Floras I shall have to do this evening, are represented more truly in position than in a Mercator's or other projection; but on the other hand, that the bounding countries of the chart are much distorted. These islets are the Madeiran, Canarian, Azorean, and Cape de Verd groups; St. Helena, and Ascension — all in the Atlantic; and Kerguelen's Land in the South Indian Ocean.

Let us commence with the Atlantic Ocean and the Madeiran group, consisting of Madeira, Porto Santo, and the rocks called Dezertas.

On landing we are at once struck with the European character of the vegetation, and though exotic plants abound, as some Palms, the Orange, Banana, Sugar Cane, &c., it is wonderful with what ease we distinguish between the indigenous or naturalised European element, and the cultivated and semi-naturalised

But though the vegetation is European in the main. it is not so altogether, and even its European features soon arrange themselves in a botanist's eye under different categories, very much as follows:—The majority, including almost if not all the annuals, we find to be identical with European plants, and undistinguishable from them; others differ from European plants by slight but certain characters, as varieties we say; a third class are specifically different from European, and yet seem to hold a place corresponding to what their nearest allies occupy in Europe—these are representative species; and a fourth class comprises plants that are evidently allied to European, but belong to different genera—these constitute representative genera.

Now, it is a curious fact, that when we tabulate these classes, we find that to a great extent they form a graduated series, not only in systematic order and structure, but in point of numbers; in other words, the plants identical with those of Europe are both the most numerous in species, and the species are most numerous in individuals: then come the most numerous in individuals: their constantly different from European plants, others constantly, and from European plants, others common. Then come the distinct species: of these some would be called varieties by many botanists, and others good species by all; these are still less common. Lastly, of the different genera, some constitute what all botanists call a good genus, others would, with some botanists, take rank as slight modifications of European genera: these are both the fewest in number and most local in distribution, many indeed being confined to single spots, or even represented by single plants.

So much for the European element of the Flora. Take now the separate islets of the group: Porto Santo is only 30 miles from Madeira itself, and the nearest of the Dezertas 15; yet we find that these islets not only differ materially in their Floras from the main island,

but from one another, in species, varieties, and even in genera

On penetrating to the rocky and precipitous interior, whether of the main island or the smaller, we find many indigenous trees and shrubs, that are not only foreign to Europe, but are allied to American, to African, and to Asiatic plants: thus we have trees of Clethra and Persea, genera found in no continent but America; Persea. of Apollonias and others found elsewhere on a continent only in the East Indies; and of Dracæna and Myrsine, that betray an African affinity. As these non-European plants inhabit the Canaries and Azores also, they have been called Atlantic types, under which name I shall speak of them.

Lastly, when we ascend the mountains of Madeira above 4000 feet and up to their summits (6000), we find little or none of that replacement of the species of a lower level by those of a higher northern latitude, with which we are so familiar in ascending any continental mountains of equal or less height. Plants become fewer

and fewer as we ascend, and their places are not taken by boreal ones, or by but very few.

Here then are various botanical features, in respect of which Madeira and its satellite islands, Porto Santo and the Dezertas, differ very much from continental heading seem to render confusion worse confounded areas of equal extent and elevation, or from islands lying near the coasts of a continent, the Floras of

which are therefore continental.

Let us take Great Britain as a standard of comparison. Great Britain contains twice as many flowering plants as the Madeiran group; but these are, with scarcely an exception, identical with continental European; it contains but few varieties differing from those of the neighbouring continent, and only one indigenous non-European genus, which is an American water plant. Morever, on ascending above 2000 feet, a rapid replacement of species succeeds.

And so it is with any other corresponding area in Europe: none present a similar assemblage of Asiatic and American plants, nor an equal number of peculiar varieties, species, and genera, as the Madeiran group does, nor so many peculiar plants represented by so very few specimens; and nowhere do we find the rocky islets on the coast of a continent to be tenanted by numerous singular genera, species, and varieties, which are to be found nowhere else on the surface of the globe. What should we say, for instance, if a plant so totally unlike was

anything British as the Monizia edulis (an Umbelliferous plant, with a stem like an inverted elephant's trunk, crowned with a huge tuft of Parsley-like foliage). were found on one rocky islet of the Scillys, or another Umbelliferous plant (Melanoselinum) with a slender trunk like a Palm, on one mountain of Wales; or if the Isle of Wight and Scilly Islands had varieties, species, and genera too, differing from anything in Britain, and found nowhere else in the world!

Of all the above peculiarities, it is those very rare and local plants that are isolated as genera, and in geographic distribution, that arrest the inquirer's attention and force him to speculate. e must ask ourselves, were these almost unique isolated individuals created as complete highly specialised organisms, or are they modifications of allied plants, owing their strange forms and special attributes to centrifugal variation operating through countless ages? and however they have originated, are we to regard these solitary representatives of such strange forms of vegetation as the first of their several races, destined, mayhap, to increase, and become in future as common as they are now rare; or the last of their races, which, but for the rapid advance of modern science, would have passed away, along with those countless forms of animal and vegetable life that once peopled the globe, but whose forms and structures will never be revealed to us?

Considerations which I cannot here enter into warrant our belief that such plants on oceanic islands are, like the savages which in many cases have been so long the sole witnesses of their existence, the last representatives of their several races; and the question involuntarily arises-How did this come about

Excluding the direct agency of man, and of animals introduced by man, I believe that a principal cause of the rarity or extinction of old species on oceanic islands is the subsidences they have all experienced. This sinking of the island operates in various ways. 1. It reduces the number of spots suitable to the habits of the plant. 2. It accelerates that struggle for existence which must terminate in the more hardy more prolific displacing the less hardy or prolific. 3. It reduces both the numbers and kinds of insects to whose activity the fertilising process in plants, and hence their propagation, is so largely due; and not only does it reduce the numbers and kinds of insects, but the destruction falls heaviest on the winged kinds, which, as has lately been shown, are almost exclusively the agents in this process; for these, as the becomes contracted, are blown out and lost in greater proportion than the wingless, is this mere conjecture. Mr. careful entomological researches in Madeira and the Canaries prove that winged insects exist in wonderfully smaller proportions to wingless, in these islands, than on the continents, and I can extend this observation to all the oceanic islands that I have visited.

But in Madeira the agency of man must not be overlooked. The natural history of that lovely island has undergone such a revolution within the 400 years, as under the ordinary operations of Nature can only be measured by the geological chronometer. In the romantic story of its first discovery, it is stated to have been covered with wood, whence its Portuguese name of Madeira, and this is confirmed by the first settlers, who found the forests to be impenetrable, so that they set fire to them, and a conflagration ensued which lasted seven years. Cultivation and the introduction of European trees followed; and who now can form a conception of the number of peculiar plants that utterly perished in the flames, or that have since been elbowed out by the more vigorous introduced European vegetation? And with regard to Porto Santo, in about the year 1418 a mother rabbit and her brood were landed, and increased so rapidly, that they not only consumed the native vegetation, but the cultivated, and actually drove the settlers from the

Such catastrophes help us to account for the rarity of many of the species, but not of those that inhabit the tremendous scarped precipices of the coast and interior, which are equally inaccessible to man and fire; nor of those of the outlying islets. For such, and for the presence of the Laurels and other plants of the Atlantic island type, as contradistinguished from European, we must seek other and far different explanations, which we shall best understand after visiting other oceanic islands.

(To be Continued.)

Home Correspondence.

Oncidium macranthum.-The various articles which have appeared in the Gardeners' Chronicle under this and Oncidium macranthum runs a risk of being considered a myth. With all due deference to Mr. Skinner, whose services to horticulture no one more fully appreciates than I do, the Oncidium macranthum has conical pseudobulbs 3 to 4 inches in length, sometimes separated one from the other it is true, but generally grouped together, and as these latter are more easily preserved, they are selected in preference by my collector. On the other hand, Odontoglossum coronarium has flat rounded bulbs of a brownish colour, separated often one from the other by rhizomes a foot in length, and of the thickness of a quill. As to the "noticeable fact" mentioned by the writer of the article at p. 1245, 1866, he might have seen, by consulting the two last catalogues of my sales, that Mr. Stevens copied in the second that which had been said in the first with reference to this Oncidium macranthum. Now it happened by chance that between the two sales a new consignment of the same Orchid arrived, and in better condition than the preceding one, and this explains how it was that the last sale was enriched by some ten lots (une dizaine),

which were sold for a mere song in consequence of the doubts that arose among the amateurs present, order to reassure purchasers, I consider it my duty to declare that the Oncidium macranthum sent by me to Stevens' are not only true, but that they belong to the most brilliant variety of that most noble species, a variety which I have called var. hastiferum. moreover that I guarantee all the plants sold under that name, as also those under that of Odontoglossum coronarium, and that I am ready to indemnify liberally those who may have reason to complain. I cannot any more than Mr. Skinner, prevent the errors that occasionally occur in the case of imported Orchids, but these errors can only occur in species having a great resemblance in their pseudobulbs, and which, collected in the same locality by the collector, and sent in good faith under the same name, turn out to belong to different species, and sometimes even to different genera. Between such an accident and wilful fraud there is a vast difference, and an imputation of the latter would be very culpable. It is, to say the least, strange that the writer of the article quoted upholds the authority of Mr. Skinner, while the sales took place under the re-sponsibility of a name identified for the last thirty years with the Orchids of the Cordilleras and Andes, and who had discovered and published in the "Pescatorea, the Odontoglossum coronarium above referred to. This should not have been forgotten before entering upon a discussion so disagreeable for him on account of whom the plants were sold. I will add that a specimen of Oncidium macrarthum is now in bud with me, and that those who are incredulous may soon be convinced de visu. Oncidium diadema and Phalænopsis, as well as Odontoglossum cristatum and cirrhosum, are flowering with me at this time, and they prove the accuracy of the drawings sent by my collector Wallis. J. Linden, Brussels, December 30. — There is an o saying that "the proof of a pudding is in the eating; -There is an old and on this authority we are justified in stating that, whatever some of the plants sold by Linden at Stevens' Rooms for Oncidium macranthum may be, all are not We bought one as O. macranthum, with a smooth conical bulb; it is now in bloom, and is not O. macranthum, but (apparently) O. serratum, a species nearly allied in habit, but with totally different flowers. Another plant sold as Odontoglossum cirrhosum, for which we paid 51., proves only a poor variety of Oncidium cucullatum. We do not infer that others, sold under these names, were also neces sarily wrong, but we wish to show that names are not always to be trusted. We may add that none of the plants sent home to us by our collector from Ecuador, have the long rhizome (causing a space of many inches between the bulbs) which "J. H." regards as a character of the true O. macranthum, if we understand him correctly. On the contrary, they have compressed semi-pellucid bulbs, in one row certainly, but contiguous if not actually in contact. Along with these plants an excellent coloured drawing from Nature was sent, which was at once identified by Professor Reichenbach as O. macranthum. It is only fair to M. Linden to say that some of the plants sold by him as this species, appear exactly to resemble those sent by our own collector, so far as we are able to judge. As to Odontoglossum coronarium, we feel little fear expressing a conviction that not one of the plants sold for that species is really so! We believe that they will all prove to be O. brevifolium, which we have also received from our collector, along with dried specimens and coloured drawings, accepted by Professor Reichenbach as being that species. These have a long space between the bulbs (4 to 6 inches). We have several other plants evidently belonging to the same group, but differing specifically one from another, which have the same kind of elongated rhizomes. It is, we think, unwise to speculate on these till they actually bloom and declare themselves; but we have seen enough to satisfy us that we are as yet only as it were on the threshold of knowledge, both with regard to the distinguishing characters of the species comprising the Cyrtochilian Oncids (in which group O. macranthum stands) and of the section of the genus Odontoglossum, which is so near akin to it in style of growth. Patience will reveal much, and we may briefly state that it will not (apparently) have to be severely strained in regard to the plant we have imported as Oncidium macranthum, as one of these already shows a flower stem. Jas. Backhouse & Son, York.

Downton Castle Early Dwarf Cabbage.—Knowing something of this Cabbage for some years back, I felt interested in the question put by "E. W." (see p. 1194, 1866), and was pleased to notice a reply at p. 1249 of the same volume. It is obvious that the gist of your correspondent "H. D. M.'s" remarks is to give the Cabbage a good character. I am glad of this, for it deserves it; though I believe in the case in question its earliness is a good deal over-rated. I confess to being puzzled at the description given of its comparative merits, and I must say even startled at the solution given of the vexed question—occasional rogues among Cabbage and Broccoli. I presume when "H. D. M." describes his Cabbage as having "pure white heads," he means hearts, else either he or others must have the wrong variety. Further, if it came in with "H.D. M." three weeks before Cattell's Dwarf Barnes' and Improved Nonpareil, I would expect it to be ready at least four weeks before the Enfield Market. I have not before heard of these three excellent varieties coming in together under the same treatment, but am I to understand that the existence of rogues-I hope not Kale and Late Broccoli such as "E W." complains of-in our finest and most carefully selected varieties of Broccoli and Cabbage is attributable to the high state of hybridisation and delicate constitution of many of our new varieties of vegetables?" comfortable line of argument this for our seedsmen. who need not therefore in future be particular about the purity of their stocks. For my own part I would

violaceum (Rchb. f.), even as to most minute details, as the hairy lines at the base of the lip, descending in the spur so as to produce a sort of sphincter, for the pedicellate pollinia. The chief difference is to be found in the shape, and, in consequence, in the nervation of the lip. The lip of Saccolabium violaceum is panduriform, retuse at the apex, with a tooth in the end. All the nerves run nearly parallel. Here the lip is tapering to the base, much dilated at the apex, where it is trifid, but not trypeste with a projection tooth. Both not truncate, with a projecting tooth. Both species have a projecting callosity beneath the lip. Let us add, that the colours of Saccolabium violaceum have a more bluish hue, and that that species, bearing more blotches both on the sepals and petals, has a totally different appearance. S. Harrisonianum we regard as a splendid white variety of the last. Rehb. fil.

INSULAR FLORAS.

(Continued from p. 7).

THE CANARY ISLANDS form a much larger and more nportant Archipelago than those of Madeira, are situated 300 miles further south, and are much nearer the African coast, and yet their Flora is not that of Africa, and indeed contains comparatively very few of

the plants of that continent.

The Canary Islands contain upwards of 1000 native species, of which fully one-third are absolutely peculiar to the group, and these admit of almost precisely the same classification as the Madeiran plants. Thus, the mass of the plants are identical with Mediterranean species; then follow, in numerical importance, those that are representative, as slight or well marked varieties, or congeners or co-ordinates of the Mediterranean genera and species. After these come, and in great force, the Atlantic plants, including no less than 40 of the Madeiran shrubs and trees that are not found in Europe or Africa, and as many representatives of Madeiran genera, species, and varieties, together with a number of allied ones more nearly related to African, Indian, and American plants than to European. Lastly we have, as was to be expected, a sprinkling of African plants, belonging to that division of the African Flora, which, being different from the Mediterranean on the one hand and from the Equatorial African on the other, extends from Western Asia through Arabia and across the Sahara to Cape Blanco: - a Flora conterminous in longitude with the distribution of the domesticated camel, which is used as a beast of burthen even in the Canary Islands. This Flora I would call the Arabo-Saharan.

The lofty mountains of the Canaries, though upwards of 11,000 feet high, contain no alpine plants, and as in the case of the Madeiran group, many of the most peculiar forms are extremely rare and local. Lastly, the Floras of the several islets of the group differ much from one another. The two easternmost, Lancerote and Forteventura, especially, thus standing in the same relation to the others, that Porto Santo and the Dezertas do to the main island of Madeira.

It is not necessary to do more than thus broadly sketch the general features of the Flora of this group, to show you what a parallel it exhibits to the Madeiran, and how intimate their original botanical connection

must have been.

And that this connection was something more than a botanical one is proved by the examination of some rocky islets that scarcely emerge 100 feet above the surface of the Atlantic, almost midway between Madeira and the Canaries; these are the rocks called SALVAGES, of which one, that is I believe scarcely a mile long, is covered with a scanty vegetation. It was natural to suppose that this isolated rock at least would have been peopled by migration from the African coast, but it is not so. My friend the Rev. Mr. Lowe, who has spent many years in botanising in the Madeiran and Canary Islands, is the only natu-ralist who has ever visited these storm-beaten rocks. This he did last year, and he informs me that they contain an Atlantic Flora, and one intermediate in character between that of Madeira and the Canaries, but most closely related to the latter. The Salvages hence appear to be the peaks of a submerged island that once occupied an important botanical as well as geographical position in the Atlantic Ocean, more or less closely linking the Canaries with Madeira. It is impossible otherwise to explain its colonisation by these insular oceanic types that are equally foreign to Europe and Africa.

The AZORES ISLANDS are the third great North Atlantic group, and demand more special notice, because of their remoteness from any continent. This archipelago is 740 miles distant from Portugal, 1035 from the nearest American land (Newfoundland), and almost double that distance from the American States in the same latitude as itself. They are 500 miles from

Of flowering plants 350 species have been collected from the principal islands, a very small number considering their extent, but enough to give us a clear insight into the nature of the Azorean Flora. Of these some 30 are peculiar species or well-market varieties, representatives for the most part of Madeiran or European plants. About 30 are Atlantic types, common to the Azores and Madeira, or to the Azores and the Canaries, or to all; the rest are Portuguese and Spanish plants. Thus, though the absolute number of plants foreign to Europe is even less than in the Canaries and Madeira, these hold a far more important position in the whole Flora, from including so many of those peculiar Atlantic trees and shrubs that link all these three groups into one well-marked though fragmentary Flora.

Though so much further north than Madeira, the Azores contain scarcely any more boreal plants than Madeira, or even than the Canaries; and such as it does possess are likewise found in the mountains of the Spanish Peninsula. The most notable are the common Ling or Heather (Calluna vulgaris), and the beautiful St. Dabeoc's Heath, which is elsewhere found

only in the extreme west of Ireland, and in the Pyrenean region. A third is Littorella lacustris, a little water plant that inhabits a mountain lake, probably the crater of an extinct volcano, much frequented by migratory water-fowl.

As in the other groups, there is here a considerable difference between the Floras of the separate slets; and one of the most conspicuous and beautiful plants in the Azores, the Campanula Vidalii, is absolutely confined to a single sea-girt rock off the east coast of Flores. This plant was never gathered but once, by Captain Vidal, whose name it bears, during his survey of the island some 20 years ago. Captain Vidal's survey was most fortunately accompanied by a scientific botanist, Mr. H. C. Watson, who both named this remarkable plant, and sent seeds of it to Kew From these seeds the plant has been propagated, and there are now probably a thousand-fold more plants of it in the greenhouses of England than exist in its native locality

Considering how far removed the Azores are from Europe, and how much nearer they are to America than Madeira and the Canaries are to that continent, it might appear strange that the group contains scarcely any American plants not found in the other groups. But such is the case, and more than this; for even the Clethra of the Canaries and Madeira, a genus found nowhere else out of America, does not

inhabit the Azores.

The only trace of American influence on the Azorean Flora that I can substantiate, is in a species of the Umbelliferous genus Sanicula. Of this genus a common European species is spread almost all over the globe, inclusive of Madeira and the Canaries, but exclusive of the Azores; whereas another species of this same genus takes its place in the Azores, and this species is most closely allied to an American one. It is a significant fact, that the minute seed-vessels of Sanicula are provided with hooked bristles, suggest-ing the probability that these were originally trans-

ported by birds across the Atlantic.

I may add that the large Bean-like seeds of Entada. a West Indian plant, are thrown up abundantly on the islands by the Gulf Stream, but never grow into plants, if indeed they ever germinate on their shores. Some years ago a box of these seeds from the Azores was sent to Kew, where many germinated and grew to be fine plants, showing that their immersion during a voyage

of nearly 3000 miles had not affected their vitality.

Another group of islands, far distant from the above, demand a passing notice, as they have been regarded by some botanists as members of this Atlantic Flora. These are the CAPE DE VERDS, situated far within the tropics, 800 miles south of the Canaries, and

300 distant from the African coast. I visited this group in 1839, and found the Flora of the lowlands to be purely African and Arabo-Saharan in character, but on ascending the mountains, I met with a few plants very characteristic of the Canaries and Madeira. The Rev. Mr. Lowe has during the last two winters diligently botanised this group, with most interesting results. He finds, as I did, that the mass of the Flora is African, and that the mountains contain many Canarian types; but that all these are the types that have representatives in the Mediterranean region, whilst of those peculiar Canarian, Madeiran, and Azorean plants that have no near allies or repre-sentatives in Europe, not one is found in the Cape de Verds, with the single exception of the Dragon's-blood

Also, ascending above this zone to 5000 feet and upwards, many of the same middle-European plants are found that appear at correspondingly lower tions in Madeira, the Canaries, and Azores, and I may add that these are also found on the lofty mountains of

Equatorial Africa and Abyssinia.

We have thus in the Cape de Verd Islands a certain relationship with the Canaries and Madeira almost to the exclusion of the Azores; but it is a feeble one, and so blended with that of the African continent, and especially of the Mediterranean region, as to suggest other considerations than what concern us here.

St. Helena.—The botanical history of this speek in the vast Atlantic Ocean is a most curious and instructive one. It lies in lat. 16° S., is 1200 miles from Africa, 1800 from America, and 600 from Ascension, its nearest land; it is only about 10 miles long, by seven broad, and rears itself out of the ocean, a black pyramidal volcanic mass, girdled with beetling sea-cliffs, that are cleft by narrow ravines. When discovered, about cleft by narrow ravines. 360 years ago, it was entirely covered with forests, the trees drooping over the tremendous precipices that overhang the sea. Now all is changed, fully 5-6ths of the island are utterly barren, and by far the greater part of the vegetation that exists, whether herbs, shrubs, or trees, consists of introduced European, American, African, and Australian plants. The indigenous Flora is almost confined to a few patches towards the summit of Diana's Peak, the central ridge, 2700 feet above the sea.

The destruction of the Madeira forests you will remember was by fire. A much more insidious agency has operated with tenfold greater effect in St. Helena, viz., goats. These were introduced in 1513, and multiplied so rapidly, that in 1588, Captain Cavendish states that they existed in thousands; single flocks being almost a mile long.

In 1709, trees still abounded, and one, the native Ebony, in such quantities, that it was used to burn lime with. At this time, however, the Governor of the island reported to the Court of Directors of the East India Company, that the timber was rapidly disappearing, and that the goats should be destroyed for the preservation of the Ebony wood, and because the island was suffering from droughts. He received the laconic "The goats are not to be destroyed, being more

Another century elapsed, and in 1810 another

Governor reports the total destruction of the great forests by the goats, which greedily devour the young plants, and kill the old by browsing on their leaves and bark, and that fuel was so scarce that the Government paid for coal (and this in a tropical islet), 27291. 7s. 8d. annually. Still, even then, so great was the amount of seed annually shed, so rich the soil, and so rapid the growth of the native plants, that the Governor goes on to say, that if the goats were killed, and the island left to itself, it would in 20 years be again covered with indigenous vegetation.

About this time the goats were killed, but another enemy to the indigenous vegetation was at the same time introduced, and which has now rendered it in all probability impossible that the native plants will ever igain resume their sway. Major-General Beatson, then Governor, an active and sagacious officer, proposed and carried out the introduction of exotic plants on a large scale, and from all parts of the world; these have propagated themselves with such rapidity, and grown with such vigour, that the native plants cannot compete with them. The struggle for existence had no sooner begun, than the issue was pronounced; English Broom, Brambles, Willows and Poplars, Scotch Pines and Gorse bushes, Cape of Good Hope bushes, Australian trees and American weeds, speedily overran the place; and wherever established, they have actually extinguished the indigenous Flora, which, as I said before, is now almost confined to the crest of the central ridge.

It is therefore now impossible to distinguish the introduced from the native plants of St. Helena; but most fortunately Herbaria exist, made at the beginning of this century, that to a great extent supply the deficiency. Of these, the most complete was formed by the late Dr. Burchell, the eminent South African and Brazilian traveller, who spent five years on St. Helena, from 1805 to 1810. Unfortunately for science, Dr. Burchell never published, and scarcely allowed any naturalist access to his Herbarium. On his death, last year, his magnificent botanical collections were presented to Kew by his sister, and amongst them I found his invaluable St. Helena Herbarium in a

capital state of preservation.

It includes 169 flowering plants, but most unhappily Dr. Burchell has not indicated which are bona fide natives, and which have followed the track of men and animals introduced by him, and which have become quasi-indigenous or naturalised. Some years after Dr. Burchell's visit, however, an eminent Indian botanist, Dr. Roxburgh, visited St. Helena, and drew up a catalogue of the indigenous, naturalised and cultivated plants, then existing, carefully indicating the truly indigenous ones that were then surviving. burgh's collection was much less complete than Burchell's, but by collating the two, and with my own observations made during two visits to the island, I have arrived at a fairly accurate estimate of the number and affinities of the native vegetation remaining.

According to these data, about 44 indigenous species then inhabited the island before Major-General Beatson destroyed the goats, and introduced the European, &c., plants, to which five dubious natives may possibly be added. All are shrubs, trees, or perennial plants, not one is an annual (though introduced annual plants abound, both tropical and temperate). Forty of them are absolutely peculiar, and five are tropical weeds or seaside plants of very

These forty are absolutely peculiar to St. Helena, and with scarcely an exception, cannot be regarded as close allies of any other plants at all. No less than 17 of them have been referred to peculiar genera, and of the others, all differ so markedly as species from their congeners, that not one comes under the category of being an insular form of a continental species. Many of them insular form of a continental species. are excessively scarce, being now found in very small numbers, and on single rocks; not a few have never been gathered since Dr. Burchell's visit, some are certainly now extinct, as the beautiful Ebony tree, and probably nearly one-fifth have totally disappeared during the last half-century, or are now all but extinct.

From such fragmentary data it is difficult to form any exact conclusions as to the affinities of this Flora,

but I think it may be safely regarded as an African one, and characteristic of Southern extra-tropical Africa.
The genera Phylica, Pelargonium, Mesembryanthemum, Osteospermum, and Wahlenbergia are eminently characteristic of Southern extra-tropical Africa, and I find amongst the others scarce any indication of an American parentage, except a plant referred to Physalis. The Ferns tell the same tale; of 26 species, 10 are absolutely peculiar, all the rest are African, though

some are also Indian and American.

The botany of St. Helena is thus most interest-g; it resembles none other in the pecuing: liarity of its indigenous vegetation, in the great variety of the plants of other countries, or in the number of species that have actually disappeared within the memory of living men. In 1839 and 1843 I in vain searched for forest trees and shrubs that flourished in tens of thousands not a century before my visit, and still existed as individuals 20 years before that date. Of these I saw in some cases no vestige, in others only blasted and lifeless trunks cresting the cliffs in inaccessible places. Probably 100 St. Helena plants have thus disappeared from the Systema Naturæ since the first introduction of goats on the island. Every one of these was a link in the chain of created beings, which contained within itself evidence of the affinities of other species, both living and extinct, but which evidence is now irrecoverably lost. If such be the fate of organisms that lived in our day, what folly it must be to found theories on the assumed perfection of a geological record which has witnessed revolutions in the vegetation of the globe, to which that of the Flora of St. Helena is as nothing.

(To be Continued.)

Garden.

Pansy (Bedding) Imperial Blue.—Floral Mag., t. 324, fig. 3. Violaceæ. A fine bedding Pansy, in the style of the Cliveden Blue, and valuable from its distinct pale grey-blue colour, relieved by a yellow eye, and black adjoining spots. Being of free habit and an abundant bloomer, it is likely to prove very useful. Flowered by Messrs. Downey, Larry, & Laing.

PANSY (Fancy) HUGH ADAIR. - Floral Mag A white-ground flower, remarkably fine in shape, with large vandyked dark mauve blotch on the lower petals, the upper ones magenta, with darker veins, and a pale edge. Raised by Messrs.

Downie, Laird, & Laing.

Pansy (Fancy) Thomas Downie.—Floral Mag. 324, fig. 1. A white-ground flower, with deep purple blotches fringed by purple pencillings, the upper petals veined at the base, with a light feathery-looking blotch. An attractive flower. Flowered by Messrs. Downie,

PANSY (Fancy) MISS J. KAY.—Floral Mag., t. 324, fig. 2. A yellow-ground flower, of fine shape, with large crimson maroon blotches, the upper petals magenta, with dark vandyked blotch and narrow yellow lacing.

Flowered by Messrs. Downie, Laird & Laing.

PAVETTA HOOKERI.—Neerl. Plant. t. 28. Cinchonaceæ. This is the Ixora odorata of Sir W. Hooker (Bot. Mag., t. 4191), and is considered by Prof. Oudemans as inadmissable to the genus Ixora.

PELARGONIUM (Tricolor zoned) METEOR.—Floral

Mag., t. 321. Geraniaceæ. A choice variety of this now popular section of Pelargoniums. The leaves have a broad golden margin, and greyish green centre, with an intermediate zone, of a bright reddish crimson where crossing the yellow, but becoming brownish red where the green runs outwards through the line of the zone, which it does much less than in Mrs. Pollock, so that the colours are clearer and better defined. Flowers crimson scarlet. Raised by Messrs. Saltmarsh, Chelmsford.

PLATYCODON AUTUMNALIS.—Neerl. Plant. 1866, t. 1. Campanulaceæ. Of this beautiful hardy perennial, called by Dr. Lindley P. sinensis and P. grandiflorus, Dr. Oudemans figures in the plate quoted, four distinct varieties, namely, the single and the double (hose-in-hose) form of each colour, blue and white.

They are all equally worthy of cultivation in every garden.

Rose (H. P.) Napoleon III.—Floral Mag., t. 323.

Rosaceæ. One of the crimson-scarlet class, and apparently a flower of considerable merit, which, indeed, it is said to possess. It is of the Jacqueminot class, but "shines out among a number of others of the same colour." Flowered by M. Eugène Verdier.

INSULAR FLORAS.

(Continued from p. 27).

ASCENSION. - The islet of Ascension claims a passing notice; it is much smaller than St. Helena, and 600 miles N.W. of it. St. Helena has been called a barren rock, but it is a paradise as compared with Ascension, which consists of a scorched mass of volcanic matter, in part resembling bottle glass, and in part coke and cinders. A small green peak, 800 feet above the sea, monopolises nearly all the vegetation, which consists of Purslane, a Grass, and Euphorbia in the lower parts of the island, whilst the green peak is clothed with a carpet of Ferns, and here and there a shrub, allied to but different from any St. Helena one. There are nine Ferns, of which no less than six differ from those of St. Helena, and three of them are entirely confined to the islet.

KERGUELEN'S LAND.—I shall now take you to an island with very different features from any of the above, and whose vegetation appears at first sight to be in discord with all we have yet seen of the relations of oceanic islands to continents; but which actually proves no exception to the rule, that the Floras of these

islands are derivative

Kerguelen's Land, the Isle of Desolation of Cook, is situated in the tempestuous South Indian Ocean, in the latitude of Cornwall, and within the northern limit of floating icebergs. It rears itself from the ocean as a black volcanic mass, girt with sea cliffs, and perennially swept by terrific storms. It is 2170 miles from the nearest continent, South Africa; 4130 from Cape Horn, and 3800 from the nearest of the New Zealand group, these being the southernmost masses of land inhabited by plants.

At a few miles distance it appears to be absolutely

sterile, and on nearing the coast the scenery scarcely improves. A narrow belt of Grass skirts the deep harbours, and above this are brown pounded heaps of a very peculiar Umbelliferous plant (Azorella Selago) growing like tufts of a gigantic Moss or Saxifrage. These are succeeded by scattered tufts of Grass and herbs struggling for existence in a most barren soil.

In Cook's Voyage it is written, "Perhaps no place hitherto discovered, in either hemisphere under the same parallel of latitude, affords so scanty a field for the naturalist as this barren spot; for he might assuredly have added 10 degrees to its own latitude in the southern hemisphere, and upwards of 20 in the northern, as the limits upon which such a paucity of species exist." And even Cook's account falls far short of the truth, for Spitzbergen, 30° nearer the Pole, species exist." boasts of five times as many flowering plants as Desolation Island.

Captain Cook's naturalist (Dr. Anderson) during his summer stay at Kerguelen's Land, found only 18 plants in all, Phænogamic and Cryptogamic; during my winter's stay there I found about 150, including all those found by Cook—a most remarkable fact, showing how equable, though tempestuous and severe, the climate must be throughout the year. Of the flowering plants all are perennial, and one of them had a very remarkable appearance; it was a gigantic Cruci

Native of Amboyna. Cultivated in the Leyden | ferous plant allied to the northern Scurvy Grass (Cochlearia), and which we christened the Kerguelen's Land Cabbage, both because of its appearance, and because we used it daily as a pot-herb. During 130 days we ate no other fresh vegetable than this which was served out with the ship's salt junk and pork, and during that time there was not a case of illness of any consequence in a company of 120 officers and men. It hence well merits its Latin name of Pringlea antiscorbutica, the generic name being given in compliment to Sir John Pringle, an eminent writer on that scourge of seamen, the scurvy. abundant near the sea, and is a well-marked feature in the view of Christmas Harbour which is engraved in Capt. Cook's Third Voyage. It is allied to no other known plant in the southern hemisphere, and is as remarkable, whether for its curious habit of growth, or its botanical characters, as any of those singular plants which I have indicated as forming peculiar features in the sea cliffs of the Madeiran, Azorean, or Canarian Islands. Like these too, it tells no tale as to the origin or affinities of the Kerguelen's Land Flora.

It is not so with the other flowering plants; they almost without exception point to the land whence they were derived. The only other peculiar genus on the island (Lyallia) is decidedly an Andean form : of the remaining 16 flowering plants, four are regarded as distinct species peculiar to Kerguelen's Land, but three of them are so nearly allied to Tierra del Fuego congeners, that they may equally rank as varieties of these, and the fourth stands in the same relation to a New Zealand plant. Of the remaining 12, 10 are Fuegian, of which 4 are confined to Fuegia and Kerguelen's Land, including the remarkable Umbelliferous plant, which belongs to a group that is otherwise very characteristic of the South American Andes. Five are found in all south circumpolar regions, and one alone is confined to Kerguelen's Land and Lord Auckland's Group. Three are European, and all of these are common English and Antarctic fresh-water plants. Phey are Callitriche verna, Limosella aquatica, and

The affinity of the Kerguelen's Land Flora is hence extremely close to the Fuegian; so close, indeed, that it cannot be doubted that it was for the most part derived from thence. And it is all the more remarkable that this relationship should be so strong and unmistakeable if you consider that the mother country of its Flora is not that which is nearest to it, as was the case with all the other islands we have discussed, but that which is the most distant from it; and indeed Kerguelen's Land is more distant from a continent than any other island in the Atlantic or Indian Oceans.

I have thus endeavoured to bring before you by conspicuous examples, the chief botanical features of ertain oceanic islands, and the nature of the resemblances and differences that subsist between their vegetation and those of the continents nearest to them, or from which their plants appear to have been directly or indirectly derived.

Before proceeding to discuss the theories that have been propounded to account for the stocking of oceanic islands with plants, and for the peculiarities of Oceanic Island Floras, I will recapitulate these briefly.

1. That the Flora of no oceanic island which we have considered is an independent one; that in all cases it is quite manifestly closely allied to some one continental Flora, and that however distant it may be from the mother continent, and however it by so much approximates to another continent, it never presents more than faint traces of the vegetation of such other continent. Thus the Azores, though 1000 miles nearer to America than Madeira is, has not even so many American types as Madeira has. St. Helena, though 1000 miles nearer to South America than is any part of the African coast, contains scarcely any plants that are even characteristic of America; and Kerguelen's Land, though far more distant from Tierra del Fuego than it is from Africa, Australia, or New

Zealand, is almost purely Fuegian in its Flora.

2. The Floras of all these islands are of a more temperate character than those of the mother continents in the same latitude; thus, Madeira and the Canaries have a Mediterranean Flora, though they are respectively 5° and 10° south of the principal parallel of the Mediterranean region; the affinities of the St. Helena Flora are strongly South African; and the Flora of Kerguelen's Land, in lat. 48°, is what we might expect to meet with in Fuegia, were American continent produced southward to lat. 60° were the

3. All contain many and great peculiarities, distinguishing them from the continental Floras; and these admit of the following classification:—

α. Plants peculiar to the islands and betraying no affinity to those of the mother continent, as the Laurels, &c., of Madeira and the Canaries and Azores; the arborescent Compositæ of St. Helena, and the Kerguelen's Land Cabbage, and Lyallia.

β. They contain certain genera that are very different from those of the mother continent, but are evidently allied to them; and others but slightly different. They contain species that are very different from, but allied to those of the mother continent; and others that are but slightly different from continental; and they contain varieties in the same categories.

4. As a general rule, the species of the mother continent are proportionally the most abundant, and cover the greatest surface on the islands. The peculiar species are rarer, the peculiar genera rarer still; whilst the plants having no affinity with those of the mother continent are often the commonest of all, in the temperate islands especially—at least under the condition which the island vegetations now present.

absent; but recently introduced annuals are very abundant in those islets that have been frequented by

I now come to the most difficult part of my task, which is to discuss in a brief space of time the hypotheses that have been invented by naturalists to account for the presence of continental plants in oceanic islands, and for those various differences between insular and continental Floras that I have indicated.

These hypotheses are as yet unverified and insufficient; neither geological considerations, nor botanical affinity, nor natural selection, nor all these combined, have yet helped us to a complete solution of this problem, which is at present the bête-noir of botanists. Oceanic islands are, in fact, to the naturalist, what comets and meteorites are to the astronomer; and even that pregnant doctrine of the origin and succession of life which we owe to Darwin, and which is to us what the spectrum analysis is to the physicist, has not proved sufficient to unravel the tangled phenomena they present.

There are only two possible hypotheses to account for the stocking of an oceanic island with plants from a continent: either seeds were carried across the ocean by currents, or the winds, or birds, or similar agencies; or the islands once formed part of the continent, and the plants spread over intermediate land that

has since disappeared.

To a superficial observer either of these causes may appear admissible, or feasible and sufficient; but the naturalist, who takes nothing for granted, finds insuperable obstacles to the ready acceptation of either. Upon one fundamental point most of the advocates of both hypotheses are agreed, namely, that those plants which are common to the islands and continents were not independently created in both localities, but that they did pass from one to the other; and another will probably gain ready credence, viz., that those peculiar insular plants, which have no affinity with continental ones, are relics of a far more ancient vegetation than now prevails on the mother continents. This latter is a most important point to be established. I have given you my reasons, derived from the conditions under which the Atlantic island plants are found in the Madeiran group, for assuming that they represent the wreck of a very ancient Flora; the proof of it lies in the fact that the same plants, or their congeners or close allies, are found abundantly fossil in the tertiary strata of many parts of Europe; it is an indisputable fact, that within the lifetime of these Atlantic Island species, which, from their foreign aspect, arrest our attention so forcibly in the forests of the Canaries, Madeira, and Azores, the vegetation of Europe has undergone a complete revolution, and that they are the living witnesses of [that period, when trees now characteristic of Asia and America, formed the forests of our own continent; and that they owe their preservation up to the present time to their insular position. They no doubt originally migrated from the continent of Europe* to the islands, and have since been driven out of Europe by the northern and eastern Floras that now replace them there; but this was at an immensely remote period, when the condition of both islands and continent may have been very different from what they

The hypothesis which suggests that there was an old continental extension, which, by including the islands, thus enabled them to receive the continental plants without trans-oceanic migration, first found a scientific exposition in the ingenious essay of my friend the late Prof. E. Forbes "On the Geological Relations of the existing Fauna and Flora of the British Isles, read before the British Association at Cambridge in 1845. In this Prof. Forbes maintains, that the Flora of Britain was mainly derived from the continent of Europe, when our islands were an integral part of the latter, that is before the cutting out of the English Channel and German Ocean; an hypothesis that is very well supported, and I believe universally accepted by both naturalists and geologists. He further accounts for the peculiar colony of Pyrenean plants that is found in West Ireland by an ancient continental extension across the Bay of Biscay. And finally he revives the hypothesis of the Atlantis of the ancients, in the shape of a continental extension of the western shores of Europe and Asia, reaching nearly one-third across the Atlantic Ocean, so as to include in its wide embrace the Azores, Madeira, and Canary Islands. As the arguments in favour of this view have been all laid before the British Association by its author, I cannot enumerate them here; nor is this necessary, as I shall have to allude to them in discussing the counter hypothesis of transoceanic migration.

This, which was previously nothing more than a generally accepted guess, or assumed probability, first received a scientific exposition from Mr. Darwin, in his "Origin of Species," only seven years ago. And I would here beg you to understand clearly, that this inquiry is not a part and parcel of Mr. Darwin's theory of the origin of species;—variation and natural selec-tion are not mechanical aids to the transport of plants from a continent to an island, though they may affect our views of the results of such transport, which is quite another question. I have to-night given you facts regarding Oceanic Floras that strongly support Mr. Darwin's derivative theory of species; and in like manner Mr. Darwin, believing in trans-oceanic migration on grounds altogether independent of his theory of species, uses the results flowing from such a view in support of this theory. Thus far he goes, and so far it is our business to go with him, and to scrutinise his method.

It is not necessary here to dwell on the doctrine of Unger, he mother continent are often the commonest of all, in the temperate islands especially—at least under the ondition which the island vegetations now present.

5. Indigenous annual plants are extremely rare or in a sterly review of the question (Nat. Hist. Review, ii., 149, 1862).

Mr. Darwin brings many powerful arguments in support of trans-oceanic migration; starting from the fact admitted by all, that some means of transport are always in operation, he reduces the matter to a question of extent, and amount of agencies, and of time during which they may have operated; he shows that birds do carry seeds in their feet and beaks and in their stomachs, and that such islands as the Canaries and Madeira are stocked with exclusively European species of land birds. That we have annually a trans-oceanic transport of American birds to Europe and of European birds to Greenland. That oceanic fish devour seeds, and that if these become the prey of birds, the contents of their stomachs may thus be deposited on distant islands. That dust is blown 1000 miles over the ocean, whilst the seeds of many plants are no larger or heavier than particles of dust

Then, with regard to strictly marine agencies, whereas it was supposed that exposure to salt-water must be invariably fatal to seeds, he has shown by experiment, that many seeds will survive immersion in salt water for periods sufficient to permit their being transported several hundred miles by currents without losing their vitality:—and that they are thus transported I have given you a conspicuous instance in the Entada seeds (which, by the way, were sent me by Mr. Darwin), and which, after floating 3000 miles from the West Indies to the Azores, germinated at Kew; to which he adds, that all the Coral Islets, which no one supposes to have been ever connected with continents, are well stocked with plants by marine agency

Of negative evidence in favour of this view, Mr. Darwin adduces the fact, that oceanic islands are poor in species. and that whole groups of continental plants are absent from them, which should not be the case had there been continental extension. That land mammals and Batrachians are absent from all oceanic islands, though winged mammals, as bats, birds, insects, and other transportable terrestrial creatures, are present in more or less abundance. That if we demand continental extension for some islands, it must be admitted for all, which is, according to his views of the permanence of the general outlines and dispositions of the continents and sea-beds, during the later geological epochs, quite inadmissible.

Lastly, the oceanic islands which I have to-night described, and almost all others known to us, are volcanic, which would imply that the submerged continents were volcanic too, a position we have no evidence in support of, and which is in itself extremely improbable.

(To be Continued.)

THE WEATHER OF 1866.

January.—This month was wet, and comparatively mild for the period of the season. Eleven nights were more or less frosty; the most severe frost occurred on the night of the 12th, when the thermometer fell to 9°; it fell to 17° on the 11th, but with these exceptions the frosts were but slight. The mean temperature was

nearly 3° above the average. The amount of rain was | was fully 3,6° above, the mean minimum 4° below the fully 2 inches above the usual quantity for this month. There was a heavy fall of snow on the 11th.

February.—This, again, was a very wet month. The barometer averaged very low. The amount of rain was more than double the usual quantity. mean maximum temperature the average, but the nights were somewhat colder than usual, so that the mean temperature was thus reduced almost to the average. The lowest occurred on the night of the 17th, thermometer 17°; much rain fell on the 9th; the 11th was very stormy and wet.

March. - The barometer stood much below the average, and the amount of rain was a little more than The mean maximum temperature the usual quantity. was about 23° below the average, whilst the mean minimum was more than 3° colder than usual, and the mean nearly 3° below the average. The lowest temperature indicated by the thermometer was 15° on the night of the 13th. From the 15th till the end of the month, rain, more or less, with one exception, fell every day; the total amount, however, but little exceeded the average. Winds from cold quarters, N. and N.E., were prevalent. The temperature was lower than in the preceding month, and even considerably lower than in January; this being the case, vegetation could not be said to have been rendered tender, or to have been prematurely excited. The weather was dry and cold in the first half of the month, clearing up to frost at

April.—The amount of rain was very nearly half an inch above the average; nearly 3 inch fell on the 27th. The mean temperature was about ¹/₄° above the average. Frost more or less occurred on nine nights; but not so severe as often occurs in this month, the lowest being 26° on the 3d; none were preceded by a high temperature, as is often the case when spring frosts prove most destructive. From the 22d to the 26th inclusive, and in intervals of rain, the air was very dry.

May.-This was a cold month, and rather dry, the barometer standing fully at its average height. The quantity of rain was 1.17 inch, being $\frac{s}{10}$ inch below the average. Half an inch fell on the 26th, and with this exception, none fell after the 12th. The mean The mean temperature was $4\frac{1}{10}$ ° below the average. The mean maximum was 1°.39 below the average; but the mean minimum was nearly 7° below. Frosts at night were more frequent than in the preceding month, they having occured on 13 nights; the lowest, 25°, occurred on the 4th; but with lower temperature than this we have often seen a very fair crop of fruit, unless preceded by hot days and warm nights. The prevalent winds were westerly in the first half of the month, and easterly in the second half. The air throughout the greater part of the month was generally very dry.

June.—This was a wet month, the amount being upwards of 3½ inches, or 1.58 inch above the average. Of this quantity more than an inch fell on the 4th, and nearly an inch on the 21st. The mean temperature was a little below the average; the mean maximum

Hence it appears the days were warmer than average. usual, but the nights much colder. On the night of the 19th, close upon midsummer, the thermometer fell to within 2° of freezing.

July.—This was a dry but cold month. The mean temperature was 2°.66 below the average. This lowness was chiefly owing to the coldness of the nights, for the maximum of the days' average was little below what is usual. Rain fell more or less on the first eight days, and on five days in the latter part of the month; in the rest, from the 8th to the 25th, there was no rain. The winds were chiefly from S. and S.W., from N.E. and E. 14 days. Cold, low, dusky white clouds were prevalent. The fruit crops failed very much, and disappeared without any obvious cause; they seemed to have a weakness in their formation which prevented their progressive growth. Doubtless the low night temperature experienced with easterly winds in the latter part of May had an injurious effect on the embryo fruits; and, arresting their growth, rendered them liable to drop, and to suffer from the attacks of Peaches and Nectarines were in many cases a great failure, except where the trees were managed on very good principles. Apples were smaller than usual, and a very imperfect crop. Plums were almost a total failure, and so were Pears. Strawberries failed greatly; and on the whole an imperfect and deficient crop of out-door fruit has to be set down for the

August .- On the whole this month was wet and cold. Rain, more or less, fell on 19 days, and the total amount was above the usual quantity; not considerably so, but conjointly with the want of heat the process of ripening was in consequence much retarded, and rendered imperfect in general. The mean temperature was nearly 3° below the average. Want of sun, but cold white or dusky clouds instead, rendered this an ungenial month for producing full-flavoured fruits. The mean maximum, instead of progressing, fell back from that of the preceding month.

September. — The mean temperature was nearly below the average. The mean minimum was about half a degree above the average; but the days the temperature of which more influences the maturing and ripening of grain and fruits had a mean temperature of 21° below the average, from which it appears that there was a deficiency of solar heat and light. The amount of rain was somewhat above 4 inches, fully an inch and a half above the average quantity for the month. There were only two days on which rain did not fall. The prevalent winds were from S. and The temperature fell 2° below freezing point S.W on the night of the 17th, and as low as freezing on the 24th.

October.—Very little rain fell in the first half of the month; and altogether the quantity was nearly three quarters of an inch less than usual. The mean temperature was about 1° below the average. Frosts occurred so early as the 12th, but on the 28th night the thermo-

TABLE SHOWING THE HEIGHT OF THE BAROMETER AND THERMOMETER, AND DEPTH OF RAIN AT CHISWICK, FOR EACH MONTH OF 1866, COMPARED WITH THE AVERAGE

| | | | | BAROMETER. | | | TEMPERATURE. | | | | | | | | RAIN. | |
|---|--|--|---|---|---|--|--|--|--|--|--|--|---|---|---|--|
| 1866. | | | Mean, | Extreme Highest. | Extreme Lowest, | Mean Max. | Above (+) or below (—) the average. | Mean Min, | Above (+) or below (—) the average. | Mean. | Above (+) or below (—) the average. | Extreme Highest. | Extreme Lowest. | Amount. | Above (+) or below (—) the average of 40 years. | |
| January February March April May June July August September November December | | | Inches. 29.810 29.612 29.660 29.855 29.925 29.880 29.873 29.757 29.690 30.046 29.830 29.860 | Inches, 30,575 30,240 30,330 30,430 30,359 30,211 30,286 30,061 80,053 30,422 90,237 30,436 | Inches, 28.738 28.702 29.041 29.290 29.125 29.399 29.080 29.043 29.172 29.651 29.313 29.093 | Degrees. 45.97 47.29 48.00 58.20 63.23 75.63 74.19 71.29 65.20 59.00 53.43 49.68 | Degrees, +3.16 +1.57 -2.78 +0.76 -1.39 +3.65 -0.42 -2.15 -2.47 -0.23 +3.75 +4.33 | Degrees, 33.64 30.57 30.19 35.93 35.19 44.67 46.42 46.94 46.43 89.35 31.97 32.65 | Degrees. +2.62 -1.11 -3.18 -0.25 -6.82 -3.97 -4.89 -3.56 +0.50 -1.74 -3.24 -0.66 | Degrees. 39.80 38.93 39.99 47.07 49.21 60.15 60.30 59.11 55.81 49.17 42.70 41.16 | Degrees. +2.89 +0.23 -2.98 +0.26 -4.10 -1.16 -2.66 -2.85 -0.99 -0.99 +0.26 +1.83 | Degrees. 54 55 64 79 75 87 89 79 71 61 57 | Degrees. 9 17 15 26 25 34 37 36 30 24 19 | Inches, 3.72 3.80 1.65 1.98 1.17 3.60 1.30 2.69 4.04 2.00 1.16 1.93 | Inches. +2.06 +2.41 +0.27 +0.46 -0.81 +1.58 -1.06 +0.27 +1.58 -0.73 -1.03 +0.50 | |
| Mean | | | 29.816 | 30.575 | 28.702 | 59,26 | +0.65 | 37.83 | -2.19 | 48.54 | -0.77 | 89 | 9 | 29.04 | +5.50 | |

The Mean Pressure was 0.094 inch below the average. The Mean Temperature 0.77 degree below the average.

The Mean Maximum Temperature 0.65 degree above the | average.

The Mean Minimum Temperature 2.19 degrees below the

Amount of Rain, 5.50 inches above the average.

meter indicated as low as 24°. Cold easterly winds | was 6.97 inches in arrear. This has been reduced by prevailed in the first half of the month.

November.—The usual mean temperature for the month was fully maintained. The weather was damp and hazy, but the quantity of rain which fell was little more than half the quantity which on the average falls he night of the 13th was remarkable for an extraordinary quantity of shooting stars, proceeding in all directions from the north. phenomenon was marked by no remarkable degree of frost, nor extra quantity of rain. The beauty of the Dahlias and such like herbaceous plants was spoiled by the frost on the 9th, thermometer 24°, and tender-foliaged plants were completely done for the season by that of the 20th, when the thermometer fell to 19°.

December.—There were no severe frosts in this month, in fact the thermometer did not fall lower than it did in the previous month, 19°. Up to the last two days of the month the frosts were but slight. In the last half of the month a considerable quantity of rain fell; the last half was generally fine. Several days of the last week, including the last two days of the year,

were remarkably so. The Year.—The mean temperature was below the average. The months of January and February were warmer than usual; March was colder than they were. April maintained its average temperature; but from that time till November the weather was colder than usual. The month of May was on the whole very cold. At the commencement of the year the quantity of rain

5.50 inches, the excess which has fallen above the average in the present year. The balance due to arrears is now reduced to 1.47 inch, or it may be said to very nearly an inch and a half. R. T.

Home Correspondence.

The Late Frost.—There is something very interesting to gardeners in the records of English weather, and whenever it departs from its usual solemn path of clouds and fog and wind and rain, we are all as much alive as a Cockney on the Derby day. It is the strangely different degrees of temperature in places not far distant from each other that gives this lively interest—for the matter of distances we need not say much; in our little island we are all in a cluster— and the extraordinary different effects of a certain amount of frost on trees and shrubs in sites and soils closely resembling each other. White, in his "Selborne," in noticing the effects of a severe winter (1768), remarks with much interest that his neighbour living on a hill near him had not suffered in his garden, for that his Laurels and other evergreens were as green as ever after the winter had passed away, while his were killed to the ground. Those who have seen Selborne's green low moist pastures will at once see that it is not adapted for tender evergreens. Our severe frosts have generally succeeded wet autumns; still, the very severe winter of 1838 was pre-

ceded by a remarkably dry warm autumn, so much so that when travelling from Oxford to London, towards the end of October, 1837, by the stage coach, the dust was so abundant and the sun so hot, that my seat on the box was by no means agreeable. The first two or three days of January, 1838, the thermometer ranged to 55, thrushes sung, and anticipating a mild winter, when, on the 6th the frost commenced and continued till nearly the end of February. What destruction! The minimum register at Chiswick I find noted as $4\frac{1}{2}$ ° below zero, which was not so low by $6\frac{1}{2}$ ° as registered in the late frost; yet all our finer kinds of Roses were killed, all our common evergreens, and even the shoots of Peaches, Nectarines, and Apricots. The frost of December, 1860, was, if possible, still more destructive, for in low places in this county Apple trees of mature growth were much injured, and even the common Oak suffered to a great extent in valleys; in fact, many fruit and other trees seemed paralysed, and did not fully recover till the warm summers of 1863-64. In the late frost the minimum registered here was on the morning of the 5th inst. (in your "State of the Weather" the date is the 4th) 4°, or 28° of frost. I feared at the time that trees and shrubs would be much injured, owing to their shoots, as in 1860, not being well On examining to-day the shoots of many ripened. kinds of shrubs, I find but little or no injury seems to

rosy crimson, each petal with a bold central stripe of rosy white, equal in width throughout, thus forming, it were, a star with many rays. Raised in Florence.

Flowered by M. A. Verschaffelt.

CATTLEYA DOWIANA.—Bot. Mag., t. 5618. Orchidaceæ. This magnificent plant, described at p. 922 of our volume for 1866, is perfectly distinct from all others, and at least equal in beauty to the most beau-tiful of its race hitherto known. It has the habit tiful of its race hitherto known. of C. labiata, and bears very large flowers, the plane lanceolate sepals and broader wavy petals being of a deep nankin-yellow, and the frilled lip wholly of a rich dark puce purple, traversed throughout by golden veins. Native of Costa Rica. Flowered by Messrs.

Veitch & Sons, and Mr. Bateman. CIRRHOPETALUM PAHUDII.—Neerl. Plant., 1866, t. 4-5. Orchidaceæ. An odd-looking stove epiphyte, with a creeping rhizome, compressed cylindraceous pseudobulbs, solitary, elliptic-oblong leaves, and radical flower scapes supporting an umbel of from 8 to 12 large flowers, which are brownish-red, minutely dotted with red, and having an ovato-lanceolate purple lip; the dorsal sepal is 4 inches long, and the two petals, about half its length, are directed backwards parallel with it, being prolonged into a filiform tail, while the two lateral sepals are directed forwards parallel with the lip, and are about as long as the petals. It is the Bolbophyllum Pahudii, Reich. f., and Cirrhopetalum flagelliforme, Teysmann & Binnendijk. Native of Java Flowered in the Leyden Garden.

GRIAS CAULIFLORA.—Bot. Mag., t. 5622. Myrtaceæ. A stately Palm-like tropical tree, forming a head of large lanceolate-acuminate leaves, 3 to 4 feet long, and producing pale yellow fragrant flowers 2 inches broad from the trunk, far below the leaves. Native of the Spanish Main. Flowered at Kew. It is the Anchovy Pear of the West Indies.

HIPPEASTRUM ALBERTI. - L'Illustration Hort . 498. Amaryllidaceae. This beautiful hothouse bulb has precisely the habit of H. equestre, but its orangeflowers, yellowish towards the base of each petal. measure as much as 6 inches across, and are full double the organs of fructification being replaced by from 30 to 40 petals, so that it altogether eclipses the double H. fulgidum, which has only two rows of petals. Found cultivated in Cuba by M. Albert Wagner, and sent by him to M. Wagner, of Leipsic, from whom the stock has been acquired by M. Laurentius.

HYDRANGEA JAPONICA MACROSEPALA. — Gartenflora, t. 520. Hydrangeaceæ. A variety somewhat resembling the var. rosalba of M. Van Houtte, but described as having the segments of the sterile flowers $1\frac{1}{3}$ inch broad. They are white, becoming tinted with rose as they acquire age. Native of Japan, introduced by M. Maximowicz. Flowered in the St. Petersburg Botanic Garden.

HYDRANGEA STELLATA PROLIFERA. - Gartenflora, We have here, observes M. Regel, a rival for the well-known H. Hortensia, namely a new Hydran-In habit and foliage it gea with a full head of flowers. resembles the species we already possess, but the large terminal cyme is densely packed with sterile flowers, of which the sepals, from 10 to 15 in each flower, are elliptic in form, while from one to five similar but smaller flowers are developed in the centre of most of the primary ones; they open of a yellowish-green, and change to rose colour. Native of Japan, introduced by Flowered in the St. Petersburg M. Maximowicz. Botanic Garden.

IRIS KEMPFERI VARS.—Neerl. Plant., t. 33-34. Iridaceæ. Of this beautiful hardy Japanese perennial wo fine varieties are figured in the plates before us. They are named Philip von Siebold, a very large deep purple with golden blotch near the base; and ALEX-ANDER VON HUMBOLDT, an immense flower, pure white with a golden feather at the base. According to the figure the flowers of the latter variety are more than 6 inches across. Flowered by M. Krelage

MYOSOTIS IMPÉRATRICE ELISABETH.—L'Illustra t. 500. Boraginaceæ. This is a hybrid, stated to have been raised between M. azorica and a variety of M. sylvatica, and, according to the figure, is one of great beauty, remarkable chiefly for the immense profusion of its small bright blue flowers, which have a yellow eye. It is, moreover, said to be almost a continual bloomer, to flower freely in winter, and to force well. It is quite hardy. It was raised by M. Doeller, of the gardens of Schönborn, near Vienna, and is cultivated by MM. Haage & Schmidt of Erfurt.

OPHIOPOGON JAPONICUS ARGENTEO-STRIATUS.— Neerl. Plant., t. 31. Liliaceæ. A pretty dwarf hardy herbaceous perennial, having linear-lanceolate leaves striped with green and creamy-white, and bearing racemose spikes of deep blue berries about the size of The flowers are not described. It appears to be a striped form of the broad-leaved plant known in gardens as O. Jaburan, Native of Japan. Flowered by M. Von Siebold.

INSULAR FLORAS.

(Concluded from p. 51.)

This is but a brief outline of Mr. Darwin's arguments in favour of trans-oceanic migration; such as it is, it shows a power and skill of bringing facts to bear, and a fertility of invention in devising means of verifying these facts, that almost compel me to agree with him in regarding oceanic transport to be, in the present state of science, the principal and most probable means by which oceanic islands have been stocked with plants; I say most probable, for I should add, that Mr. Darwin does not put this view forward as more than an opinion to which he inclines: with that candour which characterises all his writings, he will not let even the corroborative evidence which his derivative theory affords him, weigh when estimating the value of the two

hypotheses.

But though Mr. Darwin's explanations cover many

First, as regards transport by winds, ocean currents. &c., much that we know of the directions of these agencies in the North Atlantic, is in favour of their bringing American and not European plants to the Azores; and yet we find even fewer American types in this group than in Madeira and the Canaries. This objection is very partially met by the fact that the Azores are nearer Europe than America, and that American plants when brought into competition with European, are beaten in the contest, and that many of the American types were also European during a comparatively recent geological epoch. For the superior American currents of migration should at least keep up some supply

Nor is it sufficient to quote the fact that the birds of these islands are (as Dr. Sclater assures me is the case), almost identical specifically with European ones, and are thus the living proofs of the migration being from Europe. No doubt they are proofs of bird transport being from Europe, but not necessarily of plant transport; for since the plants are considerably different specifically, and the birds not at all, it may be argued that the birds and plants do not come under the same category. Mr. Darwin answers this objection by the consideration that the migration of birds being continuous and frequent, and these all surviving, they keep up the specific type, and do not give origin to local varieties; whilst the transport of seeds being casual and rare, and very few surviving, these in the process of time give rise to varieties, &c., and do not

perpetuate the continental races.
So, too, it is with St. Helena and Ascension—they have no land birds, but an African vegetation; and though nearly midway between Africa and America, they have scarcely a single American type of flowering plants: and Kerguelen's Land has a Flora of whose elements most have emigrated not from the nearest land but from the most distant.

Another difficulty is presented by the extreme rarity of some of the plants common to the North Atlantic Islands; take, for example, that remarkable Canarian tree, Bencomia caudata, of which only two individuals have been found in the mountains of Madeira, and these a male and a female. It is almost inconceivable that individuals of both sexes should have been transported within the same lifetime from the Canaries to so great a distance; and so with the other peculiar and rare plants common to these groups; intermediate masses of land, as the Salvages, on which such plants abounded, afford the only conceivable means of inter-insular transport; and if intermediate islands are granted (and Mr. Darwin freely grants these), why not

It is admitted that certain large islands, which lie too near the continents to come under the technical definition of oceanic, and which do contain terrestrial Mammals, as Great Britain, Ceylon, Madagascar, Japan, the Falkland Islands, &c., were once united to the continents to which they are adjacent, and thus received their immigrants; and an examination of the Floras of most of these exceedingly complicates the question, for unlike oceanic islands, many of these do contain, besides the plants of the adjacent continents, many types of those peculiar to the opposite continent -Ceylon containing Malayan plants not found in the Indian Peninsula, Japan possessing N. American plants; and Madagascar, Bornean, and Javan. We should thus be forced to admit that whereas the great islands which are peopled by plants through direct communication with the adjacent continents, do receive immigrants from other most distant continents, the little islets that are much nearer the continent and over whose course the currents of migration must have swept, have been exempted from its effects. Here, again, as it appears to me, the only answer is by an appeal to the very different rates in which the vegetation has charged in the islands and the continents during comparatively recent geological periods

Then, too, we have conspicuous examples of islands not having profited by migration from the nearest continent, where it would be most expected they should. Take New Zealand: it does contain certain Australian species and types, but these are not the most common, or most likely to have arrived by transoceanic migration. The arboreous vegetation of Australia mainly consists of Gum trees and leguminous plants, which cover three-fourths of the wooded parts that continent, but not one is found in New Zealand; yet the seeds of the Gum trees are very minute, are shed in inconceivable quantities, retain their vitality long, and both Gum trees and Acacias, when introduced by man into New Zealand, become naturalised at once, and actually displace the indigenous vegetation of the island.

Even if we grant, with Mr. Darwin, that the specific and sub-specific change between the Floras of oceanic islands and continents, is due to the new relations into which the continental plants are brought in the narrow areas that islands present, and the ensuing sharper struggle for existence, how does it come about that the plants of the Azores, which islands are 750 miles from Europe, are less changed than those of Madeira, which is only 300? This objection seems to me to be imperfectly met by the fact that the nearer island, receiving more immigrants, exhibits the sharper struggle; for this same cause should rather replenish the island with identical forms, and by cross-fertilisation tend to keep them more specifically true; as was assumed in the case of the European birds of the Madeiran group being unchanged, whilst the plants of the same group have changed.

With regard to the objection that oceanic islands are volcanic, and hence probably not the mountain-tops of sunk continents, and that they contain no fossil mam-mals, we have in the Malay Archipelago, vast areas

of the requirements of our problem, and may even-tually prove to satisfy all, there are great difficulties in the way of its full acceptation. isolated volcanic peaks, such as oceanic islands present.
Were such an area to be submerged, leaving exposed
the volcanic peaks of Java and the Moluccas, &c., &c., should we expect to find either recent or fossil ter-restrial mammals upon them? Nor should it be overlooked, that as a general rule, islands diminish in size and numbers towards the centres of the great oceans, which, taken with the admission, that the great islands adjacent to the continents were previously united to them, would favour the hypothesis that all may have been so. Then, too, we have instances of continental distribution, presenting facts so analogous to oceanic, and hitherto so utterly inexplicable, on any hypothesis of migration that does not embrace immense geological changes, that we can scarcely avoid coupling the phenomena they present with those of oceanic islands.

On the other hand, to my mind, the great objection to the continental extension hypothesis is, that it may be said to account for everything, but to explain nothing; it proves too much: whilst the hypothesis of trans-oceanic migration, though it leaves a multi-tude of facts unexplained, offers a rational solution of many of the most puzzling phenomena that oceanic islands present: phenomena which, under the hypothesis of intermediate continents, are barren facts, literally of no scientific interest-are curiosities of science, no

doubt, but are not scientific curiosities.

Thus, according to the hypothesis of trans-oceanic migration, and the theory of the derivative origin of species, we can understand why the ancient types, like ancient races of mankind, which have disappeared before the steady forward pres sure of superior races on the continents, should have survived on the islands to which but few of the superior race had penetrated; we can understand how it comes about, that so many continental species and genera are represented on the island by similar but not identical species and genera, and also for the representation of genera and species in the separate islets of the group. We can understand why we find in the Atlantic island Floras such a graduated series of forms, ascending from variety to genus, without those sharp lines of specific distinction that continental plants exhibit; why whole tribes are absent in the Islands; why their Floras are limited, and species are few in proportion to genera; why so many of their peculiar genera tend to grotesque or picturesque arborescent forms-and many other minor facts which

it would weary you to enumerate.

And if many of the phenomena of oceanic island Floras are thus well explained by the theory of the derivative origin of species, and not at all by any other theory, it surely is a strong corroboration of that theory. Depend upon it, the slow but steady struggle for existence is taking advantage of every change of form and every change of circumstance to which plants no less than animals are exposed; and, that variation and change of form are the rules in organic life, is as certain as that definite combinations and mathematical

proportions are the rules in the inorganic.

By a wise ordinance it is ruled, that amongst living beings like shall never produce its exact like; that as no two circumstances in time or place are absolutely synchronous, or equal, or similar, so shall no two beings be born alike; that a variety in the environing conditions in which the progeny of a living being may be placed shall be met by variety in the progeny itself. A wise ordinance it is, that ensures the succession of beings, not by multiplying absolutely identical forms, but by varying these, so that the right form may fill its right place in Nature's ever varying economy.

The acceptation of general principles, whether in the physical or biological sciences, has always been a slow process, and I look for no exception in the case of this of the derivative origin of species. The physical sciences however, have the start of the biological, scientific progress in them having commenced several centuries ago, whereas it is hardly one century since Botany and Zoology first became the subjects of exact scientific study. Before that period not a system had been invented, and the principles of life, whether in their structural or functional aspects, have for the most part been discovered within the life-time of many of us here, and the knowledge of them is not yet recognised as a branch of a liberal education.

You have all read of uncivilised races of mankind that regard every month's moon as a new creation of their gods, who, they say, eat the old moons, not for their sustenance, but for their glory, and to prove to mortals that they can make new ones; and they regard your denial that their gods do monthly make a new moon as equivalent to denying that they could do so if they would.

It is not so long since it was held by most scientific men (and is so by some still) that species of plants and animals were, like the savages' moons, created in as many spots as we meet them in, and in as great numbers as they were found at the times and places of their discovery. To deny that species were thus created was, in the opinion of many persons, equivalent to denying that they could have been so created.

And I have twice been present at the annual gatherings of tribes, in such a state of advancement as this, but after they had come into contact with the missionaries of the most enlightened nations of man-These missionaries attempted to teach them, amongst other matters, the true theory of the moon's motions, and at the first of the gatherings the subject was discussed by them. The presiding Sachem shook his head and his spear. The priests first attacked the new doctrine, and with fury; their temples were ornamented with symbols of the old creed, and their religious chants and rites were worded and arranged in accordance with it. The medicine men, however, being | when dryness ought to be the order of the day, whether | divided among themselves (as medicine men are apt to be in all countries), some of them sided with the missionaries—many from spite to the priests, but a few I could see, from conviction—and putting my trust in the latter, I never doubted what the upshot would be.

Upwards of six years elapsed before I again was present at a similar gathering of their tribe; and I then found the presiding Sachem treating the missionaries theory of the moon's motions as an accepted fact, and

the people applauding the new creed!

Do you ask what tribes these were, and where their annual gatherings took place, and when? I will tell you. The first was in 1860, when the Derivative doctrine of species was first brought before the bar of a scientific assembly, and that the British Association at Oxford; and I need not tell those who heard our presiding Sachem's address last Wednesday evening that the last was at Nottingham. J. D. Hooker.

ARTIFICIAL HEAT.

(Concluded from p. 1244, 1866.)

OF all the examples of Vine-culture that I have seen I do not recollect one instance in which I could say that the Vine was stall-fed, or had all it wanted. run too much in the same rut with those who have gone before us. Now, if we were to take the primæval jungle for our Vine border, and the rambling Vine shooting through and over the tangled brake, hanging the bunches of Grapes upon the trees by means of its tendrils, then, whilst it bore fruit upwards, it must have taken root downwards, showing the use of the aërial roots issuing from the stems, and when these had reached the decay of ages of vegetable mould-ay, and of animal mould, what a rush of growth the Vine must have made under a tropical sun! Indeed, the character of the plant tells clearly how well it is calculated to "hide the ruin that it feeds upon;" it forms its tissue so rapidly that it could not luxuriate, unless it could appropriate plenty of rich food and moisture. There are Vines cultivated that yield a ton of Grapes annually. Now, if we put this into figures, we have 252 gallons, or, in round numbers, a thousand quart pitchers of wine on one plant, and unless the supplies of food and of drink to such a plant were unlimited, the end never could be attained. In the jungle it would issue new roots, which, travelling into fresh pastures, would tap new

reservoirs of moisture.

The Vine is called a foul feeder, but it is more exact to call it a rapid feeder; its roots are more like the underground stolons of Couch-grass than ordinary feeders, and they travel rapidly. We read of the wild Vine with a stem as thick as a man's body, and judging from our own experience of stem and foliage, we can reckon the whole question-the extent and richness of the Vine border, the tons of moisture ascending through that stem, and the suu-heat necessary to pump up and elaborate so much rich juice. Tried by this standard a Vine in a pot is a toy. A Vine in a hothouse is only a Vine in a larger pot, and of a square form, and a Vine in a border 30 feet wide, and fat with the dung of animals, and well peppered with bone manure, would only be "a tub to the whale" after all. The earth where the Vine is planted should incline to the south, and thus give the roots artificial heat; and unless the earth is open in texture, the feeders could never follow up the chase for food in it, and as light and heat are combined in Nature, we must not separate them in Grape growing. Therefore a high temperature should go with the sun or "the and we may rest assured that the cool greater light. reaction of night is beneficial, for darkness can never do the work of light. I need not adduce chemical tests to prove this. I was at some pains to examine a collection of fossil Ferns, beautifully preserved to us in the coal formation, and from the rank luxuriance of the specimens "imprinted" in that ancient book, printed before the days of Caxton, I could not help conjuring up from the vasty deep of earth and time by which they had been overlaid, the very climate they enjoyed, and the jungle that made that climate calm and moist. O what a tale of other days these denizens of the deep unfold to us, as they now lie high and dry in our museum here, having been heavily pressed for ages to ornament a lump of coal; and when we see what beautiful Ferns are irretrievably lost, how we ought to rejoice that the Vine has held its ground, and come down to us improved.

Acres of excellent Vines might be secured to us by a little artificial heat in the form of bottled sunshine, for glass is not now what it has been. Cucumbers had gone afield long before my time; but Gourds have gone over to the farmer in my day, and the Vine is a far safer subject to work than either of these. I look upon the intelligence of our age to "wash our garments in wine;" for Grapes can certainly be grown in the sunny vales of England under glass at 3d. per lb., and

good Grape wine made at the price of ale, 4d. a pint.

Should any one be tempted to make light of the subject of artificial heat, let him take a pocket lens and point the few sunny rays that fall thereon to its focus. He will find that it will burn dry wood, and would set a forest on fire, yet it has come down to us through regions where the snow thaws not, and it has been tugging light after it at no sluggish pace. Lord Byron joked this latter traveller, and spoke of light travelling at such speed "after it was packed up for its journey," and well he might. The beautiful arrangement that Nature makes to close the flower at night by folding the corolla over the pollen like a penthouse, whilst the leaves are being saturated with the needful dew, is something bordering on the sublime. Most Orchids have a natural penthouse over the chief organs of their flower. The dense vapour that feeds their naked in Vine culture or any other culture; and then

"The weary gardener, with wild surprise, Sees the dank vapour all around him rise," And his ill-flavoured Grapes shank off before his eyes.

I knew a gardener who always carried a small planting trowel in one of his pockets, and an ordinary huck-a-back towel in the other, so that when he had to gather flowers or fruit, or see company, he could wash and dry his hands quickly. One of these towels would occasionally be hung in the hothouse all night, and the state of the towel in the morning indicated the dryness of the atmosphere. I mention this for the benefit of the elder brethren of the blue apron who may dislike decimal fractions in working the wet and dry bulbs of the thermometer to ascertain the moisture in the air. This vexed question of heat with and without moisture might be illustrated to some extent if we could conjure up the gigantic and coarse vegetation imprinted on the coal above alluded to where amphibious reptiles crawled in the dreadful swamp; where marsh gas must have abounded at night; indeed Will-o'-the-Wisp must have felt quite at home, and no doubt entertained his friends there. Clouds of vapour by day, with all the ills that rise from fens-ague, &c., must have rioted when the coal was moist, and took the impress of the dry Fern which it has so beautifully retained. Nothing can be clearer however than the fact that side by side with the swamp grew flowerless plants, and looking at the Ferns represented, the temperature no doubt was high. Among the thirsty plants left to us, we admire the elegant Sundew, growing out of moist peat and Sphagnum doing as his betters did in other days; and as we go up the ladder a little we have the Pitcher plant, the small plants of which raised from seed have not true leaves but pitchers, or, as they would say in the North, each tiny plant

"As gude as kept a sma' still." The circumstances under which such plants grow now, help us to estimate the climate they grew in then. Notwithstanding the wonderful structure of the Nepenthes it is far surpassed by the Vine as a pitcher carrier, and during the growing season a moderately warm swamp would no doubt favour the rapid develop-ment of this wine carrier. The artificial heat of winter has a fixed character. That of spring seems associated with moisture, and all our successful cultivators seem lavish of vapour at that season. The summer seldom needs our aid in this way, the "one long summer day of indolence and ease" seems amply sufficient for horticulture while it lasts, but we frequently have to supplement by means of fire the want of autumn heat, for in dealing with exotics our summer is frequently too short at both ends. The experienced eye can tell by the sere leaf of the Vine, and the straw colour of the cane, whether autumn has honestly done its part. We see in our indigenous trees in autumn the hues we want, and if we want better models we need only go where the poets (those long-

flight men) tell us,-

" Everlasting Autumn lies 'Mid yellow woods and sunny skies,"

to learn the quantity as well as the quality of artificial heat we require. A. Forsyth.

THE LATE PHILIP FRANZ VON SIEBOLD.

[We have been favoured by Professor Oudemanns, of Amsterdam, with the following notice of the life and labours of the Chevalier Von Siebold, in which many of our readers, we are sure, will feel interested. Eds.]

THE Chevalier Philip Franz von Siebold died at Munich on the 18th of October last. This great scholar, who had made his name world-famous, and shed thereby a lustre on both his native and his adopted country, was born at Würzburg on the 17th February, 1796, of a family which has given several distinguished members to the medical and other kindred professions; in fact, his daughter (who has supplied the groundwork of this sketch) enjoys at this day the reputation of being a most able practitioner in Japan in the ailments of women.

Von Siebold received a first-class education at Würzburg, and obtained the degree of Doctor in 1820. Two years later he followed the example of so many of his countrymen, and went to Java as medical officer in the Netherlands service; and when that Government despatched a scientific expedition to Japan, Von Siebold was attached thereto as medical officer and naturalist.

Arrived there, he was compelled, like all foreigners, to confine his explorations to the immediate vicinity of 'Desima." He soon, however, acquired greater freedom, mainly in consequence of the repute attaching to his name as a man of science. The Japanese naturalists, and even the physicians of the Royal Court, flocked to hear his teachings, and they in their turn gave him the best and most reliable information respecting the political, historical, and geological features of a country

then comparatively unknown.
In 1826 Von Siebold had the good fortune to accom-

pany the Dutch Ambassador to the Court of Jeddo. Incited by his love for scientific inquiry, his pubils visited almost every province of the country, and the results of their investigations were carefully collected and digested by their master. In 1828, however, while he was on the point of returning to Java, his life was endangered by the excessive zeal of one of his friends, the Imperial astronomer and librarian. This gentleman had furnished him with a hitherto unpublished map of the empire, and for this cause Von Siebold, who risked his own life to save that of his friend, was thrown into prison at the moment that he was embarking for Europe, whither his companions had already preceded him. He returned home however on the 7th July, 1830, and although holding the rank of colonel in the general staff, he quitted the Netherroots would make a paste of their farina. These are lands service, and employed himself in the arrangement lessons not to be lost sight of, for there comes a time and classification of the rich store of scientific curiosia

ties which he had recorded and collected in Japan, while his wonderful collection of ethnographic objects was purchased by the Government. The latter has been beautifully arranged in the State Ethnographic Museum at Leyden, and is now open to the inspection

We proceed to enumerate the series of interesting works which have been edited by Von Siebold alone,

or in conjunction with other learned Professors.

In addition to the treatises included in the "Transactions of the Batavian Society of Arts," we find-Nippon Archiv, zur Beschreibung von Japan, etc. Leiden, 1832—1851. This work, which is not yet entirely completed, made at once a great sensation in the learned world, from the wonderful wealth of scientific matter contained in it. This was immediately followed by his "Fauna Japonica," Lugd. Bat. 1833— 1851, in folio, in which he was assisted by C. J. Temminck and H. Schlegel, and also by his "Flora Japonica," illustrated by Zuccarini, and which have been published in part in the "Transactions of the Second Class of the Royal Academy of Sciences," iii. and iv., of Munich. Furthermore a collection of works, lithographed by the Chinese artist Ko Tsching Dscheng, at Leyden, chiefly relating to the literature of Japan.

About 1854 he fixed his residence on the banks of the Rhine, in the neighbourhood of Bonn. But when European nations became alive to the benefits likely to accrue from extended commerce with Japan, he was encouraged to take up his pen, to serve as pioneer and guide to the fleets of commerce. This he did by means of a work intituled "Urkundliche Darstellung des Bestrebungen von Niederland und Russland zur Eröffnung Japan's fur die Schiffahrt und den Seehandel aller Nationen" (Bonn, 1854, with map), and this work was the same van published in Dutch at this work was the same year published in Dutch at Bommel.

Soon after he paid a second visit to Japan. So changed, however, was the condition of affairs that he very naturally failed to inspire the same romantic interest amongst the people that he did on his first visit. He returned to Europe with a new collection of objects bearing upon the physical and social peculiarities of On his arrival in Holland, having attempted in vain to induce the Government to annex the second to the first collection, he determined to travel and offer it to some other museum, whether at Würzburg or elsewhere. At last he succeeded; the King of Bavaria bought the whole collection for the Museum at Munich, and this purchase is now awaiting the confirmation of the Bavarian Chambers. He was engaged in classifying and arranging this Museum when death overtook him from poisoning of the blood (fever?).

In the previous year numerous articles from his pen on the subject of Japan were published in the Augsburg

Allgemeine Zeitung.

About the year 1850 Von Siebold made great efforts to improve the science of horticulture in Europe, and to import new plants, especially from Asia. designs also for the laying out of gardens serve to show that mere science was not the sole incentive to exertion on the part of the Professor. It is probable however that this enterprise met with no great success; indeed everything that was not exclusively identified with science, was more or less a failure with him. One of the greatest services rendered by Von Siebold to horticulture was the laying-out of his nursery ground in the immediate vicinity of Leyden—at Leiderdorp—for the purpose of propagating and bringing into vogue plants and shrubs as they were imported direct from their native soil. This garden, better known as the "Jardin d'Acclimatation du Japon et de la Chine," contained about 5 acres of ground, and was laid out in the year 1843. Since that date the following plants and trees have been introduced, either by Von Siebold himself or by his intervention:-

25 kinds of Maple (Acer), of | 12 kinds of Weigela.

which only three were known in commerce. 15 kinds of Euonymus. 12 kinds of Hydrangea (of 4 kinds of Aralia. 20 kinds of Aucuba (amongst

them some with male blossoms). kinds of Bambusa.

4 kinds of Cerasus (not yet in commerce). 4 kinds of Citrus (not yet in

commerce), 12 kinds of Clematis. 6 kinds of Deutzia. 12 kinds of Diervilla.

which six are not yet known in commerce). 6 kinds of Malus. 6 kinds of Osmanthus.

kinds of Persica. kinds of Pinus. 12 kinds of Quercus (ever-

green).
2 kinds of Spiræa.
6 kinds of Viburnum.
4 kinds of Glycine sinensis.

Besides the above, there are in Von Siebold's garden select specimens of Japanese or Chinese Conifers, Pines, Lilies, Camellias, and a host of variegated plants. In regard to many of these, we refer to the "Catalogue raisonné et Prix Courant des Plantes et Graines du Japon et de la Chine" for the year 1863, now before us.

We are in a position to state that the Acclimatisation Garden of Von Siebold will be preserved, and the cultivation of it continued for the original purpose, and objects of its founder.

ORCHIDS AND THEIR CULTIVATION. No. XV.

Oncidiums.—The family of Oncidium has a wide geographical distribution in the New as well as in the Old World. The only genus that bears comparison at all with it in this respect, is that of Epidendrum. There is scarcely a field of importance that has come under the investigation of our enterprising and intrepid collectors but has furnished some individual of interest or beauty, to our rich European stores. It may have been found in close proximity to the snow-capped ridges of the almost inaccessible mountains that dot the surface of Central America, which are within the icy grasp of a polar atmosphere, many of them remarkable, as is well known, for their tremendous