

ORCHIDS IN NEW ZEALAND



SEPTEMBER/OCTOBER 1983

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ORCHIDS IN NEW ZEALAND

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COVER PHOTO: This unusual modern hybrid Phalaenopsis is in the private collection of Mr Tom French. Photographed by the grower.

UPDATE ON DISA

by George Fuller, New Plymouth

ALGAE

Growth of the disa seedlings over the winter and early spring is not very dramatic but that of green algae, moss and liverwort can be, all in a disturbingly competitive way. I have to date been somewhat hesitant to advocate sterilisation of the mix by boiling prior to sowing but I think that after tests this season, any disadvantages appear to be outweighed by the clean start achieved by the seedlings in sterilised material. Algal growth in unsterilised trials seemed to be particularly rampant and earlier than usual pricking-out may be called for. This is a very exacting task likely to expose the pricker-outer to even greater stress than the tiny seedlings but sometimes there is no alternative though it has been suggested that THIRAM may be a safe control. Trials should be carried out on a small scale first.

If resorting to pricking-out it would be desirable to sterilise the new mix and the best "Instruments" are a pair of pointed sticks or canes about 6mm (¼") in diameter. If there is difficulty in picking up the tiny seedlings, periodic dipping of the points of the "dibbers" in water kept handy in an egg cup will help. However, DON'T prick out unless you have to — this is best delayed until the seedlings are approaching a year old.

INSECTS

One enthusiast has noted small white insects which have aroused concern. When one begins to inspect the mix with a powerful magnifying glass it is like opening the door on a slimy landscape inhabited by grotesque monsters. I can only liken it to the underwater world of boulders and seaweed inhabited by lobsters, etc., and one can only marvel that any seed would survive to germinate but it seems that most of these creatures sustain themselves on dead organic matter and are not a threat to disa. I

have noted grey creatures like tiny fleas and must confess to surprise at the disappearance of a proportion of what is sown as seed but as some of this is invariably empty husks which would be devoured by the scavengers in any case perhaps any loss is not as bad as it first seems.

I have no information on insect threat to seed and certainly haven't experienced total loss due to insects but if one is concerned, one of the mildest yet effective treatments to move them out (but not kill them) is immersion of the container in a weak (transparent like weak tea) solution of condys crystals. I haven't tried this with disa so caution and a small trial is advised. I have heard of damage to young seedlings from insecticides used at recommended strength for orchids, so risks should not be taken. Hopefully we can compile a list of safe treatments as information accumulates.

OVERSEAS

Recent news from Cape Town is that there has been formed a Disa Society which meets regularly to promote all aspects of disa cultivation and study. A considerable amount of time is devoted to workshop — type activities and guidelines have been formed for the recognition of distinctive clones or cultural achievement.

Many readers may be interested to learn that a cultural guide is shortly to be published at very reasonable cost. It is prepared by a very knowledgeable person, Dr L. Vogelpoel and will be very relevant to our conditions. No doubt the best means of acquisition would be to encourage Orchid Societies to obtain bulk purchases of 10 or 20 copies for sale to members. I will record details in this journal as soon as they come to hand.

SEED OFFER

A reminder that the seed offer will be repeated this coming (1984) summer, with the same conditions as detailed in the January/February 1983 issue of Orchids in New Zealand, (page

117) but, please note two changes. One is that the Secretary of the Taranaki Orchid Society is now:

Mr A. Gray,
24b Alberta Road,
NEW PLYMOUTH

The other is that the time — scale for supply will of course move forward one year covering March — May 1983 as delivery period while stocks last with any unfulfilled orders met in March — May 1985, or money, less postage, returned. Orders may be lodged now and will be met in order of receipt **BUT NOT UNTIL THE HARVEST OF MARCH — MAY 1984!**

Please remember that if you hve any observations or questions on disa, I will acknowledge where possible in the journal, but not personally.



Native Orchids of New Zealand

John Johns and Brian Molloy 1983

The combined talents of John Johns, as photographer, and Brian Molloy, as botanist and writer, have resulted in this beautiful and informative book of 124 pages published by A. H. & A. W. Reed Limited. Included are 37 photographs in black and white and 120 in colour. The latter are noteworthy for accuracy of colour and remarkable detail. The text updates available information and also contains much new material based on the authors' observations.

Part I contains an account of the orchid family, a description accompanied by illustrations of the parts of the orchid plant, and an account of the number, distribution and significant features of New Zealand orchids.

In Part II, which comprises the major section of the book, 60 species of our native orchids are not only illustrated in colour but for each there is a description of the plant, notes on distribution, on time of flowering, on the meaning of the name and on other points of interest. Particularly valuable is the treatment of the large genera, *Pterostylis*, *Thelymitra* and *Corybas* which have always been regarded as difficult. The species of each genus are organised into groups and then the distinguishing features of the members of each group are noted. This system together with the very detailed illustrations allows more certain identification of a species and consequently will aid in the establishment of more accurate distribution records and possibly the recognition of additional taxa.

In Part III there is an account of the distribution pattern of different orchid species throughout the New Zealand Botanical Region, an account with illustrations of the different habitats that the orchids occupy, which today includes the new habitats of exotic conifer forests and pasture land, notes on the origin and relationships of our orchids, on methods of cultivation, on conservation, and on techniques and equipment for photographing them. There is also a check-list of species, as well as a list of those not illustrated in the book, and a list of popular, including Maori names; also an account of the origin and meaning of New Zealand orchid names, biographical notes on people responsible for these names and notes on the classification of New Zealand orchids. Lastly there is a glossary, a list of selected references and an index.

Thus the book is indispensable as a standard reference work for anyone interested in New Zealand orchids, as well as being a valuable addition to any Library on aesthetic grounds. The price of \$29.95 represents very good value for money.

Ella D. Campbell

OTAGORCHIDS

by M. McDonald

Few societies could boast a couple who have created bouquets of orchids for the Queen and Princess Alexandra, and who were presented to Princess Anne for their floral work with Kenyan orchids. Yet these have been just single incidents in the orchiding experience of Otago Orchid Club President, Stan Ombler and his wife.

What does the Otago Club achieve, when not recounting the fascinating travels of its members? You may have read of Dr. Ian St. George's astounding discovery of *Drimoanthus adversus* in the Catlins forest; which led the local news Editor to comment that it was "of insufficient general interest". From chats with non-orchidists in Dunedin I could perhaps suggest that he does not know how well his own newspaper is read! Orchidists often team up with the naturalist Field Club to trips to Mt. Cargill and other environs, showing there is a real interest in native orchids in Otago.

Otago hobbyists, and there are about 40 in the Club, encourage each other to diversify from Cymbidiums and we are having real success with *Cattleya* and *Odontoglossum* alliances, *Miltonias*, paphs and so on. Secretary, Lyn Young, has 70 non-cymbidium genera in his glasshouse at Mosgiel. Its a real treat to explore some of the 3 x 4m or so houses, minimally heated; to about 10° celsius.

Midwinter's evening saw a bumper number turn up at our Mornington Baptist Church rooms; 30 members and visitors and a dozen flowering plants, mostly from Mrs Wotton's collection. Alan Houston appeared with an *Odontioda*-*Odontoglossum* hybrid, in two pots! The contraption needed some explanation, but we now accept it was to keep the plant upright. Mr Young flowered *miltonia* "Woodland's Charm" on a very small but keen plant that shouldn't flower for another 15 months. Lyn explained the background of this deep ox-red and later we saw a slide of a mature "Woodland's Charm" on the slide programme, to our intense interest.

Having got Melanie's spiel about the Palmerston North A.G.M. finished relatively painlessly, we set up the evening's entertainment, one of Ron Maunder's slide programmes.

The initiative of Lyn, President Stan and a few helpers meant the show was supplemented by a heavy Otago influence. We thought the slides were poor, out of focus, until the bashful operator de-fogged the lens and went merrily through the sequence again. As Wilde said in Arizona, "please don't shoot the pianist — he's doing his best"!

With a more appreciative audience, President Stan was the enlightened narrator, torch in hand. However, he wasn't using it! He and others filled out the script, which makes these programmes much more worthwhile when we rely on Mr Maunder's slides rather than physically present speakers. Otago did its bit, "breaching privilege" perhaps, in adding a few slides to the programme.

On account of this author's now-national reputation as a parochial, chipped-on-the-shoulder, pro-Southerner; yes I'm proud of my door's cartoon: "If a team with one Southlander can beat the Lions; think what a team of 15 Southlander's can do"! I fear it is in appropriate to further publicise Otago's gripes. I shall therefore refuse to yodel about our experiences, particularly with buying orchids, largely through catalogues, and finding by trial and at times error, those who will and will not receive subsequent orders.

Hey! I've finally found something that Otago has in common with Northerners, and tact prevents me from squawking about it!

Cymbidium Culture Notes

by Gordon Maney of Palmerston North

SEPTEMBER – OCTOBER

By now the early flowering plants, those that flower in May, June, July, will have been potted on, or repotted. However, a word of warning. Always look first at the root system, to see whether the new green root tips are showing, in other words, that they are really active, otherwise leave until they are.

If you don't, you will get bulb shrivel, the roots will rot, and the plant will take a long time to recover; no matter how careful you are.

When I cut up plants, I try to put them into a shaded place and just spray over the leaves for about three weeks, they soon recover and the plant never really looks back.

You will be surprised to find that quite a number of your plants are better left until January, or even February, before dividing.

Because September/October is the flush of our flowering season, its a very busy one for most growers; tying up those spikes that are still coming, keeping the benches and walks damped down at all times, and spraying and feeding.

A dry feed of four parts blood, four parts Super and one part Potash, a tablespoon to a 25 cm pot sprinkled round each plant, starting 1st September. Because you will be watering more during September and October, also feed with Lush or any other good liquid feed, such as Nitro-phoska, etc., correctly proportioning *nutrients, light and water*. With the use of scientific feeding formulas, a neutral compost is best, for one then deals with no unknown factors.

Remember to keep up the throwing of slug bait around each week. Also keep spraying for Red Spider.

List of O.C.N.Z. Judges as at June 1983

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REGION 2

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Judges: T. French (Registrar), Mrs P. Boon (Dep. Reg.), G. Boon, Ms. C. Brooke, Ms. B. Watkins, G. Bruce, C. Coles, R. Watkins, P. Whittaker.

REGION 4

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Judges: B. Clark (Registrar), R.R. Bickerstaff (Dep. Reg), W.L. Goodwin (Hawkes Bay), Ms R. Bell (Poverty Bay), G. Grimson (Poverty Bay), L. London (Poverty Bay).

Fragrance in the lives and identities of orchids

Our thanks to Ralph T. Holman of the Orchid Society of Minnesota for the following article.

A controversial, but generally held principle in biology states that if a substance or a structure occurs in a living organism, it must have a function. It must occur for a reason, because development of parts which do not participate in the life process are detrimental because they cost the organism energy without the profit of a function. Therefore, when biochemists detect strange and new substances, they ponder about the reasons for their occurrence and their functions.

The fragrances of flowers are understood as one means of attracting pollinators from a distance. They are chemical messages sent by the flower out into the world in search of an insect, who desires more of the attractive substance and homes in on its source. In his efforts to gather food or to enjoy the intoxicating fragrance, he manages to transport pollen from anther to stigma and from flower to flower, accomplishing a necessary step in the sexual life of the plant. In the orchids, this is often a very specific mechanism, because only certain insects can accomplish the pollen transfer of a given species of orchid because of the limits in the geometry of the flower, and because of the size, shape and behaviour of the insect. The motivation of the insect to visit the flower is the first step in the chain of activity leading to the pollination of the orchid, assuring the continuation of that species. To get his attention, the insect must be offered something he needs or wants.

Dodson and his students have observed that in one species of orchids, the pollination occurs within a short span of time in the darkness, just before dawn, during the brief period when the flower is fragrant, accomplished by one species of solitary bee. They also observed that the solitary bees perform a strange scratching of the flower and wiping of

the forelegs upon their heavy porous hind legs, suggesting collection and storage of perfume oils by the bee. They made analysis of the fragrances of the bees legs and found the odor pattern to be similar to that of the flower. That bee was known to visit three species of orchid and some bees had the odor of Orchid A, some Orchid B and some Orchid C, some A+B, some A+C, and some B+C, but none of the bees had odor of A+B+C. In the sociology of these solitary bees, once in a lifetime the males gather together in a swarm and go hunting for the solitary females. Swarming male bees had the odor of all three orchids! Thus, the collection of odor from the three orchid species had made them recognizable and attractive to each other, and essential step in their reproductive cycle.

If the odor brings a specific pollinator to the flower, it is a distinguishing characteristic of the species, acting together with geometry and timing of the flower to facilitate pollen transfer. Since the time of Linneaus, botanists have been accustomed to using the structure of the flower in classifying the species, and perhaps the time has come to also apply the chemistry of the flower to the determination of relationships and identity. Analysis of floral odor also offers the advantage that the results can be expressed in quantitative terms, putting numbers on relationships.

Our objective is to use floral odor composition as the basis of quantitative chemical taxonomy of orchids, to help determine relationships when the traditional approach is inadequate. For this purpose, we developed a method of collecting floral odors which can be used in the field and which can be used by anyone without special equipment or training. We treat glass fibre paper with an odor-free grease in which floral odors dissolve. The greased paper is kept in an aluminium foil envelope which serves as the container for moderate sized orchids during the 24 hour collection of odor. The envelope is sealed, labelled and returned by mail to our laboratory where the essential oils (fragrances) are distilled and analyzed by a gas chromatograph-mass spectrometer-computer system. The many components are separated and the mass spectrum of each component against a library of 33,000 spectra of known substances and gives tentative identifications. The occurrence of the same compounds in the same proportions indicates identity of two fragrances (Relationship = 1). If none of the components of one fragrance match any of the components of another fragrance the relationship is zero. Intermediate values can be calculated to indicate degree of relationship.

Fragrances of a few hundred species of orchids have been analyzed, and the data are ready for evaluation and publication. In some genera, the fragrances seem to be very different from species to species, that is, the species have few components in common. In such cases, the fragrance pattern is a good identifier of the species. In other genera, the species have many components in common, indicating strong relationships among them. In some cases fragrances have been useful in determining whether newly discovered species should be considered a species or a variety.

In my work on the native *Cypripediums*, I have noticed that the roots, stems and leaves had a distinctive

odor. Recently, we investigated the odor using the same technique described above for flowers. We found that the odor contained one major compound, and the compound was the same for *C. reginae*, *C. calceolus*, *C. acaule* and *C. candidum*. This raises the question why would roots emanate an odor — it can have nothing to do with attracting pollinators! Perhaps this is an example of a plant defense odor such as is evident in tomatoes and chrysanthemums. This is quite plausible, for *C. reginae* and *C. calceolus* are known to produce substances which induce strong allergic reactions in some people, and the responsible compounds have been isolated and identified as larger, less volatile compounds with features in common with our defense substance.

Orchids produce a wide variety of fragrant substances. Some species produce one pattern during the day and another at night. Some turn on during the night, others during the day.

We are currently studying the day-night fragrances and the change in fragrance from opening of the flower until wilting. This research has been supported in the past by the American Orchid Society, but now depends on private contributions for continuation. Contributions will be gratefully received and acknowledged in our publications. Amateur orchid growers can contribute to this study by furnishing plants for our time study investigations or by collecting fragrances for us from their plants using supplies we provide. We are searching for the less common species and genera. Correspondence is welcome from interested persons.

Additional information on fragrance, pollinators and the pollination process as it is used in the classification of orchids can be obtained from the following sources;

"The Orchids: Natural History and Classification" by Robert Dressler
"Flower Analysis of New Orchids"
by Rudolph Schlechter

ORCHID HUNTING IN NEW ZEALAND

Wakarara — Ruahine Ranges

Ros Bickerstaff, 12 Enfield Road, Napier.

For those who are unfamiliar with this area, a little bit of direction finding may be useful. It is reached either off Highway 2 or Highway 50. From the former it is about 40 km directly inland from Waipawa, or from Waipukurau, Highway 50 is crossed between Onga Onga and Tikokino. Follow up the Waipawa River, a tributary of the Tukituki River, past Springhill to a few kilometres above the confluence of the Makarora River, with the Waipawa River, where the road diverges at the Makarora School. Take the left hand turning into the Triple-X area. Cross the farmland (getting the farmer's permission first) to the bush-line. At Triple-X there is a hut for use by hunters, not far from the creek. This can be forded at the roadway if one wants to go further up the Waipawa Valley. If there has been rain, this ford can be difficult to cross or even impassable. (Our Society went out to the Waipawa Valley a few years ago and had some interesting experiences crossing this ford, some cars having to be man-handled to get them out!). Both these valleys have native orchids in them.

On the edge of the bush was a felled tree trunk which was badly rotted. On its topside, grass and ferns were growing, and amongst this debris were the leaves of *Chiloglottis cornuta*. There were quite a number of small plants, but only one was showing signs of flowering. It was November, so I would have expected more to have been flowering, although in some places they flower in the early New Year. Further along the track on the shady northern face of a damp bank were sheets of *Corybas macranthus* clinging to a mossy cover. None were in flower. Some had very large leaves (7-8 cm). I collected a few specimens which flowered for me later, with the typical *Corybas macranthus* flower.

Close by was a patch of *Pterostylis* low down on the face of the clay bank. In places the plants spread out on to the pumicy silt beside the track, although a few clumps, the size of one's fist, were lodged in little hollows on the upper part of the bank. As many of these plants were in flower, it was easy to recognise them as *Pterostylis banksii* var. *patens*. Here and there at the top of the bank were seen *Thelymitra longifolia* growing in the leaf mould close to the bank's edge. There were no further varieties of orchids seen until we got

down to the stream's edge.

A few hundred metres upstream, where some branches were overhanging a flat area, both varieties of *Earina* were seen growing together, intertangled, on these branches. A few of the *Earina mucronata* had flowers showing; most had buds plumping up so that in a couple of weeks' time there would be a wonderful display. Both the *E. mucronata* and the *E. autumnalis* had very long canes showing that they had been growing undisturbed for many years. (A group of seedlings I have been growing at home for just over eight years are only 15-20 cm long. However, some I collected about 1958, now make long canes each year, each new growth being longer than the previous).

All the way upstream there were many large patches of *Pterostylis banksii* var. *patens* growing in shady spots at the foot of the slope near the stream's bank. Amongst these plants I saw one with a slightly different leaf shape — not enough to stand out from the others, but just a little different. It was not in flower but had a tight bud half developed. I collected it to try to flower at home. (It did alright, and turned out to be *P. irsoniana* — the only specimen I have seen in this area).

As there appeared to be no other kinds of orchids showing up on this right bank of the river I crossed to the left bank. The bush here was more open and got more sunlight as it was able to get the direct rays facing as it did towards the north. On a steep slope was growing a number of Whitey-wood trees (mahoe, *Melicytus ramiflorus*) as second growth, covering a former slip. They were mostly four to five metres tall and many had small clumps of *Earina mucronata*, 10 cm or so across, clinging to their branches about three metres from the ground. Nothing else was visible until I came around a small bend where the ground flattened out. There were much older trees growing here and the ground was quite swampy, my feet sank to just over ankle depth at each step, filling my boots with "goeey" mud. In the midst of this squelchy mess was an old log crumbling with rot, but literally covered with young and old *Chiloglottis cornuta*, hundreds of them. At the slightest touch parts of the log fell away exposing dozens of large and small tuberous bulbs. Search as I did all around this area, I couldn't find any other plants of this genus. It is strange how outcrops of one species can be found growing isolated from others of its kind. The conditions must have been just right for some wind-blown seed to land on a suitable host to start germination.

Not far away was a narrow washout which acted as a drainage channel for the nearby slopes. Its sides were mainly clay; this was not easily visible as both banks were densely covered with "spider orchids", *Corybas macranthus*. These were some of the largest I had seen, being nearly twice as big as those seen earlier near the edge of the bush, many were over 20 cm in stem length, with old flower stems rising well above the leaves, about 30 cm from seed pod to the clay. Being well-shaded at all times and being constantly moist may have encouraged this phenomenal growth.

I followed up this washout and soon came into open paddocks clear of bush. Here were a few goats which quickly moved away. Probably they were there to keep the blackberry down as there were a few bushes on the sides of the slopes. On a couple of stumps I saw *thelymitras* growing, one looking very healthy but the other was very stunted, so much so that it was a wonder that it was able to keep alive. As I approached the crown of the hill I started to see the onion-like foliage and dried seedheads of *Prasophillum colensoi* with dried remains of their upturned lips still attached, helping to identify the species. They were scattered over the crown of the hill, mainly singly, rarely in groups of more than three. Also, were seen small clumps of *thelymitra* interspersed among the *prasophillum*. Many of these were approaching flowering size and appeared slightly different from the *Thelymitra longifolia* I had seen lower down the hill, even the remains of old seedheads seemed different, so I collected a few plants to grown on at home. These turned out to be *Thelymitra formosa*. (William Colenso is stated to have found this species "In clayey ground, *Fagus* woods, high land between Norsewood and Dannevirke, Waipawa County, 1882; flowering in December: W.C.").

Time was fast running out, so I had to make a beeline back to the car. On the way I found a farm track, which helped to speed my return. At numerous parts on this track were springs oozing out from the clay banks; many of these spots had become moss-covered and had more of the large-leaved *Corybas macranthus* growing on them. These spots were mostly sheltered from the sun, so I was surprised to find many clumps of *Thelymitra longifolia*, "the sun orchid", growing in these shady banks, but, as most naturalists soon find out — Nature is full of surprises!



Paphs under lights or what to do when you run out of space in the greenhouse

Our thanks to Marilyn B. Zimmer of the Illowa Orchid Society for the following article.

After several years of orchid growing in a greenhouse I (as all hooked orchidists) ran out of space. Since expanding the greenhouse was out of the question, a light set-up in the basement was the solution. Now after 10 years of growing paphiopedilums in the basement I really prefer it to greenhouse growing.

Paphs really don't pout if the humidity is too low. They enjoy the constant light and constant temperatures and in a basement they are convenient to repot in January and February when you don't want to brave the zero temperatures to go to a greenhouse. They are extremely rewarding plants to grow under lights for many reasons. First, they are neat plants- no stretching, arching spikes to grow into tubes, and all are approximately the same size. Also when growing under lights insect problems are practically non-existent, and paphs are supposedly virus free. There is never a time that I don't have them in bloom in the basement. Some of the successive bloomers regularly stay in bloom for 14 to 15 months.

My collection of 150 paphs is housed in two separate growing areas in the basement. Our house is 53 years old and, consequently, the basement is not heated well, and this gives the plants a nice drop in night temperature. During mid-winter the temperature in one section of the basement will drop to 58 degrees, and of course, this is raised during the day. During the summer the house is air-conditioned and the paphs don't have to suffer through a hot midwestern summer.

One growing area is a small square space beneath the stairs which holds three banks of six 48" fixtures, or 12 Vita-lite power twist tubes, arranged in a U-shape. Beneath the bench a 21" square window fan runs on low speed continuously. The other area is a two tiered old closet which holds two 48" fixtures per shelf, or eight Vita-lites. A

fan runs in this area also, and, of course, all background walls are painted white for reflection. There is a master timer control on the wall and all outlets are wired into this timer so the amount of light is consistent. From November until March the plants receive 12 hours of light and from March through October 14 hours. Over the years I have experimented with giving longer hours of light but the only difference I could see was in the power bill.

All plants have humidity trays beneath them filled with lava rock. Covering the trays in one section are shelves from old freezers salvaged from a supermarket. The other section has my self-designed rack made with a frame of wood covered with a hardware cloth. These humidity trays provide adequate humidity for paphs.

Since my growing conditions are almost constant, the care of the plants is scheduled or routine. For the major part of the year all paphs are watered with a hose twice a week on Monday and Thursday. The only time the watering schedule is changed is during the high-humidity days of spring and summer when the air conditioning is not running. During a week of 70 degree temperatures with 90% humidity then the watering is cut to once a week.

All of my paphs are potted in the same mix. After years of experimenting with fancy formulas, I now feel that a standard commercial orchid mix with the medium size bark is as good as the others and much easier. All of my pots are plastic and none are bigger than six

inches. I use no pot shards or rocks in the bottom.

The only differentiation I make between wet and dry growers is their bench placement. All of the brachypetalum section sit in the front of the bench where they get the most air movement and dry out faster. For years the *bellatulum* group gave me problems, but after attending the Bangkok World Orchid Congress and learning how these gems grow in nature the problem was solved. They now are placed in the warmest, breeziest place in the light set-up and they bloom regularly. They also are given a top dressing of dolomite lime after repotting in the spring and again in the fall.

The *chamberlainianum* group also sit where there is good air movement along with *sukhakulii* and *fairieanum*. Complex hybrids sit wherever there is room, and cool growers such as *haynaldianum* and *phillipinense* sit next to a northern outside wall where the temperatures are a wee bit cooler. However, I must admit a defeat with some types under lights. I have resorted to putting some of the *parishii* and *rothchildianum* types into the greenhouse and they seem to do better.

Paph seedlings also grow well under lights with just a bit more water than the adults. Seedlings right out of flask are put into 4" community pots with seedling mix, mixed half and half with regular mix. They are also misted in between waterings.

My potting is rather scheduled also. Under my somewhat wet growing conditions it is essential to pot once a year. Generally, I start repotting in January after a plant has flowered and continue until March or April. Last year I was delayed in my repotting and could see the difference. Plants that had been in pots 12 to 13 months had beautiful root systems. Fourteen month plants showed disaster.

My fertilization is scheduled also. I fertilize at half strength with Peters 30-10-10 once a month. More than this seems to give leaf tip damage. I give

even less than half-strength (perhaps 1/4 strength) during the winter months as the plants are not receiving much light.

While my method of growing will not work for everyone, if you are running out of greenhouse space, if you are a new orchid grower, or if you just like to experiment with different culture, I can strongly recommend trying paphiopedilums under lights in a basement.

Want to know more about the paphiopedilum genus? Below are a few suggestions of books available to extend your present knowledge:

- "Encyclopedia of Cultivated Orchids"
by Alex Hawkes
- "Home Orchid Growing"
by Rebecca Northern
- "The Manual of Cultivated Orchid Species"
by Bechtel, Cribb & Lauernt
- "Orchid Culture and Techniques"
by Joe Grezaffi, III
- "Thailand: The World of Orchids"
by Rapee Sagarik
- "Indian Orchids: Guide I"
by Udai C. Pradhan
- "The Orchid Growers Manual"
by B.S. Williams
- "Asian Orchids"
Notes on the Subgenus
Brachypetalum"
by Dr D.J. Erdman
- "The Enchantment of Paphiopedilums"
by Edna Ratcliffe
- "Paphiopedilum"
by T.C. Hernstrom
- "Growing Orchids: Cymbidiums and Slippers"
by J.N. Rentoul
- "Flora of Malaya: Orchids"
by Holttum
- "The Genus Paphiopedilum"
by the Judging Committee of the
Sub-Tropical Orchid Council,
Queensland, Australia
- "Culture Notes"
by the South Florida Orchid Society
- "A Survey of the Slipper Orchids"
by Waters and Waters

SPRING SHOWS

AUCKLAND ORCHID CLUB

9th September, 10 a.m. to 9 p.m.
10th September, 10 a.m. to 6 p.m.
11th September, 10 a.m. to 4 p.m.
Henderson Recreation Centre

THAMES VALLEY ORCHID SOCIETY

16th September, 10 a.m. to 8 p.m.
17th September, 10 a.m. to 4 p.m.
Thames War Memorial Hall

HUTT VALLEY ORCHID CIRCLE

17th September, 11 a.m. to 5 p.m.
18th September, 12 noon to 5 p.m.
Hutt Valley Horticultural Hall

WHANGAREI ORCHID SOCIETY

16th September, 12 noon to 8 p.m.
17th September, 10 a.m. to 5 p.m.
18th September, 10 a.m. to 4 p.m.
Forum North

MARLBOROUGH ORCHID SOCIETY

17th September, 11 a.m. to 9 p.m.
Held in conjunction with Marlborough Horticultural Society Annual Show Centennial hall, Blenheim

CANTERBURY ORCHID SOCIETY

17th September, 1 p.m. to 9 p.m.
18th September, 10 a.m. to 4 p.m.
Horticultural Hall, Christchurch

SOUTH AUCKLAND ORCHID SOCIETY

17th September, 1 p.m. to 5 p.m.
18th September, 10 a.m. to 4 p.m.
Papakura Community Hall

TAURANGA AND BAY OF PLENTY ORCHID SOCIETIES

23rd September, 10 a.m. to 9 p.m.
24th September, 10 a.m. to 9 p.m.
25th September, 10 a.m. to 4 p.m.
Tauranga Town Hall

HAWKE'S BAY ORCHID SOCIETY

23rd September, 1 p.m. to 8.30 p.m.
24th September, 10.30 a.m. to 8 p.m.
25th September, 10 a.m. to 4 p.m.
Hastings Cultural Centre

NEW ZEALAND ORCHID SOCIETY

23rd September, 10 a.m. to 9 p.m.
24th September, 10 a.m. to 6 p.m.
25th September, 10 a.m. to 5 p.m.
Mount Albert War Memorial Hall.
21st Sept. Setting up and
22nd Sept. Judging.

POVERTY BAY EAST COAST ORCHID SOCIETY

23rd September, 12 noon to 9 p.m.
24th September, 10 a.m. to 6 p.m.
25th September, 10 a.m. to 4 p.m.
Archery Club Hall, Gisborne

WANGANUI ORCHID CLUB

24th September, 12 noon to 5 p.m.
25th September, 9 a.m. to 5 p.m.
Memorial Hall, Wanganui

GOLDEN COAST ORCHID SOCIETY

29th September, 9 a.m. to 8.30 p.m.

30th September, 9 a.m. to 5.30 p.m.

1st October, 9 a.m. to 6 p.m.

Coastlands Shopping Complex, Paraparaumu.

WAIKATO ORCHID SOCIETY

30th September, 1 p.m. to 8.30 p.m.
1st October, 10 a.m. to 6 p.m.
2nd October, 10 a.m. to 4 p.m.
Te Rapa Racecourse — Centennial Lounge.

WAIARARAPA ORCHID CIRCLE

30th September, 12 noon to 9 p.m.
1st October, 10 a.m. to 5 p.m.
2nd October, 10 a.m. to 4 p.m.
Masterton Town Hall

NELSON ORCHID SOCIETY

1st October, 9 a.m. to 6 p.m.
2nd October, 10 a.m. to 4 p.m.
Nayland College, Stoke

MANAWATU ORCHID SOCIETY

7th October, 2 p.m. to 8 p.m.
8th October, 10 a.m. to 5 p.m.
9th October, 11 a.m. to 4 p.m.
Girls Highschool Hall,
Fitzherbert Avenue.

NORTH SHORE ORCHID SOCIETY

7th October, 1 p.m. to 9 p.m.
8th October, 10 a.m. to 5.30 p.m.
9th October, 10 a.m. to 4.30 p.m.
A.T.I. Hall, Northcote.

SOUTH TARANAKI ORCHID SOCIETY

8th October, 1 p.m. to 5.30 p.m.
9th October, 10 a.m. to 4.30 p.m.
Hawera Community Centre

TARANAKI ORCHID SOCIETY

14th October, 1 p.m. to 9 p.m.
15th October, 10 a.m. to 8.30 p.m.
16th October, 10 a.m. to 4 p.m.
Queen's Hall, New Plymouth

DANNEVIRKE & DISTRICT ORCHID SOCIETY

15th October, 10 a.m. to 5 p.m.
Manchester Unity Hall
Dannevirke

ROTORUA ORCHID SOCIETY

15th October, 12 noon to 8 p.m.
16th October, 10 a.m. to 5 p.m.
Sportsdome, Rotorua

WELLINGTON ORCHID SOCIETY

22nd October, 11 a.m. to 5 p.m.
23rd October, 11 a.m. to 4 p.m.
St. Oram's College
Lower Hutt

TAUPO ORCHID SOCIETY

28th October, 1 p.m. to 7 p.m.
29th October, 9 a.m. to 5 p.m.
Taupo Town Hall

STRATFORD ORCHID SOCIETY

30th October, 10 a.m. to 4 p.m.
Avon School Hall

HUTT VALLEY ORCHID CIRCLE

12th November, 11 a.m. to 5 p.m.
13th November, 12 noon to 5 p.m.
In conjunction with Horticulture Society
Rose Show.
Hutt Valley Horticultural Hall.

Orchids round the world

Part 1

Miss J. Braddley of Masterton is at present on a six month wander round the world and prior to her departure promised to write a series of articles of interest to orchid readers — this is the first.

Mansell & Hatcher Ltd.

Wednesday 20th July 1983

I spent a very enjoyable afternoon at Craggwood Nurseries, have been free run of an exceptional *Odontoglossum* Alliance and *Cymbidium* establishment. David Stead made me most welcome and spent time showing me around the nursery and discussing the future of orchids throughout the world.

Starting from the beginning, I was shown a brilliant display of *odontoglossums* in the 'stock' house. David Stead also believes, like Keith Andrews, in not breeding too far beyond the natural features of the species. Some of his most impressive plants have been crosses between *Od. tigrinum* Sp. f1 hybrids. All seeds are germinated and raised in their laboratory, using flasks with the agar set on the side wall this worked at from a side angle — found to be more hygienic. A banana based medium is used successfully across the board for all genera germinated. The flasks are initially stored on racks lined with silver foil and lit by Endura warm-white 75 - 85 watt tubes. Temperature is maintained in the range 15° min — 32°C max. Glass flasks are used for home nursery production — however plastic flasks are found to have a weight advantage for overseas air-freight.

Limited meristemming is done by the laboratory — usually limited to tan or gold *odontoglossum* so material is slow in natural production, with only one or two growths being formed per season and once obtained, the material is hard to sterilize.

Once deflasked the tiny plants are planted in hygenic trays which are placed on a damp capillary mat which is essential in winter to maintain a high humidity as otherwise the underbence heating would place the plants under considerable stress. Once acclimatised to the environment outside the flask and established as an individual plant, they are transferred to small pots from which they are sold usually at a mature flowering stage. Shading of the growing plants in considerable, using either wooden laths or a sarlon type material. The small houses are very well ventilated with opening ridges, and again copious amounts of water are to be found in under-bench reserves in each house. Maintenance of cool atmosphere is essential for the growth of *odontoglossums* thus the constant air movement and high humidity is an important factor in growth.

A bark, charcoal and perlite media mix is used for both *odontoglossums* and *cymbidiums*, with a liquid fertilizer supplemented by osmacote.

Cymbidiums are also grown in the nursery, but as expected give less return per unit bench space. It has also been found that hobbyists are turning away from the standard towards the miniature thus breeding has been redirected along these lines. The mature plants are kept in a well ventilated ridge and furrow style house with an open end, the other end containing a large extractor fan. Overhead misting is utilized to water and cool the plants which stand on wire mesh benches which also facilitates air movement. As with our present season, spiking of plants has been unseasonable early — the very warm spring and summer may have been an important factor.

David Stead also stressed the importance of maintaining healthy specimens of genera species with the rapidly increasing import restrictions he is now becoming interested in further multiplication of such plants and has a reasonable range available for sale to the hobbyist.

To be continued

A Bit About Nutrients

by P.C. Tomlinson Wellington O.S.

Nutrition studies have indicated that orchids are no different from other plants with respect to their nutrient requirements, although because they are slow growers, generally take longer to show deficiencies etc. In general, the faster a plant grows, the greater is the need for nutrients. Different species and genera may have different requirements. One study showed that nitrogen and phosphate deficiencies were most apparent in cattleya seedlings, with lesser requirements for potassium, calcium and magnesium. However, potassium was found to be especially important for *Dendrobium phalaenopsis* hybrids. In bark mixes, the level of nitrogen definitely affected the growth and flower production. The minor elements seldom caused problems.

It has been found that the pH of the water supply may vary greatly with no particular significance itself in the growth of orchids. *It is the mineral content of the water that can react with added nutrients at particular pHs, or supply others in excess, that is critical.* Of all the nutrients required by plants, it was shown that nitrates were the most easily washed out of the mix by watering. The bark fungus present in bark mixes itself has a high nitrogen requirement, and therefore such mixes require additional nitrogen supplement. In one analysis, over a period of 18 to 20 months, the dry weight of fungus grown per pot of bark was found to be 50% as great as dry weight of orchid tissue, other than flowers, produced at the same time.

The mass of fungus was, however, found to contain twice as much nitrogen as the orchid tissue. A fertiliser with a nitrogen : phosphate : potash ratio of 6:1:1 was suggested for plants growing in bark for this reason; this ratio is much higher for nitrogen than the 3:1:1 ratio widely recommended. Perhaps a further look at our nitrogen applications to bark mixes may be appropriate.

The nitrogen application can be related to the rate of bark decomposition; those mixes which break down quickly needing more. The greater proportion of finer sized bark particles may increase decomposition.

Some study has shown that foliar uptake of phosphate does occur, although the significance of this total phosphate uptake was not mentioned. Interestingly in this work it was found cattleya roots 3 - 4 years old still actively absorbed nutrients; therefore in repotting they should not be removed unless obviously in poor condition.

It is important to realise that high strength applications can cause damage. They may be alright when first applied. However, if the mix is allowed to dry out, the nutrient concentration in the water remaining in the mix can increase to levels where root damage can occur. With heavy fertiliser applications, ensure the container water content of the mix is kept at an optimum level. If mixes dry out, or dry conditions are likely to occur (such as your going away on holiday) lower the strength of the fertiliser applied. For many, a little often is the best policy.

Angraecum Veitchii

by Roger Cooper Wellington O.S.

This is an old primary hybrid dating from 1899. The parent species are *Angraecum eburnum* and *A. sesquipedale*, both found in Madagascar. The flower is a glowing ivory white, especially in the dusk and has a strong fragrance. It is long-lasting - five or six weeks or longer.

Culture is as for Cattleyas with intermediate temperature range (15 - 30C), but the plant likes a high bright position in the glasshouse. Our plant regularly produces two spikes with seven or eight large flowers on each.

One of the two parent species, *A. sesquipedale* is probably the most popular *Angraecum* in cultivation. The other, *A. sesquipedale* is probably the

most spectacular species with the largest flowers. It is famous for a prediction made by Charles Darwin in 1862 and which, incidentally, is a good demonstration of the scientific method. Darwin made the first, and still the most detailed and comprehensive, study of the structure and design of orchid flowers in relation to their pollination by insects. He found that nectar collects at the base of the long spur which hangs down from the back of the lip of *Angraecum* and that visiting insects (moths and butterflies) would need to extend their proboscis (a long narrow tube that coils up beneath the head when not in use) to the base of the spur in order to extract the nectar. In so doing, they pollinate the flower. However, when given a flower of *A. sesquipedale* by James Bateman he found the spur to be excessively long, required a moth with a proboscis at least 25cm (11.5inches) long.

No such moth was known at the time and Darwin predicted that a hawk moth (or sphinx moth) would eventually be found with a proboscis of the required length. Eventually, some 40 years later, a moth with a proboscis of exactly the right length was found in Madagascar and was appropriately named *Xanthopan morgani praedicta*.

The value of a scientific hypothesis depends in part on its predictive power, the ability to make predictions which can be used to test the hypothesis. Darwin had enough faith in his hypothesis to make the prediction which at the time of his death had still not been verified.

A free circulation of air is absolutely necessary for orchids, as well as an abundance of light, but cold draughts and also the burning effect of the sun's rays, must be avoided

Williams

Ten New Orchid Judges Appointed

After an eighteen month break in the appointment of O.C.N.Z. judges ten Associate judges passed the written examination which is now required by the Orchid Council, and have also completed the three year practical requirement.

Region 1: P. Lines, Mrs D. Spehr, Mrs M. Wildman, Mrs J. Wray.

Region 3: Mrs E. Reardon.

Region 4: J. Baldwin, D. Burgess, Mrs E. Campbell.

Region 5: R. Quinn, C. Waayer.

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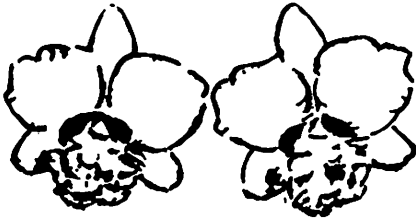
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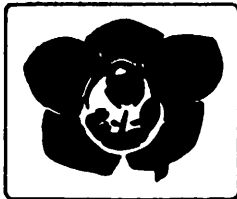
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Burgundian 'Chateau' — Brown

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Clarisse Carlton 'Tia Maria' — Green Polychrome

(Claret Princess x Lustrous) 'jocelyn' — Pink (early)

Coral Sea 'triumph' — Pink

Fort George 'Greenacres' — Green

Lillian Stewart 'Kalimna' — Pink

San Francisco 'The Beat' — Pink Polychrome

(San Miguel x Artisan) 'Green Princess' — Green

Yankee Whaler 'South Pacific' — Yellow/Green

(Great Day x Bernice Farrell) — Soft Green

Gwynneth Reed 'Greenstone' — Soft Green

Happy Days 'Goliath' — Early Green

Lester — Pink

Malland 'Mem Caroline Hargraves' — Yellow

Marisa 'Santa Barara' — Yellow

William Hertrich 'Sea Nymph' — Green

Lillian Stewart 'Santa Barbara' — Soft Pink

Great Day 'In the Morning' — White

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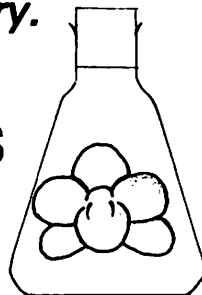
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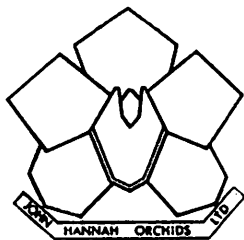
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