ORCHIDS IN NEW ZEALAND

March-April, 1978

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PUKEKURA CORNER

by George Fuller, N.D.H. (N.Z.), Curator Pukekura Park, New Plymouth.

In attending the 9th World Orchid Conference held recently in Bangkok, one of my intentions was to keep an eye open for species native to Thailand and if possible bring some back for the Park collection. Not only was this part of the venture a success, but our party was treated to the sight of spectacular displays of the finest strap-leaf Vanda hybrids in the world. The Thais are masters in this field. The other major orchid group grown there is the hard-cane Dendrobium section which is also cultivated in shade-house structures by the hectare for cut flowers.

Lack of time precluded collecting in the wild (Bangkok is in the centre of a vast plain of rice), though one of our party ventured to the proximity of the northern border with Burma and had the thrill of collecting Paphiopedilum bellatulum growing in full scorching sunlight at the top of a massive limestone outcrop on which even Euphorbias were feeling the heat! No wonder it is so prone to rotting in cultivation here.

I had to be content with collecting plants from the open air trade stalls at the show. One gem that I found was Dendrobium bellatulum with pseudo-bulbs only 5 cm tall and attractive flowers almost as much across. On the same stall were the pure alba forms of Paphiopedilum niveum in flower but at $150 each they did not find their way into the Park collection. Several other Thai Paphs were a good buy at a few dollars per plant and I was even tempted to duplicate some that we already have for they were obviously distinct clones.

Facilities were available at the show (30 km distant from the Conference) for obtaining inspection and health certificates for plants for export but they had a novel twist. Each carton was wired and secured with a lead seal! We found later that this was to prevent drug trafficking, for Thailand is a major source of opium.

We also visited several commercial nurseries very appropriately called 'farms' locally) and saw strap-leaved Vandas and Ascocendas of world renown grown to perfection. What a breath-taking sight. The Park now has a selection of these latter semi-dwarf hybrids and we will wait with great anticipation for their flowering.

It was a great personal thrill to see at last after 30 years wait, the legendary Vanda sanderana in bloom. Said by many to be the most beautiful of all orchid species, it is grown and has been used for hybridizing very extensively in Thailand though it comes from the Phillippine Islands. (I thorouglhy recommend reading the incredible story of its discovery and introduction as recorded in the book "Frederick Sander, The Orchid King.") The wait was worthwhile and it was a further satisfaction to be able to bring back a handsome flowering specimen.

Finally, I was able to select a very choice dark blue specimen of the superb Thailand native, Vanda coerulea, of which we saw some wonderful plants.

Photo: G. Fuller.

Vanda coerulea

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CONTENTS

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AWARD JUDGING

by Albert H. Blackmore, Registrar General.

The Orchid Council of New Zealand, through its judging organisation, is now ready to serve orchid growers.

The three years that has been taken to prepare Standards, Regulations and training judges have been busy for many and I can assure readers that those who have attained full judge qualification are diligent, having spent two years meeting many times in groups discussing merits and demerits of orchid flowers and plants of as many genera as they could lay their hands on, practise judging them on the points system on Standards adopted by the Orchid Council's Executive and their Committee of experts appointed for the purpose.

REGIONAL JUDGING PANELS

At present, to make judging possible at least in the North Island, sufficient judges have been trained to allow setting up four Regional Judging Panels, each controlled by a Regional Registrar, who will be responsible to arrange and conduct judgings within his or her region, when on completion of which, shall forward all results with colour slides of the flower judged to the Registrar General, whose duties will be explained later in this article.

Region known as No. 1 covers Auckland and North Auckland.

Regional Registrar, Mrs. Edna Willetts, with deputy, L. B. Rea, both members of North Shore Orchid Society.

No. 2 covers Waikato, King Country and Bay of Plenty.

Regional Registrar, I. D. James, with D. Bell as deputy, both members of Waikato Orchid Society.

No. 3 covers North and South Taranaki.

Regional Registrar, Tom French, with Mrs. Pam Boon as deputy, both members of Taranaki Orchid Society.

No. 4 covers Wellington, Golden Coast, Manawatu, Wanganui, Wairarapa, Hawke's Bay and Poverty Bay. This is a large area and hope is held that the latter two will have their own judges in a year or two.

Regional Registrar, Mrs. J. Mendoza, with G. A. Maney as deputy. Mrs. Mendoza is a member of Wellington Orchid Society. Mr. Maney is a member of Manawatu Orchid Society.

ASSOCIATE JUDGES (Trainees)

Associate Judges are preparing, especially in Hawke's Bay, Poverty Bay, as mentioned before, but also in Wanganui and Whangarei, all very keen to become proficient.

Records are kept of all practise judging, these being in the hands of the Registrar General and his deputy. With these records, it is possible to follow, through the points system, the progress of every judge. Even after promotion a judge will be expected to continue classes of practise judging with all records being forwarded to the Registrar General. This will ensure that all are kept up to date in all aspects of judging. Regional Registrars are expected to convene classes and also to report to the Registrar General of those who attend and those who do not. Award Judging must and will be of a high standard.

ORCHID JUDGING COMMITTEE

Although all final decisions will have to be approved by the Orchid Council's Executive, a Judging Committee has been appointed under the Chairmanship of the Registrar General. This Committee will deal with policy matters and is responsible to the Executive on all matters pertaining to judging. This Judging Committee of five are appointed each year by the Executive from nominees from Regional Judging Panel members. The present being Registrar General A. H. Blackmore with deputy F. E. J. Mason, both of North Shore Orchid Society; I. D. James, Waikato; Tom French, Taranaki; Mrs. J. Mendoza, Wellington.

AWARD JUDGING RECORDS

All records of Award judging are kept by the Registrar General and his Deputy, who will keep in close touch with the Council's Executive. They will see that all matters of Standards, Regulations and Judging are up to date and that these are strictly attended to.

4. A well drained mix containing a lot of broken down leaf mold seems to give the best results. You usually find Caladenias growing in litter under light scrub.

C. lyallu — is a small plant often only a few centimetres tall. It has as many as four small white to pink flowers about two centimetres across. It has a long tapering leaf covered in hairs as do nearly all Caladenias. Found in both islands under light scrub usually at higher altitudes.

C. carnea — is much more common in my area. The leaf is very thin, long and wavy and covered in hairs. One, sometimes more, typical Caladenia flowers, which vary greatly in colour. Occasionally almost pink, but white or greenish colours predominate. Two rows of calli are prominent on the labellum.

It seems to be most common growing in litter under light scrub but I've also found specimens on moss covered boulders in the Kaimai river beds.

SOCIETY NEWS

WANGANUI ORCHID CLUB

The new Secretary of the above club is now Mr. M. L. Fletcher, 30 Seddon St., Wanganui. All future correspondence, please address to Mr. Fletcher.

WAIKATO SEMINAR

July 22, 1978. This will be held in conjunction with the Waikato Orchid Society's Winter Show and Social.

Topic: Orchids Today. Where are we with orchids today? What does the future hold?

Further information is available from the Waikato Orchid Society, P.O. Box 7101, Claudelands, Hamilton.

HAWKE'S BAY ORCHID SOCIETY

We had a fairly successful outing a few weeks back, to the ranges just north of Napier. As the road was not the best, Lofty Dawson, who organised the trip, asked me to stress in our newsletter that the numbers were to be restricted and cars were to be sturdy and capable of travelling over the poor roads. Well, whose car broke down? Yours truly! Away out in the wop wops, miles from anywhere, a few of us in the lead stopped to let the back cars catch up. I had stopped the engine and when the time came to get going again I could not start it. To make matters worse my P76 is an automatic and can't be started by putting it in gear and running it downhill. However, as we had a few more kilometres to go, my passengers and gear were shared around and we got on our way. A couple of fallen trees finally stopped us, but luckily we had only a short distance to go, so we walked the last bit to the river, where we were going to make our base. We collected Earina mucronata and E. autumnalis, Thelymitra longifolia and a couple of other possible species of Thelymitra Microtis unifolia, Caladenia carnea and Corybas triloba. Nothing really spectacular. However, we did have an enjoyable outing, even if one of our party did fall over in the river and get drenched.

When we arrived back at my car it started first pop! I kept the engine running while waiting for my passengers to arrive back — a 40 minute wait, as the last car, with my wife and daughter aboard, had the exhaust pipe fall off and they had to find some wire (luckily they had seen some a short distance back) to tie it up. I went back to find out where they were, as I had seen the dust from their car as it came over the skyline half an hour before. I arrived at the right time — they (all women in their car) had almost completed temporary repairs! We got back to the main road, 30 kilometres away without any further worries. My trouble turned out to be a faulty alternator. The joys of orchid hunting in New Zealand!

ROSS BICKERSTAFF.

COVER PHOTO: by courtesy of Graham Jackson. Dendrobium devonianum, a species which is found in North East India and Burma, has long thin pseudo bulbs about 1 metre long which become pendant from their own weight. Plants are deciduous and bloom on bare canes during early summer. The flowers are pale cream with magenta purple tips on the sepals and petals. This colouring extends to the lip which also has two large orange dots and is finely fringed. The beauitful flowers have caused this orchid to be known in its native land as the 'King of Dendrobes'. This orchid grows in the photographer's own collection.

and a humid atmosphere should be provided during the Summer growing period when liquid feeding will be helpful if light conditions are bright. Feeding under dull conditions will produce forced soft growth which cannot be expected to flower well, if at all. Care must be taken to see that water does not get in the centre of the new growth, and for this reason overhead spraying is not wise.

Repotting is best done after flowering in Spring when the new growth and root activity commences.

ATTENTION PLEASE

Good news for all orchid growers in New Zealand. The time has come for us to move into the wider field of orchid discussion and display.

There was a gap in the world orchid calendar for 1980, so the New Zealand Orchid Council has booked this slot to hold a first ever N.Z. Conference to be held with a first ever National Show. Auckland has been chosen as the venue and the North Shore Orchid Society have been invited to act as hosts.

Their Committee is already hard at work and have secured the Ellerslie Racecourse for the second week in October 1980. The facilities here will be superb for our requirements both for the presentation of papers and the staging of a 3-day National Show. With race meetings scheduled both before and after our Conference, and the famous Ellerslie gardens, there should be plenty to attract overseas visitors. We should certainly attract quite a number from the Pacific basin, the Americans will surely come and the Australians have asked how many our buses will hold as they have already filled one.

Thanks to Allan Jones, a most attractive Conference letterhead is already in the hands of the printer. The main social events will be an opening cocktail party, a closing banquet, and somewhere in between, a Maori hangi.

A permanent Conference Committee to handle all aspects of this exciting event will shortly be appointed and I will report from time to time on their activities. With the assured participation and enthusiasm of all Societies and orchid growers this Conference and Show will consolidate New Zealand's standing in the wider world of orchids.

CALADENIA

by Jim Forrest, Te Puke

Here we have a large genus of about eighty species found mainly in Australia. Some of the most beautiful of all terrestrial orchids are found in this genera. They get their name from KALOS meaning beautiful and DENIA gland, referring to the labellum glands. Only two species are found in New Zealand, and both of these also grow in Australia.

In general, members of this genera grow as solitary individuals or in small groups. Our species are no exception to this form of growth. The tuber is white and round, usually encased in a fibrous sheath. In most species there is a series of these old fibrous sheaths reaching to the surface like a chain. This is not as pronounced in our species.

Only one tuber is produced each year and this grows close to, and slightly below the old one. As a result, the only way of multiplying this genera is from seed. Recently I have had quite good success in raising plants from seed, by sowing it on top of my Caladenia pots which are covered with 5 m.m. of chopped pine-needles to prevent the seed washing away. If you use this method don't mistake the young seedlings for grass which they much resemble. It takes about three to four years to reach flowering size.

Caladenias are difficult to cultivate. This seems to apply to our own as well as the many Australian species. For what it is worth I use the following methods with mine as they produce reasonable results. Hopefully, the seed raised plants may prove easier to handle than field collected specimens.

1. A plastic pot seems best. It appears to restrict extreme drying fluctuations that you get with clay pots.

2. I grow in an unheated glass house as watering can be more strictly controlled. It's very important to keep the leaf growing for as long as possible and this is where I get my best growth.

3. Don't repot annually. If you must, scrape off the top two or three centimetres and replace with new material.

Also they will be responsible in getting Awards publicised throughout the orchid world.

STANDARDS AND REGULATIONS

Standards, being the requirements needed by a flower or plant, have been laid down following those of other countries, with a few additions to bring them up to date to help judgement. All judging is done by the points system. This system helps judges to keep closer to Standards required as these are compiled from experienced world authorities of several generations of orchid growers.

Regulations deal with smooth running of judging, starting from nomination of flower or plant to final conclusion of judging and publication of results, as well as training of judges and their promotion. Also election or appointment to Committees and Panels.

PRINTING STANDARDS AND REGULATIONS

Standards and Regulations are being printed in booklet form. These will be made available to members at cost. I advise getting one as examination of its contents will provide knowledge of Award requirements when plants are being purchased. Apply to your Society's Secretary for the booklet.

Registrar General's personal comments:

I would like to place on record the diligence and happy relationship at all judging classes that I have attended. The system adopted made possible, through long and pleasant debates at classes, a greater appreciation of the quality of the flower under discussion, whether it be poor or good.

Registrars have been trained to control debates, so that all give an opinion and that all listen, with particular surety that no one member controls the discussion. This method will be adopted at all judgings.

I have no hesitation in assuring that judging will be done expertly and I hope that the services will be appreciated and taken advantage of.

As from 1 January, 1978, the subscription rate for the magazine has been increased to $5.50. It is no longer possible to absorb additional costs due to increased postal, printing and production charges.

Your Council was reluctant to take this measure but we cannot operate at a loss.

MY TEN FAVOURITE CYMBIDIUMS

by Kathleen Black, Levin

Our dear Editor delights in making me suffer, by asking me to name my ten favourite Cymbidiums; TEN out of all the lovely clones we know! Added to this, THE ten must be available within New Zealand. This last request easily understood, but not so easily complied with, however, after much soul searching and heart burning, here are MY ten.

JUNGFRAU 'DOS PUEBLOS' AM/AOS, superb white; exquisite form, large in size, free flowering.

BURGUNDIAN 'CHATEAU' FCC/RHS, perfect shape, brilliant copper colour, strong lip and it is free flowering. There are many Burgundians, all beautiful, but we have always considered 'Chateau' to be the best.

FEATHERHILL 'HERITAGE' AM/RHS, AOS, ODC, BM/CSA. Way back in 1964 Best of Show at Santa Barbara, U.S.A. It's not large by today's standard, but the vibrant rose red colour, good form plus straight stem and free flowering habit, more than compensate for its lack in size.

LUCENSE 'GOLIATH'. Early green, long stems carrying up to 18 blooms on mature plants. The flowers are large, remember it is one of the greens requiring shade.

LILLIAN STEWART 'ROSE DURBAR' HCC/-AOS, ODC. Exceptional flower, full round shape, heavy texture, free flowering. Colour outstanding, best described as wine red.

YORK 'GLENDESSARY' AM/AOS, BM/CSA. Beautiful concolour yellow. Late, carries up to 18 blooms on strong stems.

SAN FRANCISCO 'THE BEAT'. Described as a Polychrome, pink washed apricot in colour, strong flower of good shape, late bloomer, never disappoints.

YORK 'SAHARA' BM/CSA. Wonderful rich gold; flowers late for us.

VOLCANO 'MENEHUNE'. Described in some catalogues as 'Brown'. Yes it is brown and it's beautiful!

CALIFORNIA 'PINKATA'. Large clear pink flowers of very good form, late flowering.

A TROPICARIUM

by J. G. McIlwraith, of 27 Judea Street, Tauranga

Months ago I bought 'A Book for Orchid Lovers' which is produced by the South Australian Orchid Club and is a good publication for a modest cost.

One article in it, 'Growing Tropical Orchids Without a Glasshouse', interested me very much. I have always eyed rather enviously some of the warm growing orchids, particularly the Phalaenopsis and some of the Cattleya hybrids, but as I have not even an unheated glasshouse, I had resigned myself to the fact that they were not for me.

However, when I saw this article I decided to have a try at building a Tropicarium based on the principles outlined by Anna Hofner in the above article.

It has now been operating over 9 months (including a winter) and I thought other readers might be interested in the performance and the dimensions.

I thought I may as well design it to house an average height mature orchid in bloom, so I made the height 62 cm and length and width 1 metre and 46 cm respectively.

I thought this floor area would permit me to have 6 or 8 fully grown orchids sheltering through the coldest months, providing I was careful about overcrowding and ventilation.

The frame of the cabinet is of 5 cm x 5 cm dressed pine and for the back I used Pinex Insulating board, painted white for light reasons, and the two sides, front and top, are of 3 mm glass.

The top is just three pieces of glass resting on the frame which gives almost infinite variation in regard to ventilation.

For the bottom I partly copied the original article by providing a metal galvanised tray for about half the floor area, which is in the middle and a piece of 95 mm plywood on either side with holes to let the warm air through as the balance of the floor.

The original Tropicarium recommended the whole floor area be covered with three metal trays each filled with gravel and water to provide humidity.

Having lived in South Australia I was fairly sure that we would never have the low humidity conditions in the Bay of Plenty that Adelaide can get, so I only have this one tray covering half the floor area and through this summer there has been no difficulty keeping the relative humidity between 60% and 70%.

The source of heat is an electric lamp which is housed in a 'hot box' under the cabinet. The lamp is directly under the metal tray, which is filled with gravel and water and is waterproofed, being riveted and soldered on the corners. There are air holes at the bottom of the 'hot box' so air can pass through the warm area into the cabinet.

For heating, Anna Hofner had used two 15 watt bulbs but I started with one 40 watt and kept on going until I finished with a 100 watt. My cabinet was probably much bigger and Adelaide's minimum winter temperatures would be higher than ours.

During the winter this 100 watt lamp burned continuously and it seemed to last about seven weeks before blowing, and from figures given by the local power board, the cost of power was estimated at less than 40 cents per week.

In the middle of winter I found that a hundred watt lamp would heat the 10 cubic foot cabinet to the extent that the temperature rarely fell below 10 deg. C. and during the day would peak at 18 - 21 deg. C. These readings of course would be affected if I allowed too much air to escape through the top.

I tried using a 150 watt lamp but this only seemed to lift the temperature by about 3 deg. C. so for 50% more power cost it did not seem warranted.

After about 3 months of cold weather, the performance of the cabinet was so close to what I had hoped it would be, that I decided to add some refinements. Right from the start I had a minimum and maximum thermometer in the cabinet but with hotter weather approaching I added a hygrometer to keep an eye on the humidity level. This equipment sells for about $11.00.

probably because the cultural requirements are not understood.

Odontoglossum grande has a spike of 3 or 4 large flowers up to 18cm across. The blooms are bright yellow with blotches or bands of chestnut brown, hence the common name of Tiger Orchid. The lip is small and rounded and while still spotted is paler in colour than the rest of the flower.

Another common name given to this orchid is the 'clown orchid' because the centre of the flower looks like a wee man in his yellow and brown striped suit.

To ensure regular flowering these plants require a very decided winter rest. I have found that regular flowering can be obtained by withholding water completely from the time the last flowers are fully open (about mid May) until the new growths in the spring are about 5cm high (Sept.-Oct.) This species which comes from Guatemala will grow well in cool conditions—winter minimum 10 degrees—and with its tough bulbs and leathery leaves will stand higher summer temperatures than other Odontoglossums.

Two other species requiring the same unodont like conditions are O. Insleyi and O. Schlieperianum which also come from Central America. Their flowers are smaller than O. Grande but are similar in colouring and are generally more abundant.

PAPHIOPEDILUM INSIGNE

This plant comes from the Moulmein region of the Himalayas and has now been in cultivation for many years. It is probably the best known of all orchids and certainly one that most people would bring to mind when thinking of 'Ladies' Slippers'. During the orchid heyday of Victorian times, large specimen plants were quite common apparently growing and blooming well. I have read of such specimen plants not having been repotted for up to 20 years! Paph. Insigne is a cool growing orchid—some books suggest the warmest end of the Cymbidium house as an ideal situation. This plant and some of its early hybrids like 'Leeanum' do seem to need cool night temperatures to flower at all well.

A minimum temperature of 8-10 degrees (45-50F) would seem to be most satisfactory. As with all Paphs. shade is needed, particularly in the summer months, but this species does seem to tolerate (and perhaps require) more sunlight than others.

As the plants have no bulbs, no definite resting period is necessary and plants should not be allowed to dry out for long periods. Compost while being moisture retentive should be well drained.

The 10cm flowers are borne singly on a stem of about 23cm length. The dorsal sepal is green with brown spots and a broad white margin around the top edge. The petals and pouch are brown with a margin of green. The whole flower has a glossy appearance as if waxed.

Many named varieties were recorded in earlier days but most would now be lost. The best varieties are 'Harefield Hall' which has larger blooms and 'Sanderae' the albino version which is greenish yellow in colour and without brown markings.

BIFRENARIA HARRISONIAE

The genus Bifrenaria is a small one by orchid standards with only about 10 species known. Nearly all of these have been found in Brazil. Bifrenia are of the same sub-tribe as Lycaste and Anguloa and require generally similar cultural conditions.

The plants have hard four angled pseudobulbs with a single stout leathery leaf which stands stiffly erect. Flowers appear in Spring and are large and fleshy with an appearance similar to a Cymbidium. They are about 7cm across and usually creamy-white with a hairy lip of reddish purple which has deeper veins. The flowers which are always fragrant and are very long lasting, are produced on short stems from the base of the bulbs, usually singly but sometimes in twos.

They will grow well under cool house conditions, though some books advise the warmest end of the cool house. This does not seem critical to me as this plant is another of those requiring a hard cool rest after growth is completed in Autumn to ensure the production of flowers in the Spring.

An open free draining compost is required which should be of lasting materials as plants seem to resent disturbance. Ample moisture

water when it is raining) the water applied early in the day so as to allow time for the pot to only be just damp by nightfall. During very hot and dry weather daily watering may be required. Once every 10 days the plants are watered with plain water, so as to flush from the pot any build up of salt. When the season's growth is completed (the maturation of the terminal leaves will indicate this) watering is reduced, and only sufficient applied to maintain the plants in good condition, but don't stop watering completely, or small flowers and bud drop will result. With the very open mix of low absorbancy used I have found it almost impossible to over water, and it is much easier to squirt the hose over plants in a carefree manner, than to have to worry as to whether water is needed or not.

Ventilation and Humidity: Maintaining humidity is no problem in this part of the country, and relative humidity in my glasshouse seems to always be between 60 and 85%. Sufficient ventilation is given to keep day temperatures to not more than 32 deg. C.

Given suitable growing conditions, hardcane Dendrobiums appear to be relatively free from disease, and normal spray programme seems to take care of any wogs and bugs.

The range of colour and form and time of flowering has been greatly extended over the past year, assisted by the breakthrough in intersectional hybridising. The large round reds and whites have almost reached perfection, but I saw some lovely new hybrids in Australia last year in glowing greens and golds, and some fab concolours, also, Mr. Kev McFarlane tells me that many of these will have the advantage of flowering several times a year.

Beside me as I write, is a three cane plant of Den. Summit bearing three spikes of flowers, a total of 52 blooms (not counting the three I knocked off). The tepals are bright yellow-gold and the large lip, rich purple. The flowers have been open for six weeks, and should last for another two months in good condition.

Yes, hardcane Dendrobiums are worth growing, great fun, and little work for the grower!!

INTERESTING SPECIES

by J. G. Jackson, Palmerston North

COELOGYNE CRISTATA

The Coelogyne are a widely distributed genus, with species being found from China to Fiji. There are over 100 species known but only about 10 are found in collections.

They are bulbous orchids usually with a pair of broad long lasting leaves, and the bulbs are joined by a creeping rhizome. They are normally epiphytic (tree dwelling) but are sometimes lithophytic (rock dwelling). C. cristata itself grows over a wide area but is most commonly collected from high altitudes in the Himalayas of North India. It has been a favourite plant for many years with growers and is often said to be a beginners orchid because of its ability to endure extremes of treatment. Correct growing is of course necessary to ensure good flower production.

The plants grow in tight clusters of shiny green bulbs somewhat like grapes. They do not like disturbance and should only be repotted if really necessary as they do not make a lot of root growth. They are best grown in baskets and it is best to remove and replace some of the compost without removing the plants or disturbing the roots more than can be helped. They enjoy lots of water during the summer growing season but for good flowering a decided rest with cooler temperatures (down to about 4 degrees C) is necessary. Don't water through May/June and then only seldom until after flowering in early spring. Don't be concerned if bulbs shrivel—this will do no harm, and they will soon fatten up when the growing period starts again. Flowers are about 10cm across and a brilliant white with a yellow stripe on the lip. There are usually 2 or 3 to a spike and they are long lasting.

ODONTOGLOSSUM GRANDE

This is one of my favourite orchids and can be rightly considered the finest of the Odontoglossum species, although some botanists consider that it is not really an Odontoglossum at all. It is reputed to be easy to grow and flower, but this theory does not always seem to work out so well in practice,

As the weather warmed up, I knew if I let the 100 watt lamp burn continuously there were going to be days when the cabinet could get too hot in the day time, so the new plug-in type of thermostat to control the lamp seemed to be the answer. These retail for about $19.

The only other refinement I added was a set of castors which make it reasonably easy to adjust light intensity.

Now that it is summer, I have moved most of the orchids out and am making use of the cabinet to bring on back bulbs, seedlings and flasks.

Whilst these refinements do not give complete control over heat, light, humidity and ventilation, they can influence the elements sufficiently to give reasonably acceptable conditions within the cabinet when the outside conditions are quite adverse.

So to those readers who suffer similar pangs of envy when they look at some of the lovely warm growing genera that are available, I would recommend that they have a think about a Tropicarium or Wardian Case.

If the cabinet is to be only used in winter, a thermostat is not really essential. I operated right through the winter without one, so I have no doubt a bit of experimentation with bulb size will produce acceptable conditions in regard to warmth.

READERS' ENQUIRES

Question: I live in an area where we are subject to fairly heavy rainfall, some of the rain squalls being very severe, and these rapidly remove the shading from the roof of my glass house.

I have tried most of the recipes given in orchid books, using whiting with various sticking agents. These seem time consuming to mix, and messy to use. I have tried a commercial brand of shading with little more success. Can you advise of some better method?

Answer (supplied by our technical department): Most of the recipes in orchid and other books are relics of the days when labour was cheap and technology not so advanced. Procure a can of water based plastic paint in the required colour. We use white 'Berger Breeze'. Dilute this with at least 50% water. Some experimenting will be necessary to get the amount of shade you need. Procure an old broom (minus bristles), and tack a piece of carpet around the head. Pour some of the diluted paint into a flat tray, dip carpeted head into this, and apply to glass. An extension to the broom handle can be a help.

If applying to clear glass, two coats may be required to give the depth of shade desired. This coating will withstand quite severe weather, and will, if applied in early summer, gradually wear to give the right shade for winter.

If it has been sufficiently diluted, the shading can be removed easily by directing a stream of water from the hose on to the glass and using a light rubbing action with the broom.

Once a coating has been established, a light application annually of the paint diluted with 75% water will probably be sufficient.

Warning: Don't be tempted to use these paints undiluted: or you will find hand scraping is needed to remove.

We have used this method of shading for the past ten years, and find that 1 litre of paint diluted to make 1¾ litres of shading is more than adequate for a 10 x 5 metre house. We have found this method of shading economical and efficient both in terms of materials and of labour.

Question: I have a few small (3" leaf spread) Phalaenopsis seedlings. Last winter some of the leaves turned a reddish colour, and eventually yellowed and dropped. Can you advise the reason? I could find no signs of insect damage.

Answer: Your seedlings evidently received a chill at some time. Small seedlings of Phalaenopsis require slightly higher temperatures than do adult plants. Hybrids bred for pink and red colour seem more susceptible to damage from low temperatures than do whites and yellows. Provided that a leaf is still left on the plant, and a warm humid protected environment is provided, the plants should soon recover, although, of course, some valuable growing time has been lost.

GROWING HARDCANE DENDROBIUMS CAN BE FUN

by Tom French, New Plymouth.

Horticulturally speaking, hardcane Dendrobiums can best be defined as those of the genus that produce terminal inflorescences, and are mainly endemic to tropical areas.

During a visit to North Queensland in 1972 I saw many fine displays of these lovely orchids, and determined to try growing a few back home in N.Z. In late 1972 a few flasks of quality hybrids were obtained, growth of the seedlings was very rapid, and the first blooms appeared in 1974. Since then many more flasks have come my way, and added diversity of form and colour to the collection, as well as extending the flowering season from early winter through to late summer.

The flowers are very long lasting, both on the plant and when cut, many exceeding the flower life of the ubiquitous Cymbidium. The plants, being sympodial, with a very short connecting rhizome, take up little of the valuable space in the glasshouse.

It has been said that because we, in New Zealand cannot grow hardcane Dendrobes as well as those in more tropical countries that we should not attempt them, but concentrate on those orchids that we can grow so well, such as Cymbidiums. Well, I do grow Cymbids, but I do like variety in my orchids, and even if my Dendrobes don't grow as fabulously as in Cairns or Hawaii, they still grow well enough to please me, and a lot of my friends.

For what they are worth I give my methods of growing these orchids, they may not suit you, or your growing conditions, but they have been devised to give good results with as little effort on my part as possible, in the growing conditions in my glasshouse.

Temperature: For easy, carefree growing it is essential that minimum night temperatures be maintained at 16 deg. C., although some are growing them successfully at much lower temperatures, through much greater care with watering. However, at these lower temperatures growth is much slower. Day temperatures can be allowed to run up to 32 degrees C., and provided humidity is maintained, the plants seem to enjoy the warmth.

Light: In countries where hardcane Dendrobes can be grown out of doors, they can take full sun, but grown under glass a light shade is required, just sufficient so that a distinct shadow is cast when the hand is held above the plants.

Pots and Potting Mix. All my plants are grown in plastic pots, and this does influence the mix used, so if you use clay pots, which have a different rate of drying out, a different mix may also be required. The drainage holes in the pots are always enlarged, as free drainage of water from the pot, and adequate ventilation of the mix is a must for rapid and successful growth. The pot size chosen should just be sufficient to take the root ball of the plant, a 100mm. pot will be right for a three cane flowering plant, and a really big plant with 750mm tall canes will be quite happy in a 150mm pot.

Various potting mixes have been tried, and at present, because of availability, I am using a blend of five parts coarse pumice to one part coarse pine bark, sieved to remove all dust. Red scoria has also been used successfully, as has 3/8 to 3/4 road metal, in fact almost any material that will allow the water to run straight through the mix and out the botom of the pot seems to be O.K., providing the growing conditions are suitable for the plants.

Watering and Fertilising: These two items must go together, as I include the fertiliser in with normal watering. In other words the plants are fed every time they are watered. A high nitrogen soluble fertiliser is added to the water used at no more than 1/8 the recommended strength (any suitable commercial soluble fertiliser will do). So if the instructions say 1 tablespoon of fertiliser to 2 gallons of water, use 1 tablespoon to 16 gallons of water. During active growth the plants are watered on alternate days, (depending on the weather, don't

state. A plant with this mixture of cells can be called neither a diploid or a tetraploid, but is referred to as a chimera, and after several seasons growth usually reverts to the diploid state. We can now see that colchicine conversion gives larger cells — not necessarily more cells, with an increased choromosome count. It is the increased cell size which gives the flowers their more filled in shape and greater substance and size.

Colchicine treatment does not guarantee chromosome doubling in all the plants, and when numbers of treated plants are flowered, a variety of states can be seen. The problem is then how to select the fully converted plants. The most reliable method, and the only method acceptable for labelling a plant a tetraploid scientifically is by making a chromosome count on an actively growing root. This method is time consuming and needs trained personnel and a good microscope for reliable results. Another method which is simpler, and more widely used is the measurement of the size of the leaf stomata in relation to the size of the stomata in the parent plant. This is supposed to be relevant to the doubling in size of the cells during treatment. Many of the newly converted plants being offered are apparently only measured in this fashion, and as there have been few comparative studies between the two methods that give reasonable results, one must tread cautiously when venturing into the unknown.

It is possibly interesting to note at this point that the Royal Horticultural Society will not consider a colchicine converted plant for an award until after three successive years flowering. A case in point was when the converted **Cymbidium parishii** was put up for an award, and this decision was made. Other awarding Societies, so it appears, will consider these plants for an award at a much earlier stage of its flowering life.

Several growers from overseas have been very busy flowering these converted forms in fairly large numbers, and from photographs available are certainly a giant leap forward. These growers, in their foresight, are breeding with these new forms as soon as they can, which brings another interesting point to mind. In the tetraploids that have been interbred for many years, the 80 chromosomes are different, offering a large variety of characteristics available in their offspring. Using the first generation converted parent, there are two sets of 40 identical chromosomes, giving a more limited selection of characters to be passed on to the offspring, in fact, these characters are reinforced by the other member of the pair present. From this, then, the implication could be drawn that should you wish to reinforce a desirable trait of one of the parents, the little used tool in orchid breeding of crossing the siblings back with the parent to strengthen a desirable characteristic, be it colour or stem habit, could be of paramount importance.

There are many arguments over the use of colchicine to convert plants, and the resultant progeny, but those who are making the real progress are those who are actively using colchicine conversion as a matter of course. The faction arguing the hypothetical points, which may have some valid uses later, are missing out now, and shall be hard pressed to catch up with those willing to experiment and take a chance. After all, tetraploid flowers are the flowers of the future.

CULTURE NOTES

by Bruce Douglas

This period generally will be one where your seasons growths start maturing, for perish the thought, winter is round the corner. Am sure somebody goofed with the calendar and left some months out, time has passed so quickly. You probably will not have to be over careful with your watering yet unless we run into a cold, wet spell. You should be thinking of any putty work for the glasshouse etc., polythene for heat conservation or protection. The heating unit, where you need one, should be checked and in running order. I mention these few points now for it is frustrating to wait until the last minute before calling the repair man and then to find you have to go on a long waiting list. It does happen as you may have experienced in past years.

Frost: There may be an early frost somewhere in New Zealand so get your thinking cap on and know just what you are going to do should one come.

Feeding: How well are your orchids growing? Keep up the good work but it may pay to contact your local Orchid Society as some growers change their nutrient formula about this time of the year. Their reason would be that flower and spike formation require different nutrients to that required for good lush growth. Should you change anything make sure you understand why you are doing it. Don't do it just because someone told you to.

Shading: Watch for the sun's weakening and giving a lower light intensity. If you use my 'brew' it should now be starting to weather and soon wear thin. On some types of shading you may have to use a scraper to scrape lines up and down the glass. Shade cloth can be left off more and more if you are using it for shading (except on a shadehouse). The next time it is used it could be over plants or glasshouse for frost control. Keep in mind that we can and often do have an 'Indian Summer'. Don't get caught with it either.

Pests and Fungus Diseases: Pests are still capable of explosive breeding and whatever fungi do they can still do too. So keep on the ball. I read once that some fungal spores germinate if allowed to stay in a droplet of moisture for seven hours. This definitely suggests you must have good air circulation through your orchids especially if you 'overhead' them. Remember to keep up with the latest on these points from your local Orchid Society and that a dirty worker will always have trouble in this area.

Repotting: This should ideally be over now. However some people do still repot at this time of year but as you have not got the same growing time left to establish plants before winter, you would have to nurse them along in all areas except the warm North Island areas. Young plants and propagations could be potted on to keep them growing but this is quite different to a root disturbed plant waiting over the winter before really making roots. There will be some orchids that make visible new roots from under a new lead. Should you not have had other earlier chances to repot you should do them now. I expect (on a quick memory count) they would very largely be warm growing types.

Cymbidium Flower Spikes: During this period it should become apparent what sort of flowering percentage you will have. I hope it is a good one, well up on last year. But if not and you have strong green bulbs with no sign of spikes there are two things you can do. 1. Dry the plants so they show a slight shrivelling and, 2. cool the plants down at night. This may mean you have to put them outside under a hedge (or some such place with a cool draught). I see no reason why the two can not be combined. This would need to be done fairly soon otherwise any resultant spikes would be rather late.

General: Orchid seeds are as tiny as dust particles and I understand a single capsule may contain as many as 3,000,000 seeds (Cymbidiums 750,000). Then for every ovary to be fertilised twenty pollen grains are produced. There can be no hit and miss pollination here hence the insects etc. transfer complete pollen sacs. Orchid seeds do not have any food for germination so in nature they depend on certain fungi (mycorrhiza) to provide the nutrients necessary for germination and the growth of the seedling.

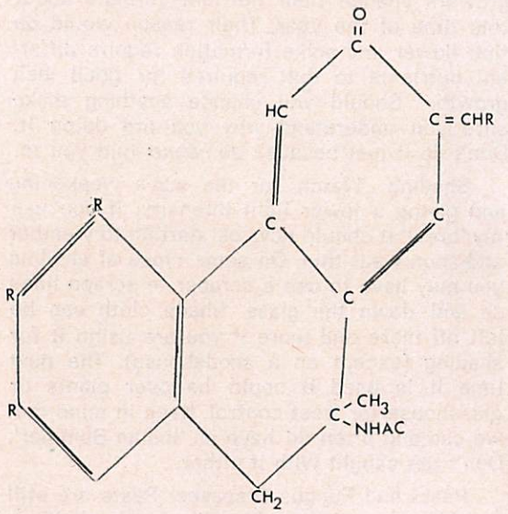
COLCHICINE

by Philip Wyatt, Victoria Rd., R.D. 1, Cambridge.

Tetraploid plants certainly produce bigger and better blooms with far more substance than their diploid counterparts, and therefore are more desirable. But the naturally occurring species are diploids, and it is from these plants that our hybrids originated, so the question arises as to how can we get these tetraploids from the diploid stock available? The first recognised tetraploids were Cymbidiums Alexanderi 'Westonbirt' and Rosanna 'Pinkie'. It is generally accepted however, that they were chance conversions from the seed germination stage, that is, somehow the chromosome number doubled at this point. There have been a few chance tetraploids produced in this manner, but the number is miniscule when compared with the number of hybrids that have been raised over the past 60 years or so. With the widespread use of plant tissue culture, and improved nutrient and propagation techniques, the chances of picking up converted tetraploids increased, but only very slightly, and the main method of obtaining these plants was to breed with known tetraploids. But this meant that not much new genetical material was being introduced, and the colour range remained limited largely to pinks and whites. Never the less science was at work, and during the 1940's and '50's an alkaloid used medically to relieve the symptoms of gout was being experimented with as a chemical means of doubling the chromosome numbers of plants. During this period, some adventurous growers who were aware of the value of tetraploid plants, tried to convert shoots and seedlings by treating them in various ways with colchicine, but there is no conclusive evidence that they were successful. It was not until the 5th World Orchid conference in 1965 that a paper was delivered by Dr. Donald Wimber on the use of colchicine to treat germinating seeds in an attempt to increase the chance of obtaining tetraploid plants. He also worked on converting mericlones to tetraploids, with considerable success. It was not long before commercial tissue culture laboratories seized upon this, and applied it en masse to diploid clones, not always to good clones, and thus adding new blood to well used parents already available. The use of these converted tetraploids is beginning to be felt in a small way now, as the first seedlings from these parents are beginning to filter on to the market.

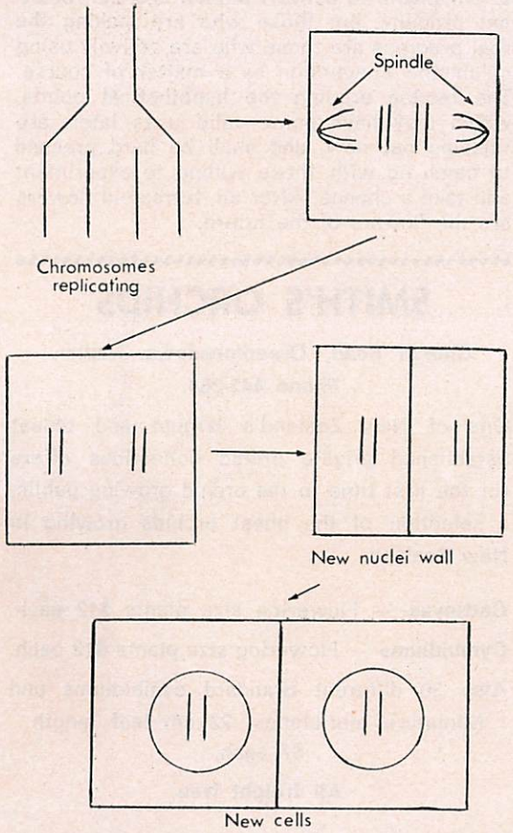
Before looking at colchicine and its mode of action, a word about its toxicity. Colchicine is one of the alkaloids, as is cocaine, morphine, and mescalin — the latter also acts on chromosomes in the same manner as does colchicine, i.e., is a spindle inhibitor. But these other alkaloids are on the forbidden list, yet their toxicity is of an hallucinogenic nature. Just 0.005 grams of colchicine will cause violent diarrhoea, nausea and stomach-ache. (It needs 0.7 gms of mescalin for mild hallucination!) These amounts are less than that used to convert the diploids to tetraploids, so the message is, extreme care, should you be thinking of tinkering around with it.

For the chemists, colchicine has an empirical formula of: $C^{22}H^{25}O^{6}N$.

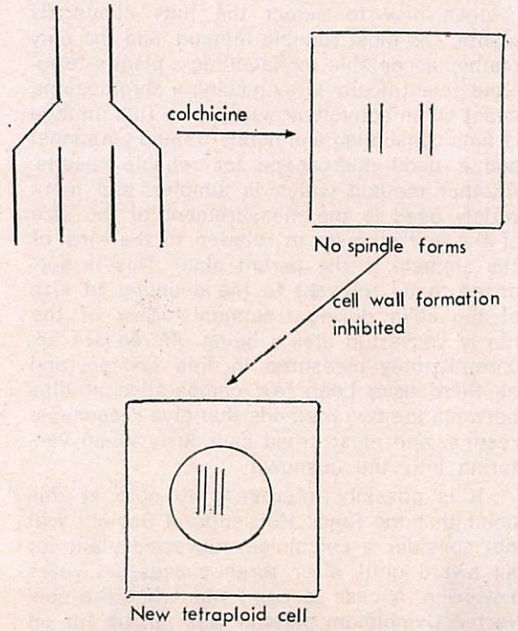


It is found mainly in the plant **Colchicum autumnale** which abounds in meadows and pastures throughout Europe, and has crocus-like flowers, the colour usually of a lilac hue. The colchicine is concentrated in the seeds and corms of the plant. Other plants with small amounts are **Gloriosa superba** and other members of the liliaceae.

A brief look at choromosome replication during cell division will help in understanding the basis of colchicine action. The process of chromosome replication during cell division is called mitosis. Once the chromosomes have replicated themselves, and the nucleus wall has disintegrated, a spindle forms at opposite ends in the cell. These spindles attract one chromosome from each pair so there are two sets of identical chromosomes. At this point a new nucleus wall forms, followed by a new cell wall, giving two new cells with identical genetical material.



Colchicine is a **mitotic spindle inhibitor,** or poison, so when it is added to an actively growing culture it prevents the formation of the spindle, and the chromosomes do not migrate to opposite ends of the cell, so when the nucleus wall forms, only one nucleus contains the chromosomes! The non-functional nucleus fails to stimulate further cell growth for itself.



During this time the mother cell continues to increase in size in preparation for cell division, which does not occur. We now have an enlarged cell with double the number of chromosomes, which continues to divide in the normal fashion as though nothing had happened, and we end up with a polyploid plant. In some plants not all the cells in the plant have been converted to the tetraploid state, some continue to grow and divide in the diploid