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ORCHIDS

BEING THE

REPORT

ON THE

ORCHID CONFERENCE

HELD AT

SOUTH KENSINGTON

On MAY 12th and 13th, 1885.

London:

MACMILLAN AND CO.

1886.

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PREFACE.

THE ORCHID CONFERENCE, organised by the Royal Horticultural Society, may be considered as one of the greatest successes ever known in Floral Exhibitions, and one, moreover, with a special object in view, every point in which was brought to the desired conclusion. There was an extensive and splendid show, lasting two days, and also a Conference, at which the attendance of Orchid growers was numerous and influential, and tended much to advance the objects of the Society, viz., to exhibit a representative collection of Orchids in flower, together with any other objects desirable for their culture, and to spread a knowledge of their habits and requirements.

In furtherance of these objects, interesting Papers were read and discussed, and much useful and valuable information elicited. The Exhibition was marked by a beautiful display of rare and showy Orchids, many of these being very large specimens; in fact, the greatest number of new and fine Orchids ever assembled at one show in this country were here displayed. It was also marked by the extraordinary facilities offered by the collection at one Exhibition of a great number of allied plants for comparing and estimating their distinguishing features; as an example of which may be mentioned the extraordinary representation of five specimens of nearly all the large white-flowered *Cattleyas* known—an occurrence hitherto unprecedented. Many other instances might be cited, but a perusal of the Report will give sufficient information on all points.

The Council of the Royal Horticultural Society, in publishing this Report, beg most heartily to thank all those who so kindly assisted them in bringing the Conference to such a successful issue, and they are much indebted to Dr. Hogg, of the *Journal of Horticulture*, for the woodcuts of the Orchids represented in these pages.

F. MASON,

Hon. Secretary, R. H. S.

SOUTH KENSINGTON,

January 4th, 1886.

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THE CONFERENCE.

WEDNESDAY, MAY the 13th, 1885.

SIR TREVOR LAWRENCE, BART., M.P., in the Chair.

THE PRESIDENT, in opening the proceedings, said : The business before us to-day is of such a nature that it will take a considerable time to get through it, and therefore I think it is necessary to commence what we have to do at once. I think, ladies and gentlemen, I ought to apologise to you for making any introductory remarks. The Conference on Orchids, which we are now about to commence, has largely to do with the botanical and scientific aspect of the cultivation of Orchids, and I need hardly say that I should not venture to express any opinion whatever on matters of botanical science in connection with this subject. It is only as a horticulturalist that I have the honour to occupy the position that I now occupy, and therefore I must ask you to be so kind as not to suppose that I am in any way presuming or proposing to give any opinion on the botanical or scientific side of the question. I think you will one and all agree with me that the Royal Horticultural Society and the Conference Committee have every reason to be satisfied with the success which has attended the Conference. (Hear, hear.) I very much doubt whether such a collection of Orchids has ever been gathered together as that we have in the conservatory below, and I believe it would be impossible to gather together such a collection of orchids as is there displayed in any other part of the world. (Hear, hear.) The thanks of the Conference Committee are due to those amateurs who have helped them on this occasion, and also to those members of the

trade who have done so, and on behalf of the Committee I beg to tender to them our very sincere thanks for the efforts and exertions they have made to make the Conference and its show a success.

The Royal Horticultural Society has for many years been under a debt of gratitude to members of the horticultural trade who have at all times supported it to their utmost ability, and who have largely contributed to this show, and to the interest connected with it. (Hear, hear.) Under the somewhat new aspect which the horticultural trade in the neighbourhood of London has assumed, several of the principal nurserymen are at the present moment very much occupied with shows of Orchids on their own premises, and therefore we could hardly expect them to denude their premises for two days of the principal attractions they possess. Therefore, while we are very considerably indebted to the horticultural trade for the help they have given us, there is no doubt that the great bulk of the show is made up of the contributions of amateurs round London. I hope, however, that on another occasion we may have help from amateurs all over the kingdom. We should very much like to see more of those magnificent Orchids, which a great many of us have heard of and some, perhaps, know, from the neighbourhood of Liverpool and Manchester, and I have reason to believe that the visitors who have come to the Conference from those parts are fired by a spirit of emulation, and will on another occasion do all they can to show that they can cultivate Orchids in the north of England as well as, if not better, than we can in the south. As regards the merits of the show, I think I may be allowed to quote the authority of no less a person than Sir Joseph Hooker. He expressed to me, and to other persons, his very great admiration for the show and his great appreciation of its value in promoting the cultivation of Orchids. Inasmuch as I think that Sir Joseph Hooker, like a great many persons who are devoted to scientific botany, is not, as a rule, very enthusiastic on behalf of shows, this testimony, coming from him, is of the more value. Referring to Kew Gardens, I think it is very much to be regretted that, mainly owing to the excessive economy with which money is given to that very valuable institution, there is no sufficiently representative collection of Orchids there at present. I believe the authorities at Kew are fully alive to the great interest that is taken in Orchid

growing throughout the length and breadth of the kingdom, and we may hope that they will do their very utmost to ensure this result—that the collection of Orchids at Kew shall be equal to those of the other natural orders of plants. In fact, it would be very unwise that they should not do so, because it is very much the custom and fashion with gentlemen who possess collections, when they leave this world, to leave their collections to some public institution, and I do not see the least reason to doubt that, if there were to be found fine ranges of Orchid houses at Kew ready to receive plants, some wealthy bachelor would leave his collection to the public, as being perhaps, on the whole, his best heir.

With regard, ladies and gentlemen, to the absentees from the Conference, I am requested by Professor Reichenbach to express his very great regret that threats of an attack of pneumonia have prevented him being present here to-day. I know the reality of his regret, and I know he has been longing and most anxious to come here to see the skill which has been displayed, and the enterprise which has been shown, by English Orchid growers. He has been so kind as to send a paper, which I shall read to you, and he writes to say that, had he been here, he would have wished to be permitted to express his warmest thanks to English Orchidologists, and also to have paid a tribute to the memory of the late John Lindley. (Hear, hear.) In connection with the cultivation of Orchids and the science of Orchidology, there is no name which has a greater respect universally felt for it than that of the late Professor Lindley. (Hear, hear.) I think I am bound to say that, while in the absence of Professor Reichenbach we lose one of the greatest exponents of the scientific Orchidology, the loss is, I think, also a great one to him, for I am sure he would have thoroughly enjoyed seeing the collection here to-day. Then I also have a letter from Dr. Patterson, of the Bridge of Allan; he says: “I need not tell you how deeply interested I am in the objects of this the first Orchid Conference held, and I sincerely wish it success. Here I may say that for over half-a-century I have derived the greatest pleasure and instruction from the cultivation of these plants.” Then among the gentlemen who would at all events have contributed to our show—and very remarkable contributions they would have been—we also very greatly regret the absence of Mr. Stevens and the plants which might have been sent from the Duke of Sutherland’s, at Trentham.

More splendid specimens of the genus *Odontoglossum* are to be seen at Trentham than in any other part of the world. Now, ladies and gentlemen, I do not think anybody can walk round the show to-day without thoroughly understanding how we who are fond of Orchids come to be very enthusiastic about them. If you want to find a justification for the hobby, I would say walk once or twice round the show and you will find it. Whether you regard the splendour and richness of colouring, the delicate grace and beauty of the flowers, or the weird and fantastic characters of some of them, I think you will find a justification for, and will understand, the affection which Orchid growers have for their children. Many of the English Orchids are called after insects, and a great many foreign Orchids bear a striking resemblance to small creatures more or less allied to insects. Then in Orchids there is a most extraordinary variety; I do not suppose that in any family of plants there is anything approaching to the variety that Orchids display. There is another very remarkable circumstance, to which I believe there is some reference in the paper from Professor Reichenbach which I am going to read to you, and that is that in some cases you get what appear to be in all respects totally different flowers growing on the same plant. Again, most Orchids are epiphytes, and grow on trees, although there is a singular variety of growth among them. Some few, on the other hand, are in their habit more like plants in herbaceous borders. But I think the most singular circumstances connected with Orchids are the peculiar contrivances, on account of which it is hardly possible that they should become fertilized except by the intervention of insects or the hand of man. Nothing has been more remarkable than the rapid increase in our knowledge of this family. Looking back to the first volumes of the *Botanical Magazine*, which appeared in 1787, I find that in the first ten volumes, there were only two Orchids illustrated out of 360 plates; while if you look at the first ten volumes of the third series of the same magazine, which appeared between the years 1845 and 1854, you find that there are no less than one hundred different species of Orchids illustrated out of the same number of plates; and now, so far as possibility goes, it would be possible to fill almost every part of the *Botanical Magazine* with new species of Orchids if it were desired to do so. Indeed, I may say that I have occasionally, as a subscriber to that periodical, felt a

little disposed to complain that we do not get a few more Orchids in it—(hear, hear)—and I sometimes think they might worthily replace some of the rather insignificant “foreign weeds with barbarous binomials” which are to be found there. I believe there are now hardly fewer than five thousand different species of Orchids known, and out of that number I should think there are close upon two thousand under cultivation. I can say with regard to one particular genus, the *Dendrobium*, that I have had in my own collection upwards of one hundred species under cultivation at the same time. There is another curious circumstance to be noted in connection with Orchids, and that is that I do not see, in the case of most of them, there is the least reason why they should ever die. The parts of the Orchideæ are annually reproduced in a great many instances, and there is really no reason why they should die, unless, as is generally the case with those in captivity, they are killed by errors in cultivation. I suppose it is quite possible to give plants, and especially Orchids, constitutional diseases such as human beings suffer from. I believe it is quite possible to give what answers to gouty affections and other such diseases to plants by injudicious diet, and by feeding them either too well or on improper food. There is yet another curious circumstance to which I will refer. I think the industry and research of collectors is making us better and better acquainted with the fact that in some of the principal *genera* of Orchids—in *Cattleya*, in *Dendrobium*, for example—there exist albinos, and that shows a little, I think, the contrariety of human nature. For, whereas, in these *genera* we search out and endeavour to secure the albino varieties, in others that are naturally white we endeavour to secure coloured varieties. Then with regard to the collecting of Orchids, in former years collectors were sent out by wealthy amateurs, gentlemen who wished to adorn their gardens with new plants and flowers; for instance, the Duke of Devonshire and the Duke of Northumberland, and other people occupying similar positions, and the Royal Horticultural Society did a great deal of very good work in employing very enterprising and skilful collectors. But all that, so far as private people are concerned, has come to an end, and I think, on the whole, it is to the advantage of the cultivation of Orchids that these matters should have passed into the hands of business people, who collect Orchids as a matter of commerce; and in referring to that for a moment, I think we

should not do justice to the persons to whom we owe many beautiful *genera* and species of Orchids if we were not to pay some tribute to them. I would especially mention the firm of Hugh Low and Co., who have for many years past devoted their energies to this object, and who have expended much capital and enterprise in this direction. Then there are Messrs. Veitch and Sons, Messrs. B. S. Williams and Sons, Mr. Bull, Messrs. Backhouse, and last, but not least, Mr. Sander. These, among other firms, have in past years devoted a great deal of enterprise to this matter. I have got here a list of countries covered by the collectors of one firm only. It is a most comprehensive list, and includes the Argentine Republic, Borneo, Brazil, the Guianas, Ceylon, Costa Rica, Ecuador, Guatemala, British Honduras, British India, Upper Burmah, Jamaica, Java, Labuan, Madagascar, Mexico, the Celebes, Uruguay, Nicaragua, Panama, Penang, Malay Peninsula, Singapore, the Phillippines, Trinidad, San Salvador, the United States, Colombia and Venezuela. That list shows, at all events, that there has been no want of very wide travel in the collectors, and perhaps it may lead people to suppose that we have very nearly collected all the Orchids we are likely to get; but I do not think that is at all the case. In fact, with regard to one particular Orchid, one of the principal importers of plants (Mr. Sander) told me that his collectors had been searching for it for many years. Though it was known where it was growing, they could not find it; but, perhaps, some day it may turn up and be found growing in great profusion. I refer to the *Odontoglossum naviium majus*. There is one other incident I may mention with regard to the enterprise of collectors. You all know that Mr. imThurn and Mr. Perkins have lately made the ascent of Roraima, a mountain in British Guiana. Within a very few hours of their making that ascent, Dr. Seidl, collecting for Mr. Sander, also made the ascent, and when he got to the top a very great disappointment was experienced. It was supposed to be covered with forests in which there was also believed to be a very great variety of beautiful Orchids; but it was found to be very nearly bare, and violent rains had washed the soil completely away, and hardly anything was to be found except a fine bladder-wort, or *Utricularia*. It appears to me, too, that the public seem to take a great interest in Orchids. Anybody who is accustomed to attend auctions knows that every now and then foolish persons, like myself, are carried away by a momen-

tary spirit of competition and give a great deal more for plants than in all probability they are worth. That is a weakness of all collectors, but what I should venture to say is this: that it never can be a very wise or judicious thing to give a large price for an imported Orchid, although it may be said to be extremely rare. Some collector may the next day send over a shipload of the same plant, so that a plant which to-day may be worth £10 or £50 would be only worth as many shillings to-morrow. I have known instances in which collectors have told pitiful tales of the privations that they have gone through in order to procure a particular plant. One collector was said to have waded up to his waist in mud for a fortnight before he found what he was looking for. But when persons desire to buy Orchids which have been raised by cross fertilization in this country, I think it is much more reasonable that they should give a considerable price for them. To begin with, they are the results of horticultural skill in this country and can never be imported from abroad; and when you consider the vast amount of careful labour and watching which is involved in raising seedling *Cattleyas* from the minute seed into a flowering state, I think you may fairly admit there is some ground why persons who have succeeded in raising them should think that they are entitled to charge a large price for them. I think I am correct in saying that the first *Cattleya* seedling raised in this country was seventeen years before it flowered, and during all that time it required very careful watching. But with regard to imported Orchids, I might instance, as examples of rarity and beauty combined, that at the present Conference, among the collections which are shown in the conservatory below, there are three very beautiful varieties of the *Odontoglossum crispum*, for which we are indebted to Baron Schröder; one of them suffused all over with a sort of port wine stain, another very richly spotted, and the third varying somewhat from them. I believe you might spend a lifetime in searching for, and might flower millions of plants before you would meet with three such varieties as these. Of course we all know that when you get any exceedingly rare and at the same time very beautiful species, it is naturally competed for on all sides, and if plants of that character are sold at a high price, I think there is full justification for it. I do not think I can detain you any longer. I am very much obliged to you for having listened to my remarks. I see that it has been suggested

by Dr. Masters that these few remarks should be called an address, but as I am not so accustomed to make addresses as my friend Dr. Masters is, and as I have really never made anything but a political address, I venture to confine myself to the word "remarks," and I can only hope you will forgive their exceedingly discursive and not very interesting nature. ("No, no," and applause.) Now, ladies and gentlemen, the first business that we have to-day is to read the communication from Professor Reichenbach. This communication only arrived yesterday, and, as I have not had time to read it over beforehand, perhaps you will forgive me if I make any small mistakes. (Hear, hear.)

The President then read the following communication from Professor Reichenbach :—

I. ON PROLIFEROUS ROOTS OF ORCHIDS.

There have been various records of buds originated on roots of Orchids, lately in the instances quoted by Messrs. Lendy and Salter.

I have long attached great interest to this case, though I have made but few observations, only one plant having often showed me this method of propagation. It is the Bird's-nest Orchid (*Neottia nidus avis*), which very often perishes after having flowered, while in other cases it produces fresh shoots from the axils of certain sheaths. In other cases it brings a fresh plant at the very top of a root fibre. I saw this in 1849, when I observed the fact at Tharand. I learned very late it had been observed before by J. P. E. Vaucher in 1841; after Vaucher and me it was seen by Irnisch, Prilleux, Hofmeister, who got it from me; then it was formally denied by Drude and re-observed and neatly described by Eugen Warming, the excellent Scandinavian botanist.

The second case was observed in my *Phalanopsis deliciosa*, gathered in 1843 by Zöllinger. My specimen shows a young plant on a root having just emitted such a small rootlet of its own as described by Mr. Salter. The specimen can be seen in my herbarium.

The third case is a sad one. A *Cyrtopodium* (if I remember rightly a Savannah plant from Venezuela) gave a fine shoot from a root in Consul Schiller's collection, under Mr. Schmidt's able management, I believe, in 1867. I watched it carefully. Finally a young assistant gardener broke it accidentally and threw the

shoot and part of the root away, hoping the loss would never be remarked.

The last case is of *Saccolabium micranthum* (Lindl.). Director Lucien Linden sent me lately a fine Cochin Chinese plant, with a young two-leaved shoot on a root. The whole plant was boiled and carefully dried. It can be seen in my herbarium.

[The President here remarked that a fine specimen of *Phalanopsis Stuartiana*, showing this peculiarity of growth, had been contributed to the show by Mr. Macdonald, of Perth. The plant was brought from the conservatory for inspection.]

II. TRILABELLIA CONTINUA.

I had seen various cases of monstrous accidental *trilabellia interna*. In all those cases there were no anthers developed at all, and the genuine free style had a terminal upright stigmathe, hollow, without the least pronation (deflexion).

The finest thing of this kind that ever came in my reach was a grand flower of *Oncidium Papilio*, with three lips, three sepals, and a fusiform apostasioid style, without the least indigitation of anthers or filaments. It was most kindly presented me by my excellent second eldest English correspondent, Mr. J. Day. I remember having seen a very fine Cattleyoid flower of that kind (if I remember rightly *Lalia elegans*) in the hands of Professor Thiselton Dyer.

All cases of that shape were accidental only, and I always, having missed the stamens as soon as there were apostasioid styles, adopted the view of an *Antagonismus*, the columna being reduced and partly made normal to pay the vast expense of the luxury of three lips.

There came, however, some instances to my mind, where the *trilabellia* occurs enclosing a common columna with its pronation and its normal anther. In these cases all the flowers were equally *trilabellia*, and this was observed once more on the next shoots of the same plant.

The first case was that one of *Oncidium pratectum* *Leeanum*. The Sanderian traveller, Mr. Osmer, was struck by a panicle loaded with such flowers, so that he made the unusual and keen attempt to dry them. They are now, thanks to Mr. Sander's liberality, at my side, eight in number. The plant itself came into the glorious collection of Mr. William Lee, where it produced identical flowers, eleven of which lay before me, thanks to

the kind possessor, who will, I hope, watch his precious unique, telling us how long it lasts *trilabellia*.

The second case was observed by my highly-valued correspondent, Major Lendy, both in 1884 and 1885. It is not quite so evident as the just quoted *Oncidium*, inasmuch as the *Phalanopsis Stuartiana Lendyana* has but one normal lip, yet the petals approach lips much more than petals. The blunt triangular blades are unguiculate and bear a callus over the mid-base of the lamina.

The third case is that of *Dendrobium nobile Cooksonianum*, of Mr. Norman C. Cookson. The flowers are very distinct from the *D. nobile Tollianum*, having the petals very thick and hairy over the base, and enjoying the colours of the lip.

III. ON LUDDEMANNIA (CYNOCHES) PESCATOREI.

This so-called "genus" has proved exceedingly troublesome. It was Schlim who discovered it near Ocaña; when there were fresh hunting grounds, Director Linden sent a plant to the late Pescatore, of La Celle de St. Cloud. There it has flowered. I think but one flower is preserved in Dr. Lindley's collection. I have four of that typical inflorescence. Dr. Lindley took it as a fresh *Cynoches*, an opinion we have seen lately reaccepted by an author whose own principles should have prevented him from doing so, since both leaves and bulbs are those of an *Acineta* in our plant, while all *Cynoches* have them like those of *Catasetum* and *Mormodes*. As soon as I had obtained both garden and wild-grown materials, I published my genus *Luddemannia*, in honour of my late friend Luddemann, who had flowered it.

Director Linden having got what formerly they called a great supply, let us say thirty plants, sent them to his correspondents, and got, by-the-bye, a certain *Stoicismus* in having to endure the most unfriendly letters of his customers, who accused him of sending *Acinetas* for *Cynoches*, asking for the genuine plant. I believe Mr. Louis Schlim sent a second cargo, all of which flowered as *Acinetas*. I remember having seen Mr. Keferstein, of Kröllnitz, near Halle, quite savage about this, my *Acineta erythroxantha*, that had developed out of what he had paid for as a *Cynoches*. In 1856, Director Linden, after having fully acknowledged Mr. Schlim's so-often-proved accuracy, told me all his bad experiences, finally adding, "Je n'y vois que de feu." As to poor

Schlim, who may have got "des lettres à cheval" from Mr. Linden, he expressed his sentence on a label I have, stating, "monstre d'un *Peristeria*." The case was nearly forgotten; almighty Time had washed away the bad impression.

The "genus" reappeared with Messrs. Veitch. A fine, rich plant was literally loaded with hanging young inflorescences, one of which had developed and appeared to be a fresh *Luddemannia*, showing fine marks of distinction. Messrs. Veitch were so very kind to let me have the plant. Unfortunately, all the inflorescences perished while travelling, notwithstanding the excellent packing of the firm, and when the plant flowered next year it showed me the abominable inflorescence of *Acineta erythroxantha*.

A quite distinct *Luddemanniana*, the third one, appeared with a stiff erect inflorescence and quite peculiar flowers. It was discovered January, 1874, by the late Wallis, who stated it had the bulb of an *Acineta* and a leaf of *Peristeria*. I am afraid Wallis made a mistake. Who might distinguish clearly the leaves of those genera? I would guess Wallis intended to write, it had the bulb of a *Peristeria*, and thus could be a sex of *Peristeria elata*.

Grand inflorescence of the old *Luddemannia Pescatorei* were collected and admirably dried for me by Mr. B. Roezl.

Finally, good plants of *Luddemanniana* were gathered by Messrs. E. Klabock and Lehmann, perhaps on the same spot. I am not sure who came first. The majestic likeness presented at the sale is well known. I was led to regard Mr. Lehmann's plant a new type, from his representation and description and the one dried inflorescence. The other inflorescence and two fresh ones proved to be the typical *L. Pescatorei*. I had the first from Consul Kienast Zölly, of Zurich, the other from an English benefactor, whose name will be, I hope, kindly supplied by Mr. Sander, who forwarded me the very well-grown, grand specimen. It is my ardent wish to have once more fresh statements of the pleiomorphic state of those flowers, which may be sexes of *Acineta*, perhaps also of *Peristeria*.

I have obtained well-developed seed from the *Acineta erythroxantha* produced from the *Luddemanniana* of Messrs. Veitch.

I hope much from that most skilful observer, Herr Consul Kienast Zölly, and from the English gentleman who had such fine flowers. I expect Director Linden, of Brussels, will feel a certain satisfaction in reading this note.

The President, on concluding the second head of Professor Reichenbach's paper, said: That is the end of the learned Professor's second communication, and I am reminded by it that in referring to the collectors of Orchids, I omitted to give sufficient credit to Mr. Sander, whose energy in this direction has been very remarkable. I believe Mr. Sander now employs thirteen collectors. He has given me very interesting details of the work they have done. Many of these gentlemen, who have very considerable botanical knowledge, are Germans, and in several instances such was their zeal that they lost their lives in the prosecution of their duties. From that it will be seen that the dangers and difficulties attaching to Orchid collecting are very considerable; it being well known, of course, that the climates in which researches have to be made are often very dangerous to European constitutions. Altogether the energy and enterprise displayed by Mr. Sander has been very remarkable.

At the conclusion of the third communication from the Professor, the President said that if any gentleman wished to make any remarks on the subject of these communications, this was the time to make them. No response, however, being made to his invitation, he continued: It is obviously very difficult to discuss the exceedingly intricate subjects dealt with in the paper which I have just read on the spur of the moment, and therefore I think the most appropriate course will be to ask Mr. Veitch to read his communication.

Mr. H. J. VEITCH, F.L.S., then read a Paper on

“THE HYBRIDISATION OF ORCHIDS.”

He said: In a communication “On Hybridisation among Vegetables,” by Dean Herbert, of Manchester, published in 1847, in the second volume of the *Journal of the Horticultural Society of London*, I find the following remarkable passage:—

“Cross-breeding amongst Orchidaceous plants would perhaps lead to very startling results; but, unfortunately, they are not easily raised from seed. I have, however, raised *bletia*, *cattleya*, *Herminium monorchis*, and *Ophrys aranifera* from seed; and if I were not, during the greater part of the year, absent from the place where my plants are deposited, I think I could succeed in

obtaining crosses in that order. I had well-formed pods last spring of orchis by pollen of ophrys, as well as of other species of orchis which had been forced ; and if I had remained on the spot, I think I should have obtained some cross-bred Orchidaceous seed. An intelligent gardener may do much for science by attempts of this kind, if he keeps accurate notes of what he attempts, and does not jump at immature conclusions."

This is the earliest authentic information I have been able to obtain of attempts to raise new forms among Orchids by cross-breeding, and with what success the Dean himself has told us in his own words. At that time, and for some years afterwards, there was a prevalent notion among gardeners that muling among Orchids was an impossibility, and, so far as I am aware, no one attempted it besides Dean Herbert till it was taken up by Dominy, at our Exeter nursery, about the year 1853. The cause of the prevalent belief of that age in the impossibility of hybridisation among Orchids is not, I think, far to seek.

Dean Herbert was a man of science, and was well acquainted with the structure of Orchid flowers ; to him their fertilisation by hand presented no difficulty ; to horticulturists and gardeners it was quite different. Not only had they, in common with many others, not the slightest suspicion of the fertilisation of Orchids by insect agency, but, moreover, very few of them possessed even an elementary knowledge of botany. They could, it is true, distinguish accurately the stamens and pistils of many flowers familiar to them, and they were aware of the functions of those organs, but the confluence of those organs into the solid column of an Orchid flower was to them a profound mystery. It was unfortunate, too, that Dean Herbert's injunction to keep accurate notes of what was attempted was not followed in the early days of Orchid hybridisation, whence the uncertainty that still hangs over the parentage of some of the earlier acquisitions.

It was Mr. John Harris, a surgeon, of Exeter, who suggested to Dominy the possibility of muling Orchids, and who pointed out to him the reproductive organs seated in the column, and showed that the application of the pollinia to the stigmatic surface was analagous to the dusting of the stigma of other flowers with pollen. This simple fact being once fairly grasped, the work of hybridisation proceeded apace. The flowers of showy species of *cattleya*, *lælia*, *calanthe*, &c., were fertilised with the pollinia of other species, and even the flowers of supposed different,

but of course allied, genera, were also operated upon in the same way. Capsules were produced in abundance, which in due course proved their maturity by dehiscing, and thus the long and anxiously desired seed was at length at hand. Then arose a great difficulty, a difficulty which still exists, and which our long experience has enabled us to make only a short step towards overcoming, to discover the most suitable method of raising seedlings. The seeds of Orchids are minute chaffy bodies of extreme lightness. So minute are they that an ordinary pocket lens is powerless to enable one to know whether the seeds are likely to contain a germ or are mere lifeless dust. When growing wild, it is evident that the contents of the mature capsules after dehiscence are more or less scattered by the wind, perhaps wafted to great distances, until they settle on the branches of trees, on shelving rocks or other suitable situations where the seeds can germinate, and the seedlings firmly affix themselves. Following, or at least believing that we were following Nature, so far as the altered circumstances of artificial cultivation allowed, every method or available means that could be thought of was brought into request to secure the germination of the seed. It was sown upon blocks of wood, pieces of tree-fern stems, strips of cork, upon the moss that surfaced the pots of the growing plants, in fact, in any situation that seemed to promise favourable results. But as it was in the early days of Orchid hybridisation, so it is now, we seem as far off as ever from hitting upon a method by which at least a moderate amount of success may be calculated upon; failures were at first, as now, innumerable, and numberless such are without doubt inevitable. Among the most cogent causes of failure in the raising of seedling Orchids, there can be no doubt that the altered conditions of climate, especially the deficiency of sunlight, and the artificial treatment to which the plants are necessarily subject in the glass houses of Europe, are the greatest. The capsules neither can nor do attain the perfection natural to them in their native countries, and it is more than probable that, independently of the capsules grown in our houses being the production of cross-breeding, they do not yield a fractional part of the quantity of good seed they would do in their native land. And so with their progeny—the tender seedlings are brought into life under circumstances so different from what they would have been in their native land, that it is not at all surprising that multitudes of them perish in their earliest infancy. The

capsules are not only less perfect in our houses than they would be in a state of nature, but they also require a longer time to arrive at maturity, a circumstance that must tell against the progeny. The cause of this is also climatic, chiefly of course the enormous diminution of sunlight and sun heat. To make this clear, I will adduce one illustration, and for that purpose I select the New Granadian cattleyas of the *labiata* group, because they are among the best of subjects for the operations of the hybridist. These cattleyas have their home chiefly in the ravines and valleys of the Cordilleras, at elevations ranging from 2,000 to 5,000 feet above sea level, and between the second and tenth parallels of north latitude. The plants by being transferred from proximity to the equator, where on clear days the sun darts his rays either perpendicularly upon the place in which they are growing, or at a comparatively small angle to them, to a high latitude like ours, where the smallest angle at which the sun's rays can fall upon our houses is about 28 deg., and that only for a few days at midsummer, an angle which daily increases, till at midwinter it reaches 75 deg., suffer an enormous diminution of solar light. Now light, in passing through the atmosphere, even under the most favorable circumstances, is subject to absorption, or is intercepted by it, but the amount varies with the angle; thus, it has been shown that of a given quantity of light falling perpendicularly upon a given point, one-fifth of it is absorbed or intercepted by the atmosphere; if it fall at an angle of 50 deg. more than one fourth is intercepted, and at an angle of 75 deg. fully one-half. Hence, in the winter months, even when the days are clear and bright, we can get no more than five-eighths (a little more than one-half) of the solar light these New Granadian cattleyas receive in their native country, on the assumption that other circumstances remain the same. It is quite evident, then, at what a disadvantage we are placed, as regards the ripening of capsules of Orchids whose native home is near the equator, to say nothing of local difficulties, such as the smoky atmosphere and fogs of London.

It is not unreasonable to infer, in the absence of more accurate knowledge obtained by direct observation, that the capsules of the New Granadian cattleyas require but a short period to attain maturity in their native country, and that this period extends only over the two or three months of what is there called the dry season, but which in that region is subject to frequent showers. In our houses, the time required for

maturing the capsules of cattleyas of the *labiata* group ranges from eleven to thirteen months, for *Lalia purpurata* it is about nine months, for *Phalenopsis Schilleriana* six months, *Cypripedium Spicerianum* eleven to twelve months, *C. insigne* ten months, *masdevallia* four months, *calanthe* three to four months, *Zygopetalum Mackayi* when crossed with *maxillaria* about six months *Odontoglossum maculatum*, *Dendrobium aureum*, *Anguloa Clowesii*, *Chysis bractescens*, and *Maxillaria Harrisoniana* each about twelve months. But, of course, these periods are only approximate; the time required for the ripening of the capsules is considerably influenced by the state of the weather and external circumstances, especially by the amount of direct sunlight during the year. I note that our experience does not differ essentially from that of M. Bleu, of Paris, who has published in the journal of the *Société Nationale d'Horticulture* the periods of ripening of the capsules of several Orchids crossed by himself, although it might be expected that in the warmer and drier climate of Paris the periods would be somewhat shorter.

Adverse as are some of the influences under which we work to obtain capsules, there is but little difficulty in getting them, and in abundance too; sometimes even from crosses that, to the systematic botanist, would seem almost beyond belief; but then comes the *crux*. Good seed is the all important factor in producing healthy seedlings, and this, unfortunately, from causes already partially adverted to, is obtainable but in a very minute proportion of the whole. Seed we get in profusion, but so little of it germinates that the patience of the most persevering is put to a severe test. The seeds of hundreds of capsules have been sown without yielding a single result. In very many cases only a solitary plant had been raised from a capsule that must have contained thousands of seeds; in very few instances indeed has the number of seedlings from one cross reached a hundred. It is true that we have raised many seedlings in the aggregate, but many of them have appeared when least expected, and when we consider the myriads of seeds that have been sown, and the comparatively few plants raised, we cannot be said to have achieved very great success. It may here be noted that with the exception of *cypripedium*, which bears the stress of fruit-bearing better than any other genus, many plants bearing capsules become greatly debilitated. During the season the capsule is being matured, growth frequently ceases altogether, and when

the plant operated upon is not strong, it not infrequently perishes even before the seed is ripe.

[Diagrams of seeds, and seedlings in various stages of development here introduced. See Plates, pp. 37—45.]

If the ripening of the capsules takes place under such adverse influences, the same influences are by no means propitious to the early infancy of the progeny. The period from germination to the formation of the first roots, which, for want of a better phrase, and for the present purpose, I will call the thalloid state of the young plant, and which sometimes occupies several months, is the most critical in the life of seedling Orchids raised in glass structures; it is especially so with cypripedium, calanthe and phalænopsis, and seedlings of these we accordingly find to be the most difficult to preserve prior to their getting firmly rooted. A succession of dull, cloudy days in winter, and even a few hours of London fog, will cause a great mortality, not only among these, but among all seedlings in a similar stage.

The cares and solitudes of the raiser of Orchid seedlings are by no means diminished when the infant plants are fairly rooted; they must still be constantly tended with the most assiduous care. To neglect the watering, for instance, for a single day, or even for a few hours in the height of summer, may prove fatal; and so, on the other hand, an excess of coddling, giving them too much heat or too much water, by stimulating them into growth before their natural season arrives, is equally a source of danger. Nor is it the only one. We know of an instance of the splendid *Dendrobium nobile nobiliss* being crossed with *D. aureum*; the capsule was matured in due course, and the seed sown, but only one seedling was raised. This, as may be readily supposed, was tenderly cared for, but all to no avail; the seedling had grown to about half-an-inch, when one night a vulgar snail devoured the precious morsel at a single meal. (Laughter.) We, too, have had our troubles. Among our earliest phalænopsis crosses we succeeded in raising a single seedling from a capsule of *Phalænopsis amabilis* crossed with *P. rosea*, which we were particularly anxious to save, as it would have solved the question of the parentage of *P. intermedia* or *Portii*, which is a supposed natural hybrid between the same two species. The plant had made three healthy leaves; it was well established in a small pot, which, to be the more secure from danger, was placed upon an inverted pot that stood in a pan of water. One

morning, to the great dismay of Seden, it was discovered that a slug had eaten off two of the best leaves, and would, if not trapped, certainly devour the remainder. Anxious to save the treasure, the plant was watched incessantly for hours in the expectation that sooner or later the marauder would make his appearance; to induce him to do so the moss was constantly plunged into water; the repeated duckings had at length the desired effect, the culprit issued from his lurking place and the plant was saved. The two little circumstances I have narrated speak for themselves.

And now, how long must the hybridist wait before his labours are rewarded with a sight of the flower whose appearance he has been awaiting with longing expectation, and upon which many hopes have been built, too often, unfortunately, to end in disappointment.

The shortest periods from the germination of the seed to the production of the flower yet observed are those of *dendrobium*, that is, *D. aureum* crossed with *D. nobile* and *vice versâ*, three to four years; *phaius* and *calanthe* about the same; *masdevallias* four to five years; *chysis* about the same. Then come longer intervals; *zygopetalum* five to nine years, according to the cross, thus, *Z. marillare* crossed with *Z. Mackayi*, five years, *vice versâ* nine years, a curious, but to us, unaccountable circumstance, as is the case of *Cypripedium Schlimii*, which crossed with *C. longifolium* flowers in four years; but the *vice versâ* cross takes six years. *Lycaste* takes seven to eight years; *lælias* and *cattleyas* may be said to flower from ten to twelve years from the seeds.

[Seedlings of different genera at various stages of growth were here shown. See Plates, pp. 37—45.]

I will now glance at some of the results obtained by us from muling. Dominy began to hybridise Orchids at our Exeter nursery in 1853, and continued his operations for some time after removal to Chelsea in 1864. Seden began at Chelsea in 1866, and has worked uninterruptedly from that time to the present. Our experience, therefore, extends over a period of more than thirty years, during which the field of operations has been greatly enlarged, especially of late years, our experiments being made upon a vast number of cultivated Orchids, including many hundreds of crosses, not only between allied species but also between species of different genera.

Among the results obtained by Dominy at Exeter, *Calanthe*

Dominii, raised from *C. masuca* $\times$ *C. furcata*, will always be regarded with interest, as being the first hybrid Orchid that flowered. It flowered for the first time in October, 1856, on which occasion the spike was shown by my father to Dr. Lindley, who exclaimed, on seeing it, "You will drive the botanists mad," an expression quite characteristic of the rigid systematists who flourished prior to the publication of Darwin's "Fertilisation of Orchids by Insect Agency." The first hybrid cattleya that flowered was *C. hybrida*, a plant now lost, but which was soon followed by the flowering of *C. Brabantiae*. The first hybrid cypripedium to flower was *C. Harrisianum*, which justly commemorates the name of Dr. Harris, a gentleman who first suggested the hybridisation of Orchids. Among other noteworthy acquisitions raised at Exeter were *Cattleya Dominiana*, *Lalia Exoniensis*, *Calanthe Veitchii*, and *Lalia Veitchii*. The last-named flowered for the first time at Chelsea. Dominy also raised some seedling vandas, but they were afterwards lost. Seden's acquisitions are more numerous, and many of them unquestionably prove that substantial progress is being made, in spite of the innumerable difficulties that beset the raising of seedling Orchids. To any one who has compared *Cypripedium cardinale*, *C. Schröderæ*, and *C. Sedeni candidulum*, with the original *C. Schlimii*, this progress is manifest enough. And so with *C. ananthum superbum*, *C. Leeantum superbum*, and *C. Morganæ*; nor ought I to omit mention of *Lalia flammea*, still unique in colour among Orchids, *Masdevallia Chelsoni*, *Calanthe Sedeni*, also obtained by other operators, and *Dendrobium micans*.

The following details may prove to be of some interest. Among cattleyas we find that all the members of the *labiata* group and also the Brazilian species with two-leaved stems, as *C. intermedia*, *C. Aclandiae*, *C. superba*, &c., cross freely with each other, and with the Brazilian lœlias, which also cross freely with each other. It is worthy of note, too, that those hybrids which have a two-leaved cattleya for one parent and a one-leaved lœlia or cattleya for the other, have some stems with one and others with two leaves, and the flowering does not seem to be affected thereby. [A plant with this peculiarity here shown.] But neither the cattleyas nor the Brazilian lœlias will cross freely with the Mexican *Lalia albida*, *autumnalis*, *majalis*, *rubescens* (better known in gardens as *acuminata*), &c. Numerous crosses have been effected both ways, and capsules have been produced, but

the seed has always proved barren. *Lælia anceps* appears to be an exception, for it seeds freely whether crossed with a cattleya or with any of the Brazilian lælias. The period from the germinating of the seed to the appearance of the first flower varies immensely in the different crosses, thus *Lælia triophthalma* raised from seed sown in 1875 flowered in 1883, this is the shortest period known to us; *Lælia caloglossa* from seed sown in 1858, flowered for the first time in 1877, or nineteen years, this is the longest period known; the others have taken periods that may be said to average from ten to twelve years.

Among cypripeds some very curious facts have been elicited through muling. Thus, the East Indian species cross freely with each other, and a numerous progeny has resulted therefrom. The South American species, the selenipedia as they are called, also cross freely with each other, and many new forms have been obtained; the hybrids in both sections flower within a few years from the seed being sown. But in the case of the crossing of Indian with South American species, the process has been much slower in producing results. An infinitely smaller percentage of the seed germinates, and those seedlings that survive are so slow in arriving at the flowering stage, that up to the present time not a single plant has produced a flower, although the plants continue strong and healthy in appearance and increase in size every year. One thing is certain, the three-celled ovary of the selenipeds offers no impediment to fertilisation by the pollinia of Cypripeds with a one-celled ovary, for we have plants raised from *C. caudatum* $\times$ *C. barbatum*, and many other like crosses between other species have yielded seed.

Cypripedium Sedeni was a remarkable cross in many respects, it was, in fact, raised from two crosses, *C. Schlimii* $\times$ *C. longifolium*, and the same two *vice versâ*. It will be observed that in this case, one of the parents, *C. longifolium*, is much more robust in habit and growth than the other parent, *C. Schlimii*. [Plants of *C. longifolium*, *C. Schlimii*, and *C. Sedeni*, were here shown.] No perceptible difference was observed between the plants raised from the two separate crosses, they agreed in habit, foliage, colour of flower, in fact, in every particular. No such similar result has been obtained by us among cypripeds. A *vice versâ* cross between the same two species produces seedlings that vary more or less from those produced from the first cross. Thus *C. tessellatum* resulted from *C. barbatum* $\times$ *C. concolor*, and

C. tessellatum porphyrium from *C. concolor* $\times$ *C. barbatum*. We have also an instance of two recognised species each being crossed by a third, but both crosses producing like results, thus *C. longifolium* $\times$ *C. Schlimii*, and *C. Roezlii* $\times$ *C. Schlimii* produced seedlings whose flowers are indistinguishable from each other, although as might be expected, the foliage of the *C. Roezlii* progeny is like that of its parents, the more robust of the two; hence the specific rank of *C. Roezlii* is very questionable.

Not only do recognised species of each section, East Indian and South American, cross freely *inter se*, but the hybrids also cross freely with them. The beautiful *C. ænanthum superbum* has for its parents *C. Harrisianum*, itself a hybrid, and *C. insigne Maulii*. As regards the habit and foliage of hybrid cypripeds, the progeny usually takes a form intermediate between the two parents, but sometimes it is more robust than either. [Plants of *C. grande*, and its parents shown.]

Large as is the field offered by the great genus *Dendrobium* for the operations of the hybridist, comparatively little has yet been effected. Dominy raised the hybrid that bears his name many years ago in our Exeter nursery. It was followed some years later by *D. Ainsworthii*, which appeared in Dr. Ainsworth's collection at Manchester in 1874. Plants of the same cross raised by West appeared about the same time in the Fairfield nursery, near Manchester, and later, in the collection of Mr. Brymer, at Dorchester, by another operator, the parents being *D. aureum* $\times$ *D. nobile*. Subsequently Seden raised *D. splendidissimum* from the same cross, and still later, Mr. Swann obtained *D. Leechianum* from *D. nobile* $\times$ *D. aureum* or the *vice versâ* of the others. The seedlings raised from all the crosses are found to be variable; members of one progeny approaching so closely varieties among the others, that the original distinctions set up between them cease to be appreciable, but without egotism I venture to claim for *splendidissimum* larger flowers with more substance in sepals and petals, caused probably through our having hybridised finer varieties of the two parents. Nevertheless, to avoid confusion, the progenies should, I think, to use an academical expression, be bracketed.

Of the eight hybrid dendrobes that have already flowered *D. nobile* is one parent of five, and *D. aureum* of three of the same five, and of one other, so that only two, *D. micans* and

D. rhodostoma, have yet flowered that have a parentage in which neither *nobile* nor *aureum* participated.

Crosses between species of *phalænopsis* have been effected by several operators, and capsules readily obtained. We only know, however, of three instances besides our own where seedlings were raised; the first by Dodds, in 1868, in the collection of Sir John Greville Smith, at Ashton Court, near Bristol, but they were afterwards lost; then Grey, gardener to the eminent orchidologist, Mr. Corning, of Albany, New York, raised some seedlings, but they, too, were afterwards lost; and, lastly, Mr. Hollington, at Enfield, who has, I believe, one seedling still living. Our own experience with *phalænopsis* dates from 1875; our first cross was between *P. grandiflora* and *P. Schilleriana*, but with that and with several succeeding crosses no results beyond the capsules were obtained. The first capsule to yield seedlings was gathered from *P. grandiflora* $\times$ *P. rosea*; a few of these are still living. Then we obtained a few from *P. amabilis* and *P. rosea*, which grew with more vigour than their elder brethren, and may not improbably flower within the next two years. Still later we obtained seedlings from *P. Schilleriana* $\times$ *P. rosea*, *P. grandiflora* $\times$ *P. Luddemanniana*, and from two or three other crosses.

Calanthe has probably received attention from more operators than any other genus in the great Orchidean family, a circumstance that can be best accounted for by results being obtainable in a shorter period than from any other genus. It may be that *calanthe* being more terrestrial than epiphytal, there is a predisposition to earlier maturity. The capsule of *calanthe* usually ripens in three to four months, and the seed takes from two to three months more to germinate; the seedlings under favourable circumstances will flower in the third or fourth year; hence it happened that, although seedlings *cattleyas* were in existence before seedling *calanthes*, the first hybrid Orchid to flower was a *calanthe*. *Calanthe Veitchii* flowered for the first time in 1859, and was at that time believed to be a true bigeneric cross, but such it cannot be now regarded, as Mr. Bentham, in the "*Genera Plantarum*," has referred the pollen parent *Limatodes rosea* to *calanthe*. Not so, however, is *Phaius irroratus*, raised by Dominy from *P. grandifolius* $\times$ *Calanthe nivalis*, and *P. irroratus purpureus*, raised by Seden from *P. grandifolius* $\times$ *Calanthe vestita rubro-maculata*, and a third progeny that has not yet flowered, which was

obtained by the last-named hybridiser from *Phaius grandifolius* and *Calanthe Veitchii*. These are entitled to be called bigeneric crosses. In one of the cases only a single plant was raised, and in each of the other two the number was very restricted. It is a curious fact, too, that in habit, aspect, and in other respects the progeny is well-nigh intermediate between the two parents, being neither quite evergreen like *phaius*, nor deciduous like *calanthe*.

Masdevallias were taken in hand at an early date, but failures were frequent, caused probably by the fact that *masdevallia*, as a genus, is far more heterogenous than was at first supposed, whence a mixture of the different sections may not possibly be effected. *M. Chelsoni* was at length raised from *M. amabilis* × *M. Veitchiana*; then *M. Fraseri* from *M. ignea* × *M. Lindenii*, by Mr. Fraser, of Dornoch, Aberdeen, but the seedlings were reared by us; and lastly, *M. Gairiana* from *M. Veitchiana* × *M. Davisii*. Capsules have been obtained from *M. Veitchiana* × *M. infracta*, *M. polysticta* × *M. tovarensis*, *M. Harryana* × *M. Veitchiana*, and a few others, but all attempts to intermix *M. chimera* and its allies with the brilliant-flowered species have proved fruitless.

Great as is the difficulty of raising seedlings from Orchids requiring a high temperature for their cultivation, it is still greater in the case of those that receive "cool treatment," if we except *masdevallia*. *Odontoglossum* affords a striking instance of this, paradoxical as it may seem, especially as so many undoubted natural hybrids between different species of this genus have appeared among the importations of the last ten years. Numerous crosses between various species, both Mexican and New Granadian, have been effected, and capsules with apparently good seed have been produced, but with the utmost care that could be bestowed no progeny has yet been raised. Mr. Cookson, of Newcastle, has, indeed, stated in *The Garden*, of February 10th, 1883, that he succeeded in raising a fine lot of *odontoglossum* seedlings, of which the pollen parent was *O. crispum* and the seed parent either *O. gloriosum* or *O. Uro-Skinneri*, but which he was not quite sure. He has since informed us that all of them have perished. And so with the *miltonias*, usually classed with *odontoglossum*, and grown in an average higher temperature, as *vexillarium*, *Roezlii*, and *phalanopsis*. The only seedlings we have been able to raise were obtained from a cross between the two

last named, and these were unfortunately lost within a few months after the germination of the seed. I may here note that the late Mr. Bentham, when working up the Orchideæ for the "Genera Plantarum" must, I think, have been misinformed when he states under "*Miltonia vexillarium*," page 563, that "fide hortulanorum facile cum *Odontoglossis* variis nec cum *Miltoniis* genuis proles hybridas gignunt." Our experience is the very opposite of this. *Vexillarium* crosses readily with the flat-lipped miltonias, as *spectabilis*, although thus far we have failed to raise any progeny from these crosses, but not with the true odontoglots; often as it has been attempted, no capsules are produced. Thus, while our experience in muling among odontoglots goes far to disprove the statement I have just quoted, it at the same time confirms unmistakeably Mr. Bentham's view as to the proper generic place of *vexillarium*, and its allies *Roezlii*, *phalanopsis* and *Warscewiczii*.

I have already taken up so much of your time that I must forbear entering into details of the crossings, and results of them, among other genera, and into the scientific aspects of hybridisation it is not my province to lead you. Nevertheless, I may be permitted to refer to a few facts that have come under our observation that have a practical bearing as well as a scientific one.

It will be gathered from what I have already said that our hybridising operations have extended over a rather wide field; that they have not been confined to the crossing of different species of the *same* genus, but hundreds of experiments have been made between species of *different* genera. The question thence naturally arises: How will these bigeneric crosses affect the stability of the genera as at present circumscribed? And, what changes of nomenclature will be necessary to place the Orchideæ on an intelligible basis as regards names? Glancing over the whole range of our operations, and the results obtained from them, I may safely reply that thus far the stability of the genera is scarcely affected, and the changes in nomenclature need be very few indeed. Leaving the progeny derived from species of *cattleya* × *lælia* out of consideration, the last-named genus being confessedly an artificial one, only two bigeneric hybrids have yet flowered; these I have mentioned above, *Phaius irrocatu*s, and *P. irrocatu*s *purpureu*s. Many years ago

Dominy raised *Anætochilus Domini* from *Goodyera discolor* and *Anætochilus xanthophyllus*, and *Goodyera Veitchii* from *G. discolor* and *Anætochilus Veitchii*. Plants derived from both crosses are still in cultivation, but the names they bear are simply garden names. We have plants, but which have not yet flowered, raised from *Cattleya trianae* crossed with *Sophronitis grandiflora*, and from *Cattleya intermedia* crossed with the same species of *sophronitis*. We have, besides, a seedling whose parents are *Cattleya trianae* and *Brasavola Digbyana*, but as the last-named is now referred to *lælia*, this can hardly be regarded a bigeneric cross. With these few cases I have exhausted the list. But when we enumerate the capsules with apparently good seed that have been obtained from bigeneric crosses, but from which no seedlings have been raised, the list is somewhat more formidable. Some of the most remarkable of these were produced by *Acanthephippium Curtisii* $\times$ *Chysis bractescens*, *Bletia hyacinthina* $\times$ *Calanthe masuca*, *Chysis aurea* $\times$ *Zygopetalum Sedeni*, *Odontoglossum bictonense* $\times$ *Zygopetalum maxillare*, *Zygopetalum Mackayi* $\times$ *Lycaste Skinneri*. But, on the other hand, we have obtained a large number of capsules of the normal size, and to all appearances externally perfect, not only from bigeneric crosses, but even between species of the same genus, which contained not a single seed. And, lastly, I may note that *Zygopetalum Mackayi* has been crossed with several species of *odontoglossum*, and seedlings raised from some of the crosses, but every one that has yet flowered has proved to be *Zygopetalum Mackayi*.

The hybridisation of Orchids by the hands of the cultivator is still in its infancy, we are but on the threshold; and now that muling among them has become a pastime of absorbing interest with amateurs—amongst whom special mention must be made of Sir Trevor Lawrence, Sir William Marriott, Sir Charles Strickland, Mr. Bowring, of Forest Farm, Windsor, Mr. D. O. Drewett, of Newcastle, and Mr. Goss, of Torquay—it would be rash indeed to attempt to predict what may be in store. But, reviewing the sum total of results already obtained, can we, considering the ceaseless watching and assiduous care seedling Orchids require before reaching the flowering stage, look upon them with unmixed satisfaction? How few of the best of them bear favourable comparison with the numberless lovely flowers borne by plants that owe their origin to the unerring instinct of the little winged tribe that unknowingly, and, perhaps, uncon-

sciously, have performed their allotted tasks for ages past, and proving, by the perfection of their work, how inapt an operator is man.

I cannot conclude this paper without availing myself of this opportunity of publicly expressing my personal obligation to Professor Reichenbach for the great trouble he has taken in examining, reporting on, and naming our various hybrids, to do which has occupied much more of his valuable time than is generally supposed. (Applause.)

This paper was illustrated by a number of coloured drawings showing the development of seedlings at various stages of their growth, extending over some years.

The PRESIDENT: Ladies and Gentlemen, there will be now an opportunity of discussing the exceedingly interesting paper we have just heard, and if anybody wishes to make any remarks upon the subject, now will be the proper time.

Dr. MASTERS, F.R.S., said: I am afraid that the number of amateurs and commercial gentlemen who are present to-day will have been so struck with the value of the paper we have just heard read that they will think there is nothing left for the botanist to say; but I hope you will allow me to say that I have listened to that paper with the utmost admiration. I have been much struck by its value, and the number of facts brought forward in it, many of them of surpassing interest, renders it one of the very finest papers ever delivered before this Society. (Hear, hear.) I am anxious to say this at once, and not to go into any points of detail, because they are far too numerous to be discussed on this occasion. The only contribution I would make in the way of discussion is this, that amongst the hundreds and thousands of Orchid seeds I have seen, not one-tenth have been perfect; and this is the reason in all probability why so few of them have germinated under Mr. Veitch's care. The ordinary Orchid seed is a really circular or elliptical bag or membrane, and in the centre of it there is a very small, almost microscopical, germ, and in not one-tenth of the seeds is this little germ present. I merely now wish to repeat that Mr. Veitch's paper is one of the grandest ever delivered before the Royal Horticultural Society. (Applause.)

The PRESIDENT then rose and said: Ladies and Gentlemen, Mr. Veitch mentioned my name as one of those who have had some experience as hybridizers, and I can entirely corroborate,

PLATE I.

Seed of *Phalaenopsis*.

Seedling *Phalaenopsis*, 4 months.

Phalaenopsis, 9 months.

Phalaenopsis, 15 months.

Phalaenopsis, 22 months.

Phalaenopsis, 2½ years.

Phalaenopsis, 3 years.

PLATE II.

Seed of Eucypridium.

Seed of Selenipedium.

PLATE III.

Seedling Cypripedium, 6 months.

Cypripedium, 9 months.

Cypripedium, 12 months.

Cypripedium, 16 months.

Cypripedium, 2 years.

PLATE IV.

Seed of Dendrobium.

Seedling Dendrobium, 4 months.

Dendrobium, 7 months.

Dendrobium, 12 months.

Dendrobium, 18 months.

Dendrobium, 2 years.

PLATE V.

Seed of Cattleya.

Seedling Cattleya, 6 months.

Cattleya, 9 months.

Cattleya, 12 months.

Cattleya, 16 months.

Cattleya, 2 years.

if it were necessary to do so, what he has said about the exceeding difficulty there is in getting fertile seed. Mr. Darwin, in his book on the "Fertilization of Orchids," mentions that, having made a microscopical examination of the seed pods sent to him, he often found that in an entire pod there was not one fertile seed; but, on the other hand, every now and then, for some reasons which at present it is impossible to understand, seed pods do produce a vast number of fertile seeds, and I, myself, have before now from a cross between *cyripedia* produced so large a number of plants that I have been constrained to throw a number away. With regard to *dendrobia*, too, I have had pods which have produced a very large number of plants. I have also had seed from *odontoglossum* which has certainly germinated, but it only arrived at a size which was scarcely distinguishable without the aid of a microscope, and very speedily died. So far as the very small experience I possess as a hybridizer goes, I should say it is far more difficult to raise the seedlings of some hybrid crossings than it is to raise very delicate children. Those errors I referred to in the few opening remarks I made, of diet and treatment, which I am afraid all our knowledge has not enabled us to avoid with regard to children, the very limited experience we have got with regard to the progeny of Orchids does not enable us to avoid in their treatment. A very singular circumstance is mentioned by Mr. Fitzgerald in his book on "Australian Orchids," which shows the extreme difficulty with which they are fertilized. He mentions a magnificent specimen of the *Dendrobium speciosum*, the Brisbane Lily, and says that there were no fewer than 40,000 flowers open at the same time on that plant; but though the plant was growing in the open air and was open to the visits of insects, only one flower produced a seed pod.

There was one circumstance I omitted to refer to in my opening remarks, which I wish to mention now in connection with Mr. Veitch's name, and which is very appropriate in that connection. The Veitch Memorial Medal Committee were so kind as to place at the disposal of the Conference Committee three medals. The Conference Committee were anxious to award these medals in the directions which they thought most appropriate. On previous occasions these medals have been awarded for very remarkable instances of cultivation in Orchids, but we thought we might properly

make a departure on this occasion from precedents, and consequently the committee have decided to award the three medals in this way—one medal to Professor Reichenbach for his very eminent services in connection with scientific Orchidology, services of which Mr. Veitch has made an appropriate recognition, and services which everybody interested in Orchids feels to have been of the most remarkable nature. The next medal we thought we should like to award to a gentleman whose name is immortalized in connection with many Orchids, which he was the first to discover and introduce into this country. That gentleman is the Rev. W. S. Parish, who was for a long time a chaplain in the East India Service, stationed in Burmah, and to whose discoveries we owe a large number of Burmese Orchids. (Hear, hear.) The award in the case of the third medal, I think, renders my mentioning the matter especially appropriate on this occasion. We thought we could not more wisely award it than to that very skilful hybridizer, Mr. Seden—(hear, hear)—to whose skill we owe many of the beautiful hybrids which have been produced in Mr. Veitch's nursery. Of course, in awarding that last medal we did not at all overlook the services rendered by a gentleman whom I saw in the room a short time ago, I mean Mr. Dominy. (Hear, hear.) But we had only three medals to award, and so, of course, we could not award more than three, and we thought perhaps it would be more judicious to award a medal to a soldier who is still fighting in the ranks than to a veteran—great as our debt of gratitude is to him—who has retired from them. (Applause.)

Mr. VEITCH: May I say that, representing as I do the Veitch family, nothing could gratify me more than that the medal founded in our father's memory should have been given to Seden. He entered my father's service twenty-five years ago, and has been in our employ ever since, and a more zealous foreman it would be impossible to find. I wish to bear testimony to my pleasure that Seden should have the medal.

Mr. B. T. LOWNE: I wish to point out that one of the difficulties in rearing seedling Orchids arises, I believe, from the fact that the pollen is only developed from the proliferation of the mother cells, after the pollinia are placed upon the stigma. I think it is possible that the stimulation due to the presence of the pollinia gives rise to the development of the capsule, even whilst the ovales remain unimpregnate.

Mr. JAMES BATEMAN then rose and said: I have particular pleasure in proposing a vote of thanks to Mr. Veitch for his admirable paper. I am sure that he, and Mr. Dominy also, will know and appreciate the effort it costs me to make this proposal, for I have been brought up with the very strongest abhorrence of hybridizers. (Laughter.) I fell into evil hands early in life. My first Orchid-growing friend was Mr. Huntly. When I paid Mr. Huntly a visit at his snug rectory in Huntingdonshire, he pointed out to me his cacti and his Orchids, and said, "I like those plants, in fact they are the only plants I grow, because those fiends (meaning the hybridizers) cannot touch them." (Laughter.) You must make a little allowance for a botanist, for hybridizers do give botanists a lot of trouble—(laughter)—but, however strong my prejudices were, I must confess that when I saw such plants as the cattleya downstairs, if I was not converted, I was, at all events, what comes to the same thing, shut up. (Laughter.) I have the greatest pleasure in moving this vote of thanks to Mr. Veitch. (Applause.)

Mr. JOHN DAY said he had great pleasure in seconding the motion, for he thought Mr. Veitch richly deserved the thanks of the Conference for his splendid paper. Mr. Bateman had already said all that was necessary, and he had nothing to add except that he was sure everybody would join in thanking Mr. Veitch most cordially.

The vote of thanks was then carried unanimously.

Mr. VEITCH, responding to the vote, said: I am exceedingly obliged to you, ladies and gentlemen, for your kindness. I look upon you all here as one large family, and if anyone can contribute to the pleasure of those they meet, or can add to the scientific knowledge of the country, I think it is his duty to do so. Mr. Bateman is such a kind-hearted, genial gentleman, that many a time I have asked myself why, when he came into my houses, he used to act in such an extraordinary manner when he saw a hybrid. Now I have found it out; it was this friend of his who he has mentioned who set him the bad example. (Laughter.) However, I am very glad to find that Mr. Bateman has lived sufficiently long to get rid of his prejudices against the hybrids, and I hope I shall before long be able to name one after him. (Laughter.)

The PRESIDENT then called upon Mr. O'Brien to read his paper on

“ THE CULTIVATION OF ORCHIDS.”

Mr. JAMES O'BRIEN said : The subject of Orchid culture being almost inexhaustible, I shall only be able to touch briefly upon some of its phases, and in doing so, whilst endeavouring to make some remarks acceptable to all Orchid growers, I shall direct them principally towards the amateur. A glance at what has been written on the subject many years ago, proves that there may be rules laid down for the culture of any or all of the Orchids, and that a good result once attained may always be secured by following the same line of treatment. Whenever I read a detailed account of the treatment given to an exceptionally fine plant by some grower of forty or fifty years ago, I find that in our practice of to-day we need not depart from it in the least to ensure the same good results, which ought, however, to be attained by us with much less trouble than by those of olden time, by reason of the much better accommodation we have.

Orchids, from the time of the earliest arrivals, have always been appreciated, and as early as the year 1800, when the lovely *Aerides odoratum* and many other showy things were introduced, their habits and culture seem to have been understood fairly well, but the bad construction of the houses and their defective heating by means of flues and other contrivances militated sadly against the culture of the small growers and the varieties requiring cool treatment ; and hence, while many continued the culture of the more robust kinds, and attracted visitors from distant parts to see them when in bloom, no general progress was made until the period between 1835 and 1850, which was perhaps the richest in importations of fine handsome Orchids.

During that period the fine discoveries of Messrs. Veitch's collector (Lobb) with *aerides*, *saccolabiums*, and *vandas* ; Griffiths with his *cymbidiums* and *dendrobies* ; Skinner, Barker, and Hartweg, in Mexico, Guatemala, and along the Andes ; and other collectors, made quite a revival among the Orchid growers, and the result of new energy being put into the matter was that with some of the showier Orchids such perfection was attained that I fear we could not even now match some of the specimens mentioned as being exhibited at the Horticultural Society's Shows

at the famed Chiswick Gardens, where in those days a good collection of Orchids was to be found. Among the best exhibits for many years appear those from Mrs. Lawrence's renowned collection at Ealing Park, that home where our worthy President, Sir Trevor Lawrence, first acquired that love for Orchids which he has turned to such good account in forming and keeping up, always in good condition, the best representative collection of Orchids which was ever got together.

Among the specimens exhibited in 1845-6-7 are enumerated: from Mrs. Lawrence, Ealing Park, *Aerides odoratum*, with sixteen leading growths and between thirty and forty flower spikes; *Cattleya crispa*, with over twenty spikes; *Saccolabium præmorsum*, covered with bloom; *Epidendrum bicornutum*, with many spikes; *Oncidium ampliatum majus*, with many spikes, forming a head of golden flowers over four feet across; and *Odontoglossum grande*, quite worthy of being a leading plant in a collection. J. H. Schröder, Esq., of Stamford Green, is also credited with *Calanthe veratrifolia*, with eighteen spikes, and many other fine plants. J. J. Blandy, Esq., with *Saccolabium guttatum*, with eighteen flower spikes. R. S. Holford, Esq., of Weston Birt, with *Aerides odoratum*, with twenty-seven to thirty spikes. Sigismund Rucker, Esq., also produced specimens which it is pleasant to read about; and among other things, Robert Hanbury, Esq., in November, 1845, exhibited a robust plant of the autumn-flowering *Cattleya labiata*, with four spikes, bearing sixteen flowers between them, and forming a specimen which any of our best collections would be glad to give room to at the present day.

Of plants described as being very fine in different places forty years ago, but which are yet rare, and in some cases the specimens mentioned are not to be matched, are *Renanthera coccinea*, in the gardens belonging to A. Palmer, Esq., at Cheam, with seven panicles on a plant, each bearing from 100 to 110 flowers, and an equally good one of it in the possession of R. S. Holford, Esq., on one of the panicles of which were one hundred and seventeen of its showy scarlet flowers. Good specimens are also mentioned of the yellow *Calanthe curculigoides* from the Straits of Malacca; *Angræcum bilobum*, with a dozen long flower spikes; the rose-coloured *Eulophia guineensis*; and in the gardens of the Horticultural Society, in 1847, a *Lælia superbiens* with nine large heads of bloom.

These notes show that the love for Orchids, which existed from the time the first plants came into the country, has steadily increased, and that their widely-diffused culture of the present day, far from being a modern fashion in flowers, is but the result of the steady progress of that which always existed, and always will exist, as long as that love for flowers, which is one of the chief characteristics of the inhabitants of these isles, remains. For those who want novelty as well as beauty, too, there is as good a prospect still as for those who wish simply for the beautiful, for if we turn to the works of Dr. Lindley, Professor Reichenbach, and other writers on Orchid lore, we there see such a host of lovely things figured or described, but not yet imported, as to prove bewildering even to one, like myself, who has made Orchids a study from childhood. So far as I am concerned, I never could see that there was any difficulty in growing the greater part of our handsomest Orchids, provided the one who took them in hand had a real liking for them, and a determination to use his own eyes and his best judgment for their benefit. In such a case success follows invariably, for Orchids, like the domestic animals, soon find out when there is one who is fond of them about them, and they seem to be happy and to thrive and establish an understanding with such a guardian, indicating to him their wants in many important matters as plainly as though they could speak.

It is this kind of understanding that should be aimed at, as it goes a great way towards securing success, as well as giving pleasure to the pursuit; and it is the existence or the want of this kind of relation between the plants and their master which makes all the difference between a good grower and a bad one—between a healthy collection and a shabby one. Be sure, that without someone takes an unfeigned and steady interest in the plants, they will not thrive, but if one can be found to be watchful over their interests, and apply what knowledge he can get by what he sees or reads of in other collections, a good measure of success is sure; and hence some of our smaller amateurs, by their diligence and real liking for their plants, often grow things to perfection which have puzzled more scientific men. In growing a general collection of Orchids, however, many stubborn subjects will be met with, but as the bad-doers of the past have given way, those of the present will follow, no doubt, in the case of all who steadily persevere. Every point in

Orchid culture is of importance, one neglected item often causing failure in some direction or other. Let us glance at a few of the most important matters, beginning with

THE ORCHID HOUSE.

In this particular we certainly have the advantage over those of former years, in that we now have compact, well-ventilated, and comfortably-heated structures; but these changes were not made until the Orchid growers themselves took to designing their own houses or advising with the builders about them, and from that time a new era in Orchid culture commenced. The running lights, which were so fond of slipping down in the night, were done away with; the swinging-sashes on a level with the plants on the side-stages were doomed; those neat little sliding-traps at the base of the house, and those convenient top ventilators, substituted, and many other sanitary matters arranged, which anyone may see to perfection in that fine new *Cattleya* house, and those other recently-built structures belonging to William Lee, Esq., at "Downside," Leatherhead, where one of our largest, best, and best-housed collections will be found, many of the convenient arrangement in those houses being of Mr. Lee's own designing. At Baron Schröder's, too, at "The Dell," Egham, some of the best of our modern improvements, combining usefulness and ornament, will be found; and as the plants contained in the houses are of the best and rarest, a visit to them is a great pleasure to any Orchid grower.

In former times it used to be considered imperative to build the Orchid houses running east and west, and many adhere to that plan still; many also consider that a lean-to or three-quarter span facing north is the best for *odontoglossums* and cold-house plants. For my part, I cannot say that houses of any other aspect are not as good as these, provided they be properly arranged in other respects. A north house is certainly very cool, and good for cold-house plants, and particularly *masdevallias* in summer; but, from the very conflicting evidence I have gathered in different parts of the country, I should say that anyone having houses which they wish to devote to Orchids need not be deterred by their facing this way or facing that, or in building new ones to greatly inconvenience themselves to make their houses run in any particular direction.

Tolerably low, span-roofed houses are the best to build for most Orchids, and in building them, no two should be placed together side by side, but each should be built apart, in order to allow of the bottom ventilation being effected by traps opening into the outer air. In some cases, where this has been neglected, chambers from end to end, with openings at intervals, and other intricate contrivances, have been resorted to, but all to no purpose, as the houses have gone back to the style of those of very many years ago, and are practically unventilated, as we now understand the word. It is to the even balancing of the ventilation, by means of the bottom ventilators opening into the outer air, and the top ones at the highest point of the house, that we, in a great measure, may attribute our much better culture of odontoglossums, masdevallias, cattleyas, &c., than the Orchid growers of former years displayed. Next in importance after the ventilation, comes

THE STAGING.

This, by common consent, seems to be best when an open woodwork staging is raised over a close one, containing either water or shingle, which is kept moist. Some, indeed, grow moss on this close staging, and ferns underneath them; but although such arrangement is perhaps beneficial whilst the ferns keep clean, they are so liable to thrips and other insects that they are better kept out of the Orchid houses, in my opinion. The open woodwork staging is certainly very good above the close and moisture-supplying one, and great need of it might be seen formerly in the presence of large numbers of inverted flower-pots for raising the plants.

As a further means of giving moisture and storing rain-water, which alone should be used, wherever it can be obtained, for watering Orchids, too much space cannot be devoted to open rain-water tanks under the stages. Plants watered with rain-water alone have a great advantage over those watered with water from any other source, and Mr. Bateman records his opinion that they are not attacked by those small snails which are so troublesome where they abound. From my own observation I can say that I believe there is a good foundation for the statement.

WATERING ORCHIDS.

The watering of Orchids is a matter on which much depends. It is now pretty generally understood that all evergreen Orchids, either terrestrial or epiphytal, require plenty of water when growing freely, and less when not growing; that those which lose their leaves, such as some dendrobies, invariably require a period of rest, during which water is entirely withheld and a lower temperature given, and that odontoglossums, masdevallias, and the other cold-house things, want water summer and winter; but I find the resting or drying-off system is often overdone, and plants injured accordingly, and that in some collections the plants would be much better if watered all the year round than dried as they are to such an extent that they cannot recover in the growing season what they lose in the so-called resting period.

My own opinion is that any drying-off which causes shrivelling is wrong, and that cattleyas, lœlias, and similar plants, if properly potted, do best kept moist, even when not actively growing; but care must be taken to see that they are not in bad peat. As a rule, it would be much better for the plants we often see in small collections if they had one-half the quantity of potting material about them and twice the quantity of water they get given them. Syringing a house of Orchids should never be done, and the syringes should be only used for moistening the staging and back walls, or doing any other work on which it can be certainly employed without harm. When used on the plants the operator cannot tell what he is doing, and in the hands of a thoughtless person the syringe is the most mischievous instrument ever introduced. There can be no rule for its use among Orchids as a means for distributing water, and certainly no benefit that can be set against the loss of young growths and decayed flower-spikes which must follow an indiscriminate use of it.

ON POTTING ORCHIDS.

And now it will be well to notice a few matters connected with the potting and materials used. For growing the epiphytal Orchids in the early days of Orchid culture, blocks or logs of wood were largely used, with, in many cases, wire baskets for the more spreading kinds. These baskets were first made of iron wire, but this being found to be objectionable on account of its rusting, copper wire was substituted. Soon it got found out

that Orchid roots and young growths did not like metallic substances, and slate was employed to make baskets of different shapes, which were fitted with wire suspenders. Later on the designs were very varied and fanciful, baskets being made of scollop-shells, cocoa-nut husks, rods of hazel, oak, and maple, all of which were found objectionable for some reason or other.

During all this time the ordinary flower-pot was making way, disguised to meet the case by having holes and slits to accommodate the air roots. This fashion of flower-pot at length became extensively used, but as it was alleged against it that it harboured insects, it had to give way to the plain, common garden pot, which is now doing such great service. But I am sure that we have allowed the common flower-pot to encroach too far, and that while we beat our predecessors with *odontoglossums*, *masdevallias*, and many other things which do perfectly well in pots, we have certainly lost ground with *saccolabiums*, *aerides*, and plants of that nature; so much so, that they are but poorly represented in many otherwise good collections. My own opinion is that it is solely through potting them instead of basketing them, and that in pots the chances are against them on many points. Their large fleshy roots do not get the air in pots that they do in baskets, and when potted they are generally placed on the stage too far from the glass, and retain the water given them longer than these plants like.

Against these arguments it is said, with much truth, that it is impossible to suspend everything, and that when baskets are used they are dangerous to the plant when decaying. To this it may be answered that if it is for the benefit of the plant, some means of raising it to a fair distance from the glass should be found, and that if the *saccolabiums* and *aerides* have done well in baskets, which would have done badly in pots, the trouble of removing the old basket and replacing it with a new one ought not to be considered. The *saccolabium* specimens at Mrs. Lawrence's, that with twenty spikes at Mr. Blandy's, and all the others in those days were in baskets, and I do not think their equals will ever be found in pots.

The Orchid baskets, too, are so much improved in the present day that all objection to them has been removed, and I venture to predict a great future for them. I should like those who are not satisfied with their *saccolabiums*, *aerides*, and smaller

vandas, to try them in baskets, using plenty of crocks and charcoal where obtainable, and only a little sphagnum moss.

In growing this class of plants, if the growers would but take the hint from the denrobies, which grow with them in their native habitats, and make the growing-time of the saccolabium to correspond with theirs, they would give their plants less heat and water in winter, and more in spring and summer, and a better condition would come upon them. The excessive heat which is often given to saccolabiums and aerides, and given, too, in winter, and while they are so far away from what little light there is, stunts them, prevents their flowering, and makes it hard work for them even to live.

MATERIALS FOR POTTING.

Now as to materials for potting. Good living sphagnum for saccolabiums, aerides, vandas, phalænopsis, angræcums, and others of like growth, and the fibre of peat composed of fern root alone for cattleyas and lalias, has always been considered the best. Unfortunately, much of the peat of late years has been of grass and heath root, which is liable to rapid decay, and consequently to cause injury to the plants. Various materials, such as cocoa-nut fibre, have been advanced to supersede peat, but none have proved acceptable. I therefore recommend all who wish their plants well to keep to the sphagnum moss and the best peat they can get, using the less of the latter when it is not good, and to leave experiments to others. There are always plenty ready to try new things, and curiously enough it is never the learner who carries the experiments to a serious conclusion, but the well-tried old hand, who, having done all that is good and reasonable, goes in for a new idea on a large scale.

I can call to mind several unaccountable instances of this kind, in one of which I remember a clever grower in the north, who had for years grown his plants to perfection, suddenly became possessed with the idea that chopped sphagnum, and what appeared to me to be road-grit, was the proper thing for all Orchids, and forthwith he proceeded to pot them in it. In another case I found that a previously well-grown collection had been potted in sphagnum moss and what I was told was prepared cocoa-nut fibre. How effectual the preparation was in getting the plants ready to depart this life I need not say.

Above all things a steady perseverance in what others have

found to be a correct method of treatment answers best, and it is better to leave doubtful experiments to their originators until they are proven. The worst of it is that wonder-workers are never tired of getting others to injure their plants by trying their schemes, and hence much mischief occurs. For my part I have generally found that the extreme practices, which we hear of from time to time, in the end only go to prove the extraordinary tenacity of life in Orchids, and their adaptability to the different kinds of treatment they must necessarily receive at different hands.

SHADING AND HEATING.

Next comes the shading and heating of the Orchid house. With respect to the shading, I am convinced that all Orchids should be shaded against the direct rays of the sun, and that the shading should, where possible, be varied in thickness according to the plants contained in the house. Some of those very thin materials we see exhibited, when strengthened with webbing, do admirably for *lælias* and other Mexican and Brazilian plants; the medium textures for cattleyas, and the thickest for cypripediums, *masdevallias*, and all cold-house plants, all East Indian Orchids, and all terrestrial Orchids, such as *Calanthe veratrifolia*, *Phajus Wallichii*, &c. These grow in dense jungles, and bright sunlight dwarfs them and altogether spoils them.

I saw a remarkable instance of this recently in a garden where a *Calanthe veratrifolia* had been kept in a sunny house for years, and had always been a miserable and stunted object. At length it was placed out of the way on the centre bed, and underneath the tall plants, which effectually hid it from view. In a very short time it became a robust, free-flowering plant. I have seen many similar cases where excessive sunlight under glass has had much the same effect as excessive cold would have done. I therefore assert that although most Orchids require a clear light, yet when grown under glass all of them should be sheltered from the unbroken rays of the sun from the time it gets the power to injure until its power wanes. For Orchids in flower a thick shading is absolutely necessary, as the flowers last twice as long shaded, and draw on the strength of the plants much less than they do when exposed to the sun. As regards the heating of Orchid houses, I early found that it was necessary to have some plan, and to adhere to it, checking it by the

thermometer. I therefore compiled the following scale for the whole year :—

TABLE OF TEMPERATURES FOR ORCHID HOUSES.

MONTHS.	WARM HOUSE. EAST INDIAN.		CATTLEYA, OR INTERMEDIATE HOUSE.		COOL, OR ODONTOGLOSSUM HOUSE.	
	Day. Degrees.	Night. Degs.	Day. Degrees.	Night. Degs.	Day. Degrees.	Night. Degs.
January	65—70	60	60—65	55	50—55	45
February	65—70	60	60—65	55	50—55	45
March	65—70	60	60—65	55	55—60	50
April	65—70	60	60—65	55	55—60	50
May	70—75	65	65—70	60	60—65	55
June	75—80	70	70—75	65	60—65	55
July	75—85	70	70—80	65	60—70	55
August	75—85	70	70—80	65	60—70	55
September	75—80	70	70—75	65	60—65	55
October	70—75	65	65—70	60	60—65	55
November	65—70	60	60—65	55	55—60	50
December	65—70	60	60—65	55	50—55	45

Degrees Fahrenheit. The higher day temperature to be attained by Sun-heat when possible.

This scale cannot, of course, be followed to the letter, neither is it necessary that it should be ; it is intended rather to give a basis on which to operate, to enforce a strict guard over the regulation of the heating, and to the preserving of that lower night temperature which is of such vital consequence to the plants, and which should in all cases be insured by night ventilation and by every other means at command. In summer the prescribed temperature will often be exceeded, but it hardly matters by how much if the extra rise is due to sun-heat, and the houses in which the plants are are properly shaded and kept moist.

ARRANGEMENT OF THE PLANTS.

And now the manner of the arrangement of the plants in the houses demands attention, as I am bound to confess that in all ages of Orchid culture, even down to this day, a great mortality has always prevailed among small growing plants. This arises, probably, in many cases, from excessive heat and too little air, but in by far the greater number of cases by the lesser plants being made to occupy the front portions of the graduated stages, thus reversing the proper order of things, and placing the strong

plants near the glass and the weak and dwarf ones the farthest from it. From this cause I am sure the periodical scarcity of the ionopsis, trichocentrums, comparettias, barkerias, and such like frail things may, in a great measure, be attributed to the distance they are grown from the glass. Indeed, it is of the highest importance that in general practice some attempt should be made to arrange the plants with relation to the distance from the glass of the roof according to their height and general growth. Hence, the very smallest should always be grown on blocks, rafts, or in baskets or shallow pans, and the others arranged according to their heights, as nearly as the necessity for occupying all the staging will permit.

Allowing 1 ft. from the glass as the safety line, a good rough rule may be laid down that every small or medium-sized true epiphytal Orchid will do best if brought to within its own height of that line ; thus, if a plant is 12 ins. high it should be brought to within 2 ft. of the glass of the roof ; if 1 ft. 6 ins. to 2 ft. 6 ins., and so on until the larger and stronger growing kinds, which will do in any position, are reached.

The rule should be approached as nearly as possible with small things, but with large ones a distance of 3 ft. from the glass is a convenient and good one. Of course, this rule, like every other in such an elastic matter as Orchid culture, cannot be adhered to in all cases, but if steadily kept in mind and followed where practicable, it will be found of the greatest service in preserving the delicate subjects. *Cypripediums*, *masdevallias*, cool-house Orchids generally, and terrestrial Orchids, although requiring some consideration in the same way, are not included in those which it is absolutely necessary to arrange after some modification of the before-mentioned plan. I may also add that fumigation, which is so injurious to many Orchids, claims many victims from the small growers, and it is best for each grower to find some safe liquid insecticide than to resort to fumigating at all.

And now after I have endeavoured to gain converts by showing that Orchid culture is a pleasant occupation to those who possess some skill and much diligence, and who are willing to observe nature and follow her dictates in the culture of their plants, demanding of them only twelve months' work in a year, exercising their judgment in all cases to the best of their ability, and maintaining the most scrupulous cleanliness in houses,

plants, and everything around their plants, let me finish with a few observations as to the cost of the plants.

THE COST OF ORCHIDS.

On this head it may safely be said that never were good showy Orchids to be obtained at more convenient prices, and that the present regulation of supply and demand, while presenting to the wealthy collector rare plants for which he must pay well, at the same time offer to him who finds a congenial pastime in tending his one or two little houses of Orchids, plenty of beautiful things as well within the reach of his purse as any ordinary plant would be. Indeed, good things are cheaper now than ever they were, and with the exception of a few very high prices, those realized now-a-days are not the outcome of a new Orchid craze, as a comparison with former prices will prove.

Rare things, according to the esteem in which they are held in their day, have always commanded good prices. In March, 1846, at a sale of Guatemalan Orchids at Stevens's, *Celia macrostachya* realized £10 to £12 10s.; *Barkeria spectabilis*, £5 to £17 each; *Epidendrum Stamfordianum*, 5 guineas; *Lalia superbiens*, £13 to £15; *Mormodes* and *Epidendrums*, 5 to 10 guineas each, and *Arpophyllums*, £10 to £15 each; the 168 lots realizing £600. In 1845, *D. aqueum* fetched £10 a plant, and later on *D. formosum* 15 guineas, other dendrobes, £10 to £12 each; *Oncidium macranthum*, £5 to £8 each. In 1847, the imported plants of *Vanda Lowii* fetched from £10 to £25 each; *Aerides maculosum*, £20; *A. crispum*, £21; *A. odoratum*, £16, and others equally high prices; Mrs. Lawrence, the Earl of Derby, Mr. Rucker, and Mr. Schröder being the principal buyers. Notes taken at the same period also tell us that errors of description were more frequent in former times than in ours. *Ansellia Africana* is described as having immense sprays of handsome flowers each as large as a tulip, and in another case the auctioneer is entrusted with the sale of a bright scarlet vanda!

It will, therefore, be seen that ever since Orchids were introduced they could command prices according to their beauty or rarity, and so no doubt it will continue to be. Let us hope that the now great facilities for obtaining handsome things, formerly very expensive, may, with the aid of the display of their beauties at this Conference, induce many new growers to

commence, each according to his means, for out of such ranks our great Orchid growers of the future will be recruited.

At the conclusion of Mr. O'Brien's paper the Chair was taken by Professor Michael Foster, in the place of the President, who was called away. On the motion of the Chairman a hearty vote of thanks was accorded to Mr. O'Brien, and shortly afterwards the Conference adjourned for an hour for luncheon. On reassembling Mr. W. Lee took the Chair. The next subject on the paper for discussion was

ORCHID NOMENCLATURE.

Mr. HARVEY, in opening a discussion on this subject, said : I feel very great diffidence, in the presence of men who know so much more than I do about Orchids, in alluding to the subject. My excuse, however, must be that I feel very strongly on the question of nomenclature. The great difficulty we have to meet with to-day is the absence of Professor Reichenbach, without whom I am afraid we cannot do much in this matter. I think that, as we have had a Conference on the nomenclature of daffodils, we ought to have one on the nomenclature of Orchids ; and, indeed, it is especially required. Now, although I do not suppose that it is in the power of the present Conference to decide that the Orchid Conference Committee shall be a permanent institution, I suppose the Council of the Royal Horticultural Society could do so, and what I would venture humbly to suggest is this, that the latter body should be asked to accept the recommendation of this Conference, that the Committee should be appointed permanently. I feel sure that nothing can be done in the matter of nomenclature without Professor Reichenbach, and therefore the mode in which we ought to act seems to me to be that we should ask the Society, on the recommendation of this meeting, to make the Orchid Conference Committee permanent, and that we should take steps to secure the presence of Professor Reichenbach at a future date, and then go into the question in a systematic and scientific manner. (Hear, hear.) I think I know some things which perhaps I ought not to mention, but I believe Professor Reichenbach's attendance might be secured if we took the right mode of doing it. Unfortunately, the learned gentleman's health is not very good, but I think he would come, and, in fact, I have had a letter from him saying that he would be present to-day.

The CHAIRMAN : The question of nomenclature of Orchids is a very extensive one, and is one which, I think, cannot be

properly dealt with on the present occasion. When the Committee put this question down on the paper for consideration to-day, it was hoped and expected that Professor Reichenbach would carry out his promise to come to the Conference, and we had intended to refer the whole of this question to that gentleman, and to get him to give us a paper on the subject, as we want a little direction in that way. If the question of the nomenclature of daffodils was of importance, surely the question of the nomenclature of Orchids is of much more importance. At present we are rather at sea about the nomenclature of Orchids, as we have only just a few names which have been given to us by Professor Reichenbach, and we want a more extended and general consolidation of this question. I am, therefore, afraid that it cannot be discussed on this occasion. The question might be referred, in the manner Mr. Harvey has suggested, to the Orchid Conference Committee, before they quite close their labours, and they would certainly bring the question forward and not lose sight of it. More than that I do not think we can do to-day, but of course we shall be happy to hear any remarks on the question, if any gentleman has anything to say.

Mr. LYNCH observed that it was of course necessary in the first place to ascertain all that could be learned about every individual plant, and then they might be compared in series which should be as complete as it was possible to get them. This would, he thought, give the best results scientifically and horticulturally. This system had been applied to the Iris family, and as there appeared to be something in common between the Iris and the Orchid, it would perhaps be possible to take the Iris example and apply it to the classification of Orchids.

Mr. O'BRIEN said he had only to observe that if they were to defer the matter of nomenclature until they could secure Professor Reichenbach's attendance, they ought not to go too far in it at present. For his own part he was prepared to make a few observations on the subject, but on the lines they had now laid down he thought it better to defer them.

Mr. BURBIDGE remarked that in his mind there was nothing whatever to prevent the Orchid Conference Committee from discussing the matter among themselves, though perhaps they could not do so in public.

It was then agreed that the question should be deferred to a future date.

THE USE OF MANURE IN ORCHID GROWING.

THE CHAIRMAN : I have just had laid before me the question of—what shall I say?—the question of the use of manure in the cultivation of Orchids. Now all manures are composed more or less of substances of an aciduous nature, but I have had one kind of manure brought to my notice which is quite free from acid of any kind. It is the fish manure of Messrs. Jensen and Co., of which firm Mr. Alfred Borwick, who is a member of our Society, and who I hope is here to-day, is one of the proprietors. I should like to call upon Mr. Borwick, if here, to tell us something of the experience he has had in the cultivation of Orchids with this particular kind of manure.

Mr. ALFRED BORWICK then rose and said : I have some difficulty in complying with the request of the Chairman in this matter, because the idea of anything like manuring Orchids is horrible to most Orchid growers. It has often been a source of regret to me to see so many Orchids dwindle, if not possibly pass out of existence, after they have heavily flowered, not from any want of care or devotion, for that is generally in excess of the demand, but apparently from a deficiency of strength, or in other words a species of starvation. I am led to think this must be the case from information conveyed by travellers and collectors, that birds throng the trees upon which Orchids are found, and that they supply in their dung a rich diet, containing, as it does, ammonia, phosphoric acid, and some potash, which is washed by the rains and dews into the interstices of the trunks, so that the plants not only enjoy the advantage offered by residence on living trees, but the stimulant and food provided by the birds. Terrestrial Orchids in the same way have the benefit of decaying vegetation, which supplies stores of ammonia. As soon as plants come into house cultivation, there is at once an end to these rich manurial provisions, and they have to depend upon moss, peat, charcoal and crocks, with possibly occasional charges of liquid manure, for their subsistence. In all the soils and ingredients used for potting Orchids there is little trace of potash or other manurial constituent, and nothing goes to promote the development of fibre in plants like potash. The aim is to produce bulbs of largest size and firmest growth, but that is impossible unless there are healthy roots in abundance, and these roots can obtain a sufficient amount of nourishment to supply the fibres, of which the bulbs

mainly consist. The manure which I have used for some time is that of Messrs. J. Jensen and Co., 10, St. Helen's Place, E.C., who are engaged in the manufacture of fish manure at the Loffoden Islands, the seat of the great Norwegian cod fisheries. When I tell you that this year no fewer than 32,000,000 of large fish were caught, you can form some slight idea of the magnitude of the fisheries. The fish are gutted, the bodies salted for food, the livers go to make oil, while the heads and backs are available for manure. They are dried, pulverised, and reach England in the form and condition of flour. The average manurial constituents of dried cod-fish are 10·60 ammonia, and 30 phosphates. Grand as these ingredients are in themselves, they are wanting in one thing, namely, potash. If this is absent, it is impossible to obtain perfect fertilization; wherever it is present in due degree, the effect is astonishing in the vigour and rigidity of plant growth. Refined salts of potash and magnesia are added to the fish manure, and at once produce a perfect fertilizer of similar constitution to bird dung, and containing the essential constituents of ammonia, phosphoric acid, and potash, in the form most available for plants. In this manure there is no acid used; fishbone is very gelatinous and when sufficiently pulverised dissolves in the soil, so none is needed. Seeing, as I did, the effect of this combination on all pot plants, it struck me that Orchids might like it also. Last August I began to experimentalize upon a plant of *Cymbidium Lowii*, and requested my gardener to put half-an-ounce on the soil. We soon observed a darker colour in the foliage; in four or five weeks two strong growths appeared, which proved to be flower spikes; as they grew more fish potash was added from time to time. Since then there are five breaks, four of them of strength sufficient to content anyone. I then ordered its use for all terrestrial orchids, *Lycastes*, *Calanthes*, *Sophranites*, *Phaius*, *Zygopetalums*, *Odontoglossums*, *Masdevallias*, *Dendrobiums*, and even for *Oncidiums* and *Lælias*. So far, vigour seems to be on the ascendant, and I see no reason whatever to retire from the line taken up or to alter my views. The plan of operations is simple. My gardener uses more peat round the sides of the pots, and he merely dusts the peat with a pinch of the manure, and wherever the fish potash is, there the roots work. Mr. Wm. Bull told me a fortnight ago that it was a vexed question as to what extent manures could be used for the cultivation of Orchids, and one which demanded the consideration of growers. The manure

to which I have alluded is very easily obtained and applied. I would not recommend anyone to make trials, except on plants of little value, and then no harm can be done. If it is found serviceable in the way indicated, there will then be time] to consider a wider application. (Applause).

The CHAIRMAN: I do not know whether any cultivators of Orchids here have ever ventured to try any manure on their plants. I have never heard of its being done, but if any gentleman here has made the experiment we shall be very glad to hear what he has to say.

Mr. HARVEY: I did once try an experiment with manure on a *Cymbidium Lowii*, but I very nearly killed it.

Mr. JAMES: For some years past we have been in the habit of using pure horse urine, after it had been diluted, on many Orchids, and we have always found that, when used, it has proved very beneficial, especially in the growing season. We are using it largely for damping the stages and paths at night, when a heavy dew quickly arises. I think, if we take into consideration what Mr. Borwick has already hinted at, the fact that plants invariably suffer extremely after carrying their heavy spikes, it seems to impress one with the thought that there is some necessity for sustaining the strength. The question has been raised of late years as to whether Orchids benefit by having their spikes removed after they are formed. I have no doubt in my own mind that it is a marvellous advantage if you want to gain strength in the plants. I have an instance of the *Odontoglossum Alexandrae*. Two years ago we took very special care of it as being an extra good one. Somehow a small slug got into it and eat the spike out and it at once began to make two bulbs, but most unfortunately the spikes got eaten out of the two bulbs. The result has been that this year it has made a double growth from each bulb, and now it has four heads to the plant, and, marvellous to say, it has sent up nine spikes to the flower, an instance which I have not seen before in an *Alexandrae*. One bulb has three spikes on the side of the double leaf. I take it for granted that this must be merely a question of strength from raising the plant, which was a moderately strong one. Further, I think, that as regards the question of some kind of nutriment, it is not so much a question of what kind is applied, but rather of how it is applied. If you drench the flowers with pure horse urine diluted and use it in watering,

it benefits the plant, because from the constant moisture going up in the growing season, the plant must take in the ammonia which is constantly rising. With reference to syringing, I do not think that all our friends would have agreed with Mr. O'Brien in never using the syringe, and I think that statement would require qualification. We have always used weak liquid manure on the surface of the plants, and a moderately good practical rule is not to use it strong enough to injure the flower. I do contend that the syringe is beneficial in the growing season, especially when the nights are genial and there are no frosts. I think that manure is quite beneficial, and I have satisfied myself on the matter with reference to the many different things we have used. The difficulty which many meet with in using artificial manures, and which I myself have met with, is that of beginning by applying it too strong. Whenever people begin to use it they begin with it too strong. If they would only use it weaker and then proceed to ascertain for themselves the plants that will take the strongest kind, they will not have so many failures.

Mr. BURBIDGE : In connection with what Mr. James has said as to cutting off the spikes of Orchids, I have no doubt that must be of the greatest assistance to the plant. Twelve or fifteen years ago the finest plants in England were those in the collection of Mr. E. Salt, at Ferniehurst. I never saw plants which grew so well, and all their growth was owing to the spikes being cut off. Mr. Salt had a delicate wife who could not go into the Orchid house, and the consequence was that Mr. Salt cut the spikes at once, even before the last flower on the spikes had expanded ; and I believe that it was owing to that that they were the finest specimens I ever saw. The question of manure for Orchids is a very delicate question. Mr. James tells us we must not use the manure too strong, I think the best point in Mr. Borwick's paper was, when he told us to use the manure on our common plants. I am very anxious to put the point in this way, because if young growers begin to use manure without having some proportion given to them, some absolutely exact data as to cases in which manure has been successfully used, they will simply be playing with fire. I am very anxious to put these points before the meeting, because I have often seen these plants so badly injured by an indiscriminate use of manure.

Mr. JAMES : I contend that the flowers draw up their nutriment from the dew of the house in a very much larger measure than from anything in the peat ; and I say again, that if the manure is not too strong it is beneficial to the plant. I do not think for a moment that any young grower would be so stupid as to water any plant with liquid manure. There is just now springing up an idea that young men are the right men to conduct the affairs of the world, both in gardening and in everything else. Perhaps old men are not always wise, yet I do think that if young men do begin to water Orchids with liquid manure they will do a very stupid thing. At any rate, I think it would be a wise method to practice first of all on those plants you care the least about in regard to value.

Mr. DRUITT : I simply wish to say that I consider the use of manures to be distinctly beneficial to terrestrial Orchids.

Mr. HEATH (Cheltenham) : The question of watering Orchids with manure is a most difficult one, and one that will have to be argued out by practical people. There is no doubt that Orchids are watered by a great many growers with manure, but they generally like to keep their secret to themselves. As regards Orchid manuring we have not used it over the tops of the pots, but we have used on several occasions cow manure, sheep manure, and horse manure, and we also tried the three together with a small addition of soot. We found the plants were very vigorous for a year or two, but after that we were bound to wash the entire plants out, for we found they got rather a yellow hue. Since that time we potted them, and instead of watering them overhead we have thrown down in the house manures, in the way of nitrate of soda and sulphate of ammonia, and after a week or so we found the plants became of a most brilliant dark green colour. The only thing we find is, that all the different classes of *deudrobia* and *cypripedia* will take a large quantity of liquid manure of any sort ; but tender roots do not take so large an amount of manure of the same strong kind. We have tried this plan now for six years.

The CHAIRMAN : Most of the remarks which gentlemen have made on this subject do not appear to have been upon the identical question which I introduced, that is, the direct application of this powder of fishbone, which is not treated with acid, as is usual with most manures. But this manure, I am informed, is absolutely free from all aciduous matter, and

therefore it suggests itself to my mind as a perfectly novel manure; and although we are perfectly well acquainted with all the methods of getting atmospheric manures, still we are not so well acquainted with the direct application of this powder to the roots. It was for this reason that I introduced the question, and having introduced it and heard the various remarks that have been made, we will now leave it.

Dr. MASTERS: It appears to me from what has been said on this subject, that we have to deal with general principles. In the first place, we do not know the chemical composition of any part of the leaf or of the flower, and until we know that, we cannot have any definite rule as to the right manure to apply or when to apply it; but we may certainly say without any fear of contradiction, that all plants, Orchids not excepted, want manure, and are the better for it, at a certain time. The thing to know is, what is the right food to give, and what is the proper time to give it. The proper food to be given them at one time is that which will make bulb and leaf, and which at another time will enable them to form flower and seed. Now, as to the structure of Orchids, I may perhaps be more at home. The structure is extraordinarily diversified. The internal structure of leaves, flowers, and roots, even in the same genus, is widely different, but I cannot believe that the appropriate food must be equally different. That we have got to find out in the future. More especially I would call attention to the roots of these flowers. There is nothing in nature like the root of an Orchid. Instead of turning down into water like most other roots, the Orchid root almost invariably turns up from it; therefore, if you dip these roots into liquid manure, I think you will be quite certain to injure them, as they undoubtedly absorb most of their food through atmospheric agency.

Mr. BORWICK: I would not use the ordinary bone manure, because it is so hard by nature that acid is required to make it mix with the ground. But the manure of which I have spoken mixes easily with the ground without any acid at all.

Mr. JAMES: Are we to understand that this Orchid Conference will continue yearly? If so, I may suggest that on a future occasion we might exhibit plants that have been put to the various processes mentioned. In following up what Dr. Masters has said, I think it is proved to demonstration that the whole nutriment is taken in by the plant in the way he has suggested.

It seems to me that everything points in the direction that the whole of the nutriment which the plant draws in, whatever it is, is taken through the air, upon which the plant subsists. Should we continue this meeting at a future time, I think it would be worth while for any members who may have special subjects to bring before the meeting to treat them in their own way.

The CHAIRMAN, after a hearty vote of thanks had been awarded to Mr. Borwick for his remarks on the question of manures, said: I cannot give any promise that this meeting will be continued, because we have hardly got so far as that. When we first took up this idea of an Orchid Conference, we did so with considerable trepidation, because we had not only to consider the time of the year when people would be in London, but also the season when plants could be moved without being injured. Of course, if we want to have the best possible show, we ought to have it very much earlier; but then we have to consider about people being in London, and the question of visitors, and other matters connected with it. It must be remembered that this Conference brings no grist to the mill of the Horticultural Society in any way. We do not take any money at the door, but it is all done out of the pure love of Orchid growing. (Hear, hear.) I should say, speaking my own mind and feeling on the subject, that this Orchid Conference should continue. It has, I think, been a great success, everybody seems to have been exceedingly well pleased and satisfied, and I must say a great deal more interest has been taken in the subject than I ever expected to see. I was especially glad to see so many gentlemen come back after the adjournment for lunch. It now only remains for me to thank you all for your very kind attendance and for the very patient way in which you have listened to the remarks that have been made. (Hear, hear.)

Mr. HOLBROOK GASKELL, of Liverpool, then said: I strongly hope that the Council of the Horticultural Society will see their way to make this an annual Conference. I am quite sure that the oftener it is held the more largely it will be attended. I would wish now to propose that the thanks of the meeting be accorded to those gentlemen, especially to two of them—Sir Trevor Lawrence and Mr. Lee—who have taken such a vast deal of trouble for our entertainment.

This motion having been carried with acclamation, the Chairman announced that there would be a Primula Conference next year, and the proceedings were brought to a close.

REPORTS
ON THE
PLANTS EXHIBITED.

I.
HORTICULTURAL,

BY

F. W. BURBIDGE, F.L.S.,

CURATOR TRINITY COLLEGE BOTANICAL GARDENS, DUBLIN; FORMERLY OF THE
ROYAL GARDENS, KEW; MEMBER OF THE "SCIENTIFIC COMMITTEE"
OF THE ROYAL HORTICULTURAL SOCIETY.

II.
BOTANICAL,

BY

H. N. RIDLEY, M.A., F.L.S.,

BOTANICAL DEPARTMENT, BRITISH MUSEUM; ETC., ETC.

REPORT

ON THE

PLANTS EXHIBITED.

I.

HORTICULTURAL.

INTRODUCTORY.

ORCHIDS are so extremely popular to-day that the holding of a special Conference on these plants by the Royal Horticultural Society, in May last, seemed quite natural, seeing that they to some extent represent the horticultural respectability of many nineteenth century gardens. That the exhibition was very successful goes without the saying, and visitors had indeed a good opportunity of forming for themselves very vivid impressions as to the beauty and variability of these interesting plants. For the benefit of those, however, who were not able to attend, our report is both critical and explanatory.

One of the first points which strikes one in connection with the late Conference is the fact that in the main professional botanists were conspicuous by their absence, so that the burden of management fell almost entirely on the shoulders of amateur and trade growers, aided of course to the utmost by the officers of the Royal Horticultural Society. That the absence of Professor Reichenbach and others was, in a way, very unfortunate is generally acknowledged, and in what manner I hope to show in this report under another head. Perhaps it is best that the Orchid Conference and its results may after

all be considered as a successful beginning of the Orchid question, rather than in any sense final and absolute. At the same time, were we to compare this meeting with those held in connection with (1) Apples, and (2) Daffodils, it would not be quite fair, seeing that in the case of Apples one thousand five hundred and forty-five varieties of one species (*Pyrus malus*) only were under consideration, and in the second only a solitary genus (*Narcissus*) of about twenty species, and, say, five or six hundred varieties and forms was discussed. On the other hand, when we consider that in the natural order of Orchids we have at least three hundred and thirty-four *genera*, comprising, according to various computations, from six to ten thousand species, the vast difference between the wider scope of our present Conference and former ones becomes strikingly apparent. Even when we grant that we have only about one thousand five hundred or two thousand species and varieties of Orchids in cultivation, and for a moment remember that some or other of these entirely fill up a whole year by their flowering, it becomes at once apparent that no one Conference or exhibition can include more than a portion of that number. As a matter of fact, only fifty-seven *genera* of Orchids were represented on this occasion by about three hundred and fifty species and varieties. We thus see at a glance what a mere fringe of the subject was touched upon after all, albeit that the finest of all the seasonable kinds were exhibited. Besides all this, one must not fail to point out the fact that the great trade collections were but poorly represented, owing to the principal nurserymen having semi-public exhibitions of their own on view at the same time. It is when we look at the late Conference in this light that its real importance is seen, notwithstanding that its necessarily limited representative or seasonable character becomes also more fully apparent.

It is, however, much to be desired that a meeting so successful and instructive should be followed by other Orchid meetings of a similar calibre from time to time. It is almost needless to say that our climate renders the exhibition of tropical Orchids nearly impossible, except during the warmest months of the year; but if a permanent Orchid Committee were appointed, much good work might be done by its members, even at the ordinary flower shows and meetings of the Royal Horticultural Society.

DESCRIPTIVE AND ANALYTICAL LIST OF GENERA, SPECIES, VARIETIES,
AND HYBRIDS SHOWN.

The *genera* exhibited at the Conference numbered 57 in all, the total number of species and varieties being 348. The proportions stand as follows:—*Odontoglossum* 66, *Masdevallia* 48, *Cypripedium* 40, *Dendrobium* 34, *Cattleya* 27, *Oncidium* 19, and *Lælia* 11.

The following is a descriptive enumeration, in alphabetical order, of the *genera*, species and varieties exhibited:—

ACINETA.—*A. Humboldtii* is a species from Colombia, of *Stanhopea*-like habit. Flowers fleshy or wax-like, yellow spotted with brown; odorous. Also known as *A. superba*, and as *Peristeria Humboldtii*.

ADA.—*A. aurantiaca* is an evergreen species, nearly allied to *Brassia*, from Colombia, bearing erect nodding spikes of vermilion-coloured flowers. The generic name is commemorative of the Golden God of the Assyrians.

AERIDES.—Five species and varieties were shown. *A. Ballantinei*, a showy kind; *A. Fieldingii*, or “the Foxbrush,” “Air Plant;” *A. Houlettianum*; *A. quinquevulnerum*, the cinque spotted; and *A. Veitchii*.

ANGULOA.—Three kinds were shown, viz., *A. Clowesii*, with yellow flowers like deformed tulips; *A. Turneri*; and *A. uniflora maculata*, a purple spotted variety from Peru. *A. Clowesii*, commemorates the late Rev. John Clowes, who bequeathed his collection of Orchids to Kew.

BOLLEA (*Huntleya*).—Two species only were shown, both natives of Colombia, viz., *B. Lalindei* and *B. Patini*.

BRASSIA.—Only one species, viz., *B. cinnamomea* (*B. Keiliana* = *B. glumacea*) was shown. It is a native of Merida (? Venezuela), with greenish-yellow flowers.

BULBOPHYLLUM.—Three species were shown, viz., *B. Dearei*, of dwarf habit, with yellow-brown lined flowers; *B. Lobbii*, a smaller-flowered species of similar colour; and *B. Siamense*. All are of Eastern origin. To this genus *B. (Megaclinium)*

oxypterum, an African species, is added by some authors. It is of botanical interest only. Native of West Africa.

BURLINGTONIA.—Only one species, viz., *B. fragrans*, from Brazil, was shown. It has recurved or drooping spikes of fragrant white flowers, and is very ornamental when well grown.

CALANTHE.—Two evergreen kinds, viz., *C. Dominii* (the first hybrid Orchid), with erect spikes of purplish flowers and the Javanese *C. veratrifolia*, were shown. The latter has pure white blossoms.

The pseudo-bulbous or deciduous section of this genus was represented by *C. vestita igneo oculata*, having white red-eyed flowers, from Moulmein; also the variety *gigantea*, with stouter spikes and larger blossoms; and *Sanderiana*, a novel introduction.

CAMAROTIS.—An old species, *C. purpurea*, used formerly to be a favourite exhibition plant, specimens having been shown at the Chiswick Flower Shows bearing over a hundred spikes of its bright rose-purple flowers.

CYPRIPEDIUM.—Forty species and varieties of these interesting Lady's Slipper Orchids were shown, about twelve of them being garden hybrids raised by Messrs. Veitch and others. The most interesting were *C. Godefroyæ*, a novelty, from Cochinchina; *C. argus*, a richly spotted kind from the Philippines, *C. barbatum* in variety; *C. caudatum*, from Peru, with petals over two feet in length, and a great octopus pouch-like lip. *C. Harrissianum* was of interest, as being the first hybrid raised in the genus, and as having been named in compliment to Dr. Harris, of Exeter, who suggested to Mr. Dominy the idea of cross-fertilising Orchids. *C. Stonei*, from Borneo, and its valuable ribbon-petalled variety, *C. Stonei platytanum*, were well represented, single plants of the last-named being valued at from £80 to £140 each. *C. lævigatum* is interesting as having been found growing on the roots of *Vanda Batemanii* in the Philippine Isles. *C. Lawrencianum*, found in North Borneo, is a handsome species, larger than *C. barbatum*, and named in compliment to Sir T. Lawrence, Bart.

The other forms shown were *C. albo purpureum*, *barbatum*

grandiflorum, biflorum, Bulleni, calurum, concolor, niveum, ciliolare, Dayanum, Druryi, grande, Haynaldianum, Hookeræ, Lowii, marmorophyllum, microchilum, Parishii, Pearcei, Roezlii, Schlimmii, Sedeni candidibulum, Selligerum, do majus, superciliare, Swannianum, tessellatum porphyreum, villosum, vireus, vernixum, Wallisii, and Warneri. Eighty-four plants in all were shown.

DENDROBIUM.—Thirty-four species and varieties were represented, nearly all being Indian kinds. The most remarkable were *D. Brymerianum*, with glossy, gold-coloured flowers, the lip being deeply fringed; *D. Harveyanum*, of similar character, but having deeply-fringed petals; *D. crassinode album*, a white-blossomed variety of a well-known showy species; *D. albo sanguineum*, a rare kind, with large buff, purple or claret-blotched flowers. Amongst the most showy were *D. Falconeri*, *D. Wardianum*, *D. fimbriatum*, *D. Dalhousieanum*, *D. thrysiflorum*, *D. macrophyllum*, and *D. Cambridgeanum*, all well-known kinds. The black-haired section (*nigro hirsutæ*) were represented by *D. infundibulum*, *D. Jamesianum*, *D. cariniferum*, and *D. cruentum*, the remainder being *D. Bensoniæ*, *D. chrysotoxum*, *D. clavatum*, *D. densiflorum*, *D. Devonianum*, *D. fimbriatum*, *D. Jenkinsi*, a curious little creeping species, *D. Paxtoni*, *D. Pierardi*, *D. primulinum*, *D. pulchellum*, *D. rhodostoma*, *D. Smilliæ*, *D. rhodopterygium*, *D. tetragonium*, and one or two others. Sixty-seven plants in all were exhibited.

DENDROCHILIUM.—*D. filiforme* was the only species shown, and is the very epitome of neatness and gracefulness amongst these charming flowers. The racemes of golden-green blossoms resemble the most dainty filagree work, and droop from among the deep green grass-like foliage in the most elegant manner. Philippines.

DIACRUM.—A very fine and well-cultivated specimen came from Kew, bearing fine stout spikes of its pure white purple-dotted flowers. It is commonly known as *Epidendrum bicornutum*, and is, together with one or two *Schomburghias*, remarkable amongst Orchids in having hollow or cow's-horn-like pseudo-bulbs, both alike forming shelter for various species of tropical ants. *D. bicornutum* is a native of Trinidad, where it has been found clinging to rocks quite near to high-water mark, and within reach of the salt spray.

DISA.—Two well-grown specimens of *Disa grandiflora* (the "Flower of the Gods") were shown, neither being in bloom. It is the most showy of all terrestrial Orchids, and comes from the watercourses on Table Mountain, South Africa.

EPIDENDRUM.—Five species and varieties only were represented. *E. ibaguense* had reedy stems and lilac trusses of flower; *E. Parkinsonianum*, with channelled, fleshy, glaucous leaves, and large pure white flowers; *E. rhizophorum*, another species of reed-like habit; *E. vitellinum*, and its variety *E. vitellinum majus*, having glaucous-leaved pseudo-bulbs and branched spikes of pale orange-vermilion coloured blossoms. All are South American or West Indian.

ERIA.—An Indian genus (allied to *Dendrobium*), of which only one inconspicuous species, viz., *E. excavata*, was shown. Flowers whitish, in lateral clusters, issuing from a depression in the fleshy pseudo-bulbs.

GALEANDRA.—*S. Devoniana* alone was exhibited. It is a plant of grassy or reed-like habit, from the Rio Negro, and was named long ago by Lindley, in compliment to the late Duke of Devonshire, a patron of the Royal Horticultural Society, and one of the first of amateur Orchidists. The flowers are borne seven or eight together in terminal nodding spikes, and are whitish, veined with purple on the expanded involute lip.

GRAMMATOPHYLLUM.—The plants of this genus are known popularly as the "Letter Orchids," and are from Malaysia and Madagascar. The plant exhibited appeared to be an undescribed species.

HOULLETIA.—A small genus from Colombia. The species exhibited, *H. odoratissima*, bears numerous yellowish-purple marked flowers of exquisite fragrance, whence the specific name.

IONOPSIS.—A small genus of Brazilian or West Indian Orchids, extremely difficult of cultivation. One species grows in Jamaica on the twigs of hedges and trees in full sunshine, and the best success is obtained by bare-block culture in our hot-houses. The kind shown was *I. utricularioides*.

CATTLEYA.—A well-known genus of extremely showy South American plants. Twenty-seven varieties were shown, Mr. Lee's

plants, as also those shown by Mr. F. Sander, being in excellent condition. The most interesting were varieties of *C. Mendelli*, *C. Mossiæ*, and *C. Wagneriana*. *C. Blunti* was also very attractive, and some plants of *C. citrina* were much admired. This last-named species is quite anomalous in the group, resembling *Epidendrum vitellinum* in general appearance, but having the peculiar habit of growing head downwards; it also prefers a bare board or block of wood to compost of any other kind. Thirteen varieties of *C. Mendelli* were shown by Mr. Sander and others, some forms being gorgeously coloured on the lip; *C. gigas*, *C. labiata pallida*, *C. nobilior*, *C. Percivaliana*, *C. Skinneri*, *C. Trianæ*, *C. Warneri*, and others, were well-grown. The gems of the whole group, however, were a couple of plants of *C. Skinneri alba*, one from Kew, and the other, of which mention has already been made, being from Mr. Sander's collection.

CHYSIS.—Two species were shown, viz., *C. bractescens*, from Oaxaca, and *C. Lemminghei*, from Tobasco. The former has large, sweet-scented, ivory-white blossoms, the latter has smaller white flowers tipped with rosy purple blotches. Two hybrid kinds were also shown. *C. Chelsoni* is the result of a cross, effected between *C. aurea* × *C. bracteata*. Another Veitchian hybrid, named *C. Sedeni*, was also represented.

CIRRHOPE TALUM.—This genus now forms a distinct sub-section of the Eastern Bulbophyllums, and are so exquisitely beautiful when closely examined that one regrets the more their rarity in our modern collections. *C. fimbriatum*, the only species represented, came from the Royal Gardens, Kew, and bore three-quarter whorls of purplish flowers on the apices of slender erect peduncles or scapes.

CÆLIA.—The only species of this genus shown was *C. triptera*, native of Jamaica and Cuba. It has several synonymes, such as *C. Baueriana*, *C. glacialis*, &c. It has erect spikes of rosy-coloured flowers.

CÆLOGYNE.—Of this well-known and highly popular Eastern genus eight species and varieties were exhibited. The white-flowered *C. cristata*, and its pale form, *C. Lemoniana*, were especially attractive. *C. elata*, *C. ocellata* var. *maxima*, and *C. ochracea*, were also represented by well-grown plants; but perhaps the most interesting were *C. Parishii* and *C. pandurata*, the

latter having a green perianth and a curiously warted black lip shaped like a fiddle, hence its specific name. It is common on low jungle trees in the forests of Borneo, the other species shown being of Indian origin.

COLAX.—*C. Jugosus* was represented by two examples, bearing wax-like flowers of an ivory whiteness, the petals and the trowel-shaped lip being richly barred and spotted with rich velvety purple markings. Nearly allied to the *Maxillarias*, and one of the most distinct and pleasing of its kind.

CYMBIDIUM.—The two species shown were *C. Devonianum*, from the Khasia Hills, and *C. giganteum* var. *Lowii*, another Indian species, and a great favourite with collectors, as it blooms profusely, and its blossoms endure fresh for a period of ten or twelve weeks after their buds expand. The colouring is peculiar and attractive, the perianth being of a warm greenish-yellow, the boat-shaped lip being white with the central portion painted with cinnabar.

KEIFERSTEINIA.—A solitary species, *K. graminea* was shown an Orchid of considerable botanical interest, but not showy.

LÆLIA.—Twelve species and varieties were shown, the most beautiful being the several varieties of *L. elegans*, and *L. Schilleriana*. *L. albida*, whitish; *L. autumnalis*, rose-purple; *L. bella*, a rare and valuable variety already alluded to elsewhere; *L. cinnabarina*, *L. purpurea alba*, *L. labiata* and *L. elegans*. *Walstenholmia* were all staged in good condition.

LEPTOTES.—*L. bicolor* was the only species represented. It is a dwarf epiphytal kind, with terete channelled foliage, and bears showy white-petalled flowers, the lip being stained with rose colour or purple. This plant is now referred to the genus *Tetramicra*, which see in accompanying list.

LUDDEMANNIA.—A curious genus supposed to have a marked tendency towards a dwarf habit. Its affinities are with *Acineta* or *Peristeria*.

LYCASTE.—Three species only were shown, viz., *L. gigantea*, a strong-growing kind having greenish blossoms, the fuscous lip being fringed with longish hairs. *L. plana* and *L. Skinnerii* were also represented.

MASDEVALLIA.—This popular South American genus now numbers about one hundred species, of which nearly one-half, viz., forty-eight species and varieties, were shown on this occasion. The large and richly-coloured forms of *M. Harryana* were perhaps the most showy; there were also two fine forms of *M. Veitchii*, viz., *gigantea* and *grandiflora*. *M. Shuttleworthii* was also very attractive, as also were the great spider-like flowers of *M. chimera*. Perhaps the rarest and most interesting plant in this group was a tiny specimen of the new *M. racemosa* (= *M. Crossii*), bearing erect spikes of vivid scarlet flowers. These neat-habited plants divide the honours of what are known as "Cool Orchids" with the genus *Odontoglossum*, and like them often have especial greenhouses devoted to their culture. Among the rarer kinds we noted *M. amabilis*, *M. Armini*, *M. Backhouseana*, *M. civilis*, *M. Gaireana*, *M. Houlteana*, *M. psittacina*, *M. tridactylites*, *M. trichæte*, *M. trochilus*, *M. Wagneriana*, and *M. xanthina*, all hearty and well grown.

MAXILLARIA.—The most remarkable species in this group was the new *M. Sanderiana*, elsewhere alluded to in this report. *M. luteo-alba*, *M. triangularis*, *M. Turneri*, *M. Harrisonii*, and *M. triangularis* were also represented in good condition.

MESOSPINDIUM.—This genus, now more generally referred to *Odontoglossum*, was represented by *M. sanguineum* only, a bright rosy-flowered plant, not unlike the rare *Odontoglossum roseum* in general habit and colour of its flowers.

MEGACLINIUM.—A small genus of African Orchids, interesting as being representative of the Eastern bulbophylls. The small dark purple or brownish flowers are borne on a curious wavy-margined leaf-like spike. The plant exhibited came from Mr. R. Lindsay, Curator of the Royal Botanical Gardens, Edinburgh.

ODONTOGLOSSUM.—Of all the cool growing or temperate Orchids, those of this group are now the most in favour with amateur cultivators, and without a doubt *O. Alexandræ* is to-day the most popular of all Orchidaceous plants whatever, it being grown literally by the million in this country. Among the sixty-six species and varieties shown at the Conference, the following seemed especially worthy of extended notice: Mr. J. T. Peacock sent a well-grown specimen of *O. Wilckeanum*, which may be

best described as a pale-coloured form of *O. luteo purpureum*, having narrow yellow-fringed petals blotched with chocolate-brown markings. A plant marked *O. hybrid* (?) reminded one of *O. Lindleyanum* (= *O. epidendroides*) or of *O. Wallisii*, having a pale-yellow starry perianth with blotches of a reddish-brown colour. In Mr. Peacock's group I also noted *O. Hallii*, from the Lloa Valley; *O. Hallii xanthoglossum*, from Ecuador; and typical *O. luteo purpureum*, from New Granada; these, together with the *O. Wilckeanum* above mentioned, forming a most interesting group, showing some of the most marked variations of a single species under different geographical conditions.

O. hebraicum, also from Mr. Peacock, reminds one of *O. nævium majus* in habit of growth and inflorescence, but the flowers are larger, of a more creamy-yellow hue, the sepals being dotted with reddish-brown in a linear manner. It is quite possible that this plant represents *O. nævium majus* in the upland districts of Columbia, where it is found growing wild.

O. Andersonianum is a well-known and one of the most beautiful forms or varieties of what we now call *O. Alexandræ* (Bateman), but which the late Prof. Lindley had previously named *O. crispum*. It is rather singular that Lindley, in describing the colour of the flower, says that it is *yellow*, so, that either he was misled by the dried specimen which he had before him, or, as might be quite possible, he really had a yellow-flowered variety. When Weir and Blunt first found *O. Alexandræ*, and sent home living plants, all the varieties were white, and the yellow varieties, or so-called hybrids, did not appear for some years after the first introduction of this now popular species. *O. Andersonianum* may be taken as a typical yellow *O. crispum*, some of its forms being suffused with pink on pale cream-coloured grounds, the sepals and petals being more or less spotted with reddish-brown markings. It is a native of New Granada. *O. Ruckerianum*, another typical form of *O. crispum*, is similar to *O. Andersonianum*, but the sepals and petals are copiously suffused with rosy-purple or lake colouring, their margins being whitish and elegantly crimped; but there can be no doubt but that these two forms are united by intermediates. *O. Ruckerianum punctatissimum* differs from the typical form in having a profusion of dots instead of well-marked spots or blotches.

Mr. Pollett's form of *O. Ruckerianum*, a very beautiful one,

was remarkable, inasmuch as the spots assumed a bar-like arrangement on the sepals. His *O. Andersonianum superbum* again had buff-coloured sepals and petals, suffused with pink and with dark red markings. *O. Alexandræ Bonnyana* is a large, broad-petalled variety, white, with pink-flushed sepals and petals, the sepals only having one large cinnabar blotch situated at a point about two-thirds of their length from the ovary.

O. polyxanthum came from several exhibitors, and at first sight looks like a paler, less heavily-blotched *O. triumphans*. Some, however, believe it to be of hybrid origin, and *O. triumphans* × *O. maculatum* or *O. nebulosum* have been suggested as possibly its parents. *O. triumphans* is a native of Peru, however, while *O. nebulosum* is from Mexico, as is also *O. maculatum*, so that I prefer here to consider *O. polyxanthum* as merely a geographical form of *O. triumphans*. The flowers really resemble typical *O. triumphans* in form and size, the bases of the perianth divisions being clear yellow, petals dotted or lined, the sepals only being heavily blotched with dark red brown; the cordate lip is crimson-brown, margined with creamy yellow. This description is from Mr. Duke's specimen.

O. sceptrum reminds one of a short-perianthed form of *O. luteo purpureum*, having flowers only about half the size, colour yellow, blotched with brown, a native of Colombia. Mr. Lee showed a pale-flowered variety. Mr. Duke had a pale form of *O. crispum*, resembling *O. hebraicum*, but the flowers were less copiously spotted than is usually the case in that variety. Mr. Smeed had a fine pink flowered *O. Alexandræ*, of which the petals were profusely dotted in the centre, the sepals less so, the lip being pure white with a golden crest, its lower or apical portion being blotched with chocolate. *O. Alexandræ* var. *guttatum* seems intermediate between *O. Andersonianum* and *O. hebraicum*. Messrs. Sander, of St. Alban's, had a fine series of *O. crispum* (yellow grounds) and *O. Alexandræ* (white grounds), among which were many of the reputed hybrid forms. Both the yellow and the white forms varied much in breadth of perianth segments, and in depth, size, and variety of marking. In one variety the yellow colouring matter is emphasised, or focussed, as it were, in a rich golden lip-crest, while in another the red colouring comes out either as blushing perianth segments, or in the form of red spots or blotches. Looking at this bank of imported plants, it was at once apparent that the sooner we cease naming them in

Latin the better. No two forms were alike, and those exhibited proved very conclusively that there is a sliding scale of varieties between even the most distinct and remarkable of the named kinds. It is convenient in gardens to have some ready means of distinguishing these beautiful forms, but it is quite clear that the varieties of *Odontoglossum crispum* are not more deserving of Latin varietal names than are the numerous wild forms of *Anemone coronaria* or *Ranunculus asiaticus*. Mr. Lee had some fine broad-petalled forms of *O. Alexandræ*, and a good plant of *O. crispum Jenningsianum*, which reminds one of *O. Ruckerianum*. This plant was also represented in the Sanderian collection. *O. Alexandræ* var. *Chestertonii*, also from Mr. Lee, had white sepals and petals, the latter with heavy chocolate spots, the sepals being barred with the same colour. Mr. Brymer had a very showy variety of *O. Alexandræ*, with its sepals and petals suffused with rosy-lake, the column heavily blotched with dark chocolate brown.

Perhaps, however, the gem of all the *O. Alexandræ* group is *O. Cooksoni*, which has white crisp-edged sepals and petals of medium breadth, each ornamented with two or three bold blood-red blotches. The markings on the sepals are bar-like. This variety has been illustrated in the "Orchid Album," and is to *O. Alexandræ* what *O. Veitchianum* is to *O. Pescatorei*, than which no higher praise can to-day be given.

In addition to those named above, the following species and varieties were shown: *O. coronarium miniatum*, *O. citrosmum* and its variety *album*, *O. Uro-Skinneri*, *O. Pescatorei*, *O. Phalænopsis*, *O. coradinei*, *O. odoratum*, *O. hystrix*, *O. bictoniense*, *O. maculatum*, *O. cristatum*, and others.

ONCIDIUM.—*O. Marshallianum* and *O. macranthum* were the most handsome of the kinds shown, but *O. papilio* (= the "Butter-fly Oncid" of Demerara) attracted much attention, as, also, did the great paniced inflorescence of *O. altissimum*, *O. sarcodes*, *O. sphacelatum*, and the blotched and diadem-like *O. serratum* (= *O. diadema*). *O. juncifolium* is remarkable as belonging to the terete or onion-leaved section, which small group also comprehends the new *O. Jonesianum*, one of the most distinct and showy of new additions to this genus.

PANISEA.—Only one species, *P. (Cœlogyne) uniflora*, was shown. It is botanically interesting, but not showy.

PESCATOREL.—A small genus of leafy evergreen orchids, nearly related, indeed now generally referred, to *Zygopetalum*. *P. Lehmanni*, the only species represented, has showy, purplish flowers, with a curiously ridged disc on the lip.

PHAIUS.—Three species were shown, viz., *P. maculatus*, *P. grandifolius* var. *Wallichii*, and *P. albus*, the last-named being a deciduous-leaved plant, with elongated rod-like pseudo-bulbs, and now more generally called "*Thunia alba*" in gardens. All are well-known garden plants.

PHALÆNOPSIS.—These "Moth Orchids," as they are popularly called, comprise the very *élite* of the epiphytal Orchids, so far as beauty and graceful habit are concerned. Unfortunately, they are not easy to grow successfully many years together. Only four kinds were shown, viz., *P. Parishii*, a splendidly-grown plant from the Kew collection; *P. Luddemannia*, *P. tetraspis*, a rare novelty, with milk-white flowers; and, above all, the lovely rose-tinged variety of *P. amabilis* (the queen of Orchids), known as *Sanderiana*, a lovely plant from a little visited island of the Philippine Archipelago.

POLYSTACHYA.—A small genus of Orchids from the West Indian Islands, *P. pubescens* having erect spikes of yellowish flowers, the sepals being lined or streaked with purple. Kew.

PONTHIEVA.—Terrestrial South American herbs near *Neottia*. *P. maculata*, the species represented, has spotted leaves.

RENANTHERA.—A showy genus of Eastern epiphytes, near *Vanda*. *R. coccinea*, the species exhibited (not in bloom), comes from China, and bears large panicles of Indian red, yellow-barred flowers; a remarkable plant, well grown at Chatsworth and elsewhere.

RESTREPIA.—A most interesting little group of plants. *R. antennifera*, the plant shown, having yellow flowers dotted with purple and long antennæ-like petals.

SACCOLABIUM.—Only two species of this showy genus were represented, viz., *S. retusum* and *S. ampullaceum*, neither remarkable as showing good culture.

SCUTICARIA.—Curious plants, having singular thong-like leaves depending from the branch or block on which they grow. *S. Hadwinii*, named in compliment to one of the earliest of amateur Orchid growers at Liverpool, has yellow flowers barred with cinnabar, and is very showy.

STELIS.—Singular little plants with small and inconspicuous flowers. Nearly related to *Pleurothallis* and *Masdevalls*. *S. muscifera* has brownish-purple hairy or ciliated blossoms resembling small flies, hence its specific name.

LEPTOTES.—See **TETRAMICRA**.

THUNIA.—See **PHAIUS**.

TRICHOPILIA.—A showy genus of South American rock plants or epiphytes. *T. coccinea* was the only species shown. Flowers, dark reddish-crimson, with an open convolute *Gloxinia*-like lip.

UROPEDIDIUM.—This genus, founded by Lindley, from a specimen discovered by M. Linden, is now generally supposed to be a pelariad form of *Cypripedium caudatum*, from which plant it differs only in having three anthers developed instead of two, and the lip, instead of being saccate or slipper like, is petaloid or strap shaped, attaining the same length as the long lace-like petals. Two well-grown specimens were exhibited in flower.

VANDA.—A well-known showy genus of Eastern epiphytes, which are great favourites in Orchid houses from their graceful and evergreen habit of growth. The sky-blue *T. cœrulescens*, and the white *V. Denisoniana*, were very lovely, as also were *V. teres*, and several well-bloomed plants of *V. suavis*, including Veitch's, Paterson's, and two or three other forms.

WARSCIEWICZELLA.—A small genus, related to *Huntleyas*, *Bolleas*, *Pescatoreas*, and *Zygopetalums*. *W. Wailesiana*, with purplish flowers, was the only kind shown.

ZYGOPETALUM.—A well-known Western genus of winter and spring-blooming Orchids, of which *Z. Mackayi* is the type, and *Z. maxillare* one of the best. The only plant now shown was the hybrid, *Z. Sedeni*, raised by the Messrs. Veitch, and alluded to elsewhere.

FIRST-CLASS CERTIFICATES WERE AWARDED BY THE FLORAL COMMITTEE
TO THE FOLLOWING :—

To Sir TREVOR LAWRENCE, Bart, M.P., for

- No. 1. *Luddemannia Lehmanni*.—This is a most remarkable plant, and is alluded to in Herr Reichenbach's communication. It is variable in its inflorescence, and allied to the Acinetas, the plant at the Conference bearing a couple of drooping spikes or racemes, the most prominent colour being of a rich old gold or orange hue. The bulbs are ovoid, slightly channelled; the leaves a foot long by about three inches in breadth. It is a plant extremely rare in collections.

To WM. LEE, Esq., Downside, Leatherhead, for

- No. 2. *Cypripedium Godefroyæ*.—A remarkable dwarf-growing Lady's Slipper, recently introduced from Cochin China by M. Godefroy, of Augentieul, near Paris. In habit and in its marbled leafage it closely resembles *C. niveum*, but the flowers are more heavily dotted and blotched with purple on a white ground. The plant has been well figured in the *Garden* and also in the "Orchid Album," and is one of the most remarkable and showy of all the new kinds.

To MR. BALLANTINE, Gardener to Baron Schröder, The Dell,
Egham, for

- No. 3. *Odontoglossum Alexandræ Veitchii*.—A strong-growing broad-petalled variety, of really first-class merit. The sepals and petals are snow-white, spotted distinctly with cinnabar brown, the lip being white with a rich yellow crest. It was certificated under the name of *O. crispum Veitchii*, but to avoid confusion, I have throughout this report used Lindley's name only for the varieties having a yellow ground colouring, and have in like manner reserved the name *O. Alexandræ* for such as have white grounds. If this plan were generally followed, both

names would be employed rightly, so far as priority is concerned, and each name would possess a really distinctive meaning.

- No. 4. *O. Alexandra Sanderianum*.—A variety much admired by connoisseurs, and of great beauty. The sepals and petals are pure white, broad, and overlapping the rich cinnabar or reddish blotches covering the centres of the perianth segments and leaving only a narrow border of startling whiteness.
- „ 5. *O. excellens*.—A very beautiful variety, possibly of hybrid origin. The sepals and petals are broad and firm, being of a creamy-white, or yellowish colour, spotted vividly with chestnut red.
- „ 6. *Maxillaria Sanderiana*.—This was one of the most distinct of all the new species of Orchids shown. It resembles *M. grandiflora* somewhat, but is dwarfer, and more compact. The flowers are of ivory-like whiteness, bold and massive, and are marked with very dark maroon or crimson-bronze towards the bases of the sepals and petals.

To Mr. B. S. WILLIAMS, Upper Holloway, for

- No. 7. *Masdevallia Harryana lateritia*.—A robust and free-growing variety of the well-known type, having flowers nearly half as large again, of exquisite form, and of the most pleasing shade of violet or amethyst-crimson. As seen in contrast with several other forms, it stood out as a great advance in form and vivid colouring.

To MESSRS. FRED. SANDER AND CO., St. Albans, for

- No. 8. *Cattleya Wagneriana*.—A robust plant of compact growth, with thick leathery leaves, and massive flowers. The sepals and petals are wax-like, and of great substance, being of glistening whiteness, except the throat of the involute lip, which is of a soft golden-yellow colour. It is quite an addition to a beautiful genus.
- „ 9. *C. maxima Peruviana*.—A noble variety of a rare and beautiful species, which until quite recently has been a

rarity in our collections. It is larger than the type, the sepals and petals being of good substance and fine form, the veined lip being of a rich amethyst-purple colour margined with rose, and this is emphasised by a narrow golden band running down the disc of the lip.

- No. 10. *C. Suarissima Schroderiana*.—A vigorous-habited variety of the type, having pure white sepals and petals, the lip being enriched with purple markings in a very pleasing way. Named in honour of one of the most distinguished amateurs, an honour it richly deserves.
- „ 11. *C. Bluntii*.—A distinct and handsome plant, named in compliment to a well-known collector of Orchids abroad. Although similar in some respects to *C. Wagneriana*, it is distinct enough on its own merits to deserve the award it obtained. It has larger expanded flowers, the sepals and petals being pure white, and the lip suffused with rose colour, having a rich gold blotch on the disc.
- „ 12. *O. crispum Ruckerianum punctatissimum*.—A strong-habited variety having the creamy yellow flowers of the type, which are, however, as the name implies, more minutely dotted with cinnabar red markings.

CULTURE.

From a gardening point of view, “good cultivation” is a most important factor in a floral display of any kind. It is what the gardener travels about to see, and until quite recently it was to see his own big successes in this direction that the public paid for admission to our flower shows and gardens. After all it is a pleasant surprise that we cannot claim any superlative examples of the “elephantine” type for our Orchid Conference. For example, there was nothing like the six or seven fine specimens of *Odontoglossum vexillarium*, which were shown at the Paris Exhibition on May 20th, one of which bore two hundred flowers, and the whole group, as arranged in a large perforated iron vase, bore about five hundred blossoms; and a “made-up” plant of *Vanda teres* (also from the Rothschild gardens at Ferrières, over which M. Bergmann presides), bearing at least three or four hundred expanded flowers. Although we had no “made-up”

specimens of this calibre at our Orchid Show, Mr. James Douglas, of the gardens at Great Gearies, has more recently exhibited before the Royal Horticultural Society a beautiful *bonâ fide* plant of *Odontoglossum vexillarium*, bearing two hundred flowers. But, on the other hand, we may point out that the general level of cultivation, as shown by the whole mass of Orchids at the Conference, was very high, and we selected the following for especial notice. But as a general list of amateur and trade exhibitors, with lists of the species shown by them, will be appended to this report, it is unnecessary that I should do more here than refer to their general excellence. The President of the Society, Sir Trevor Lawrence, Bart., Baron Schröder, Mr. Lee, The Duke of Devonshire, Mr. Peacock, Mr. Pollett, Mr. Southgate, Mr. W. Brymer, and Mr. Neville Wyatt, amongst other distinguished amateurs, had very remarkable collections of plants. Taking the exhibits generally, the *genera* best represented were *Odontoglossum*, *Cypripedium*, *Dendrobium*, *Masdevallia*, and the *Cattleyas* and *Lælias*.

From the Kew collection there was a well-flowered plant of *Epidendrum bicornutum*, a plant by no means easy to grow, and with it a remarkable specimen of the dwarf *Phalenopsis Parishii*, covered with its dainty white and purple flowers, also a well-bloomed *Cattleya Skinnerii alba*. Mr. De B. Crawshay exhibited a remarkably strong piece of *Cattleya gigas*, imported in September, 1884 bearing five flowers on its last made growth. From Chatsworth came a plant of the Chinese climbing Orchid *Renanthera coccinea*, about nine feet in height. As shown this splendid plant was not in bloom, but it is well known as being one of the very few plants of this species which—as its old flower spikes testified—has flowered regularly for the past ten or more years. At Chatsworth it is grown in the large conservatory on the trunk of a small birch tree, to the shining bark of which its thong-like roots firmly adhere. Messrs. Sander and Co. exhibited a remarkably fine plant of *Cattleya Skinnerii alba*, and this plant was sold by them at the Conference for two hundred and fifty guineas, a like sum having been realized by Messrs. Veitch for *Lælia bella* about the same time. It should be borne in mind, however, that these high prices represent to a great extent rarity rather than good culture alone. Some strong plants of *Odontoglossum Alexandra*, well bloomed and representing fine variations, came from Mr. A. H. Smee's garden, at the Grange, Wallington,

Surrey, and these identical plants were interesting as having been grown out of doors in a sheltered nook over a running stream for four months (*i.e.*, June to October) during 1884. The vexed questions with regard to the "pruning" and "manuring" of Orchids were not touched upon in a very decided manner, although a good pruned specimen, *Dendrobium nobile*, was exhibited; and at a previous meeting, on April 21st, of the Society, Mr. Prinsep showed a splendid example of *Dendrobium nobile*, which had been pruned by him. It had forty-eight growths all more or less leafy, and bore six hundred and thirty expanded flowers.

As to manures and their application, the consensus of opinion went to show that when used in solution and sprinkled sparingly on the floors and stages, the plants were generally benefited by their application, but that the direct application of solid or liquid manures to the compost in which epiphytal Orchids are grown is a dangerous proceeding, liable to cause serious injury.

ARRANGEMENT.

The six or seven hundred plants exhibited were arranged on tables down the centre of the great Conservatory, thus giving a vivid mass of colour amid the greenery afforded by the ordinary occupants, such as palms, ferns, dracænas, &c., of the place. Cut flowers of Orchids were not so abundant as one might have expected, seeing that many amateurs might thus have added to the interest of the exhibition without in any way risking the health of their plants. If another display of the kind is held, it is to be hoped that this point will be brought before growers who may reside at a distance, since the expenses of forwarding cut blooms is a mere trifle as compared with the carriage of the plants themselves.

As we have said, there were no "specimens" of the "elephantine" or flower-show type present, and this in itself, as we have already observed, was a subject for congratulation rather than for regret. It is to be sincerely hoped that the day of "made-up" specimen Orchids is over, and that in future we shall see *bond fide* single plants as grown only at our exhibitions. The bad habit of taking half-a-dozen small plants (more or less as the case may be) of *Cattleya* or *Dendrobium*, and "bedding them out" in a big tub of moss and then exhibiting what is really a group of plants as a "specimen," is

a fraud so patent that the wonder is that custom has tolerated the practice so long. Fortunately, there was none of this kind of ingenuity at the Conference, and if, henceforth, the Royal Horticultural Society veto the thing and offer prizes for *bond fide* single plants, it will lead to a better state of things. After all, even in the case of *bond fide* specimen plants, mere size is not essential to true beauty; and instead of encouraging size only, we might do much better by offering prizes for the best and most artistic groups of Orchids arranged in banks of fresh green ferns, or other suitable foliage plants.

PAPERS READ AT THE CONFERENCE.

Professor H. G. Reichenbach, of Hamburgh, contributed a short but extremely interesting botanical paper, the first portion of which referred to the now interesting question of "Proliferous Orchid Roots." The second portion referred to the slowly increasing advent of "Three-lipped Orchids," and the third part to an erratic *Peristeria*, *Acineta*, or *Luddemannia*, with polymorphic and possibly bi-sexual flowers. Mr. Harry Veitch's paper on the "Hybridization of Orchids," and the President's felicitous speech, were the masterpieces of the whole proceedings, and the value of Mr. Veitch's paper was much enhanced by the clear illustrations and actual specimens by which it was accompanied. As this and other communications read will appear in type with this report, it is perhaps unnecessary that I should say more respecting them except to point out to practical gardeners, and more especially to the younger members of the craft, what a wide and open field there is around them for original observation, experiment, and research. Mr. O'Brien's paper on "The Cultivation of Orchids" also contains much valuable information. Perhaps his condemnation of the use of the syringe amongst Orchids was a little too sweeping, and the mention of particular firms or manufactories is always a questionable policy in papers of this description. The discussion which followed Mr. O'Brien's paper was mainly devoted to the praises of a new manure of no especial interest to us in this report. One little fact brought out, however, was the desirability of resting Orchids, especially when small or weakly, by removing their flower spikes either before or immediately after their flower-buds expand.

It is somewhat to be regretted that a paper dealing with the naming of Orchids was not read at the Conference, especially as all interested in the matter, whether botanists, amateurs or gardeners, are agreed that it is a subject demanding urgent attention. It is to be hoped, however, that another opportunity may arise at which some definite and practicable scheme for the naming of all garden varieties of Orchids and other plants may be proposed and adopted under the auspices of the Royal Horticultural Society. The one great step in advance made at the Narcissus Congress was the resolution to use Latin names for wild plants only, and to adopt popular English names for mere garden forms. Many of the Cattleyas and Odontoglossums, for example, are really not more distinct from each other than are seedling Narcissi, Primroses or Chrysanthemums, and to give mere garden hybrids and slightly different native or wild seedlings long Latin names only increases a confusion which is becoming unbearable. Seeing that some definite understanding must sooner or later be arrived at on this question, it seems almost a pity that this question of names was not the first subject brought before the Conference. At the last moment the subject was postponed in the hope that Professor Reichenbach, together with other botanists, might be induced at some future date to attend and settle the matter. The Editor of the *Gardeners' Chronicle* puts the whole matter "into a nutshell" as follows: "The subject of nomenclature was not only crowded out from a full programme, but it was wisely eliminated till such time as the great authority of Professor Reichenbach could be effectively brought to bear upon it."

It is one of the curious anomalies of our time that with all the facilities afforded by English gardens, and our two national *herbaria* combined, new or critical species of Orchids cannot be named in this country.

GENERAL RESULTS.

If it be true that "the proof of a pudding is in the eating thereof," it will readily be granted that the good of a Conference consists of the results gained. In the present case we had decidedly the finest and best representative collection of Orchids brought together that has ever been seen in one place, or in other words a flower show quite unique of its kind. Visitors were

enabled to see species and varieties of extreme rarity, beauty and value under the most convenient of conditions. The exhibition of materials and appliances for the culture of Orchids was also most instructive. All three of the papers read at the Conference, together with the opening speech of Sir Trevor Lawrence, Bart., form a most valuable contribution to horticultural literature, and to select only one example, viz., Mr. Veitch's paper on "Hybridization," it is without doubt the most interesting paper read before the Society during modern times. As to the discussions which as a rule follow the reading of papers, one need in this case say nothing, and as to the question of nomenclature nothing was attempted. It would not be fair to conclude a report of this kind without alluding to the generous manner in which the whole of the horticultural and daily press assisted the Conference by reporting and illustrating the proceedings in the most complete manner.

F. W. BURBIDGE, F.L.S.

DUBLIN,

July 6th, 1885.

ALPHABETICAL LIST OF THE GENERA OF ORCHIDS.

The following list has been compiled and re-arranged from Hooker and Bentham's "Genera Plantarum," vol. iii. pp. 460—636, and may be interesting to the numerous amateurs who cultivate Orchids. All the *genera* of Orchids recognised by the late Mr. Bentham are included, but only a proportion of the total number (334) is generally met with in cultivation; these are distinguished by being printed in black type. A few notes on culture and other matters of popular interest have been added, each genus being numbered consecutively from 1 to 334.

In the "Genera Plantarum" above cited will be found all the literary references necessary for the botanical student, together with many citations of plates and figures, which, from considerations of space, we are compelled to omit. The indications that are here supplied must therefore be considered as illustrative but not exhaustive. On the other hand, we have inserted refe-

rences to the plates in the "Orchid Album," and to the full enumeration of cultivated species of a large number of the *genera*, as drawn up by Mr. Hemsley, in our columns, and also to most of the figures given in the *Gardeners' Chronicle*, but not cited in the "Genera." The * indicates that a figure will be found in the volumes of the *Gardeners' Chronicle*. F. W. BURBIDGE.

1. *ABOLA*, Lindley.

A small-flowered epiphyte, of no beauty, from the Colombian Andes.

2. *ACACALLIS*, Lindley.

One species, from Northern Brazil.

3. *Acampe*, Lindley.

Eight or nine species, from India, China, South Africa, &c. This genus approaches *Sarcanthus*. Species not showy.

4. *Acanthephippium*, Blume.

Three or four species, from India and the Malayan Archipelago. Flowers fleshy, on erect spikes, not very showy. See Bot. Reg., t. 1730, and 1846, t. 47; Bot. Mag., t. 4492. For list of species, see Gard. Chron., 1882, xviii., p. 565.

5. *Aceras*, R. Brown.

One species, in Europe and North Africa. Rehb., Icon. Fl. Germanica, t. 357; Barla. Icon. Orch. Alp. Marit., t. 23.

6. *ACIANTHUS*, R. Brown.

Seven species, from Australia, New Zealand, and New Caledonia. See Rehb. f., Xen. Orch., t. 187.

7. *Acineta*, Lindley.

Eight species, from Colombia, Central America, and Mexico. Flowers resembling those of *Peristeria*, being fleshy, white, or yellow, and heavily spotted or dotted. Inflorescence pendulous, as in *Stanhopea*,—like which, the plants should be grown in baskets. See Bateman's Orch., Mexico and Guatemala, t. 8; Bot. Mag., t. 4156, 4203; Bot. Reg., 1843, t. 78; Gard. Chron., 1879, xi., 235.

8. *ACRIOPSIS*, Reinwardt.

Three or four species, from Burmah and Malaysia. Not showy.

9. **Achrocæne**, Lindley.

One species, from the Sikkim Himalayas. See Gard. Chron., 1882, xviii., 428.

10. **Ada**, Lindley.

One species only known, from the Colombian Andes. It was first called *Brassia cinnabarina* by Lindley. Showy spikes of vermilion-tinted flowers. See Bot. Mag., t. 5435 ; Orchid Album, t. 53.

11. **ADENOCHILUS**, Hooker.

Two species only, from New Zealand and Australia.

12. **Aeranthus**, Lindley.

Two species, both from Madagascar. See Gard. Chron., 1879, xi., 235.

13. **Aerides**, Loureiro.

Ten to fifteen species are found in India, Malayan Archipelago, Philippine Islands, China, and Japan. Nearly all the species are showy and fragrant, and some are variable. See Orchid Album, t. 21, 116, 160 ; Bot. Mag., t. 4049, 4139, 4427, 4982, 5728, 5798. The following species are figured in the Gard. Chron. :—

**A. crassifolium*, 1877, viii., 493.

**A. cylindricum*, 1875, iii., 537.

**A. odoratum*, 1845, 436.

**A. odoratum purpurascens*, 1881, xvi., 597.

**A. quinquevulnera*, 1845, 100.

**A. Schröderi*, 1880, xiii., 493 ; 1882, xvii., 341.

14. **AGANISIA**, Lindley.

Six species, from Tropical America. See Bot. Reg., 1840, t. 32.

15. **Agrostophyllum**, Blume.

Five or six species, from India and the Malayan Archipelago. For list of species see Gard. Chron., 1882, xviii., 812.

16. **Alamania**, Llave and Lexarza.

One species, from Mexico. See Gard. Chron., 1883, xix., 764 ; 1879, xi., 235.

17. *ALTENSTEINIA*, Humboldt, Bonpland, and Kunth.

Twelve species are known, from the Andes of Tropical America.

18. *Amblostoma*, Scheidweiler.

Three species, from Brazil, Peru, and Bolivia. For list of species see Gard. Chron., 1883, xix., 660.

19. *Angræcum*, Thouars.

Twenty-five species are known, from Tropical and South-east Africa, Madagascar, Bourbon, and Mauritius. *A. sesquipedale* is the largest flowered of all Orchids, and also possesses the longest spur or nectary. *A. funale* is a rare leafless epiphyte, and the leaves of *A. fragrans* have been used as a kind of tea. *A. falcatum* is the most northern species, being found in Japan. See Orchid Album, t. 41, 162, 179; Bot Mag., t. 2097, 4159, 4295, 4370, 4761, 4782, 5113, 5170, 5589, 5624. The following species are figured in Gard. Chron.:—

**A. eburneum* superbum, 1873, 217.

**A. Ellisii*, 1875, iii., 277.

**A. fastuosum*, 1885, xxiii., 533.

**A. funale*, 1846, 135.

**A. Kotschyi*, 1880, xiv., 693.

**A. Scottianum*, 1880, xiv., 137; 1882, xvii., 342.

**A. sesquipedale*, 1857, 253; 1873, 255; plant, 1874, 346.

20. *Anguloa*, Ruiz and Pavon.

Three species and several varieties are known, from Colombia and Peru. They are strong-growing plants, with the habit of *Lycaste*, and having great waxy flowers like Tulips, solitary, on scapes springing from the base of the pseudo-bulbs. See Bot. Mag., t. 4313, 4807, and 5384; Orchid Album, t. 19, 133.

21. *Anæctochilus*, Blume.

From ten to twenty species and varieties are in cultivation, and are mainly remarkable for the beauty of their foliage, which is velvet-like in texture, lined or suffused with golden, silvery, or bronzy lines. Borneo, Ceylon, India. See Bot. Mag., t. 4123, 5208; Bot. Reg., t. 2010.

22. Ansellia, Lindley.

One species, originally found on the stem of a Date Palm at Fernando Po, but two or three remarkable varieties have since been introduced. Tropical and South Africa. See Bot. Mag., t. 4965 ; Bot. Reg., 1844, t. 12 ; 1846, t. 30.

23. Anthogonium, Lindley.

Only one species known, from the Himalayas and Burmah. See Gard. Chron., 1882, xviii., 812.

24. APHYLLORCHIS, Blume.

Four or five species, native of India and the Malayan Archipelago.

25. Aplectrum, Nuttall.

One species, known in North America as the "Putty Root," and a near relative of the Corallorhizas.

26. APOSTASIA, Blume.

Four species, native of India, Malayan Archipelago, and Australia. Not showy, but of special interest to botanists.

27. APPENDICULA, Blume.

Species twenty, from Malacca, Malayan Archipelago, and Pacific islands. Not showy.

28. Arachnanthe, Blume.

Six species, from Malaysia and the Himalayas. *Vanda Lowii* and *V. Canthcartii* have been included in this genus, which approaches *Renanthera* and *Vanda*. See Bot. Mag., 5475, 5845.

29. Arethusa, Linnæus.

One species, found in North America and in Japan. See Bot. Mag., t. 2204 ; Bot. Reg., 1072.

30. ARGYNCHIS, Blume.

One species, from Java.

31. ARNOTTIA, A. Richard.

Two species only known, from Mauritius.

32. Arpophyllum, Llave and Lexarza.

About six species, from Mexico, Central America, and Jamaica. When well grown they are distinct and

showy, fine examples having formerly been exhibited.
For list of species see Gard. Chron., 1881, xvi., 428 ;
1879, xi., 235.

33. **Arundina**, Blume.

Five to ten species, from India, Malayan Archipelago,
and South China. Of reed-like habit, with showy
flowers, the Arundinas represent the Sobralias of the
Western Hemisphere. See Orchid Album, t. 139.
For list of species see Gard. Chron., 1880, xiv., 636.

34. **Aspasia**, Lindley.

Five or six species, from Brazil and Central America.
See Gard. Chron., 1879, xi., 235 ; Bot. Mag.,
t. 3769, 3962 ; Bot. Reg., t. 1907.

BARKERIA (see Epidendrum), Gard. Chron., 1879, xi., 235 ;
Orchid Album, t. 148.

**B. elegans* (cyclotella), Gard. Chron., 1872, xiii., 80, 235.
See Bot. Mag., t. 3818.

35. **BARTHOLINA**, R. Brown.

One species, from South Africa.

36. **BASKERVILLEA**, Lindley.

One species, wild in Peru.

37. **Batemannia**, Lindley.

One species, from Guiana. See Gard. Chron., 1879, xi.,
235, Bot. Mag., t. 3818.

**B. meleagris*, Gard. Chron., 1881, xvi., 209.

38. **BICORNELLA**, Lindley.

Two species, from Madagascar.

39. **Bifrenaria**, Lindley.

About ten species, from Guiana and Colombia. See Bot.
Mag., t. 2789, 2927, 3597, 3629 ; Bot. Reg., t. 879,
1566, 1875 ; 1839, t. 12.

40. **BIPINNULA**, Jussieu.

Three or four species, from South America, outside the
tropical limits. Not showy.

41. **Bletia**, Ruiz and Pavon.

About twenty species, from Tropical America, China and
Japan. *B. hyacinthina*, *B. Sherrattiana*, and one or

two others are showy. See Bot. Mag., t. 3736; Bot. Reg., 1847, t. 60. For list of species, see Gard. Chron., 1882, xviii., 681; see also Gard. Chron., 1879, xi., 236.

BOLLEA (Zygopetalum).

**B. Patinii*, Gard. Chron., 1875, iii., 9.

BOLBOPHYLLARIA (see *Bulbophyllum*), Gard. Chron., 1879, xi., 236.

42. **Bonatea**, Willdenow.

Two or three species are known, from South Africa. See Bot. Mag., t. 2926.

43. **Brachionidium**, Lindley.

Three species from Colombia and Bolivia. Epiphytes, nearly related to *Masdevalls* and *Pleurothallis*. See Gard. Chron., 1881, xvi., 172.

44. **BRACHTIA**, Reichenbach f.

Three species, from Colombia.

45. **BRACHYCORYTHIS**, Lindley.

Four or five species, from South and Tropical Africa.

46. **Brassavola**, R. Brown.

About twenty species, from Tropical America and Mexico. Epiphytes, with terete foliage, except *B. glauca* and *B. Digbyana*. Flowers white and showy. See Gard. Chron., 1879, xi., 236; Bot. Mag., t. 543, 2878, 3229, 3722, 3761, 3782, 4021, 4734; and Bot. Reg., t. 1465, 1561, 1914; 1839, t. 5; 1840, t. 39.

**B. stricta*, fruit of, Gard. Chron., 1885, xxiii, 85, 505.

47. **Brassia**, R. Brown.

About twenty species are known, from Tropical America, Brazil, and Mexico. Flowers greenish, spotted with brown, in spikes like *Odontoglossum*. See Orchid Album, t. 152; Gard. Chron., 1879, xi., 236; Bot. Mag., 1691, 3451, 3577, 3794, 4003, 5748; Bot. Reg., t. 832, 1754; 1841, t. 18; 1847, t. 29.

48. **Bromheadia**, Lindley.

Two species, native of Malacca and the Malayan Archipelago, forming reed-like growth in wet jungle. Showy, but not easy to grow. See Bot. Mag., t. 4001,

49. **Broughtonia**, R. Brown.

Three or four species, from Jamaica and the West Indian Islands. Sun-loving epiphytes, growing best on bare blocks. See Bot. Mag. t. 3076, 3536; Loddiges, Bot. Cab., t. 793.

50. **BROWNLEE**, Harvey.

Three or four species, from South Africa, related to *Disa*.

51. **Bulbophyllum**, Thouars.

Eighty or a hundred species are known, from India, Malayan Archipelago, Tropical Africa, Australia, New Zealand, and South America. Very few are showy, but all are interesting. In the Eastern Tropics these plants take the place of the Western *Masdevallias*. Some *Sarcopodia* and other *genera* are now placed under *Bulbophyllum*. For list of species see Gard. Chron., 1882, xviii., 52, 104, 172. See Bot. Mag., t. 4532, 5408 (*Sarcopodium*), 3605, 4088, 4166, 4267, 5050, 5288, 5309, 5316, 5329, 6119, &c.

Burlingtonia; see *Rodriguezia*, Orchid Album, t. 18.

52. **BURNETTIA**, Lindley.

One species, from Tasmania, resembling *Caladenia*, but of different habit. Not showy.

53. **CALADENIA**, R. Brown.

Thirty or forty, in Australia and New Zealand. Not showy.

54. **Calanthe**, R. Brown.

About forty species, widely distributed. Japan, Pacific Islands, New Caledonia, Madagascar, Tropical and South Eastern Africa, Central America, Mexico, and West Indies. *Limatodes rosea* is now placed in this genus. See Orchid Album, t. 31, 134. For list of species see Gard. Chron., 1879, xi., 267; 1883, xix., 636; Bot. Mag., t. 2615, 4541, 4671, 5042, 5375, 6104 (*Styloglossum*), 4704, 5312.

55. **CALEANA**, R. Brown.

Three species, from South Australia.

56. **Calostylis**, Blume.

One species only, from Java. See Gard. Chron., 1882, xviii., 812.

57. *Calochilus*, R. Brown.

Three species known, in Eastern Australia. See Fitzgerald's Aust. Orchids, and Bot. Mag., t. 3187.

58. *Calopogon*, R. Brown.

Four or five species, from North America. See Bot. Mag., t. 116; Sweet, Brit. Fl. Gard., t. 115.

59. *Calypso*, Salisbury.

One species, broadly distributed in North Europe, Asia, and in North America.

**C. borealis*, 1881, xvi., 656.

60. *Camaridium*, Lindley.

About twelve species, in Colombia, Guiana, and elsewhere in Tropical America. See Gard. Chron. 1879, xi., p. 267.

61. *Campylocentron*, Benth.

Fifteen species, from Brazil and West Indian Islands.

62. *Catasetum*, L. C. Richard.

Forty to fifty species, including *Myanthus* and *Monachanthus*, principally Brazilian and Mexican. The group is curious, as showing an approach to a dioecious development. Although not bright in colour these plants were formerly much grown. See Gard. Chron., 1879, xi., 267; Bot. Mag., t. 2559, 3262, 3329, 3514, 3590, 3802, 3823, 3923, 3929, 3937, 3942, 4017, 4792, 5202, 5399; Orchid Album, t. 83.

**C. incurvum*, Gard. Chron., 1855, 4.

C. scurra, Gard. Chron., 1877, vii., 305.

63. *Cattleya*, Lindley.

About twenty species, and varieties *innumerable, are known from, principally, Brazil and Mexico. *Cattleyas* and *Lælias* are the most showy of all Orchids. For one specimen of *C. Trianae* var. *Leeana* 250 guineas were paid, and several other varieties, such as *C. Dodgsoni*, *Osmani*. &c., have brought nearly as large a sum. The best known and most ornamental are *C. labiata*, *C. Mossiæ*, *C. Mendelii*, *C. Trianae*, *C. gigas*, *C. Dowiana*, *C. Gaskelliana*, *C. Percivaliana*,

C. Laurenciana, &c. See Orchid Album, t. 3, 6, 26, 33, 45, 69, 81, 84, 108, 112, 115, 121, 125, 144, 150, 154, 166, 178, 184; Bot. Mag., t. 2851, 3265, 3669, 3693, 3742, 3998, 4083, 4085, 4270, 4902, 4909, 4916, 5032, 5039, 5048, 5150, 5504, 5618, 5683.

For figures, see Gard. Chron. as under:—

- **C. Acklandiæ*, fruit of, 1885, xxiii., 544.
- **C. amethystoglossa* var. *sulphurea*, 1866, 315.
- **C. dolosa*, 1876, v., 430, 431.
- **C. Dowiana*, fruit of, 1885, xxiii., 501.
- **C. fausta*, 1873, 290.
- **C. fausta* var. *radicans*, 1873, 290.
- **C. gigas*, 1874, ii., 617; 1880, xiv., 269; 1882, xvii., 343.
- **C. gigas* *Sanderiana*, 1883, xx., 401.
- **C. Lawrenceana*, 1885, xviii., 374, 375.
- **C. lobata*, 1848, 403.
- **C. maxima*, 1884, xxii., 620
- **C. Mossiæ*, 1883, xx., 533.
- **C. nobilior*, 1883, xix., 729.
- **C. Percivaliana*, 1884, xxi., 181.
- **C. pumila*, a monster, 1854, 804,
- **C. Reineckiana*, 1884, xxii., 173.
- **C. Sanderiana*, 1883, xx., 401.
- **C. Skinneri*, a monster, 1884, xxi., 548.
- **C. velutina*, 1872, 1259.
- **C. Warneri*, 1883, xx., 369.

64. *CENTROPETALUM*, Lindley.

Five or six species, from the Andes of Colombia. The pretty little *Nasonia* is now placed here.

65. *Cephalanthera*, L. C. Richard.

One of the few world-wide *genera* of Orchids. About ten species are known.

66. *CERATANDRA*, Ecklon.

Seven or eight species are known from South Africa.

67. *Ceratostylis*, Blume.

About fifteen species, from India, Malaysia, and the Pacific Islands. For species, see Gard. Chron., 1882, xviii., 812.

68. **CHEIRADENIA**, Lindley.
One species only known, from Guiana.
69. **CHEIROSTYLIS**, Blume.
Eight species known, from India, Malayan Archipelago, and Tropical Africa.
70. **CHILOGLOTTIS**, R. Brown.
Six species, from Australia and New Zealand.
CHLOIDIA (see *Corymbia*), Gard. Chron., 1879, xi., 267.
71. **CHLORÆA**, Lindley.
Eighty or more species are known, from South America, Chili being the head-quarters of the group.
72. **CHLOROSA**, Blume.
One species only known, from Java.
73. **Chondrorhyncha**, Lindley.
One or two species only known, from Colombia.
74. **CHRYSOCYCNIS**, Reichenbach f.
One species only known, from New Granada.
75. **Chrysoglossum**, Blume.
Three or four species, from Malayan Archipelago and Sikkim. See Gard. Chron., 1882, xviii., 428.
76. **Chysis**, Lindley.
Six or eight species known, from Mexico and Colombia.
C. bractescens and others are showy, with large waxy flowers in spikes from young growth. For list of species see Gard. Chron., 1879, xi., 267; 1882, xviii., 746; Bot. Mag., t. 3617, 4576, 5186, 5265.
**C. Chelsoni*, Gard. Chron., 1880, xiii., 717.
77. **CHYTROGLOSSA**, Reichenbach f.
Two species known, from Brazil.
78. **Cirrhopetalum**, Lindley.
About thirty species, from India, Malaysia, China, and Madagascar. Some of the species are very beautiful, but are now but rarely met with in collections. For list of species, see Gard. Chron., 1882, xviii., 172, 364.
79. **CIRRHÆA**, Lindley.
Five species from Brazil. See Gard. Chron., 1879, xi., 267.

80. *CLEISOSTOMA*, Blume.

Fifteen species, from India, Malayan Archipelago, and Tropical Australia.

CLEISTES (see *Pogonia*), Gard. Chron. 1879, xi., 267.

81. *Clowesia*, Lindley.

One species, from Brazil.

82. *COCHLIODA*, Lindley.

Six species, from the Andes of South America.

83. *Cœlia*, Lindley.

Four or five species, from the West Indies, Central America, and Mexico. See Orchid Album, t. 51. For species, see Gard. Chron., 1882, xviii., 428; see also Gard. Chron., 1879, xi., 267.

CÆLIOPSIS, Gard. Chron., 1872, 9; 1879, xi., 267.

84. *Cœlogyne*, Lindley.

About fifty species are known, from India, Malayan Archipelago, and the South of China. Many species are in cultivation, *C. cristata* and its varieties being extremely popular. The *Pleiones*, or "Indian Crocus," now included here, are much grown for their beauty. See Orchid Album, t. 54, 63, 143. For species, see Gard. Chron., 1883, xix., 46, 576.

**C. brunnea*, 1848, 71.

**C. cristata*, 1877, vii., 597.

**C. Massangeana*. (Supplementary sheet, March 18, 1882.)

COHNIA, Gard. Chron., 1879, xi., 297.

COLAX (see *Lycaste*), Gard. Chron., 1879, xi., 267.

85. *Collabium*, Blume.

Two species, one from Java, and the other is Bornean. See Gard. Chron., 1882, xviii., 428.

86. *Comparettia*, Poeppig and Endlicher.

Two species, from the Andes of South America. See Gard. Chron., 1879, xi., 276; Bot. Mag., t. 4980; Bot. Reg., 1838, t. 68; Orchid Album, t. 65.

87. *Corallorhiza*, R. Brown.

Ten or twelve specimens are known, but widely distributed in Europe, Temperate Asia, North America, and Mexico. See Gard. Chron., 1879, xi., 267.

88. **Coryanthes**, Hooker.

Four or five species, from Tropical South America.

See Orchid Album, t. 98 ; Gard. Chron., 1879, xi., 267 ; Bot. Mag. (Gongora), t. 2755, 3747 ; Bot. Reg., 1841, t. 1793.

**C. elegantissima* (as *macrantha*), 1882, xvii., 593, 597.

**C. maculata* var., sections of, 1885, xxiii., 144, 145.

89. **CORYCIUM**, Swarz.

Ten species, from South Africa.

90. **CORYMBIS**, Thouars.

Six or seven species, broadly distributed in the Tropics.

91. **Corysanthes**, R. Brown.

Fifteen species, in Australia, New Zealand, and in Malayan Archipelago. See Bot. Mag., t. 5357.

92. **Cottonia**, Wight.

Two or three species, from India and Ceylon. *C. (Vanda) peduncularis* is the type.

93. **Cranichis**, Swarz.

About twenty species, from the Andes, Tropical South America, Mexico, and West Indies. See Gard. Chron., 1879, xi., 268.

94. **CREMASTRA**, Lindley.

One species, from Japan.

CRYBE (see *Arethusa*), Gard. Chron., 1879, xi., 268.

95. **Cryptarrhena**, R. Brown.

Species two, one from Central America, and the other from the West Indies. See Gard. Chron., 1879, xi., 268.

96. **CRYPTOCENTRUM**, Benth.

Only one species known, from Ecuador.

97. **Cryptochilus**, Wallich.

Two species, from the Himalayas. See Gard. Chron., 1882, xviii., 812.

98. **CRYPTOPUS**, Lindley.

One species, from Madagascar, resembling *Angraecum*.

99. **CRYPTOSTYLIS**, R. Brown.

Species seven, from India, Malayan Archipelago, and Australia.

**C. longifolia*, Gard. Chron., 1885, xxiii., 275.

100. *Cycnoches*, Lindley.

The "Swan Orchid." Eight species, from Guiana and Mexico. See Bot. Mag., t. 3855, 4054, 4213; Gard. Chron., 1879, xi., 268; Bot. Mag., t. 3855, 4054, 4215.

**C. Warscewiczii*, 1879, xii., 493.

101. *Cymbidium*, Swarz.

Thirty species, from India, Malayan Archipelago, and South China. *C. eburneum*, *C. Mastersii*, *C. giganteum*, and its variety *Louii*, are often met with in collections. See Orchid Album, t. 25, 140, 170; Bot. Mag., t. 387, 1751, 4884, 4907, 5126, 5457, 5574, 5710, 5851.

**C. eburneum*, 1884, xxii., 499; 1884, xxii., 77.

**C. Lowianum*, 1879, xi., 405.

102. *Cycnorchis*, Thouars.

Twelve species, from Tropical Africa and Madagascar.

103. *Cyperorchis*, Blume.

Two or three species, from India and Malayan Archipelago. Near *Cymbidium*.

104. *Cypripedium*, Linnæus.

Forty species, widely distributed in Europe, Asia, and America. The South American species have been called *Selenipedium*. Many hybrids have been raised in gardens. *C. caudatum* and its abnormal form, *Uropedium*, are very remarkable. They are the "Lady's Slipper" Orchid of gardens, and the most beautiful North American species (*C. spectabile*) is called the "Mocassin Flower." See Orchid Album, t. 8, 22, 36, 70, 86, 88, 109, 119, 122, 136, 155, 177; Gard. Chron., 1879, xi., 268; Bot. Mag., t. 192, 216, 911, 2938, 3024, 5855, 5349, 5508, 5791, 5922, 6175, 6296, 6432, 6490.

**C. Ashburtoniæ*, 1879, xi., 16.

**C. calceolus*, 1879, xi., 813.

**C. caudatum*, 1875, iii., 211.

**C. caudatum*, fruit of, 1885, xxiii., 472.

**C. concolor*, 1865, 626; 1883, xix., 18.

**C. Druryi*, fruit of, 1885, xxiii., 472.

**C. hirsutissimum*, fruit of, 1885, xxiii., 472.

- **C. Maulei*, 1882, xviii., 716.
- **C. punctatum violaceum*, 1882, xviii., 717.
- **C. Japonicum*, 1875, iii., 625.
- **C. lævigatum*, 1865, 914.
- **C. Lawrenceanum*, 1880, xiii., 776.
- **C. Lowii*, 1847, 765 ; 1850, 215.
- **C. niveum*, 1883, xix., 18.
- **C. occidentale*, 1877, vii., 725.
- **C. Parishii*, 1869, 814.
- **C. pubescens*, 1883, xix., 785.
- **C. selligerum*, 1880, xiii., 776.
- **C. spectabile*, 1877, viii., 689.
- **C. Spicerianum*, 1880, xiii., 41.
- **C. Stonei*, a monstrous, 1883, xx., 73.
- **C. Stonei* var. *platytanum*, 1867, 1118.
- **C. vexillarium*, 1880, xiii., 781.
- CYRTOPERA (see *Cyrtopodium*), Gard. Chron., 1879, xi., 268.

105. **Cyrtopodium**, R. Brown.

Twenty species are known, in Asia, Africa, and Tropical America. See Gard. Chron., 1879, xi., 268 ; Bot. Mag., t. 1800, 3507.

106. **CYRTOSTYLIS**, R. Brown.

Three or four species, wild in Australia and New Zealand. See Fitzgerald, Aust. Orch., with plate.

107. **CYSTORCHIS**, Blume.

Two species, from the Malayan Archipelago.

108. **Dendrobium**, Swarz.

Over 300 species, and many varieties are known, from India, Malayan Archipelago, Ceylon, Japan, China, and Australia. Several hybrids have been raised. See Orchid Album, t. 13, 20, 38, 42, 92, 99, 103, 113, 141, 152, 165, 174 ; Bot. Mag., t. 3608, 5249, 4619, 5430, 5537, 5285, 5444, 5459, 5540, 5956, 5968, 6013, 6226, 6383, 4993, 5482, 5515, 5679, 5825, 6007, 6050, 6199, 6319, 6438. For full list of species see Gard. Chron., 1881, xvi., 624, 688 ; 1882, xvii., 18, 26, 306, 471, 528, 641, 735, 776, 799.

**D. Ainsworthii*, hybr., 1874, i., 443.

- **D. Ainsworthii*, 1874, i., 443; 1877, viii., 166; 1881, xvi., 624.
- **D. amœnum*, 1875, iii., 305; 1881, xvi., 625.
- **D. Bensonæ*, 1878, x., 817; 1884, xxii., 145.
- **D. Brymerianum*, 1879, xi., 475; 1881, xvi., 689.
- **D. d'Albertisii*, 1878, x., 217.
- **D. densiflorum*, 1882, xvii., 737.
- **D. formosum giganteum*, 1882, xvii., 369.
- **D. formosum giganteum*, fruit of, 1885, xxiii., 472.
- **D. heterocarpum*, fruit of, 1885, xxiii., 472.
- **D. Leechianum*, 1882, xvii., 256.
- **D. luteolum chlorocentrum*, 1883, xix., 340.
- **D. nobile*, 1872, 732; 1879, xi., 565.
- **D. rhodostoma*, fruit of, 1885, xxiii., 472.
- **D. speciosum Hillii*, 1877, vii., 113.
- **D. superbiens*, 1878, i., 49.
- **D. thyrsoflorum*, 1877, vii., 653; 1881, xv., 463.
- **D. tortile*, 1847, 797.
- **D. Wardianum*, 1877, viii., 240.

109. **Dendrochilum**, Blume.

Nine or ten species are known, from the Philippines and other groups in the Malayan Archipelago. They are extremely graceful little epiphytes, and three or four species are now common in collections. For species see Gard. Chron., 1882, xviii., 427.

110. **DENDROPHYLAX**, Reichenbach f.

Three species, wild in the West Indies, and resembling *Angræcum*. See Bot. Mag., t. 4295.

111. **Diacrium**, Lindley.

Four species, wild in Guiana, Mexico, and other parts of Central America. See Bot. Mag., t. 3332 (as an *Epidendrum*); Gard. Chron., 1883, xix., 764.

112. **Diadenium**, Poeppig and Endlicher.

Two species, from Peru and Para. See *Xenia Orch.*, i., 13, t. 6; Saunders' Ref. Bot., t. 84; Gard. Chron., 1879, xi., 268.

113. **Dichæa**, Lindley.

Twelve species are known, from Mexico, Central America, and the West Indies. See Gard. Chron., 1879, xi., 268.

114. **Dignanthe**, Lindley.

One species, wild in Mexico. See Gard. Chron., 1879, xi., 268.

DINEMA (see Epidendrum), Gard. Chron., 1879, xi., 268.

115. **Diothonea**, Lindley.

Four species, from the Andes in Peru and Colombia. Gard. Chron., 1883, xix., 700.

116. **DIPLOCENTRUM**, Lindley.

Two or three species known, from India.

117. **DIPLOMERIS**, Don.118. **DIPODIUM**, R. Brown.

Six species, from the Malayan region, Australia, and the Pacific Isles. See Bot. Reg., t. 1980; Paxt., Mag. Bot., xvi., p. 321 (as Wailesia).

119. **Disa**, Berg.

Fifty species of *Disa* are wild in Southern and Tropical Africa, and in Madagascar, but only one species (*D. grandiflora*) is common in gardens, being one of the most beautiful of all terrestrial Orchids. Known to us from the Southern Hemisphere, *Cypripedium spectabile* being the belle of the Northern one. See Bot. Mag., t. 4073, 4091, 6529, 6532; Bot. Reg., t. 324, 926; Harvey, Thes. Cap., t. 41, 84, 86.

**D. grandiflora*, Gard. Chron., 1875, iii., 441; 1882, xviii., 521.

120. **DISPERIS**, Swarz.

Twenty species known, from India, Tropical Africa, South Africa, and Madagascar. See Harvey's Thes. Cap., t. 106, 148, 171, 172.

121. **DIURIS**, Swarz.

Fifteen species, all wild, in Australia. See Fitzgerald Aust. Orch., with two plates; Bot. Mag., t. 3156, 6201.

122. **DORITIS**, Lindley.

Five or more species, from India and the Malayan Archipelago. Some species have been referred to *Dendrobium*, others to *Aerides* and to *Phalænopsis*.

123. **DOSSINIA**, Morren.

One species known, from Borneo.

124. **DRAKEA**, Lindley.

Three species known, from Australia ; *vide* Rehb. f., *Xenia* Orch., t. 189.

**D. elastica*, Gard. Chron., 1848, 424.

125. **Drymoda**, Lindley.

One species, from the Malayan Peninsula. See Bot. Mag., t. 5905 ; Gard. Chron., 1882, xviii., p. 427.

126. **Erina**, Lindley.

Six or eight species known, from New Zealand and the Pacific Islands. See Gard. Chron., 1882, xviii., 812.

127. **Elleanthus**, Presl.

Fifty species, from Tropical America, Brazil, Central America, and the West India Islands. See Gard. Chron., 1879, xi., 334 ; 1883, xix., 659.

128. **EPIBLEMA**, R. Brown.

One species, from South West Australia and New Zealand.

129. **Epidendrum**, Linnæus.

Above 400 species are described, from Tropical America, extending as far north as Texas, where one species exists on trees of *Magnolia glauca*. A large proportion are fragrant, but with dingy white or greenish flowers. *E. vitellinum*, *E. nemorale*, *E. bicornutum*, and many others are, however, showy and generally cultivated. *E. cochleatum* and *E. fragrans* were the first epiphytal Orchids to flower in the Royal Gardens at Kew. See Orchid Album, t. 4, 74, 149, 157, 161. For full list of species see Gard. Chron., 1879, xi., 334, 367. See also Gard. Chron., 1883, xx., 42, 152, 204, 244, 477, 573, 606, 634 ; Bot. Mag., t. 2831, 3013, 3534, 3557, 3631, 3638, 3765, 3885, 3898, 4067, 4094, 4107, 4572, 4606, 4784, 533, 5491, 5664, 6098, &c.

**E. Endresii*, Gard. Chron., 1885, xxiii., 504.

130. **Epipactis**, R. Brown.

Ten or more species are known, and are widely distributed in Europe, Asia, and America, outside tropical limits. See Gard. Chron., 1879, xi., 433.

**E. latifolia* var., 1852, 532.

131. **EPIPOGUM**, Gmelin.

Two species, from Temperate Europe and Asia.

132. **EPISTEPHIUM**, Künth.

Six species, from Tropical South America. See Bot. Mag., t. 5485.

133. **Eria**, Lindley.

Eighty species, from India, South China, and the Malayan Archipelago. They are mostly weedy in habit, and produce inconspicuous flowers. For full list of species see Gard. Chron., 1882, xviii., 468; Bot. Mag., t. 3605, 4163, 5391, 5415, 5807, 5910.

**E. flava*, Gard. Chron., 1882, xviii., 469.

134 **ERIOCHILUS**, R. Brown.

Five or six species are known, all from Australia.

135. **Eriopsis**, Lindley.

Three or four species, from North Brazil, Guiana, and Colombia. *E. biloba* is an interesting and showy species. See Bot. Mag., t. 4437.

136. **Erycina**, Lindley.

One species known, from Mexico, resembling *Ionopsis* in habit. See Gard. Chron., 1879, xi., 433.

EUCNEMIS (see *Govenia*), Gard. Chron., 1879, xi., 433.

137. **EUCOSIA**, Blume.

One species, from Java.

138. **Eulophia**, R. Brown.

Fifty species, wild for the most part, in Tropical and Southern Africa, Tropical Asia, and one from Brazil. Few have been introduced. See Orchid Album, t. 89; Gard. Chron., 1879, xi., 433; Bot. Mag., t. 2467, 5564, 5579, 5875, 6246.

139. **FARICARIA**, Lindley.

One species, from South Africa.

FREGEA (see *Sobralia*), Gard. Chron., 1879, xi., 433.

140. **Galeandra**, Lindley.

Six species, wild in Tropical America, Brazil and Mexico. See Gard. Chron., 1879, xi., 433; Bot. Mag., t. 4610, 4701; Bot. Reg., 1840, t. 49; Maund's Botanist, t. 231.

**G. nivalis*, Gard. Chron. 1882, xvii., 537.

141. **GALEOLA**, Loureiro.
Twelve species, from India, Japan, Malayan Archipelago, Australia, and New Caledonia.
GALEOTTIA. (See *Zygopetalum*.)
**G. fimbriata*, Gard. Chron., 1856, 660.
142. **GASTRODIA**, R. Brown.
Seven species, from India, Western Asia, Malayan Archipelago, Australia, and New Zealand.
143. **Geodorum**, Jackson.
Nine or ten species, wild in India, Malayan Archipelago, and Australia. See Bot. Mag., t. 2195.
144. **Glomera**, Blume.
Two species, from the Malayan Archipelago and Pacific Isles. See Gard. Chron., 1882, xviii., 812.
145. **GLOSSODIA**, R. Brown.
Four species, wild in Australia.
146. **GLOSSULA**, Lindley.
One species, from China and Cochin China; near *Harbenaria*, or *Bonatea*.
147. **Gomezia**, R. Brown.
Six species, wild in Brazil, related to *Odontoglossum* or *Rodriguezia*. See Bot. Mag., t. 2746 (*Pleurothallis*), t. 3497, 3505 (as *Rodriguezia*).
148. **GOMPHICHS**, Lindley.
Four or five species, wild on the Andes of South America.
149. **Gongora**, Ruiz and Pavon.
Twenty species, wild in Mexico and Brazil. The genus *Acropera* is now included. Some of the species are very interesting as grown in baskets, although not showy enough for modern collectors. See Gard. Chron., 1879, xi., 433.
150. **Goodyera**, R. Brown.
Twenty-five species, natives of Britain, Europe, Madeira, Asia, tropical and temperate; Madagascar, North America, and New Caledonia. Velvety-leaved, low-growing plants, resembling the *Anætochili* of the Tropics. *G. discolor* and *G. Dawsoni* are common in collections. See Gard. Chron., 1879, xi., 433; Bot. Mag., t. 2540.

151. **GOVENIA**, Lindley.
Ten species are known, from Brazil, Mexico, and the West Indies. See Gard. Chron., 1879, xi., 433 ; Bot. Mag., t. 3660, 4151.
152. **GRAMMANGIS**, Reichenbach f.
Two species, one from Madagascar (see Bot. Mag., 5179, *Grammatophyllum*), and one from Java(?). See Bot. Mag., t. 5676 (as *Cymbidium Huttoni*).
153. **Grammatophyllum**, Blume.
Three or four species, from Malayan Archipelago and Madagascar. They are large-growing epiphytes. See Orchid Album, t. 147.
**G. speciosum*, Gard. Chron., 1878, x., 180.
154. **Grobya**, Lindley.
Two species, wild in Brazil.
155. **GYMNOCHILUS**, Blume.
Two species, wild in Madagascar. Near *Goodyera*.
156. **Habenaria**, Willdenow.
Four hundred species, from the temperate and subtropical regions, where they are widely distributed. Few are worth cultivating. See Gard. Chron., 1879, xi., 433.
157. **HÆMARIA**, Lindley.
Four species, wild in China, Cochin China, and the Malayan Archipelago. See Bot. Mag., t. 2055 ; Bot. Reg., t. 271.
158. **Hartwegia**, Lindley.
One species, wild in Mexico and Central America, and rarely met with in collections as *H. purpurea*. See Gard. Chron., xix., 764.
159. **HEMIPILIA**, Lindley.
Two species, wild in India. Near *Habenaria* or *Bonatea*.
160. **HERMINIUM**, Linnæus.
Six species, wild in Europe and Temperate Asia.
161. **HERPYSDIA**, Lindley.
One species known, from the Himalayas.
162. **Herschelia**, Lindley.
Two species, from Southern Africa. Near *Disa*. *H. celestis* flowered at De Graaff's nursery in Leyden a few years ago.

163. **HETÆRIA**, Blume.
Thirteen species, from India, Malaysia, Australia, and Tropical Africa. Near *Goodyera*, but not showy.
164. **Hexadesmia**, A. Brongniart.
Four or five species, from Mexico, Central America, West Indies, and Brazil. See *Gard. Chron.*, 1883, xix., 700.
165. **HEXALECTRIS**, Rafin.
One species, from Southern North America and Mexico, near *Corallorhiza* and *Bletia*.
166. **Hexesia**, Lindley.
Three or four species, wild in Mexico, Central America, and Brazil. See *Gard. Chron.*, 1879, xi., 434 ; 1883, xix., 700.
167. **HOFFMEISTERELLA**, Reichenbach f.
One species, from the Andes of Ecuador.
168. **HOLOTHRIX**, L. C. Richard.
Eighteen or twenty species, from Abyssinia and South Africa.
169. **Hormidium**, Lindley.
Seven species, from Tropical America, Brazil, Cuba and Mexico. See *Gard. Chron.*, 1883, xix., 700 ; *Bot. Mag.*, t. 3233, 6314.
170. **Houlletia**, A. Brongniart.
Five species, from Brazil and Colombia. See *Gard. Chron.*, 1879, xi., 434 ; *Bot. Mag.*, t. 4075, 6305.
**H. chrysantha*, *Gard. Chron.*, 1882, xviii., 437.
HUNTLEYA. (See *Zygopetalum*.)
171. **HUTTONÆA**, Harvey.
Two species, from South Africa.
172. **HYLOPHILA**, Lindley.
One species, from Malacca and Malayan Archipelago.
173. **Ionopsis**, Humboldt, Bonpland, and Künth.
Ten species are known, from Tropical America, Brazil, Mexico, and the West Indies. *I. paniculata* and others are showy, but difficult of prolonged cultivation. See *Gard. Chron.*, 1879, xi., p. 434 ; *Bot. Mag.*, t. 5541.

174. *Isochilus*, R. Brown.

Four or five species, from South America, Brazil, Mexico, West Indies. See Bot. Reg., t. 745; Gard. Chron., 1879, xi., 434; 1883, xix., 764.

175. *Josepha*, Wight.

Two species, from the Indian Peninsula and Ceylon. See Gard. Chron., 1882, xviii., 812.

176. *Lacæna*, Lindley.

Two species, known in Central America. See Gard. Chron., 1879, xi., 434.

177. *Lælia*, Lindley.

Twenty species or more, from Mexico to Brazil; differs from *Cattleya* in having eight pollen masses in each flower instead of four. All are showy, and much prized. See Orchid Album, t. 2, 9, 10, 23, 30 44, 49, 60, 75, 97, 117, 123, 132, 135, 138, 146, 181; Gard. Chron., 1879, xi., 559; Bot. Mag., t. 3804, 3810, 3817, 3957, 4000, 4099, 4302, 4205, 5144, 5449, 5498, 5553, 5667, 6038. The following species are figured in Gard. Chron.:—

**L. autumnalis* var., 1872, 1009.

**L. Jongheana*, 1872, 425.

**L. majalis*, 1883, xix., 628.

**L. Mylamiana*, 1876, ii., 740.

**L. purpurata*, 1880, xiv., 45.

**L. Veitchiana*, 1883, xx., 145 (Supplement).

178. *Læliopsis*, Lindley.

Species three or four, from the West Indies and Cuba and St. Domingo. *Læliopsis Domingiensis* resembles *Broughtonia* in habit, with pale rosy flowers.

179. *Lamium*, Lindley.

Species two only, from Brazil and Surinam. Near *Epidendrum*. See Gard. Chron., 1883, xix., 660.

180. *Latourea*, Blume.

One species, wild in New Guinea, with the habit of *Dendrobium*. See Gard. Chron., 1882, xviii., 52.

181. *LEUCANORCHIS*, Blume.

Two species, from Java and Japan, resembling *Aphyllorchis*.

182. **LEIOCHILUS**, Knowles and Westcott.
Four or five species, wild in Central America, Mexico, and the West Indies. See Bot. Mag., t. 3845.
183. **Lepanthes**, Swarz.
Forty species, from Tropical America on the Andes, Mexico and West Indies. See Bot. Mag., t. 4112, 5259; Gard. Chron., 1879, xi., 559; 1881, xvi., 136.
184. **LEPIDOGYNE**, Blume.
One species, from Java
LEPTOTES. (See Tetramicra).
185. **LEUCORCHIS**, Blume.
Two or three species, from India, Malayan Archipelago, and the Pacific Islands. Widely distributed.
LIMATODES. (See Calanthe.)
186. **Limodorum**, L. C. Richard.
One species, wild in the Mediterranean, Europe, and Caucasus.
187. **Liparis**, L. C. Richard.
A hundred species, widely dispersed throughout the sub-tropical regions. *L. longipes* is now and then found in cultivation. See Gard. Chron., 1879, xi., 559; 1881, xvi., 592; Bot. Mag., t. 2004 (Malaxis), 2709, 3770, 5529.
**L. Loeselii*, Gard. Chron., 1884, xxi., 144.
188. **Lissochilus**, R. Brown.
Thirty species, from Tropical and Southern Africa. See Bot. Mag., t. 2931 (Eulophia), 5486, 5851.
189. **Listera**, R. Brown.
Ten species, in Europe and Temperate Asia and mountains of North America. See Reich., Ic. Fl. Germ., t. 478, f. 3—5, t. 479, 480; Hook. Fl. Bor. Amer., t. 205.
190. **Lockhartia**, Hooker.
Ten species, from Tropical America, Brazil, West Indies, and Mexico. See Gard. Chron., 1879, xi., 559; Bot. Mag., t. 2715, 5592 (Fernandezia); Bot. Reg., t. 1806 (Fernandezia).

191. **Luisia**, Gaudichaud.

Ten species, from India, Eastern Asia, Malaysia and Japan. See Bot. Mag., t. 3648 (Cymbidium), 5558.

**L. Psyche*, Gard. Chron., 1865, 842.

192. **Lycaste**, Lindley.

Twenty-five species, from Tropical America, Peru, Mexico, and West Indies. Pamphinia and Colax are now included here. Mostly showy. *L. Skinneri* and its varieties are very popular. See Orchid Album, t. 100; Gard. Chron., 1879, xi., 559; Bot. Mag., t. 3146, 3395, 4081, 4193, 4445, 5616, 5706, 6251, 6303.

**L. flavescens*, Gard. Chron., 1882, xvii., 523.

193. **Lycomormium**, Reichenbach, f.

Two or three species, from Colombia and Central America. Habit of Peristeria. Flowers resembling Cyrtopodium. See Bot. Reg., t. 1953; Knowles and Westcott, Floral Cabinet, t. 70.

194. **LYPERANTHUS**, R. Brown.

Five or six species, from New Caledonia, New Zealand.

195. **MACODES**, Blume.

One species, from Java. See Blume, Orch. Archip. Ind., 119, t. 31, 36; Rchb. f., Xen. Orch., t. 96, f. 1.

196. **Macradenia**, R. Brown.

One or two species, from the West Indies. See Gard. Chron., 1879, xi., 559.

197. **Malaxis**, Swarz.

One little species (*M. paludosa*), is epiphytal on living sphagnum in Britain, Ireland and North Europe. See Gard. Chron. 1881, xvi., 463.

**M. paludosa*, 1884, xxi., 144.

198. **MANNIELLA**, Reichenbach f.

One species, native of West Tropical Africa. Related to Platylepis. Flowers small, not showy.

199. **Masdevallia**, Ruiz and Pavon.

Species a hundred or more, wild in South America, Peru, Mexico, Brazil, Guiana, and West Indies, generally at considerable altitudes on mountains. Many are showy

and they are favourites in collections along with *Odontoglossa* from similar climates. *M. Veitchii*, *M. Harryana*, *M. Davisii*, *M. tovarenses*, *M. chimara*, and others, are very beautiful. For full list of species see Gard. Chron., 1881, xvi., 236, 305, 336, 409; 1879, xi., 559; Orchid Album, t. 5, 24, 62, 76, 105, 110; Bot. Mag., t. 4921, 5476, 5505, 5239, 5962, 5990, 6152, 6159, 6171, 6190, 6208, 6258, 6262, 6273, 6368, 6372. The following species are figured in Gard. Chron.:—

- **M. bella*, 1880, xiii., 756; 1881, xvi., 237.
- **M. Carderi*, 1883, xx., 181.
- **M. chimæra*, 1875, iii., 41; 1881, xvi., 113.
- **M. coccinea*, 1868, 70; 1881, xvi., 236; 1884, xxi., 736.
- **Masdevallia*, group of, 1881, xxi., 741.
- **M. ignea*, 1872, 545; 1881, xvi., 305.
- **M. Lindeni*, 1874, i., 385; plant, 1881, xvi., 336.
- **M. macrura*, 1877, vii., 13; 1881, xvi., 337.
- **M. nycterina*, 1881, xvi., 337; 1874, 639.
- **M. polysticta*, 1875, iii., 657.
- **M. racemosa* var. *Crossi*, 1884, xxi., 737.
- **M. rosea*, 1880, xiii., 680, 681; 1881, xvi., 336; 1882, xvii., 644.
- **M. Schlimii*, 1883, xix., 532.
- **M. tovarense*, 1871, 1421; 1881, xvi., 409.
- **M. triaristella*, 1876, vi., 559.
- **M. Veitchiana*, 1871, 1421; 1881, xvi., 409.
- **M. Wallisii* var. *stupenda*, 1885, xxiii., 473.

200. *Maxillaria*, Ruiz and Pavon.

Above a hundred species are known, from Tropical America, Brazil, West Indies, and Mexico. *M. grandiflora* and *M. venusta* resemble *Lycaste* in having large flowers, solitary on basal scapes, but there are many inconspicuous species in the group. See Orchid Album, 106; Gard. Chron., 1879, xi., 559, 686; Bot. Mag., t. 2729, 3154, 3613, 3945, 3966, 4374, 4434, 6477; Bot. Reg., t. 3614.

201. *Megaclinium*, Lindley.

Nine species, wild in Tropical Africa, where they seem to represent the Eastern *Bulbophylla*. See Gard. Chron.

1882, xviii., 364; Bot. Mag., t. 4028, 5836; Bot. Reg., t. 1959.

MESOSPINDIUM. (See Odontoglossum.)

202. **Meiracyllum**, Reichenbach, f.

Three species, from Mexico and Central America, with habit of Pleurothallids, and pollen resembling *Eria*. See Gard. Chron., 1879, xi., 686; 1881, xvi., 428.

203. **MICROSACCUS**, Blume.

Three or four species, from Malayan Archipelago and Malacca, somewhat resembling *Saccolabium*, with affinity with some *Dendrobis*.

204. **Microstylis**, Nuttall.

Forty species are wild in Europe, Asia, and America. North and South. See Gard. Chron., 1879, xi., 686; 1881, xvi., 463; Bot. Mag., t. 4103, 5403, 6325.

**M. histionantha*, 1881, xvi., 463.

205. **MICROTIS**, R. Brown.

Six species, wild in Australia and New Zealand (? Java.)

206. **Miltonia**, Lindley.

Ten species, from Peru and Brazil. Mostly showy when well grown. It is questionable whether the *Miltonia*-flowered *Odontoglossums* should not be included here, or are they hybrids, *Miltonia* and *Odontoglossum*? See Orchid Album, t. 46, 72, 146; Bot. Mag., t. 3793, 4109, 4204, 4425, 5436, 5572, 5843.

**M. Warscewiczii*, Gard. Chron., 1871, 1258.

207. **MÆRENHOUTIA**, Blume.

One species, wild in the Society Island. Not showy.

MONACANTHUS. (See *Catasetum*.)

208. **MONADENIA**, Lindley.

Twelve species, from South Africa, approaching *Disa*.

209. **Monomeria**, Lindley.

Two species, one from Nepal and one from Burmah, resembling *Bulbophylli*. See Gard. Chron., 1882, xviii., 427.

210. **Mormodes**, Lindley.

Fourteen species, from Colombia, Central America, and Mexico. Showy and interesting plants, requiring a

hot, dry atmosphere like *Catasetum*. See Gard. Chron., 1879, xi., 686; Bot. Mag., t. 3879, 3900, 4214, 4455, 4577, 5802, 2840, 6496. The following are figured in Gard. Chron.:—

**M. Cartoni* var., 1871, 447.

**M. luxatum eburneum*, 1882, xviii., 145.

**M. Ocanæ*, 1879, xii., 816, 817.

211. *MORMOLYCE*, Fenzl.

One species, wild in Mexico.

MYANTHUS. (See *Catestum*.)

212. *MYRMECHIS*, Blume.

Two species, from Java and Japan.

213. *MYSTACIDIUM*, Lindley.

Twenty species, from Tropical and Southern Africa, near *Angræcum*.

NANODES, Lindley. (See *Epidendrum*.)

**N. Medusæ*, Gard. Chron., 1867, 482.

214. *NEODRYAS*, Reichenbach, f.

Three species, from Bolivia and Peru, approaching *Oncidium* (*O. Brunleesianum*).

215. *Neottia*, Linnæus.

Three species, from Europe, Northern Asia, in mountainous districts. Not showy.

216. *Nephelaphyllum*, Blume.

Four species, from India, South China, and Malayan Archipelago. See Gard. Chron., 1882, xviii., 780; Bot. Mag., t. 5332, 5390.

217. *NEUWIEDIA*, Blume.

Three species, from Malacca and the Malayan Archipelago.

218. *Notylia*, Lindley.

Eighteen species, from Tropical America (*Pleurothallis*). See Gard. Chron., 1879, xi., 719; Bot. Mag., t. 5609, 6311; Bot. Reg., t. 759 (*Pleurothallis*).

219. *Oberonia*, Lindley.

Fifty species, from Tropical Asia, Madagascar, Pacific Islands, and Australia. Curious epiphytes, with distichous leaves and minute greenish flowers arranged in rat-tail-like spikes. See Gard. Chron., 1881, xvi. 527; Bot. Mag., t. 4517, 5056.

220. *Octodesmia*, Benth.

Three species, from Jamaica, St. Domingo. See Gard. Chron., 1883, xix., 700; Bot. Mag., t. 2823.

221. *Octomeria*, R. Brown.

Ten species, described from Tropical America and the West Indies. Near *Pleurothallis*. See Gard. Chron., 1879, xi., 719; 1881, xvi., 428; Bot. Mag., t. 2764.

222. *Odontochilus*, Blume.

Ten species, from India, Malayan Archipelago, and the Pacific Islands. Ornamental-leaved plants, related to the *Anætochiles*. See Gard. Chron., 1883, xix., 608.

223. *Odontoglossum*, Humboldt, Bonpland, and Künth.

Eighty species, of numerous varieties, wild on the Andes of Tropical America, Bolivia, and Mexico. Nearly all the species are amenable to cool-house growth, the exceptions being *O. grande*, *O. Insleayi*, *O. citrosmum*, and the species of the *Miltonia* flowered, or *O. vexillarium* group. The genus *Mesospinidium* is now included here. See Orchid Album, t. 27, 35, 40, 43, 47, 52, 58, 64, 66, 68, 71, 79, 82, 85, 90, 101, 111, 118, 127, 131, 151, 163, 167, 171, 175; Gard. Chron., 1879, xi., 719; Bot. Mag., t. 3812 (*Zygopetalum*), 3955, 4372, 4878, 4919, 4923, 5691, 5697, 5736, 5778, 5993, 6029, 6144, 6229, 6237, 6265, 6317, 6455, 6502. The following species are figured in Gard. Chron.:—

**O. Andersonianum*, 1884, xxii., 44.

**O. Andersonianum* var. *lobatum*, 1884, xxii., 45

**O. cirrosum*, 1878, ix., 181; 1876, v., 54, 503.

**O. Coradinei*, 1872, 1068.

**O. Dawsonianum*, 1865, 1226.

**O. elegans*, 1883, xix., 721.

**O. gloriosum*, 1865, 578.

**O. grande*, fruit of, 1885, xxiii., 505.

**O. Halli*, 1865, 962; 1873, 77.

**O. hebraicum*, 1881, xvi., 173.

**O. Krameri*, 1868, 98.

**O. luteo-purpureum*, 1884, xxi., 585.

**O. lyroglossum*, 1882, xvii., 632. (Supplement, May 13, 1882.)

- **O. membranaceum*, 1881, xv., 753.
- **O. mulus* var., 1883, xix., 469.
- **O. nebulosum*, 1867, 572,
- **O. nebulosum candidulum*, 1867, 710.
- **O. nevadense*, 1881, xvi., 461.
- **O. Oerstedii*, 1877, vii., 811.
- **O. odoratum*, 1881, xv., 337.
- **O. Pescatorei*, 1884, xxii., 332.
- **O. Phalænopsis*, 1872, 832.
- **O. polyxanthum*, 1881, xvi., 461 ; 1883, xix., 761.
- **O. radiatum*, 1865, 746.
- **O. Roezlii*, 1873, 1303.
- **O. Rossi majus* var. *rubescens*, 1884, xxi., 345.
- **O. Ruckerianum*, 1873, 105.
- **O. Schliperianum*, 1865, 1082.
- **O. triumphans*, 1867, 516.
- **O. vexillarium*, 1872, 667 ; 1873, 644.
- **O. Warnerianum*, 1865, 579.
- **O. Wilckeanum*, 1884, xx., 640.

224. *OEONIA*, Lindley.

Four or five species, wild in Madagascar. They are related to *Angræcum*.

225. *Oncidium*, Swarz.

Over 250 species are known, from Tropical America. Brazil and Bolivia, West Indies, and Mexico. Many showy species are in cultivation. They vary much in habit, the sections being "small lipped" (*microchilia*), "Iris-leaved" (*equitantia*), "round-leaved" (*teretifolia*), and "flat-leaved" (*planifolia*). *O. papilio* is the "Butterfly Orchid," and one of the first of Orchids to attract public attention in England. See *Orchid Album*, t. 1, 12, 32, 104, 129, 137, 183 ; *Bot. Mag.*, t. 5632, 2773, 3393, 4130, 3568, 777, 1491, 2203, 2990, 3109, 3486, 3499, 3581, 3705, 3712, 3752, 3806, 3807, 3836, 5193, 6138, 6254, 6278, 6322. See also *Gard. Chron.*, 1879, xii., 43.

The following are figured in *Gard. Chron.*:—

- **O. bifrons*, 1857, 84.
- **O. candidum*, 1883, xx., 233.
- **O. Forbesii*, 1879, xi., 525.
- **O. Forbesii* var. *Borwickianum*, 1879, xi., 525.

- **O. Gardnerianum*, 1881, xvi., 86.
- **O. Lanceanum*, 1884, xxi., 609.
- **O. luridum* var. *purpuratum*, 1848, 159.
- **O. macranthum*, 1869, 739.
- **O. microchilum*, 1856, 68.
- **O. monachicum*, 1883, xix., 369.
- **O. Rogersii*, 1870, 277.
- **O. splendidum*, 1871, 42.
- **O. varicosum*, 1870, 277.
- **O. zebrinum*, 1872, 1355.

226. *Ophrys*, Linnæus.

Thirty species or more, wild in Europe, Temperate Asia, and Northern Africa. The likeness to insects, as shown by several species of *Ophrys*, has long been observed. The Spider, Fly and Bee *Ophrys* belong to this group, and some European species and varieties are very beautiful. See *Rchb. Ic. Fl. Germ.*, t. 443, 465; *Barlæ. Ic. Orch. Alp. Marit.*, t. 51, 62; *Moggr. Fl. Ment.*, t. 19, 43, 46, 72. See *Gard. Chron.*, for figures of the following:—

- **O. tenthredinifera*, 1872, 605.
- **O. scolopax*, 1869, 442; 1872, 1009.

227. *Orchis*, Linnæus.

Eighty species, widely distributed throughout the temperate regions of the Northern Hemisphere. The most showy species are from North Africa and the islands of Madeira, and those of the Canary group. The “long purples” of Shakespeare are supposed to refer to our *O. mascula*. These species of Orchids are more easily cultivated than are many other terrestrial species.

- **Orchis*, Snipe (*Ophrys scolopax*), 1869, 442; 1872, 1009.

228. *Oreorchis*, Lindley.

Four species, from the mountains of Asia and India, Siberia and Japan.

229. *Ornithidium*, Salisbaud.

Twenty species, from Tropical America, Brazil, West Indies, and Mexico. *O. coccinea* is a pretty little red-flowered species, in cultivation. See *Gard. Chron.*,

1879, xi., 75 ; Bot. Mag., t. 1437 (*Cymbidium*) ; Bot. Reg., t. 1804 ; Saunders' Ref. Bot., t. 105 (*Maxillaria densa*).

230. **Ornithocephalus**, Hooker.

Twenty species, from Tropical America, Brazil, and Mexico. Small-growing epiphytes of no great beauty. Gard. Chron., 1879, xii., 75.

231. **ORNITHOCHILUS**, Wallich.

Two species, from the Himalayas and Burmah.

232. **ORTHOCERAS**, R. Brown.

One species, from Australia and New Zealand. Fitzgerald, Australian Orchids, with plate.

233. **Osyricera**, Blume.

One species, from Java, approaching *Bulbophyllum*. See Gard. Chron., 1882, xviii., 427.

234. **OTOCHILUS**, Lindley.

Three or four species, from the Himalayas and Burmah. Near *Cœlogyne*. See Bot. Mag., t. 3921.

235. **PACHITES** (?), Lindley.

One species, from South Africa.

236. **Pacyphyllum**, Humboldt, Bonpland and Künth.

Six or seven species, from the Andes of Tropical America. Near *Lockhartia*, or *Fernandezia*. See Hooker, Icon. Plant., t. 117 ; Gard. Chron., 1879, xii., 75.

237. **Pachystoma**, Blume.

Ten species, native of India, Malayan Archipelago, and Tropical Africa. *P. Thompsonianum* is a very beautiful species, now and then seen in cultivation. *Ipsea* is now included here. See Gard. Chron., 1882, xviii., 500 ; Bot. Mag., t. 5701, 6471.

**P. speciosum* Thompsoni, Gard. Chron., 1879, xii., 625 ; 1882, xviii., 501.

PALUMBINA (see *Oncidium*).

**P. candida*, Gard. Chron., 1865, 793.

238. **Panisea**, Lindley.

One or two species, from the Himalayas. Related to *Cœlogynes* and *Bulbophylls*. Gard. Chron., 1882, xviii., 427.

PAPHINIA (see *Lycaste*), Orchid Album, t. 34, 145.

PAPPERITZIA, Gard. Chron., 1879, xii., 75.

PAXTONIA (see *Spathoglottis*).

**Paxtonia rosea*, 1882, xviii., 532.

239. PELEXIA, Lindley.

Seven or eight species, from Tropical America, Brazil, West Indies, and Central America. Near *Spiranthes* and *Cephalanthera*. Not showy.

240. *Peristeria*, Hooker.

Two or three species, from the Andes of Colombia, and from Panama. *P. elata* is the "El Spirito Sancta," or "Dove Orchid," often met with in gardens, where it produces long erect spikes of fleshy-white, waxlike flowers. Gard. Chron., 1879, xii., 75.

PESCATOREA (see *Zygopetalum*), Orchid Album, t. 17, 57.

**P. Dayana* var. *candidula*, Gard. Chron., 1875, iii., 343.

**P. Lehmanni*, Gard. Chron., 1882, xvii., 45.

241. *Phaius*, Loureiro.

Fifteen species, wild in Tropical Asia, Japan, Malaysia, Pacific Islands, Australia, Madagascar, and in Tropical Africa. *Phaius grandifolius*, from Hong Kong, is naturalised in Jamaica, and is one of the oldest of cultivated Orchids. *Thunia* is now included under *Phaius*. *P. Wallichii* is only a form of *P. grandiflora*. See Orchid Album, t. 91; Gard. Chron., 1882, xviii., 565; Bot. Mag., t. 1924, 2713 (*Bletia*), t. 3960, 4078, 6032, 4442, 3991, 5694. The following species are figured in Gard. Chron. :—

**P. Callosus*, 1848, 287.

**P. grandifolius*, 1872, 733; 1882, xviii., 565.

**P. irroratus*, 1867, 264; 1882, xviii., 565.

**P. tuberosus*, 1881, xv., 341; 1882, xviii., 595; 1884, xxi., 520.

242. *Phalænopsis*, Blume.

Twenty to thirty species, from India, the Philippines, and Malayan Archipelago. These are amongst the most graceful and beautiful of all Orchids. *P. grandiflora*, *P. amabilis*, *P. Schilleriana*, and their varieties, are well-known. See Orchid Album, t. 11, 39, 80, 153,

182; Bot. Mag., t. 4297, 5184, 5351, 5630, 6622, 5212, 5523, 5527, 5815, 5570. The following are figured in Gard. Chron. :—

- **P. amabilis*, 1848, 269.
- **P. amethystina*, 1870, 1731.
- **Phalænopsis* at home, 1879, xi., 597.
- **P. grandiflora*, 1848, 39.
- **P. Portei*, 1876, v., 369, 371.
- **P. rosea*, 1848, 671.
- **P. speciosa* var. *Christiana*, 1882, xviii., 745.
- **P. Schilleriana*, 1875, iv., 169; 1881, xvi., 301.
- **P. Stuartiana*, 1881, xvi., 752.
- **P. Sumatrana*, 1865, 507.
- **P. violacea*, 1881, xvi., 145.

243. *Pholidota*, Lindley.

About twenty species, from India, Malaysia and South China. *P. imbricata* and *P. articulata* are met with in collections, but none are showy. See Gard. Chron., 1883, xix., 608.

244. *Phreatia*, Lindley.

Ten species, wild in India, Malaysia, Pacific Isles, and Australia. *Oberonia* is included. See Gard. Chron., 1882, viii., 500.

245. *PHYMATIDIUM*, Lindley.

Two species from Brazil. Near *Ornithocephalus*.

246. *Physosiphon*, Lindley.

Four species, from Tropical America, Brazil, and Mexico. Near *Stelis*, and not showy. *P. Loddigesii* is sometimes grown in collections. See Gard. Chron., 1879, xii., 75; 1881, xvi., 136; Bot. Mag., t. 4869; Loddiges, Botanical Cabinet, t. 1601 (*Stelis*).

247. *Physurus*, L. C. Richard.

Twenty species, wild in Asia and Tropical America. Low growing, leafy Orchids, resembling *Goodyera* or *Anætochilus*. See Gard. Chron., 1879, xii., 75; Bot. Mag., t. 5305.

PILUMNA (see *Trichopilia*), Orchid Album, t. 128.

248. **Pinelia**, Lindley.

One species, wild in Brazil, resembling *Restrepia*. See Gard. Chron., 1883, xix., 764.

PLATANThERA (see *Habernaria*), Gard. Chron., 1879, xii., 75.

249. **PLATYCLINIS**, Benth.

Eight species, from India and Malaysia, resembling *Liparis*. See Bot. Mag., t. 4853.

250. **PLATYCORYNE**, Reichenbach f.

One species, wild in Madagascar, and approaching *Disa* in habit.

251. **PLATYLEPIS**, A. Rich.

Five species, wild in Tropical and Southern Africa and Madagascar. Near *Goodyera*.

PLEIONE = *Cœlogyne*. See Orchid Album, t. 102.

**Pleiones*, Gard. Chron., 1874, i., 15.

252. **Pleuranthium**, Lindley.

Five or six species, wild in Tropical America. Near *Ponera*. Not showy. See Gard. Chron., 1883, xix., 764.

253. **Pleurothallis**, R. Brown.

About 350 species are wild in Tropical America, Brazil, Bolivia, and elsewhere on mountains. Many are weedy. For full list of cultivated species see Gard. Chron., 1879, xii., 75 ; 1881, xv., 784 ; xvi., 10, 42 ; Bot. Mag., t. 3261, 3030, 3682, 3897, 4142.

**P. scapha*, Gard. Chron., 1881, xv., 784.

254. **PLOCOGLOTTIS**, Blume.

Eight species, from Malaysia.

255. **PODOCHILUS**, Blume.

Twelve species, wild in India and Malayan Archipelago.

256. **Pogonia**, Jussieu.

Thirty species, wild in all parts of the world, America and Asia, both Tropical and Temperate ; also in Temperate and Tropical Africa. See Bot. Mag., t. 6125.

257. **POGONIOPSIS**, Reichenbach f.

One species, wild in Brazil, and related to *Pogonia*.

258. **Polycynis**, Reichenbach f.

Three or four species, native of Tropical America. Pretty little plants, resembling *Gongora* in habit. See

Gard. Chron., 1879, xii., 75; Bot. Mag., t. 4479 (Cycnoches); Bot. Reg., 1841, t. 69 (Houlletia).

259. **Polystachya**, Hooker.

Forty species, wild in Tropical and Southern Africa, rarely found in Asia and America. But few species are worth culture. See Gard. Chron., 1879, xii., 75; Bot. Mag., t. 3707, 4161, 5586.

260. **Ponera**, Lindley.

Four or five species, wild in Mexico and Central America. Near Epidendrum. See Gard. Chron., 1883, xix., 764; xii., 107.

261. **Ponthieva**, R. Brown.

Ten or twelve species, wild in Tropical and Sub-tropical America. Terrestrial herbs. Near Neottia. See Bot. Mag., t. 842 (Neottia), and 6337; Gard. Chron., 1879, xii., 107.

262. **PRASOPHYLLUM**, R. Brown.

Twenty-six species, wild in Australia and New Zealand, and in New Caledonia. Terrestrial herbs. Not showy.

263. **Prescottia**, Lindley.

Twenty species, from Tropical America, Brazil, West Indies, and Mexico. Not showy. See Gard. Chron., 1879, xii., 107; Bot. Reg., t. 1915; Lodd., Bot. Cab., t. 990.

PROMENÆA, Orchid Album, t. 7. (See Zygopetalum.)

264. **Pseudocentrum**, Lindley.

Four or five species, wild on the Andes of Southern and Central America, and in Jamaica. Not showy. See Gard. Chron., 1879, xii., 107.

PSITTACOGLOSSUM (see Maxillaria), Gard. Chron., 1879, xii., 107.

265. **PTERICHIS**, Lindley.

Six species, wild in Tropical and Southern America. Terrestrial herbs. Not showy.

266. **PTEROGLOSSASPIS**, Reichenbach f.

One species, found in Abyssinia.

267. Pterostylis, R. Brown.

Thirty-six species, from Australia, New Zealand, and New Caledonia. See Fitzgerald, Austral. Orch., with twelve plates; Bot. Mag., t. 3085, 3086, 3172, 3400, 3401, 6351.

*P. Baptistii, Gard. Chron., 1878, ix., 273.

268. PTERYGODIUM, Swarz.

Ten species, from South Africa.

269. QUEKKETTIA, Lindley.

One species, wild in Brazil. Not showy.

270. Renanthera, Loureiro.

Five species, from India and the Malayan Archipelago and China. *R. coccinea* is a showy species. See Bot. Mag., t. 2997, 2998; Bot. Reg., t. 1131; 1843, t. 41.

*R. Lowi, Gard. Chron., 1883, xx., 657.

*R. coccinea, Gard. Chron., 1845, 491.

271. Restrepia, Humboldt, Bonpland, and Künth.

About twenty species, from Tropical America, Brazil, and Mexico. In habit resembling Pleurothallis. See Gard. Chron., 1879, xii., 107; 1881, xvi., 172; Bot. Mag., t. 5257, 5966, 6288.

*R. elegans, Gard. Chron., 1881, xvi., 172.

272. RHYNCHOSTYLIS, Blume.

Two or three species, wild in India and Malaysia. Resembling Saccolabium. See Bot. Mag., t. 4108.

273. Rodriguezia, Ruiz and Pavon.

Twenty species, including Burlingtonia, from Tropical America, Brazil, and Central America. See Gard. Chron., 1879, xii., 107; Bot. Mag., t. 3324, 4834, 5419; Bot. Reg., t. 930; Lodd., Bot. Cab., t. 676.

274. Saccolabium, Blume.

About twenty species, wild in India and the Malayan Archipelago. *S. giganteum*, *S. guttatum*, *S. pramorsum*, and others, are well known favourites, specimens bearing twenty to thirty spikes having been exhibited. Well grown they are very effective. See Orchid Album, t. 56. 107, 156, 169; Bot. Mag., t. 4772, 5326, 5433, 5595, 5635, 5681, 5767, 6222.

**S. Blumei*, Gard. Chron., 1885, xxiii., 523.

**S. guttatum*, Gard. Chron., 1845, 364 ; 1874, i., 219.

SARCOPODIUM. (See *Bolbophyllum* and *Dendrobium*.)

**S. Dearei*, Gard. Chron., 1883, xx., 108.

275. **Sarcanthus**, Lindley.

Fifteen or twenty species, from India and South China, and the Malayan Islands. Scarcely any are showy. See Bot. Mag., t. 3571, 4639, 5217, 5630.

276. **Sarcophilus**, R. Brown.

Thirty species, from India, Malaysia, Pacific Islands, and Australia. Not much cultivated, although *S. calceolus* is showy.

277. **Satyrium**, Swarz.

Fifty species, from India, Madagascar, and Tropical and Southern Africa. Terrestrial herbs, many of which are beautiful, but not easy of cultivation. See Bot. Mag., t. 1512, 2172, 6625 ; Bot. Reg., t. 416, 703 ; 1840, t. 18 ; Lodd., Bot. Cab., t. 104.

**S. nepalense*, Gard. Chron., 1885, xxiii., 208.

278. **SAUNDERSIA**, Reichenbach f.

One species, wild in Brazil.

279. **Scaphoglottis**, Poeppig and Endlicher.

Eight or ten species, from Tropical America. Not very showy. Gard. Chron., 1879, xii., 107 ; 1883, xix., 700 ; Bot. Mag., t. 4071 ; Bot. Reg., t. 1901.

280. **SCELOCHILUS**, Klotzsch.

Three or four species, wild on the Andes of Tropical America, and resembling *Compantia*.

281. **SCHIZOCHILUS**, Sond.

Four or five species, wild in South Africa.

282. **SCHIZODIUM**, Lindley.

Ten species, from South Africa. Related to *Disa*, but not showy.

283. **Schlimmia**, Planch.

Three species, from Colombia, resembling *Maxillaria* in habit.

**S. trifida*, Gard. Chron., 1877, vii., 141.

284. *SCHENORCHIS*, Blume.

One species, wild in Java (? Australia), resembling *Saccolabium*.

285. *Schomburgkia*, Lindley.

Twelve species, from Tropical and Central America. *S. tibicinis* has hollow pseudo-bulbs, and is the "Cow's-horn Orchid" of Honduras, and difficult to collect, owing to the ants which infest its sheltering stems. See Gard. Chron., 1879, xii., 107; Bot. Mag., 3729, 4476, 5172.

286. *Scuticaria*, Lindley.

Two or three species, from Brazil and Guiana. Epiphytes with curious thong-like or terete drooping leaves. *S. Steelii* and *S. Hadweni* have long been grown in gardens. See Orchid Album, t. 55; Bot. Mag., t. 4629 (*Bifrenaria*), 3572, 3573; Bot. Reg., t. 1986 (*Maxillaria*).

287. *Selenipedium*, Reichenbach f.

Ten species, from mountains of South and Tropical America. They are mostly grown as *Cypripediums*. *S. caudatum* is one of the most remarkable of Orchids, its petals growing 20 to 30 inches in length, a large proportion of which growth elongates after lower bud expansion. In *Uropedium Lindenii* the lip is petaloid instead of saccate, and three stamens are present. See Gard. Chron., 1879, xii., 107; Bot. Mag., t. 5466, 5614, 5970, 6217 (*Cypripedia*).

288. *Seraphyta*, Fischer and Meyer.

One species, from the West Indies, resembling *Amblostoma*. See Gard. Chron., 1883, xix., 700; Bot. Mag., t. 3565 (as *Epidendrum diffusum*).

289. *Serapias*, Linnæus.

Four or five species, wild in the Mediterranean region and extending to the Azores. They are so closely linked together by natural hybrid intermediates as to be scarcely distinguishable from a purely botanical point of view. See Bot. Mag., t. 5868, 6255; Bot. Reg., t. 1189; Moggr., Flor. Ment., t. 16, 94, 95.

**S. cordigera*, Gard. Chron., 1883, xx., 341.

90. **SERTIFERA**, Lindley.

One species only known, wild in Ecuador (*S. purpurea*, Lindley.)

291. **SIGMATOSTALIX**, Reichenbach f.

Seven species, wild in Tropical America.

292. **Sobralia**, Ruiz and Pavon.

Thirty species are wild on the Andes of Tropical America, Peru, Mexico, and Guiana. They are reedy herbs, bearing large *Cattleya*-like flowers, and represented in the West—the *Arundinas* of the Eastern Tropics. *S. macrantha* and its varieties are often met with in collections. See Lindl., *Sert. Orch.*, t. 29; Bateman, *Orch. Mex.*, t. 26, 37; *Bot. Mag.*, t. 4446, 4570, 4682, 4882; *Bot. Reg.*, 1841, t. 17.

**S. macrantha albida*, *Gard. Chron.*, 1871, 906.

203. **SOLENIDIUM**, Lindley.

Only one species, wild on the Colombian Andes, and allied to *Oncidia*.

294. **Sophronitis**, Lindley.

Four or five species, mostly from the Organ Mountains in Brazil. They are showy little epiphytes, with scarlet, butterfly-like flowers. *S. coccinea* and *S. grandiflora* are very popular in gardens. See Lindl., *Sert. Orch.*, t. 5, f. 2; *Bot. Mag.*, t., 3677, 3709; *Flor de Serres*, t. 1716.

**S. grandiflora*, *Gard. Chron.*, 1884, xxii., 561.

295. **Spathoglottis**, Blume.

Ten or more species, wild in India, South China, Malaysia, Pacific Islands, and Australia. Terrestrial herbs, often bearing showy flowers on erect spikes. "Paxtonia" is a pelorioid form of this genus. See *Gard. Chron.*, 1882, xviii., 532.

**S. Lobbi*, *Gard. Chron.*, 1882, xviii., 532.

296. **Spiranthes**, L. C. Richard.

About a hundred species, of world-wide distribution. Few are showy, except one or two species of *Stenorhynchus*. *Spiranthes Romanzoviana* (= *S. gemmipara*), wild in the South of Ireland, is unknown elsewhere in Europe, but extends from the Atlantic

to the Pacific in North America. See Gard. Chron., 1879, xiii., 107; Bot. Mag., t. 1568, 2026 (*Neottia*), 1562, 2730, 5277; Bot. Reg., t. 602, 794, 823, 1934.

**S. Romazoviana*, Gard. Chron., 1881, xvi., 465.

297. **Stanhopea**, Forst.

About twenty species known, from Tropical America, Brazil, and Mexico. Strong-growing epiphytes, bearing peculiar sweet-scented flowers, all showy. They are well deserving of culture. The lip is peculiar, and variable in formation in different species. See Gard. Chron., 1879, xii., 107. The following species are figured in Gard. Chron. :—

**S. ecornuta*, 1850, 295.

**S. florida*, 1881, xvi., 561, 565.

**S. guttulata*, 1848, 439.

**S. serrata*, 1850, 295.

**S. tricornis*, 1850, 295. See Bot. Mag., 3350, 4197, 4885, 5278, 5289, 5300.

298. **Stauroopsis**, Reichenbach f.

Eight or ten species, from the Malayan Archipelago and (?) India. Generally included under *Phalaenopsis* in gardens. *Trichoglottis pallens* is sometimes met with in cultivation, and is a good type species. See Lindl., Bot. Reg., 1846, t. 59; Bot. Mag., t. 5189.

299. **Stelis**, Swarz.

A hundred and fifty species are known in books, some few being in cultivation. They are wild in Tropical America, Brazil, Peru, Mexico, and the West Indies. See Gard. Chron., 1879, xii., 107; 1881, xvi., 136; Bot. Mag., t. 3975, 6521; Bot. Reg., t. 935; Lodd., Bot. Cab., t. 442, 1011,

**S. Bruchmülleri*, Gard. Chron., 1881, xv., 136.

300. **Stenia**, Lindley.

Two species only known, one from Guiana, and the other from Colombia. *S. fimbriata* is often grown in gardens.

301. **Stenoglossum**, Humboldt, Bonpland, and Kunth.

One species, from the Andes of Tropical America. Near *Epidendrum* or *Diothonea*. See Gard. Chron., 1883, xix., 700.

302. **STENOGLOTTIS**, Lindley.
One species, wild in Southern Africa.
STENORRHYNCHUS (see *Spiranthes*), Gard. Chron., 1879,
xii., 138.
303. **STENOPTERA**, Presl.
Three species, from the mountains of Tropical America
and the West Indies. Not showy.
304. **STEREOSANDRA**, Blume.
One species, wild in Java.
305. **Sunipia**, Lindley.
One species, from the Himalayas and Burmah. See
Gard. Chron., 1881, xvi., 463.
306. **SUTRINA**, Lindley.
One species, from Peru.
307. **TÆNIOPHYLLUM**, Blume.
Six species, from India, Malaysia, Pacific Isles, and
Australia.
308. **Tainia**, Blume.
Six or seven species, from India, South China, and the
Malayan Archipelago. Allied to *Eria*. See Gard.
Chron., 1882, xviii., 780.
309. **TELIPOGON**, Humboldt, Bonpland, and Künth.
Forty or more species, from the Andes of South America.
310. **TETRAMICRA**, Lindley.
Six species, from Tropical America, Brazil, and the West
Indies. *Leptotes* is included here. See Bot. Mag.,
t. 3098 (*Brassavola*), 3734.
311. **THECOSTELE**, Reichenbach f.
Only one species, from Malacca and the Malayan Archi-
pelago. Somewhat approaching the American
Stanhopeas.
312. **THELASIS**, Blume.
Eight species, from India, China, and the Malayan
Archipelago. Not showy.
313. **Thelymitra**, Forst.
Twenty species, from Australia, New Zealand, New
Caledonia, and Malaysia.
THUNIA (see *Phaius*), Orchid Album, t. 67, 130.

314. TIPULARIA, Nuttall.

Two species, from North America and the Himalayan range. Near *Oreorchis* and *Corallorhiza*.

315. Trias, Lindley.

Three species, from India, wild in Moulmein, and approaching *Bulbophylls*. See *Gard. Chron.*, 1882, xviii., 426.

316. Trichocentrum, Poeppig and Endlicher.

Eight species, from Tropical America, Brazil, and Central America. See *Gard. Chron.*, 1879, xii., 139; *Bot. Mag.*, t. 3969, 5688.

**T. albo-purpureum*, *Gard. Chron.*, 1866, 219.

**T. Pfavii*, *Gard. Chron.*, 1882, xvii., 117.

317. TRICHOCEROS, Humboldt, Bonpland, and Künth.

Six or eight species, from Peru and Colombia.

318. Trichoglottis, Blume.

Four or five species, from Malaysia; approaching *Sarcochilus*.

319. Trichopilia, Lindley.

Sixteen or more species, from Colombia, and Central America, and Mexico. *Helcia* and *Pilumna* are now placed here. Several species are grown in gardens. See *Orchid Album*, t. 14; *Gard. Chron.*, 1879, xii., 139; *Bot. Mag.*, t. 3739, 4654, 4857, 5035 (*Pilumna*), 5550, 5949.

320. Trichosma, Lindley.

One species, wild on the Khasia Hills, related to *Eria*, with the habit of *Cœlogyne*. See *Orchid Album*, t. 113; *Gard. Chron.*, 1882, xviii., 812.

321. Trigonidium, Lindley.

Seven or eight species, from Tropical and Central America, Brazil, &c. See *Gard. Chron.*, 1879, xii., 139.

322. Trizeuxis, Lindley.

One species, from the Colombian Andes. See *Gard. Chron.*, 1879, xii., 139.

323. TROPIDIA, Lindley.

Five or more species, from India, Malaysia, and the Pacific Islands.

324. **UNCIFERA**, Lindley.

Two species, wild on the Khasia Hills, and resembling *Saccolabium*.

325. **Vanda**, R. Brown.

Twenty species and numerous varieties, from India, Malayan Archipelago, and Tropical Australia. *Vanda suavis* and *V. tricolor* are well-known favourites, varying greatly. *V. teres* and *V. Hookeri* are lovely representatives of the terete-leaved group. *V. Sanderiana* is one of the finest species. See Orchid Album, t. 15, 48, 59, 61, 73, 77, 124, 168, 172, 180; Bot. Mag., t. 2245, 3416, 4114, 4432, 5174, 5611, 5759, 5811, 5834, 6173, 6328. The following species are figured in Gard. Chron.:—

- **V. Bensonæ*, 1867, 180.
- **V. Cathcartii*, 1870, 1409.
- **V. cœrulescens*, 1873, 529.
- **V. fuscoviridis*, 1848, 351.
- **V. lamellata* Boxalli, 1881, xv., 87.
- **V. Sanderiana*, 1883, xx., 440, 441.
- **V. suavis*, 1872, 974.
- **V. suavis*, Wingate's var., 1884, xxii., 237.
- **V. teres*, 1883, xx., 273.
- **V. tricolor* Patersoni, 1884, xxii., 236.

326. **Vanilla**, Swarz.

Twenty or more species, of world-wide distribution in tropical countries, and remarkable as affording delicious flavouring principle from their fruits. See Gard. Chron., 1879, xii., 139.

**Vanilla*, fertilisation of, Gard. Chron., 1867, 997.

327. **VRYDAGZENIA**, Blume.

Eight species, from the Malayan Archipelago, and the Pacific Islands. Near *Hetæria* or *Anætochilus*.

328. **Warrea**, Lindley.

Two species, from Colombia and Peru. See Bot. Mag., t. 4235 (*Maxillaria*), Loddiges, Botanical Cabinet, t. 1884 (*Maxillaria*).

WARSCIEWICZELLA (see *Zygopetalum*), Orchid Album t. 126.

329. *WULLSCHLÆGELIA*, Reichenbach f.

Two species, from the West Indies and North Brazil.
Near *Cranichis*.

330. *XYLOBIUM*, Lindley.

Sixteen species, from Tropical America, resembling
Maxillaria. See *Bot. Mag.*, t. 2806, 2955, 2981.

331. *YOANIA*, Maximowicz.

One species, wild in Japan, resembling *Epipogon*.

332. *ZEUXINE*, Lindley.

Sixteen, from India, Malaysia, and Tropical Africa. Not
showy.

333. *ZYGOPETALUM*, Hooker.

Forty species, from the warm parts of South and Central
America, Brazil, and the West Indies. *Huntleya*,
Bollæa, *Warscewiczella*, and *Promenæa* are now
included in this genus. See *Orchid Album*, t. 28,
50, 78, 87, 142; *Gard. Chron.*, 1879, xii., 139; *Bot.*
Mag., t. 2748, 2819, 3402, 3585, 3674, 3686, 4766,
4830 (*Warrea*), 5046, 5567, 5582, 5598 (*Huntleya*),
6003, 6331, 6458.

**Z. aromaticum*, *Gard. Chron.*, 1868, 75.

334. *ZYGOSTATES*, Lindley.

Three or four species, from Brazil; approaching the genus
Ornithocephalus. Not showy.

REPORT

ON THE

PLANTS EXHIBITED.

II.

BOTANICAL.

FROM a botanical point of view, this exhibition, one of the largest and most varied yet made, was of very considerable interest, for though certain very popular cultural *genera*—*e.g.*, *Odontoglossum*, *Cattleya*, and *Cypripedium*—formed the bulk and most conspicuous portion of the show, yet there were a number of smaller and less striking plants shown which possessed an almost strictly botanical interest. These were chiefly shown by the amateurs, the dealers devoting themselves rather to the more showy *genera* and hybrids. Several of the *genera* well known in cultivation were hardly or not at all represented in the exhibition, owing to their not flowering at that time, and the ornamental-foliaged plants belonging to the group *Neottiae* were conspicuous by their absence. In spite of this, however, there were examples of no less than sixty-one *genera*.

The majority of these were epiphytes, the terrestrials being usually more difficult of cultivation, and as a rule less showy.

The greatest number were natives of tropical South America, but species from most other parts of the world were there. The proportions are represented by the following order : South America (including Mexico), East India, Malaya (including Philippine Islands), Indian Peninsula, Australia, China and Japan, Europe, North America, Africa, Madagascar.

The Indo-Malayan region would doubtless have been more strongly represented, had not several of the most important *genera* been almost out of season, such were *Dendrobium*, *Cœlogyne* and *Phalænopsis*.

EPIDENDREÆ.

This section formed a very large portion of the show, and perhaps the most conspicuous part of it. Among the plants of chiefly botanical interest was *Stelis muscifera* (Lindley), rather a pretty little plant for the genus, with dark red leaves and spikes of very small dull red flowers. It came from the Royal Gardens at Kew, together with its ally, *Physosiphon Loddigesii* (Lindley), a curious little plant with long slender spikes of very small pale orange flowers, the sepals of which form at the base a short tube, the points spreading in a starlike manner. The tube contains and conceals the rest of the flower, after the manner of a *Masdevallia*, between which genus and *Pleurothallis* this plant seems to be a connecting link. The flowers of the specimen exhibited were of a paler colour than usual. Fine plants of the strange *Restrepia antennifera* (Lindley) were shown by Mr. Brymer and Mr. Southgate.

The ever-popular genus *Masdevallia* was exceedingly well represented; all sections of the genus were shown, and almost all the exhibitors showed some species, the series shown by Sir Trevor Lawrence attracting universal admiration. The *chimera* section was illustrated by *M. Roetzlii* (Rehb. f.), *chimera* (Rehb. f.), and *Backhousiana* (Rehb. f.), three very closely-allied plants, if indeed they are not varieties of one species; and there were also plants of *M. Benedicti* (Rehb. f.), some splendid specimens of *Veitchiana* (Rehb. f.), and *Lindenii* (André), with its variety or subspecies *Harryana*, and there were plenty of plants of the smaller flowered *M. ignea* (Rehb. f.), with the varieties *aurantiaca*, *coccinea*, &c.

Other species exhibited were *M. Shuttleworthii* (Rehb. f.), and the pale variety *xanthocorys*, *ludibunda* (Rehb. f.), *Reichenbachiana* (Endr.), *psittacina* (Rehb. f.), *trochilus* (Rehb. f.), and a fine plant of *Schlimii*, with four flower spikes, *civilis* (Rehb. f.), *Houtteana*, of which a beautiful plant with numerous flowers was shown by Messrs. Vervaet, *Fraseri* (Rehb. f.), and *racemosa* (Rehb. f.), which latter, however, was hardly in bloom. There were also a considerable number of hybrids.

Among the small-flowered species the most curious were *M. Arminii*, shown by Sir T. Lawrence, *M. Estradae*, *triangularis*, *simula* and *tridactylites*, with small brown flowers set singly on very slender wire-like stems, so as to vibrate with every breath

of wind. It belongs to the *triaristella* group, remarkable for the tails being inserted below the apex of the sepals, and not a continuation of them. It was shown by Mr. Courtauld. *M. ochthodes* (Rchb. f.), with spikes of small yellow flowers, came from Kew Gardens.

The *Dendrobia* were not so well represented as might have been expected. This was owing, doubtless, to their earlier flowering period, many species being out of bloom. There were, however, a good number shown, including many interesting plants and some remarkably fine specimens of well-known species, among which would be noted the plants of *D. nobile*, shown by the Duke of Devonshire and Mr. Prinseps.

Of the yellow-flowered species, the most interesting were *D. densiflorum*, *Jenkinsii*, *chrysotoxum*, *D. ochreatum* (*Cambridgeanum*) and *Jenkinsii*, and *D. Harveyanum*, shown by Sir Trevor Lawrence, remarkable for the petals being decorated with fringes, while the edge of the lip is almost, and those of the sepals quite, entire. *D. Brymerianum*, in which the fimbriation of the lip is carried to its greatest development, was shown by E. Harvey and J. Southgate. *D. cruentum* has very remarkable greenish-yellow flowers, streaked with red. It belongs to the *nigrohirsute* section, and was shown by B. D. Knox, of Caversham, and by R. Whyte, of Lee. To the same section belongs *D. Jamesianum*, a fine plant of which was sent by H. Low, who also sent a specimen of *D. Lowii*, with its singular yellow and red flowers, with a bearded lip prolonged at the base, so as to form with the foot of the column a kind of spur. It is most nearly allied to *D. cruentum*. Specimens also were shown of *Falconeri*, and its variety *Wardianum*, *Bensoniæ*, *Devonianum*, *Parishii*, *lituiflorum* and *crassinode*, and *rhodopterygium*. *D. albosanguineum*, with its large fawn-coloured flowers with crimson blotches in the throat, was shown by J. C. Duke. There were also plants of *D. Dalhousieanum*, and *superbum* vars *anosmum* and *Dearei*, the latter, a beautiful white-flowered plant, shown by Baron Schröder.

Sir Trevor Lawrence showed also specimens of two very interesting Australian species, but rarely seen in collections, viz., *D. Smillie* (F. Muell), one of the *dendrocoryne* section, with a large tuft of small rosy flowers with a green lip, borne at the end of a large pseudo-bulb (it has been figured in Fitzgerald's *Australian Orchids*), and *D. tetragomum*, first found by Allan

Cunningham. This plant is remarkable for its four-angled pseudo-bulbs, and its starlike, whitish flower, with narrow, acuminate petals and sepals, very unlike those of any other species but those of *D. amboinense* (Hook). The unusual form of the flower suggests a mimicry of the Spider Orchids of Australia, *Caladenia Patersonii*, &c.

A beautiful pan of *D. Fytchianum* from Southern India was shown by R. Ewing, of Cheshunt, with thirty leafless pseudo-bulbs, thickly covered at the summits with the delicate white flowers. One hybrid dendrobium only was shown, viz., *D. rhodostoma*, a cross between *D. sanguinolentum* and *Huttonii*. Specimens were exhibited by J. Cypher and Sir Trevor Lawrence.

Bulbophylla, as a rule, are not popular plants, owing to the small size of their flowers; but specimens of the large-flowered section, *Sarcopodium*, were shown. Sir Trevor Lawrence brought *B. siamense* and *Dearei*, which latter was also shown by C. L. Ingram, and from the Duke of Devonshire came *B. Lobbii*.

Perhaps the most curious plant in the exhibition was *Megaclinium oxypterum* (Lindley), the only species shown from the Edinburgh Botanic Gardens. The genus is allied to *Bulbophyllum*, especially to the *clavatum* section, having, like the species of that section, the rachis dilated into a swollen mass in which the flowers seem imbedded. In the *Megaclinium* the rachis is flattened, with wavy edges, curiously marbled with purple, about three inches long and nearly one in diameter. On each side of it is a row of small dull-coloured flowers. It is a native of Western Tropical Africa, and was one of the very few species shown from that continent.

From Kew Gardens came *Cirrhopetalum fimbriatum*, the only representative of that curious but not showy genus. It bore several umbels of small dull-coloured flowers, arising on slender peduncles from the bases of the leafless pseudo-bulbs; and the same establishment sent a plant of *Panisea uniflora*, a humble, inconspicuous species, with solitary dull ochreous flowers, a native of the Himalayas, perhaps more correctly referred to the genus *Cœlogyne*. The large genus, *Eria*, was illustrated by one species, and that not a conspicuous one, viz., *E. excavata*. It was sent from Kew.

Celia Baueriana is a curious West Indian plant, with short, compact spikes of small white flowers beautifully scented, and overtopped by the rather thin, long and narrow leaves. There

are but few species in the genus, and this is by no means the finest. It came from Kew Gardens.

Blume's genus, *Dendrochilum*, has been separated by Mr. Bentham in the "Genera Plantarum" into *Dendrochilum* and *Platyclinis*, which latter genus he refers to the neighbourhood of *Liparis*, from which genus it is abundantly distinct. To it belong the *dendrochilums* of cultivators, such as *D. glumaceum* and *Cobbii*. Cut spikes of the former were shown by Dr. Paterson with other cut flowers of Orchids.

The true *Phaii*, with leafless flower stems, were but poorly represented, *P. Wallichii* (Lindley) being the only one shown. We regretted not to see *P. tuberosus* (Blume), which has been so successfully flowered this year by several of our best cultivators, for it is without exception the noblest of all terrestrial Orchids in cultivation at present, though also, alas! very difficult to deal with.

The genus *Thunia* has been reduced by Mr. Bentham to a section of *Phaius*; the habit, however, is so different that it would seem better to keep it as a distinct genus. It is said also that the *thunias* will not hybridize with the *phaii*, this, if put beyond doubt, would be additional evidence against the close alliance of the two genera. Two species were shown, *T. Marshalliana* and *T. alba* (Lindley), both closely-allied plants.

Bletia hyacinthina (Brown) was the only Japanese Orchid in the show. It was exhibited by Sir Trevor Lawrence, and is especially interesting as being the only Asiatic species of the genus, which is otherwise confined to America. It thus furnishes another example of the connection of the floras of North America and Eastern Asia.

There were several representatives of the small genus *Chysis*. Mr. Cobb, of Silverdale Lodge, Sydenham, showed *C. Limminghei* and a fine plant of *Chysis bractescens* with three flower spikes. The latter species was also exhibited by Mr. C. N. Wyatt, of Cheltenham. Messrs. Veitch showed, in a collection of hybrids, *C. Chelsoni*, a hybrid between *C. bractescens* and *C. aurea*, and *C. Sedeni*, between *C. bractescens* and *C. Limminghei*.

The genus *Acanthephippium* is rarely seen in collections, doubtless on account of its impatience of cultivation. It is a close ally of the preceding genus, as is evidenced not only by its structure but also by the fact that it has been successfully hybridized with it. *A. bicolor* (Lindley), a native of Southern

India, was shown by Sir Trevor Lawrence; the flowers are rather large and fleshy, pink, white and yellow in colour.

The Cölogynes were but poorly represented, owing to the lateness of the season, many of them, especially those of the *pleione* section being winter-flowering plants. There were, however, plants of *C. cristata* (Lindley), *nitida*, *ocellata*, and *ochracea*, and cut spikes of *C. elata* were shown by J. Southgate; but the most interesting species was the rare *C. Parishii* (Rchb. f.), with its green flowers spotted with black, shown by Mr. J. C. Duke.

Of the genus *Calanthe* but few kinds were shown. *C. veratrifolia* (R. Br.), the most widely distributed of the genus, ranging from Southern India to Australia, was shown by Mr. Brymer. *C. Dominii*, hybrid between *C. furcata* and *C. masucci*, was exhibited by Mr. Cortauld.

Mr. Lee showed fine plants of *C. vestita* var. *igneo oculata gigantea*, and Mr. B. S. Williams brought *C. Sanderiana* (Rchb. f.), the finest perhaps of the *vestita* section. It seems strange that so few species of this beautiful genus have found favour with cultivators. There are a number of Malayan and North Indian species of great beauty which are never seen now in collections.

Among the Epidendreae proper, *Diacrium* (*Epidendrum*) *bicornutum* (Benth.) was sent from Kew Gardens. The genus was originally made as a section of *Epidendrum* by Lindley, but was raised to the rank of a genus by Bentham in the "Genera Plantarum," on account of its two-horned lip being free from the column. The habit, too, is very different, and the flowers large and showy.

The true epidendrums are by no means popular among cultivators, and indeed the genus contains a very large proportion of plants with small and dull-coloured flowers. Still a considerable number of species have been in cultivation, but few have attracted much attention. A small number were shown, including *E. ibaguense* (Lindley), *E. rhizophorum* (Lindley), *E. raniferum* (Lindley), and cut spikes of *E. erectum*, shown by Dr. Paterson.

There was also a plant of *E. falcatum* (*Parkinsonianum*) shown by the Duke of Devonshire. This species is a near ally of *E. ciliare*, having like that plant large pale yellow or white flowers with a broad three-lobed lip, but it is especially interesting from its fleshy curved, almost cylindrical-grooved, leaves, recalling somewhat those of *Tetramicra bicolor*.

The *Barkerias* have been reduced by Mr. Bentham to a section of *Epidendrum*. They seem, however, to possess sufficiently distinctive characters to be kept separate. Most of the species have been in cultivation, but none were shown at the exhibition.

The *Cattleyas* were very extensively represented, as would naturally be imagined, and included, besides, a very large number of plants of *labiata* section, several of a more distinctly botanical interest. Among the latter were *C. Forbesii* (Lindley), shown by Sander, *C. Acklandiae* (Lindley) and *elatior* var. *Leopoldi*, brought by H. Low, and *C. citrina* (Lindley), of which several plants were shown. This is probably the most northern species of *Cattleya*, and is unique in the genus for its oval pseudo-bulbs, glaucous leaves, and pendant half-opened flower. There were also several splendid plants of *C. Skinneri*, perfect masses of flowers.

The highly polymorphic *C. labiata* was represented by numberless forms, bearing as many names, and most of the well-known varieties were shown, the most striking of which was the fine white variety *Wagneri*, shown by Mr. Sander, who obtained a first-class certificate for it.

The whole genus was at one time referred by Professor Reichenbach to the genus *Epidendrum*, and indeed there are connecting links in the form of such plants as *E. Boothianum* (Lindley). Mr. Bentham has, however, kept the genus distinct, on account of the free lip embracing the column. The relations of the *Cattleyas* with the *Lælias* is also of some interest. Hitherto the number of pollinia, eight in *Lælia*, four in *Cattleya*, have been considered as sufficient to keep the two apart. In view, however, of the remarkable facts set forth in Mr. Veitch's paper on hybridization, it may well be doubted whether this view is the correct one, as the two *genera* seem to cross, in some instances at least, very readily. One of those hybrids is *Lælia bella* (*C. labiata* × *L. purpurata*), a plant of great beauty, shown by Baron Schröder.

The *Lælias* were of course as well represented as the *Cattleyas*, and included *L. purpurata*, *Schroederi elegans*, with the variety *Schilleriana*; *lobata*, shown by Sir Trevor Lawrence, and *autumnalis*, while *L. xanthina* and *cinnabarina*, shown by J. Southgate, represented the orange-flowered section.

The finest species of the small genus *Tetramicra* or *Leptotes*, *T. bicolor*, a well-known plant, with its curious fleshy terete

leaves and pink and white flowers, was brought by several exhibitors.

Schomburgkia is a fine genus which was not at all represented. It seems strange that such showy plants as some of the species are should be so unpopular. *Sophronitis* was out of flower, but a plant in fruit was shown by Mr. Veitch in the collection of fruiting Orchids. It will be referred to further on.

VANDÆ.

The few *Cymbidiums* that are in cultivation were in many cases out of flower, but several species were shown, of which *C. Louii* was most conspicuous, several splendid plants being exhibited. *C. Devonianum* (Lindley) was shown by Mr. Lee, and cut spikes of *C. eburneum* (Lindley) and *C. sinense* (Willd.) were sent by Dr. Paterson.

The last-named exhibitor sent also sprays of *Ansellia Africana* (Rchb. f.), one of the few African Orchids shown. A species of *Grammatophyllum*, which appears to be undescribed, was exhibited by the Plant and Bulb Company. It bore a loose raceme of rather large green flowers with brown spots, somewhat like those of *G. multiflorum*.

The *Polystachyas* are not as a rule remarkable for showiness, and have been but rarely introduced into cultivation. One species, undoubtedly the finest of the genus, viz., *P. pubescens*, a native of Africa, was sent from Kew Gardens, where it has flowered for several years. The flowers are larger than in most species, of a bright yellow, and marked with brown streaks. The genus is an interesting one in many ways. In the first place, it is one of the few epiphytic *genera* which extend to both hemispheres; and, indeed, some of the South American species are closely allied to Madagascar and Indian ones. The structure of the flowers, too, is very curious. In the bud the lip is covered with short hairs, which, when the flower is open, break off and form a loose, powdery mass on the lip. That these bear some relation to fertilization by insect agency seems highly probable, but in what way is less easy to discover, as the flowers are reversed, or, to be more correct, are right way up, which is rarely the case in Orchids, so that the face of the lip looks towards the ground, the result of which is, that when the flower opens, most of the powdery mass of hair must fall to the ground.

The genus *Eriopsis* consists of three or four South American species, rarely seen in cultivation. *E. biloba* was shown by Mr. Roberts, of Gunnersbury Park. It bore two erect spikes of the curious pendant flowers, buff-coloured, with darker edges to the sepals and petals.

Two or three species of *Anguloa* were shown, including *A. Clowesii* (Lindley), with four of its strongly-perfumed flowers, exhibited by Sir Trevor Lawrence, and *A. uniflora* var. *maculata*, by the Duke of Devonshire. There was also a plant of what seemed a new species, shown by Baron Schröder. It had a single white flower tinted with rose, and an orange lip with a thick callus in the centre.

The curious brown-flowered *Houlletia odoratissima* (Lindley) was shown by Sir Trevor Lawrence, who also brought one of the two known species of *Scuticaria*, viz., *S. Hadweni*. This Brazilian plant was formerly referred to the genus *Bifrenaria*, but from its habit and almost cylindrical leaves, it is evidently more closely allied to the Guiana species, *S. Steelii*.

Of the true *Maxillarias*, several were shown, including *M. Turnerii*, by J. Southgate, *M. luteo-alba* and *triangularis* from Kew Gardens. There was also a spray of *M. aurea* var. *flava* among the cut flowers shown by Dr. Paterson. In quite a different style was *M. Sanderiana* (Rehb. f.), exhibited by Baron Schröder. This species bears some resemblance to *Lycaste Skinneri*, with large whitish flowers spotted with purple. It obtained a first-class certificate.

Perhaps one of the most striking Orchids in the show was a fine plant of *Luddemannia Lehmanni*, shown by Sir Trevor Lawrence, with two long pendant spikes of closely-packed yellow-brown flowers. The genus is an exceptionally interesting one, on account of its relation with *Acineta*, as is set forth in a note communicated at the Conference by Professor Reichenbach.

Bifrenaria was represented by the well-known *B. Harrisonia* (Rehb. f.), often called *Maxillaria Harrisonia*. Plants were shown by Mr. Brymer.

Colax jugosus (Lindley) was exhibited by the Duke of Devonshire. This beautiful and uncommon plant has been placed with the only other species of the genus under *Lycaste* by the authors of the "Genera Plantarum." Professor Reichenbach in the "Xenia Orchidacea" keeps it distinct, considering it related to *Zygopetalum*. The species shown, with its beautiful white flowers marked with purple, is far the finest of the two.

Trichopilia is a small genus of which almost, if not all, the species have been in cultivation in England or on the Continent. Three species were shown, viz., *T. coccinea* and *T. tortilis* and *T. crispa*. Of the *Rodriguezias* or *Burlingtonias*, but few are showy enough to be deemed worthy of cultivation; cut sprays of one of the best species, *B. fragrans*, were shown by Messrs. Ireland and Thomson.

The genus *Cochlioda* has been aptly described by Mr. Bentham as having the flowers of an *Epidendrum* with the pollinia of one of the *Vandææ*, and the species which he includes in it have been variously ranked as *Odontoglossums* and *Mesospinidiums*. Three species were shown, *C. sanguinea* (Benth.), from B. S. Williams; *C. rosea* (Benth.), shown by Sir Trevor Lawrence; and *C. vulcanicum*, cut spikes of which were brought by Dr. Paterson.

The true *Zygopetala* are distinguished from the other species referred to, the genus by Mr. Bentham by their tall, many-flowered spike. Several examples were shown, including *Z. Mackayi* (Lindley), *Z. maxillare* (Lindley), and the hybrid between these two species, *Z. Sedeni* (Rehb. f.).

The section *Warszewiczella* was represented by *W. velata* (Rehb. f.), a plant of which, shown by Sander, bore numerous beautiful violet blooms. The larger-flowered *Pescatoreas* are referred by the authors of "Genera Plantarum" to the same section. *P. Lehmanni* was shown by J. Southgate, and a flower of *P. Gairiana*, was shown by Messrs. Veitch.

The *Promeneas*, including *Kiefersteinia*, form a section characterised chiefly by their smaller size. *P. citrina* (Lindley), with bright yellow flowers, was shown by Baron Schöder; and *Kiefersteinia graminea* (Rehb. f.), with curious green flowers with red spots, was exhibited by Sir Trevor Lawrence. Three species of the section *Bollea*, including *B. Patini* and *Lalindei*, not yet in flower, were shown by Mons. Vervaert, of Ghent. *Lycaste Skinneri* (Lindley) was shown in plenty and in every variety, the white and rose colour of the flowers being very variously distributed in the different forms. A beautiful series was shown by Mr. H. Little. More interesting, botanically, was *L. Lawrenceana* (Rehb. f.), shown by Sir Trevor Lawrence, with green mottled petals and sepals, and a fawn-coloured lip with a white edge.

The genus *Acineta* was represented by *A. Humboldtii*, shown by the Duke of Devonshire.

The *Odontoglossums* vied with the *Cattleyas* in obtrusiveness

at the show. All sections were represented, and the number of specimens of some of the species shown was very large. Of these none were more extensively exhibited than *O. crispum* (Lindley), *alias O. Alexandrae, Bluntii, &c.* This ever-popular plant was to be seen with every variety of colouring and under innumerable names, and afford an excellent example of the difficulties of a systematic botanist in dealing with an easily-grown and variable plant, the synonymy of which is already very extensive and is still on the increase. No genus requires more revision than this one. At present it is credited with upwards of one hundred species, many of which are probably mere cultural varieties, or natural hybrids. *O. Pescatorei* (Lindley), a near relative of *O. crispum*, was also extensively exhibited, and is equally overloaded with nomenclature. Even more critical are the brown and yellow-flowered section, of which *O. triumphans* (Rchb. f.), *Hallii* (Lindley), and *hebraicum* may be taken as types. Very many of these were shown, forming a bewildering study to the systematic botanist. Among the rarer and more interesting species were *O. pulchellum*, *lave coronarium*, and *facetum*, shown by Sir Trevor Lawrence, *O. Oerstedii* (Lindley), and *Cervantesii* (Lindley), by J. Southgate; and there were plenty of specimens of *O. Rossii* and *citrosimum*, and the acuminate-petalled *O. gloriosum*, *naevum*, and *cirrhosum*. There were no *Miltonias* shown, but the connecting links between that genus and *Odontoglossum*, in the shape of the broad-flowered odontoglosses, *O. vexillarium* and its allies, were very plentifully exhibited.

The *Oncidia* were almost if not quite as numerous as the *Odontoglossa*. Of the *cyrtochilum* section were shown *O. Kienasianum* (Rchb. f.) by Rev. J. B. Norman, *superbiens* (Lindley) by J. Southgate, *serratum* (Lindley) and *macranthum* by Mr. Cortauld, and several other species. The terete-leaved section was represented by *O. juncifolium*, referred by Dr. Lindley to a variety of *O. cebolleta* (Swartz), one of the most widely distributed of *Oncidia*. It was shown by Sir Trevor Lawrence, who also sent *O. bifolium* (Lindley). Other interesting species were *O. Edwardsii* (Rchb. f.), of which several plants were shown with large panicles of the small purple flowers; *O. pulchellum* (Lindley), with small white and rose-coloured flowers, was shown by Sir Trevor Lawrence and Baron Schröder; *O. concolor* (Lindley), *Marshallianum*, *sphacelatum*, and *cucullatum*

were also exhibited. Perhaps the most aberrant species of the genus is *O. papilio* (Lindley), of which two or three plants were shown. It is a variable plant, and more than one variety has received a distinct specific name. Apart from the unique form of the flower, it is very interesting on account of its mimicry of a butterfly, such as one of the *heliconii* of its native forest. Unlike most species in the genus the flowers are solitary, which adds to the illusion. The only parallel instance of real mimicry of an insect known to me is in the well-known genus *Ophrys*. In both cases the resemblance is more suggestive than exact.

The beautiful monotypic *Ada aurantiaca* (Lindley) was represented by several well-flowered plants and cut spikes.

The Brassias were not at their best, but specimens of three or four kinds were shown, including sprays of *B. verrucosa* (Lindley) from Messrs. Ireland and Wilson, *B. Lawrenceana* (Lindley), by Dr. Paterson, and a plant of *B. Keiliana*, one of the finest species, was shown by Mr. Smee, as one of a group of plants which had been grown for nearly four months, from July to October, 1884, in the open air without detriment. Like the rest of the group, which comprised *Odontoglossum crispum* and *Rossii*, it appeared quite strong and healthy.

The beautiful and delicate *Ionopsis utricularioides* (Lindley) was shown by Sir Trevor Lawrence and by the Plant and Bulb Company. *Phalænopsis* was rather past its prime, but several interesting plants were exhibited, including the rare *P. tetraspis* (Rehb. f.), from the Himalayas, shown by Mr. Cobb; *P. Parishii* (Rehb. f.), a very beautiful miniature species with small rose and white flowers, few leaves and remarkably broad flat green roots, came from Kew Gardens. *P. Luddemanniana* was shown by Mr. Brymer.

A plant of *Renanthera coccinea* (Lindley) was exhibited by the Duke of Devonshire, but it was not yet in flower.

Sarcophilus Hartmanni (Fitzg.) was one of the few Australian Orchids shown. It is and was the sole representative of the genus, unless we follow Mr. Benthham and include in it the beautiful *Camarotis purpurea* (Lindley), of which a fine plant was shown by Sir Trevor Lawrence.

There were several species of the beautiful genus *Aerides*, including *A. Veitchii*, *Lobbii*, and *Houlletianum*, shown by Sir Trevor Lawrence, the latter also by Mr. Lee, and sprays of *A. roseum*, *rubrum*, and *Fieldingii*, were among the cut flowers of

Dr. Paterson, and *A. Warneri* among those of Messrs. Ireland and Thomson.

The allied genus *Saccolabium* was also well represented. Plants of *S. ampullaceum* (Lindley) were shown by Sir Trevor Lawrence, J. Southgate and Mr. Brymer. The latter showed also *S. retusum* (Lindley). *S. gemmatum* (Rchb. f.), a narrow-leaved plant with slender spikes of very small rose-coloured flowers, was sent from Kew Gardens. *S. præmorsum* (Lindley) was shown by Mr. Cypher.

The genus *Cleisostoma* consists for the most part of somewhat insignificant looking plants. One species, *C. crassifolium*, was exhibited by Sir Trevor Lawrence.

The Vandas were not numerous as regards specimens, but several species were shown, including, *V. suavis*, *insignis*, and *tricolor*, *V. cærulescens*, shown by B. S. Williams and Baron Schröder, and belonging to the same section; the curious white-flowered *V. Denisoniana* was represented by several specimens. Two plants of *V. teres* (Lindley) were shown by Sir Trevor Lawrence and Mr. Brymer.

The large genus *Angræcum* was but poorly represented. Probably there is not sufficient variety in the species to make them welcome to the cultivator, for although at one time or another a considerable number of kinds have been introduced, but few are able to hold their own against the more showy genera. It is true, moreover, that most of the early species were out of bloom, and the later ones, such as *A. Ellisii* (Rchb. f.), were not yet in flower, the result of which was that the only species shown was *A. sesquipedale* (Thouars), flowers of which were shown by Dr. Paterson.

NEOTTIEÆ.

But few plants of this section of Orchids have been in cultivation, and fewer still are popular in these days, when brilliant and large flowers are the prevailing fashion. The group contains, however, a number of beautiful foliage plants, such as the *Anætochili* and *Dossinia*. These were entirely absent from the exhibition, perhaps because on account of the difficulties attending their cultivation they have been supplanted by easier grown foliage plants of other orders. The genus *Sobralia* is almost the only other popular one of the section. It was, however, hardly in bloom at the time of the exhibition, and so was

not represented. Specimens of two *genera* were shown, viz., *Ponthieva* and *Vanilla*; fruits, leaves and flowers of the latter were exhibited by Mr. Cookson among the fruiting Orchids. The pods were large, and of a fine dark brown or chocolate colour and deliciously scented. A plant of *Ponthieva maculata* (Lindley) was sent from Kew Gardens, where it has been cultivated for some years. This is the showiest of the genus, and is remarkable for being probably the hairiest plant of the order.

OPHRYDEÆ

Is another unpopular section, for which also the season was rather too early. Four *genera*, however, were represented. Lady Howard de Walden, of Mote Park, Maidstone, exhibited several species of *Serapias* from Italy, including *S. lingua* (Lindley) and *cordigera* (Lindley), and a plant of *S. parviflora* (Parl.) was sent from Kew. The above-mentioned lady showed also *Ophrys Bertolonii*, one of the most beautiful and curious of the Insect Orchids. These plants had flowered for two years in succession, but, perhaps owing to the colder and duller climate of England, the flowers of the *Serapias* were rather pale in colour. From Mr. Ware, of Tottenham, came *Orchis papilionacea* (Lindley), a beautiful and interesting South European plant, which forms a connecting link between the *genera* *Orchis* and *Serapias*, having indeed been successfully hybridized with the latter genus.

Two or three plants of the largest flowered of all *Ophrydeæ*, *Disa grandiflora* (Lindley), were exhibited, but not in flower.

CYPRIPEDÆ.

There are few *genera* more popular than *Cypripedium* and *Selenipedium*, almost all the species known having been in cultivation at one time or another, and most at the present day.

The cypripediums proper are most naturally divided into those of temperate and those of tropical regions. The former are easily recognized by their leafy stems, the latter having a rosette of leaves from which arises a naked scape bearing usually a single flower.

Of the temperate species, Messrs. Paul and Son showed *C. pubescens* (Lindley), a North American species resembling, but rather inferior in colouring to, our British species *C. calceolus* (Lindley), which was shown by Mr. Ware, together with *C. parviflorus* (Lindley), also a North American plant.

The tropical species were, however, the most extensively shown, upwards of twenty species and numerous hybrids being exhibited. The most highly admired was the new *C. Godefroyæ* (Rehb. f.), a beautiful plant, allied to *C. niveum* (Lindley), but with a larger and broader flower, white spotted with purple. It is a native of Cochin China, and was exhibited by Baron Schröder and Mr. Lee. Both its allies, *C. niveum* (Lindley) and *concolor* (Hook), were also shown. *C. Druryi* (Beddome), with its curious yellow flowers, is interesting, as being one of the most western of the Old World tropical species, being a native of Southern India. Another Indian species is the well-known *C. insigne* (Wall.), of which numerous specimens and varieties were shown. Other species were *C. Dayanum* (Rehb. f.), *ciliolare*, shown by Sir Trevor Lawrence and Mr. Low; *Hookeri*, *Lowii*, *laxigatum* and its ally *Stonei*, with the curious variety *platytanum*, shown by Mr. W. Lee; *C. Argus*, from Mr. Williams; *C. Parishii*, from the Plant and Bulb Company; and several other well-known plants and many hybrid forms, of which the best series were those shown under the class for hybrid Orchids, by Messrs. Veitch.

Of the South American genus *Selenipedium*, there were shown numerous specimens of *S. caudatum* (Rehb. f.) and its variety *roseum*, *S. longifolium* (Rehb. f.), and *Schlimii* (Rehb. f.), and, most curious of all, *Uropedium Lindenii*, which it seems hardly possible to doubt is a persistent monstrosity of *S. caudatum*. The reduction of the lip to a petal-like organ is not a very uncommon malformation in Orchideæ, occurring at times all through the family, and it seems in some instances to be persistent—e.g., in *Paxtonia rosea* (Lindley), a monstrosity of a species of *Spathoglottis*, and in the *Uropedium*.

There were a few special exhibitions which call for some remarks. A number of drawings in water colours and oils, and a few photographs, by various artists, were shown, mostly representing, however, common or well-known plants. The best were by Miss Woolward, and included the picture of an apparently new species of *Masdevallia*, belonging to the unequal-petalled section, but with small flowers. Mr. Smee showed a series of Orchids which had been exposed to the open air for four months in the autumn, apparently without injury. Among them was *Dendrobium Devonianum* with a pseudo-bulb six feet and a-half in length. When it is remembered that several of the

Odontoglossa ascend the Andes almost to the snow line, and that the little *Epidendrum conopseum* can endure the cold winters of Georgia and Louisiana, we may yet hope in time to obtain epiphytic Orchids which can be grown in the open air, at least in our south-western counties.

A very interesting series of Orchids in fruit was shown by Messrs. Veitch. The study of the forms of the capsules of Orchids has been hitherto too much neglected, and, indeed, the fruit of many even well-known *genera* have not yet been described. One reason for this is to be found in the fact that botanical collectors rarely obtain complete specimens of Orchids with both fruit and flowers, and without the latter it is almost impossible to identify the plant, and, furthermore, the fruits are a good deal injured by pressing, and their form rendered difficult to make out.

The capsules of most Orchids consist of six valves in two whorls, the outer ones are narrow and barren, while those of the inner series are broad and bear on their inner service the placentas with the minute circles. These valves bear, usually, ridges running down the middle, and commonly the outer valves are reduced to the ridges only, in the form of slender ribs alternating with the broad seed-bearing inner valves. Sometimes the valves and their ridges are nearly equal and sometimes the ridges are absent. Besides variations in these respects, the first varies in shape and outline, it may be long and narrow as in the *Vanilla*, or short and thick as in *Cattleya*. Usually the placentas do not run the whole length of the capsule, but between their termination and the base of the column is a larger or shorter portion, which is generally narrower than the body of the capsule and forms a kind of beak.

These various forms were well illustrated by the exhibits of Messrs. Veitch, Smee and Cookson. The long, narrow, pod-like form was represented by the fruits of *Vanilla planifolia*, almost cylindrical, with no ridges and only grooves to mark the six-partite origin of the fruit. They were quite soft and pulpy, of a rich chocolate brown, and deliciously scented. *Phalenopsis Schilleriana* has also a long pod, about four inches in length, cylindrical, thicker and shorter than that of *Vanilla*, and with more distinct grooves. *Cypripedium* has also a sub-cylindrical elongate fruit.

Sophranitis grandiflora has an elongate fruit with distinct ridges and a very conspicuous beak.

In *Oncidium Forbesii*, the fruit is somewhat like that of *Sophranitis* in shape, but thicker and with more distinct ribs and a shorter beak.

Chysis bractescens has a thick sub-cylindric capsule with thick blunt ridges. In *Vanda insignis*, the fruit is straight and thick, six-sided, with no beak. The fruits of *Odontoglossum Pescatorei* and *O. radiatum* have rather indistinct ridges, being elongate and triangular in section. *Angræcum sesquipedale* has a rather long pyriform fruit, with indistinct ridges and no beak. In *Dendrobium Findleyanum* the fruit is rather long-shaped but has no beak, and the ridges are somewhat obscure. *Aerides quinquevulnera* and *Masdevallia towarensis* have each a short thick beakless fruit, that of the former being rather large in proportion to the flower. The *Cattleyas* and *Lælias* have pendulous thick and short fruits with distinct beaks, and the ridges prominent and blunt, nearly equal, with deep and broad depressions between them. Those of *Cattleya Trianae*, *Lalia anceps*, and *albida* were shown. Very similar in form are the fruits of *Lycaste*; the ribs, however, were stouter and blunter in the species shown, viz., *L. Skinneri* and *Deppii*.

W. Macdonald, Esq., of Perth, sent a plant of *Phalænopsis Stuartiana* (Rehb. f.), on the roots of which three young plants had appeared. This is not the first time this very unusual phenomenon has appeared on a *Phalænopsis*. Professor Reichenbach mentions an analogous case in a communication read at the Conference, and a similar specimen was grown a short time ago by Major Lendy.

This method of reproduction is more common in dicotyledonous plants, especially in tree or shrubby plants, and is the rule rather than the exception in some trees, such as the Balsam Poplar.

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