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Sophronites Grandifloral

THE
Orchid-Grower's Manual

CONTAINING A BRIEF DESCRIPTION

OF

UPWARDS OF TWO HUNDRED AND SIXTY
ORCHIDACEOUS PLANTS

TOGETHER WITH

NOTICES OF THEIR TIMES OF FLOWERING AND MOST APPROVED MODES OF TREATMENT;
ALSO, PLAIN AND PRACTICAL INSTRUCTIONS RELATING TO THE GENERAL
CULTURE OF ORCHIDS; AND REMARKS ON THE HEAT,
MOISTURE, SOIL, AND SEASONS OF GROWTH
AND REST, BEST SUITED TO THE
SEVERAL SPECIES.

BY

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LONDON:

CHAPMAN AND HALL, 193 PICCADILLY.

MDCCCLII.

LONDON :
PRINTED BY G. BARCLAY, CASTLE ST. LEICESTER SQ.

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TO
CHARLES BORHAM WARNER, Esq.

FELLOW OF THE HORTICULTURAL SOCIETY OF LONDON,

The following Pages

ARE

RESPECTFULLY INSCRIBED

BY

HIS OBEDIENT SERVANT,

B. S. WILLIAMS.

PREFACE.

THE following papers were written nearly four years ago, at the suggestion of Mr. Bellenden Ker, who had commenced the cultivation of Orchids, and whose gardener then employed was not conversant with their treatment. At first it was intended that the observations should have been printed in a small volume; but the papers were afterwards offered to the Editor of the "Gardener's Chronicle," in which publication they appeared under the title of "Orchids for the Million." They were preceded by the following remarks, made by the gentleman at whose suggestion they were written.

"Being desirous of growing a few of the more showy Orchidaceous plants, but as neither myself nor my then gardener was acquainted with the mode of their cultivation, I applied for some information on this head to Mr. Williams, the gardener of my neighbour, Mr.

Warner, and who kindly, from time to time, gave me such instruction as was necessary for a beginner. There is a notion amongst gardeners that the cultivation of these plants is attended with great difficulty; that different houses for different climates are necessary; and that the secret of good culture is only known to few; that, in fact, no one but those having a large establishment, and a gardener expressly skilled in Orchidaceous culture, should attempt to grow them. Mr. Bateman, in the preface to his great work, intimates that their cultivation is to be left to the aristocratic, whilst the more humble florist is to be confined to his Carnations, Auriculas, Dahlias, and such-like flowers. Mr. Williams' plan seemed to me very simple, and also that one house might easily be made to answer the purpose, if properly managed; at least for those who are not ambitious of possessing a very large collection, or of growing such as are most impatient of culture. Having derived much advantage from the instruction afforded to me, I recommended Mr. Williams to make notes of his mode of culture, and since these were written I have advised him to publish them. I trust that, to humble beginners like myself, I have done good service by this advice; and I cannot but think that ere long many will be induced to attempt the cultivation of this beautiful tribe of plants, who, for want of plain instructions, have hitherto been deterred from

making a beginning. A very small house is sufficient, hot-water pipes or tanks are now cheap, and a small boiler may be had for 2*l.* 10*s.*, or less; and glass (thanks to Sir Robert Peel) is also within the means of the humblest gardener; and those who refer to Mr. Rivers' account in your paper of how to make cheap lights, and build cheap houses, will find that for 40*l.*, or less, a very sufficient Orchid-house, with hot-water apparatus, may be put up.

“Knowing the pleasure derived by many in the humblest classes from the cultivation of flowers, and how much talent, patience, and ingenuity, are often displayed by such amateurs, I feel gratified by the hope that I may possibly be the means of increasing the harmless amusement of many. It is not likely that Mr. Williams' instructions will interest or inform those cultivators — Mr. Mylam, Mr. Blake, Mr. Bassett, Messrs. Veitch, Rollisson, &c., or others at the head of the great collections of this country; it is merely for the benefit of the beginner that they are intended. As regards the fitness of Mr. Williams to instruct, the best proof I can offer of this is, that for some years he has exhibited, both at Chiswick and in the Regent's Park, and a reference to the prize lists will show that he was always successful, and, during the past years, obtained 23 gold and 12 silver medals for Orchids, and 14 silver ones for Ferns. Mr. Warner's collec-

tion not being so large as those of many others, it was only the last two years that Mr. Williams competed in the highest class of twenty plants."

Since the first appearance of these observations, I have revised them, and have added notices of several desirable, showy, and new species; and the following pages will contain short and plain, but, it is believed, accurate descriptions of more than 260 of the best Orchids now in cultivation. I cannot resist this opportunity of expressing my gratification at finding that it has come to my knowledge that the publication of these papers has already induced several persons to commence the cultivation of this interesting class of plants.

Any reader of this Manual who may be interested in the commencement and progress of the culture of Orchids in this country, will find a clear and useful summary of information on this subject in an article on Ephiphytes in the "Penny Cyclopedia."

THE
ORCHID-GROWER'S MANUAL.

INTRODUCTION.

THE nature and the habits of Orchidaceous plants are now better known than they were some few years ago, and we have become acquainted with the conditions of their growth in the countries where they are indigenous. There they are exposed to a dry season, during which they are at rest ; and to a rainy season, when the heat is higher, and the air moist nearly to saturation. To grow Orchids in any perfection, their native climate must, to a certain extent, be imitated ; viz. they must have a period of rest in a dry and comparatively cool atmosphere, and during their growth and flowering they should be exposed to a high moist atmosphere ; but as they principally grow on the trunks and branches of trees, it is important that they should be exposed to a free current of air, and also to the light : this is essential, except in some few species which require shading, to prevent the plants being exposed to the direct action of the sun's rays, which is apt to scorch the leaves. The great heat and moisture are only necessary while the plants are in vigorous growth, and this period should be during spring and summer, the best periods of rest being from

about November till February ; and it is the long period of rest which predisposes the plant to blossom. Of course, the rules as to the periods of growth and rest can only be stated in general terms. There are certain kinds which do not entirely cease growing throughout the whole year. And again, even of those which do go to rest periodically, on the completion of their growth, it does not always happen that their time of rest corresponds with that at which the largest numbers go to rest.

Directions for the period of Growth.

When the growing season commences, raise the temperature of the East India house, or house in which the greatest heat is maintained, to 65° by night and 70° by day ; by sun heat it may be allowed to range to 75° , and as the days lengthen, so the temperature may be permitted to increase ; and during the months of May, June, July, and August, it should range from 70° to 75° by night, and from 75° to 80° by day, and by sun heat to 85° , or even 90° : this will not do any harm, provided the plants are shaded from the direct rays of the sun. The Mexican or cooler house should be 60° by night, and from 65° to 70° by day ; and as the days lengthen, so the temperature may be allowed to increase ; and during the months of May, June, July, and August, the night heat may range from 65° to 70° , and by day from 70° to 85° . Great attention should, at the same time, be paid to the state of the atmosphere, as regards moisture ; at all times of the year this is of much importance to the successful growth of the plants, for they derive the greater part of their subsistence from the moisture in the air, so that wherever any plants are growing, the atmosphere should be well supplied with moisture : this is obtained by pouring water over the tables, walls, and paths of the house

every morning and afternoon; and by keeping the hot-water tanks full, this will cause a nice gentle steam to rise, which is of great value whilst the plants are in a vigorous state of growth, especially as regards the East Indian Orchids, such as *Aerides*, *Saccolabiums*, *Vandas*, *Phalænopsis*, *Dendrobiums*, and many others requiring a high temperature, with a considerable degree of moisture. The Mexican Orchids, most of which come from a cooler climate, not so saturated with water, of course require less heat and moisture, but these should have a considerable degree of warmth during their growing season.

Water.

This should be administered with great care, especially in the case of plants just starting into growth, as, if watered too profusely, the young shoots are apt to be affected by the moisture of the house, and liable to what is termed damping off; whilst, therefore, the shoots are young, only enough of water should be given to keep moist the peat in which the plants are grown. As they advance in growth, more may be given; and when the pseudobulbs are about half grown, they may have a good supply at the roots. My practice is to shut up the house in the spring of the year about three o'clock; and in May, June, July, August, and September, I shut it up about an hour later, when the heat of the sun is on the decline. I then usually give a gentle syringing with water, as nearly as may be of the same temperature as that of the house. In fine weather, the temperature from sun heat will increase frequently as high as 95° , or even more; but I have never experienced any injury from this, so long as the house was saturated with moisture, in which case there is no fear of any injury to the plants. The house should be dried up once a-day, if possible, by means of ventilation. In

syringing, be very careful not to wet the young shoots too much. The syringe should be furnished with a fine rose, so as to cause the water to fall on the plants in imitation of a gentle shower of small rain ; but this syringing should only be done after a hot summer's day. Those plants which are growing on blocks of wood should be syringed twice a-day in the summer time ; and I also find it a good method, during the growing season, to take the blocks down, and dip them in water till the wood and moss are thoroughly soaked. Plants in baskets should likewise be taken down and examined, and if they are dry, they should be soaked in the water. This is also a good mode of getting rid of many insects that harbour in the moss, such as the woodlouse and cockroach ; when the moss is soaked, they will come to the top, and then they may be easily killed. Rain or pond water is the best.

On the Cultivation of Tropical Orchids.

Among Orchids some are termed terrestrial, growing in earth ; such as the genera *Phajus*, *Calanthe*, *Bletia*, *Cyrtopodium*, *Cypripedium*, &c.: all draw support from the ground. *Epiphytes*, the other class, inhabit trees and rocks ; from which, however, they derive little or no nourishment. These are by far the most numerous and interesting. They are found adhering to the arms of living trees, whilst some of them delight in very elevated situations upon high trees. Others, again, grow upon low trees, some on rocks and mountains, some on trees overhanging a river, and some near dripping rocks. The latter, of course, require a particularly damp atmosphere to grow in ; others are found in woods, where scarcely any sun can penetrate ; these like a shady moist atmosphere, whilst those in more elevated situations do not need so much shade as the last. A knowledge of the different habitats of the various species

is essential to the careful grower, so that he may, as far as his means permit, place them in circumstances similar to those in which they make their natural growth ; and it is, perhaps, to inattention on this point that the want of success in the culture of some of the orchidaceous plants, by even the most successful of our cultivators, is to be attributed.

Mode of Potting, and the Materials to be used.

When the season of rest is over, many kinds will require repotting : but I have not confined my practice to that time only ; no season can be determined on absolutely as the proper one for this operation. The months of February and March are the best times to pot some of them, that is, after the resting season. Those that do not need potting should be top-dressed with good fibrous peat, removing the old soil from the top without breaking the root of the plants. This also affords the means of getting rid of many insects which harbour in the old soil. The pots should be thoroughly cleansed from the mould, moss, and dirt, too often seen covering those in which Orchids are growing. Previously to potting the plants, they should not receive any water for four or five days. Some, however, should be potted at a period somewhat later, viz. just as they begin to grow. All the species of the genera *Phajus*, *Calanthea*, *Dendrobium*, *Stanhope*, *Cyrtopodium*, *Brassia*, *Miltonia*, *Sobralia*, *Bletia*, *Oncidium*, and many others, require this treatment. *Lalias*, *Cattleyas*, *Saccolabiums*, *Aerides*, *Vandas*, and similar plants, should be potted just before the commencement of their growing season. The chief point to be attended to in all potting is that the pots may be well drained ; the best material for drainage is potsherds or charcoal. Before potting, be particular to have the pots perfectly clean inside and out, and

the broken potsherds should be washed : after this is done, select a pot according to the size of the plant ; do not give them too much pot room. Some plants will require shifting once a-year ; others it will not be necessary to shift oftener than once in two or three years : but if a plant become sickly or soddened with wet, the best way to bring it into a healthy state is to turn it out of the pot or basket, and wash the roots carefully with some clean water, cutting off such of the fibres as are dead ; then to repot it, not giving it much water till the plant begins to make fresh roots. The best pots are those in ordinary use. Some employ slate pots, but they are not, in my opinion, so good for Orchids as those made of clay.

In potting large plants, there should be a small pot turned upside down in the bottom of the large one ; then fill in with potsherds or charcoal broken up into pieces, about two inches square for large plants ;—smaller plants should not have pieces so large ; then introduce potsherds till within three or four inches of the rim, and afterwards put on a layer of moss to prevent the peat from impeding the drainage, and to let the water pass off quickly. This is of great importance, and if it is not attended to the water will become stagnant, and the soil sodden, which is fatal to the growth of the plant. The grand point to be observed in the successful culture of Orchids, as well as of other plants, is good drainage ; without that it is hopeless to try to keep the plants long in a healthy condition. The best material for potting the different kinds of epiphytes in is good, rough, fibrous peat and sphagnum moss ; after the layer of moss is applied, then fill up with peat. This should be broken into lumps about the size of a hen's egg : I always use broken potsherds or charcoal mixed with the peat. The plant should be elevated above the rim of the pot two or three inches, taking care to have all the pseudo-

bulbs above the soil ; then put some peat on the top of the roots so as to cover them, employing a few small pegs to keep the soil firmly in the pot. After the plants are potted I fix a stick in the centre of the plant, to keep it firm. In shifting, I carefully shake off all the old soil I can without injuring the roots, and am careful not to give too much water at first ; but after the plants begin to make more root, they have a good supply. The best material for those in baskets is sphagnum moss and broken potsherds. The basket should suit the size of the plant ; but do not have it too large, for it will not last more than two or three years, at which time, probably, the plant will require shifting into a larger one. There should be placed a layer of moss at the bottom of the basket, then a few potsherds, then fill up with moss and potsherds mixed. Take the plants carefully out of the old basket without breaking the roots, shake off all the old moss, place the plant on the new material, about level with the top of the basket ; put a stick in the centre, to keep it firm, and finish by giving a gentle watering.

Those plants that require wood to grow upon should have moss attached to the blocks, if by experience they are found to require it ; some, however, do better on bare blocks, but they need more moisture, as they are then entirely dependent on what is obtained from the atmosphere. In fastening them firmly on the blocks, have some copper nails and drive them into the block : then, with copper wire, secure the plants firmly to the wood. As soon as they make fresh roots they will cling to the block, and the wire may be taken away.

The Material for Terrestrial Orchids.

These require a stronger compost than the epiphytcal kinds. They should be potted just when they begin to

grow, after the resting season; they do not need so much drainage as epiphytes. The compost I use for them is turfy loam chopped into pieces about the size of a walnut, leaf-mould, and a little rotten cow-dung; these are all mixed well together. The plants require a good-sized pot; put about two inches of drainage at the bottom, on that a layer of moss, then some of the rough peat, and finish with the compost above-mentioned; place the plant one inch below the rim of the pot; water sparingly at first, but when the plants are about six inches high they may have a good supply.

Treatment of Fresh-imported Plants.

These, when unpacked, should be sponged over every leaf and bulb, and all the old decayed parts taken away. There are many insects that will harbour in them, such as the cockroach, and the different kinds of scale, which are great enemies. When they are clean they should be laid on dry moss and placed in some shady part of the house, where it is rather cool and dry. Too much light, heat, and moisture at first is injurious to them. The moss should be gradually moistened, and when they begin to grow and make roots they should be potted or put on blocks or in baskets, but care should be taken not to have the pots too large; over-potting is dangerous.

As soon as they begin to grow, those which come from the hotter parts of India should be put at the warmest end of the house, but they should not have too much moisture at first: those which come from the more temperate regions should be kept at the coolest part of the house, and they should not be allowed to stand under any drip, as this frequently rots the young shoots as soon as they appear. Such plants as *Vandas*, *Saccolabiums*, *Aerides*, *Angræcums*, *Phalænopsis*, are fastened on blocks as soon as they are

received, and I place them so that the plants hang downwards, in order that no water may lodge about them, till they begin to grow and form new roots: this is much the safest mode of treating these valuable Orchids. This is also the mode adopted by Messrs. Rollisson of Tooting, who are among the most successful growers of these plants.

*Remarks on the most suitable House for the Culture of the
Orchideæ.*

Mr. Warner's house stands north and south; it is 60 feet long, with a span-roof, 24 feet wide and 13 feet high; in the centre is a glass division, so as to make two houses, one for those that come from the warmer parts of India, next the boiler, and the other for those which come from cooler climates, and which require less heat and moisture. There are two middle tables, each 4 feet 7 inches wide, 2 feet 8 inches high, for plants, and a path 3 feet wide runs up the centre of the house. Along each side are slate cisterns for holding rain-water, and under these are three rows of 4-inch hot-water pipes; on the top of the cisterns is a table for plants, and up each side of the house there is a path 3 feet wide. York stone suits best for the floor of the house, because it holds more moisture than slate, but slate is best for tables; the latter should be made with a ledge, so that they can hold water during the summer, but in winter they should be dry: the water should never be permitted to be long on the shelves at a time. I change it once a-week. I put a layer of small stones, about the size of bantams' eggs, in the water, to set the pots on, and in this way a good drainage is maintained.

For heating an Orchid-house nothing is better than hot water; three rows of 4-inch pipe should run round the house, and two round each centre table, inside of the

brickwork on which the table rests; and there should be an open tank in the centre, with means for turning off the water when moisture is not required. Small iron ventilators, made to open and shut, should be inserted in the brickwork on each side, so as to allow the heat and moisture to pass into the house when required. At each end of the middle tables there should be a hole, provided with a sliding door, large enough for a man to enter under the tables, to examine the pipes at any time when they are out of order.

Glazing.

The laps here are close. The squares are 3 feet long and 11 inches wide, sheet glass, 21 oz. to the foot. On both sides there should be upright sashes, containing glass 15 inches high and 11 inches wide. The south end of Mr. Warner's house is glazed, and the north end is brickwork, for climbing Ferns and Orchids. Each sash-bar of the roof should have a small groove in it, to allow the water to run down to the bottom of the bar, where a small zinc gutter should be provided to receive it; if this be not attended to, the latter will drip on the plants, which is very injurious to them.

Ventilation.

This is of great importance; for if cold air is allowed to pass among the plants they will not thrive, and all care which has previously been bestowed on them will be in vain. Means of ventilation should, therefore, be provided for, near the ground, close to the hot-water pipes, in order that the air may be warmed in entering the house. In the houses here there are three ventilators on each side of each house, two at the south end in the brickwork, and

two at the north end near the top of the house. The ventilating shutters are made of wood, about two feet long, one foot wide; sliding slate ventilators answer perhaps better: there should be two glass ventilators at the south end near the roof, as the top-lights of the house are not made to slide.

Every Orchid-house requires to be shaded. The best material for shading is canvass, and there should be blinds on each side of the house, with a strong lath at the top to nail the canvass to, with a roller at the bottom. The canvass must be nailed to the roller, but care should be taken in doing this that the awning roll up regularly from the bottom to the top. I never, however, allow the canvass to be down, except when the sun is powerful, for I find that too much shade is injurious to most kinds of Orchids. The awning will also be useful in the winter season for covering the house during a frosty night, being a great protection to those plants that are near the glass. It is advisable to have a covering on the top of the house for the protection of the canvass when rolled up, in order to keep it from the wet.

Slate cisterns, for collecting the water which falls on the roof, are very important in a house. We have cisterns on each side of the house over the hot-water pipes, which keep the water at the same temperature as that of the house.

The best houses for the culture of the Orchids, in my opinion, are those with span roof, facing east and west, and not more than 10 or 11 feet high in the centre, 17 or 18 feet wide, and about 60 feet long, with a glass division in the centre to separate them into two houses. One for those that come from the East Indies, which ought to be next to the boiler; and the other house for those that come from cooler regions: there ought to be upright

sashes on both sides of the house, with glass from 15 to 20 inches high, and not made to open. Many of the Orchid-growers object to the side-sashes, and generally recommend brickwork, with the roof laid on the brickwork, and no glass on either side; but, in my opinion, that is not the best plan, and I would recommend any one about to build an Orchid-house to have upright sashes on both sides, and glass at the south end and brickwork at the north end. I have found by experience that Orchids cannot have too much light; that this is the only way to get good, stout, ripe bulbs for flowering. Small houses are the best for Orchids. There are several large houses in different parts of the country, but in no instance have I seen the plants grow well in them. These large houses take twice the heat to keep them at the right temperature; and, after all, they do not seem adapted to the wants of the plants. I would advise those who have large houses and their Orchids not doing well, to pull them down, or turn them into some other purpose, and try smaller ones for Orchids; the expense would soon be saved by diminished cost of pipes and fuel.

*Treatment of Plants in Flower, and the best Mode of
protracting their Bloom.*

There are many Orchids that may be removed when in flower to a much cooler house than that in which they are grown, or even in a warm sitting-room. The following are among the advantages of keeping them during their period of flowering in a cool and dry atmosphere, rather than, as is frequently the case, in a hot and moist house: in the latter, the flowers do not last nearly so long as they do when moved to a cooler house or a warm room. Perhaps there are not many cultivators who have studied this point more than myself, and I never found the plants injured by

this treatment. Some imagine, that if they are put in a cool place they will be injured; but this, in my experience, has not occurred. During the time they are in a room, the temperature should not be below 50° . At night the room should be kept quite dry, and before they are removed from the stove they should be put at the coolest end of it; or, if there be two houses, those that are in the hottest should be moved to the coolest for a few days before being taken into the room, and they should be allowed to get nearly dry, and should receive but very little water—only enough to keep the roots moist. The flowers should not receive any moisture.

I name a few that I have tried in a room during the months of May, June, July, and August. I have kept *Saccolabium guttatum* in this way five weeks, *Aerides affine* the same time; *A. odoratum* or *A. roseum*, and some of the *Dendrobiums*, viz. *nobile* and *cærulescens*, I have kept in a room four and five weeks. *D. moniliforme*, *D. macrophyllum*, *D. pulchellum*, *D. Ruckerii*, and *D. secundum*, last a much longer time in bloom if they are kept cool. *Brassias* and *Oncidiums*, *Epidendrums*, *Odontoglossums*, *Cyrtorchilums*, *Trichopelia tortilis*, *Lycaste Skinnerii*, *L. aromatica*, *L. cruenta*, *Maxillaria tenuifolia*, *Aspasia lunata*, and all the *Cattleyas*, succeed well in a cool room or house, and last for a much longer time in flower. I have kept *Lælia majalis* in a cool room four and five weeks, and *L. flava* will keep a much longer time in blossom than in the warm house. When the bloom begins to fade they should be removed to the stove, where they may be placed in the coolest end, with plenty of shade: they ought to be kept there for about ten days, for if they are exposed to the sun they are very apt to become scorched.

*Treatment of Plants previously to being taken to a
Flower Show.*

It is my practice to move them to a cool dry house or room for a few days. If the plants are growing in the hottest house, I move them to the cooler one. They should not receive any water for two or three days, and should be allowed just enough to keep them slightly moist. When it is probable that the plants will come into blossom earlier than is wished, the time of flowering may be successfully retarded by taking them to a cooler part of the house, or even putting them in a greenhouse, keeping them slightly shaded during the brightest part of the day. Dendrobiums are very easy to keep back, if they are wanted to bloom later in the season. *Dendrobium nobile*, *D. pulchellum*, *D. macrophyllum*, *D. densiflorum*, *D. Farmerii*, *D. Pierardii*, these generally bloom during winter, but I have kept them back until June; and by having a succession of plants you may have the Orchid-house gay with Dendrobiums from January to June. All the Dendrobiums will bear a cool treatment while at rest, and all can be kept for late flowering. The treatment they require in a warm greenhouse is to have but little water, only enough to keep them from shrivelling; the temperature should not go below 40°, and the bulbs of the plants must be kept dry, or the flower-buds are apt to rot. When the plants are wanted to flower, move them into the Orchid-house, and keep them shaded from the sun. *Phajus Wallichii* and *grandifolius* may be kept back in the same way as the Dendrobiums.

*Remarks on preparing Orchids for travelling to a
Flower-Show.*

These plants require great care in packing and tying,

for many are very tender. Their flowers being large and waxy, some of them require more packing than others. I have seen many a plant spoiled by not being carefully packed, and it is a vexatious thing to have a fine specimen plant spoiled during its journey to the place of exhibition. They will travel as well forty miles as ten, if they are properly packed. I have had a good deal of this work to do, and a few hints on the subject to young beginners may be of use to them. Some kinds bear removing much better than others. The genus *Phajus Wallichii* and *grandifolius* are both bad plants for travelling, if not well packed. I have seen fine plants brought to different flower-shows, with their flowers completely spoilt for the want of careful packing; though I have shown *P. Wallichii* these last five years at the Chiswick and Regent's Park exhibitions, and they have always been conveyed without injury. In preparing them, I first get some strong flower sticks, and put one to each flower spike; the stick should be long enough to go into the earth, so as to remain firm; the sticks should be placed at the back part of the flowers, and stand one or two inches above the flower spike; then get some wadding and tie up the stick, afterwards tie the flower-spike firmly to the stick, add more wadding, putting it round every flower-stalk, and tie them firm to the flower-spike: begin at the top of the spike, and tie every flower separately, so that the flowers do not touch one another. The leaves of the plant must not be allowed to rub against the flowers. On arriving at the end of their journey, untie them, remove the wadding, and tie them in the proper form. In tying, care should be taken not to rub the flowers.

Saccolabiums and *Aerides* do not require so much packing. It is sufficient to put two or three sticks to each spike, one at each end, and one in the centre, if the spike be long; but if short, two will be sufficient. The stick,

which should only be long enough to support the spike in the drooping way in which they are growing, should be fixed firmly in the basket or pot; a small piece of wadding should be placed on the top of the stick, to which the spike should be firmly tied. This will be sufficient to cause safety. The wadding should not be allowed to touch the top part of the flowers, as it will stick to them, and be very hard to remove.

Vandas require more packing, their flowers being larger, and further apart; on the spike place some wadding between each flower, then fix some sticks firmly in the basket, and tie the spike to them, without letting the stick touch the flowers: wadding should then be put in between the flowers to keep them separate.

Phalænopsis grandiflora and *amabilis* are bad to travel, and require much care. The best way is to get a box and set the plant in the bottom of it, which must be long enough to allow the flower-spike to lie at its full length; wadding should then be placed underneath the flowers, which should lie flat on the wadding; another sheet of wadding should then be placed on the top of the flowers, in order to make them lie firm. I have also taken them to shows treated in the same way as recommended for *Vandas*.

Dendrobiums.—Some of them only require a stick to each bulb fixed firmly in the pot, to tie the bulb to; such as *D. nobile*, *D. macrophyllum*, *D. Devonianum*, *D. moniliforme*, and similarly flowering sorts. Those sorts that flower with pendulous racemes, such as *D. densiflorum*, *D. Farmerii*, and others growing in the same way, require three sticks,—one to the bulb, to which the latter should be firmly tied; then put the other two to the flower spike, one at each end, in the same way as with the *Saccolabiums*.

Cattleyas require to be packed very carefully; their

flowers should be tied so that they do not touch one another. I always put a stick to each flowering bulb, and tie it firmly, and a stick to each flower-stalk, just below the flower, with a piece of wadding round the stalk; afterwards tie the stalks to the stick: neither the stick nor the leaves of the plant should be allowed to touch the flowers, or they will bruise.

*Oncidium*s travel well; they only require a strong stick to each flower-spike, with a piece of wadding round the stick when it is tied.

Sobralias macrantha is a bad plant to travel, if not properly tied. There should be a strong stick to each flowering bulb, and tied firmly; and also one to the flower-stalk, with a piece of wadding close to the flowers; then tie the stalk firmly to the stick, and allow nothing to rub against the flowers.

Perestera alata.—This should be treated in the same way as the *Phajus*.

*Cypripedium*s require a small stick to each flower-stalk. All the *Lycaste*, and other Orchids that flower in the same way, require similar support for their flowers.

The best mode of conveyance for Orchids is a spring van with a cover on the top. In placing the plants in the van, I always put some hay between each pot, to keep them firm and prevent their rubbing against each other.

Treatment during the Time of Rest.

Rest is of great importance to Orchids, as well as other things. No plant will continue long in good health without it. My practice is to give them a long season of rest, generally from November to the middle of February. During this time the temperature of the East India house should be regulated so as to keep it as near as possible at 60° by night, and 65° by day; but by sun heat the tem-

perature will rise a few degrees higher. Air must then be given so as to keep it about 65° ; but a few degrees of solar warmth above this point will do no harm. A little air should be given on every fine day, in order to dry up damp; but the air must be admitted close to the hot-water pipes, so that it may become warm on entering the house. As to those plants that come from the hotter parts of India, the temperature should not be allowed to go below 60° . The Mexican house should range from 50° to 55° by night, and from 55° to 60° by day; this should not be allowed to go below 50° at night.

Rest is induced by lowering the temperature, and withholding water from the plants; during this season they should only receive sufficient water to keep them from shrivelling. There are, however, some plants that will grow during the winter months, as many of the *Aerides*, *Vandas*, *Saccolabiums*, *Phalænopsis*, *Zygopetalums*, and similar kinds. These will require water at the roots to keep them increasing, but care should be taken not to wet the young shoots, for if they get wet they are very apt to rot at this season of the year. Those that are growing should be placed at the warmest end of the house.

Some Orchids are deciduous, losing their leaves after they have finished their growth. To this class belong *Cyrtopodiums*, *Barkerias*, *Cynoches*, *Phajus albus*, some of the *Dendrobiums*, *Cælogyne maculata*, *C. Wallichiana*, and many others. I always place these so that they may have as much light and sun during their season of rest as possible. This is the only way to ripen their bulbs, which causes them to grow stronger and flower more freely. These plants require but very little water when at rest. But when such plants as *Vandas*, *Angræcums*, *Aerides*, *Saccolabiums*, and *Phalænopsis* are at rest, they should never be allowed to get too dry at the roots: the moss

should always be kept a little damp; for the stems and leaves are very apt to shrivel if kept too dry, and this often causes them to lose their bottom leaves; and they require but a short season of rest. Those which are growing on blocks will require more water than those which are in pots or baskets, and they should be watered about twice or three times a-week if the weather be fine, but in dull weather they will not require it so often. The water should be poured over the paths and walks every fine morning, with a view to create a moist atmosphere, but the moisture in the house must be regulated according to the weather outside;—this is an important point to be attended to: if the weather be dull outside, the house inside must be kept dry. The glass and roof should always be perfectly clean, so that the plants may have plenty of light and sun: it is my practice, as soon as the season of rest commences, to wash every piece of glass on the house, and also the woodwork.

Insects.

The plants are liable to be injured by many sorts of insects, such as red spider, thrips, mealy-bug, white and brown scale, woodlice, cockroaches, and a small shell snail. Cockroaches are among the greatest plagues we have to deal with; they will do a great deal of mischief in a few nights, if they are not sought after, on every opportunity. The food they like best is the young tender roots and flower-stems. I have seen the roots of a plant completely eaten off in one night. The only way to keep these insects under is by constantly looking after them, both by night and day. I search for them every evening by candle-light, and in the daytime by moving the pots and baskets under which they harbour. They leave their hiding-places in the evening, and seek after food, and it is

then that they are most easily caught. It is also a good plan to lay some damp moss in the hottest part of the house ; I have killed many in this way, looking the moss over every two or three days. I have also destroyed them with a mixture of honey, lard, and arsenic, the latter in very small quantity. I place some of this in oyster shells in different parts of the house. Some growers mix the arsenic with tallow put on a stick, which is stuck in the pots ; care, however, must be taken that the mixture does not touch the leaves or bulbs of the plants.

The small ants are another pest in the Orchid-house, as they carry the dirt to the flowers, which spoils their appearance. The best thing I know of to catch these little and troublesome insects, is to cut apples in halves, scoop out some of the inside, and lay the pieces in different parts of the house, looking them over very often. I have destroyed hundreds this way in a very short time.

The woodlouse and the small shell snail are also very destructive. These, like the cockroach, are very fond of the young roots ; they may be trapped by cutting some potatoes in two, scooping out the inside, and placing them on the pots and baskets, looking over them every night and morning till you clear your house of these vermin. Turnips cut in slices will answer the same end. Toads are very useful in catching insects ; I always keep a stock of them in the house.

The best way of getting rid of red spider and thrips is by constantly washing the leaves with clean water, and by fumigating the house with tobacco. My method is to fill the house with tobacco-smoke three or four times ; this should be done every two or three days till the insects are quite destroyed. Evening is the best time to do this. It is also a good plan to mix some lime and sulphur together, and rub it on the pipes in different parts of the house,

but taking care not to use too much; and it should be used only when the pipes are warm. There should be a good supply of moisture at the same time, but not too much heat. The green fly, which makes its appearance in spring on the young flower-buds, may also be destroyed by tobacco-smoke.

The brown and white scale and mealy-bug I keep under by constantly sponging the leaves and bulbs with water; the white scale is very troublesome if not looked after. Cattleyas are very subject to this; the following recipe for destroying these insects was given me by Mr. Veitch of Exeter, who is a very successful grower of Orchids, viz. to one gallon of rain water add eight ounces of soft soap, one ounce of tobacco, and three table-spoonsful of turpentine; stir well together, and leave the mixture for forty-eight hours; then strain it through a cloth: what you have to spare must be bottled off. It is necessary to rub the plants over two or three times, if they are much infested, but once will be sufficient in most cases.

Diseases or Rot in Orchids.

Orchids are subjected to disease in their leaves and bulbs, especially during the damp months of winter. The rot, which is apt to assail the thick, fleshy bulbs, is caused by too much moisture in the house; sometimes the drip from the glass will fall on the crowns of the bulb, and they soon rot. Steam is also very bad in a house during the winter, particularly to such plants as Cattleyas, Peristerias, Odontoglossums, and any other Orchids that have fleshy bulbs. When the rot takes the bulbs it should be seen to at once, and may be easily stopped by cutting the diseased part entirely away with a sharp knife. No portion of the diseased or decayed bulb should be left; the wound should then be filled up with sulphur, keeping it dry. When the

leaves begin to rot, the diseased part should be cut clean away, and a little sulphur rubbed on the part that is cut, but not so as to let the sulphur get to the roots of the plants.

When any part of the fleshy bulb of the above-named or similarly-formed bulbs becomes discoloured, and the dark or discoloured part appears moist or wet, especially if any fluid exudes from it on pressure, the wet or discoloured part should be immediately cut out, or there is danger that the bulb will be destroyed, as the rot is often much more extensive within the bulb than the discoloured appearances on the outside would seem to indicate. The plant should also be removed to a drier and cooler place, and water given with the utmost care.

Propagation.

There are different modes of propagating the various kinds of Orchids; some are easily increased by dividing them into pieces, or by cutting the old pseudo-bulbs from the plants after the latter have done blooming: such plants as *Dendrobiums* are increased in this way. The best time for dividing the plants is just as they begin to grow, or when they are at rest; they should be cut through with a sharp knife between the pseudo-bulbs, being careful not to harm the roots: each piece should have some roots attached to it. After they are cut through they should be parted, potted, and put into some shady part of the house, without receiving much water at the roots till they have begun to grow and make fresh ones, then they may have a good supply. *Dendrobium nobile*, *Pierardii*, *pulchellum*, *macrophyllum*, *Devonianum*, and similar growing sorts, are easily propagated. This is effected by bending the old pseudo-bulbs round the basket or pots in which they are growing, or by cutting the old flowering bulbs away from

the plant, and laying them on some damp moss, in a shady and warm part of the house, with a good supply of moisture. After they break and make roots they may be potted or put in baskets. Such as *D. Jenkinsii*, *D. aggregatum*, *D. formosum*, *D. speciosum*, *D. densiflorum*, and similar growing sorts, are increased by dividing the plants.

Aerides, Vandas, Angræcums, Saccolabiums, Camarotis, Renantheras, and similar growing sorts, are all propagated by cutting the tops off the plant just below the first root, or by taking the young growths from the bottom of the plant. After they have formed roots, they should be cut off with a sharp knife, and afterwards put on blocks or in baskets with some sphagnum moss, and kept in a warm and damp part of the house, without receiving much water till they have begun to grow, when they may have a good supply. Odontoglossums, Oncidiums, Zygopetalums, Sobralias, Trichopilias, Stanhopeas, Schomburgkias, Peristerias, Mormodes, Miltonias, Lycastes, Leptotes, Lælias, Galeandras, Epidendrums, Cyrtopodiums, Cyrtochilums, Cymbidiums, Cycnoches, Coryanthes, Cœlogyne, Cattleyas, Calanthes, Brassias, Bletias, Barkerias, Aspasia, are all propagated by dividing them into pieces, each having a portion of the roots attached to it, and a young bulb on the pseudo-bulb.

Phajus albus is very easily increased. The best way is to cut the old pseudo-bulbs off after the young ones have begun to flower, that is, just before the plant has made its growth. The pseudo-bulbs should be cut into pieces about six inches long, and then put into a pot in some silver sand, with a bell-glass over them till they have struck root; they should then be potted in some fibrous peat, and should have good drainage, and a good supply of water in the growing season.

Some of the Epidendrums are easily propagated, such

as *cinnabarinum* and *crassifolium*; these will form plants on the tops of the old flower-stalks; they should be left to grow till they have made their growth, they should then be cut off and potted, and they will soon make good plants. Some *Dendrobiums* will also form plants on the tops of the old pseudo-bulbs, and they should be treated in the same way.

Mode of producing Back Breaks.

There are many of our Orchids that will keep on growing year after year, and yet produce only one flowering bulb each year, but if the plants are cut they will produce back breaks, increasing, and soon make fine specimens. This is the way to produce such plants as are seen every year at the London Exhibitions. Some plants are more easy to increase than others. The *Cattleyas* are of this kind. When you have a plant that has back bulbs, if there are about four, cut the plant in two between the bulbs, but not to disturb the plant; let the bulbs keep in the same place. The best time to cut all Orchids is during their season of rest, or just as they are beginning to grow. All other Orchids that have bulbs should be treated in the same way, if it be desirable to increase them.

On the Mode of making Baskets, and the best Wood for that Purpose.

Blocks or baskets are most suitable for true air-plants, such as *Vandas*, *Saccolabiums*, *Aerides*, *Angræcums*, *Phalænopsis*, &c.; when planted in baskets or on blocks, they send out their roots much stronger into the air, and suck up the moisture, whereas, if their roots are covered too much, they are very apt to rot. Various materials are used for forming baskets; some are made of copper wire, which is very durable: but I prefer those made of wood,

though they do not last so long. They look better, and are more suitable for the roots of the plants to cling to. The best kind of wood is maple or hazel, and the best baskets those of a square shape. The wood should be cut into such lengths as the size of the basket may require: but do not make them too large; there are two objections to this—one is, that they take up much space; the other, that the plants do not require much room. After the wood is cut into proper lengths, the pieces should be bored within one inch from the ends, taking care to have all the holes bored the same distance: there should be four lengths of copper wire, one for each corner; the wire should be put through each piece of wood, and brought up to form the handle for suspending the plants from the roofing. Iron wire should never be used in making baskets, for it is probably injurious to the plants.

The best kinds of wood for blocks are acacia, apple, pear, plum, or cork, if it can be obtained. The wood should be cut into lengths, suitable for the size of the plants; get some nails, and drive one at each end with some copper wire to form the handle, wind the wire round each nail, and leave the handle about ten inches high. Small copper nails are the best by which to fasten the plants on the blocks.

Orchids at present in Cultivation.

THE following short and plain description of all the best orchidaceous plants I have seen will, it is hoped, prove serviceable to those who may be inclined to commence the cultivation of this increasingly-attractive class of plants, as well as to others who may have commenced but have not completed their collections. A general account is given of the distinctive features of each genus, which is followed by a more particular description of each species, together with an account of the mode of treatment, which, after considerable experience, has been found best adapted to each individual plant.

ACINETA.

This is a curious genus of plants. There are several species, but only two that I have seen are worth growing. They produce their flowers from the bottom of the basket. Both species are evergreen, with short bulbs, and leaves about a foot high; they are of easy culture, and are best grown in baskets with moss and peat. They require a liberal supply of water at the roots during their period of growth, afterwards less will suffice; they will do in either house suspended from the roof. They are propagated by dividing the plant.

A. Barkerii.—A curious Orchid from Mexico, producing from the bottom of the basket its spikes of yellow flowers, each about a foot in length, which if kept dry will last a long time in perfection. It blooms during the summer.

A. Humboldtii.—A strong-growing species from La Guayra. Flowers in the same way as *Barkerii*, but about a month earlier; the long spikes of flowers are of a deep chocolate colour, spotted with crimson. It lasts only a short time in perfection.

In order that the flowers in this class, as in all others, may be preserved in bloom, care should be taken not to wet them while watering the plants.

AERIDES.

Aerides are among the most beautiful of Orchids, many of them uniting every good quality that a plant can possess,—rich, evergreen, and regularly-curved foliage,—a graceful habit,—flowers of peculiar elegance. Even when not in bloom the plants themselves are interesting objects, and give a sort of tropical character to the collections in which they are found. The stem of the plants is straight or slightly bent, with leaves attached on opposite sides, and the plant is nourished by large fleshy roots, shooting out horizontally from the lower part of the stem. The flowers, which are rich and waxy, proceed from the axils of the leaves, and extend in delicate racemes one or two feet in length, while their fragrance is so abundant as to fill the house in which they grow with grateful perfume.

These plants are of easy culture, and if properly attended to are seldom out of order. They are found in the hottest parts of India and other warm countries, growing on the branches of trees, generally on such as overhang streams of water; and to grow them in anything like perfection, the climate in which they grow wild must be imitated as nearly as possible. I find they succeed best with a good supply of heat and moisture in their growing season, which is from about March to the latter end of October.

During this time I keep the temperature, by day, from 70° to 75° . It may be allowed to rise to 80° and 85° , or even higher will not do any harm, provided the house is shaded from the rays of the sun. The night temperature should range from 65° to 70° in March and April, and afterwards it may rise five degrees higher.

I grow the *Aerides* in baskets made of wood, but they may be grown in pots,—a mode of culture successfully followed in the fine collections of these plants belonging to J. H. Schroder, Esq. of Stratford. Sphagnum moss and broken potsherds have proved the best materials for filling the baskets. They require frequent watering at the roots in the growing season; indeed they should never be allowed to become dry, not even during their season of rest, as they are liable to shrivel and lose their bottom leaves. The *Aerides* require but little repose, and the moss should always be kept damp; but during the dull months of winter no water should be allowed to lodge on the leaves or heart of the plant, as it would be very apt to rot them. The plants should be suspended from the roof, but not very near the glass, lest they should be affected by the cold; and they should be kept perfectly free from insects, especially the different kinds of scale. There is a small kind which is apt to infest them, and which, if allowed to get ahead, will make the plants look yellow and unhealthy. It may be kept under by constantly washing with rain-water and a sponge. These plants are propagated by cutting them into pieces, with roots attached to each piece. Some kinds, however, are shy in throwing up young shoots, and this makes these sorts very scarce. The *Ae. odoratum* tribe are the most easy to increase, and *Ae. crispum* sends out roots more freely than some others. If the plants ever get into an unhealthy condition, the best way is to cut them to pieces

and give them fresh moss, with plenty of water at the roots.

Ae. affine.—A handsome, free-flowering, but slow-growing Orchid, from India, with light green foliage a foot long, and pink and purple flowers, blooming in June and July, and lasting three or four weeks in perfection. We have a plant of this species about a foot high, which produces every year four spikes of bloom, two feet long, with three or four branches on each spike. This makes a fine show-plant for June or July.

Ae. crispum.—A truly beautiful free-growing Orchid, from India, with purple-coloured stem, dark green foliage, ten inches long; the blossoms, which are abundant, are white tipped with pink. Flowers in June or July, and lasts two or three weeks in good condition. The spikes of flowers are long, and very distinct from any of the other kinds.

Ae. crispum pallidum.—A variety of *Ae. crispum*, grows to about the same height, and flowers at the same time. The blossoms are of a lighter colour.

Ae. Larpentæ.—A fine Indian free-growing plant, with dark green leaves, ten inches long. The flowers are numerous on a single spike. It blooms in June, and lasts two weeks in perfection. This is a rare and distinct plant, and was first flowered by Mr. Iles, then gardener to Lady Larpent, and shown at the Regent's Park Exhibition in 1847, when it received the first prize as a new plant.

Ae. maculosum.—A lovely dwarf Orchid from Bombay, with dark green leaves, eight inches long, close and compact, stiff growing, with light-coloured flowers, spotted all over with purple, and a large purple blotch on the lip. Blooms in June and July, and if the flowers are kept dry, last four weeks in perfection. We have a plant of this species a foot high, which produces three spikes every year,

with more than thirty blooms on each spike : the colour of the bloom is very striking.

Ae. maculosum, var. *Schroderii*.—A magnificent free-growing plant from the hills near Bombay, much stronger than *Ae. maculosum*, and more in the way of *Ae. crispum*, with dark green foliage, ten inches long ; the flowers are very delicate, the sepals and petals almost alike ; white, tinged with lilac and spotted with rose ; the labellum a beautiful rose colour. It flowers in June or July, lasts three weeks in perfection. This was first flowered by Mr. Plant, then gardener to J. H. Schroder, Esq., of Stratford. It is supposed that there are only four plants in this country, and these were cut from the parent plant.

Ae. odoratum.—A good, old, free-growing species from India, one of the most abundantly flowering of this genus, having light green foliage, blooming in June or July, and remaining two weeks in good condition. The blossoms are white stained with pink. We have a specimen five feet high and four feet in diameter, which produces thirty or forty spikes of bloom every year, and is altogether a noble plant.

Ae. odoratum, var. *major*.—Like the preceding in growth, and differing only in the larger size and longer spikes of flowers. There is another variety of *odoratum*, called *Purpurescens*, the flowers of which are of a much darker pink colour and the leaves broader. This is a desirable plant, and is rather scarce.

Ae. quinquevulnerum.—A splendid free-flowering Orchid from Manilla, with light green foliage, about one foot long : less compact than many other species. Sepals and petals white, spotted with purple ; the top of the lip is green, the sides are pink, and the middle is of a deep crimson : it blooms in July or August, and lasts two or three weeks in bloom. There are two varieties ; one has much lighter coloured flowers than the other. A fine

specimen of the best variety, which I saw at Messrs. Rollisson's, Tooting, in 1851, had five spikes of bloom upon it.

Ae. roseum.—A beautiful dwarf-plant from India; leaves a foot long, spotted with brown. A slow-growing species, bearing rose-coloured flowers in June and July. This plant, which does not root freely, requires less moisture than any of the other kinds.

Ae. suarissima.—A distinct and desirable species, of free growth, with light green foliage spotted with small brown spots, ten inches long. The sepals and petals are white, and the lip has a blotch of yellow in the centre edged with white. Blooms in July, August, and September, and lasts in good condition three weeks. We flowered two varieties of this species, one of which was much better than the other, having pink spots on the end of each petal, which makes a more showy flower.

Ae. virens.—A lovely plant from Java, with light green foliage, eight inches long; the flowers are of a light peach colour, spotted with purple; the lip is spotted with crimson; blooms in May and June; the flowers remain long in perfection. A scarce and desirable species.

AGANISIA.

Aganisia pulchella.—A pretty dwarf Orchid from Demerara, eight inches high, the only species of this genus that I know; produces from the bottom of the bulb a spike of flowers, which are white, with a blotch of yellow in the centre of the lip. It blows at different times of the year, lasts two or three weeks in perfection, and is best grown in a pot, with peat and good drainage. It requires a liberal supply of water at the roots, and the hottest house. It is a very scarce plant, and is propagated by dividing the bulbs.

ANGRÆCUMS.

There are several species of this genus, but I know of only three which are showy, and which ought to be in every collection. They grow in the same manner and require the same treatment as the *Aerides*, and are propagated by the same means. They are evergreen.

Ang. bilobum.—This is an elegant little Orchid from the Cape Coast, with dark green leaves and very compact growth. The blossoms are white, with a small tail about two inches long, which proceeds from the flower. It blossoms from October to December, lasts two or three weeks in good condition. I have grown this plant on a block, but find it does best in a basket, where the roots obtain more moisture.

Ang. caudatum.—A curious and beautiful free-flowering species from Sierra Leone, with light green foliage, ten inches long; a very compact grower, with racemes of flowers of a foot or more in length, which are of a greenish yellow, mixed with brown; the labellum is pure white, from which proceeds a tail about nine inches long, of a pale green colour. Sometimes there are twelve or more of these curious flowers on a spike. It blossoms from June to September, and lasts in perfection a long time. This has always been a rare plant, but a recent importation has made it a little more plentiful.

Ang. eburenium.—A magnificent free-flowering Orchid from Madagascar, strong growing, with light green leaves eighteen inches long; the blossoms are of a greenish white, and the lip of pure white like ivory. It produces flowers in abundance from February to March. A noble specimen of this species, which I saw at Messrs. Rollisson's, Tooting, was two feet high, showing eight spikes of bloom. It is a beautiful object when in flower, as well as a very rare and distinct species.

ANGULOA.

There are only four of this genus that I can recommend. The flowers are large and beautiful. They are fine plants for exhibition, especially *A. Clowesii*; the colour is different from that of many of our Orchids, which makes it valuable. The bulbs are large, about three inches high, with broad flag-shaped leaves a foot or more long; they all produce their flowers, which are about six inches high, from the base of the bulbs. These are best grown in pots, with rough fibrous peat, good drainage, and plenty of heat and moisture in the growing season. The East India house is the most suitable place for them during their season of growth; afterwards they may be moved to a cooler place. They ought to have a good season of rest, and during this time they should be kept rather dry, till they begin to show signs of growth, when they must be treated as already recommended. They are propagated by dividing the bulbs just before they begin to grow.

An. Clowesiana.—A charming and free-growing species from Columbia; sepals and petals bright yellow; lip pure white. Blooms in June and July; lasts long in perfection if kept in a cool house. A scarce plant.

An. Ruckerii.—A handsome Orchid, from the same country as the former, and flowering at the same time. The sepals and petals rich brownish orange, lip greenish yellow: lasts two or three weeks in good condition. Also a rare plant.

An. uniflora.—A good species from Columbia, flowers freely; the blossoms are white, and are produced in June and July, lasting two or three weeks in flower.

An. uniflora, var.—A spotted variety of the former, but much handsomer; the blossoms are white, spotted all over with dark brown. Flowers at the same time as *uniflora*.

ANSELLIA.

Ansellia Africana.—A noble free-flowering Orchid, growing three or four feet high; the flowers proceed from the top of the bulb, with sixty or seventy flowers on a spike. They are of a pale yellow colour, spotted all over with dark brown; the lip yellow. This is a fine plant for winter blooming, and remains in perfection a long time if kept in a cool house. We had a plant of this in a cool house, of from 45° to 50° , which began to open its flowers early in the beginning of February, and continued in blossom till the latter end of May. This plant is of easy cultivation, requiring the heat of the East India house, and being best grown in a pot of large size, with peat and good drainage. The roots should be well watered about two or three times a-week; but be careful not to wet the young growth, as this is apt to cause them to rot. This Orchid was found by a gardener, the late John Ansell, in Africa, at the bottom of a palm-tree. It is the only one of the genus that is known; it is rather a scarce plant, and is propagated by dividing the bulbs after it has finished its growth.

BARKERIAS.

These plants are deciduous, losing their leaves during their season of rest; they are small-growing, but free in producing flowers, which are both rich and delicate in colour. These plants merit a place in every collection. I have seen only four species. There is one called *Barkeria elegans*, but I believe it is lost to the country. The *Barkerias* are compact-growing, with upright slender bulbs, from the top of which the numerous flower-stems are produced. These plants are best grown on blocks of wood of a flat shape, so that the plants can be tied on the

top without any moss. They send out their thick fleshy roots very freely, and will soon cling to the blocks. They require to be grown in a cool house, where they can receive air every day during their season of growth. The Mexican house will be the most suitable place for them, but during their season of growth they require a good supply of water. Twice a-day in summer will not be too much for them; but during their season of rest very little water will suffice, —only enough to keep their bulbs from shrivelling, about two or three times a-week. They should be suspended from the roof, near the glass, where they can receive plenty of light, but not too much sun.

Barkeria melanocaulon.—A pretty and free-flowering Orchid from Costa Rica; the sepals and petals are lilac pink, the labellum with a spot of green in the centre. It produces its blossoms on an upright spike from June to September, and will continue in perfection a long time. A very rare and desirable species.

B. Lindleyana.—From the same country. The flowers are produced on a long spike, and are of a rich purple colour, with a blotch of white in the centre of the lip; blooms in September and October, and lasts long in good condition. A scarce plant.

B. Skinnerii.—A beautiful free-flowering Orchid from Guatemala, with deep rose-coloured blossoms, which are produced on a spike sometimes two feet long, with as many as twenty to thirty flowers on each spike. It will continue in flower from November to February. A valuable Orchid for winter blooming.

B. spectabilis.—A charming species, from the same country as *Skinnerii*, the flowers of which proceed from the top of the bulb, on a spike bearing eight or ten flowers of a rosy pink, or blush, dotted with deep crimson. It blooms in June and July, and lasts three or four weeks in

perfection, if kept in a cool house. This makes a splendid plant for exhibition. I have seen specimens at the Chiswick and the Regent's Park shows with as many as ten spikes on one single plant. A very distinct and desirable Orchid.

BLETIAS.

These are terrestrial Orchids. There are several species of this genus, but there are only a few that are worth growing. They are of easy culture, and may be grown in any warm house, so long as the frost is kept from them; the bulbs are round and flat, from which proceeds long narrow leaves. They are deciduous. The best material for growing them in is loam and leaf-mould mixed together, with about two inches of drainage in the bottom of the pot, covered with a layer of moss or rough peat; then fill the pot with the mould to within an inch of the top, place the bulbs on the top of the mould, and cover them over. They require a good supply of water in the growing season, but not much heat. After their growth is finished, give them a good season of rest; and they should be kept rather dry till they begin to grow.

Bl. campanulata, from Peru; the blossoms are of a deep purple, with a white centre; flowers at different times of the year, and lasts long in perfection.

Bl. Shepherdii, from Jamaica; the flowers are purple, marked down the centre with yellow; blooms during the winter months on a long spike, which keeps in perfection three or four weeks.

Bl. patula, from the same place as the last, produces its dark purple flowers, which last three or four weeks, on a long spike in March or April. These plants require to be well grown to make them flower. We have a fine specimen of this species, which produces eight spikes of

bloom ; the colour is distinct from many of our Orchids, and the flowers produce a good effect in a house. These plants are not thought much of by many Orchid-growers, but I think they are worth the care that is bestowed upon them on account of their colour.

BOLBOPHYLLUM.

There are several species of this genus, but only one that is worth growing, *Henshallii* ; the flowers of the others are curious, particularly the labellum, on which the least breath of air or the slightest motion causes a tremulous or dancing movement. They are chiefly valued as curiosities, require but very little room, and thrive best on small blocks of wood with a little moss suspended in a warm part of the house ; the roots require a good supply of water. They are propagated by dividing the bulb.

Bolbophyllum barbigerum, from Sierra Leone : a curious dwarf species, sepals and petals greenish brown ; the lip is covered with dark-coloured hair. It lasts long in bloom.

Bol. Henshallii, from Java, introduced by Messrs. Veitch of Exeter and Messrs. Rollisson of Tooting ; the flowers are large, the sepals deep yellow, the upper part marked with purple and spotted. It produces its solitary flowers during the summer months, and lasts long in beauty.

Bol. saltatorium.—A curious dwarf Orchid from Africa, of a greenish brown colour, blooms at different times of the year, and lasts some time in perfection.

BRASSAVOLA.

There are several species of this genus, but only two that are showy and worth growing. They are of easy culture, and grow best in a little moss on blocks of wood suspended from the roof. They require a liberal quantity

of water during the growing season, but afterwards they need watering less frequently. They are best grown in the warmest house, and are propagated by dividing the plants.

Brassavola Digbyana.—A fine compact evergreen species from the West Indies. The plant is about six inches high, the sepals and petals of the flower are white; lip the same, streaked with purple down the centre. It produces its solitary flowers during the winter months from the top of the bulb, lasts about two or three weeks in bloom, and is a very rare plant.

Bra. glauca.—A desirable compact evergreen Orchid from Mexico; its blossoms are creamy white, with a pink mark on the upper part of the lip. It blooms in February or March, and lasts two or three weeks in perfection. This is rather difficult to flower in some collections, but it does every year at this place, producing one large flower from a sheath at the top of the bulb.

BRASSIAS.

These are not thought much of by many Orchid-growers, but there are a few kinds that may be recommended. They are rather large-growing plants, of easy culture, and will do either in the East India or a cooler house; the flowers are produced from the side of the bulbs on a long drooping spike: they are all evergreen, with good foliage, each leaf being a foot or more in length. They are best grown in pots, with rough fibrous peat and good drainage, and require a liberal supply of water at the roots in the growing season; afterwards just enough water to keep their bulbs plump will suffice, for they should never be allowed to shrivel. They are propagated by dividing the plants when they begin to grow.

Brassia Lanceana.—A free-flowering Orchid from De-

merara, blooming at different times of the year, and bearing yellow blossoms spotted with brown, which last three weeks in perfection. There are two varieties of this plant, one much better than the other, having larger and brighter coloured flowers. It makes a good show-plant. I have shown a single plant with twenty spikes in full bloom, each about two feet long.

Br. Laurenciana, from Demerara, blooming abundantly from June to August; the colour of the flower is yellow and green spotted with brown, and lasting three or four weeks in good condition if kept dry.

Br. maculata, major, from Jamaica. A free-flowering Orchid, sepals and petals greenish yellow spotted with brown; lip white spotted with dark brown; flowers in May and June, lasts five weeks in bloom if kept in a cool house.

Br. verrucosa.—A curious species from Mexico; the upper part of the flowers is of a pale green; the lip white, marked with green warts. It blossoms abundantly in May and June.

Br. Wrayæ.—A very good species from Guatemala, producing its flowers on spikes two or three feet long; sepals and petals are yellowish green, blotched with brown; the lip is broad and yellow, spotted with brown; blooms from May to August, and continues flowering for two months. This is a good plant for exhibition, on account of its colour.

BROUGHTONIA.

Broughtonia sanguinea, from Jamaica; the only one of the genus that I have seen cultivated. A very compact evergreen growing plant, which succeeds best on a block of wood, with a little moss, suspended from the roof. It requires a good supply of heat and moisture in the growing season, and produces its spikes of crimson flowers from the top of the bulb, during the summer months, lasting a lon

time in good condition. This plant ought to be in every collection, on account of the distinct colour of its flowers. It is propagated by dividing the plant.

BURLINGTONIA.

There are some beautiful species of this genus; they are very compact in growth, with beautiful evergreen foliage, from four to six inches high. They produce their delicately-coloured flowers on drooping spikes, shooting from the sides of their bulbs. These plants ought to be in every collection, however small, as they require but very little room, and may be easily grown in perfection. I find them thrive best in baskets with sphagnum moss and potsherd, and a good supply of heat and moisture while growing. They require but little rest, and should never be suffered to get too dry at the roots: they are propagated by dividing the plant. The following are among the best kinds of this beautiful class of plants with which I am acquainted.

Burlingtonia candida.—A pretty dwarf-growing species from Demerara, very scarce: the colour is white; it blooms in June or July: lasts two or three weeks in flower.

Burl. fragrans.—A charming Orchid from Brazil, also scarce. The white and pink flowers are produced on a spike in April and May, and last three or four weeks in beauty, if kept free from damp.

Burl. Knowlesii.—A beautiful new species, somewhat similar in habit to *venusta*, very dwarf and compact. The flowers are white, in long racemes, slightly tinged with a pinky lilac. It blooms during the autumn, and continues in perfection a long time. A scarce Orchid.

Burl. venusta.—A very good species from Brazil, the blossoms being white. It blooms at different times of the

year ; lasts two or three weeks in good condition. Messrs. Rollisson, of Tooting, have a fine stock of this species.

CALANTHE.

There are some beautiful species of this class of plants, which are great favourites, and ought to be in every collection. They are of easy culture, having handsome ever-green foliage, except *vestita*, which is deciduous, losing its leaves during the season of rest. All their flowers are striking, and generally attractive. Most of them are rather large, upright-growing plants, some of the leaves being a foot and a half long and six inches broad. Their long spikes of flowers rise from the bulbs, and come up between the leaves. They generally make their growth after the flowers have faded. These are terrestrial Orchids, and are best grown in pots of a large size, with loam, leaf-mould, and rotten dung, mixed together. When they are planted, two inches of drainage should be put at the bottom of the pot, then a layer of moss on rough peat ; after which the pot should be filled up with the mould, and the plant left about level with the rim. These plants are best grown in the Indian house, and require well watering at the roots in their growing season, so that the mould is never allowed to get dry. They require but little rest ; and during that time not so much water, only enough to keep the soil slightly damp. These plants are very much subject to the brown and white scale, which should be diligently sought ; for, if allowed to accumulate, the plants will not thrive : they are propagated by dividing the plant. The following are the most beautiful of this class. There are several others ; but as many of them are not worth growing, I notice only those that are good.

Calanthe furcata. — A showy Orchid from India, which is very free in producing its spikes of white flowers, three

feet long, and lasting in perfection six weeks ; it flowers in June, July, and August, and is a good plant for exhibitions.

Cal. masuca.—A scarce, but magnificent, and free-flowing Orchid from India, producing its flowers on a spike two feet long ; sepals and petals deep violet colour, with a rich purple lip ; it blooms in June, July, and August, and lasts six weeks in perfection. This is a charming plant for exhibition, the colour being very distinct. We had a specimen of this, with eight spikes of its beautifully-coloured flowers, at the Chiswick show in 1851.

Cal. veratrifolia.—A noble species from India ; its spikes of flowers, which are of a delicate white, frequently attain the height of two or three feet ; it blooms freely from May to July, and will continue blooming for two months. The flowers should be kept free from damp ; if they get wet they are apt to become spotted. This also makes one of the finest exhibition plants we have ; it is a very old plant, but no collection ought to be without it.

Cal. vestita.—A charming free-flowering Orchid from Moulmein, deciduous, and producing from October to February its long drooping flower-spikes, which have a white, downy covering, and rise from the base of its finely-formed and silvery-green bulbs when the latter are destitute of leaves. The sepals and petals of the flower are of a delicate white ; the lip is the same, with a blotch of rich crimson in the centre. There is a variety of this with a blotch of yellow in the centre of the lip ; the flowers of the latter are nearly equal to the former, and are produced in the same way. No collection ought to be without both varieties. They are fine plants for winter blooming, the flowers being two inches across. We have a plant of this fine species with four spikes, which frequently produces from twenty to thirty flowers on each spike, and continues in perfection for three months.

CAMAROTIS.

Camarotis purpurea.—A beautiful upright-growing Orchid, with leaves three inches long throughout the whole length of the stem. It produces its flower-spikes, which are about eight inches long, from the side of the stem; the blossoms are rose coloured, and appear from March to May, lasting two or three weeks in beauty. This plant requires care to grow it well; it may be planted either in a pot or basket with moss, and requires a good supply of heat and moisture over the roots and leaves during the period of growth, but needs very little rest, and should never be allowed to shrivel. The East India house is the most suitable place for it. A fine specimen of this species was shown at the Chiswick and Regent's Park exhibitions in 1850. This single plant, on which there were more than 100 spikes of flowers, was grown by Mr. Basset, gardener to R. S. Holford, Esq., Tetbury, in Gloucestershire.

CATTLEYAS

rank among our finest Orchids; they are general favourites, and there can be little doubt that, as the simple mode of treatment which they require, and the ease with which they may be brought to a high state of perfection becomes better understood, they will be extensively cultivated. Many of the bulbs are singular and agreeable in form; and the dark evergreen foliage of the plants when in a healthy condition, together with their compact habit of growth, render them peculiarly attractive. Some of the sorts have only a single leaf at the top of each bulb; others, as *C. Skinnerii* and *C. intermedia*, have two, and *C. granulosa* and *C. Leopoldiana* have three: the flowers are large, elegant in form, and scarcely surpassed in their

brilliant richness and depth of colours ; the most frequent of which are violet, rose colour, crimson, and purple, with their intermediate shades. The flower-scape, which is inclosed in a sheath, rises from the top of the bulb, and a single spike sometimes contains as many as nine perfect flowers. As soon as the flowering is over, the Cattleyas generally begin to make their growth for the next season ; but some of them, as *C. Walkeriana*, *C. violacea*, and *C. superba*, flower while making their growth. In the cultivation of Cattleyas I have found them thrive best in pots, with the exception of *C. Walkeriana*, *C. marginata*, and *C. citrina*, which grow best on blocks with a small quantity of moss. If room be not abundant, all the kinds may be grown on blocks, but they will require more attention, and seldom thrive so well as in pots. They require a good depth of drainage. I generally fill the pot about half full of potsherds, which I cover with a layer of moss, and then fill up the remaining space with peat, taking care always to have the plants elevated above the rim of the pot.

I grow all the Cattleyas, excepting *C. citrina*, in the East India house, and am accustomed to give them a good supply of heat, and not too much water, while they are growing. Water applied to the roots once or twice a-week will be sufficient for those in most vigorous state of growth : too much water is apt to cause the bulbs to rot. So long as the soil remains moist no water is required ; and when the soil becomes dry, water should be applied to the roots, not to the bulbs, as it is apt to injure them greatly. When the plants have made their growth they should be allowed to rest, and be kept rather dry, giving them just water sufficient to prevent their shrivelling.

A long season of rest is very advantageous to the plants, causing them to flower more freely and grow more vigorously afterwards. Those plants growing on blocks will

require a good supply of water at their roots every day during summer, and twice or three times a-week in winter.

Cattleyas require to be kept perfectly clean and free from insects. They are subject to the white scale, which should never be allowed to accumulate, as it is then difficult to remove, and the plants are in danger of being destroyed. In order to keep the plants free they should be carefully looked over every three or four weeks, and sponged with clean water of the same temperature as the house. They are propagated by dividing the plants.

The following list comprises the most beautiful and valuable species of this splendid genus ; and the collection in which they are found will seldom, if ever, be without one or more of the sorts in flower.

Cat. Aclandia.—A charming Orchid from Brazil, of a dwarf habit, seldom being above six inches high. It is a very shy-blooming plant ; but its large chocolate-coloured flowers are variegated with yellow, and have a rich rose-coloured lip. It flowers in June and July, and remains long in perfection. A very scarce plant.

Cat. Amethystina.—I have not seen this species, but have heard it spoken of as an exceedingly attractive and desirable plant.

Cat. bicolor.—A beautiful and free-flowering Orchid from Brazil ; sepals and petals pale green, with a rich purple lip. It blooms in September, and remains a long time in perfection. It produces as many as eight or ten flowers on a spike. This is a strong grower, rising eighteen inches or two feet high.

Cat. candida.—A desirable free-growing species from Brazil, about a foot high ; sepals and petals are of a delicate white, slightly shaded with pink : the lip is of the same colour, with a shade of yellow in the centre. It flowers from July to November, and lasts three or four weeks in good condition, if the flowers are kept free from

damp. This plant makes two growths in a year, and blooms from both, producing three or four flowers on a spike.

Cat. citrina.—A beautiful dwarf-plant from Mexico, with bright yellow flowers, one or two together, and large for the size of the plant; blooms from May to August, and lasts two weeks in perfection. This is best grown on a block of wood, and the plant should be tied to the block with the leaves hanging downwards, as it is found growing beneath the branches of trees in its native country. I always grow this in the coolest house.

Cat. crispa.—A splendid free-growing Orchid from Brazil, about a foot and a half high; it flowers in July and August: the blossoms are pure white, with a rich crimson stain in the middle of the lip. A single spike frequently produces four or five flowers, which continue in perfection for two weeks. This is a fine plant for exhibition in July. The colour of the flowers is remarkably attractive, and always produces a good effect in a collection. We have a splendid plant, that produces fifty or sixty blooms every year.

Cat. elegans.—A most beautiful species; sepals and petals pale purple, suffused with cinnamon brown; labellum (form of *Cat. Loddigesii*), of the most brilliant purple; flowers in clusters after the manner of *granulosa*. This beautiful species was imported by Messrs. James Backhouse and Son of York.

Cat. granulosa, from Brazil.—A free-growing species, producing large olive-coloured flowers, with rich, brown spots; the lip is whitish, spotted with crimson. It blooms in August and September, and remains long in perfection. This species is not so good as many of the Cattleyas; but where there is room it is worth growing, for its distinct colours.

Cat. granulosa Leopoldiana.—A new Orchid, in the way

of *granulosa* and *guttata* ; a free-flowering plant : it blooms in July, and lasts two or three weeks in beauty. A very rare plant.

Cat. guttata, from Brazil, is a free-growing Orchid, about twenty inches high. The flowers are of a greenish yellow, beautifully spotted with crimson ; the lip is white, stained with purple. This plant, when well grown, will produce as many as nine or ten flowers on a spike. It blooms in October and November, lasts two weeks in bloom, and is a very distinct species.

Cat. Harrisoniæ, from Brazil.—A free-growing Orchid, attaining the height of twenty inches ; blooms in abundance from July to October ; the flowers will last in good condition three weeks : the blossoms are of a beautiful rose colour, having on the lip a slight tinge of yellow. This is a noble plant, and amply repays the care required to grow it well. A fine specimen of *C. Harrisoniæ*, grown by Mr. Woolley, gardener to H. Bellenden Ker, Esq., Cheshunt, and having more than fifty flowers opened at once, was shown at the Regent's Park Exhibition in 1851.

Cat. intermedia violacea.—A beautiful Orchid from Brazil ; a free grower, and about a foot high. Sepals and petals are delicate rose colour, and the lip has a rich purple spot in the centre. It blooms in May and June, and lasts three or four weeks in good perfection, if kept in a cool place. This species frequently produces as many as nine flowers on a spike, and makes a fine plant for the May and June shows. We exhibited one with thirty blossoms at the Chiswick Flower-show, in 1851. There are three varieties of *C. intermedia*, but *violacea* is the best.

Cat. labiata.—One of the best of the Cattleyas ; comes from Brazil, is a free-blooming species, and grows about twenty inches high. The flowers are rose coloured, with a rich crimson lip. It flowers in October and November, and will continue in perfection three or four weeks. The

flowers are very large, often five inches across, with three or four on a spike. The finest specimen I ever saw is in the superb collection of R. Hanbury, Esq., Pole's Gardens, near Ware. The plant is cultivated in a large tub, about two feet across. This superb *Cattleya* was first flowered by the late Mr. Cattley, of Barnet, in honour of whom the genus is named.

Cat. Loddigesii, from Brazil, grows a foot or more high; a free-flowering species; sepals and petals of a pale rose colour, tinged with lilac; the lip is a light rose, marked with yellow. It blooms in August and September, and remains long in perfection, producing three or four flowers on a spike, and is a desirable species.

Cat. marginata.—A handsome dwarf-plant from Brazil, about six inches high: sepals and petals rosy crimson; lip deep rose, margined with white: it produces its bloom in September and October, and lasts three weeks in perfection. The flowers are large and solitary. It is a very desirable plant, and ought to be in every collection, however small, as it requires but very little room. It grows the best on a block of wood, with a little sphagnum moss suspended from the roof of the house, with a good supply of water at the root, in the growing season. It has always been a rare plant, but Messrs. Rollisson, of Tooting, having imported a recent supply, have some fine plants of it in good condition.

Cat. Mossiæ.—This magnificent and free-flowering Orchid is from La Guayra. It grows a foot or more high, blooms from March to August. The flowers are very large, a single one being four or five inches across, and three or four growing on one spike. There are three or four varieties of this plant, with blossoms of every shade of colour, from pale pink to rose purple. This species makes a noble plant for exhibition. I have seen specimens of *Cattleya Mossiæ* at the Chiswick and Regent's

Park shows, with thirty or forty flowers upon a single plant. The flowers will remain in perfection for three or four weeks, if kept in a cool place.

Cat. pumila.—A charming species from Brazil, about six inches high. It flowers in September: the blossoms are rose coloured, with a crisped lip of a crimson colour, often edged with white. It remains three or four weeks in perfection.

Cat. Skinnerii.—A beautiful and free-flowering plant from Guatemala, grows about a foot high, and blooms in March, April, and May: the blossoms are rose-purple, which remain three weeks in perfection, if the flowers are kept dry. This fine species of Cattleya, when grown strong, will produce as many as nine or ten flowers on a spike. It is one of the finest Orchids that can be grown for any of the exhibitions in May, the colour being distinct, and different from any of the other Cattleyas.

Cat. superba.—This truly beautiful plant comes from Guyana. It is a slow-growing species, and usually ten inches high. It flowers in June and July. The blossoms, which are of a deep rose colour, with a rich crimson lip, will remain in bloom three weeks: it produces three or four flowers on a spike, and is a very rare and distinct species.

Cat. violacea.—A handsome, free-flowering species from Brazil, which grows about twenty inches high. It produces flowers in abundance, from July to September: the flowers last in perfection three weeks: the blossoms are of a beautiful, deep violet-rose colour, and frequently present four or five flowers on a spike. This plant makes two growths in one year, and blooms from both. It is a fine exhibition plant for the late shows in July.

Cat. Walkeriana, formerly *bulbosa*.—A truly elegant dwarf species from Brazil, about four inches high, with large, light, rose-coloured flowers; the lip, which is a richer

rose than the other part, having a slight tinge of yellow: generally two flowers on a spike, five inches across. It blooms twice a-year, February and June: on the young growth the blossoms last four or five weeks in beauty, which is longer than those of any other *Cattleya*: it is also sweet-scented, and will fill the house with perfume. I always grow this plant on a block of wood, surrounded by a little sphagnum moss, and suspended from the roof in a place where there is plenty of light, but not too much sun. We had the pleasure of first blooming this new and splendid Orchid, which was figured in the first number of "Paxton's Flower Gardener," March 1st, 1850.

CHYSIS.

This is a beautiful, though limited, class of plants, there being only three of this genus that I am acquainted with. They are deciduous, losing the leaves during their season of rest. The bulbs are thick and fleshy, and about a foot long, producing their flowers with the young growth: these will do on blocks of wood, but grow much finer in baskets, with peat, moss, and potsherds. They require a liberal supply of heat and moisture in their growing season, but after they have finished their growth should be moved into a cooler house till they begin to grow; then they may be taken back to the India house. During their season of rest they require but very little water, and are propagated by dividing the plants just as they begin to grow.

Chysis aurea.—A charming Orchid from Venezuela, producing its flowers on a short spike, generally twice a-year: the blossoms are yellow, the lip is marked with crimson. It flowers at different times of the year, and lasts two weeks in beauty. A scarce plant.

Chy. bractescens.—A fine species from Guatemala:

its flowers are produced on a short spike, sometimes six together, each flower measuring two or three inches across; the sepals and petals are white; the lip has a blotch of yellow in the centre. It blooms in April and May, lasts two or three weeks in perfection: it makes a good show-plant.

Chy. lavis, from Guatemala. — The blossoms are cream-coloured, with a blotch of yellow on the lip: it flowers in the same way as the two former kinds, but at different times of the year; lasts two weeks in good condition. A scarce plant.

CŒLOGYNE.

There are many species of this class of plants, some of which are very beautiful: the colour of the flowers of some being rich and of a most delicate hue, while others are not worth growing. The following produce the best flowers: some of the species are evergreen; others are deciduous, and lose their leaves after they have finished their growth, which is generally the time they begin to flower: the blossoms on the deciduous species thus appear without any leaves. Almost all the Cœlogyne have small bulbs, from which the flowers proceed with the young growth: they make their leaves after they have done blooming: the flowers of some are very large, measuring as much as three inches across.

These plants are all best grown in pots, with peat and moss. Some of them will do on blocks, but the pot-and-peat culture is the best. They require good drainage, and an abundance of water at their roots in their growing season, and are best grown in the East India house; but after they have finished their growth a cooler house will do. During their period of rest they should have but little water, especially the deciduous kind, which are best placed

near the glass till they begin to grow, when they should be moved back into heat and treated as above. They are propagated by dividing the bulbs.

Cæl. cristata.—A magnificent Orchid from Nepaul; a dwarf evergreen species, leaves six inches long; the flowers proceed from the bottom of the bulb, on a drooping spike, six or eight together, each flower being three or four inches across: the colour is a beautiful white, with a blotch of yellow on the lip. It blossoms in February and March, and will continue in perfection four or five weeks if the flowers are kept free from damp. This is the finest of the genus, and ought to be in every collection.

Cæl. Cumingii.—A pretty species from Singapore; sepals and petals white; lip bright yellow, with white down the centre. It lasts long in beauty.

Cæl. Gardneriana.—A very good Orchid from the Khoosea Hills, grows about a foot high; the flowers, which are white tinged with yellow, are produced on a drooping spike. It blooms during the winter months, and lasts three or four weeks in good condition.

Cæl. Louii.—A fine evergreen species from Borneo: a rather large-growing plant, about two feet high; the flowers are produced on a drooping spike, about a foot long, twelve or more flowers together, which are large, of a pale yellow and chocolate in colour. It blooms in June or July, lasts two weeks in perfection. This requires a large pot to grow it to perfection, being one of the freest of all the Cœlogyne. A scarce plant.

Cæl. maculata.—A beautiful new deciduous Orchid, from the Khoosea Hills, with leaves six inches long. This plant flowers without any foliage; the sepals and petals are of a delicate white, with the lip of the same colour, beautifully barred with crimson. It blooms in October and November, continuing three or four weeks in perfection.

This plant should be potted level with the pot rim, and some silver sand should be mixed with the peat, which ought to be finer than for the others.

Cæl. speciosa.—A desirable plant from Borneo, ever-green, and about eight inches high; the flowers are brown and white, and are produced on a short spike, two or more together, at different times of the year. It lasts long in bloom.

Cæl. Wallichiana.—A truly handsome dwarf species from India. A deciduous plant, producing its solitary flowers in October and November, and lasting two weeks in beauty. The colour is of a deep rose, and the lip the same, with a dash of white in the centre; the blossoms are three or four inches across. This has always been a rare plant; but within the last year a fresh importation has made it rather more plentiful. This requires to be grown the same as *maculata*.

CORYANTHES.

These are very large, extraordinary-looking flowers. Before the flowers open they are in the shape of a Chinese foot; after opening, the flowers form a sort of a cup, having above it a pair of fleshy horns, from which a sort of liquid exudes and drops into the cup. They produce their flowers from the bottom of the bulbs on a spike, one or two together. The plants are evergreen, with leaves ten inches long, on short bulbs three inches high. The leaves are two or three inches broad. They will grow either in baskets or pots, with moss and peat and good drainage; they require a liberal supply of water at the roots during their period of growth, with a good heat. After they have made their growth they should be kept rather dry, so that their bulbs be not allowed to shrivel. They are propagated by division of the bulbs.

Coryanthes macrantha.—The best of the genus, which comes from the Caraccas, and flowers in May, June, and July: lasts but three or four days in bloom; the colour orange-yellow, spotted with purple; the lip is red. This plant ought to be in every collection.

Cor. maculata, from Demerara.—The flowers are dull yellow, spotted with dull crimson; blooms during the summer months, and lasts but three days in beauty.

Cor. speciosa.—This singular Orchid comes from Demerara, is about a foot high, with pale yellow-coloured flowers, which are produced in April or May: lasts three or four days in bloom.

CYCNOCHES.

This is another curious tribe of plants. Their flowers are of a very peculiar form, being in the shape of a swan. They are not thought much of by many growers of Orchids, but some are worth growing on account of the curious form of their flowers; they are of easy culture, and produce their flowers freely; all are deciduous, and lose their leaves as soon as they have finished their growth. The bulbs, which are thick and fleshy, are from six to ten inches high, and have three or four leaves on the top of each bulb. They produce their flowers, which are large, from nearly the top of the bulb, some of them several together. They are best grown in the East India house, in pots, with rough fibrous peat and good drainage, with a liberal supply of water at the roots in their growing season; afterwards they may be kept much cooler, and should be placed near the glass to receive all the light possible; and during this time they must be kept rather dry, having only just enough water to keep their bulbs from shrivelling. When they begin to grow, move them back into heat. They are

propagated by dividing the bulbs when they begin to grow.

Cycnoches barbatum, from New Granada.—A dwarf species, sepals and petals greenish white, spotted with pink; lip the same colour. It blooms in June or July, lasts in flower two or three weeks. A very scarce plant,

Cyc. chlorochilion.—A very good species from Demerara; the flowers, which are of a yellowish colour, are produced in June or July, and last three weeks in good condition if kept dry.

Cyc. Loddigesii.—A very curious Orchid from Surinam. It produces its blossoms on a spike, six or eight together, which are four inches across; the sepals and petals are of a brownish-green colour, with darker spots, and bearing resemblance to the expanded wings of a swan. It blooms in July and August, and continues in perfection three weeks. A desirable species, which ought to be in every collection.

Cyc. pentadactylon.—This is also a very curious species from Brazil; the flowers are very large, the colour being yellow and brown. It flowers at different times of the year, and lasts long in beauty.

Cyc. ventricosum.—A free-flowering Orchid from Guatemala; the blossoms are greenish-yellow, with a white lip: blooms in June, July, or August, lasting in bloom three weeks.

CYMBIDIUM.

There are several species of this genus, but only a few that are good; some of them are very handsome, and delicate in colour. They are all evergreen, with beautiful foliage; some are large-growing plants with short bulbs, from which the leaves and flowers proceed. They are generally free-flowering plants, and some of them produce pendulous spikes as much as two feet long. They

are best grown in the East India house, in pots of large size ; they require plenty of pot room, as they send out thick fleshy roots very freely. I grow these in rough peat with good drainage, and a liberal quantity of water at the roots during their period of growth ; afterwards less water will suffice, and they should be kept at the cool end of the East India house. They are propagated by dividing the bulbs. The following are the best I have seen :—

Cymbidium eburneum.—A remarkably handsome species, the finest of the genus, with graceful foliage, and of very compact growth. The sepals and petals of the flowers are pure white ; the lip is the same colour, with a blotch of yellow in the centre : the flowers are erect, about six inches high, and very large. It blooms in February and March, and lasts a long time in bloom. A very scarce plant. We are indebted to Messrs. Loddiges for the introducing of this magnificent plant.

Cym. giganteum, from Nepaul.—This is not so good as the others, but it makes a good plant for winter blooming : a rather large-growing species ; its brown and purple flowers are produced on long spikes during the winter, and last long in perfection if they are kept dry.

Cym. Mastersii.—A pretty Orchid from India. It is a great deal like *eburneum* in its growth, but the flowers are very different ; they are produced on a spike, and are white with a yellow centre. This plant blooms during the winter, and continues long in flower.

Cym. pendulum.—A very good Orchid from Sylhet : a large-growing plant, with long drooping spikes from one to two feet long ; sepals and petals brown ; the lip red striped with white. It blooms in July or August, and lasts long in beauty.

CYPRIPEDIUMS.

These are all beautiful in foliage as well as in flower, and are worth a place in every collection. They are of easy culture, and require but little space; the form of the flowers is curious, being that of a slipper—they are generally called the Lady's Slipper, and are all dwarf, compact, and evergreen, the leaves of some being beautifully spotted. They produce their flowers from the centre of the leaves, on an upright stalk, and rise from six inches to a foot high. All are best grown in the East India house, except *insigne*, which thrives best in a cooler place, and will do well in a warm greenhouse. I grow all in pots with peat, except *Lowii*, and this I grow in a pot with loam and leaf mould; they all require a liberal quantity of water at their roots during their period of growth. They need but little rest, and should not be allowed to get too dry at the roots. The plants are not like many of our Orchids; they have no thick fleshy bulbs to supply them with nourishment. They are propagated by dividing the plant.

Cypripedium barbatum.—A handsome species, with beautifully spotted foliage; the colour of the flowers brownish-purple and white: it produces its solitary flowers at different times of the year, lasting six weeks in bloom. There are two varieties of this plant, one being much brighter in colour than the other.

Cyp. caudatum.—A remarkable and curious Orchid from Peru, with light green foliage, producing its pale yellow and green flowers, several together, on a single spike; there are two tails, which hang downwards from each flower, about twenty inches long. It blooms in March, April, and May, and lasts three or four weeks in perfection.

Cyp. insigne.—A good old species from Sylhet, with

light green foliage ; sepals and petals yellowish green—the upper petal is tipped with white, and spotted with brown ; the labellum is orange and brown. It produces its solitary flowers during the winter, lasting six weeks in bloom.

Cyp. Lowii.—A curious and beautiful Orchid from Borneo, with light green foliage. This rare Orchid produces its flowers on a spike, two or more together, during the summer, and continues in perfection for two or three months if kept in a cool house.

Cyp. purpuratum.—A pretty species from the Indian islands, with beautifully spotted foliage ; produces its flowers during the winter months : the flowers are very much like *barbatum*, except the upper petal, which has more pure white on the end of the petal.

DENDROBIUMS.

This is a magnificent class of plants ; some of their flowers are very large and delicate in colour, and others delightfully fragrant. There are not many plants that surpass the Dendrobiums. Their beautiful flowers are of nearly every shade of colour, and many produce them very freely ; some are compact in their growth, while others are straggling ; some are very gracefully growing plants, especially when cultivated in baskets and suspended from the roof, so that their pendulous bulbs hang down and exhibit their flowers to the best advantage : all the drooping kinds require to be grown in this way ; some of them are ever-green, others are deciduous.

Though some of the Dendrobiums require different treatment from others, they may all be successfully cultivated with proper attention. They are generally found in the hotter parts of India, growing on the branches of trees, frequently such as hang over streams of water ; and to grow

these plants to perfection they must have a good season both of rest and growth. They require to be grown strong to flower well. Some of the sorts are best grown in pots, with peat and good drainage; others do best on blocks of wood. I keep them all in the East India house. During their period of growth give them a good supply of heat and moisture, with a liberal quantity of water at the roots: in fact, the moss or peat never should be allowed to get dry while they are in a vigorous growth. After they have finished their growth, allow them a good season of rest by moving them into a cooler house, and during the time they are in a cool house give them but very little water, only enough to keep their bulbs from shrivelling. This is the only way to make them grow strong and flower freely; when they begin to grow they should be moved back into heat, and treated as is described above. They generally begin to grow after their flowers are faded.

They are propagated in different ways: some of them form plants on the old bulbs, which should be cut off and potted: some are propagated by cutting the old bulbs from the plant after they have done blooming; others are increased by dividing the plants according to the directions given in reference to propagation (p. 22). The Dendrobiums are a large class of plants; some of them not worth growing, excepting for botanical purposes. The following are among the finest in cultivation, and will amply reward the care of the cultivator.

Dendrobium Aduncum, from Manilla.—A rather straggling grower: an evergreen species, producing its flower-spikes from the old bulbs. The blossoms, which are small, are white and pink in colour, and appear at different times in the year, lasting two or three weeks in perfection. This is best grown in a pot with peat and good drainage: it is

not so good as many of the *Dendrobiums*, but it is worth growing where there is plenty of room.

D. aggregatum.—A pretty, dwarf, evergreen species, from India: grows about four inches high, producing its pale yellow blossoms on a spike from the middle of the bulb: flowers in March and April, and lasts two weeks in bloom. This will do either on a block, or in a pot with peat, and is a desirable species.

D. alba sanguineum.—A charming new Orchid from India: a compact-growing plant, with bulbs a foot high, and produces its large flowers, which are creamy white, from nearly the top of the bulb, with a crimson blotch on the centre of the lip. This was first flowered by Messrs. Veitch, of Exeter, who received it from their collector in India: it blooms in July, and lasts a long time in perfection, and is best grown in a pot with moss. A scarce Orchid, and a fine, showy plant for exhibition.

D. album, from India.—It produces its white blossoms during the winter. This is not so handsome as many, but it is worth growing where there is room.

D. calceolarea.—A beautiful evergreen species from India. This is a large-growing plant, about four feet high: when well grown its flowers proceed from the top of the old bulb, on a raceme, twelve or more together, which are large; sepals and petals orange colour; lip chocolate, edged with yellow: it blooms during the summer months, lasting but four days in bloom. This is best grown in a pot with moss or peat.

D. Cambridgeanum.—A remarkably handsome Orchid from India: a deciduous species of a drooping habit, about a foot long. The flowers are produced on the young growth in March and April: the sepals and petals are of a bright orange; the lip has a crimson blotch in the centre: it lasts

in beauty two weeks, and is best grown in a basket with moss suspended from the roof,

D. chrysanthemum.—A charming species from India, deciduous and pendulous, growing about three or four feet long, and generally flowers along the stem at the same time it is making its growth. The colour of the flowers is a bright yellow, with a dark red spot on the lip : it blossoms at different times of the year, lasting two weeks in perfection, and requiring the same treatment as *Cambridgeanum*.

D. chrysotoxum, from India. An upright-growing plant, a foot or more high, and evergreen. It produces its pale yellow flowers on a spike from the top of the bulb ; blooms during the winter months, and lasts a short time in perfection : pot-and-peat culture suits it best.

D. cretaceum.—A compact, deciduous-growing plant : it produces its white flowers during June and July, lasting six weeks in perfection. This will do either in a pot or basket, with peat or moss. A rare plant.

D. Dalhousianum.—This is a beautiful Indian evergreen species ; bulbs are elegantly marked, and grow three or four feet high : it blooms from the old growth, with numerous flowers on a spike, in April and May. The flowers are large, of a pale lemon colour, with a pink margin, and two dark crimson spots in the centre : it lasts four or five days in beauty. This will grow either in a pot or basket, with moss. A scarce Orchid, justly prized by those who possess it : it makes a good plant for exhibition.

D. densiflorum. — A magnificent evergreen Orchid from India ; compact and free flowering, of upright growth, a foot or more high. It produces its beautiful spikes of rich yellow flowers from the side of the bulb, near the top. It blooms in March, April, or May, and lasts from four to six days in perfection, if kept in a cool house. This is one of the showiest Orchids in cultivation, and is best grown in

a pot with peat, and is one of the choicest plants we have for exhibition, on account of its colour.

D. Devonianum.—This is one of the finest of the genus from India; a deciduous and pendulous-growing species. The blossoms proceed from nearly the whole length of the bulb, which sometimes attains the extent of four feet: the flowers are two inches across; sepals cream colour, shaded with pinkish purple; the petals are broader than the sepals, and are pink, with a deep purple stain; the lip is broad and fringed, rich purple on the ends, with two spots of rich orange on the column. It blooms in May or June, lasts two weeks in perfection, and is best grown in a basket with moss. This makes a splendid plant for exhibition.

D. Farmerii.—A beautiful, compact, evergreen Orchid, from India, with dark green foliage. This grows and flowers in the same way as *densiflorum*. The colour of the flowers is pink, with a yellow centre: it blooms in April and May, and lasts two weeks in beauty if kept in a cool house, requiring the same treatment as *densiflorum*.

D. fimbriatum.—A very good Orchid from India. A drooping, evergreen species; the bulbs grow two or three feet long, producing their flowers on a spike at nearly the end of the bulb: the flowers are of a bright yellow, and beautifully fringed. This plant will continue flowering from the old bulbs for years: it generally blossoms during the spring months, seldom lasting more than four days in bloom; is best grown in a basket with moss.

D. formosum.—A remarkably handsome, compact, evergreen Orchid; grows about a foot high, and blooms from the top of the bulb, three or four together: the blossoms are white, with a bright yellow centre, and frequently three inches across; they last six weeks or more in perfection. This may be grown either in a pot or basket with moss or peat: it makes a splendid plant for exhibition.

D. Gibsonii.—A very pretty, evergreen, and upright-growing Orchid from India, about two feet high: the blossoms are produced on the ends of the old bulbs; the sepals and petals are rich orange; the lip bright yellow, with two dark spots on the upper part: blooms during the autumn months, lasts two weeks in good condition. Same treatment as *formosum*.

D. Heynianum.—A pretty species from Bombay: a deciduous kind; it produces its small spikes of flowers during the winter, which are of a delicate white, several together. A very rare plant.

D. Jenkinsii.—A beautiful, dwarf, evergreen species, from India, about two inches high: the flowers are very large for the size of the plant; the colour is a pale buff, margined with yellow; they are produced from the bulb, one or two together: last ten days in beauty. This is best grown on a bare block of wood suspended from the roof. We generally bloom this plant every year, with fifty flowers on one single plant.

D. macrophyllum.—A fine Orchid from the Philippine Islands, of pendulous habit; a deciduous species, losing its leaves just as it begins to show its flower-buds. The bulbs grow about two feet long, from which the flowers proceed in a row on each side; they are pink tinged with rose colour, three or four inches across each flower, and lasting two weeks in perfection, if the flowers are kept dry. It is best grown in a basket with moss. This makes a noble plant for public exhibition.

D. moniliforme.—A delicate species from Japan: an evergreen, upright-growing plant, about a foot or more high; blooms all up the bulb on two-year old growth, the colour being a light blue and white: it blooms during the winter months, lasting two weeks in beauty. This will

grow in a basket, but I find it thrives best in a pot with peat or moss.

D. moschatum.—A handsome species from India : this grows in the same way as *calceolare*, the flowers are nearly the same, and it lasts about as long in perfection.

D. nobile.—A magnificent Orchid from India ; a free-flowering, evergreen species, of upright growth : the blossoms, which are pink and white, with a spot of crimson in the centre of the lip, are formed along the sides of the bulbs. It blooms during the winter and spring months, lasting three or four weeks in good condition, if kept in a cool house. It will grow either in a pot or basket with moss or peat. This is one of the finest exhibition plants we have. I have shown it in the month of May with three hundred flowers on one single plant : a truly splendid object.

D. Paxtonii.—A remarkably handsome Orchid from India ; an evergreen species, with upright growth, about three or four feet high : it blooms at different times of the year, from nearly the top of the old bulb, on a spike, and its flowers are of a beautiful orange colour, with a dark centre : lasts in perfection ten days, and requires the same treatment as *nobile*.

D. Pierardii.—A useful Orchid, for the winter and spring months, from India : a drooping, deciduous species, flowering in the same way as *macrophyllum*, and requiring similar treatment : its beautiful white flowers last three weeks in beauty.

D. Pierardii latifolium, from India : the flowers are much finer than the old species, though of the same colour : it blooms in April and May. A scarce plant. We have bloomed this with seventy flowers on a single bulb. It requires the same treatment as the former, and is a useful plant for exhibition.

D. pulchellum purpureum.—A pretty, dwarf, deciduous species, from Sylhet; loses its leaves after it has finished growing, and generally begins to show flower in February all up the bulb: the sepals and petals are white, edged with green; the lip is beautifully fringed; it has a bright orange blotch in the centre: does well in a basket with moss; lasts two weeks in bloom.

D. sanguinolentum.—A good species from India, ever-green; the bulbs and leaves are violet or lilac coloured; grows three or four feet high; blooms from the end of the old bulbs, which keep blooming for years; sepals and petals fawn colour, tipped with spots of deep violet; the lip the same colour: it blooms during the summer and autumn months, and lasts two weeks in good condition: this will do either in a basket or pot, with peat or moss.

D. transparens.—A beautiful small-flowering Orchid, from India; blooms in the same way as *nobile*; the flowers, which grow in pairs along the bulb, are of a pale, transparent, pinkish lilac, stained in the middle of the lip with a blotch of deep crimson: it blooms in June and July, and does well grown in a pot with peat or moss. A new and rare plant, introduced by Messrs. Veitch, of Exeter.

D. tortilis.—A charming species from Java; an ever-green, about two feet high; blooms in the same way as *nobile*, and requires the same treatment. The flowers are pale yellow, almost white: blooms in May and June, lasting a long time in perfection. A scarce plant, also introduced by Messrs. Veitch.

D. triadenium.—A delicate Orchid from India, of upright growth, and evergreen: produces its white and pink flowers on a small spike from the old bulbs, lasting two weeks in bloom: flowers at different times of the year, and is best grown in a pot with peat.

D. Wallichianum.—This is a beautiful Indian kind;

has taller bulbs, much darker foliage, and richer-coloured flowers than *nobile*: it blooms at the same time, and requires similar treatment. This makes a noble plant for show.

EPIDENDRUMS.

Many of this large class of plants are scarcely worth cultivating, excepting for botanical purposes. More growers of Orchids have been deceived in buying Epidendrums, than any other class of Orchids: the bulbs of so many kinds are so nearly alike, that it is difficult to tell what they really are till they flower. They may often be kept several years before they flower, and then, instead of something good, they produce frequently only dingy green flowers, about the same colour as the leaves. Some of these are very fragrant, and will perfume the whole house in which they are grown. There are, however, some beautiful species among this class, the flowers of which are very distinct in colour. The following comprise all the best sorts that I know. They are all evergreen, and compact in their habit, except *cinnabarinum* and *crassifolium*, which are tall-growing, with long slender bulbs, and small leaves from top to bottom: the other sorts have short, round bulbs, with long narrow leaves, except *aurantiacum*, *bicornutum*, and *Stamfordianum*. These grow more in the way of the Cattleyas, with upright bulbs, having two or three short leaves on the top. They all produce their flowers from the top of the bulb, except *Stamfordianum*, in which they rise from the bottom.

These plants will all do in the Mexican house, and may be grown on blocks of wood; but the pot-and-peat culture is the best. They require a season of rest, with the same treatment as the Cattleyas, excepting less heat:

they are propagated by dividing the plants, as described in the remarks on propagation (p. 22).

Epidendrum alatum major.—A pretty species from Mexico: its spikes of flowers, produced in June or July, are pale yellow, with the lip striped with purple, and continue five or six weeks in beauty. There are several varieties of *alatum*, but I know only one, viz. the *major* variety, which was flowered by Mr. Woolley, gardener to H. Bellenden Ker, Esq., Cheshunt.

Epi. aurantiacum.—A charming species from Guatemala. This plant grows in the same way as the *Cattleya Skinnerii*, which the bulbs so nearly resemble as to be often mistaken for it. It grows a foot high, and produces its flowers from a sheath at the top of the bulb: the flowers are of a bright orange colour, with lip of the same, striped with crimson: it blooms in March, April, and May, lasting six weeks in perfection if kept in a cool house. There are two varieties of this plant, one of which never expands its flowers. We have both varieties here, and both growing in the same house, with the same treatment: the best variety opens its flowers, while the other keeps them nearly close,—a peculiarity which renders it not worth growing. There is a fine plant of the best variety in the Horticultural Gardens, Chiswick, which is worth a visit when in bloom.

Epi. alifolium.—A pretty species when well grown, from the same country as the former. This is pendulous-growing, and very distinct from any of the other Epidendrums, having curious and narrow-pointed leaves: the flowers, which are large, proceed from the top of the bulb, one or two together: the sepals and petals are greenish-yellow and brown, the lip is of a pure white; it blooms during the summer months, and lasts long in beauty. This plant is best grown in a basket with moss.

Epi. bicornutum.—A remarkably handsome Orchid from Guyana, about ten inches high: the flowers proceed from the top of the bulbs on a spike; sometimes on one spike there are as many as twelve beautiful flowers, each about two inches across, of a pure white, with a few crimson spots in the centre of the lip: blossoms in April and May, lasting two or three weeks in beauty. This is rather a difficult plant to grow: the best plant I ever saw was grown on a block of wood without any moss, and flowered five or six years in succession; but in the seventh year the plant seemed to lose its vigour, and never flowered afterwards, probably because the block began to decay and get sour. I have seen plants do well in pots with peat and good drainage.

Epi. cinnabarinum, from Pernambuco.—A tall-growing plant, four feet high, which blooms from the top of the bulb: the flowers are bright scarlet, and are produced in abundance in May, June, and July: it continues flowering for two or three months.

Epi. crassifolium.—This is not so good as many Epidendrums, but it is worth growing on account of its colour: it is a rather tall grower, two or three feet high; it produces its rose-coloured flowers in profusion in March, April, May, and June, and will continue blooming for three or four months, which makes it a valuable plant for exhibitions.

Epi. Hanburyanum, from Mexico.—This is not so showy as many of the Epidendrums, but is worth growing on account of its colour; sepals and petals deep purple, lip pale rose: blooms during the spring months, lasting long in beauty.

Epi. macrochilum.—A beautiful species from Guatemala; the sepals and petals brown, lip large, of a pure white, with a purple blotch at the base: it blossoms in

April and May, and lasts five weeks in good condition, if the flowers are kept free from damp.

Epi. macrochilum roseum.—A beautiful variety of the former; the lip is of a darker rose colour, blooms at the same time, and lasts long in beauty.

Epi. phæniceum.—A fine species from Cuba; the sepals and petals purple; the lip of the same colour, mixed with pink and crimson: blooms during the summer months.

Epi. Stamfordianum, from Guatemala.—A small-flowering species, producing its flowers in great abundance on a branching spike: they are of a greenish yellow, thickly spotted with brownish purple: it blooms in April and May, lasting a considerable time in perfection. There are two varieties of this plant; one has much brighter coloured flowers than the other; the best has longer and thinner bulbs than the other.

Epi. varicosum. — A truly beautiful Orchid from Mexico; sepals and petals are of a delicate pink, spotted with crimson; the lip of the same colour: it produces its flowers in June and July, and continues flowering for four weeks. There are two varieties of this plant; one has much darker coloured flowers than the other. A very scarce Orchid.

Epi. vitellinum.—A small-growing plant, but one of the finest of the genus, from Mexico: a very distinct Orchid; the sepals and petals rich orange scarlet, the lip a bright yellow: blossoms during the winter, lasting six weeks or more in good condition. A very scarce Orchid.

Epi. vitellinum major.—The same colour as *vitellinum*, the only difference being in the larger size of the flowers, and in its blooming during the summer months: it lasts long in bloom. A very rare plant.

GALEANDRA.

There are only two of this genus that I know of; both are good and worth growing. They are deciduous and upright-growing, with slender bulbs, producing their flower spikes from the top, just as they have finished their growth. These are best grown in pots, with peat and good drainage, in the East India house, with a good supply of water at the roots during their period of growth. Afterwards they should be moved into the cooler house, placed near the glass, and kept rather dry, till they begin to grow, when they should be treated as before directed.

Galeandra Bauerii.—A desirable dwarf species from Guayana; the pink and purple-coloured blossoms are produced on a drooping spike; blooms in June, July, and August; continues in perfection a long time. This makes a fine plant when well grown, and it is worth all the care that can be bestowed upon it.

Gal. Devoniana.—A beautiful Orchid from South America; grows about two feet high; the blossoms are pink and white; blooms in April and May, lasting a long time in beauty. A very scarce plant.

GOODYERA.

Goodyera discolor, from Brazil.—This is a most useful plant for the winter; very free-flowering, with beautiful dark evergreen and velvet-like foliage. It is best grown in a pot with leaf-mould and peat mixed together, and will thrive in either house. It should have a good supply of water at the roots in the growing season. It produces its spikes of white and yellow blossoms during the winter, and will continue flowering for two months.

HUNTLEYA.

This small genus of curiously-formed, though not very showy flowers, is of easy culture, and worth growing. The plants have evergreen foliage, about ten inches high, and are compact in their growth, with small bulbs, from which their flowers proceed. The blossoms are large, and stand about four inches high. These are best grown in pots, with peat and good drainage, in the East India house, with a liberal supply of water at the roots during the time they are in vigorous growth, but less afterwards. They require but a short season of rest.

Huntleya meleagris.—The best of the genus, from South America. The flowers are yellow and brown; blooms in June and July, and lasts a long time in beauty. A scarce Orchid.

Hunt. violacea.—A curious species from Guayana. It produces its solitary violet-coloured flowers at different times of the year; keeps in bloom four or five weeks.

Hunt. Wailesiæ.—A curious dwarf plant. It produces its white and purple flowers during the autumn months, lasting long in perfection. A scarce plant, and very distinct.

LÆLIAS.

This is a most lovely class of plants. Their flowers are large and very handsome, distinct in colour; most of them compact in their growth, with evergreen foliage, and resembling in many respects the genus *Cattleya*, to which some of them are nearly equal in the beauty of their flowers. They produce their blossoms, on spikes of varied length, from the top of their bulbs. These plants merit a place in every collection, and will amply repay the cultivator for the care they may require. The *Lælias*

are among our finest Orchids for winter blooming. Some are best grown on blocks of wood with moss; others thrive well in pots with peat and good drainage.

Lælia cinnabarina, *L. flava*, *L. Perrinii*, are best grown in pots, without much water at the roots at any time, and require the same treatment as the Cattleyas. Those on blocks require more water. All are best grown in the Mexican house, except *Perrinii*, which requires a little more heat to grow it to perfection. They are propagated in the same way as the Cattleyas.

Læ. acuminata. — A pretty, delicate-flowering, and compact-growing plant from Mexico; sepals and petals white; lip white, with a dark blotch on the upper part. It blooms in December and January, and lasts two or three weeks in beauty. There is another variety of this plant with violet-coloured flowers.

Læ. albida superba. — A lovely compact-growing variety from Oaxaca; sepals and petals white; lip pink, with stripes of yellow down the centre. It blossoms in December and January, lasting a good time in beauty. There are two varieties of this plant. The best is called *superba*. In *superba* the flowers are much larger than in *albida*. I never saw this variety until December 1851, when I met with several plants in bloom at Stratford, Essex, in the nursery of Mr. Bunny, one of our most successful growers of Orchids.

Læ. anceps. — A remarkably handsome Orchid from Mexico; sepals and petals rose lilac; the lip of a beautiful deep purple. It blooms in December and January. The flowers are three or four inches across, and last a month in perfection, if kept in a cool dry house.

Læ. autumnalis. — A lovely and showy Orchid from Mexico. It produces its blossoms on a spike twelve inches or more high, and often as many as nine flowers on a single spike. We have bloomed it with that number.

The sepals and petals are of a beautiful purple colour; lip rose colour, and white, with yellow in the centre. The flowers are four inches across: it blooms at the same time as *anceps*, lasting two weeks in good condition. There are several varieties of this plant, some of them much richer in colour than others.

Læ. cinnabarina.—A charming distinct species from Brazil, very compact in its growth; the flowers are of a reddish orange. It blooms in March, April, and May, lasting six weeks in beauty. This makes a good plant for exhibition on account of its colour.

Læ. flava.—A very distinct species from Mexico; grows in the same way as *cinnabarina*. The colour of the flowers is yellow; blooms at the same time as the former; lasts three weeks in perfection.

Læ. furfuracea.—A great deal like *autumnalis* in its growth and flower, the flowers of this being more compact and lasting a longer time in beauty.

Læ. Perrinii.—A truly beautiful species from Brazil; grows like the Cattleyas and flowers in the same way; the sepals and petals light purple, with a crimson lip. It blooms in October and November; continues in good condition three weeks. There are two varieties of this plant; one producing much darker coloured flowers, and being stronger in its growth than the other.

Læ. majalis.—This is a glorious plant from Bolanos; a dwarf-growing species. The flowers are large, four inches across, of a delicate rose colour; the lip is striped and spotted with chocolate. It blooms with the young growth, and lasts five or six weeks in beauty. This is the finest of the genus, and is rather difficult to flower in some collections; but it flowers every year at this place. I keep it rather dry during the winter.

Læ. superbiens.—A magnificent Orchid from Guate-

mala. This is rather a large-growing plant, but it is one of the finest. The flowers are produced on a spike five feet long, having sometimes from fourteen to twenty flowers on one spike, each flower measuring nearly four inches across. The flowers are of a beautiful deep rose, variegated with dark red; the lip is a rich crimson, striped with yellow. It blooms during the winter months, and continues long in beauty. The finest plant I ever saw of this is in the Horticultural Gardens, Chiswick. This plant, when in bloom, is worth travelling miles to see. It sometimes produces as many as nine spikes of its beautiful flowers at one time; the plant is four or five feet high, and its diameter is equal to its height; it is in perfect health.

LEPTOTES.

This small genus of Orchids deserves to be in every collection; they are small and compact-growing plants, with curious evergreen foliage in the shape of a thick rush, about three inches long, and produce their flowers from the top of the bulb. They are of easy culture, and will do either on blocks or in pots with peat. These plants are very accommodating, for they will grow in either house with a liberal supply of water in the growing season. They are propagated by dividing the plants.

Leptotes bicolor.—A pretty Orchid from Brazil; sepals and petals are white, with a blotch of purple on the lip, and blooms during the winter months, lasting four weeks in beauty.

Lep. serrulata.—A charming little plant, from the same country as *bicolor*; the flowers are nearly the same in colour; the only difference being, that they are much larger. It blooms in April and May; lasts three weeks in perfection. A scarce plant.

LYCASTE.

There are several species of this genus, but only a few that have handsome flowers. These plants have short thick bulbs with flag-shape leaves; the flowers are single generally, but sometimes double, and are formed at the end of a spike or stalk, about eight inches from the bulbs. They are of easy culture, and may be grown in either house in pots with peat and good drainage; plenty of water in the growing season, but afterwards only enough to keep them from shrivelling. They should be kept cool. They are propagated by dividing the plants.

Lycaste cruenta, from Guatemala.—The blossoms are yellow, with a dark spot in the centre of the lip. It produces its flowers in abundance in March and April: lasts three weeks in perfection.

Lyc. Deppii.—A good old species from Zalapa. It produces its flowers during the winter and spring months, lasting long in beauty.

Lyc. Skinnerii.—A beautiful Orchid from Guatemala. A free-flowering species; sepals and petals pure white, tinged at the base with rose colour; the lip of the same colour, spotted with crimson. There are several varieties of this plant: one, called *violacea*, is much darker-coloured in the lip; it blooms during the winter months, lasting a long time in beauty. This plant ought to be in every collection; it is one of the finest plants for winter blooming. Its large, numerous, singularly-formed, and richly-coloured flowers, rendering it at this season peculiarly attractive.

MILTONIAS.

There are some beautiful species of this class of plants, several of the flowers are very handsome; they are gene-

rally compact growing, with evergreen foliage, and flower freely from the side of the bulb. These will thrive in either house with pot-and-peat culture, and a good supply of water at the roots in the growing season; afterwards less will suffice. They are propagated by dividing the plant just as they begin to grow.

Miltonia candida.—A good species from Brazil; sepals and petals are yellow and brown, and the labellum pure white marked with pink. It produces its spikes of flowers during the autumn, lasting three weeks in bloom.

Mil. candida grandiflora.—This is much finer than the old *candida*, the flowers are larger and brighter in colour, and the plant is much stronger in its growth.

Mil. Clowesii, major, from Brazil. It produces long spikes of flowers in September and October; sepals and petals pale yellow barred with chocolate; lip purple and white; lasts long in perfection. There are several varieties of this plant, but *major* is the best.

Mil. Karwinski.—A charming species from Brazil; sepals and petals pale yellow barred with brown; lip white spotted with chocolate. This fine species blooms during the winter months, lasting in beauty a long time.

Mil. Morelii.—A handsome Orchid from Rio Janeiro. The flowers of this species resemble those of *spectabilis*, the only difference being that *Morelii* is much darker in the lip; they grow in the same way, and produce their flowers in September and October, continuing in bloom a long time.

Mil. spectabilis.—A beautiful Orchid from Brazil, grows about six inches high, and very free in producing its large solitary flowers in July and August, lasting six weeks in beauty if kept in a cool house and free from damp; sepals and petals white; the lip violet, edged with dull white. There are four varieties of this beautiful

species, some much better than others. Messrs. Rollisson of Tooting have some fine varieties of *spectabilis*; the lip of one which I saw in flower was four inches across, and of a beautiful colour.

MORMODES.

There are several of this genus, but only two that I know of that are worth growing; these are both deciduous, and will do in either house, growing in pots with peat, with a liberal quantity of water at the roots during their period of growth; afterwards they should be kept dry, and placed near the glass till they begin to grow. They are propagated by dividing the plant.

Mormodes citrinum.—The best of the genus from Mexico; the flowers are yellow, and are produced on a short spike in July and August.

Mor. luxatum.—From the same country as the former; sepals and petals creamy white; the lip the same, with stripes of brown in the centre: blooms in July, lasting in bloom two weeks or more.

ODONTOGLOSSUMS.

There are many species belonging to this class, and containing some handsome varieties. *Odontoglossum grande* is one of the showiest Orchids in cultivation. They are all evergreen, some with stout bulbs, and very compact in their growth; their flowers proceed from the sides of the bulbs.

They are best grown in the Mexican house, without much heat and moisture, as they only require the mould to be kept rather damp when they are growing, and after their growth is completed want very little water. They are best grown in pots, with peat and moss and good

drainage, and are propagated by dividing the plants. The following list contains the best in cultivation.

Odontoglossum citrosimum.—A charming Orchid from Guatemala. It produces its long pendulous spikes of flowers in June and July; the colour is pink and white, the flowers measuring two inches across, twelve or more on one spike. It will continue in perfection four or five weeks, if kept in a cool house free from damp. There are two varieties of this plant; one has much brighter-coloured flowers than the other. Mr. Mylom, gardener to S. Rucker, Esq., flowers this fine variety every year, with several spikes, and branched. This variety is very scarce, and makes one of the finest plants for exhibition.

Odo. grande.—A remarkably handsome species from Guatemala; produces its very large flowers on an upright spike during the autumn. The flowers are mottled and striped with brown and yellow, like the back of a tiger; the lip white and purple. It remains in perfection three or four weeks, if the flowers are kept dry.

Odo. hastilabium.—A desirable new Orchid from South America. It produces its spikes of flowers in June, July, and August, the colour being purple, green, and white. It continues blooming for two months, if kept in a cool house. This is a useful plant for exhibition, on account of its continuing in bloom so long.

Odo. Insleayii, from Mexico.—This grows in the same way as *grande*; the flowers are brown, yellow, and orange, and are produced on a short spike at different times of the year, lasting in beauty three weeks.

Odo. membranaceum.—A beautiful small-growing species from Guatemala; sepals and petals pure white; the lip of the same colour barred with brown. It blooms during the winter months, and continues in bloom four weeks. This will do on a block of wood.

Odo. navium.—A pretty dwarf Orchid from Truxillo, the colour of the flowers being white spotted with crimson ; the lip yellow. It blooms in June and July, and lasts a considerable time in perfection. A scarce plant.

Odo. pulchellum.—A good species from Guatemala ; the flowers are white, with the exception of the crest of the labium, which is spotted with crimson. It blooms during the winter months, and lasts five weeks in good condition.

Odo. Rossii.—A desirable little Orchid from Mexico. It produces its white and purple flowers during the winter, and lasts long in beauty.

Odo. Warnerii.—A pretty dwarf species from Mexico ; the flowers are yellow and crimson. It blooms in March and April, and lasts three weeks in perfection. A rare plant.

ONCIDIUMS.

A large class of Orchids, some of which are very beautiful ; their flowers are rich and showy, and they make fine exhibition plants on account of their colours, which are very attractive in the midst of a collection of plants. They are all evergreen. Some of them are large growers, while others are more compact ; some have handsome spotted foliage. They have generally short thick bulbs, from which the leaves and flower-spikes proceed ; but in this respect there is much dissimilarity amongst them. Some kinds will do well on blocks of wood, but they are generally best grown in pots, with peat and moss and good drainage, with a liberal supply of heat and moisture in the growing season ; afterwards only just enough water is required to keep their leaves and bulbs plump and firm. These plants are very accommodating, they will thrive in either house, and are propagated by division of the roots. The following are all fine sorts,

and ought to be in every collection; they are of easy culture. There are many other *Oncidiums* worth growing besides those named in the following list.

Oncidium ampliatus, major.—One of the finest in cultivation from Guatemala. It produces its large yellow flowers in abundance, on a long branching spike three or four feet high, in April, May, and July, and continues blooming for two months when the spikes are strong. This is one of the finest *Oncidiums* we have for exhibition.

Onc. Barkerii.—A remarkably handsome dwarf Orchid from Mexico; the flowers are very large; the sepals and petals rich brown barred with yellow; the lip a bright yellow, about an inch and a half across. It produces its branching spikes of flower during the dull months of winter, which greatly enhances its value, and it lasts six weeks in bloom.

Onc. bifolium.—A handsome dwarf-growing species from Monte Video; the sepals and petals brown; the lip a bright yellow, of large size. It produces its short spikes of flowers in May and June, lasting a long time in perfection. There are two varieties of this plant; one is much brighter in the colour of the flowers. This is best grown in a pot with moss, suspended from the roof, close to the rafters, with a piece of wire round the pot to hang it up by. This *Oncidium* is not so easy to grow as many others. Messrs. Loddiges, of Hackney, cultivate this plant better than any other grower of Orchids whose collections I have seen; they treat them in the way above recommended.

Onc. bicallosum.—A showy species from Guatemala, a dwarf plant; sepal and petals dark brown; the lip a bright yellow. This makes a fine plant for winter blooming, and continues in perfection a long time. It is like *Cavendishii* in the flowers and growth.

Onc. bicolor, from the Spanish Main, is a fine species, which blooms in September. The lip is very large, of a deep yellow on the upper side, and almost white underneath; the sepals and petals are yellow, spotted with crimson. This will thrive on a block of wood suspended from the roof.

Onc. Cavendishii.—A magnificent species from Guatemala. The large broad leaves of this princely Orchid are of a rich and lively green; its bright yellow flowers are produced in great abundance from strong and branching spikes, and, by appearing in the dull months of winter, greatly increase its value. The flowers, even at this season, retain all their brilliancy for several weeks. It may be grown on a block or in a pot, but on account of its size seems to do best in the latter.

Onc. crispum.—A good species from the Organ Mountains; a dwarf-growing plant with large flowers; sepals and petals a rich coppery colour; lip the same colour, with lighter spots in the centre. This generally blooms during the autumn, and lasts three or four weeks in beauty: grows best on a block of wood.

Onc. divaricatum.—A small but abundantly-flowering species from Brazil; its yellow, orange, and brown-coloured flowers are produced on long branching spikes during the summer months: continues in perfection a long time. This is a useful plant for exhibition, when well grown: pot culture is the best.

Onc. flexuosum.—This is a good old species from Brazil: producing its showy flowers in abundance on a long spike; the blossoms are yellow, slightly spotted with brown: blooms at different times of the year, and continues blooming for several weeks. There are two varieties of this plant; one called *major*, which has much larger flowers

than the other, though of the same colour. This is a scarce variety, and is best grown in a pot with moss.

Onc. Forbesii.—A truly handsome dwarf species from Brazil: the flowers are large and very distinct, the colours being yellow, scarlet, and white: it blooms in November. This is a very rare plant; the only one I ever saw of it was in Messrs. Rollisson's collection at Tooting, where it was growing in a pot with peat.

Onc. hamatochilum.—A fine new species from New Granada. A compact-growing plant, in the same way as *Lanceanum*; sepals and petals greenish yellow blotched with chestnut; the lip a rich crimson and rose. A scarce Orchid.

Onc. incurvum.—A pretty distinct Orchid from Mexico: a dwarf species, producing white and red flowers during the winter: lasts long in beauty, and is best grown in a pot with peat.

Onc. Lanceanum.—A remarkably handsome, distinct Orchid, from Guyana, with beautiful spotted foliage: the flowers are large, and are produced on a stiff spike about a foot or more high; sepals and petals bright yellow blotched with crimson; the lip a rich violet. There are two varieties of this plant; one has the lip almost white: it blooms during the summer months, lasting four or five weeks in good condition, if the flowers be kept free from damp. This is best grown in a pot or basket, with moss or peat, and makes a splendid plant for exhibition. We showed one at Chiswick, in 1850, with fourteen spikes on a single plant.

Onc. leucochilum.—A desirable and distinct species from Mexico, producing spikes, sometimes as much as ten feet long; sepals and petals yellowish green, lip a pure white: blooming at different times of the year, and lasting a long time in perfection: best grown in a pot.

Onc. luridum guttatum.—A fine species from Jamaica : it produces long spikes of flowers, which are yellow, brown, and red in colour : it blooms during the summer months, continues in perfection a long time, and is best grown in a pot with peat.

Onc. papilio, major.—A truly magnificent Orchid from Trinidad : the flowers of this are in the shape of a butterfly : it continues blooming from the old flower stems for years ; as soon as one flower fades, another appears in the same place : the colour of the flowers is rich dark brown, barred with yellow ; lip very large, with bright yellow in the centre, and edged with dark brown. This will do either in a pot or on a block. There are several varieties of *papilio*, but *major* is the best.

Onc. phymatochilion.—A very curious species from Brazil. A compact-growing plant : it produces long branching spikes in May and June.

Onc. roseum.—A pretty small-flowering species from Honduras : the flower is rose-coloured spotted with red : blooms at different times of the year : lasts six weeks in good condition, and is best grown in a pot with peat.

Onc. sarcodes.—A fine, new species, with handsome flowers, from Brazil : it produces its branching spikes of yellow and crimson flowers during March and April. This fine species was first flowered in the collection of Mr. Bunney, at the Stratford nursery. A very rare, compact-growing plant. Mr. B. grows this in a pot with peat.

Onc. sessile.—A pretty, new species, of compact growth, from Santa Martha : it produces its slender spikes of yellow flowers, spotted in the centre with pale cinnamon colour : blooms during the spring months. This fine species was flowered in 1850, by Mr. Iveson, gardener to the Duke of Northumberland.

Onc. sphacelatum, major.—A good, free-flowering Or-

chid, from Honduras, producing its long branching spikes of flowers in April and May, lasting three or four weeks in beauty. The colour of the flower is yellow, barred with dark brown: it is best grown in a pot, with peat or moss.

Onc. unguiculatum, from Guatemala.—A pretty winter-flowering species: the large yellow flowers are produced on a long branching spike, three or four feet high, lasting a long time in perfection: pot-and-peat culture suits it best.

PAPHINIA.

Paphinia cristata, from Trinidad.—The only one of the genus that I have seen is a pretty, dwarf-growing plant, about six inches high, with short, shining bulbs, from the base of which the flowers appear on a short stalk, one or two together, and droop downwards over the side of the pot; sepals and petals dark chocolate colour, tinged with purple; lip white, barred with purple, and fringed. There are two varieties of this; one has much darker coloured flowers than the other. It is very free in producing its large flowers at different times of the year, lasting two or three weeks in perfection. This is best grown in a pot with rough fibrous peat, and good drainage, with a liberal supply of water at the roots during the period of growth, and thrives best in the East India house. It is propagated by dividing the bulbs.

PERISTERIAS.

A very curious class of Orchids, of which there are several species, but only three that I can recommend as worth growing. There is one noble plant in this class, *Peristeria alata*, the dove plant, which ought to be in every collection. These plants throw their flowers from the bot-

tom of their large bulbs, and will grow in either house : they are best grown in pots, with loam and leaf-mould, with a good quantity of water during their period of growth ; afterwards give them a good season of rest, and keep them nearly dry at the roots : if allowed to get wet during their rest they are apt to rot. They are propagated by dividing the plants.

Peristeria alata.—A noble Orchid from Panama : a free-growing species, with leaves three or four feet high, rising from large bulbs five inches high, and sending up its tall spikes of white, waxy flowers, in July, August, and September : the central parts of each flower present very striking resemblance to the figure of a dove. This plant continues blooming for two months when the spikes are strong.

Peri. cerina, from the Spanish Main : it produces bunches of yellow flowers close to the bulbs, and blooms in June or July.

Peri. guttata, from South America.—A curious Orchid, which produces its bunches of flowers close to the bulbs, whence they hang over the edge of the pot : the colours of the flowers are red and yellow. It blooms in September, lasting two or three weeks in perfection.

PHAJUS.

This is a fine class of terrestrial Orchids, very free in producing their beautiful spikes of flowers, which are noble objects when well grown. They are of easy culture, and will repay attention and care. They are large-growing plants, with noble foliage : there are not more than three of this class, that I know of, that are distinct and worth growing. All need the same treatment, excepting *albus*. They all require plenty of heat and moisture at their roots in their growing season, but the water should not touch

the young growth. *Phajus Wallichii* and *grandiflorus* are best grown in pots of large size, with loam, leaf-mould, and rotten cow-dung, as directed in the remarks on Terrestrial Orchids. They are propagated by dividing the bulbs after they have done blooming.

Phajus albus.—This stately Indian plant flowers in July and August. The blossoms are pure white, the lip being pencilled with purple: continues blooming for five weeks. It is a deciduous species, loses its leaves after the growth is finished, and is best grown in a pot with rough, fibrous peat, and good drainage, with a liberal supply of water at the roots in the growing season. After the growth is completed it requires a good rest, by being placed in the cool house, and kept dry, till it begins to grow, when it should be put into heat, and treated as before. See hints on Propagation respecting this plant.

Pha. grandifolius.—This noble evergreen plant comes from China, grows three feet high, and produces its flower-spikes one or two feet above the foliage, the colour of the flowers being white and brown; and blooms during the winter and spring months, and lasts long in beauty if in a cool house. This is a most useful plant for winter blooming, and a noble plant for exhibition.

Pha. Wallichii, from India.—This is one of the finest Orchids in cultivation: a large-growing plant, about four or five feet high, producing long upright spikes of flowers in March, April, and May. The blossoms are orange-yellow in colour, or buff tinged with purple: it will keep blooming for six weeks. This makes a noble plant for exhibition. For further notice of these plants, see remarks on preparing Orchids for travelling.

PHALÆNOPSIS.

A small, but exceedingly fine genus, of not very large plants, but bearing magnificent flowers of the most delicate white. They are compact-growing plants, with rich, beautiful, fleshy, evergreen foliage, and produce their spikes of flowers from the axils of the leaves. No collection ought to be without them, as they require very little room, and are free as well as frequent bloomers. They require to be grown in the heat of the East India house, with a liberal supply of water over their leaves and roots throughout the summer season; and even in winter they should always be kept damp at the roots. Like the *Aerides*, they require but little rest, and may be grown in pots with sphagnum moss, in baskets with the same material, also on blocks without moss, and thrive well under either treatment; but they require more attention when grown on blocks, as regards moisture. These plants are difficult to increase, being very shy in sending out young shoots; but when they do, the shoots should be left on the plant till they make roots; when they may be parted and placed on separate blocks in the warmest part of the house, suspended from the roof, and kept moist.

Phalænopsis amabilis.—The queen of Orchids. This magnificent plant comes from Manilla. It produces its graceful spikes of flowers nearly all the year round: the flowers, each of which is three inches across, are arranged in two rows down the spike; sepals and petals pure white; the lip of the same colour, the inside streaked with rose-pink. The flowers continue in perfection a long time, if they are kept free from damp; if the flowers get wet they are apt to spot.

Phalæ. grandiflora.—A truly handsome species from Java. The flowers are produced in the same way as in

amabilis. The only difference between the two is, that *grandiflora* has much larger flowers, with yellow in the centre of the lip, instead of pink; and the leaves are longer, and of a lighter green. This makes a fine plant for exhibition. We showed a plant at the Chiswick and Regent's Park Exhibitions, in 1851, with seventy flowers on one single plant.

Phalæ. rosea, from Manilla.—A small-flowering species, but very pretty: grows in the same way as the two former, but very inferior in beauty; the colour being white, slightly tinged with pink; the lip deep violet. It blooms at different times of the year, lasting long in beauty. A scarce Orchid.

PROMENÆAS.

This is a small genus of pretty, little, dwarf-growing Orchids, about three inches high: they produce their flowers from the side of their bulbs, and hang over the edge of the pot. They are not very showy plants, but curious, and ought to be in every collection, and are best grown in pots with peat, in either house, with the same treatment as *Paphinia cristata*.

Promenæa Rollissonii, from Brazil: it produces its pale yellow flowers during the autumn, lasting three weeks or more in beauty.

Pro. stapelioides, from Brazil.—The colours of the flowers are green and yellow: it blooms in July, August, and September, and lasts long in perfection.

SACCOLABIUMS.

Some of the finest Orchids in cultivation belong to this class. They are very compact in their growth, with beautiful, long, and pendant evergreen foliage. Their habit of

growth is the same as that of the *Aerides*, and they require the same heat and treatment. These plants inhabit the hottest parts of India, and are found growing on the branches of trees. They produce their long, graceful racemes of flowers, which are often a foot and a half long, from the axils of the leaves. They are propagated in the same way as the *Aerides*, and are infested by the same sorts of insects. The following list comprises the best among this beautiful class of plants. There are several others; some of which are not worth growing. I have only named those that are the most beautiful, and which ought to be in every collection, however small: they are even handsome without flowers.

Saccolabium Blumei.—A beautiful distinct species from Java. It produces its flowers in July and August, which are violet and white in colour, and last three weeks in perfection.

Sac. Blumei, major.—A charming Orchid from Java. The colours of the flowers are the same as *Blumei*, the difference between the two consisting in the *major* having much larger flowers and finer spikes. The growth of the plant is also much stronger than *Blumei*. Messrs. Rollisson, of Tooting, having received a great number of plants of the *major* from their collector in Java, it is more plentiful than formerly.

Sac. guttatum.—A remarkably handsome species from India: the finest of the genus. It blossoms from May to August. The flowers are white, spotted with deep rosy-purple. It remains three or four weeks in perfection, if removed to a cooler house, and kept free from damp. There are two or three varieties of this plant: one is much finer than the others. The best is called the true *guttatum*. This makes one of the finest plants for exhibition. I observed specimens of this plant shown in the year 1850,

with as many as twenty or twenty-five spikes of flowers on a plant at one time.

Sac. miniatum.—A pretty, distinct, small-growing Orchid from Java. It is not so good as the other species named, but it is worth growing. It produces its short spikes of vermilion-coloured flowers in March and April, lasting three weeks in beauty. This will do well on a block of wood without moss.

Sac. præmorsum.—A lovely species from Malabar. The flowers are white, thinly spotted with lilac. It blooms in May and June: lasts three weeks in perfection. This is much like *guttatum*. It also makes a fine exhibition plant.

SCHOMBURGKIA.

Schomburgkia tibicinus.—A pretty Orchid from Honduras. There are several species of this class of Orchids, and some of them very pretty in colour: but they have two faults; they are large-growing and very shy-flowering, generally producing long spikes with a few flowers at the end. The one named above is the best: it is more compact in its growth. The flowers are more than two inches across: sepals and petals pink, spotted with rich chocolate; the lip white, with rose colour on the sides. It blooms in May and June, and will keep flowering for six weeks. This requires to be grown strong before it will flower. It is best grown on a block of wood, with a good supply of heat and moisture in the growing season.

SCUTICARIA.

This is a small genus. I know of only two species: they have evergreen foliage in the shape of a rush. The flowers, which are handsome, proceed from the bottom of

the bulb, on a short stalk about two inches high. They are best grown in the East India house, either on blocks or in baskets with moss, with a liberal quantity of water at the roots in the growing season. They are propagated by dividing the plants just as they begin to grow.

Scuticaria Hadwenii.—A beautiful Orchid with pendulous foliage. This plant is very much like *Steelii*; the only difference between the two is, that *Hadwenii* throws its flowers more erect, and stands one or two inches higher. The colours of the flowers are nearly alike. A very rare plant.

Scu. Steelii.—This is another handsome plant from Guyana. The foliage of this species is pendulous, three or four feet long. The flowers are yellow, spotted with crimson: it produces its blossoms at different times of the year, lasting a good time in perfection.

SOBRALIAS.

There are some handsome varieties belonging to this family. Their colours are brilliant, and flowers large. They are strong, free-growing plants, with evergreen foliage, and produce their flowers out of a spathe, one at a time, from the top of the reedy-like stem: they have as many as six flowers from each spathe; as soon as one decays another appears. They will grow either in the East India house or the Mexican, and thrive best in pots of a large size, with rough fibrous peat, and about three inches of drainage, with plenty of water at the roots in the growing season; afterwards keep them much drier. When these plants get too large, turn them out of the pot, and part them, making two or three young plants, which will soon grow and make flowering plants. The following are the best of this

class. There are several others, but they seldom compensate for the room and care they require.

Sobralia liliastrum.—A distinct species from Guyana; the flowers are white, and are produced in July and August, and last but a short time in beauty. There are two varieties of this, one much better than the other.

Sob. macrantha.—A remarkably handsome Orchid from Guatemala; the finest of the genus. The flowers are large, six inches across, of a beautiful rich purple and crimson; blooms during the summer months, and lasts three days in perfection. This makes a fine plant for exhibition.

Sob. macrantha, splendens.—A charming variety from Guatemala, flowering from June to August. It has darker flowers than *macrantha*, but not so large.

SOPHRONITIS.

Another small genus of Orchids, and one of them, *grandiflora*, very handsome. The others are worth growing, on account of their not taking up much room; they are small, and are best grown on blocks of wood, with a liberal supply of heat and moisture all the year. They are evergreen, and produce their flowers from the top of the bulb, and are propagated by dividing the plants just as they begin to grow.

Sophronitis cernua.—A small-flowering Orchid from Rio, with small bunches of red flowers, several together. It blooms during the winter, lasting long in beauty.

Sop. grandiflora.—A truly handsome species from the Organ Mountains; the flowers are large, of a beautiful bright scarlet colour, lasting six weeks or more in perfection. It blooms in November and December. This

plant ought to be in every collection. There are two varieties of this species ; one produces short obtuse leaves, with exceedingly brilliant-coloured flowers ; the other has longer leaves and bulbs, but fainter-coloured flowers. The plant represented in the frontispiece was drawn from one in Mr. Warner's collection.

Sop. violacea.—A pretty, distinct species, from the same country as the former. It produces its violet-coloured flowers during the winter months, and lasts long in beauty.

STANHOPEA.

This is rather a large family of Orchids, most of which have handsome-coloured, waxy-looking, and curiously-formed flowers, produced from the bottom of the plant on spikes, several together. The flowers only last a few days. The bulbs are short, with strong evergreen foliage, about a foot and a half high. They are of easy culture, and are best grown with moss in baskets suspended from the roof ; they require a liberal supply of water in the growing season : after their growth is completed they are the better for a good period of rest, during which they should be kept nearly dry at the roots. They will grow in either house. The baskets should be made shallow, and open at the bottom and sides, so that the flowers may easily find their way through. I shall only name a few of the best sorts, though there are others worth growing where room is not an object.

Stanhopea aurea, from Guatemala ; the colour of the flowers is yellow. It blooms during the summer and autumn months.

Sta. Devoniensis, from Mexico ; the flowers are orange spotted with red. It blooms during the summer.

Sta. grandiflora.—A distinct species from Trinidad ; the flowers are white, and very large. It blooms at different times of the year, and lasts but three days in flower.

Sta. insignis, from Trinidad ; the colour is pale yellow spotted with red ; the lip nearly white spotted with purple. It produces its flowers in August and September.

Sta. martiana, from Mexico ; the sepals and petals are straw-colour spotted with red ; the labellum white. Blooms during the autumn.

Sta. occulata : comes from Mexico, flowers from July to November ; the colour of the flowers is pale yellow spotted with purple.

Sta. tigrina, from Mexico, the handsomest of the genus ; the blossoms are very large, a pale yellow barred and blotched with deep chocolate. It blooms in July, August, and September.

Sta. tigrina lutescens.—This is also a fine variety from Guatemala ; the flowers are brilliant yellow, inclining to orange, and barred with deep chocolate. Blooms at the same time as *tigrina*. This makes a fine plant for exhibition, on account of its large showy flowers.

TRICHOPELIA.

This is a small genus of Orchids, all of which are pretty and distinct ; their flowers are very curious in form, and are produced from the side of the bulbs. They are dwarf evergreen plants, and are best grown in pots, with peat and good drainage, without too much water at the roots at any time. They will do in either house, and are propagated by dividing the plant.

Trichopelia coccinea.—A new species from Central America. A very distinct plant ; sepals and petals are

twisted, brownish, with yellow; the lip of a deep crimson, with a narrow edge of white. It produces its blossoms in May and June, lasting three weeks in beauty.

Tri. suavis.—This is also a new species, and very handsome; grows in the way of *Odontoglossum grande*; the bulbs and leaves greatly resemble that plant. The flowers are white spotted with pink. It blooms in March or April, lasting about two weeks in perfection.

Tri. tortilis.—A fine species from Mexico. The sepals and petals are twisted like a corkscrew; they are brown and pale yellow; the lip white spotted with red. It produces its flowers freely at different times of the year, and lasts two or three weeks in beauty. There are two varieties of the plant, one with much brighter coloured flowers than the other.

UROPEDIUM.

Uropedium Lindenii.—A curious new Orchid. I have not seen this in bloom, but I believe it is one of the most curious Orchids in cultivation; there is a long tail extending from the lip. It grows in the way of *Cypripedium caudatum*, and requires similar treatment.

VANDAS.

This is a lovely tribe of plants, with magnificent coloured flowers, some of them very large. There are not many plants that surpass the Vandas in the beauty of their flowers. They grow in the same way as the *Aerides* and *Saccolabiums*, having gracefully-formed evergreen foliage; the upright spikes, all of which bear large waxy flowers,

spring from the axils of the leaves. They require similar treatment to the *Aerides*, being subjected to the same sort of insects, and are propagated in the same way.

Vanda Batemanii.—A noble Orchid. A large upright-growing plant, which blooms in July, August, and September, and continues blooming for three months. The colour of the flowers is yellow, spotted with crimson, the back of the sepals and petals being rose-colour. A very rare plant.

Va. cœrulea.—A remarkably handsome and new Orchid from India. This fine plant produces its upright spikes of flowers, nine or ten together, five inches across, and between three or four inches in diameter. The colour of the flowers is a rich lilac; they are produced during the spring months. The honour of having introduced this plant belongs to Messrs. Veitch, of Exeter, who received it from their collector, Mr. Thomas Lobb.

Va. cristata.—A charming Orchid from India; sepals and petals are whitish; the lip is spotted and striped with dark brown; it produces its flowers from March to July, lasting in bloom six weeks or two months. This very scarce Orchid makes a fine plant for exhibition.

Va. Lowii, from Borneo.—I do not know that this new species has yet flowered in this country. I believe there are only two plants in England; one in the fine collection of S. Rucker, Esq., and the other in that of Mrs. Lawrence, of Ealing Park. This rare and choice species was discovered in Borneo by Mr. Low, son of Mr. Hugh Low, of Clapton Nursery. Mr. Low is one of the most enterprising importers of Orchids, and has introduced some of the best now in cultivation.

Va. Roxburghii.—A good old species from India, with white and purple-coloured flowers, which appear during the

summer, and last five or six weeks in beauty. There are two varieties of this plant; one is much handsomer and has a darker coloured lip than the other.

Va. suavis. — A truly magnificent Orchid from Java; a strong-growing species, and very free in flowering. It produces branching spikes of flowers, each being large, of a creamy white, spotted with crimson. It blooms at different times of the year, lasting a long time in perfection. This is another of Messrs. Veitch's importations. A rare species, which makes one of the finest plants for exhibition.

Va. teres. — A handsome, curiously-growing, and distinct Orchid, the foliage resembling a rush. It comes from Sylhet. Its large red and yellow-coloured flowers are produced from June to August, and last four or five weeks in beauty. It is rather a shy-flowering species, and is best kept rather dry during the winter, to make it flower. It thrives best on a block of wood, the block being plunged into a pot.

Va. tricolor. — A charming free-growing species from Java; grows in the same way as *suavis*; the sepals are pale yellow spotted with crimson; lip purple, striped with white. It blooms at different times of the year, and lasts long in perfection. There are two or three varieties of this plant; some are not so good as others. This also makes a fine plant for exhibition. Messrs. Rollisson, of Tooting, have imported a fine stock of this plant from Java.

Va. violacea. — A fine species from Manilla, with violet lip, the other part of the flower being whitish, with pale violet spots. It blooms in February, lasting long in beauty.

WARRÆA.

Warræa cyanea. — A very pretty and distinct Orchid from Columbia. It is an upright-growing plant with ever-

green foliage, and requires to be grown in a pot, with peat and good drainage, in the East India house. The colour of the flowers is white and purple. It blows in June, lasting a long time in beauty. A rare species. There are several more of this tribe, but I have not seen them in bloom.

War. tricolor.—A very good species from Brazil. The flowers are produced on an upright spike, two feet high, in June and July; sepals and petals white; the lip white, with yellow and purple in the centre: the blossoms last a long time in perfection, and require the same treatment as the former one.

ZYGOPETALUM.

This is a handsome tribe of plants with evergreen foliage. They generally bloom during the winter, which makes them very valuable. They are rather large-growing plants, of easy culture, and will do in either house in pots, with peat and good drainage, and plenty of water at the roots. They are propagated by dividing the plants.

Zygopetalum brachypetalum, from Brazil.—This is one of the handsomest of the species, having brownish sepals and petals; a little marbled with green and a deep blush violet; lip veined with white. It blooms in December, lasting long in perfection.

Zy. crinitum cerulea.—A handsome variety from Brazil. It produces upright spikes, sometimes two from the same bulb, and bears beautifully variegated flowers during the winter. The sepals and petals are green, barred with brown; the lip is white or cream-coloured, streaked with bright blue.

Zy. intermedium, from Brazil. — It produces green and blue blossoms during the autumn, and continues in perfection four or five weeks.

Zy. Mackayii.—A handsome Brazilian plant. It produces long spikes of large flowers during the winter. The colour of the flowers is greenish yellow, spotted with brown and lilac. There are several varieties of this plant; some much finer than others. It lasts in perfection a long time.

Zy. maxillare.—A free-flowering, pretty species from Brazil, producing its drooping spikes at different times of the year, and keeping in beauty a long time. We have bloomed this species with seventy flowers on a plant at one time; sepals and petals greenish colour, based with chocolate; the lip a rich blue.

Zy. rostratum.—A showy compact species from Demerara. A free-flowering plant; sepals and petals yellowish green; lip white striped with pink, and two inches across. This plant blooms three times a-year, and lasts six weeks in perfection. It requires more heat and moisture than any of the other species.

Variegated Orchids.

ORCHIDS, as well as most other orders of the vegetable kingdom, have their variegated species, and in these, as well as among other variegated plants, the flowers are generally small and unattractive, as compared with the novelty and charm of their foliage. The genus *Anæctochilus* is one of the most remarkable of these. The plants are dwarf in habit, but perfect in form, and exceedingly beautiful; their height varies from two to four or six inches, and their leaves, which are well defined, and generally obtuse in form, vary from two to four inches in length, including the stalk, which, like the stem of the plant, is short and fleshy. The foliage of all the species is remarkably singular and beautiful, on some of the varieties, resembling the richest olive or almost purple-coloured velvet, veined in regular lines, or covered with a net-work of gold. In other species the colour of the leaf is rich and lively green, marked with silver tracing over its entire surface. The plants require to be grown in sand mixed with moss; and the white ground from which they spring, enlivened occasionally by the small growth of the moss on the surface, exhibits the plants themselves to the best possible advantage, especially as they require to be grown beneath bell-glasses; seen under which, the delicacy, richness, and softness of the appearance of the whole plant is increased. Very few visitors walk through an Orchid house containing any of these plants, without bestowing on them

more than ordinary attention, and expressing admiration of their elegance, richness, and beauty.

The flowers are produced on short upright spikes ; but as the blossoms are small, and often injure the plant, I always nip them off as soon as they appear.

The whole genus must receive a different sort of treatment from any of the other Orchids. They are best grown in pots under bell-glasses, in the heat of the East India house, in a shady part. I grow them in sphagnum moss chopped into small pieces, with some river sand mixed well together. Silver sand will answer the same purpose. I have grown them in both with good drainage. These plants do not require large pots to grow in, as they do not root freely : they succeed best in a small pot plunged into a larger one, so that the bell-glass fits the outside pot, which will afford space for the leaves to grow within the glass. They require fresh potting once every year, and I have found the month of February or beginning of March the best time. The plants should be elevated above the rim of the pot one or two inches ; and during their season of growth they require an abundance of water at the roots, especially during the summer season. In winter they only need just enough to keep the material a little damp ; and they require but a short season of rest. The bell-glasses must always be kept over them, and should be perfectly clean inside ; for if the glasses are allowed to become dirty, the plants will not thrive.

Anætochilus are propagated by cutting the plants into pieces, with a root attached to each piece : when there is only a single stem, the plant should be cut off just below the first root, and put in a small pot, with the material before named ; after the top of the plant has been thus removed, leave the bottom part of the plant in the pot with the bell-glass over it, and it will soon throw up a young shoot, which must be left on till it has formed roots ;

then cut it off from the old piece, and treat it in the same way as the part first removed, leaving the old piece in the pot, which will throw up again, and form another plant. I have raised many plants in this way from the old stocks. I have heard that they may be propagated by a process similar to that employed for increasing Gloxinias, viz. taking the leaves off and putting them in silver sand, under bell-glasses; but I have never tried that way myself. It is, however, worth a trial; and if they can be so raised, it will make them more plentiful, as some of them are very scarce plants at present.

The following list contains all that I have seen in cultivation.

Anætochilus argenteus.—The commonest of the genus; very free-growing species, with bright, clear, green foliage, and silver-coloured markings. This is a very distinct plant, and of remarkably easy culture.

Anæ. intermedius.—A very pretty species in the way of *setaceus*, but not so handsome. It grows about the same height. The foliage is smaller and less pointed than in *argenteus*, with a surface resembling a soft silky substance. Its colour is of dark olive, striped and veined with gold.

Anæ. Lowii.—A charming species from Borneo; the finest of all the genus: grows six inches high, with leaves four inches long and three broad, resembling very much the finest kinds of velvet. Their colour is rich dark green, shading off to mellow orange-brown, intersected from the stalk to the point by well-defined lines of a deep golden colour, and crossed by bars or lines of the same attractive hue. This remarkable and valuable species has been but recently introduced to this country. It was imported by Mr. Hugh Low, of the Clapton Nurseries, who received it from his son, at present a resident in Borneo, and who sent home, at the same time, an interesting account of his

journey into the interior of the country, to explore a remarkable cavern of extraordinary form and considerable extent, and near one of the openings to which he found a plant or two of this rare and beautiful species.

Anæ. Lobbii.—This is not so attractive as some of the kinds, but it is worth growing, for it is very distinct. The foliage is much darker, with light-coloured markings. Very rare.

Anæ. maculatus.—A beautiful species in the way of *argenteus*; the only difference being, that the foliage of *maculatus* has a more silvery appearance. A scarce plant.

Anæ. setaceus.—A remarkably handsome species: grows four inches high, with foliage two inches long, resembling in colour beautifully rich dark velvet, covered with golden net-work.

Anæ. striatus.—A very distinct species, much smaller-growing than any of the others, with narrow green foliage, and a white mark down the centre of each leaf. This species is very rare.

Anæ. xanthophyllus.—A lovely species; grows four inches high, with foliage more than two inches long. The leaves are velvety, dark in colour, with a broad orange and green stripe down the centre, covered with beautiful golden net-work.

Cypripedium Javanicum.—This plant has beautifully variegated foliage: the flowers are not much, but it is worth growing on account of its leaves. Messrs. Rollisson, of Tooting, who imported this species, have some fine plants of it. It requires the heat of the East India house, and is best grown in a pot with peat and good drainage.

Goodyera spe. — A beautiful but un-named species, which I saw lately at Messrs. Rollissons, and which has been but recently imported. The plant was four or five inches high; the leaves comparatively large, being about

four inches long and two or three broad, and bearing a strong resemblance to *Anætochilus argenteus*, the markings being similar, but the green darker, and the surface less glossy.

Rhoplastemma discolor.—A fine new species, with handsome foliage, nearly circular in form, three or four inches across : the leaves are of a pinkish red, covered over with small hairs ; and the plant has grown well in a pot with peat in the East India house. This singular plant was received by Messrs. Rollisson from their collector in Java.

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