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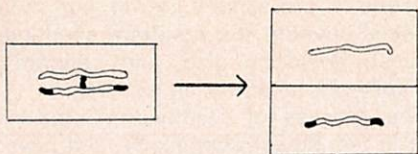
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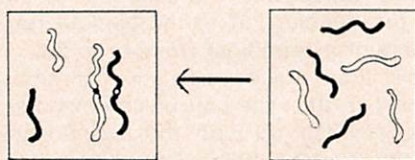
Cut flower exporters

So far we have the same number of chromosomes we started with but in the second stage of meiosis the daughter chromatids in each cell are pulled apart without dividing to form two haploid cells.



As we can see in the diagrams which we shall call a diploid scheme, the chromosomes can pair off quite efficiently.

In a triploid plant we run into a bit of trouble.



The four chromosomes can pair and go through this reduction business, but the remaining extra set are on a limb and are prevented from going through this sequence. It is probably at this point that we get the sterility in triploid plants—the extra chromosome acting as an inhibitor. The chromosomes have also been mixed up during meiosis so after the fertilisation of a self pollinated hybrid, other characteristics that possibly were repressed will be expressed in the daughter plants and their flowers. In the species there is some variation in selfings but this is usually very minor, such as changing a few spots on the flower. Where one of the parents of a cross has a strong desirable characteristic which does not show up in its siblings, to self pollinate the siblings or to cross the sibling back with the parent can reinforce the desirable characteristic in the new batch of seedlings. This unfortunately is a very important genetic tool that is used so very rarely in orchid breeding. When the two gametes come in contact and fertilisation takes place, the two haploid chromosomes can combine to return the ploidity of the cell from haploid to

diploid. When these two sets of chromosomes meet they engage in an intimate exchange of genes in what is termed as crossing over: The two pairs of chromatids come together then one chromatid from each pair crosses.



The chromatids then break at the crossing point to give single chromosomes again, but with the new gene inserted into its sequence.



This crossing over sequence does not happen once but many times over the chromosomes length, thus completely mixing up the genetic sequence of the two parents, so theoretically if you make a two way cross e.g. A x B and B x A, the progeny of both crosses should in the long run turn out the same, but this does not generally seem to happen, probably because no one wants to raise 200,000 plants from the same cross.

Next article—Colchicine

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Thank you Whangarei O.S. for your generous donation of \$50 for the magazine funds.

## ORCHIDS IN NEW ZEALAND

Official publication of the Orchid Council of New Zealand

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## CYMBIDIUM CULTURE

by Russell Martin of McBeans—Australia

Cymbidiums represent approximately 75% of the orchids grown by orchid enthusiasts. Over the past ten years, many changes have been made in the methods of growing these beautiful flowering plants.

**POTS:**—After 20 years of experiments with various types of pots, our entire collection is now potted in soft P.V.C. black plastic pots. The root development is superior to any other type of pot used to date. The old method of crocking pots has been discarded and a wad of fern fibre is now used in conjunction with the plastic pots.

**MIXTURE:**—With the introduction of plastic pots, a variation in the type of mixture has developed. We are having great success with a mixture of—

- 1 part peat moss (imported)
- 1 part tan bark (course grade)
- 2 parts leaf mould (ti-tree, bracken fern or tree fern).
- 2 parts rice hulls OR peanut shells
- 4 parts coarse washed sand (Koo-Wee-Rup)

To this mixture we add a six-inch pot of Magamp to one cubic yard of the above mixture. Magamp is a slow release fertilizer, which is giving outstanding results with Cymbidium growth. The mixture should remain moist at all times but never damp or soggy.

**REPOTTING:**—The best time to break up plants and repot Cymbidiums, is immediately after flowering, or October to December. It is advisable to repot two to three bulb pieces rather than break up plants too small.

**BACK BULBS.** The old bulbs which have lost their foliage can be removed at this time, the old roots and dead leaf husks removed from the bulb which, when placed singly in three to four inch pots, to a depth of half their length, will develop new growth. Potting on of small plants, back bulb propagations or seedlings can be carried out at other times of the year, providing the roots are not disturbed. These plants thrive in glass houses, bush houses, semi-glassed in verandahs, or on

the southern side of an ever-green tree, such as an orange or lemon. They require maximum light from March to August, when a light shading such as plastic paints on the outside of glass or P.V.C., Sarlon Cloth, or Fibre-Glass fly wire can also be used effectively. This shading is intensified to a maximum in December-January and from the end of February a gradual reduction of shading until March, when full light is again beneficial to good growth and flower production.

**WATERING:**—With the above plastic pots and mixtures, we are able to water quite heavily and obtain maximum growth with two waterings per day through the growing period—December-January-February—one watering a day March-April—tapering down to one watering every five or six days during May-June-July. During August-September-October as the flower spikes develop and flower, the watering is increased to one a day. Damping down of the house or growing area and fine spray over the foliage of the Cymbidiums is also beneficial to growth.

**VENTILATION:**—Cymbidiums require maximum ventilation and when grown in glass-houses, permanent ventilators can be left open throughout the year with no detrimental effect to the plants. It is obvious that many more plants grown out of doors develop flower spikes, as against those grown in tight glass-house conditions. The modern trend with glass-houses, is to incorporate an automatic system of ventilation, known as an "evaporate cooler" which circulates moist fresh air throughout the house whenever unsatisfactory conditions prevail.

**PEST CONTROL**—Cymbidiums are not greatly troubled by many pests and regular spraying with a mixture of white oil, clensel and a fungicide i.e. Thiotix, Karathane, or Natriphene, used at recommended strength two or three times a year, should control pests such as scale, red spider, aphid, and fungus. Slugs and snails can be controlled by bait or pellets.

## A BRIEF INTRODUCTION TO CHROMOSOMES

by Philip Wyatt — Hamilton

As more hybrids are being produced, the more complex the parentage becomes, therefore it is most important to know a little about the genetical background, as well as the breeding characteristics of the parents. Also with the increasing interest in hybridising, seed raising, and tissue culture the occurrence of chance tetraploids is on the increase, and this has been hurried on with the increasing use of colchicine to double chromosome counts. Another quirk is the refusal of triploids to cross or self pollinate and set viable seed. Over the next few issues I shall discuss genetics in general terms with relation to breeding orchids.

A chromosome is the structure that is contained in the nucleus of a cell, and carries with it the code which determines the characteristics of the plant, its flowers, its growth habits, in the form of genes. The coding material that makes up these genes exists as a single fibril of Deoxyribonucleic Acid (DNA). The chromosome is the centre of many complex processes in cell division, e.g. meiosis and mitosis, and in the normal cell exists in the diploid (2n) state, or in the polyploids as a triploid (3n), tetraploid, etc. In orchid growing it is these ploidy numbers that we are most concerned with.

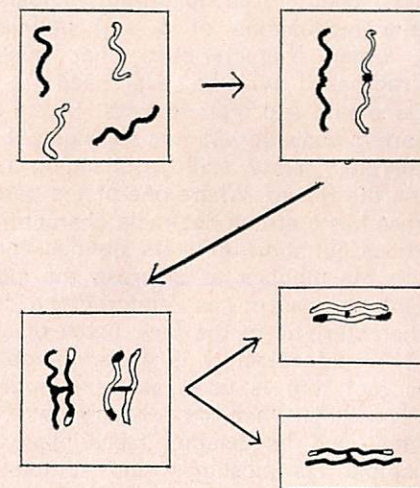
Before we go further, let's look at ploidy. Ploidy refers to the number of sets of chromosomes per cell. The basic number is found in the haploid, referred to as n, which in Cymbidiums is 20 chromosomes. This haploid number of chromosomes is found in the gametes, i.e. the ovules and pollen. Diploid, or 2n, is the number of chromosomes found in the normal plant — the species, and in the Cymbidium this is 40. The tetraploid, or 4n, has double the number of chromosomes found in the normal plant, at 80. These tetraploids usually arise as a chance mutation during the seeding process, such as Wallara 'Gold Nugget' and Early Bird 'Pacific', or as is the case now, after treatment with colchicine, as did Sleeping Dream 'Tetragold.' Triploid plants, have

60 chromosomes, and arise from crossing a diploid with a tetraploid.

Triploids are usually sterile, but should fertile seed develop the resultant seedlings rarely reach flowering size, and generally grow themselves to death at an early age.

The process of fertilisation—the changes seen in the flower chemically, and how this is tied in with the long slow journey of the pollen down the stigma to the gametes, which have only half the normal number of chromosomes is very interesting. How does this happen? In short, meiosis. Meiosis is the process by which the number of chromosomes in cells destined to become the gametes is reduced from the diploid (2n) to the haploid (n), or in the case of a tetraploid from 4n to 2n.

The first stages see the chromosomes stretch out, then the pair of chromosomes from one parent pair up with the chromosomes of the other parent, being joined together by a centromere. The two sets of chromosomes are then divided by a nuclear membrane into two cells. (These pairs of chromosomes then exchange genes, this ensures that the genetic information being transferred is well mixed) the chromosomes in each pair divide themselves into daughter chromatids.



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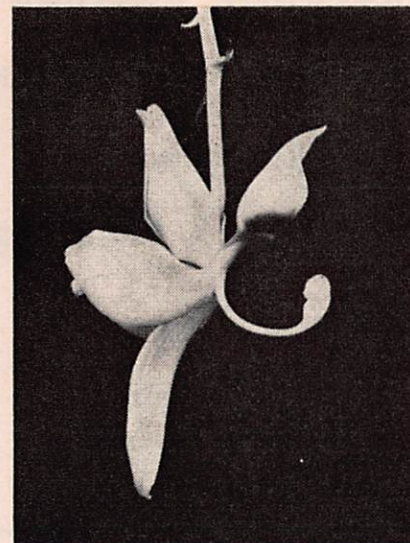
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## PUKEKURA CORNER

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



*Cynoches chlorochilon*. Klotzsch.

Orchids are naughty plants. I find tremendous fascination in studying the peculiarities of their pollinating mechanisms some of which border on the incredible. I find there are species which in a court of law could be accused of causing male insects to commit indecent acts upon them, others guilty of supplying alcoholic beverages outside normal trading hours, not to mention the mental and physical torment (almost grievous bodily harm) inflicted upon the poor mortals who attempt to grow them. The specimen up for sentence today, with the unpronounceable name given above (and there are even worse to follow) is accused of grossly misleading the course of justice—represented by botanists—and dealing in hard narcotics.

Let us get the easy part over first. The members of the genus *Cynoches* are called the 'swan orchids', the reason becoming apparent if the reader inverts the book (or stands on the head) to view the illustration.

(Another example of orchid cussedness). Natural distribution is from Mexico south and east into Colombia and Venezuela, to Peru and Brazil.

Cultivation is in the warm section and presents no special problems provided one notes that the plant is totally deciduous and dormant in the winter and should be hung in a position where it gets no direct watering during this period, otherwise the pseudobulbs may rot very rapidly. In spring, new growth starts and watering and feeding are required until terminal development ceases. Leaves are broad and handsome and flowers are produced on our plant in April or May on the new matured pseudobulb. Leaves may or may not be shed before flowering, depending upon cultural techniques. Several long lasting blooms, each about 10-15 cm across and pale green are produced per spike and these have a pure white lip with a deep green zone at the base.

Now the complications. Most orchids have both male and female reproductive parts in the same flower but in the genus *Cynoches* there are several variations. Each flower is of one sex only, though there are even exceptions to that rule. In some species, the male and female types of flowers are very different from each other and just to complicate matters further there can be variations within each sex within each species. We're not finished yet. Some plants will produce a separate spike each of male and female flowers while yet others may produce both male and female on the same spike. What a botanist's nightmare

But there are greater fascinations to follow when we consider pollination. A bee is attracted to the male flower (illustrated) to scratch in the dark green region at the base of the lip. To do this it must hang upside down and because of poor footing, dangle its posterior. This ultimately bumps and triggers the pollinia release mechanism resulting in it completing its extatic scratch session with a vital burden on its rear-end. During the following three

quarters of an hour the angle of attachment of the pollen mass changes but it is ineffective for several hours because the protective pollen cap requires this amount of time to fall off. By this time the bee is likely to be well away from the first flower but hopefully still looking for another green patch to scratch and by the law of averages should find a female flower.

The female flower, with shorter neck, does not have the elegance and grace of the male, being more of a "stubby duck" than a swan but is still good for a comforting scratch, although still upside down. With better footing provided, all goes well until take off time. Have you ever given a thought to how a bee takes off from an inverted surface after being drugged with scratch while being the involuntary bearer of a terminal burden? There can be only one answer—to fall off!

In falling, the bee whistles past or even slides down the stubby column of the female flower and the pollen mass is caught in a device shaped somewhat like the claws of a hammer, ensuring that it is pulled off and deposited on the stigmatic surface. Bingo! pollination has taken place as the outcome of this complex and remarkable chain of events.

Plants of *Cycnoches chlorochilon* are sometimes offered for sale by those dealing with South American species and it may be listed under the rather frightening synonym of *Cycnoches ventricosum* Batem. var. *chlorochilon* (Klotzsch). If someone can instruct me as to how to carry out a transvestectomy operation on an orchid we may even be able to ensure locally produced seedlings.

**Cover Photo:** *Laelia harpophylla* has slender 22-38cm pseudobulbs with a single swordlike leaf and is one of a genus of about 75 epiphytic species extending from Mexico to Argentine. Photo by courtesy of Allen John, Hawke's Bay Orchid Society, of a plant in the private collection of Russell Hutton.

**Last Issue's cover:** *Maxillaria houtteana* (Rchb.f.) Mostly winter-spring flowering but often almost ever-blooming. Photo by courtesy of G. Fuller.

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## BOOK REVIEW

### "THE FOOD AND HEAT PRODUCING SOLAR GREENHOUSE, DESIGN, CONSTRUCTION OPERATION"

Rick Fisher and Bill Yanda.

Since the commencement of the 'energy crisis' there has been a questioning of the traditional greenhouse, particularly with respect to its thermal efficiency. The book under discussion goes much further by putting forward some valid alternatives. The two authors live in the mountain region of northern New Mexico, where the outdoor harvesting season for tomatoes lasts a mere 5 or 6 weeks! Naturally in such a climate thermal efficiency is important. By using a purely solar heated greenhouse they extended this period by 6 months!

After two introductory chapters, Chapter 3 examines greenhouse design and orientation. Theoretical aspects are discussed clearly and in a practical manner. Chapter 4 gives a particularly good description of how to build a greenhouse, from foundations to final details. Chapter 5 describes the performance to be expected from a basic 'solar greenhouse' and how to improve this still further. This chapter is particularly valuable.

Chapter 6 deals with the day to day running of a greenhouse—potting mixes, fertilisers, pests etc., with particular emphasis on food crops.

Chapter 7 is perhaps the best of all. Entitled "The State of the Art", it examines 29 different greenhouses built by private individuals, research groups, and manufacturers.

Appendices give sun movement charts, planting charts, and a resume of current research in the field.

Many of the designs featured actually contribute heating to the house to which they are attached. It seems probable that a suitable structure could maintain 'warmhouse' conditions without any additional heating in many areas of New Zealand.

The book is produced in a large paperback format (28cm x 21.5 cm) with 161 pages. It contains 108 diagrams and photographs.

If you are thinking of building a greenhouse

or improving an existing one, your first step should be to obtain 'The Solar Greenhouse'—many of the ideas it contains could readily be incorporated to advantage in New Zealand orchid houses.

—N. C. MILLER

"The Food and Heat Producing Solar Greenhouse. Design, Construction, Operation." by Rick Fisher and Bill Yanda.

John Muir Publications 1976 N.Z. price \$7.95. Our copy obtained from Technical Books Ltd.

## ORCHID SCHOLARSHIP

A first for New Zealand. Miss Judy Brophy of New Plymouth has been awarded the Eric Young Orchid Scholarship which entitles her to three years study at the Royal Horticultural Society Gardens at Wisley, England. Judy who comes from Warea, a farming community in Taranaki, served her horticultural apprenticeship with the New Plymouth City Council Parks and Reserves Department which included an exchange period with the Wellington Parks and Reserves. During this period she developed an interest in the Pukekura Park orchid collection and decided to specialise in this field.

We wish you well with your studies and hope that an opportunity arises for you to return to this country.

## SOCIETY NEWS

Advance notice: There is to be a Seminar at Hamilton on 22 July, 1978 in conjunction with the **Waikato Orchid Society's** Winter Show and Social. The topic will be **Orchids Today**, where are we with orchids today and what does the future hold. Keep this day free. Registration of names for mailing list for further information now open. Reply: Waikato Orchid Society, P.O. Box 7101, Claudelands, Hamilton.

Welcome to the **Wellington Orchid Society**. It is a pleasure to hear of new societies being formed to cater for the needs of growing numbers of enthusiastic orchidists over New Zealand.

note. The Garden's main attractions are two-fold; firstly, the landscaped display areas of flowering orchids planted on a gently sloping hillside with masses of contrasting colours to be enjoyed in the open air in full sunshine continuously throughout the year, and secondly, the Water Garden laid out in the valley below the orchids on each side of a running stream and planted with a wide range of tropical and sub-tropical plants. The two areas, the one complimenting the other, provide a garden of beauty and repose which is unrivalled in South East Asia, and which has characteristics not found anywhere else. Naturally this is where some of my past two years savings rapidly vanished. These gardens are close to the Zoo if you need to loose friends or family while signing your traveller's cheques.

I visited other gardens with the same wonderful service and friendliness which is part of a way of life there. One taxi driver we had could not understand why I should want to stop and look at a fallen tree smothered with Dendrobiums—he obviously wasn't an orchid enthusiast!

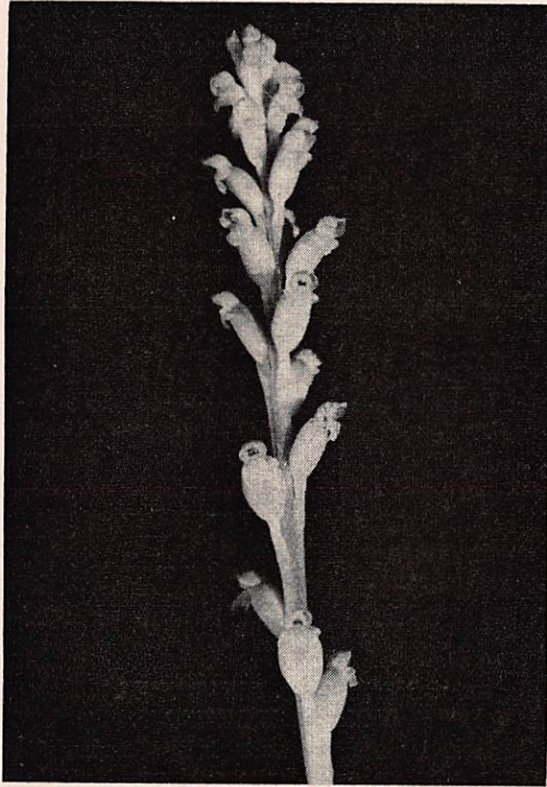
The floral arrangements in the Hotels were beautifully done—all masses of orchids and anthuriums, and the funeral wreaths had to be seen to be believed.

To anyone wishing to have a marvellous holiday while purchasing flowers and plants, I can thoroughly recommend a trip to Singapore.

## PRESEVATION OF NEW ZEALAND ORCHIDS

by Syd Wray.

In areas where many orchids are known only in a single valley or mountain range we need to protect them. In Colombia and other countries we hear that entire colonies of orchids are lost because man has built cities on the sites that the early explorers and collectors described. It is disappointing that orchids were sold in their thousands for just a few brightly coloured beads and the collectors just didn't care and most of the plants died before they reached their destination.



Today those orchids are lost to mankind. In New Zealand, cities are looking for new sites for dumping rubbish and in New Plymouth they now have a 100 acre farm made up of valleys and flats from damp to dry ground (used to stay on this property as a small boy). Many orchids will be lost by bulldozers, earth moving machinery and the like. Growers need to be aware of orchids growing in their area and check out the growing habits, pH of the ground, whether wet or dry in both seasons, how much shade, temperature etc. they require and perhaps we might be able in the future to have parks where we can grow all our natives like they are doing in Australia, Colombia and other countries.

All over the world Orchid Societies are growing bigger and the selfing of species will have to increase to satisfy the demands of growers. Little is known about New Zealand natives and although the orchids may be small it is up to us to preserve them.

## ACIANTHUS

by Jim Forrest, Te Puke

Acianthus gets its name from the Greek akis a point and anthos a flower. This apparently refers to the pointed appearance of the flowers. It is a small genus of about twenty species confined to Australia, New Zealand and New Caledonia. Another feature of the genus is that it mimics insects, and we find "Gnat Orchid", *A. reniformis*, "Mayfly", *A. caudatus*, "Mosquito," *A. exsertus* and so on.

Three species are found in New Zealand, of which two are smaller varieties of Australian species.

Acianthus are small plants but grow in large colonies and are very floriferous.

The solitary leaf is oval to heart shaped and usually near the base of the stem. *A. reniformis* has a distinctive leaf which gives it its name, but *A. fornicatus* is easily mistaken for *Pterostylis trullifolia* or a baby *Corybas* early in the season. In my area *P. trullifolia* and *A. fornicatus* grow at the same time and often together so are easy to mistake. However *P. trullifolia* makes a rosette early and can soon be distinguished—a baby *Corybas* is another matter.

The underground part of the plant is a small round tuber up to five millimetres in diameter. Under favourable conditions it produces several new ones each season.

Flowers are small and reddish to green in colour. Seldom a single flower and can be as many as ten or a dozen.

Acianthus are usually found growing in shade on the floor of the bush, fallen trees or banks.

### Cultivation

Cultivation is fairly easy, and they are seen to their best advantage if grown say in a six or seven inch pot with 20 tubers giving a mass effect. I use a free draining sandy mix of about 50% sand, some peat moss, leaf mould and crushed charcoal. Growth can commence as early as January and once growth starts the pots should be kept moist. During the dormant period they should be kept on

the dry side. I store mine in the basement during this period. Avoid winds and draughts as this genus withers quickly if either are encountered.

### Species

*A. fornicatus* var *sinclairii*—grows up to 10 cm tall. Leaf is from one to three cm long, sessile, usually halfway up stem, and strongly cordate at the base.

Flowers 1-10, green with reddish lip about 6-8 mm long. Common throughout the country it can flower as early as February, but usually May to August.

*A. reniformis* var *oblongus*—very similar to *A. fornicatus* except the leaf which is oblong and as a rule near the ground. It is not as common as the above. Flowers July to September.

*A. vindis*—has been found only in N.W. Nelson. I've never seen this species but understand it has its leaf well up the stem and green flowers, so should be easy to identify. Flowers in summer.

## HADFIELD ORCHIDS

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## Quality Cymbidiums

Mericlones — Seedlings

Back Bulb Propagations

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## SOCIETY NEWS

### TARANAKI ORCHID SOCIETY

Congratulations to Golden Coast Orchid Society for a very successful seminar at Waikanae in July. A bus load from New Plymouth joined the crowds and were very enthusiastic over the way it was run and with the very fine catering provided. We joined with the Wanganui Orchid Society for morning tea on the Saturday—thank you for the hospitality.

### WANGANUI ORCHID CLUB

We are very pleased to see this group active again.

President: Mr. A. W. Larsen

Secretary: Mr. A. L. Galpin, 19 Peat St., Wanganui. Phone 29-471

Meeting Place: Camera Club Rooms, Cooks Gardens.

Time: 8.00 p.m.

Date: 1st Wednesday in the month.

### WELLINGTON ORCHID SOCIETY

President: Mr. F. R. Askin

Secretary: Mr. L. Wyatt, 43 Hardy Street, Waterloo, Lower Hutt. Phone 695-101

Meeting Place: St. Orans College Hall, 550 High Street, Lower Hutt.

Time 8.00 p.m.

Date: First Monday in the month (except January).

### MARLBOROUGH ORCHID SOCIETY

President: Dr. K. H. Patterson

Secretary: Mrs. C. Mitchell, 33 Bomford St, Blenheim. Phone 4526.

Meeting Place: Victoria League Rooms, Blenheim.

Time:

Date: 3rd Thursday in the month.

Sorry M.O.S. seems I made a booeey. The inaugural meeting of this forward moving Society was held in Blenheim not Nelson as previously recorded. Forward moving aptly describes this Society as they already have two Orchid displays to their credit, one at the National Camellia Society and the other at the Horticultural Spring Show. Good work Marlborough. A quick look at the rest of the years programme shows some interesting meetings ahead for this active Society.

# Bangkok World Orchid Exhibition

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JANUARY 15 to FEBRUARY 5

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#### Tour Highlights . . .

—The sights of Singapore, including the famous Mandai Orchid Gardens.

—A visit to the Rose Garden Country Resort, Bangkok, to view the Show.

—A three day trip to Chiang Mai near the Burma Border . . . plus a visit to the local Orchid laboratory.

—See the best of Malaysia on a 7 day luxury coach journey from Bangkok to Singapore. Unforgettable!

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## Thomas Cook

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means the desirable features of the flower's surface which enhance appearances. The flower shall be of good substance and texture, refined quality, firm, fresh, lustrous and without any blemish.

5. FLORIFEROUSNESS. Maximum points 10. All or nearly all flowers on the stem should be open, and points will be allotted for open flowers according to the scale below provided that all flowers be fully open on spikes carrying 13 or less. The spike being judged must carry not less than 7 flowers.

Scale for floriferousness	Size of flower
13 or more flowers 10 points	115 mm and over 10 points
12 flowers 9 points	110 mm and over 9 points
11 flowers 8 points	105 mm and over 8 points
10 flowers 7 points	100 mm and over 7 points
9 flowers 6 points	95 mm and over 6 points
8 flowers 5 points	90 mm and over 5 points
7 flowers 4 points	85 mm and over 4 points
under 7 nil	Under 85 mm nil

6. SIZE OF FLOWER. Maximum points 10. Shall be measured across the visible limits of the petals and shall be allotted in accordance with the scale.

### COMMERCIAL CYMBIDIUM FLOWER GROWERS

I have been taken to task by Commercial flower growers, who have told me that florists have two requirements when buying Cymbidium flowers, namely 1. Attractiveness and 2. Firm substance. Shape they say is not important.

In defence of Award judging and its relationship to florists requirements let me say that an Award judge, keeping strictly to Judging Standards also requires an attractive flower. It must have good colour, firm substance and glistening texture. No unattractive flower can hope to gain an Award. As for shape, I have taken particular notice at Orchid Meetings where a vote is taken on the flowers on display and invariably the winning flower has good shape even when many of the members have little experience. This proves to me that even if a poor shaped flower can be attractive one of good shape is more so.

### THE GROWING PLANT

The Commercial growers want for flower sales, not only attractive flowers, but they also want vigorous growing plants that will

produce many spikes on which there are many flowers.

Except for the number of flowers on each spike, Award judging does not take into consideration plant vigour nor spike numbers except in the case of miniatures and I must accept that in this respect Award judging fails to give the true value of a plant nor can it hope to do so. A miserable plant cannot hope to produce the best flower and the cause of this could be poor growing and not the natural growing quality of the particular clone. It would be most unusual for a poor plant to produce a flower worthy of an Award even though a flower from the same clone well grown could be worthy.

### HYBRIDISTS—THE PRODUCERS OF NEW SEEDLINGS

Although in the case of plant vigour and spike number, judging for Awards is not the complete answer I consider that granting Awards for quality flowers goes a long way in producing flowers suitable for the flower trade. When a seedling gains an Award, the hybridist receives value in money and status as a producer. This naturally encourages hybridists to breed more and better flowers, which, being the source of commercial flower growers and traders income, must show that Awards are of extreme value.

## IMPRESSIONS OF SINGAPORE

by Jennie Meads, 12 Totara Tce., Inglewood

My initial reaction to Singapore's heat and humidity was typically that of an American saying "Oh My God"—to become acclimatized would be difficult. Even though I "ooh"ed and "ah"ed at all the Vandas, Renantandas, Arandas etc. I think we are more fortunate here in New Zealand as it is easier for us to grow a wider range of genera. One nurseryman couldn't understand how we could possibly grow Cymbidiums outside. In Singapore they cannot get the cooler growing genera to flower even if they survive the constant 34 degrees C heat and 85 per cent humidity.

We visited the breathtaking Mandai Orchid Gardens—even my husband sat up and took



**Size:** This is measured across the visible limits of the dorsal sepal and points are allotted against a set scale.

**Substance and Texture:** The flower should have good substance and be firm and fresh without any blemish.

**Stem:** Should be firm enough to support the flower well above the foliage and display the flower effectively.

#### MONTHLY CALENDAR

October: Shade glasshouse.

November: Potting should be completed and sprayed for pests.

December: General maintenance.

January: Spray for pests — blood and bone fertilizer.

February: Watch for buds in leaf axils.

March: Move plants coming into bud and spray for pests.

April: Lime rinse — staking.

May: Staking.

June: Staking — clean plants for shows.

July: The Shows are here — visit them and other growers.

August: Show — consider purchases.

September: Prepare compost.

## SMITH'S ORCHIDS

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One of New Zealand's largest and oldest established private orchid collections offers for the first time to the orchid growing public, a selection of the finest orchids growing in New Zealand:

**Cattleyas** — Flowering size plants \$12 each.

**Cymbidiums** — Flowering size plants \$12 each.

Also 30 different Standard cymbidiums and Miniature mericlones, 22 cm leaf length \$7 each.

All freight free.

## WHAT IS A GOOD CYMBIDIUM?

A. H. Blackmore

Opinions vary. As Registrar of Awards and Prizes for the Orchid Council of New Zealand and a judge, I naturally look to the Standards laid down by the judging fraternity throughout the world, but then again, as one who has produced, packed and sold, both overseas and locally, Cymbidium flowers, I recognise there are other factors that have to be taken into consideration.

Firstly let me deal with Judging Standards.

I quote from the standards laid down by the Orchid Council of New Zealand.

1. **SHAPE OR FORM.** Maximum points 30. To gain a First Class Certificate 25.5 points or over must be obtained, for an Award of Merit 24 or over, for Highly Commended 22.5 or over.

The flower should be symmetrical in form, circular in outline, slightly concave and well balanced. Petals and sepals to be broad, rounded at the distal end, close and evenly spaced. Hooding, furling, reflexing and any other distortions are undesirable. The labellum to be wide and fully displayed—the distal end should not turn under.

2. **COLOUR.** Maximum points 30. To gain an F.C.C. an A.M. or H.C.C. 22.5 points or over must be obtained.

**NO FLOWER CAN GET ANY OF THE ABOVE THREE AWARDS UNLESS IT OBTAINS THE REQUIRED POINTS IN BOTH SHAPE AND COLOUR. SHAPE AND COLOUR ARE IMPORTANT.**

3. **HABIT AND ARRANGEMENT OF INFLORESCENCE.** Maximum points 10. The stem should be sufficiently strong to support the inflorescence unaided. It should be long and preferably arched or may be straight, but not twisted. The flowers should be evenly distributed and well displayed without overlapping or bunching.

4. **SUBSTANCE AND TEXTURE.** Substance means the thickness in the flower. Texture

## SUCCESS WITH PAPHIOPEDILUMS

by N. Donnelly, Australia.

This genus has come into favour over the last few years and growers are learning how easy the plants are to grow. Provided the correct conditions are given and a selection of species and hybrids are grown, flowering can span twelve months of the year.

There are many reasons why growers have failures and these notes which cover fifteen years experience, I trust, will be guidance to successful growing and flowering.

#### Housing

The first requirement is a glasshouse where conditions can be created to attain maximum results. A cool glasshouse will be adequate for most plain green leaved paphs, however the majority of the mottled leaved plants require a maximum of 10° C - 12° C. If you have your eyes on the Champion of the Show, some type of heating will assist in giving taller stems and larger flowers. Lining the house with polythene assists in increasing the temperature.

#### Conditions

These are of vital importance to the plants. Being plants that grow on the forest floor in leaf mould or attached to cliffs, humidity is extremely high and has to be duplicated in the house. This can be done by having solid benches with coarse sand which will hold the moisture or open benches with moisture retaining material underneath in which ferns and shadeloving plants can be grown. In hot weather daily watering of the sand on the benches or under the benches should be carried out to retain a moist atmosphere. In their natural habitat the majority of the plants do not receive direct light only filtered light and the house requires heavy shading from October to April to meet this requirement. After April winter rains will gradually remove the shading and repainting will be carried out again in October. The amount of shade should be enough so that a shadow is barely visible when your hand is moved over the plants on a sunny day. Too much shade will stunt growth and inhibit flowering.



*Paphiopedilum fairrieianum* Pfitz.

#### Selection

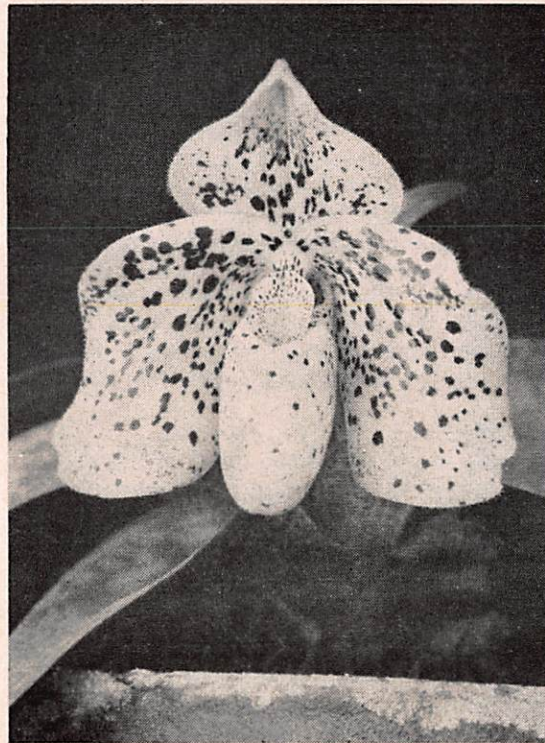
Having sorted out housing and conditions, selection of plants can be considered. These notes will apply to growers who do not have heated glasshouses. If you are starting out, it is recommended that a small collection of say, 10-15 plants be obtained and the growing of these be mastered before outlaying more money on the costly 'show-ponies'. The plants will tell you whether the conditions are suitable

or not. If root growth and foliage are poor, your growing conditions need adjustment, but loss incurred is only minimal. The older hybrids produce many roots whilst the newer hybrids produce less which must be retained if you expect to maintain constant results. The normal run of paph can be purchased from nurserymen and other growers at a cost of \$5 to \$15 dependant on size. Only the last five or so years has a regular supply of seedlings been available from nurserymen, the majority coming from Ratcliffes in England. The Americans and several of our own growers have been busy also, and these too, are on the market. These seedlings can cost anywhere from \$2.50 to \$7.50 each and are sold sometimes in pot size or leafspan, which can be confusing to many beginners. A 5 cm pot could have a plant with a leafspan of 5 cm to 12 cm. It could also be that a 10 cm pot advertised is an overpotted plant so clarify the size of the PLANT not the pot before you purchase and avoid disappointment. Do not buy seedlings because they are a special, go for quality not quantity. Check the parentage and do not take pot luck if you want to give yourself a chance of a good seedling. If you are unsure of your selection, there are many paph growers who will gladly assist you. Seedlings should be flowered at least three times before they are discarded. Before purchasing show paphs you should consider whether the plant is a consistent performer. Knowledge of show judging standards is also an added advantage when considering plant purchase where no track record of that plant can be established. If you aim for the top be prepared to outlay \$50 to \$150 to obtain such plants and your growing will need to be of a high standard to protect such an outlay.

#### Potting

The majority of paph growers are using black polythene pots, which have proven better than the old terracotta type. The polythene pots are cleaner, lighter, warmer and require less watering. Paphs should not be overpotted and the best guide is to use the size pot the roots of the plant will go into without undue pressure or breakage. Drainage can be pine needles or better still dried bracken fern. The pine needles tend to matt whereas the bracken

allows better drainage flow and aeration at the base of the pot. When placed in the pot, the base of the plant should be approx. 1 cm - 2 cm below the rim with compost covering the base of the plant. Potting is usually carried out in October - November each year (or anytime with a heated glasshouse) after shading the house. The plants should be potted firmly which will make the roots force themselves through the compost resulting in stronger foliage and flowers.



*Paphiopedilum bellatulum* Pfitz.

#### Compost

Every grower has a different compost and I can only recommend if you have trouble, seek out a good grower and endeavor to follow his method. Most composts have basic ingredients but in different quantities, and slight modification may be necessary for success. My compost is made up as follows:

- 3 parts fine pine bark
- 2 parts leaf mould
- 1 part coarse sand.

All ingredients are mixed together, bagged and kept from the weather for several weeks before use. Immediately after potting, the plants are given a good watering and left for two weeks before normal watering is carried out.

#### Watering

One of the biggest problems of paph growers is that of watering. Watering to a regular pattern is not on, the plants have to be kept moist, not continually wet. You must make the roots chase the moisture and by watering when necessary you will achieve this. In hot weather this may be twice a week and fortnightly in cold weather. Moisture on the bench will also draw the roots down in the pot which will prevent the development of small roots at the top of the compost. From February onwards flower buds begin to appear in the leaf axis and overhead watering on these plants should cease. Such plants should be grouped together, so water-bath in early April and this will green up the leaves and give a glossy sheen. Several handfuls of lime can be put into a two gallon bucket of water and the plants dipped therein.

#### Fertilizers

Due to regular potting and rich leaf-mould, no fertilizers are required, although a little blood and bone on top of the compost in January will not harm. Paphs that have been overfertilized usually show the damage by dieback at the tips of the leaves and if this continues down the leaf it could spell disaster for the plants.

#### Pests and Diseases

Except for mealybug and scale, paphs are relatively free of pests. Highly poisonous Meta-Systox can be used in October (after potting) and March to control all such pests, however, it is safe to use Malathion regularly to control mealybugs. Scale usually affects yellows, greens and whites so watch these closely. If scale is evident remove by hand. White oil should not be used as it seals the pores of the leaves and as these plants do not have bulbs their leaves are most important. Oc-

asionally rot develops in plants and the use of Thiotox in dry form controls this. Slugs and snails are sometimes a problem but the usual poison pellets can be laid to control these.

#### General Maintenance

Black polythene pots have removed many of the problems associated with terracotta pots. Regular cleansing of the foliage should be carried out, all dead leaves removed and as the flowers grow all stems should be staked in an upright position. The final tying of the stem is not carried out until the flower begins to open or earlier should it tend to droop too far forward. If you intend exhibiting, staking is a must, for if the flower opens in a drooping position the pouch will stand out horizontally to the flower when tied to the stake. This in itself will prevent the judges considering the flower, irrespective of its quality and size.

#### Exhibiting

Many growers fail to prepare their plants prior to exhibiting, such as staking, cleaning pots, cleaning leaves and correct labelling. All these count in a close finish and could well mean the difference of Champion or runner-up. Make your plant look at the judges, if it is worthy of being a Champion then make it look like one.

#### Judging

In judging a paph the allotment of points is given for Shape, Colour, Size, Substance and Texture and Stem.

A brief summary of each is:

**Shape:** The flower should be symmetrical, and approximately circular in form and generally concave. The dorsal sepal should be round and broad whilst the ventral sepal should be rounded, not pointed and fit neatly at the back of the flower to form a lock on the dorsal to stop any reflexing. It should form a background for the pouch and show a neat margin around and below the pouch. From the back view the flower should be smooth and round. The petals should be in balance with the rest of the flower and the pouch in proportion with the other segments.

**Colour:** This should be clear, glistening and fresh not smudgy or blurred with all marking and shadings well defined and evenly distributed.