Orchids
IN NEW ZEALAND

Volume 12 — No. 3
May/June 1986

Burkes Orchids

MINIATURE CYMBIDIUMS

Autumn Flowering Varieties

(75-125mm leaf length)

Mini Splendour 'Easter Show' - red
Sue 'Spring Bride' - oyster shade
Sue 'St. David' - Blush pink
Sue 'St. Joseph' - bronze yellow
Dear Lisa 'Willow' - apple green
Mini Mint 'Kiwi Jade' - pure colour green/yellow

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101-150	$2.40 per plant
151-200	$2.25 per plant
over 200	$2.00 per plant

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Orchids

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NEW ZEALAND ORCHID SOCIETY

VOL. 12, No. 3 **MAY/JUNE 1986**

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Nanodes medusae is a small-growing species from Ecuador. Previously known as an *Epidendrum,* it requires intermediate conditions.

Photography: David Menzies

BACK COVER

Acianthus fornicatus
Acianthus reniformis

Photography: Bob Goodger

The warm growing environment for the Hobbyist

J. Hart
North Shore Orchid Society

Our Editors have been urging me to write an article about my experimental warm growing environment.

At the time Nick and Elizabeth were living in Coatesville and they had constructed a well-insulated house which took as much advantage as possible of passive solar heating.

I decided to follow their lead and after my retirement about four years ago, I commenced the planning stage. My aim was to provide conditions for the tropical low level orchids with some emphasis on Phalaenopsis.

The following points had to be considered:

1. Location
2. Size
3. Shape
4. Energy Conservation
5. Air Movement and Ventilation
6. Heating Source
7. Automation

1. Location

It is important that the site allows as much sunlight as possible to reach the house. This meant removing a dozen tall pine trees which were getting old and dangerous anyway.

I chose a site about four metres from the house. Good shelter was provided by native bush and the neighbour's house. Note that the distance from our house is fairly short to facilitate electrical and water connections.

Shelter from cold winds assists considerably in energy conservation.

2. Size

The rule of thumb when designing a glasshouse "think how big it must be for your needs and multiply by two" did not apply in my case as for various reasons I was restricted to a 5m x 3m site.

The smaller the house the more difficult it is to prevent rapid changes of temperature. However, this can be eased somewhat by increasing the height thereby increasing the total cubic capacity.

3. Shape or configuration

The main considerations are:

a) To prevent overheating in summer.
b) To take advantage of as much winter sun as possible.
c) To be able to control light during all seasons.

In summer when the temperatures are high a conventional "glasshouse" can heat up to temperatures prohibiting growth and inducing a high rate of transpiration from the leaves. Heavy shading is required which in the case of many orchids results in poor flowering.

In winter the glass roof is the cause of considerable heat loss. During this season the sun is low, most of the light comes through the northern side of the house.

I followed Nick's lead and planned a solid roof, well insulated by 5cm polystyrene sheets and a three metre high vertical and transparent north facing "front". (Figure 1).

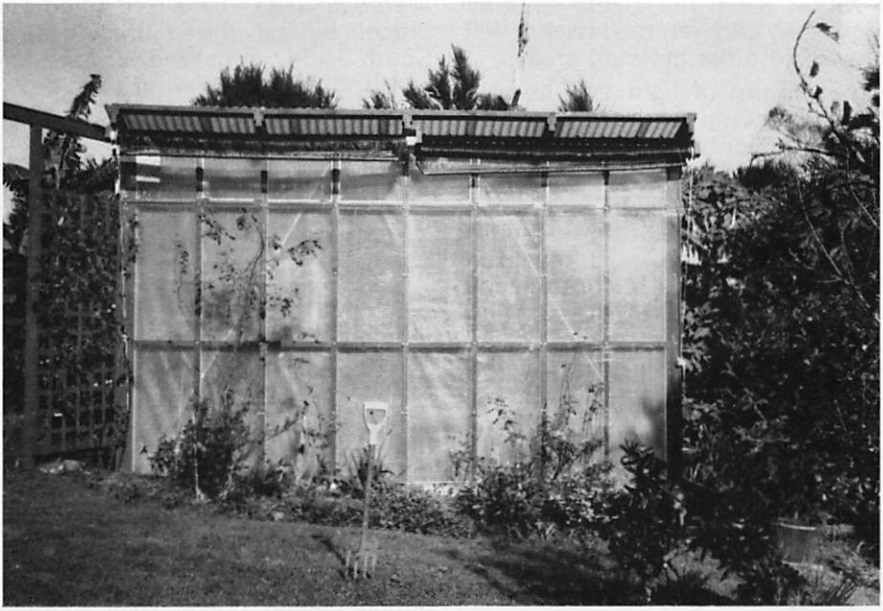


Figure 1: North Facing Wall. Taken mid-winter at noon. Notice shadow cast by garden fork.

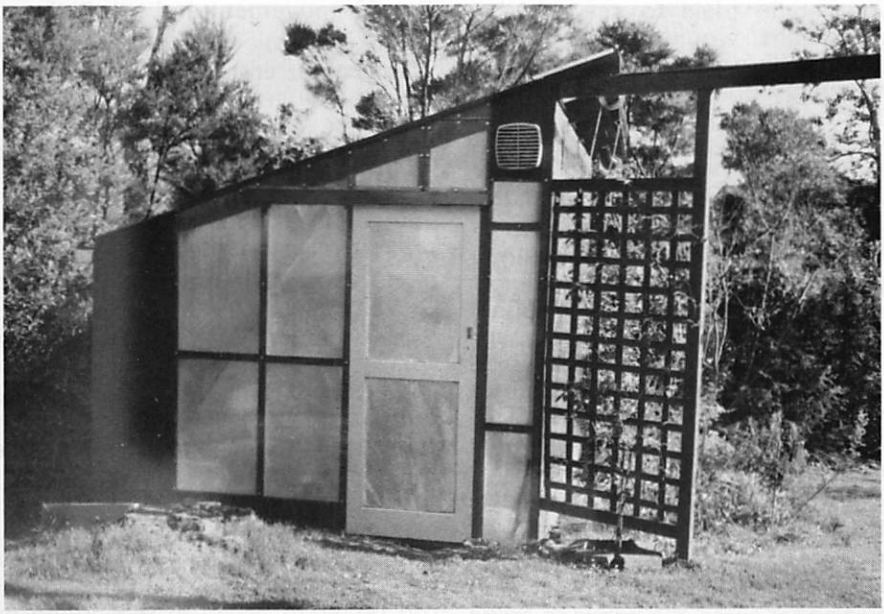


Figure 2: East Wall showing sliding door and exhaust fan.

In winter when the plants need all the light they can get, the low sun will reach well into the growing area.

Some control of light and heat in spring and autumn can be provided by shadecloth roller blinds on the outside of the north wall.

As no appreciable light and much cold comes from the south, the south wall was planned to be solid, tanalized construction plywood for both inside and outside wall with insulating material in between.

The dimensions would be, floor 5m x 3m, north wall 3m high, south wall 2m high. (Side view, Figure 2).

The side walls and north facing wall were covered with "Qualex" sheets. This material consists of two thin sheets of clear plastic held together by plastic ribs. Thus the double skin with an airgap in between contributes to heat conservation. To save on the cost of the "Qualex" sheets small areas on the southern side of the sidewalls were covered with construction ply inside and out with insulation in between.

After some trials to see whether enough light would enter on the southern side of the house I decided on the compromise that a Qualex strip 675mm wide would have to run the full length of the southern part of the roof. This would enable me to provide for light-loving plants such as Vandas, etc.

The Floor. To form a barrier between the earth and the building's floor a heavy duty black plastic sheet was put in place over the clay soil with a depression sloping east to west, deep enough to hold a small diameter plastic drainage pipe. This enables excess water to flow to the outside.

Over the plastic sheet the floor was built up with 10cm of fine scoria.

This material is moisture retentive, dark in colour to absorb heat and uninviting for slugs and snails to crawl on.

Materials used. Tanalized pine frame, braced by galvanized bracing strips. South side, tanalized construction ply, bottom 1200mm of fibrolite.

Roof, iron (I made use of two discarded Parker roller-doors).

Roof insulation, 5cm polystyrene sheets.

North and side walls, Qualex sheets mentioned before.

Behind these, horticultural grade bubble plastic.

Lots of "Stop Gap" filler to eliminate all gaps and cracks.

Sliding door on the east wall, also "double" insulated. (Figure 2).

4. Energy conservation

This topic was given the highest priority. Hence the use of Qualex, bubble plastic, polystyrene, gap filler.

It is important to make the house as airtight as possible to prevent heat loss. This will also keep unwanted insects out.

5. Air movement and ventilation

This topic is one to which, in my opinion, not enough attention is paid by glasshouse users.

In orchid literature much is made of bacterial rot and fungus diseases in orchids.

Virtually all of these can be prevented by ensuring:

a) *Constant* air movement day and night.
b) Watering only on sunny days, not later than 10.00 a.m.

To achieve constant air movement without local gales I installed a ceiling fan with 36cm blades and speed regulator normally set on 1 or 2 (slow). (Figure 3).

If you water in the morning on a bright day and the sun disappears before the leaves are dry let the fan run faster to assist in the drying out process.

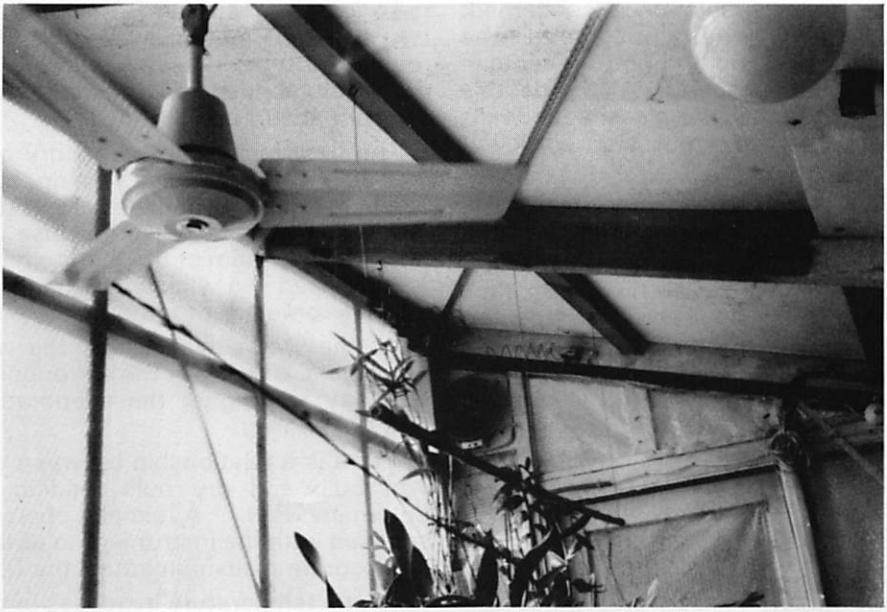


Figure 3: Interior showing ceiling fan (stopped for the photo), light globe, exhaust fan and thermostat control unit behind light.

The ceiling fan even when rotating slowly will move a far greater volume of air than a fast running small fan.

The ideal ceiling fan would be one with reversible blades which can push air both downwards and upwards.

On hot days with low outside humidity the plants may dry out too much under the fan in its normal position. In this case the blades could be set in reverse blowing the air towards the ceiling. However, my fan is a conventional downdraught type and the humidity problem is solved another way as detailed below.

All plants need fresh air to survive, especially orchids. Nearly all plants take in carbon dioxide during the day and exhale oxygen. Notice I say nearly, because recent research shows that a number of orchids will reverse this process when under stress, i.e. very high day temperatures with lower humidity levels. Such orchids are mainly the terete leaved types. They close their breathing pores (stomata) during the day and open them at night.

It is therefore important to supply a constant supply of carbon dioxide and to expel the surplus oxygen.

At night during cool weather we cannot afford to ventilate our expensive warmed air to the outside. We therefore close the vents towards evening or even not open them at all during a dull winter's day.

By having good air movement inside we still ensure that whatever carbon dioxide is available, is passed continuously over the plants.

As an aside I remember reading somewhere that you can do your orchids a favour by inviting your friends into the glasshouse where their exhaled carbon dioxide enhances the supply for the orchids!

As far as ventilation is concerned, my house does not have the conventional top and bottom vents in the conventional way. A considerable surface area of the glasshouse walls have to be open to ensure sufficient passive airflow.

Passive airflow complicates construction, increases unwanted gaps and is expensive to automate.

To simplify the problem two fans were installed, one through the west wall at the bottom. This fan blows outside air into the house. The other was placed as high as possible on the east wall. This fan sucks the air out of the house. (Figure 2).

Both fans, their intakes covered by flyscreen to keep the bugs out, are controlled by the same thermostat set at about 24 °C. This means they both come on at that temperature as the inside warms up and stop when the temperature drops below this point. Note that ordinary household thermostats which only come on when the temperature drops **below** a set point cannot be used. On the North Shore - my site is frost free - the inside temperature in mid-winter climbs to 24 °C. by about 10.00 a.m. on a sunny day and the fans turn off by about 4.00 p.m.

In summer the fans start much earlier, about 8.30 a.m. and eventually stop at about 6.00 p.m. or later.

A penalty is paid equal to the cost of power to run the fans. However, as the total wattage is about 75 watts. the cost is not high.

Humidity Control. Humidity is measured as Relative Humidity (R.H.) i.e. the percentage of water vapour in the air. For example completely dry air would have a R.H. of 0%, saturated air 100%.

It is desirable that orchids live in an environment of not less than 40-50% R.H. However, many tropical orchids, especially Phalaenopsis, require not less than 60% R.H.

To keep a check on R.H. there are two types of meters available. The round dial type, unless expensive, is not recommended as the readings are far from accurate.

The best instrument is a "dry and wet bulb thermometer". The dry bulb is an ordinary thermometer. Next to it is the wet bulb so called because the bulb at the bottom of the thermometer is enveloped in a wick which hangs in a small container of water.

As the water evaporates, the wet bulb cools. The lower the surrounding humidity the higher the evaporation and the cooling.

There is a relationship between the wet bulb and dry bulb reading to determine R.H. A simple chart is supplied with the instrument to obtain an accurate measurement of the R.H.

As the temperature increases in the morning the R.H. in the house gradually decreases and additional water vapour has to be injected into the environment to maintain the R.H.

The best way to maintain the desired humidity levels is by using an evaporative cooler which operates on a humidistat set at the desired R.H. and injects atomised water vapour into the air.

It is called a cooler as the water vapour cools the air at the same time. But . . . they are expensive!

I have solved the humidity problem by the fine scoria floor which is kept damp by micromist nozzles screwed into a 13mm alkathene pipe. The time interval for the misting of the floor is controlled automatically - see below.

Heating Source.

For the benefit of the Phallies I have to keep to a minimum temperature of 17 °C. at night.

A 2,000 watt fan heater is installed just under the roof at the west end of the house. It's airflow is directed towards the ceiling fan which takes care of even distribution of the heated air.

The heater is controlled by a thermostat set at 17 °C. Because of the insulation and tightness of the house and mild winters (only a few nights below 8 °C.), the heater only operates about 45 seconds to one minute before shutting off, to come on again after about 3-4 minutes on the coldest nights.

Automation

Fancy automatic greenhouse controls can be obtained at similar fancy prices.

However, some automation is desirable when the owner is absent. Whilst in Australia I purchased a gadget which features a digital clock and four three point power outlets. Each of those four power outlets can be programmed to go on/off at set times and days of the week. These outlets can be connected to ordinary washing machine solenoids to provide automatic watering/misting.

I have installed an "over-ride" so that there is no watering or misting if the temperature is too low. You must have the system installed or checked out by an electrician.

I normally handwater but when I go away the system is a boon. The heater thermostat is the only instrument on which I have spent a little more than is normal.

Ordinary household thermostats work very well but the differential between the on/off cycle can be as much as 4 °C. This is wasteful as every time the heater turns on it will have to heat the air 4 °C. before turning off. A good electronic type thermostat has only about ½-1 °C. differential, is far more efficient and saves power. This is the reason why my heater is only on for such a short period.

To monitor the performance of your thermostat buy a maximum/minimum thermometer. This will also enable you to check the cooling efficiency of

Figure 4: Front bench. Equitants in bud near the front. Hose with mist nozzles.

the house on hot days. The thermostat, maximum/minimum thermometer and hygrometer shold be installed where there is a good airflow but not in line with the airflow of the heater.

By doing so the instruments will measure the temperatures relating to the complete environment and not only the air immediately surrounding the instruments.

CONCLUSION

Considerable enjoyment was experienced in designing and building the house. The only criticism I have is that there could be a little more light in mid-summer. I might have to provide more light by cutting a strip in the roof iron which could be "plugged" in winter with polystyrene sheeting.

However, the orchids are doing well. It is an ideal house for phalaenopsis, but oncidiums - mule ear, variegata, vandaecous types, paphiopedilums of tropical origin and some cattleyas are flourishing. (Figure 4).

We must realize that we cannot fully compete with nature and that any construction we build is a compromise. However, that should not discourage the keen grower with an inquisitive mind to get as close to a natural environment as possible.

24 Albany Highway
Glenfield
Auckland 10

Photography: J. Hart

PHALAENOPSIS CULTURE

Part 4 Let's Talk about Temperature, Air, Light and Humidity for Phalaenopsis

Bill Livingston

As we unravel this subject for you, we hope you will have a better understanding of how temperature, air, light and humidity relate to one another. You will be aware how and why these elements have to be closely balanced to produce well grown and flowered Phalaenopsis.

Temperature no doubt has the greatest effect on Phalaenopsis' rate of growth and flowering. Seedlings growth responds much faster if they are grown warm, and much slower to lower temperatures. The night temperature for seedlings should be about 18 °C., and they prefer not to exceed 30 °C day time. Mature plants can be grown at a night temperature of 16 °C., days the same as seedings 30 °C.

Phalaenopsis plants can be occasionally subjected to higher day temperature, but seem to stop growing above 30 °C. The same is true when the temperature drops below 10 °C to 11 °C. If temperatures do rise above 32 °C., you should immediately, by wetting the walkways down, under the benches, and even mist over the plants, to raise the humidity. This takes the stress off the leaves and the plant in general. Remember as the temperatures rise the air dries, so you should increase humidity to maintain the 50% to 60% required by the plants. At night as temperatures drop the humidity increases. Low temperatures and high humidity can invite different forms of fungus and bacterial rot, especially if temperatures drop below 16 °C.

We have visited many greenhouses and observed the thermometer and humidistat on the wall or post about eye level. Your plants are on the bench, and this is where you should be reading the temperature and humidity. You will find there can be a number of degrees difference.

If your greenhouse is allowing the temperature to rise above 30 °C., we suggest you check the shading. Quite often the sun on clear days can buildup quite a lot of heat. You may have to add some shade material to the house. Vertical fans running 24 hours a day can help dissipate the heat off the leaves when the temperature builds up, and help prevent sunburning to the leaves. If you are not home during the day, may we suggest you buy a humidistat, and it can be installed very easily. It can work automatically daily as needed, which can help save your prize plants.

Phalaenopsis enjoy and grow very well with 50% to 60% humidity, during the growing season and can tolerate 40% to 45% during the winter months. A little lower humdity in the winter months will help prevent a lot of fungal and bacterial growth within the plants.

Try and avoid sudden temperature changes. For example - you have a small greenhouse, and it's winter or early spring, a very cold day. You go to the greenhouse, you open the greenhouse door and let it stand open for a short time. There is a sudden rush of cold air that strikes the plants. This can be responsible for the yellowing and dropping of developing flower buds. Extreme heat and extra high light intensity also can cause bud drop and even sunburn leaves. Never grow your Phalaenopsis in direct sunlight. They need some shading. A white wash with a little latex paint, to help make it stick is very good. If you want something a little more

permanent, you can buy shade cloth. It comes in various forms of lighting amounts. We have found using a 72% shade gives you an actual light intensity of 50%. Certain crosses under extreme temperature changes and high light intensities can develop a red pigmented colouring to the leaves. This is not a permanent condition unless you lower the light or raise the temperature when too low.

We know temperatures can affect the flowering of Phalaenopsis. This is another subject which will be covered in another article.

Light intensity in the greenhouse can be checked very easily several ways. One indicator other than a light meter is your hand. When you pass your flattened out hand horizontally back and forth across the top of the plants, about 15cm to 18cm high, you should be able to see a very faint shadow. If you don't get a shadow, that means you have too much shading on. A very dark shadow meant you have too much light and should put on more shading. If you have access to a photo-light meter that reads in foot-candles, you can shade more accurately. The light requirements in the Spring and Summer can be from 900 to 1000 fc. In the Fall and Winter, light should be increased to 1200 to 1500 fc. With the proper lighting your plants can utilize their nutrients much better. This was described in our last article.

Keep the humidity below 80% if at all possible. Humidity above 80% can subject the plants to a host of fungal and bacterial problems. These problems can be held down to some degree by good air movement within the greenhouse, as well as fungal and bacterial sprays. Vertical fans and good venting help greatly to keep the air in the greenhouse moving. To give you an idea as to how much air movement you should have, the spikes and flowers should be gently moving. You don't want a wind tunnel force of air. We say, just a whisper breeze. Be sure the fan or fans are not picking up a cold draft and passing it across the plants. This could cause bud drop.

As some of you start to use natural gas to heat your greenhouse, your Phalaenopsis will let you know almost immediately if there is a slight gas leak or the flame is not adjusted for burning and some of the gas is escaping into the house. Again buds will turn yellow and drop. This is good for those raising their plants in the home. Be sure your gas heaters are well vented to the outside.

We don't believe New Zealand has a problem of not having enough humidity from what we have been told. Some say you have too much at times. If you find you have a problem with too much humidity in the greenhouse, you can open up the vents to let the humidity escape. This is especially helpful in the Summer when the nights are warm. The other method to lower humidity is to raise the thermostat, to heat up the air. This will dry the greenhouse out to some degree at night. This method is very good on days you have watered, and the plants just didn't want to dry off too well. Humidity could get to nearly 100% under this condition. The way to combat this is to turn the heater up about 5 ° for the night. You will find this very helpful. It cuts down fungal problems. Phalaenopsis cannot store water as do some of the other orchids. This is why humidity is essential to their well being. It keeps the balance of water and nutrients within the plants cells.

We have tried to give the essential high-lights for better understanding in growing your Phalaenopsis. We could probably have elaborated more on the subject, but we are trying not to burden you with too much information to make it overpower you. Really Phalaenopsis are one of the easiest orchids to grow in the greenhouse and home. They like the same comfortable temperatures we

do. They like fresh air as we do. They like bright light but not direct sun, as many of us do. I know there are a lot of people who like to bake in the sun, but there are as many of us that don't like to bake. A reasonable amount of humdity is enjoyed as we do. It almost sounds as if we are making them out to be human. Well, they are alive, and produce an array of beauty hard to beat, for a long period of time. They will take all kinds of abuse and never talk back. Some seem to thrive on neglect and resent being pampered.

Our next article will cover "Pests and Diseases". We will endeavour to try and recommend the chemicals you have available in New Zealand.

128 Hughes Road
Watsonville
California
U.S.A. 95076

Orchids Australia '86

10th Australian Orchid Conference at Adelaide, South Australia. 17th to 23rd Septemver 1986

Adelaide is an attractive city of half a million people, several large orchid nurseries, and many orchid enthusiasts making up a number of societies. An International Orchid Show will be a feature of Orchids Australia '86, staged on two floors of the display Pavilion of the Adelaide Show Grounds.

A day of lectures and a Forum Day will make up the Conference Lecture Sessions, held at the Oberoi Hotel, 4 km from the Orchid Show. An excellent group of speakers and participants will be present, making the whole occasion an exciting, stimulating experience for those lucky enough to be able to attend.

Flowering Brassia verrucosa

Dorothy Dennis

Why do the lists of "Plants for Beginners" always include *Brassia verrucosa?* While it is easy to grow, so few are able to obtain any flowers. My plant of *Brassia verrucosa* came from Cyril Pritchard of Whakatane, so I knew it was a good clone. After keeping it with the cymbidiums for several years it had multiplied into five robust plants. Last April I decided the time had come for drastic action.

Plant No. 1, in a wire basket, was returned to the cymbidiums. Plants Nos. 2 and 3, in wire baskets, were hung with the soft cane dendrobiums and not watered all winter. Plant Nos. 4 and 5, in hard plastic pots were put on the 'humidity tray' of gravel to about ½" above water level. The roots of these two pots promptly shot through holes in the bottom of the pots into the water where they showed no deterioration for many months.

Now, in January plant No. 1 has at least ten new growths, no flowers. Plant Nos. 2 and 3 dehydrated badly but recovered quickly with copious spring watering. Now have 3 and 5 new growths, no flowers. Plant No. 4 looked miserable by late Spring but recovered when shifted to a wooden bench. Now has seven new growths, no flowers. Plant No. 5 still stands on gravel over water, has nine new growths, three spikes, twelve flowers.

As only Plant Nos. 2 and 3, which made least growth, have green root tips, would a successful grower of flowers please explain his or her culture methods with particular reference to watering.

1a Randell Place
Te Puke

A FASHION SHOW?

Tony Ballard

When the 1990 World Orchid Conference was first mooted for New Zealand, the World Site Committee had two major criteria that had to be met.

(a) Is the Conference venue close to major hotels? and

(b) Is there enough variety of genera grown to support an undertaking of this size?

(I'm sure the Committee was convinced that New Zealand was a nation of cymbidium growers only!).

The first condition was a little difficult. Hotels to meet the expected tourist boom have proliferated in the last couple of years, but Conference centres are not that easy. Our first choice was the Princes Wharf Passenger Terminal - on the waterfront, Down Town shopping and Hotels close by. Unfortunately, this could not be booked ahead. Our space requirements are more than is usually available and the Harbour Board must reserve the passenger area for tourist cruise liners.

Bookings have been made at the Logan Campbell Centre in Epsom, 8-10 minutes down the motorway from the Sheraton Hotel. We propose to use this Hotel as the Conference Headquarters and their facilities should please all concerned. Show and Sales areas will be spacious and easy of access and, most important, Show parking is provided. There are many Motels close by as well.

The exact Conference Show dates have not been announced yet, but the suggested time is in early September. This coincides with the seasonal flush of flowers over the greater part of the North Island which is expected to provide the bulk of the displays. Those people who travelled north to Ellerslie six years ago, and those who ventured to Wellington last October, know only too well the hazards and frustrations of exhibiting a long way from home! Also, of interest, **our** Show will probably follow an International Stamp Exhibition, so facilities for banking and postage, etc., will be already in place.

But what about the flowers? What are you planning especially for 1990? What are the fashionable genera in your area at the moment? What do you **expect** to see?

Our two International Shows have given us a little taste of things to come! Cymbidiums of course will be there in quantity. Overseas sceptics may perhaps be correct in their assessment but seeing is believing and hopefully our recent overseas visitors will spread the good word about the diverse "other genera" that can be displayed here.

In any case a change of pace should be good for the influential (and wealthy) hierachy who travel the world on orchid activities! England and Europe can show Pleiones, Odontoglossums and Paphiopedilums - Bankok had Vandas, Dendrobiums and Phalaenopsis - Miami produced a cocktail of tropical delights (with few locally grown Cymbidiums) and Tokyo will have hundreds of miniature Cymbidiums, miniature in overall size of plant and bulbs and flowers, with Japanese species as a major part of their display.

Last August, as an added interest towards 1990, the N.Z.O.S. Programme was all about hybridizing. We were led through the process by Andrew Easton (just like breeding racehorses, he said) and many pods are ripening.

We hope that the Grand Champion Cymbidium will be a new seedling or maybe we will strike a winner with a Cattleya hybrid!

A view around the country from Auckland may be of interest.

The enthusiastic orchid growers from Taranaki have done a marvellous job in hybridizing new quality Disa flowers. The seed has been readily available and the growing methods are not too difficult. New Plymouth is so fortunate - with George Fuller as your mentor who could go wrong? And the fashionable plants in Hamilton at the moment, are "small" growers, mini-catts in particular. Jim James has hybridized several "winners" with *Sophronitis coccinea* as the starting point for colour and size.

Both Tauranga and Christchurch will be strong supporters of Paphs. while Phals. are becoming more popular right through the country.

In between these few specialist areas are the species growers. Cool or warm growing, you name it, we've got it, somewhere! In the "plants on display" listings from two societies here in 1985, 20 Masdevallia species or crosses are listed - what an upsurge over the last ten years.

In New Zealand we are in the situation that things are never the same. Blame the weather, the range of climatic conditions, the bark or what have you! For 1990 we **must** cultivate those plants that have an average blooming time, say August to October, so we can **ALL** enjoy the "Greatest Fashion Show on Earth".

21 Boyd Avenue
Mangere Bridge
Auckland

NZOS News Review

From the 38th A.G.M., 21st May 1986.

The Officers elected were:

Patron: Mr Fred Powell
President: Mr Alf Day
Vice-Presidents: Mr Denis Bonham and Mr Ray Dix
Hon. Secretary: Mrs Nancie Bonham, 24 Coronation Road, Epsom, Auckland. Ph. 656-300.
Hon. Treasurer: Mrs Betty Vance
Hon. Newsletter Editor: Mrs Nell Wiffen
Hon. Librarian: Mrs Thelma Hogan
Solicitor: Mr Sel Ross
Auditor: Bank Manager, Mrs Merle Wildman
Magazine Correspondent: Mr Tony Ballard

These officers plus nine elected members comprise the Executive Committee.

Group 2 retires 1987: Mrs Joan Parker, Mr Ian Baker, Mr Mark Dawe.

Group 3 retires 1988: Mr Peter Elfleet, Mr Malcolm Holmes, Mrs Frances Helleur.

Group 1 retires 1989: Mr Chas King, Mrs Marge Orr, Mr David Forsyth.

Colour Fund Donations

We are grateful for the continued support from societies with donations for the Colour Fund.

We have been pleased to receive a recent donation from the Taupo Orchid Society.

Thank you.

3. WILLIAM HODGES

(1744-1797)

Ian M. St. George

In the Print Room of the Alexander Turnbull Library is an octavo album labelled in brown ink on the cover, "Hodges's Drawings of New Zealand Plants". A further inscription reads, "Drawn by Mr Hodges the painter who was with Captain Cook". It contains twenty five sketches, drawn in yellow and two tones of grey wash with occasional touches of another colour.

They are quickly and skilfully done. A few pencil lines show through in places, but the artist creates his light and shade, curve and plane, of leaf, flower and stem with a minimum of well judged brush strokes. White flowers and leaves are outlined, or stand out from a wash background. Sometimes fine dark lines add texture. There are handwritten annotations for eight plants.

William Hodges was the professional artist of Cook's second voyage, on board to paint landscapes and figures. His paintings do contain recogniseable plants, but no true botanical studies had been ascribed to him.

Botanically the sketches are naive. Of six orchids depicted, only two are New Zealand natives, *Microtis unifolia* and *Thelymitra longifolia,* shown here. The sketches appear to have been copied from the George Forster drawings of them in the British Museum (Natural History).

The annotations are written in a careful hand (not Hodges's), and in rather unscientific language: "Single leaved orch: a new plant peculiar to the dry hills of New Zealand especially the top of Long Island in Queen Charlotte Sound", and "An elegant genus of the orchideae, growing along with the other. Its height of (*sic*) that of the preceding sort never exceeds eighteen inches".

The former is the *Microtis,* the latter *Thelymitra.*

Hodges may have wanted the sketches as working drawings for his own use later. His paintings and drawings do show a variety of flora; among them the tree-fern in his *A View in Dusky Bay, New Zealand,* and the flax in *Waterfall in Dusky Bay, New Zealand* are easily recogniseable: there are identifiable plants in several of his Pacific Island works. Indeed Hodges was careful about his botanical foreground staffage: he wrote on the back of a print in the British Museum, "The Plants are Coconut trees and Plantains which are Indigenous". None of his New Zealand paintings contain plants recogniseable from the album, but two of the sketches do appear to have served as models for foreground plants in one of his engravings of Tonga.

Hodges was the son of a London smith. His parents encouraged his inclination to drawing by placing him in Shipley's school when he was ten. In 1758 he was articled to Richard Wilson, the landscape painter with whom he spent seven years, and so his career was determined.

With his grand appreciation of tropical light he reminds us of Turner, yet precedes the latter by twenty five years. He was the first to paint scenes in the Antarctic, and in Dusky Bay he captured the lush green bush in moonlight, the grandeur of the waterfall, the weight of the forest, the terror of a storm at sea.

Plate 1: *Microtis unifolia*

Plate 2: *Thelymitra longifolia*

Right: Watercolour drawings by William Hodges, c. 1775. Reproduced courtesy of the Alexander Turnbull Library.

Plate 1

Plate 2

In the Pacific he captured the steaming humidity of lush islands and glaring sunlight on tropical waters. To achieve the desired effect, he used techniques that were almost impressionistic.

Hodges had only middling success in his own time. His personal life was beset by tragedy, and after a banking venture collapsed, he died - some say from "gout of the stomach" (not a diagnosis that would be acceptable today), others, by his own hand. His wife died a few months later, leaving their six children orphans.

45 Cargill Street
Dunedin

Winter Shows

WELLINGTON ORCHID SOCIETY

Sat. 5th, Sun. 6th July
Queen Margaret College, Wellington

NEW ZEALAND ORCHID SOCIETY

Friday 11th July to Sunday 13th July
Mt. Albert War Memorial Hall, Auckland

WAIKATO ORCHID SOCIETY

Sunday 27th July
Te Rapa Racecourse, Hamilton

NOTES FROM APOROSTYLIS

Older growers who knew Charlie Mayhead of New Plymouth will be saddened to hear of his recent passing. Charlie was a nobile dendrobium enthusiast before the rage started. He confounded the "dry off from Anzac Day" growers, by watering all the year round and still getting masses of flowers and huge canes!

With his characteristic strong accent and cheerful manner, he was always enthusiastic in supporting the Taranaki O.S. Shows, until age and ill health kept him from displaying. His family has carried on the orchid tradition. Condolences to Mrs Mayhead, Phil, Ruth Coles and families.

U.S. expatriates Jim and Eloise Harper, who have lived in Palmerston North for the last five years, have finally returned to their home in Illinois. Jim and Eloise took a very active part in the orchid scene in N.Z. while he was attached to Dairy Research in Palmerston North.

Many societies had him to speak on a variety of subjects including Mexican orchids, Encyclias, Australian natives and New Guinea orchids. Jim was also of great assistance to his judging panel and at our judging Seminars.

Best wishes Jim and Eloise. We will miss you and are glad to hear you will be back from time to time.

Friends and acquaintances of Alan Beck of Ngatea will be glad to hear that he is recovering steadily after major surgery. He hopes to be getting back to his local society any day now, but jokingly told a visitor recently that he "was only firing on 3½ cylinders just yet". Best wishes, Alan, for a full and speedy recovery.

Recent overseas visitors to N.Z. were Mr and Mrs Ernest Heatherington. Ernest is Managing Director of Stewarts Orchids, California, U.S.A. The Heatheringtons were on a very brief visit to observe Halley's Comet and were able to fit in a visit and talk to a Waikato Orchid Society meeting.

Something really new in the way of orchid pots is about to hit the market. Roy Clareburt of Auckland saw the need for a pot designed especially for epiphytic orchids. He has come up with a 7.5cm (3") dark green pot resembling a tiny plastic clothes basket. There'll be no complaints about not enough drainage here -perhaps too much! A lot of thought has gone into the design and the material used (hangers are available too), and if this one proves 'a boomer' he has plans for a 14cm (5½") one later. Good luck, Roy! It's about time we had an orchid pot designed for orchids!

Has your society ever been on a weekend bus trip? The Taranaki O.S. is still talking about the great time they had on their Anniversary Weekend trip to Rotorua and Tauranga in early March. No breakdowns or George Fuller frolic's this trip, but a wonderful meal of freshly caught trout laid on by the Rotorua Society, visits to Fleur Orchid Gardens and local members, a stopover in Tauranga in a hotel with no Sunday night dinner, but a nice supper and get-together with local enthusiasts after a fish and chip tea. More visits to local growers and nurseries on the Monday morning, with cuppa's and lunch provided, then homewards with lots of plants. A great weekend, with a good mix of young and old members, all thoroughly enjoying themselves. What better way for members to get to know each other and make orchid friends in other places. We recommend a visit to the Rotorua and Tauranga area.

Thank you for having us!

WHISKERED WILLIES

See overleaf:

Epidendrum ilense was discovered in Ecuador as recently as 1976. Sadly, its natural habitat has now entirely been destroyed, to make way for agriculture, but fortunately a few specimens had found their way into cultivation.

Dendrobium macrophyllum from New Guinea requires warm, bright conditions. Together with the species mentioned above, and on our front cover, it sports a remarkably hirsute appearance!

Photography: David Menzies

Epidendrum ilense

Dendrobium macrophyllum

Pacific Orchid Visits . . .

A VANUATU VISIT

Jim Raddatz

Vanuatu consists of a group of some 40 islands, many of which are small but there are eight or ten larger islands. Our visit was mainly to our family, who now live there and of course this was a great thrill for them and us. We were also lucky enough to visit Hermon Slade.

When anyone refers to Hermon Slade as a world authority on orchids it is not an exaggeration. I don't think I have enjoyed talking about orchids with anyone as much as I did with Hermon. We saw a very mixed collection of orchids in Hermon's garden and bush house with the rare *Paph. praestans* from New Guinea in flower. We then had a delightful lunch prepared by Hermon and served on his verandah overlooking the beautiful harbour at Port Vila.

He then drove us to parts of the Island where we saw, growing on trees at the edge of the beach, an interesting leafless orchid, *Taeniophyllum fasciata.* Also in the trees were plants of *Den. macranthum* which was also known as *Den. pseudo-tokai.* There were many plants of a small vandaceous orchid, *Robiguetia mimos,* of which some were in flower with their sprays of pretty rose pink flowers with the odd alba form scattered through them. We then drove back to Port Vila, and almost in town growing on trees, were plants of *Den. sladei* (yes, named after Hermon). They look like a green curtain hanging down from the trees. Just down the road leading to the Intercontinental Hotel many of the trees had fine specimens of the pencil orchid, *Den. seemannii* which is practically identical to our Australian *Dendrobium teretifolium.*

On the tours we saw *Vandopsis warocqueana,* including one clump about ten foot in radius. There were no flowers but Hermon described it as a beautiful plant with very poor white flowers. We often noticed this orchid growing on coconut palms in the plantations.

We flew to Tanna Island, about one hour away in a small plane, and saw many orchids growing in the trees. I believe there is a nice reddish coloured orchid growing there at higher elevations which is like a reddish *Den. smilliae.* It was here that Betty and I actually stood on the rim of an active volcano, looking down and waiting for it to erupt. The rumbles were quite worrying at first but although it threw quite sizeable boulders in the air none came our way. Maybe our guide knew where to go. We were then treated to a picnic lunch practically on top of the volcano. The interesting point of this volcano trip was that on the windward side of the volcano there is an area of some hundreds of acres which is literally a desert of volcanic ash. Often the dust storms made it very difficult for our driver to see where he was going. In the area around the volcano were a few clumps of stunted vegetation often only the size of an average bedroom. I asked our guide about the beautiful mauve orchids which are growing near the volcano and he showed me clumps of *Spathoglottis* growing amongst this stunted vegetation; they were thriving but not in flower. Hermon told me that there are at least three species of *Spathoglottis* growing in Vanuatu - *Spathoglottis petrii, S. plicata* and *S. tomentosa.*

This is the extent of orchids we saw in Vanuatu except for gardens growing mainly the Terete Vandas and *Arachnis.* They also have - *Coelogyne lamellata, Calanthe triplicata, Bulbophyllum longiscapum* and some other Dendrobiums.

Vanuatu has published a series of stamps of their orchids together with a leaflet which was published in both English and French giving a good description of the orchids on the stamps. The facts were provided by R. Lambert and G. Hermon Slade and it was certainly interesting reading. We went to visit a friend of Hermon's who had a strawberry farm and a nursery. They had a couple of *Phalaenopsis* hybrids growing in pots hanging from the trees. The flower spike on one was easily eight foot long but a poor flowering with only a few flowers on the end of the spike branches. The owner told us that it had over 300 flowers last year. I know such a spike is a tall story but I have a slide of it and I am standing beside it acting as a measuring stick.

I feel this is a fair amount of orchid ramblings and this was all in two weeks. We came away from Vanuatu so happy to have seen our son, daughter-in-law and grandson, and the many new friends we met, and to have made the acquaintance of such a wonderful man as Hermon Slade. We will return.

Brisbane, Australia

Are you *cherishing* those specimen plants for 1990? And encourage those new seedlings on, too!

PESTS OF ORCHIDS

Gary M. Barker

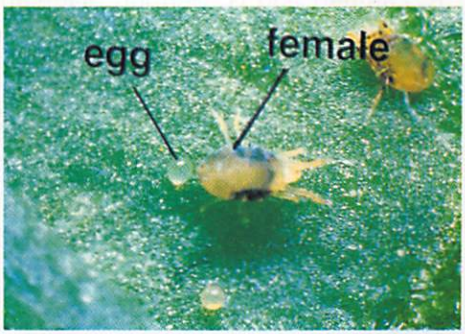
1. Two spotted spider mite *(Tetranychus urticae)*

Two spotted spider mites are ubiquitous pests occurring on a very wide range of plants from the orchard to the glasshouse. They occur throughout New Zealand and are the most serious pest encountered by most orchid growers.

Life Cycle and Ecology

The summer females, about 0.65mm long, are usually green - pale yellow with a large black spot on each side of the body. The males and active immature stages are of similar colouring but smaller. Starved mites may be reddish. In autumn, with the arrival of shorter days and lower temperatures, reproduction gradually ceases in most individuals and only the adult female mites survive over winter. These assume a brick-red colour and hibernate on plants, in crevices in the glasshouse structure, or in litter. The strains associated with perennial crops such as orchids often become adapted to continuous reproduction throughout the year irrespective of day-length, particularly in heated houses. The properties of hibernating females enable them to survive adverse conditions; they can withstand low temperatures provided air humidity is high, and are less susceptible to miticides.

Females come out of dormancy early in spring to feed and lay eggs. A female normally lays about 70 eggs, but may lay as many as 200, at the rate of 3-14 eggs per day. The eggs are minute (about 0.1mm diameter), spherical, clear to pale yellow-green. The mites secrete a loose web of silken threads on the underside of the leaves, beneath which the eggs and developing nymph stages are protected. An egg takes 2-15 days to hatch.



Two-spotted spider mite.

After hatching the two spotted mite passes through 1 larva (6 legs) and 2 nymph (8 legs) stages to become the adult within 4 to 24 days. Between each immature stage there is a resting period during which the mites are relatively resistant to chemicals.

Humidity and temperature are important factors in spider mite ecology. Loss or gain of water from the atmosphere by small organisms like mites is fundamental to their existance. Two spotted mites feed on moisture-laden plant tissue, and thus make up for loss of water to the atmosphere. Numerous reports indicate that hot, dry weather is conducive to outbreaks of these mites. The optimum temperature for their growth is 28-32 °C. The mites are more active and lay twice as many eggs in conditions of low humidity as compared to high humidity.

Damage

Two spotted mites damage plants by feeding directly on the leaf cell contents causing the cells to collapse and die. The first sign of attack is usually a very fine and more or less regular silver or grey speckling on the underside of the leaves. As the mites multiply, the foliage loses its healthy green colour, the undersides of the leaves become richly silvered or brownish and of dry, shrivelled appearance. Webbing is usually obvious over the leaves. The mites move away from badly damaged leaves to feed on the growing shoots and flowers. Fine scarring of buds and flowers result in browning or colour break in the sepals and petals. Bud drop or distortion of the flowers will result from heavy infestations.

Chemical Control

The continuous use of certain miticides over a long period will select strains of mites which are resistant to those chemicals. Mites resistant to one miticide may also be resistant to other miticides belonging to the same chemical group. Growers should consider carefully whether repeated and frequent chemical treatments are necessary. Maintenance of high humidity in the glasshouse will do much to suppress mite populations, and help to reduce the need for frequent chemical applications and the likelihood of resistance. Where repeated treatments are necessary, growers should use a single chemical and, on development of resistance change to using a chemical of an unrelated group.

The chemicals available for mite control are listed in Table 1. Each is listed under chemical group names and examples are given of commercial formulations (Trade names) available at wholesale and retail outlets. For each product, the recommended dilution rate (in water), spectrum of activity against pests and mode of action are given.

Many chemicals can be damaging to plants (phytotoxic), particularly on young growths or flowers, or under certain environmental conditions, such as high temperatures. Excessive rates of application will increase the possibility of damage. When contemplating the use of a new chemical or one not previously tried on orchids, growers should seek advice of fellow growers or MAF personnel, or test on a small number of plants.

Miticides are available in two formulations - liquid concentrate and wettable powders. As a general rule, phytotoxicity to orchids is more likely to occur with use of the liquid formulations. In the Table, only wettable powder formulations are listed where a choice of formulations was available.

With all chemicals, effective mite control can only be achieved if thorough coverage of the foliage occurs. The main objective of pesticide application is to place the chemical on the target - in this case on mites on the underside of the leaves. The spraying systems used must produce small droplets and propel the droplets with the direction and momentum required to make contact with the target.

Biological Control

By combining the minimal use of chemicals with the maximum use of biological control agents (predators, parasites, pathogens), the chance of pests becoming resistant to pesticides is considerably reduced. There will also be less exposure of the grower and the environment to pesticides. This approach of combining chemical and biological agents in pest control is known as Integrated Pest Management (IPM).

Trials are currently in progress in New Zealand by DSIR to evaluate the use of a predatory mite, *Phytoseiulus persimilis,* to control two-spotted spider mites in glasshouse crops such

Table 1: Chemicals available for mite control.

Chemical group/ Chemical name	Trade Name	LD50 dermal toxicity to mammals	Product dilution	Comments
Organophosphates				
Diazinon	Basudin 50	1200	10g/10 ℓ	General insecticide, active on contact or ingestion.
	Ispray Diazinon 50	1200	10g/10 ℓ	Limited control of two spotted mites.
Dimethoate	Rogor 20W	700	8ml/10 ℓ	General insecticide. Contact and systemic action.
Omethoate	Folimat	700	10ml/10 ℓ	
Maldison	Ispray Malathion	4000	25g/10 ℓ	General insecticide. Contact action. Limited control of two spotted mites.
	Malalthion 25WP	4000	25g/10 ℓ	
Naled	Dibrom 870	800	10ml/10 ℓ	General insecticide. Contact and vapour action.
Thiometon	Ekatin	200	10ml/10 ℓ	General insecticide-miticide. Contact and systemic action.
Sulfurous acid-cyclic diol ester				
Endosulfan	Malix	360	20ml/10 ℓ	General insecticide-miticide. Contact and stomach poison.
	Thiodan	360	20ml/10 ℓ	
	Thiofor	360	20ml/10 ℓ	
Organic sulphite				
Propargite	Omite	250	20g/10 ℓ	Miticide. Contact action.
DDT Type				
Dicofol	Kelthane 35	1000	10g/10 ℓ	Miticide. Contact action. Requires temperatures between 15-25 °C.
Organotins				
Azocyclotin	Peropal	1000	7.5g/10 ℓ	Miticide. Contact action against active stages.
Cyhexatin	Plictran 600F	2000	3ml/10 ℓ	Miticide. Contact action against active stages. Residual action. Requires temperatures between 15-25 °C.
Chlorophenyl-sulphone				
Tetradifon	Tedion V-18	1000	10g/10 ℓ	Miticide with contact action against eggs and nymphs.

as cymbidiums. To be successful, spider mite populations in the crop must be monitored and the predator introduced when the pest exceeds a specified population density. *P. persimilis* is a very active and voracious predator and will quickly reduce spider mites to low levels. In fact, its predations on spider mites are so effective that its own populations tend to die out due to insufficient prey. Therefore, in practice, the predator must be introduced into the glasshouse to control each successive build-up of spider mite.

To achieve acceptible spider mite control in IPM, it is often necessary to use a limited number of miticide applications in addition to predator introduction. Control of other pests will also require chemical applications. The success of IPM relies on choosing those chemicals which are least disruptive to the predator populations. This problem can be minimised by using strains of predatory mites resistant to certain groups of chemicals. These aspects of IPM are presently under study and it is hoped that the predatory mites will be available commercially in the near future.

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for

Vol. 12, No. 5: 30th July
Vol. 12, No. 6: 1st October

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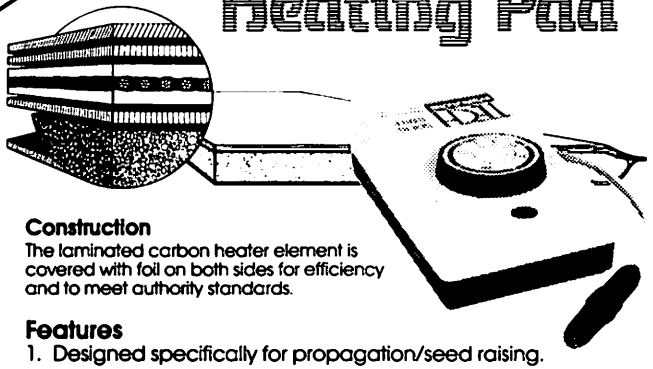

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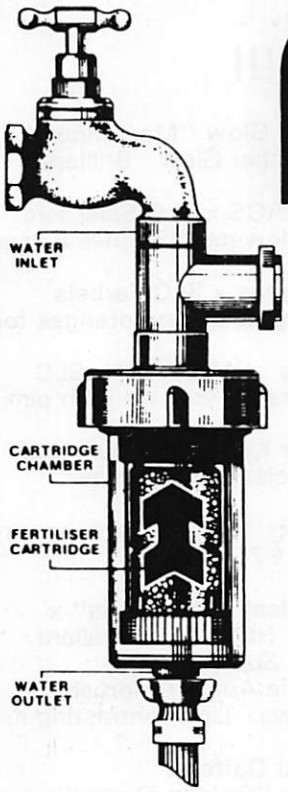

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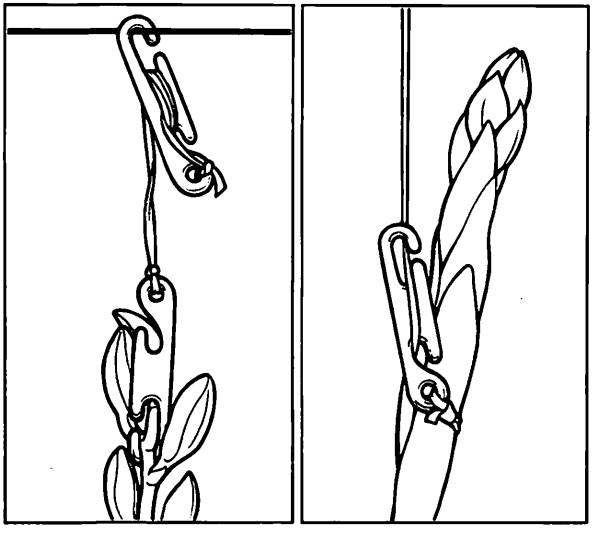

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PORTRAITS OF NEW ZEALAND ORCHID SPECIES

Acianthus reniformis
Photography: Bob Goodger

Acianthus reniformis has a single, thickish, stalkless, usually kidney-shaped leaf which lies flat on the ground.
The 2-4 reddish flowers per stem are larger than those of *A. Fornicatus.* It occurs in Australia, and in the North Island, and part of the South Island, often on wet bare clay banks, flowering from July to October.

Acianthus fornicatus
Photography: Bob Goodger

Acianthus fornicatus has a single, stalkless, thin, heart-shaped leaf, slightly up the stem.
There are 2-8 flowers per stem, with small, green bracts, and conspicuous, pale dorsal sepals. It is common throughout New Zealand, and can form large colonies, flowering from May to October.