

# ORCHIDOLOGIA ZEYLANICA

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Hony. Editor

E. SOYSA

O.B.E., M.B., F.L.S.

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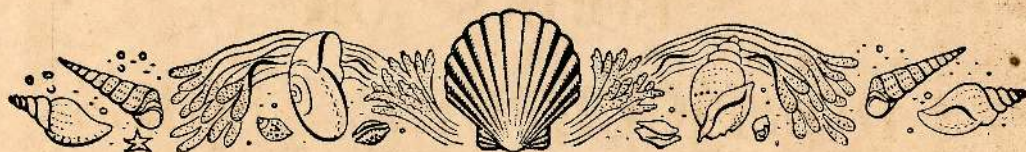
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#### EDITORIAL

**P**ROMINENT among events of the second half of the past year was the arrival of the new Governor-General of Ceylon, the Rt. Hon. Baron Soulbury, G.C.M.G., O.B.E., M.C. We associate ourselves with the island-wide welcome that has greeted His Excellency, who, like his predecessor, is an old friend of Ceylon. His Lordship's previous services to the country, when as His Majesty's Commissioner he became "chief architect of the reformed Constitution" that led to the independence of Ceylon, had already secured for him a favoured place in the respect and affections of her peoples. During the few months that Lord Soulbury has spent in our midst as His Majesty's Representative in this Dominion, His Excellency has displayed a sincere personal interest in numerous local activities—and among them may be mentioned Orchid culture.

His Excellency has honoured the Orchid Circle of Ceylon by consenting to officiate as its Patron in succession to our last Governor-General, Sir Henry Moore, G.C.M.G., whose farewell message was featured in the last issue of this bulletin. That our new Patron intends to interest himself in our activities and aspirations, as his predecessors have done, will be evident from the fact that he has already acquainted himself with past achievements of our Orchid Circle by personal enquiry and through previous issues of *Orchidologia Zeylanica*. We have much pleasure in assuring His Excellency with confidence that, not only will his interest be gratefully appreciated by Orchidophiles in Ceylon, but also will he find much to augment that interest in Orchid collections in various parts of Ceylon as well as at our Orchid Circle shows and meetings.

Just as we go to press comes the first bright news of the New Year—that the King, by conferring a most distinguished honour upon our Prime Minister in making him a Privy Councillor, has also honoured the youngest Dominion of the Commonwealth and her people. To us of the Orchid Circle of Ceylon there is added pleasure in this historic event because of the fact that the Rt. Hon. D. S. Senanayake has been a Founder Member and President of our Orchid Circle since its inception in 1934. In congratulating our President and assuring him of the sincere and hearty felicitations of his fellow-members, we would also take this opportunity of tendering our gratitude for Mr. Senanayake's sincere interest in and warm support of the activities and endeavours of the Orchid Circle.

Ever since the busy times when he initiated and developed Ceylon's first Ministry of Agriculture and Lands, through the difficult years when he assumed Leadership of the former State Council and its Board of Ministers, up to the much more busy and responsible days of the present time, when he shoulders the burdens of Prime Ministership, as well as those of the Ministries of External Affairs and Defence, our President has contrived to find time to participate in the activities of the Orchid Circle. Not content with having built up an interesting Orchid collection at his private home, "Woodlands", he has made a successful start with

another at his official residence, " Temple Trees ". The busiest men, it is said, have the most time to spare, and the fact that the Prime Minister can find time to spare for his Orchids in the course of a very busy life is proof enough of the fact that he is a true lover of Orchids in the best sense of the word. We express the cordial wish and sincere hope that our President may long be spared in health and strength to guide the destinies of Ceylon and its people and to derive the fullest joy and pleasure from his love of Orchids. Let us look forward to the time when Mr. Senanayake's labours for Ceylon in the new order of things will merit further recognition from King and people.

With this bulletin, the forty-sixth in the series, the sixteenth volume of *Orchidologia Zeylanica* comes to a close. It will also be the last issue to be published by the present Honorary Editor, for steadily increasing demands upon progressively decreasing leisure time have compelled him to request acceptance of his resignation of the editorial office in accordance with the preliminary notice of this intention given by him to the Committee of the Orchid Circle a year ago.

The editing of *Orchidologia Zeylanica* has been a pleasant experience and a source of interest and knowledge during the years that have passed, and this in itself has been adequate reward for the labour. But, the persistent and dishearteningly poor response to time-consuming appeals for material for publication has not been a source of encouragement in recent years. Fortunately, our overseas members have loyally provided the co-operation that has become so sadly lacking among local members, and but for that fact the life of *Orchidologia Zeylanica* might have had to cease after having been preserved so successfully through the war years.

In passing on the editorship to Messrs. J. C. S. Fonseka and S. J. Perera, the retiring Editor feels confident that *Orchidologia Zeylanica* is in safe hands that would restore it to its pre-war eminence among the world's Orchid periodicals. Messrs. Fonseka and Perera have individually had a share in maintaining the prestige of this bulletin in the past, and there can be no doubt that with the greater amount of time at their disposal than available to the retiring Editor, their collaboration will ensure a revival of active support from among local members of the Orchid Circle.

The new Honorary Editors are assured of good will and good wishes from the hearts of all their fellow-members in the Orchid Circle. But this would be quite inadequate, even futile, without active support from their pens! Let us see to it that this new chapter in the history of *Orchidologia Zeylanica*, which opens with the turn of the second half of the century, shall be the brightest and most successful one achieved so far. We express the earnest hope that the active co-operation of local members will be forthcoming in very much greater measure than in the past. Not only could this ease the burden of the two honorary workers who have volunteered to undertake the responsibility of continuing the bulletin, but also would it be a sincere tribute to their labour of love.

In laying down the editorial pen we would most sincerely thank all those kind friends who in many ways and at many times have so loyally helped to make a success of this literary venture since it was initiated in 1934. We offer a very special expression of gratitude to those fellow-members upon whom we have called often and never in vain; their readiness to help us out of difficulties when we were so often short of material for publication was equalled only by the invariable cheerfulness of their response to these oft-repeated appeals. The names of these writers will be familiar to everyone who has read this bulletin during the past ten years and more, and their contributions, apart from their value as such, are the best testimony of a sincere and abiding interest in *Orchidologia Zeylanica*.

## CULTIVATION OF ORCHIDS IN SOUTH BENGAL

S. B. BARNWELL

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**I** ALWAYS grow ordinary epiphytic Orchids in baskets in preference to pots, as this provides better aeration and less comfortable harbourage for insects. I make my baskets of teak wood 1 inch square for big baskets and 1 inch by  $\frac{3}{4}$  inch for smaller baskets. I use baskets of 6 $\frac{1}{2}$ , 8 and 9 inches according to the size of the plant to be potted. On balance I prefer planed to unplanned wood. Baskets should never be stained or painted.

For compost I use a base of jhama (black, burnt brick). On top of this I use a mixture of jhama, charcoal and well burnt bone. The jhama should not be solid and vitrified, neither should it contain big holes, but should be nice and porous. If the diameter of the holes is on the average a little smaller than the diameter of a pin, that will be just about right. The charcoal should be made from some hard wood. Babul (mimosa) is best if available. If it is not, I use teak or sal. It should be in nice solid pieces and not in long thin splinters. It must be fresh and clean when the plant is first planted. The bone must be burnt in an open fire until every particle of Glycerine or fatty matter in it has been burnt away. When it is being burnt, it will turn first brown, then black, and then, after it has been red hot for some time, white again with grey patches. It is then ready for use. It will now be very brittle, easily broken and somewhat porous; it must not be used before it has reached this stage. The top layer of the compost should contain about equal quantities of jhama, charcoal and bone, perhaps with somewhat more charcoal. The bottom layer should be of jhama only. The size of the pieces in the upper layers should vary according to the size of the basket and the nature of the plant. In 8-inch baskets I use pieces about an inch square for preference. I use somewhat bigger pieces for plants with very thick roots, and somewhat smaller for plants with very small roots. Never use dust of charcoal or jhama as it clogs the compost. I pack the pieces loosely for Vandas or Aerides of the ordinary kinds which like plenty of aeration, and somewhat more tightly for Dendrobiums. Cattleyas seem to like something between.

Absolute cleanliness of the basket and of the above materials is essential. Jhama will often have traces of mud on it. Reject all such pieces, and use only those which have come from the inside of the lump when it is broken up, and so are absolutely clean. Do not pick up old pieces of jhama or charcoal from the ground and use them whole. They are certain to be dirty.

I have found that some Orchids—notably *Dendrobium formosum* and *D. nobile*—do better when grown on blocks of wood. So I grow these on teakwood blocks, which I put in baskets with the usual compost, keeping the bottom of the plant a couple of inches above the surface so that the roots may reach down into the compost when necessary.

Terete Vandas, *Vanda spathulata*, Renantheras and Arachnanthes need somewhat different treatment. If they are not grown in specially prepared beds, which is the best way but which renders them non-transportable, the following procedure has to be adopted. Pots should be used, not baskets. The plants should be tied to a solid upright stake planted in the pot, which should be half filled with jhama and a layer of mixed compost. When the plants begin rooting on to this compost, the solid sediment from the liquid manure I shall later describe pressed into lumps should be applied to the top of the compost. A week or two later, when this has settled well in, and rooting is proceeding vigorously, more compost should be added, and somewhat later more manure sediment, and so on till the pot is full. Do not use this method for ordinary Vandas, Dendrobiums, Cattleyas or other Orchids of true epiphytic habit unless you are prepared to lose the plant in the interests of research. It might

do for *Peristerias* or *Calanthes*, but I have not tried it. It would certainly kill all *Cattleyas* and nearly all *Dendrobiums* and other *Vandas* than the ones mentioned above.

When repotting an Orchid already growing in a basket the roots may quite safely be separated from the wood with a sharp knife provided the living thread in the middle is not cut or broken by bending. In the case of an Orchid in a pot the easiest thing to do is to break the pot and remove as much of the unwanted matter as can be done with the minimum of root disturbance.

In all cases of potting or repotting, the first essential is to remove all dead matter—particularly dead stems or dead bulbs. No badly damaged roots should be potted within the compost, though it does not matter if there are any above it on the surface as they will keep dry and so not set up rotting. In removing dead matter I always cut right down to the living tissue with a razor blade. In the case of a plant that is rotting from the newest shoot backwards one should make absolutely sure to cut away every trace of discoloured tissue ruthlessly, no matter how many bulbs this may necessitate removing. If this is not done the rot, which is caused by a fungus that can prey on living matter, will continue to spread until the whole plant is killed. Dead matter at the back of a plant is not so dangerous. Usually old age and not fungoid attack has been the cause of such death. In general when potting or repotting care should be taken to preserve as many roots as possible, but rotting new roots must be removed. Even if the plant is scraped completely clear of all roots, it will almost always produce some more unless it is very weak indeed. Bits of old compost or old pots may be retained if clean and wholesome, but should be so used to make it possible to get rid of them later if necessary.

After the necessary surgery has been performed, the plant may be cleaned by washing it in soap and water and then rinsed clean of soap. After this it should not be potted for at least 24 hours, but should be kept absolutely dry. This allows a scab to form on the cut surfaces. After this I paint all cut surfaces on the body and leaves of the plant with Friar's balsam (compound tincture of benzoin) to finally seal the wound and not allow it to spread further than absolutely necessary. When this is thoroughly dry I pot the plant.

When potting monopodial Orchids I allow some of the living stem to penetrate below the surface—particularly in the case of terete *Vandas* and plants of a similar nature. The object of this is to see that the lowest living roots do not have too far to go to reach the surface of the compost. Monopodial Orchids should be potted with the main stem in the middle of the basket.

When potting sympodial Orchids it is absolutely essential that the whole body of the plant be kept above the surface, so that the top and both sides of the rhizome are completely clear of compost. Nothing but the actual roots should be allowed to fall below the topmost level of the compost. Sympodial Orchids should be potted in the corner of the basket with the expected direction of growth pointing to the opposite corner.

When arranging the roots of an Orchid in a basket, it is not essential, particularly if it is not done in the cold weather or the beginning of the hot dry weather, for all or indeed any of the roots to be placed below the surface of the compost. They should be placed wherever they point most naturally, inside, outside, or below the basket. When potting in the dry weather I like to have a few roots inside the compost if possible. Having arranged the roots, I do not pack the compost at all tight, but leave plenty of space for aeration. The gaps can be filled in later when the plant has recovered from the shock of root disturbance and has settled down, and there is no danger of rotting. Damaged roots rot almost invariably if kept constantly damp or un-aerated. Newly potted Orchids should be watered very sparingly indeed until they have put out new root growth and actually begun to take hold of the compost, and until which time they should never be manured.

Newly potted Orchids must be held absolutely steady in their baskets until they have taken a good hold with their roots. This may either be done by fixing two upright stakes in the corners of the basket tying a horizontal wire or coconut string from one to the other a couple of inches or more above the surface of the compost, and tying the bulbs or leaves to this, or by tying a wire or coconut string tightly over the rhizome and round the basket, or by both of these methods or any other that may suggest itself. I do not like putting a stake in the middle of the basket if it can be helped except as mentioned in the case of terete Vandas. The purpose of steadying the plant is to avoid rubbing of the new root tips against the compost they are trying to take hold of it. A touch on the root tip either in this manner or with the hand is quite sufficient to stop its growth.

The best season for repotting is the time before root growth begins. This is usually done in March or April, but it is best to avoid times when root growth is proceeding very vigorously, and also the period when root growth is not expected to begin for some time and the plant is still ripening its last grown bulbs. This season is with most plants the early part of the cold weather or at the end of the rains.

Once an Orchid has been potted, it only remains to study the problems of shading, watering, manuring and cleanliness.

The problem of shading is rather a difficult one. Certain Orchids like plenty of sun, and others prefer heavier shade. Again, some Orchids in their natural habitats in the hills grow in very sunny positions, but the greater heat of the sun in the plains combined with the higher temperature would probably kill them in a short space of time, so a compromise has to be made by keeping them somewhat cooler, and therefore more shaded. As a general rule I give each plant as much sunlight as I find in practice it will tolerate. Excess of shade causes the foliage to be excessively long and dark green in colour and the stem leggy or bulbous growth to be under-developed, and the flowers to be pale and few in number or completely absent. The more sunlight that can be given without damaging the plant the more profusely will it flower. Excessive sunlight causes yellowing and drooping of the foliage and, in extreme cases, actual burning, which is indicated by the developing of patches of soft brown rotting tissue in the leaves. Afternoon sun is more likely to cause this than morning sun. Such patches must be cut out completely, or the rot will spread. Generally speaking, morning sun is beneficial to all Orchids which like a fair amount of sun, and full afternoon sun should be allowed only to terete Vandas, *Vanda spathulata*, *Epidendrum radicans*, *Renanthera coccinea* and *Arachnanthes*—but only when they are well established. Even in these cases, I usually place the plants in broken sunlight instead of full sunlight for a few weeks after flowering, and for a few weeks after the end of the November rains.

The next class of plants comprises Orchids which like moderately shaded positions. By this I mean full sunlight from dawn till about 9-30 a.m., and, after that, the overhead covering should let through slightly more sun than shade. In this class I place all Dendrobies except *D. Farmerii* and *D. superbum*, all Cattleyas, *Vanda caerulea*, *Vanda Parishii* and probably *Vanda Amesiana* and *Vanda Kimballiana*. My own plants of these last two species did well for a year under these conditions, but, as they were then stolen, I had no further opportunities for observation. Also in this category I place all *Oncidiums*, *Rhynchostylis*, *Aerides*, and any plant I am in doubt about until it shows symptoms of excess or deficit of light.

In the last class are those Orchids which like slightly more shade than sun—*Phalænopsis*, *Cypripediums*, *Dendrobium*s such as *D. Farmerii* and *D. superbum*, and all newly potted or very young plants. I keep all newly potted plants in this section till they are well established and then move them into their appropriate places. It is to be remembered that too much shade kills plants just as surely, even though not as quickly, as too much sun. Orchid houses should never be shaded by climbing plants trained overhead. Apart from harbouring insects,

these climbers get thicker and denser every year, which necessitates continual pruning and thinning. If this is not done the shade soon becomes much too dense. I have seen many collections deteriorating for this reason.

In the section for Dendrobies, Cattleyas, Vandas, etc., I like the overhead covering to consist of half sun and half shade to  $\frac{3}{4}$  sun and  $\frac{1}{4}$  shade. In the section for Phalænopsis and Cypripediums, I like it to consist of about  $\frac{3}{4}$  sun and  $\frac{1}{4}$  shade.

If in doubt about a plant, large, broad, thin or soft leaves and no bulbs indicate a shady position, small or narrow leaves and large bulbs or very thick and hard leaves indicate a more sunny position.

If the plants are to do well watering has to be conducted very carefully. Too much water on a healthy plant may set up rotting, which will kill the plant very quickly if drastic surgery is not undertaken, and too little will produce stunted growth. All Orchids have a growing and a resting season, and during the latter the plants do not grow and water supply must be decreased. In some this is more pronounced than in others. When the plant is growing it can absorb a lot of water and pass it through its system, but when it is resting the roots are inactive and the water stagnates in the outer layer of their substance and rotting begins. Newly potted plants should be watered only with the greatest discretion. Damaged roots rot even more rapidly than resting roots, and newly potted plants, except in very dry weather, should only be watered very lightly and not more than once a day—not at all if the weather is damp. Another unfortunate effect of overwatering in the resting season is that it makes the plant run to leaf without producing flowers. If a plant refuses to flower, one of the best remedies is to keep it very dry in the resting season. At all times, and particularly when the new shoots are very young, one should be very careful to see that no water can collect and stagnate in the tops of the new shoots, or at the places where the leaves join the stems, or this too will set up rot whether the plant is resting or not. The place for water is the compost and the roots.

Underwatering is apt to stunt the growth of Orchids, and at the same time if exercised in the resting season and if not carried too far it will produce very profuse flowering, causing a great strain on the plant. This should not be repeated two seasons in succession.

Certain Orchids have a very decided and long resting season, as, for example, *Dendrobium Dalhousieanum*, *D. aggregatum*, *D. Parishii*, *D. moschatum*, *D. Pierardii* and other plants that come from places that have a very decided cold, dry weather, and do not at the same time grow near water. Such plants I water not more than twice a week in the resting season unless the weather is very hot and dry. The bulbs of such species will then show signs of shrivelling. This is quite in order, and, if the bulbs do not shrivel somewhat in the resting season, it means these plants are getting too much water. In the full growing season, however, these Orchids can be generously watered when the weather is dry. In the hot weather I water them twice to three times a day, but in this district in the rainy season I do not water at all except in dry spells, as I find the heavy rain of this place enough.

Other plants have not so long or a decided resting season, notably Cattleyas, Acridies and the Australasian Dendrobies (*D. superbiens*, *D. phalænopsis*). These do not start resting till December sometimes, whereas the group first mentioned sometimes cease activity as early as August. Cattleyas should not be kept so dry that they shrivel very much. In the resting season I usually water once every second day, and if the weather is hot and dry once lightly per day.

Some plants have a very short resting season indeed, notably Phalænopsis of all varieties except to some extent *P. Parishii*, which can stand a somewhat more decided rest. Phalænopsis should be rested very lightly in the early cold weather until the flower shoots begin to appear at the end of November or middle of December. When the flower spikes begin to

grow rapidly I give a more generous supply of water. *Phalaenopsis* should never be allowed to shrivel. I water lightly once per day in the resting season, twice when the flower spikes begin to grow rapidly, and three times when the flower buds begin to appear.

I would say again the water supply must be decreased to a greater or lesser extent according to the species for all Orchids in the resting season, otherwise they will flower less and be liable to disease.

Also, always decrease water supplies to some extent after a plant has flowered in order to give it a rest for a week or two.

To put it briefly : Orchids must rest in some part of the cold weather. Increase the water supply to each plant gradually as soon as it shows flower spikes or buds, new shoots, or profuse new roots. Water heavily when the plant is either flowering or growing fast in the dry weather. Rest lightly after flowering and continue watering generously (except in rainy weather) until the plant finishes growing, and then decrease watering gradually in the resting season. It is better to keep Orchids too dry than too wet.

It is impossible to lay down rules as to just when the resting season begins, as this varies from year to year, and from place to place. It is however fairly easy to recognise. After September it will be noticed that the last leaf on the bulb of a *Dendrobe* has been formed, and the bulb is round and plump ; or the last grown bulb on a *Cattleya* is completely formed, and the second output of roots is completed and they have ceased to grow rapidly, or that the top leaf on a *Vanda* is growing very slowly or not at all. This is the time to decrease the water supply. Do not cut it down suddenly, but do it gradually over a week or two. The resting season may begin any time up to the middle of November. Watch very carefully in the case of *Cattleyas* that this is promptly recognised, and that new bulbs do not start growing in October or November. If they do, they will be weakly, and will prejudice the growths of the first bulbs the next year. Some *Cattleyas* produce two bulbs per season, and some only one. Some *Oncidiums*, also, have to be carefully watched.

The beginning of the growing season is easier to recognise. Either flower buds will appear, or new shoots will begin to grow, or numerous healthy new roots may begin to appear. These symptoms may be expected any time from February to April. When this happens, gradually increase the water supply up to the maximum. An apparent resting period may occur in the hot dry weather of April and May. Ignore this and go on watering if the weather is dry.

The amount of water given and the frequency of watering should vary according to the vessel in which the plant is growing. Pots with no holes in the sides require least water. Large cubical baskets require more, as more air gets inside, and the moisture dries up more quickly. Small flat baskets require most of all for the same reason. Always watch the weather. If it is raining no water is required. If it is very hot and dry more is required, and spraying water into the air about the plants is very beneficial, as also is water splashed on the ground and left to evaporate. For watering the roots rain water is best. River or tank water if clean is good, if very muddy it is not at all good unless allowed to stand clear. Heavily chlorinated or other chemical bearing water is not good if it can be avoided.

I grow my Orchids on a mixture of charcoal, jhama and bone burnt absolutely dry. From this there is nothing to be absorbed except some calcium and phosphorus from the bone. Consequently it is necessary to provide some further form of nourishment in the form of manure. In the very dry climate of North Bengal I used sphagnum moss with great success, but this was found to lead to disaster in the damper climate of South Bengal, as it disintegrated too quickly, and I lost a lot of plants through rot. Also it was found to harbour insects—notably young cockroaches. I tried experiments in North Bengal with goat manure, but found it too strong, though it possessed the virtue of slow disintegration. The method that

I have found to answer best here is the periodical application of clarified liquid manure prepared as follows :—

In an earthen narrow-necked pot (capacity about 4 gallons) I mix equal parts of cowdung and water, one handfull of bonemeal, and about two handfulls of the ash of coconut husk (designed to increase the potash content). I leave this to ferment for about a fortnight. When this process is complete I mix 4 measures of this with 25 measures of water and set it aside in an earthenware pot for a few days. During this time the solid matter settles completely, and I spray the clear supernatant liquid on the roots of my Orchids. When plants are newly potted and have not yet made any new root growth I do not use manure at all. Also, I never manure resting plants. As the plants begin to grow I begin manuring once a fortnight. After a month (*i.e.* after two manurings), I increase the dose to once a week, and in the height of growing season once every five days. Do not give the plants manure when the roots are not fit to absorb it, nor at any time more than they can absorb. Begin the season's manuring slowly, and decrease slowly when the plants are preparing to rest.

Terete Vandas and other plants cultivated in the same way can stand stronger meat. I feed them with the solid sediment of the half-and-half mixture of water and manure already described in addition to the periodical applications of liquid manure that I give to my other Orchids. At Kew Gardens blood and soot are also added to the liquid brew, but I have not tried them yet myself.

In order to grow Orchids successfully, absolute cleanliness is essential. Mud of any kind is absolutely fatal to epiphytic Orchids, though sand is not. Mud may be introduced on dirty pieces of jhama, in dirty water, or by dirty methods of manuring. Great care should be taken that this does not occur. Another way in which mud may be introduced is by keeping the pots or baskets on the ground, the mud being splashed up with the rain.

A good deal has been said about trimming off dead matter. This should be very carefully attended to, and the plants kept free of it when they are growing in the same way as has been suggested for potting them. Occasional bird droppings seem to do no harm.

It should be seen that the leaves do not get covered with dirt of any kind. If this happens the plants cannot breathe. In such cases the leaves should be very carefully wiped down with soap and water, the soap being then removed by spraying, taking care that none of it falls on the roots or composts.

A most vigilant guard should be kept against insect pests. Snails eat certain Orchid leaves, being particularly fond of succulent foliage as *Phalaenopsis amabilis*. They should be caught and killed. The same remarks apply to some types of caterpillars, while other kinds bore into flower buds and eat the inside of the buds. The Dendrobium beetle may be found in most kinds of Dendrobiums, particularly *D. phalaenopsis*. I have also found it, or a near relation, eating Vandas, and *Phalaenopsis*. Infested pseudobulbs should be ruthlessly cut out and destroyed, no matter how much of the plant it is necessary to sacrifice. Its presence may be recognised either by finding small round holes from which dark coloured matter sometimes oozes, or by yellowing of the top leaf. In either of these cases may be found in the form of a white or greenish maggot with a black head, which later turns into a chrysalis, and last of all into the adult beetle. If it is cut out in time little damage is done. If it is not it may kill the whole bulb. Two varieties of yellow coloured beetles eat both the leaves and the flowers. These should be caught and killed. One excellent remedy against all these pests is to see that no wild Orchids are brought from the jungle to the vicinity where they may provide breeding grounds. Cockroaches and woodlice eat the roots, particularly if there is any moss in the compost. The best remedy against these is cleanliness, and periodically dipping the pots in a bucket of water to drive the pests out. Unfortunately they can remain under the surface for a surprisingly long time. Kew Gardens suggested putting nicotine in the water, but I have not tried it, not having been troubled by cockroaches since I began keeping my Orchids suspended instead of on benches. I would suggest also trying adding a



small quantity of ammonia to the water used for dipping the plants into. Cockroach attack is very easily recognised by the eating away of the tips of new roots. Thrips can do an immense amount of damage to new shoots. They seem particularly partial to the Australasian *Dendrobies*. They can be very successfully dealt with by painting the affected parts with an infusion of tobacco with some soap flakes dissolved in it. Thrips are microscopic, but may be recognised by the white spots they make on the leaves and the way they malforn the latter.

Mealy bugs can be squashed or killed with a touch of methylated spirit. They are not a very serious problem. Scale is best removed with soap. A second application is sometimes necessary. It is recognisable as patches of whitish or very pale greenish material on leaves and bulbs. Black furry matter can be removed by painting with methylated spirit. Do not keep diseased plants among healthy ones until the former have recovered.

A word of warning: nicotine is said to be an absolutely safe insecticide, and it has never done any damage to my plants, though I have never dared to use it on the compost. But anything containing either kerosine or D. D. T. is deadly poison to Orchids, and should never be used.

Orchids like plenty of fresh air. I grow my own suspended from suitable trees, when I can, so that they have air all around them and can grow in conditions as close to nature as possible. Incidentally, Orchids so suspended are less vulnerable to insect pests and mice and snails, which have easy access to Orchid pots placed on shelves. They find it more difficult to descend a long wire. I often find lizards in my Orchid baskets and I encourage them as I believe they are largely responsible for the remarkable freedom I have so far enjoyed from attack by cockroaches and other flying insects.

Flowering exhausts a plant considerably, and forcing it too hard may damage its constitution. So, do not force a plant by putting it in a sunnier position than is natural to it, or by withholding water too much more than occasionally. Never force an Orchid two years in succession. On weakly plants always pick the flowers as soon as they open or soon afterwards. Some Orchids, notably *Phalænopsis*, sometimes produce enormous flower sprays. These should not be left on the plants too long as this means a severe strain. If they are picked, some of them will last almost as long in a vase of water as on the plant. The flowers of some species last longer if picked and kept indoors in water, because insects will not venture indoors to depollinate them. In Barisal I note this particularly in *Dendrobium Dalhousieanum* and *D. moschatum*. If you are trying to produce Orchids from seed, do not make too many pods on one plant unless you do not mind losing the plant. Seed bearing is a great strain on any plant.

When first potting very small plants, I find it sometimes helps rooting to plug up the drainage holes to some extent with moss. I usually start them in small earthenware cups with holes bored in the bottom and sides, subsequently, when the plants have grown, chipping the bottom off the cup and planting the rest in a basket in clean sharp sand from which every particle of dust has been washed out. The sand is poured in up to the tips of the roots or the base of the plant if there are no roots. As the roots extend I wash away the sand with a syringe so that they can attach themselves to the compost under the sand. Ultimately I remove the plugs and wash all the sand away through the drainage holes. This method ensures that very small roots are not too much in the air and also encourages root growth in general. I have very successfully grown some adult plants in sand.

When visiting the hills there is a considerable temptation to bring Orchids down and try them. Invariably this leads to disappointment as the plants die. It can be taken as certain that no Bengal *Cymbidium* worth having (except possibly *C. eburneum*) and no *Pleione*, and no *Cœlogyne* except *C. fuscescens* will grow in the plains. *Dendrobium nobile*, *D. chrysanthum*, *D. Farmerii*, *D. aureum*, *D. densiflorum*, *D. transparens* and *D. fimbriatum* can be made to "do" in the plains if they are very carefully managed, if small plants from lower altitudes are selected and if the place suits them. *Vanda cœrulea* and *V. cristata* will also do in the

same manner. *Dendrobium Devonianum*, *D. Ruckerii*, *D. Hookerianum*, *D. amœnum*, *D. Jamecianum*, etc. definitely will not do. The growing of hill Orchids in the plains should not be tried except by very experienced hands as a very little mal-treatment will kill them and they are great breeding grounds for rot and other diseases. I ultimately successfully grew these six Dendrobes and two Vandas for a couple of years in the plains without their deteriorating visibly, and flowered them too, but care by someone else for eight months while I was on leave finished them all off except one small plant each of *D. nobile*, *D. Farmerii*, and *D. fimbriatum* which are now recovering. Never buy hill Orchids as there are plenty of species from the plains that will do admirably and which are not noticeably more expensive. *Dendrobium Picardii*, *D. moschatum*, *D. Dalhousieanum*, *D. aggregatum*, *D. Parrishii*, *D. superbum*, *D. formosum* and *D. chrysotoxum* are as good as any Dendrobe that grows in the hills (except possibly *D. Devonianum*), are cheap, and will flourish admirably in the plains. Generally speaking, the bringing of hill Orchids to the plains is a cruel murder of beautiful plants, which in no way benefits him who brings them, and wastes a lot of his time, patience and garden space.

For purposes of propagation of Orchids other than by seed, we have to consider separately the monopodial and sympodial groups, as their structure is quite different. The principle involved, however, is the same. Generally speaking, Orchids store up a good deal of vitality. In the case of the monopodial Orchids this is stored in the stem, and in that of sympodial ones in the bulbs. If some of this store of vitality is cut off from the outlet, viz. the growing head, it tends to make itself a new outlet, which can only be done through a new growing head. In the case of sympodial Orchids there are certain easily visible nodes or eyes through which this occurs. Often more than one eye may break out simultaneously. In nature the size of plants is increased sometimes by the store of vitality in the plant being such that it cannot find issue in one growing head only, but, in the season of new growth develops two eyes simultaneously, and sometimes by the plant being damaged by insects, wind, or some other cause which separates the growing head from some older part of the plant. If it is required to make an additional plant, this is the process we require to follow.

In the case of sympodial Orchids the main eyes are at the bottom of the bulb, and there is always more than one of them, though, unless the plant is very full of vitality, only one of them develops and the others lie dormant. Now, if we cut through the rhizome, dividing the plant into two parts, the original growing head will go on growing with the reduced store of vitality located in the forward end of it. The vitality stored in the back of the plant will then be seeking a source of exit, and will find it in one of the eyes which have been lying dormant for one or two years, and this will produce a new growing head, and, hence a new plant. In performing this operation there are several things to be remembered. In the first place by cutting off the back end of the plant we are depriving it of some of its vitality, thereby perhaps weakening its constitution. So do not divide plants that are not thoroughly healthy. Also do not cut off too much, otherwise you may find you have substituted for one flowering plant two sickly ones which will not flower for a long time, if ever again. In the case of plants other than *Pleiones* and *Peristerias* and others like them (whose old bulbs do die off anyhow after a year), never less than three bulbs, and preferably not less than four should be left on the main plant. The vigour of the new plant will depend entirely on its size, and a single unripened new bulb will probably not grow at all. After cutting through the rhizome, it is better not to remove the additional plant until it is growing vigorously, and so fit for transplantation. In performing this operation, it is also to be remembered that it is useless to divide a plant into two parts unless the hinder portion has got eyes that are living though dormant, otherwise the latter will not grow.

In some species, notably *Dendrobiums*, there are many additional eyes, running the whole length of the bulbs. Sometimes when the plant is vigorous these will develop as well as the main eyes, or, if the plant is about to die, instead of them. The resulting plants will be small at first, but will grow, and, if conditions are favourable to the growth of that species, will ultimately develop into plants of full flowering size. We can produce these bulbils, as they

are called, by cutting off an old pseudobulb, or preferably bending it to fracture it partially, fairly near its base. A bulbil is then likely to form and develop. As it sends out roots, it should have a little clean moss tied on to its base to give it a foothold. When the new plant has grown well, it can be potted up after severing the bulb from the main plant. If bulbils develop naturally on a healthy plant whose bulb has not been fractured, the longer they are left on it, the better they will grow, but also the more nourishment they will take from the old plant. When potting a bulbil always leave a fair amount of old growth with it. The separating of one bulb is not as damaging to a plant as the separating of several, but it does deprive it of some stored up vitality, so, before resorting to multiplication by this process the condition of the old plant is to be considered. In the case of *Peristerias*, *Pleiones*, etc., do not separate the bulbs till the new one is thoroughly established.

In the case of monopodial Orchids the stem has to be divided instead of the rhizome. In the case of the climbing Orchids this merely amounts to taking a cutting off the top, remembering to see that the cutting has a sufficiency of roots. In the case of species with shorter stems we have to ascertain how much of the stem is living, and then cut through it in such a way that sufficient living matter and living roots are left on both sides of the cut for the plant to live. Unfortunately the eyes of sympodial Orchids are not visible, but there seem to be plenty of them, as the operation, if carefully done, is almost always successful. Anyhow, do not have less than one year's growth on either side of the cut. It is not advisable to cut above the living leaf growth except perhaps in the case of climbing Orchids like *Vandas teres* and *V. spathulata*. In the case of the sympodial Orchids the same remarks apply about weakening the constitution of the plant by division. Do not do it unless the plant is strong enough to stand it and recover.

Some Orchids, *Phalænopses* in particular, produce new plants in other ways. Many *Phalænopses* produce new plants from the flower spike. Binding some moss round the joints is said to encourage this, but I have to confess that I have never succeeded in inducing a bulbil in this manner. *Phalænopsis Stuartiana* produces bulbils on the roots from time to time. It appears that this is encouraged by fracturing a root by bending it as is done in the case of *Dendrobiums*, though this process is not reliable. Cutting the root definitely does not work. Bulbils obtained in either of these methods should be encouraged with a little moss round their roots when they produce them.

Raising Orchids from seed is not as difficult a problem as it is generally considered. There are two sides to this, first the production of the seed and then its germination and cultivation.

The sexual parts of the Orchid are rather curious, being all combined in one structure. This is a long horn-shaped body called the column, starting in the spur, and projecting from the middle of the flower above the lip. The tip of this body is loosely attached, and, as its underside projects somewhat, it can very easily be lifted off with a match stick. The yellow pollen masses will be found in the cavity in the detachable tip. In the case of *Dendrobiums* they are more or less loose, and in the case of *Vandaceous* Orchids they are attached to a sticky filament. A little below the tip, and on the inside or lower side of the column will be found a recess which is covered with a sticky material. This is the stigma or female part of the flower. Sometimes this is so close behind the tip that it is somewhat difficult to see, but if a flower is pulled to pieces its whereabouts is easily discovered for future reference. In nature, each species of Orchid is fertilised by some particular species of insect. But in the garden in the case of non-indigenous Orchids the particular species of insect which performs the act of fertilisation in nature will probably not be present, and in case a hybrid is desired certainly there will be no insect available to perform the operation, so that in all cases where the production of seed is worth while, the process will have to be performed artificially. This is done as follows:—

Orchid seeds are subject to fungoid attack, so that a sterilised instrument is necessary. Take an ordinary match, strike it, and as soon as the head is consumed blow it out and let it

cool. If a hybrid is to be produced, two such instruments will be required—one for each kind of pollen. Let us suppose we are going to produce a hybrid between two species A and B, growing seed pods on both plants. First examine both flowers carefully to see just where the sexual parts lie, so that there may be no fumbling in the middle of the operation. Now insert match A just under the tip of the column of flower A and lift the tip off. If the flower is a *Dendrobium*, this will have to be done rather carefully as the pollen grains are only very slightly sticky, if at all, and will have to be made to fall on the upper side of the match. If the flower is a *Vandaceous* species it will be very easy, as the sticky filament will stick very firmly to the match head, and it will probably also be necessary to remove the covering tip of the column by gently pulling it off so that the two yellow pollen masses on their sticky filament are fully exposed. Now that we have the pollen masses on match A, very gently press them into the sticky cavity or stigma of flower B. In the case of *Dendrobiums* they will stick very easily, and the operation has been successfully performed. In the case of *Vandaceous* species they will be so firmly attached by their filament to the match that it is difficult to remove the latter without pulling the pollen masses off again. They may be held firm by yet another match, or the filament stretched round the back of the column until it breaks without pulling the pollen out again. Now, with match B remove the pollen mass from flower B and press it in the same way into the stigma of plant A. The operation is now complete. If you do not wish to fertilise flower A, remove the pollen mass from plant B just the same, or the latter may possibly get fertilised with its own pollen, and spoil the hybrid. If a hybrid is not required, but only pure bred seeds, then only one match is really necessary, but if two flowers are available, cross-fertilise one with the other instead of fertilising each flower with its own pollen. Incidentally do not choose too fresh or too old flowers for this, or you may be unsuccessful.

If the operation has been successful, the flower will soon fade and begin to develop into a seed pod, though in the case of hybrids this will not always fully develop or produce seeds if it does.

The pods may take as little as three months or as much as a year to ripen. Just before this they will begin to shrivel and turn slightly yellow. Tie them up in a piece of dry cellophane at this stage unless the weather is very wet, or the pod may open before you are prepared, and the seeds fall out and be lost. Even if this does happen there will probably be a little seed left sticking inside the burst pod, which may be sown by rubbing the furry inside surface on the seed bed. The seeds of all Orchids are very numerous and as small as grains of the finest flour, so that they will appear as a very fine powder.

If you want to produce hybrids it has to be realised that only fairly closely related species can be interbred. You can interbreed any species of *Vanda* with any other species of *Vanda*, or any species of *Cattleya* with any other species of *Cattleya*, but some species of *Dendrobium* refuse to interbreed with certain other species of *Dendrobium*, so that *Dendrobium* hybrids may be successful or may not. Certain closely related genera may also interbreed. Thus you may be able to interbreed a *Vanda* with a *Phalaenopsis* or a *Renanthera*. Groups of some genera, members of which may interbreed with members of the same group are :

- (1) *Laelia*—*Cattleya*—*Sophranitis*—*Brassavola*—*Epidendrum*.
- (2) *Vanda*—*Aerides*—*Saccolabium*—*Phalaenopsis*—*Renanthera*—*Arachnanthe*—*Rhynchostylis*.
- (3) *Oncidium*—*Odontoglossum*—*Cochlioda*.
- (4) Asiatic or European *Cypripediums*.
- (5) Different species of *Dendrobiums*.

You cannot interbreed any member of one of these groups with a member of any of the four others. You cannot interbreed a true monopodial Orchid with a sympodial Orchid. Hybrids of a group may interbreed with hybrids of the same group. Generally speaking the more nearly related the species are the more readily they will interbreed, and the healthier

and more fertile will be the seed pod. Hybrids will take on the characters of both parents, so choose good specimens of each species. And if one of the species is ugly do not be surprised if the offspring is ugly too.

Production of seeds is a great strain on a plant, and if it is weak may kill it, so do not raise seed on a valuable plant that is weak unless you think it is sure to die in any case. If you are interbreeding a valuable plant with a common plant always raise the seeds on the common plant (except in the case next mentioned). The result will be just the same and it makes little difference which plant is the male parent, and which the female. If you are very anxious to have seeds you will find that fertilisation is more likely to be successful if you make the plant with the shorter column the mother or seed-bearing parent—provided the stigma is large enough to take the pollen mass. If both plants are strong and fairly common, grow the seeds on both plants. Except in plants of the type of *Acrides*, *Saccolabium* or *Rhynchostylis*, which bear a great number of seed pods in nature, you may fertilise several flowers, but as soon as it is seen which fertilisations have been successful, remove all but one or at the most two pods on very strong plants, or you may get no seeds and lose the plant as well. Do not raise seed on the same plant two years' running if you can help it.

Again, neatness and cleanliness are essential for the production of seeds. If you introduce bacteria into the flower, or if you damage the sexual parts of the flower by bending or pressing too hard (it does not matter about the sepals and petals) you will probably get no seeds. If the shape of the flower makes fertilisation very difficult, you may safely cut off some of the petals and sepals in order to get at the sexual parts more easily. In the case of species that grow wild locally, however, you will have to provide a substitute covering of paper to keep out fertilising insects until the pollen you have introduced has taken hold (this usually takes about 24 hours), or you may have some natural pollen introduced which will spoil your hybrid.

On a commercial scale or by those with the necessary time and resources, Orchid seeds are usually sown in test tubes in the laboratory, and this is certainly the most successful method, but this is difficult for those who have no laboratory facilities at their disposal. However, those who grow Orchids on a small scale in their spare time can achieve some success by other methods.

Except in test tubes Orchid seeds can only grow in the presence of certain microscopic fungi, which in turn are always found in and around Orchid roots. (This is called symbiosis). We have to ensure the presence of these before we can sow our seeds. We also have to ensure that the "seed bed" is such that the seeds will not be blown away, and that some moisture can be retained on very dry days.

There are several species of these microscopic fungi. Some Orchids prefer one variety some another. One species (*Rhizoctonia repens*) is invariably found in (and liked by) *Dendrobium*, *Cattleya*, *Oncidium*, *Cymbidium*, *Coclogyne* and their close relations. Another (*Rhizoctonia mucorrhoidos*) is found in *Vanda*, *Phalaenopsis*, *Renanthera*, *Saccolabium*, *Arachnanthe*, etc. These two species of fungus are likely to meet most of the requirements of small growers in Pakistan, India and Ceylon.

One method of procedure is to scatter the seeds round the roots of the parent plant, but they are not very likely to grow on brick and charcoal. Another method with which success is somewhat more promising, and with which I have been successful is to cut a branch off a tree with plenty of wild plants containing the right variety of fungus, and to hang it up horizontally and scatter the seeds on it or placing them on through a paper tube. The more numerous the roots, and the rougher the surface the better. A few bindings of coconut string

two or three inches wide into which the fungus may spread, increase the chances of success. This method, however, is very clumsy and invites insect and fungoid attack. Be sure to remove all seed pods from the wild plants, or you may have wild seedlings mixed up with some hybrids and be unable to distinguish which is which.

The best method I have found is as follows :—On a block of teakwood, say 1" by 5" by 7", spread a little sphagnum or similar moss very thinly on the teakwood. Now take three or four very small and absolutely clean plants (bulbils are best) of some common species known to favour the right variety of fungus. (I use small bulbils of *Dendrobium Pierardii* about 5" long for all varieties of *Dendrobiums*). Spread the roots out over the moss and bind them neatly down with a single turn of clean coconut string. If the roots of the host plant are matted with bark, etc., cut them off ruthlessly and let new ones form. Bulbils have clean roots which is why they are so much better. Now let the host plants grow for a bit. When they have taken hold nicely, sprinkle in a little fine, clean, sharp sand, and when this has been washed in nicely among the moss, and the latter has settled down, and the roots of the host plant have grown substantially, you have a seed bed of moss, sand and roots, which is very porous and about 1/10" thick. I further improve this with occasional applications with a fountain pen filler of very weak clear liquid manure prepared as described earlier. This seed bed will very soon be full of the right kind of fungi. I keep seedbeds ready of both varieties of fungus. The thinner and more numerous the roots of the host plant, the better. I am also trying experiments by sawing off the top of a whole coconut in the husk just above the nut inside, and growing host plants on the sawn surface of the piece so cut off, and also by binding a block of wood with coir string instead of moss.

Your seed bed is now ready. Orchid seeds probably do not keep for more than a month or two in prime condition. Bearing this, however, in mind, it is best not to sow too early in the dry season, as the seedlings will be damaged if they are desiccated. When sowing them sprinkle them evenly on the surface and wash them in with a fine spray of water. Now hang them up where you grow your Orchids, but be very careful that the surface of the seed bed is not exposed at any time of day to strong, direct sunlight until the plants have grown well. Proper drainage is essential, and waterlogging will kill them in no time, but desiccation is also dangerous. Consequently, in very dry weather, I keep the blocks horizontal so as to retain the moisture as long as possible, and in wet weather I keep them at an angle of 45 degrees to let the water drain off. I am keeping my coconut seed beds with the cut surface almost vertical as they are very apt to hold the water. I hang my blocks in big shallow baskets, propping them up at different angles according to the weather, and I suspend the baskets by fine wires, with a small bunch of cotton wool tied round in the middle to keep away the tiny snails which are found here, but which are big enough to eat up all your Orchid seedlings as soon as they germinate.

The seedlings should germinate and be visible as minute specks of green within a month or two. When they are half an inch or so high, I begin feeding them with occasional applications of weak clear liquid manure. From now on there should be no more difficulty, and they may be treated like the other Orchids except that care should be taken that they are preserved especially carefully from sunburn or insect attack.

In very dry climates the seeds might have to be grown under specially moist conditions. These can be achieved by placing the blocks in a clean wooden box, closed or partially closed with a pane of glass according to conditions. Such boxes, however, are very dangerous articles, particularly if kept completely closed, or if they are kept too moist inside, as excessive stagnant moisture will set up rot, which will immediately destroy all the seedlings in the box. If these boxes are used watering and ventilation must be very carefully controlled indeed.

## ORCHID CULTURE IN KUCHING, SARAWAK\*

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THE history of Orchid culture in Kuching dates as far back as about forty-five years when the late Mr. O. F. Ricketts first started his collection. At that time, perhaps he was the only local collector. His collection consisted of mostly local species and some imported Orchids; some of these may still be found among the present day collectors. It was not until 1930 that a few Chinese enthusiasts began to take an active part. The prevailing opinion was that Orchid culture could only be indulged by the well-to-do. As a result of this mis-conceived idea, and lacking encouragement, even now there are only about fifteen collectors. Of these only four are in possession of fairly good collections. These collections have been slowly developed within the past twelve years or so, and in the past few months have received considerable stimulus.

Most of the Orchids today that are in cultivation, are (for reasons of easy culture) collected or imported from places at sea level; only a few species are from slightly higher elevations, up to say 2,000 feet. The latter will thrive successfully at sea level in spite of the change of climate conditions, and so far depreciated or poor results have seldom been noticed.

Some of the finest Kuching-grown Orchids, such as the 1948 Floricultural Society Harrison Trophy-winning *Phalaenopsis amabilis* come from far up the great Borneo rivers.

The following is a list of the most favoured Sarawak Orchids that are in cultivation in Kuching:—

### AERIDES

*Aerides odoratum* is perhaps the commonest of all, very beautiful and easy to grow. It has strap-like leaves of about 8 to 9 inches long and about  $1\frac{1}{2}$  inches wide. Its beautiful sprays of creamy-white flowers tipped with reddish-purple have a strong pomade-like perfume.

### ARACHNIS

*Arachnis breviscapa* grows extensively on trees around Kuching. The stem is stout, bearing leaves about 5 to 7 inches long and  $1\frac{1}{2}$  inches wide. The inflorescence is about 6 inches long, bearing deep cream flowers with irregular orange blotches. The size of the flower is about  $2\frac{1}{2}$  inches across.

*Arachnis flos-aeris*, a tree-top species, is the oldest and best known of its species, and when grown in suitable conditions produces as many as three to four panicles with ten or more flowers on each. The flowers are large and of a weird, grotesque shape. They are broadly banded with dark purplish-brown on a background of pale yellowish-green, and have a strong odour of musk.

*Arachnis Lowii* is the best of its group and appears to be the only one that shows two kinds of flowers on the same spike. Common around Kuching, in tree-tops. The two flowers at the base of the spike, which are widely separated from the rest, are of a tawny-yellow colour spotted with crimson. The rest of the flowers are of a greenish-yellow colour marked throughout by irregular blotches of rich reddish chocolate-brown. The flowers are generally 3 inches wide. The flower spikes are pendulous and are covered with fine hairs.

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## ARUNDINA

*Arundina graminifolia* is the most useful and common of garden Orchids, having very attractive flowers like miniature Cattleyas. It grows even along the roadsides around Kuching. The flowers are 2 inches across and are borne singly on the slender inflorescence. The colour is usually white with bright rosy-purple on the lip.

## CALANTHE

*Calanthe vestita* is a cool growing Orchid, on hillsides as at Matang. The plant has large almost circular pseudobulbs. The flower spikes, sometimes over two feet long, are produced from the base of the pseudobulbs. The flowers have curious shaped petals and sepals and are creamy-white with a yellow blotch.

## CŒLOGYNE

*Cœlogyne asperata*. The pseudobulbs are large and oblong with a pair of apical leaves of a rich green colour. The raceme is pendulous, about  $1\frac{1}{2}$  feet in length. Each flower is 2 inches across, cream-coloured and the lip is fringed, marked with chocolate and orange streaks and veins. The flowers are scented. It is common in low trees especially along river banks.

*Cœlogyne Dayana*. The pseudobulbs are long, with a pair of pointed leaves. The flower spikes are drooping about three feet long, bearing numerous flowers of ochre-yellow with chocolate-brown markings on the lips. This has not been found near Kuching, but at Lawas (in Brunei Bay) mostly.

*Cœlogyne pandurata*. The pseudobulbs are large, ovate and compressed at the edges. The leaves are long, broad and leathery and about  $1\frac{1}{2}$  feet long. The colour is bright green. The inflorescence is erect with large bright green flowers; the lips are jet black in colour. Tree-tops around Kuching are its habitat.

## CYMBIDIUM

*Cymbidium atropurpureum* has leaves semi-erect, long and narrow. The flower spikes are also semi-pendulous, bearing rich red-purple flowers; the lips are white, spotted and blotched with crimson. Another common Kuching epiphyte of the tree-tops.

## CYPRIPEDIUM

*Cypripedium Lowii* has leaves of pale green, about one foot long and about two inches wide. The flower spikes are slender, about  $1\frac{1}{2}$  feet long, bearing 3 to 5 flowers about 4 inches across and variously coloured with creamy-yellow, pale green and purple. The pouch of the lip is large, smooth and purplish-green. Usually on branches overhanging the rivers.

*Cypripedium Stonei* has leathery and dark green leaves of about one foot in length. The slender and erect inflorescence is about  $1\frac{1}{2}$  feet long bearing 3 to 5 flowers of various shades of white, reddish-purple, dark red and yellow. The pouch of the lip is large, smooth and dull red in colour with purplish veins. An Orchid of the limestone hills, for instance along Simang-gang Road.

## DENDROBIUM

*Dendrobium superbum* has drooping pseudobulbs of 2 to 7 feet long, and is common in the jungle. The leaves are leathery and dark green in colour. The fragrant flowers are borne



singly or in pairs and are 2 to 3 inches across. The colour of the flower is rose-purple with a downy lip of similar shade and a pair of crimson-purple blotches.

*Dendrobium Treacherianum* has yellowish-green pseudobulbs and a pair of leaves about 5 inches long and 1 inch wide. The arching inflorescence is about  $1\frac{1}{2}$  feet long bearing about 15 to 20 flowers of pale rose, veined with light purple with white, and dark purple lips. The size of each flower is about 2 inches across, and there is a rancid or coconut oil odour. Not a common Orchid and hard to collect, for it favours the tops of the highest trees on hillsides. The species of this genus are highly selective in regard to what trees they will grow on.

### GRAMMATOPHYLLUM

*Grammatophyllum speciosum* has stout yellow pseudobulbs of about 2 inches in diameter. The tall and stout flower spikes are about 7 feet long, bearing numerous brownish-yellow flowers heavily spotted with dark purple. The leaves are long and narrow. The flower is about 3 to 5 inches across. Common around Kuching, in trees.

### PHALÆNOPSIS

*Phalænopsis amabilis* has large and thick leathery leaves about 8 inches long and light green in colour. The stout arching racemes are about 2 feet in length, carrying as many as 15 flowers of pure white with a few purple-reddish markings. The size of the flower is about 2 to 3 inches across. This lovely species is known only from the Ulu Baram, Trusan and Ulu Lawas; commoner in North Borneo. This Orchid is better known as *Phalænopsis grandiflora*.

*Phalænopsis violacea* has light shining green leaves 8 to 10 inches long and 4 to 5 inches wide. The inflorescence is short, bearing two or three star-shaped scented flowers, over an inch across. The colour of the flower is creamy-yellow and deep purple. In tree-tops, mainly of the Lundu district.

### SPATHOGLOTTIS

*Spathoglottis plicata* is one of the common ground Orchids and is very much favoured as an outdoor garden plant. The leaves are about 2 feet long and  $2\frac{1}{2}$  to 3 inches wide. The flowers are borne on an erect stalk about  $2\frac{1}{2}$  feet in length and are mauve in colour with purple lips. The size of flower is over 1 inch across. A common ground Orchid in loamy soils, also sandy patches, for instance around Matang.

### VANDA

*Vanda Dearei* has robust and fleshy leaves which are closely set and neatly arched, about one foot long. The inflorescence is short, bearing soft lemon-yellow flowers with yellow lips and a strong rose fragrance. The size of the flower is about  $2\frac{1}{2}$  inches across. Not common; most have come from the upper Serian.

*Vanda hastifera* has pale lemon-yellow flowers with brown blotches, about 2 inches in size, and very sweet scented. Quite common round Kuching in trees.

*Vanda Hookeriana* has terete stems and leaves about five inches long. The flower spike is usually about 1 foot long, bearing 5 to 7 flowers of white and rose colour, spotted with magenta-purple on the lip. Mainly from Bijat in the Second Division, where it is a swamp species.

Other note-worthy local Orchids that are in cultivation include

<i>Acanthophippium bicolor</i>	<i>Cypripedium barbatum</i>
<i>Bromheadia Finlaysonianana</i>	<i>Dendrobium crumenatum</i>
<i>Bulbophyllum Lobbiani</i>	„ <i>pandaneti</i>
„ <i>medusæ</i>	„ <i>sanguinolentum</i>
<i>Calanthe veratrifolia</i>	„ <i>Takahashii</i>
<i>Cœlogyne Forstermannii</i>	<i>Phalœnopsis cornu-cervi</i>
„ <i>Massangana</i>	„ <i>Denevei</i>
„ <i>Meyeriana</i>	„ <i>sumatrana</i>
„ <i>Rochussenii</i>	<i>Phaius grandifolius</i>
<i>Cymbidium Finlaysonianum</i>	<i>Saccolabium Hendersonianum</i>

I am indebted to Mr. B. S. Tan for his assistance in preparing these notes, which are simply offered as a contribution to the subject. It is much to be hoped that more people will take an active, intelligent and serious interest in Orchids throughout Borneo, and will communicate findings and illustrations to the *Sarawak Museum Journal*. It should be added that Orchid export in Sarawak is not permitted without special sanction.

## ORCHIDS AT THE BOTANIC GARDENS, PERADENIYA

J. S. DAVID

Colombo

BORN in Peradeniya and having spent the most impressionable period of my life in the neighbourhood of the Royal Botanic Gardens, and encouraged in garden lore by knowing parents, it is not strange that my predilection for horticulture should have become crystallized in a wholehearted devotion to Orchids. Although my work keeps me in Colombo, I never miss an opportunity of visiting the Orchid house at the Peradeniya Botanic Gardens whenever I go upcountry.

I daresay all enthusiasts in Ceylon would have at least made one pilgrimage to this Mecca of Orchid lovers. At the time of my visit in May last the plants in bloom were *Vandopsis (Arachnanthe) Lowii*, *Cœlogyne Dayana*, *Phaius Wallichii*, *Oncidium multiflorum*, *Dendrobium gratiosissimum*, *Eria stellata*, *Epidendrum pachycarpon*, *Dendrobium moschatum*, *Epidendrum O'Brienianum*, *Cœlogyne cristata*, *Dendrobium calceolare* and a recently acquired plant of *Dendrobium Macartheae*.

*Vandopsis Lowii* was represented by two plants in bloom, one having two pendulous spikes, the other with only one. One flower spike with all its flowers opened measured almost 4 feet and carried 33 attractive flowers, while its companion had 22 flowers. Unlike Mr. Weeramantry's plant of *V. Lowii*, this specimen had two basal flowers distinct from the rest. Mr. Weeramantry's plant, if I remember correct, had three basal flowers differing from the rest. It is also interesting to note that the authorities are keen on developing new plants and hybrids as I discovered that some of the flowers had been cross-pollinated. Self-pollination too had been tried between the wine red flowers on the spike and the basal yellow flowers. This should be an interesting cross if the pods prove fertile.

*Dendrobium gratiosissimum* is a dwarf plant about 8 inches high with pseudobulbs resembling *D. Pierardi*. There were two comparatively large flowers 2 inches wide on one pseudobulb. The flowers had large lips with a gold-suffused throat. I am inclined to think that this is a Burmese Orchid. There were also two plants of *Eria stellata* in bloom with attractive glossy green foliage and dainty small white flowers streaked with rust-red. *Phaius Wallichii* had one single large flower which was a poor display considering the robust nature of the plant. *Cœlogyne Dayana* was as colourful as one imagines it to be. Three plants were in bloom and their

long pendulous sprays caught one's attention immediately on entering the Orchid house. I was also fortunate in seeing a delicate Brazilian species in bloom, *Epidendrum pachycarpon*, carrying a spray of 6 flowers. Each bloom was almost an inch across with creamy sepals and a large lip inclined in an almost vertical position. The petals were dull white streaked with brown-red. The popular *Oncidium multiflorum*, though in flower, made no attempt to live up to its reputation of being the Golden Shower Orchid.

I had a very good reason for visiting the Gardens at that time of the year as normally the numerous plants of *Dendrobium aggregatum* would be in bloom turning the Orchid house into a paradise of gold. Unfortunately, the plants had decided to delay their floral display for a later date and more fortunate eyes. Those who remember seeing these plants in flower will agree with me in saying that the blaze of gold displayed is a sight never to be forgotten.

Among plants that had bloomed earlier in the year were *Cattleya Schraderea*, *Dendrobium densiflorum*, *D. suavissimum* and two species of Stanhopea, one of which I think is *S. Wardii* var. *oculatum*. The plants that were in bud were *Cattleya Princess Enid* and *Dendrobium nobile*. There was also a plant of *Rhopsalis cassythia* (Nawahandi) in flower with soap-bubble flowers. It is an interesting epiphyte that sometimes grows in company with Orchids in our lowcountry jungles.

An interesting diversion was caused when a large rat-snake was seen emerging from its hiding place in the jute covering of the roof. The caretaker told me that it was a friendly and welcome reptile as it helped to destroy rats and squirrels that come into the Orchid house thieving the coconut fibre and husks for making their nests. The snake had discovered that he had the easiest means of capturing his meals at no great physical exertion by taking cover in the Orchid house roof and awaiting these visitors.

On a large Philodendron in the flower section of the Gardens opposite the fountain was a newly tied up plant of our Vesak-mala, *Dendrobium Maccarthiae*. The clump had 21 flowers and presented a very pretty sight rarely seen outside Ratnapura. Two of the flowers had been crossed with *Dendrobium fimbriatum*. These attempts at hybridising are, I understand, the enthusiastic efforts of Mr. Ranasinghe of the Department of Agriculture, who is a very keen horticulturist. I must also mention here that the two large clumps of *Gramotophyllum speciosum* on the mango trees outside the Orchid house are almost outstripping their host in size. Some of the pseudobulbs are well over 10 feet long.

The interest shown by our President, the Prime Minister, is very apparent, as I noticed he had asked for a selection of Orchids for "Temple Trees". A representative collection was being grown for him amongst which were plants of *V. teres* var. *alba*, *V. Joaquim*, *V. gigantea* × *Arachnis Hookeriana* *alba*, *V. Andersoniae*, *Phaius bicolor*, *V. spathulata*, *D. moschatum*, *Caelogyne pandurata*, *Dendrobium aggregatum*, *Cymbidium bicolor*, *Caelogyne cristata*, *Cael. flaccida*, *Arundina bambusaeifolia*, *Cael. ochracea*, *Arachnis moschifera*, *D. chrysoxum*, *Phaius Tanker*, *villice*, *Oncidium multiflorum* and *Eria stellata*. The plants by now are, I presume, well established in the Prime Minister's Orchid house, and we can anticipate keen competition at our Shows when they bloom.

We look forward to seeing the Orchid house at Victoria Park, Colombo, as its show-piece once more and to this end no doubt the Peradeniya Gardens will contribute in large measure in restocking the Park with plants. It is indeed noteworthy that the Orchids at Peradeniya did not suffer much during the black period of the War, although the Gardens had as much activity as the Victoria Park. The well laid out Orchid beds outside the Orchid house still contain those robust hybrids from Galagedera.

The cemented stagings inside the Orchid house are kept cool by a thick carpet of *Fittonia* and *Staghorn* very neatly trimmed. The Orchid pots themselves stand on a bed of half-inch river pebbles. At a glance it is apparent that the directive hand behind the arrangement of the indoor and outdoor Orchids is one possessing a keen artistic sense in which the Orchids blend with the natural surroundings. The plants are allowed direct rain but provision also

exists for shielding them from excessive moisture. Sand culture is being tried in an attempt to rejuvenate a *Vanda* in bad condition. The Orchid house comes under an assistant who thoroughly understands Orchids, as is evident from the clean healthy appearance of the plants. Liquid cowdung is used sparingly but to very good effect, as I understand no other fertiliser is used. My old friend, Kalubanda, who was in charge of the Orchids for as long as I can remember has I am told retired and is now on pension. A newcomer is U. K. Jamis who himself shows a keen interest in the plants.

Most readers are familiar with the growth of plantlets on the flower spike of *Phalænopsis Schilleriana*. A similar growth was noticed on a plant of *Phal. equestris* which resembles *Phal. amabilis* in growth and habit. The parent plant of my *Phal. Stuartiana* still continues to send out plants from its roots and flower spike, whereas all its offspring flower regularly during October to December.

I must also mention some notable *Cattleyas* at Peradeniya. Among these plants are *Cattleya Fabia*, *C. Ludemanniana*, *C. Stoneware*, *C. Harrisoni*, *C. Schroderæ*, *C. Aelandiæ*, *C. Princess*, *C. Mount Royal*, *C. Warneri*, *C. Gaskelliana*. The group of *Læliocattleyas* has such stalwarts as *L.c. Avignon*, *L.c. Gabrielle* and *L.c. Hatfield* while *Brassocattleyas* are represented by *B.c. Heather Queen* and *B.c. Ilene* and the *B.l.c. King Edward*.

The Peradeniya Gardens as a whole has undergone a marvellous transformation since the end of its occupation by the Services and is now the delightful retreat of all horticulturists as before. It is not out of place to mention here the keen, personal interest shown by the Curator in the Gardens. The collection of Orchids and indoor plants are, perhaps, as comprehensive as any public collection in the East.

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## INTERNATIONAL COMMISSION ON ORCHIDOLOGY

A SIGNIFICANT advance in Orchid history has just been initiated with the establishment of an International Commission on Orchidology under the Botanical Section of the International Union of Biological Sciences, a division of the International Council of Scientific Unions in co-operation with U.N.E.S.C.O.

It has long been obvious that interest in Orchids is global, and problems arising therefrom are, in many instances, international in character. It will be the function of this Commission, composed of eminent authorities in most of the important Orchid-growing areas of the world, to work out proposals which, if adopted and developed, can lead to a solution of these problems.

Among the basic matters which would immediately come under the consideration of the International Commission on Orchidology are :—

1. A more sound and truly international system for the recording of Orchid hybrids
2. The correlation of taxonomic concepts and nomenclature in Orchid species
3. Nomenclature of Orchid hybrids
4. Conservation of Orchid species
5. A survey of horticultural and botanical activity in Orchids throughout the world

In respect of problems such as relate to Orchid taxonomy or nomenclature it would be the purpose of the Commission to investigate these thoroughly and to evolve proposals which would be forwarded to the proper bodies for action at the International Botanical Congresses which assemble from time to time. The Orchidological Commission contemplates no independent action. It is hoped that the first report of the Commission will be ready for submission to the next International Botanical Congress which has been convened to meet at Stockholm.

Orchid research will have special attention in recognition of the fundamental botanical importance of the *Orchidaceæ*, the rapidly increasing interest in Orchids and the expanding quantity of research, both applied and theoretical. The American Orchid Society, in co-operation with the Botanical Department of Harvard University, is preparing final plans for a programme relating to Orchid research based on the following points :—

1. Establishment of an international scientific quarterly journal of Orchidology
2. Establishment of a programme of Orchid research
3. Establishment of an endowed fund or foundation for financing such research

Before this three-point programme can be definitely initiated it is necessary to make a survey of research now being conducted in different countries, and to ascertain how much material is available for publication. Orchid societies all over the world have been invited to help in this survey by answering certain questions :—

- (a) What research relating to Orchids is now being conducted in your institution ?
- (b) What material do you have ready for publication ?
- (c) What material is there in preparation ?
- (d) Would you be interested in subscribing to an International Quarterly Journal of Orchidology (subscription 3 to 4 dollars a year) ?

The following have been invited to form the nucleus of the International Commission on Orchidology which will initiate the planning of international co-operation in this field of biological science :—

*Chairman* : Mr. Gordon W. Dillon...*U. S. A.*

<i>Australia</i>	...	Rev. H. M. R. Rupp
<i>Brazil</i>	...	Dr. Ferdinand J. Krackowicz
<i>Ceylon</i>	...	Dr. Ernest Soysa
<i>England</i>	...	Mr. Gurney Wilson
<i>Germany</i>	...	Dr. Carl Pretzel
<i>Hawaii</i>	...	Dr. Walter Carter
<i>Malaya</i>	...	Mr. R. E. Holtum
<i>Mexico</i>	...	Prof. Juan Balme
<i>United States</i>	}	{Prof. Oakes Ames
<i>of America</i>		
<i>Venezuela</i>	...	Dr. J. A. O'Daly

All those in Ceylon interested in scientific study or research concerning Orchidology are invited to give this matter their attention and to communicate their views to the Ceylon representative on the International Commission of Orchidology, Dr. Ernest Soysa, 32, Barnes Place, Colombo.

## SOME AUSTRALIAN DENDROBES

H. E. YOUNG, D.Sc. Agr.

Rubber Research Institute, Agalawatte, Ceylon

THESE few notes are confined to some of the species and varieties of the genus *Dendrobium* most favoured by Orchid growers and which inhabit north Queensland in the north-eastern section of Australia. A brief description of the natural occurrence of the plants in question and an outline of the cultural methods which produce good results in Australia may be of help to those Ceylon growers who have representatives in their collections of the species mentioned.

The Cooktown Orchid, *Dendrobium bigibbum*, including its variety *phalænopsis* occurs, as its name suggests, in the Cape York Peninsula region of Queensland and the "cookie", as it is fondly called, is the floral emblem of the Queensland Orchid Society. The type species of *D. bigibbum*, though smaller in the flowers than its variety *phalænopsis* is, with its rounded sepals and petals and beautiful form and daintiness, preferred by some Orchid lovers to its more showy varietal relatives. The species itself occurs most frequently along the east coast of the Peninsula and for some forty miles or more down the west coast with a variable inland distribution in the same region. It is also found on the Torres Straits Islands.

The plants were found in great numbers, before the advent of large scale commercial collectors, along the shore line within five to ten chains of the sea as well as on the lands bordering some of the coastal rivers and creeks. Some large communities also inhabit certain favoured inland areas. Along the eastern coast-line they grow mainly on the branches and stems of a species of *Eugenia* which is found in dense thickets amongst the boulders and sand dunes of the rocky coast line. These *Eugenias* are dwarfed by the salt spray carried to them by the trade winds and, except in sheltered areas, rarely reach a height of more than four or five feet and are often only knee high. The Cooktown Orchid grows on these shrubs, rooting in the shade but sending its leaves and flowers into the sunlight at the tops of the bushes. A minor proportion of this Orchid population is found growing on rocks in the neighbourhood as well as on other trees and vines. On the western coast of the Peninsula the Orchids in question grow on the branches and stems of low trees and vines in half shade and do not flower nearly as well.

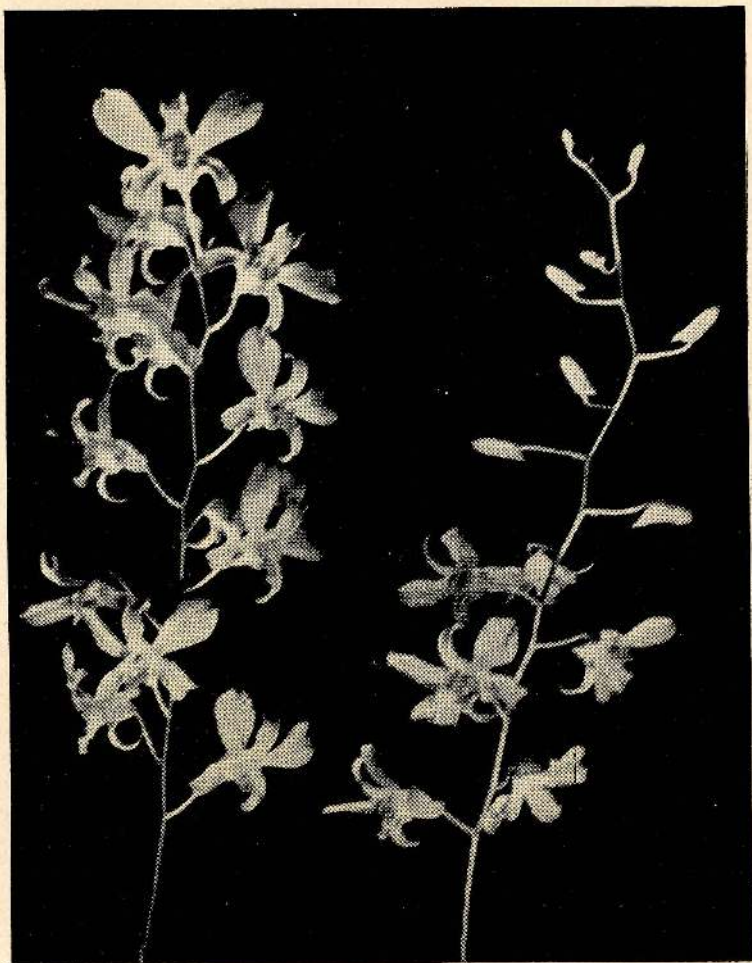
*D. bigibbum* var. *phalænopsis* is found in communities or mixed with the type species, *D. bigibbum*. The other variations such as *hololeucum* (white flowered type) and *album* (white with a green throat) are found usually as isolated rare plants in otherwise normal communities. *D. bigibbum* var. *compactum* is a plant with short thickened pseudobulbs with flowers of the *phalænopsis* type; in some cases, however, they are even larger than those of a good *phalænopsis*. The variety *compactum* has its own variations and representatives of all the flower variations of *D. bigibbum* may be found on these dwarf pseudobulbed plants. This variety occurs as isolated communities in an inland area of the region in question.

The variation in flower form and colour shading in the species *D. bigibbum* as a whole is enormous being much accentuated in the case of the *phalænopsis* group. Colour variations form a gradual series from the white types through to the dark magenta ones. The variety *Schroderianum* does not occur on the Australian continent, but is found in New Guinea and Indonesia, and likewise has considerable colour variation. This showy type is referred to in Queensland as the "Painted Lady".

In nature one seldom sees flower spikes of the *D. bigibbum* series with more than four or five blooms and often with one or two. Flowering occurs spasmodically throughout the year though the main flush of blooms appears in one season.



Courtesy : Mr. J. R. Bailey



**DENDROBIUM UNDULATUM VAR. BLOOMFIELDII**



The flowers in general have a strong but fleeting perfume which may occasionally be detected shortly after dark on a dewy night. Although rarely found, possibly because specific conditions are required for its emission, this perfume cannot, having been sampled, be forgotten. Under ordinary conditions the flowers are not scented.

*Dendrobium undulatum*, the Golden Orchid, occupies the same general area but with a more widespread distribution. This species extends from New Guinea through the Torres Straits Islands and down the Queensland coast. The most southerly occurring plant I have seen was on Fraser Island well out of the tropics whilst the plant is relatively common in the Port Moresby area of New Guinea but reaches a climax near Cape York itself.

Like the *bigibbum* series this plant is a member of the antelope group. It is typically a large plant with pseudobulbs reaching eight feet or more in height. It grows on practically any species of tree found in the area where the conditions of sunlight, etc. are suitable along the coast and on the neighbouring islands and may frequently be seen, especially on the western beach of Cape York Peninsula, thriving as large clumps in the sand just above highwater mark. This occurrence is due to the plants germinating on the thin branches of shore line shrubs. The branches ultimately die, or break under the weight of the developing Orchid, which grows on vigorously in the sand, collecting its humus supply from wind blown leaves and from the detritus of the shrub it fell from.

*Dendrobium undulatum* has quite a range of colour variation from the normal bronze yellow type to a dark muddy brown at one extreme and to the cream coloured variety *Bloomfieldi* at the other. The latter variety is comparatively rare and is restricted to small areas. The purple throat markings also vary in intensity of colouring and in the amount of colour present. The New Guinea forms tend to be dark and unattractive.

*Dendrobium superbiens* the Torres Straits Orchid, is a native of the Torres Straits Islands and the most northerly part of the Cape York Peninsula. Unfortunately, it is becoming a natural rarity owing to the depredations of commercial collectors. This is made worse by the fact that the plant is a natural hybrid and is self sterile and therefore does not reproduce itself from seed.

It is only found where its two parents *D. bigibbum* (and varieties) and *D. undulatum* occur together. Controlled pollinations have successfully produced this plant in most of the variations found naturally and have proved its origin. With such a variable type of parent as *D. bigibbum* with its many forms it is no wonder that the Torres Straits Orchid occurs in many types both in form and colour. The variation in the amount of twist and waviness of the sepals and petals of the Golden Orchid is also reflected in this hybrid progeny, which, however, tend in general to resemble *D. undulatum* in form with narrow petals and sepals. *D. Goldei* is a very showy member of this hybrid stock which was described originally as a species many years ago; it is closer to the *phalaenopsis* type in form than *superbiens* is. An horticultural variety produced in France by crossing the two parents was called *D. Louis Bleriot*. This variety appears inseparable from *D. Goldei* and, of course, *D. superbiens* which name has priority.

The Torres Straits Orchid plant itself is intermediate in character between the two parents. It is normally a robust type with tapering pseudobulbs up to three feet high, many smaller forms also occur. The inflorescence is sometimes branched and in a strong flowering plant is very showy. On one such plant growing in the open in Brisbane on a camphor laurel tree I counted sixty-five blooms on the one flower spike.

Under cultivation all three species (*D. bigibbum*, *D. superbiens* and *D. undulatum*) thrive throughout the Queensland coast under proper conditions. The Golden Orchid is perhaps the less exacting in its requirements and thrives in the open garden on trees, in rockeries or in pots and is a great lover of full sunlight.

The Cooktown and Torres Straits Orchids are grown on trees or in pots. The trees most favoured being citrus though they do equally well on some others such as the Queensland nut (*Macadamia ternifolia*).

In southern Queensland, and perhaps even in the northern tropics, best results are obtained under glass with these two Orchids. Freer and stronger growth is produced and larger and more numerous flowers than occur in nature result. Spikes of the Cooktown Orchid with up to twenty flowers are not uncommon under glass with several spikes per pseudobulb. In the natural plant, however, single spikes are the general rule with only three or four blooms per spike.

The plants require plenty of light, warmth, moisture and humidity when in active growth but rapidly deteriorate unless dried off in the dormant period. An open, well drained compost is essential as a rooting medium, the most successful results being obtained by potting in osmunda or totoca fibre with crocks or old bones in the bottom of the pot. Often a little dry cowdung is placed in the compost with good results. Applications of dried blood, bone meal and meatworks manure cause strong growth and many flowers to appear and have become almost standard practice. Some growers prefer to use inorganic nutrient solutions regularly applied, others use various organic liquids as well. A little superphosphate or dry fowl manure is also appreciated by the plants as a top dressing. Repotting as soon as the compost becomes at all soggy is a prerequisite for successful results.

The variety *compactum* behaves similarly whilst *D. Schroderianum* is a stronger grower.

*Dendrobium Johannis* is another species which is prized more overseas than in Australia. This attractively perfumed Orchid with its dark chocolate flowers and golden throat sometimes marked with purple occurs in much the same area as the Cooktown Orchid but prefers drier and more exposed sites on the limbs of fairly large trees in open forest. It occurs, so far as I have observed, only in areas associated with the Golden Orchid and the Ti-tree Orchid (*D. canaliculatum*). The latter is a small but attractively flowered species, with a lovely perfume and short thick pseudobulbs, and occurs only on species of the paper barked ti-tree (*Melaleuca spp.*) which inhabit the marshy, low lying sites of the region. So far the many attempts I have made to obtain fertile seed of *D. Johannis* have been fruitless and it seems to be self sterile.

This species may possibly be a natural hybrid between *D. canaliculatum* and *D. undulatum*. An examination of the characters of these two species shows that this could be the case, and its association with the *undulatum-canaliculatum* complex in nature and the perfume of the flowers provide supporting evidence.

Like the Ti-tree Orchid it is rather more difficult to grow successfully under horticultural conditions than the Cooktown Orchid though I have found it to thrive on crotons and Tristanias. In pots however it has so far proved unamenable and comparatively short lived.

It would be interesting to cross the Ti-tree Orchid and the Golden Orchid to see if one could produce a *D. Johannis*.

In potting any of the three main species mentioned above the procedure usually adopted is to place broken crocks and/or old bones in the bottom of the pot and pack the pot and the plant into it tightly with totoca or osmunda fibre. Bone meal may be mixed through the fibre with advantage. When the plant is established and growing the other manures referred to may be safely and circumspectly applied. The *Cattleya* group responds similarly to this treatment, and feeding with manures has produced remarkably good results with all genera, terrestrial or epiphytic.

Orchids, after all, are plants and for good results with plants in general an adequately fertile growing medium with enough water and good drainage in the growing season and drier conditions and no foreign manures in the dormant period plus the light temperature humidity and air requisite for each variety is essential for the best growth and highest yield.

Courtesy : Mr. J. R. Bailey



**DENDROBIUM SUPERBIENS**

*Courtesy : Dept. of Agriculture, Queensland*



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**DENDROBIUM SUPERBIENS**



## ORCHID GROWING IN JAMAICA

H. W. HARRIS

Clerk Courts, Port Antonio, Jamaica

ORCHIDS have always fascinated me, but it was only some two and a half years ago that I took up collecting seriously. It was at this time that I first met my wife and I look back with joy on the many afternoons that I visited her to be told that I would find her in her Orchid house. It was in this small Orchid house that I learned to love Orchids, and, as my wife would say, I have now become an Orchid maniac.

My wife then had about forty plants composed of Dendrobiums, Oncidiums, Broughtonias, Lælias, Schomburgkias and Cattleyas. Soon after our marriage I took over the Orchids, and so as to gain experience rapidly, I visited regularly all the leading growers in Jamaica, and can only say that I met with the greatest kindness, courtesy and generosity. I was lent books and periodicals and in many cases given plants.

Orchids have brought me many friends, and especially do I value the friendship of Mr. Gunter, Dr. Machado and Mr. Adam Pullar. These gentlemen have been especially helpful and generous. It was through Dr. Machado that I joined the American Orchid Society, and Mr. Gunter was to a great extent instrumental in my joining the Orchid Circle of Ceylon as he lent me back numbers of *Orchidologia Zeylanica* and, better still, Dr. Soysa's book *Orchid Culture in Ceylon*. This book was of great help to me as it is written in language which the novice can understand, and it answers most of the questions that crops up from day to day in the tropics.

I went to Kingston last week-end to the revival and first meeting of our own Orchid Circle. Due to the war, the last meeting had been in 1939. We had a very fine turnout and every one was most enthusiastic. There were some very fine blooms on the exhibition table. *Dendrobium Louis Bleriot*, *Cattleya Enid* and *C. Desmond Sander* were really gorgeous. Dr. Machado was elected our President, and I was pleased to have been placed on the committee as I had worked hard to get the Society alive and functioning.

To come back to my collection; of the original forty plants perhaps twenty remain; the rest have been given away to friends and relations. The collection however has grown to one hundred and sixty plants and comprises Cattleyas, Dendrobiums, Phalænopses, Vandas, Oncidiums and their respective hybrids. Most of these plants have been obtained from England and America. These plants are housed in a lath house fifteen feet by ten feet, with benching along the sides and top end. All Phalænopses and Dendrobiums are hung. I enclose a picture of the house which explains what I have tried to convey. Port Antonio, where I now live, happens to be a very beautiful place, but at the same time it is very wet, the atmosphere is very moist and it rains most nights heavily. I therefore keep a tarpaulin on the top and spread it over the house every night, and in this way I keep out much of the rain.

I find that it is essential to water sparingly, otherwise the plants stay moist for too long a time and rot is apt to set in. This luckily has happened to only one of my plants. *Cattleya Celtica* gave me four beautiful blooms last week, and then I put it in the house on the resting bench. I was ill for a few days, and on going to have a look at my plants I found that it had been watered and that rot had already reached an advanced stage. I am giving this plant as much sun as possible, but I fear I have very little hope of saving it.

Unfortunately, most of my plants were potted last year. I am, however, potting all my newly acquired plants in the following way. I fill my pots two-thirds full with charcoal and broken crocks and then pot up with local tree fern roots. This is essential for good drainage. By the way, there are two kinds of this root—the black coarse one and the fine brown one, which is not so plentiful. This latter is, by far, the better of the two, and I am careful only

to use this. It is important when plants have been imported that all osmunda and spagnum moss be very carefully removed before potting. If this be allowed to remain it is very hard to dry out, and, in this climate, plants would be practically certain to rot or at any rate damp off.

My plants have done very well this year, bloom production has been good, and the plants are all leading, some of them having three or four sheaths on them. I am now looking forward to many blooms over the festive seasons and hope I will not be disappointed.

Dr. Soysa has just informed me that I have been made a member of the Orchid Circle of Ceylon. I feel honoured to be a member and look forward to receiving my first bulletin. Dr. Soysa has been calling for material for the bulletin, and I hope that if he decides to publish this article, fellow members will find something of interest in the above observations.

## NOTES ON BULBOPHYLLUMS

### *Bulbophyllum* Pechei

ALEX D. HAWKES

P. O. Box 35, Coconut Grove 33, Florida, U. S. A.

**A**MONG the several dozens of species of the ponderous, polymorphic genus *Bulbophyllum* which are today encountered in cultivation is the singularly interesting and attractive *B. Pechei* Bull. A native of Burma, principally in the vicinity of Moulmein, it is a rapid-growing epiphytic Orchid which seemingly thrives even under adverse greenhouse conditions of neglect and ill-culture. The creeping rhizomes, from which the smooth bright-green pseudobulbs arise at intervals, quickly fill a basket or similar container, forming a large specimen capable of producing many dense flower spikes.

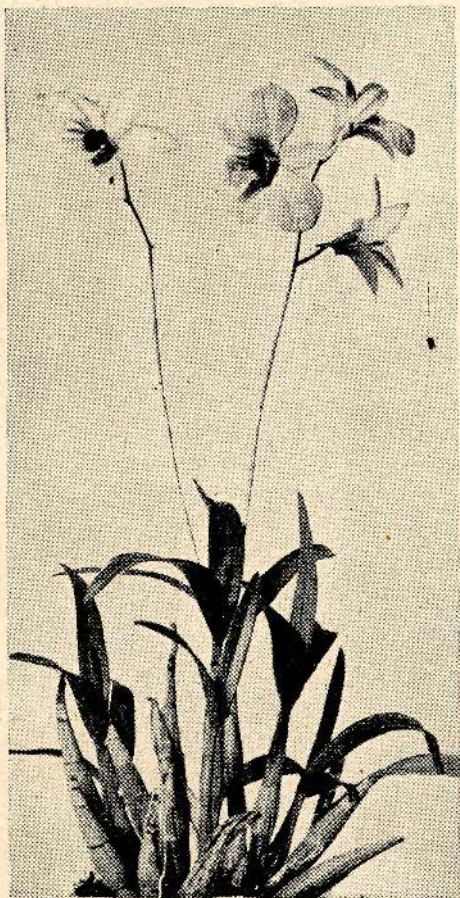
*Bulbophyllum Pechei* was initially described by Bull in 1891, from plants imported from Burma. It was relegated to the section *Racemosa* of this complex aggregation, and placed in the group which includes *Bulbophyllum Careyianum* Spreng. (its closest ally), *B. crassipes* Hook., *B. cupreum* Ldl., *B. nilgherrense* Wight, and *B. sicyobulbon* Par. & Rehb. f. It has been offered for sale in the United States and other countries, and, though the species of this genus are not as popular with amateurs as they once were, this plant is still one of the most frequently encountered members of the gigantic coterie of Orchidaceous plants which comprise the group.

It bears ovoid, angled pseudobulbs, at irregular intervals along a rather thick prostrate rhizome, which bear a single leaf and eventually become rather wrinkled with age, almost to the state of corrugation. The leaves, typically solitary, are rigidly erect, thickly leathery, linear-oblong to lanceolate in shape, obtuse at the apex, and generally more or less spotted on the lower surface.

The elongate racemes, produced from the base of the bulbs (as is characteristic of the genus), bear a large number of closely packed small flowers of peculiar formation, and possessing a rather objectionable musk-like odor. They are mostly varying shades of brown, with a certain amount of yellow about the labellum. The dorsal sepal is oblong-ovate and obtuse, while the partially adnate laterals are obliquely ovate, acute, and narrow considerably toward the base. The minute petals are triangular and prominently aristate at the tip. The fleshy, deep-brown lip, which is joined in its attachment to the column and hence mobile to some extent, is oblong in shape and has no lateral lobes of any sort; it is truncate and denticulate at the apex. The short squatty column is bicuspitate at the tip, the margins of the teeth being denticulate in turn.

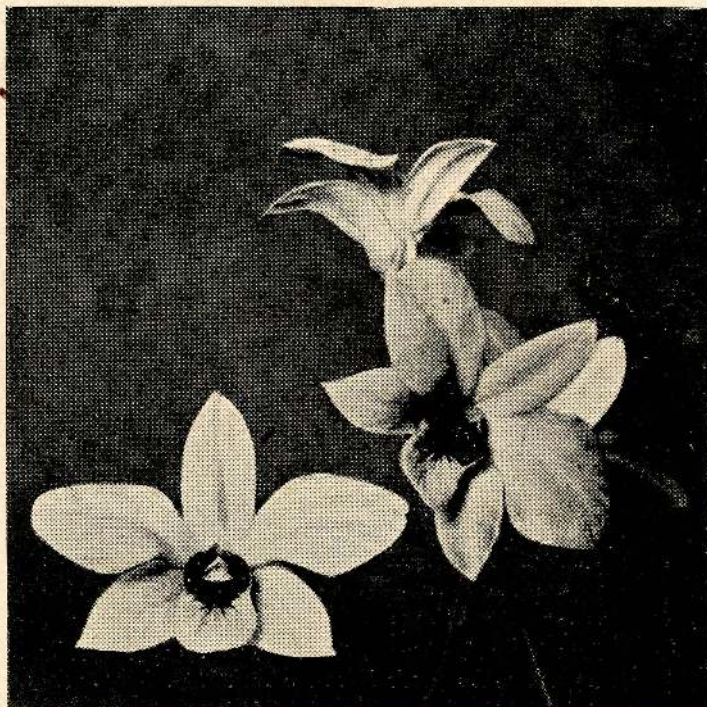
NOTE:—Mr. Alex D. Hawkes is making a special study of the genus *Bulbophyllum*, and would gratefully appreciate descriptions and illustrations of Ceylon species of this somewhat neglected genus. Would any reader able to be of assistance in this matter please communicate direct with Mr. Hawkes?—*Editor*.

Courtesy : Dept. of Agriculture, Queensland



**DENDROBIUM BIGIBBUM  
VAR. COMPACTUM**

Courtesy : Dept. of Agriculture, Queensland



**DENDROBIUM BIGIBBUM VAR. COMPACTUM**





## AN UPCOUNTRY ORCHID DIARY

JULY—DECEMBER, 1949

A. N. PAINE

Algiewatte, Nuwara Eliya

**July** : *Cymbidium Goldflake* is in bloom for the second time this year, with three spikes of 13, 10, and 8 flowers.

*Cypripedium insigne Sanderæ* and *C. punctato-violaceum* have 5 flowers each. *Selenipedium Sedeni* has had some 50 or 60 flowers during the month. There have been many *Dendrobium cælogyne* (*D. amplum*) flowers.

**August** : *Cymbidium Goldflake* lasted in bloom till nearly the end of the month. *Cypripedium Charlesworthii*, which had two flowers earlier in the year, now has seven flowers out, making a total of nine for the year. A similar (4-inch) pot has four flowers out. *Cypripedium Fairricianum* has bloomed one pot has four flowers, two pots have one flower each. *Selenipedium Sedeni* continues in bloom. *Cælogyne speciosa* has three flowers.

**September** (a wet and windy month till nearly its end) : *Cymbidium Traceyanum* has one spike with ten flowers, and another spike showing in the same pot ; *C. longifolium* has many spikes of flowers. *Cypripedium venustum*, *C. hirsutissimum*, *C. insigne* in bloom. *Eria convallarioides*.

**October** : *Cymbidium Traceyanum*, three plants in flower. *C. Mastersii*, several spikes. *C. elegans*, two spikes with many small straw-coloured flowers. *C. Devonianum*, one spike of several small green and claret-coloured flowers.

*Cælogyne Mossii* (?) and *C. Brunneii* are in bloom, also *Ione bicolor*.

*Dendrobium longicornu*, many flowers, pure white, constricted, with a long spur ; lip marked with cinnabar-red (this species has been imported at various times under the names of *D. longicornu*, *D. infundibulum* and *D. Jamesianum*).

*Dendrobium cælogyne*, several solitary flowers on plants growing practically wild in the garden.

*D. infundibulum* has a few pure white flowers (lip marked with yellow), but is in bad health, having been heavily attacked by slugs.

*D. Treacherianum* was imported from Borneo many years ago and occasionally flowered in Dimbula, producing arching spikes with five or six flowers. Here, in the drier end of the glass house, it has sent up from a two-leaved, thick, fleshy four-angled pseudobulb one and a half inches high, an upright spike eighteen inches high, with twelve flowers arranged spirally (there might have been one or two more as the tip was eaten off or damaged). The flowers are three inches across, star-shaped, sepals and petals very acute, lip tongue-shaped, all nearly white at the apices turning light blood-red to deep blood-red at the base and throat of lip, side lobes of lip deep, dark blood-red.

(Very like the illustration of *D. Lyonii* in the *Phillipine Orchid Review* of June, 1948, except that the spike is upright, and this may be due to its being grown under glass.)

**November** : *Cymbidium Traceyanum* and *C. Mastersii* are still in flower, while several *Cypripediums* are out. *C. Adrastus*, *C. insigne*, *C. insigne Sanderæ*, *C. Lecanum*, *C. villosum*, and *C. punctato-violaceum*.

*Odontoglossum mirum aureum* has three flowers, yellow, heavily spotted with chocolate. *Odontioda Linden Lee* has five flowers, dark violet purple changing to mauve, with many chocolate markings and a narrow white fringe. I have had an un-named *Odontioda* for many years in Dimbula without flowering, here it produces rather large flowers, heavily spotted with bright red, a beautiful Orchid.

**December** : *Cypripedium Lecanum* and *C. insigne* are still in bloom but most of the others are over.

*Cymbidium Goldflake* is in flower for the third time this year, and many flowers of *C. Lowianum* will be shortly out.

A few *Cœlogynes* have flowered, but their flowers generally do not last long ; among those out were *C. cristata*, *C. corymbosa*, *C. ocellata* and *C. speciosa*.

*Dendrobium Wardianum* and *D. rotundatum* are in flower.

*Odontioda Virginia* has three flowers, rather small, deep claret-coloured with a very narrow white border and yellow marking on the crest of the lip.

*Arachanthe Clarkei*, the " upcountry Scorpion Orchid ", has a few flowers.

The following indigenous Orchids have flowered in the open in the garden during the last six months : *Liparis Walkeri*, *Oberonia zeylanica*, *Phaius bicolor*, *Dendrobiums heterocarpum*, *D. nutans*, *Eria braccata*, *E. bicolor*, *Cœlogyne odoratissima*, *Adrorhizon purpurascens*, *Cleisotoma tenuifolia*, *Podochilus falcatus*.

An interesting feature of the flowering of *Dendrobium Treacherianum* was that soon after the flowers opened, a single bee came and searched for nectar or whatever is secreted in the spur ; the insect emerged with two pollinia adhering to its back ; some time after, when the flowers were almost past their prime, about a dozen bees flew frantically and excitedly about the flowers as if intoxicated with the nectar, sometimes three bees trying to get into a single flower at the same time. Probably as a result of this, four flowers have been fertilised, and this is the only exotic *Dendrobium* I have known to be naturally fertilised.

I have crossed *Odontioda Linden Lea* with *Odontoglossum mirum aureum* (mother plant) and the seed capsule is now three inches long.

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## NEWS AND NOTES

His Excellency the Governor-General, Lord Soulbury, G.C.M.G., P.C., O.B.E., M.C., has been pleased to accept office as Patron of the Orchid Circle of Ceylon in succession to Sir Henry Moore, G.C.M.G., who retired as Governor-General of Ceylon in June, 1949.

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His Majesty the King has been graciously pleased to declare that the Prime Minister of Ceylon shall be sworn of His Majesty's Most Honourable Privy Council. The Rt. Hon. D. S. Senanayake, LL.D., has been President of the Orchid Circle of Ceylon since 1934 and Prime Minister of Ceylon since 1947.

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Dr. Harold E. Young, D.Sc. (Agri.), a Foundation Member and ex-President (1947) of the Queensland Orchid Society, has come to Ceylon as Mycologist to the Rubber Research Station at Dartonfield, Agalawatta. Dr. Young is already known to readers as the author of articles on Australian Orchids published in this bulletin.

\* \* \* \* \*

Dr. Ernest Soysa has been appointed a member of the International Commission on Orchidology as Ceylon's representative on this body, which has been established under the auspices of the Council of Scientific Unions of U.N.E.S.C.O.

Mr. D. A. Cooray of Panadura, whose recent death we regret to record, has directed in his will that his collection of Orchids shall be gifted to the Public Orchidarium in Victoria Park, Colombo, and that his collection of books and other publications on Orchids shall be gifted to the Library of the Orchid Circle of Ceylon. The late Mr. y Coora has contributed some valuable knowledge on Orchids in Oriental literature in an article published in *Orchidologia Zeylanica* (1940) following a long literary research in this subject. He flowered a fine variety of *Sophrolaeliocattleya Winter Glow* just before the last war; a colour plate of this hybrid was published in this bulletin at that time.

\* \* \* \* \*

The following ladies and gentlemen have been nominated for membership of the Orchid Circle of Ceylon:—

*For Local Membership, Ordinary*—Mrs. Keith Anderson (Kandy), Mr. R. E. Jackson (Maskeliya), Major A. N. Weinman (Dehiwela), Mr. C. H. Z. Fernando (Colombo), Dr. H. E. Young (Agalawatte), Mr. John E. de Silva (Ja-Ela), Mr. N. J. Wallooppillai (Colombo).

*For Overseas Membership, Ordinary*—Mrs. Elmira Orso (Honolulu), Mrs. H. Cornfield (N. S. Wales), Mrs. Ivy Nott (Queensland), The Princess Nina Mdivani (London), Mr. Denis S. P. Conan Doyle (London), Mr. H. W. Harris (Jamaica), Mr. D. J. Garrard (Florida), Mr. S. Y. Wong (Singapore), Mr. Yusoo bin Ishak (Singapore), Mr. Lawrence S. Murphy (England), Mr. Raymond A. McLeod (Massachusetts), Mr. Joseph A. Myers (Florida), Mr. W. A. Bayne (Trinidad).

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Following a proposal to compile a regional scientific bibliography for South Asia, U.N.E.S.C.O., through its Science Co-operation Office for South Asia, functioning at Delhi University, has prepared a preliminary list of scientific periodicals now being published in India, Burma, Ceylon, Malaya, Siam and Indonesia. The periodicals of each country (including our own bulletin) appear in alphabetical arrangement, complete with their periodicity, subscription rates and addresses where obtainable. It is intended to publish an index of articles contained in scientific literature for the first half-year of 1949. Authors of scientific contributions published during the past year are invited to send titles and references of such work in order to make the bibliography more complete.

\* \* \* \* \*

We have received a complimentary copy of a handy booklet on Orchid culture, entitled *Orchids and their Cultivation*, published by Messrs. Sanders of St. Albans, England. Much of the material is abstracted from Sanders' well-known *Orchid Guide*, supplemented by detailed cultural hints and notes. Clearly written and lucidly explained, the principles of glasshouse cultivation of Orchids have been simplified for the beginner and amplified for the experienced amateur who may like to try his skill at the more specialized aspects of this pursuit. Not the least attractive feature of this fine little book is its collection of handsome illustrations, nine of which are very well produced as colour plates. Special mention should also be made of the serial illustrations of the technique of potting Orchids, which provide a more effective lesson than pages of print.

Though intended as a pocket guide for the Orchid amateur in temperate latitudes, Sanders' *Orchids and their Cultivation*, priced at 10s. 10d. post free, will provide tropical Orchid lovers with much useful information about Orchids and their physiological requirements in cultivation.

\* \* \* \* \*

Confiscation and destruction of parcels of Orchids consigned for air transport to and from Ceylon having been reported from time to time, the attention of readers is again drawn to the strict regulations enforced at airports in India, Pakistan, Malaya and other countries across which plant material is consigned by air. As a precaution against introduction of plant pests, some countries do not permit the import of plant material by air where

no airport facilities for disinfestation are available. For the same reason, plant material may not be transferred from plane to plane at airports in India and Pakistan unless packed in airtight metal containers.

All those who intend to despatch or import plants by air are advised to make certain of the regulations enforced by the countries across which such air routes may lie. Generally speaking, as no transshipment difficulties will arise, in despatching Orchids by a direct air route risk of loss is avoidable, but one must definitely ascertain whether any restrictions apply at the airport of entry before consigning Orchids by air.

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Exhibits from Ceylon were sent by air to the London Evening News Flower Show held at Olympia, London, from September 22nd to 24th, 1949. The British Overseas Airways Corporation kindly offered to despatch free of charge small consignments of packed flowers up to a weight of 14 lbs. each to this British Flower Show. Owing to the short notice received it was not possible to send any Orchid exhibits to the 1949 Show. In view of the possibilities that the B. A. O. C. may offer similar facilities for free air transport of Orchids for this year's Olympia Flower Show, members of the Orchid Circle are advised to get in touch with the Regional Representative of the B. O. A. C. for Ceylon, c/o Messrs. James Finlay & Co., Ltd., P. O. Box 59, Colombo, and obtain advance information about the date of the 1950 Show, the regulations regarding packing requirements for the country over which the aircraft will fly, and other details.

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Invitations have been received from the South Florida Orchid Society (affiliated with the American Orchid Society) for the co-operation of members of the Orchid Circle of Ceylon in the Annual International Orchid Shows sponsored by this Society. Those willing to send exhibits are advised to communicate direct with the Secretary of the South Florida Orchid Society, Mrs. H. R. Wright, 3020, Seminole Street, Miami 45, Florida, U. S. A.

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The Orchid collection at the Royal Botanic Gardens in Peradeniya has recently been enriched by gifts of Orchids from donors in Ceylon and abroad. One of the most generous of these has come from Senator Col. T. Y. Wright, who has long been the most senior Orchid collector in Ceylon. Col. Wright's gift to the Peradeniya Gardens includes *Dendrobiums*, *Vandas*, *Oncidiums*, *Erias* and *Cattleyas*—among the latter the chaste *Brassocattleya Ceylon Pearl*, and hybrids raised by the donor in Ceylon.

\* \* \* \* \*

The appointment of a Horticultural Officer with special knowledge of Orchidology by the Department of Agriculture of Ceylon will be welcomed by all Orchid lovers in Ceylon. While the potential facilities for such advances in Orchid culture as hybridisation and laboratory methods of seed germination are almost unlimited in Ceylon, all the work that has so far been done in these lines has been the result of private enterprise. Much of this has been carried out by Mr. Ernest de Saram of Charmaine, Kadawatte, and this gentleman has been selected by Government to fill the newly created post. Mr. de Saram has commenced work at the Botanic Gardens at Gampaha, where conditions are said to be ideal for initiating experiments in modern methods of Orchid seed culture. Readers who have seed of Orchid crosses of merit are advised to communicate with Mr. de Saram for advice regarding germination.

\* \* \* \* \*

With the retirement of Dr. Ernest Soysa from the post of Honorary Editor of *Orchidologia Zeylanica*, his duties will be assumed by Gate Muhandiram J. C. S. Fonseka and Mr. S. J. Perera. All communications for the new Honorary Editors of the bulletin should be addressed to the residence of Mr. Fonseka—**Greylands, 100-Horton Place, Colombo.**

*Courtesy: Mr. A. Mamujee*



**BRASSOCATTELEYA CEYLON PEARL**

*(From a painting by Miss Bertha Jansz)*



## ORCHIDS ON POSTAGE STAMPS

**E**VEN if Ceylon may not be the first country in Asia to have an Orchid postage stamp—there being a reference to a Japanese Orchid stamp in the *Orchid Review* (London) of October, 1944—the most handsome of Orchid stamps issued anywhere in the world is the new Ceylon 15-ct. pictorial. One of the set of six new stamps selected by the Government for issue on the second anniversary of Ceylon's Independence Day, February 4th, 1950, this stamp features *Dendrobium MacCarthiae*, the celebrated Vesak Orchid of Ceylon. It may be of interest to recount the events that have led up to the appearance of this new addition to the world's series of Orchid stamps.

The first Orchid stamp, as far as can be ascertained would appear to be the large diamond-shaped 1-ct. issue which formed one of a series of floral stamps that commemorated the National Exhibition of Agriculture, Industry and Commerce of Costa Rica held in December, 1937. It depicts a flowering pseudobulb of the Guarria Morada Orchid, *Cattleya Skinneri*, printed in purple and green to give a realistic impression of this fine Costa Rican species.

The next Orchid to be featured on a stamp was also one that has immortalised the memory of Skinner, a great Orchid collector of the last century. The plant was *Lycaste Skinneri* var. *alba*, the Monja Blanca or White Nun Orchid of Guatemala, which had been proclaimed by Presidential decree as the National Flower of that Republic in February, 1934 (*American Orchid Society Bulletin*, June, 1935). This decree was commemorated by the issue of a blue and dark grey stamp printed on a white ground which showed up the albino flowers of the *Lycaste* to advantage. The photograph from which this stamp was designed appeared as the cover illustration of the *American Orchid Society Bulletin* of December, 1936.

In 1941, Dr. Ernest Soysa, submitted to the Ceylon Government a design for a rectangular stamp featuring three flowering stems of the Vesak Orchid, *Dendrobium MacCarthiae*. A realistic painting of the sketch made by Miss Bertha Jansz, Honorary Artist to the Orchid Circle of Ceylon, showed the stems, foliage, flowers and buds of the Orchid in natural colouring and pose against a plain background. The design had the approval of Sir Andrew Caldecott, then Governor of Ceylon, and the Hon. Mr. D. S. Senanayake, then Minister of Agriculture, who were Patron and President, respectively, of the Orchid Circle of Ceylon. Owing to wartime conditions, however, the Ceylon Government decided against issuing any new postage stamps at that time.

In 1943, what was apparently the first European Orchid stamp, and the only one of its kind to appear during the war, was issued by Switzerland as one of a series of Child Welfare propaganda stamps. It has been described in the *Orchid Review* of October, 1944, as a quite beautiful representation of a Cypripedium, probably *Cypripedium calceolus* var. *helveticum*. This would be the Swiss Lady's Slipper Orchid or Frauenschuh.

The war had come to an end, and the Orchid Circle renewed its attempts to persuade the Government of Ceylon to publish an Orchid stamp. In September, 1946, the President, Mr. Senanayake, speaking from the chair stated that the design for a Vesak Orchid stamp was under favourable consideration by the Hon. Mr. J. L. Kotelawala, then Minister of Communications and Works. But the proposal was again shelved as a decision to issue a new set of postage stamps was once more deferred by the Ceylon Government.

Four diminutive *Cattleyas* had been incorporated in the border design of a prewar Brazilian stamp, commemorating the South American Botanical Reunion held in Brazil in 1938, but it was not till after the war that Brazil, paradise of Orchids, produced its first Orchid stamp proper. Issued in commemoration of the Fourth National Orchid Exhibition held in

Rio de Janeiro on November 8th, 1946, this stamp, printed in ultramarine and red on a white ground, depicted a large Orchid bloom with narrow white sepals, broader white petals and a spreading white-bordered lip with red markings. A specimen of the stamp appeared in illustration of a description of it in *Orquidea*, the Brazilian Orchid Review of December, 1946. From Dr. Luis de Mendonca, Editor of that Review, it was ascertained that the Orchid figured in the Brazilian postage stamp was *Laelia purpurata*.

On February 7th, 1947, Colombia issued a set of six postage stamps to publicise the Orchids of that country. The species depicted were *Masdevallia nictetina* in chocolate and green on a white ground (1-ct.); *Miltonia vexillaria* in carmine and yellow on white (2-ct.); *Cattleya Dowiana* var. *aurca*, in yellow, claret and blue on white (5-ct.); *Odontoglossum crispum*, in grey crimson and purple on white (5-ct.); *Cattleya chocoensis* in grey, crimson, yellow and olive green on white (5-ct.); and *Cattleya labiata-Triana* in mauve, crimson, yellow and bronze on white (10-ct.).

The appearance of this colourful set of South American stamps created fresh interest among both Orchid lovers and stamp collectors all over the world. The *Australian Orchid Review* featured the Colombian stamps in natural colour on the cover page of its June issue in 1948. Mr. O. C. Kirby, the philatelic columnist of the *Times of Ceylon* re-opened the case for a Ceylon Orchid stamp in that paper (August 10th, 1947), subsequently publishing a commentary by Dr. E. Soysa with a reproduction of his original Vesak Orchid design (August 21st, 1947), and a letter from Dr. Andreas Nell (September 21st, 1947), who suggested fewer flowers to display the Orchids to better advantage. Col. J. P. Applby, Postmaster-General of Ceylon, at the time, suggested that, as in the Colombian and Costa Rican stamps, the lack of a background left too much blank space in Dr. Soysa's design.

Adopting these suggestions, Dr. Soysa re-designed the Vesak Orchid stamp by introducing a distant view of Adam's Peak, which rises from the natural habitat of this *Dendrobium*, as a background for the Orchid. The amended design was admirably executed by Miss Bertha Jansz, whose infinite patience and artistry have produced a really superb effect in purple and green tones that give the scene a natural effect. The Prime Minister, the Hon. Mr. D. S. Senanayake, President of the Orchid Circle, Mr. J. A. Clubb, Chairman of its Committee, Sir Ernest de Silva, Ceylon's foremost philatelic authority, Lady Hankinson, wife of the British High Commissioner in Ceylon, and others were very favourably impressed with Miss Jansz's excellent painting.

In June, 1948, the Commissioner for Stamps called for designs for a new set of Ceylon stamps and the Vesak Orchid design was selected for the 15-ct. issue.

Features typical of Ceylon's flora, scenic beauty, ancient art, religious tradition, and legendary associations are depicted in pictorial and emblematic detail in this new stamp :

1. Three representative and distinctive species of Ceylon plants, associated with religious and symbolic tradition are featured :—

(a) The Vesak Orchid : an endemic species found only in Ceylon ; named *Dendrobium MacCarthia* in honour of the wife of a former Governor of Ceylon, Sir Charles MacCarthy ; flowers valued as temple offerings in Buddhist worship during the Vesak festival in May, when the Orchid is in full bloom ; considered the most beautiful and most representative of Ceylon's Orchids. (The central theme of the stamp).





ORCHID POSTAGE STAMPS



(b) The Bo Leaf : *Ficus religiosa*, introduced to Ceylon B.C. 288 (*Mahavansa*, Ch. XIX); venerated for its religious associations; used in Ayurvedhic medicine. (Figured in a conventional Bo leaf pattern border)

(c) The Lotus Flower : *Nelumbium speciosum*, the Neloong mala; figures in Sanskrit mythology and legend, in religious ceremonial, etc.; used in Ayurvedhic medicine. (Introduced as a traditional lotus pattern border)

2. The background of the design represents a natural view of Adam's Peak, or Sri Pada, in relation to the surrounding range of hills from the Maskeliya side as seen from Dalhousie Estate, where the ascent to the Peak from that side commences. This mountain is venerated for its sacred footprint, ascribed to Gautama Buddha by the Buddhists, to Siva by the Hindus, and to Adam by the Muslims who perpetuated an early Christian legend. The Vesak Orchid is limited in natural distribution to the humid jungles surrounding the foot of this sacred mountain in the Sabaragamuwa Province.
3. Ancient architecture and sculpture are represented in the supporting columns on each side of the picture and in the stone lion of the Polonnaruwa Rajamaligawa crouching below the Kandyan pillar.
4. The legend "Ceylon", and its Sinhalese name "Sri Lanka", and Tamil name "Il-lankai" are inscribed on a scroll stretching between the capitals of the pillars.

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Owing to the delay in publication of this issue, due to circumstances beyond our control, it has become possible to include an illustration of the new 15 cent Vesak Orchid stamp issued in Ceylon on February 4th, 1950.—*Editor*.

## NOMENCLATURE OF ORCHID HYBRIDS

ROKURO URATA (President) and WALLACE H. OTAGURO (Secretary)  
Board of Trustees, Honolulu Orchid Society

THE Trustees of the Honolulu Orchid Society have been able to study a letter written by Sanders Ltd., of St. Albans, England, addressed to the Secretary of the American Orchid Society. A copy of this letter came to the attention of this group through the kind offices of Mrs. J. Milton Warne and Dr. H. L. Lyon of the Pacific Orchid Society. This letter (appended hereto) proposed a change in part of the rules governing the registration of Orchid hybrid names.

The change proposed is "that in future no cross be registered as a new hybrid which has same parentage as one already named, whatever be the degree of parentage of either parent. ... Of course we do not suggest any alteration in any way of hybrids already registered and published".

As reason for this proposal it is stated that "if this ruling is not now established it is quite possible that as the years pass there will be fifty new hybrid names, all of which have the same two parents". It is also stated that "if this ruling had been adopted at the outset of hybridization the Hybrid List would have been less than half its present length and **no one** would have been the worse off". Another statement says, "We gave up registration of new hybrid *Miltonia* names, as practically identical forms were produced from differently named parents". Summarizing these statements the reasons for this proposal appear to be (1) the Hybrid List is growing too large too rapidly, and the proposed change will prevent this undesirable trend; and (2) same forms arise from different parentages due to similarity in ancestry and this is undesirable if registered under different hybrid names.

Concerning reason No. (1), the Trustees of Honolulu Orchid Society would like to know first of all, whether this rapid increase in the size of the Hybrid List is undesirable or not, and secondly whether the new proposal will help to reduce the total registration. At this time let us inquire into the reason why the List is valuable to the Orchid men.

It is valuable, first of all, because this List enables us to trace the ancestry of an outstanding individual to the original species, thus enabling us to determine how future breeding should proceed in order to produce even more outstanding individuals. Other reasons, for less important, may include such matters as elimination of duplication of hybrid names, a sense of authenticity given to Orchid breeding, the increased sales value due to new names implying new excellence (at least to the buyers of seedlings), the romantic stimulus of strange names and strange sources, etc. However, the most important reason for the existence of this Hybrid List is its direct effect on future breeding.

If this is so, does the present system of registering Orchid hybrid names fulfill the reason for its existence? We are forced to the conclusion that the present system does a very poor job of it. It was apparently formulated in the days when genetics as a science was either non-existent or in its infancy. The primary truth of segregation and recombination, which is the foundation on which present day breeding is established, is apparently ignored to an extent that the very poor seedlings and the very best ones, simply because they happen to have the same named parents, continue to exist under the same hybrid name. We would like to point out here the importance of an individual plant, both as a specimen plant and as a parent. A haphazard system, only unofficially recognized, of dubbing individual plants

with "variety" names over and above the registered hybrid name, is the only attempt to recognize a plant of proven merit. This "system" is a chaos because "variety" names may be also applied to a whole cross, a group of plants of certain similarity in type, or in the case of species, a whole group of plants growing in a single locality.

If the present proposal attempts to improve this outmoded system of hybrid registration, we are happy to co-operate. If a helpful proposal tended to increase the size of the Hybrid List at a faster rate, we shall be happy to accept it. However, we feel that the proposal leads us to a greater confusion. Let us imagine a case where this proposal had been accepted throughout the Orchid world; then we, in Hawaii, begin to breed Vandas. *Vanda tricolor* × *Vanda Sanderiana* will give us *V. Tatzeri*. *V. Tatzeri* × *V. Sanderiana* will give us *V. Tatzeri*. The new *V. Tatzeri* (which we call *V. Clara Fisher* now) × *V. Sanderiana* will give us *V. Tatzeri* again. (*V. Ohuohu* now) Similarly *Vanda Rothschildiana* and *V. Omomea* will have the same name. We would like to point out here that *V. Tatzeri*, *V. Clara Fisher*, *V. Ohuohu* all show distinct effect of backcrossing so that a person who has seen a fair number of each is able to name them with good accuracy. Also, it must be pointed out that the individual variation within a population of *V. Ohuohu* is great enough to make appreciable difference in the resulting hybrids if distinct types are bred further.

Let us consider another hypothetical case, where we are breeding *D. undulatum* and *D. phalaenopsis*. The F1 will give us *D. Pauline*. In order to produce *D. Pauline* with greater amount of frills we continue to backcross this to *D. undulatum*. On the other hand, in order to produce a yellowish type of Dendrobe of *D. phalaenopsis* type we backcross to *D. phalaenopsis* var. *Maumakea*. Eventually we shall have *D. Pauline* of *undulatum* type and another of *phalaenopsis* type. These two groups of plants may be as far apart as the two original parents.

We accept the two examples given by Messrs. Sanders as probably true, but we cannot but see that if we accept their proposal we are bound to get into difficulties of the above sort.

We can also visualize a group of Orchid men discussing the *Vanda* and *Dendrobium* hybrid and backcrosses given as examples above. What an inconvenience it will be to constantly refer to *V. Ohuohu* as "that *V. Tatzeri* which was backcrossed to *V. Sanderiana* twice." The present system is far better than this.

Of course, the proposal suggests that the several backcrosses be given a varietal name, to be published by commercial firms in their catalogues and lists. But then, what of the possible duplication in names, and the numerous hybridizers who do not publish lists or catalogues. The resulting confusion is not difficult to visualize.

Will the proposal help to cut down the total volume of new registrations? We have tried to answer this by using a simple mathematical formula which tells us how many combinations are possible if a certain number of different objects are arranged in a group of two or more. The formula is  $C_n = 2^n - (n + 1)$ . For instance, if we had two species to start with, what is the number of combinations possible according to the proposal? It will be  $C_2 = 2^2 - (2 + 1) = 1$ . In other words, if a genus had only two species, the Hybrid List will be able to print only one hybrid name. If we had three species, then we shall have four hybrid names.  $C_3 = 2^3 - (3 + 1) = 4$ . Table 1 will show what will result if the number of species were increased.

TABLE I

n	Cn	n	Cn
2	1	15	32,752
3	4	16	65,519
4	11	17	131,054
5	26	18	262,125
6	57	19	524,268
7	120	20	1,048,555
8	247	21	2,097,130
9	502	22	4,194,281
10	1,013	23	8,388,584
11	2,036	24	16,777,191
12	4,083	25	33,554,406
13	8,178	50	1,126,000,000,000,000
14	16,369	100	? ? ?

We would like to call your attention to the thousands of registered hybrid names available for our future hybridizers to use as a source of combinations. Do you think the new proposal will help to cut down our future registrations?

Reason No. 2:—If the number of species in a genus is small, and if an outstanding species, variety or hybrid is used as recurring parent in continual backcrossing it is quite possible that after several generations, similar types will appear from closely related parentages. If, however, the degree of excellence does not improve by further crossing, it is quite conceivable that crosses of this nature will be abandoned by the breeders soon. The essence of the problem we feel, is not so much in similar types appearing in different crosses as in the degree of excellence a portion of the cross attains. That new hybrids with different names appear similar is a minor matter, but the possibility of one or more outstanding individuals appearing in a cross is of very great importance. In this connection we recall a story to the effect that *Cypripedium* breeding had reached a stagnation point, very similar to that described of *Miltonias* by Messrs. Sanders, until a single individual, *C. Christopher var. Grand Duke Nicholas*, appeared on the scene in 1915. This variety with its amazingly wide dorsal sepal started a new race of *Cypripediums* and the interest in this genus was revived. Similar incident have occurred in the breeding history of both plants and animals.

We have endeavoured to present our major objections to the proposal of Messrs. Sanders. In doing so we have digressed and have pointed out what we feel is a very serious weakness of our existing method of registering hybrids. The Trustees of the Honolulu Orchid Society feel that this is an important matter to all persons interested in Orchid breeding and should be seriously considered.

\* \* \* \*

(Copy of letter referred to above)

THE SECRETARY,

American Orchid Society,

Cambridge 38,

Massachusetts, U. S. A.

Dear Sir,

Will you please, at your early convenience, bring the following before your Presidents and Committee. The British Orchid Growers' Association are unanimously in agreement with this proposal. If then we also have the agreement of your Society we will place the matter before our Royal Horticultural Society and ask for a ruling. We are sending a copy of this also to the Pacific Orchid Society, so we may have their views.

**Hybrid Names :** That in future no cross be registered as a new hybrid which has same parentage as one already named, whatever be the degree of parentage of either parent.

We give the two following examples of what has been done, taken from the new Addendum. If this ruling is not now established it is quite possible that as the years pass there will be fifty new hybrid names, all of which have the same two parents.

This, in fact, has occurred in *Miltonias* of which perhaps 90% are really varieties or forms of *M. Bleuana*. Therefore we gave up the registration of new hybrid *Miltonia* names, as practically identical forms were produced from differently named parents.

Pray ask your Society to consider this matter most carefully, as we do want, in so far as it be possible, to keep the number of new Orchid Hybrid names within reasonable bounds. Of course we do **not** suggest any alteration in any way of hybrids already registered and published.

#### Examples :

Our *Cymbidium Nirvana* (*C. Pauwelsii* × *C. Swallow*) should have been considered a variety or type of *C. Swallow*. It has no different parent, i.e. *C. Alexanderi* and *C. Pauwelsii*. Only has it more *C. Pauwelsii* than *C. Alexanderi* in its parentage. It is obvious that without a record and correct labelling it will be impossible to distinguish *C. Nirvana* from *C. Swallow*. As stated above fifty new hybrids can eventually be named by crossing *C. Alexanderi*, *C. Pauwelsii* and their offspring with each other.

*Cattleya Lasmedon* (*C. Titrianae* × *C. Trianae*) should have been considered a variety or form of *C. Titrianae*, having only *C. Trianae* and *C. Tityus* in its parentage. Here again another fifty new hybrids can be grown and named, yet all of them having the same two parents *C. Trianae* and *C. Tityus*.

We do not think that any hardship will be caused by this ruling if agreed upon.

For sales purposes—Lists, Offers, Catalogues, etc., the new batch raised (if considered good enough by the raisers) can be given a varietal name. We could have called the *C. Nirvana Swallow Nirvana Type* (or *Sander's Type* or any other name) and so listed it in our offers with the parentage *C. Pauwelsii Comte de Hempline* × *C. Swallow magnificum*.

Messrs. Armacost and Royston could have done the same with their *Cattleya Lasmedon*, listing it as *C. Titrianae Lasmedon Type* (or *Armacost's Type*) stating the parentage *C. Titrianae* × *C. Trianae var. Bill Taft*.

We trust we have succeeded in making this suggestion **quite clear**. If this ruling had been adopted at the outset of hybridization (as then suggested by Fred Sander) the Hybrid List would have been less than half its present length and **no one** would have been the worse off.

Faithfully yours,

pp. SANDERS (ST. ALBANS) LTD.

15th July, 1949.

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An interesting subject has been opened up in the above communications. We invite readers to study the views expressed, by Messrs. Sanders and the Honolulu Orchid Society, and to submit comments, criticisms and suggestions.—*Editor*.

## CORRESPONDENCE

THE EDITOR,  
*Orchidologia Zeylanica*,  
COLOMBO.

Dear Sir,

I write to enquire whether any of your readers have had the experience of *Calanthes* sporting. I have had a very fine show of these Orchids this past year, numbering some 23 pots, embracing some six different varieties.

First to flower were five pots of *C. Harrisii*, pure white with larger blooms than the others. Later on in the season three or four pots of *C. Veitchii* flowered, and about this time appeared one pot, which threw pure white blooms, and in another pot with the normal rose-red bloom of *C. Veitchii* appeared one pseudobulb bearing a spray of pure white flowers.

Now these white flowers appeared long after *C. Harrisii* had finished and are much smaller and rather a different shape as regards the four-lobed lip, which is large and broad in *C. Harrisii*. These flowers are even smaller than those of *C. Veitchii*. The smallness in size does not appear to be due to poor growth, as both plants are very healthy.

I am well aware that there is a pure white variety of *C. Veitchii* named "*Calanthe alba*", and I can only imagine that some of my pseudobulbs have sported to this white variety.

Can any of your readers kindly inform me whether the blooms of "*C. alba*" are smaller than those of *C. Veitchii*, and whether they have ever had any similar experience?

Malaboda,  
Matugama, Ceylon.

Yours faithfully,  
G. B. FOOTE.

Dear Mr. Editor,

The *nom-de-plume*, "*An Epiphytic Idiot*", over which a letter dated June, 1949, from Nuwara Eliya, Ceylon, has been addressed to you in the last bulletin, could have been much more wisely chosen, nevertheless it may probably bear fruit, and be the means if instituting a system of exchange between members, which system it is observed has the approbation of the Ceylon Orchid Review.

I am of the opinion that an Exchange Section would be of great assistance to many members of the Orchid Circle, who are unable to pay high prices for plants, and in this connection I can recommend the system as I have been exchanging plants both in Australia and overseas for some years.

It would be necessary to indicate the class of Orchids required, and at the same time indicate the class of plants which would be available for exchange.

If Townsville was considered, atmospheric conditions would have to be taken into account, as Townsville is situated in Lat. 19 South, whereas Colombo is somewhere about 8 North. Townsville has a wet season of about three months yearly January, February and March the balance of the year with an occasional wet day or two, but as a rule brilliant sunshine.

Cattleyas, *Phalænopses*, *Dendrobiums*, *Vandas* and other genera from Siam, Africa and America grow and flower well.

Temperatures range from 55° in winter to 90° or 95° in summer.

If Mr. Epiphytic Idiot, or anybody else, cares to write me I shall be pleased to hear from them.

Meantime Salutations from  
A SANE SUBSCRIBER.

P. O. Box 45,  
Townsville,  
Queensland, Australia.

We have already expressed our willingness to open an Exchange Section, as mentioned on page 40 of our last issue. No offers of Orchids have, however, been received for inclusion in this issue.—*Editor*.



Dear Dr. Soysa,

I am a reader of your very excellent book, *Orchid Culture in Ceylon*, and I would like to congratulate you very much! It really is a joy to read your clear definitions of Orchids species. Very interesting are the chapters on asymbiotic and symbiotic germination of seeds. Here at the Missouri Botanical Gardens, the Orchid collection has much increased since the last few years, and we counted about 200,000 *Cattleyas* in 1949. Beside that, we do much in Orchid research work. Now we are just on colchicine treatments and Mycorrhiza studies. Would you be interested in an article for your wellknown *Orchidologia Zeylanica*, about Orchid-mycorrhiza, the different Rhizoctonias and their cultivation?

If there is anything you would like to know, we would only be too glad to do our best for you and the Orchid Circle of Ceylon.

With best wishes, I am

truly yours,

HANS GUBLER.

The Orchid Laboratory,  
Missouri Botanical Gardens,  
St. Louis, Missouri, U.S.A.

We are most grateful to Mr. Gubler for his appreciation and offer of help. It would be a great pleasure to publish an article from him in this bulletin. We are particularly anxious to know about the new colchicine treatment of Orchids and how it may be tried by the amateur.—*Editor*.

Correspondence for the **Honorary Secretary** should be addressed personally to **Mr. C. M. Abeyesinghe, Department of Botany, University of Ceylon, Colombo.**

Enquiries regarding **Orchid Shows** should be addressed to **Gate Muhandiram J. C. S. Fonseka, Greylands, 100-Horton Place, Colombo.**

Advice regarding **Orchid hybrids** may be obtained on application to **Mr. B. O. Ashby, Padukka Group, Padukka.**

Information concerning the **Orchid Circle Library** may be obtained from **Dr. E. Soysa, 32-Barnes Place, Colombo.**

**Membership Subscriptions** for 1950 are now due (*local Rs. 5; overseas 10 shillings sterling*). Remittances are payable to the **Honorary Treasurer**, and should be addressed to **Mr. C. M. Abeyesinghe, Department of Botany, University of Ceylon, Colombo**, with a letter of advice stating date of despatch of remittance, how remitted, for what year or years the amount is to be credited, etc., **Overseas remittances** should invariably be remitted by **Money Order**, and *never by cheque*.

Articles, notes and all communications for the **Honorary Editors** of *Orchidologia Zeylanica* should be addressed c/o **Gate Muhandiram J. C. S. Fonseka, Greylands, 100-Horton Place, Colombo**. The Honorary Editors would gratefully appreciate the immediate, or early, despatch of matter for publication in the next issue of this bulletin.

The attention of readers is directed towards the above instructions regarding correspondence intended for the several Honorary Office-bearers who share the work of maintaining the various activities of the Orchid Circle of Ceylon. It is particularly requested that enquiries concerning departments in charge of different Office-bearers should not be included in a single letter, but addressed to the individuals concerned, as detailed above.

Attention to this small matter will be of great assistance to the honorary workers who would be most grateful for such co-operation.—*Editor*.

## A REQUEST TO READERS

Enquiries are received from time to time, particularly from readers overseas, for second-hand copies of our book, **Orchid Culture in Ceylon**, published during the War, in aid of the Red Cross Society, and for back-numbers of **Orchidologia Zeylanica**, which are no longer in print, namely:—

Volume I, Numbers 1, 2, 3, 4;	Volume V, Numbers 1, 2;
Volume II, Numbers 1, 2, 3, 4;	Volume VI, Number 1;
Volume III, Numbers 1, 2, 3, 4;	Volume VII, Numbers 1, 2;
Volume IV, Numbers 1, 2, 3, 4;	Volume XV, Numbers 1, 2.

Readers who are prepared to dispose of any of these back-numbers of **Orchidologia Zeylanica**, or of copies of the book, **Orchid Culture in Ceylon**, are invited to communicate with the Honorary Librarian of the Orchid Circle of Ceylon, **Dr. E. Soysa, 32—Barnes Place, Colombo, Ceylon**, stating what prices they expect for items offered for sale.

Those who have not yet secured the above back-numbers of **Orchidologia Zeylanica**, or old copies of **Orchid Culture in Ceylon**, are requested to notify Dr. Soysa of their requirements. *It should be noted that back-numbers of Orchidologia Zeylanica not listed above are still in print and available from the Hon. Librarian, or from Messrs. H. W. Cave & Co., Colombo, Ceylon.*

The Honorary Librarian of the Orchid Circle of Ceylon hopes to be able to assist readers to **communicate direct with each other regarding the acquisition of published material now out of print** by inserting, in future issues of this bulletin, lists of those who have such publications for sale and those who are in need of them.

May we again remind readers that—

- (a) The Orchid Circle of Ceylon accepts subscriptions for *membership only, i.e.* only from individuals *and not from institutions*. Membership subscription (Rs. 5, local; 10 shillings sterling, overseas) carries a free issue of *Orchidologia Zeylanica*.
- (b) Membership subscription must be made payable to **The Honorary Treasurer, The Orchid Circle of Ceylon, and not to "Orchidologia Zeylanica" or to individuals**. **Overseas remittances should always be sent by Money Order and never by cheque.**
- (c) All remittances should be addressed to the Honorary Treasurer, **Mr. C.M. Abeyesinhe, Department of Botany, University of Ceylon, Colombo**.
- (d) **Subscriptions for Orchidologia Zeylanica from non-members, societies, libraries and other institutions should not be sent to the Orchid Circle of Ceylon, but to Messrs. H. W. Cave & Co., Colombo, Ceylon, to whom all such remittances should be made payable.** Failure to conform to the above procedure may result in much delay and inconvenience, and even of oversight of payments incorrectly remitted or despatched to the wrong address.

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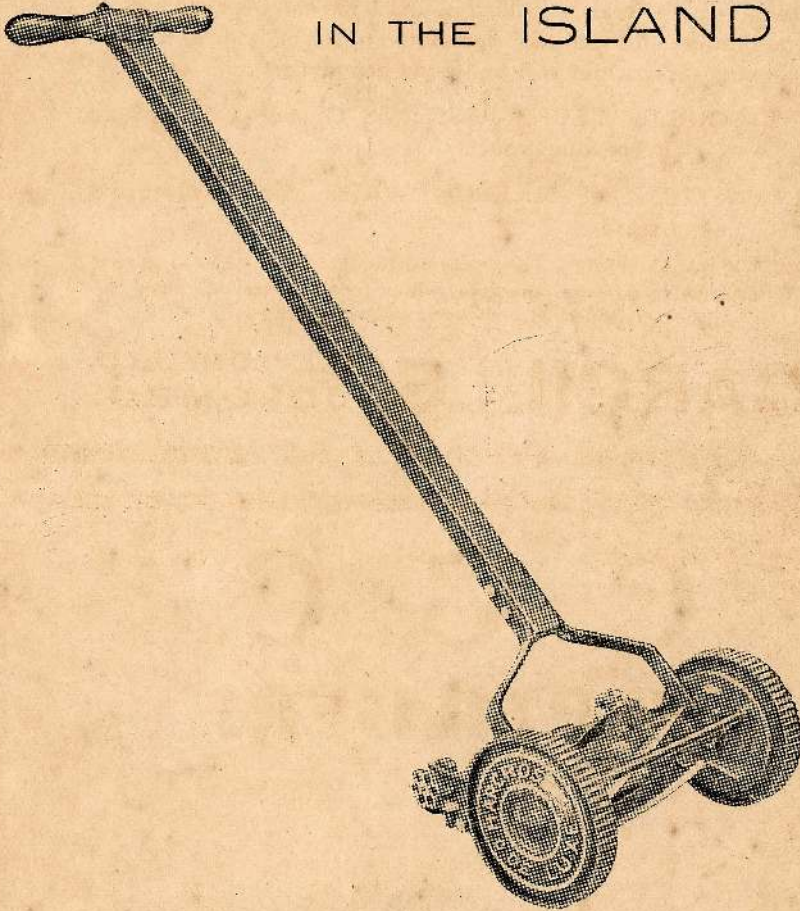
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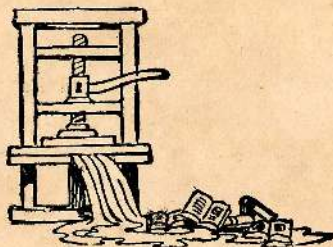
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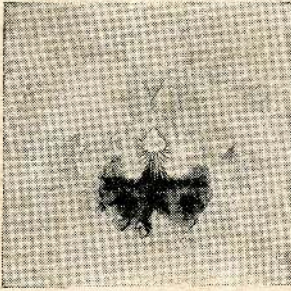
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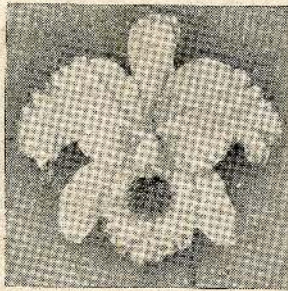
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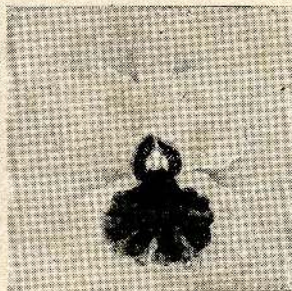
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L-CATT. FIESTA  
R. H. S. A. M. SEPT. 24, '46

The orchids pictured above were flown by Capital Airlines to New York transferred to Pan American World Airways System at LaGuardia Field, flown to Heath Row Airport, England, picked up by our Manager, Mr. J. L. Humphreys, of Armstrong & Brown, Tunbridge Wells, and displayed at fortnightly shows of the Royal Horticultural Society in London. Awards were given as indicated under the pictures.



We shall be glad to recommend you for membership in the Orchid Society of California. Dues are \$4 a year and include six issues of their bi-monthly bulletin "The Orchid Digest." We accept subscriptions to "The Orchid Review," an English publication devoted to orchids and circulating all over the world. Subscription rate \$3.60 annually. Also the "Australian Orchid Review," published quarterly. Subscription rate \$1.20 annually.



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