

Orchids

in New Zealand

Volume 18 No. 4

August 1992



Australian

Orchid

Review

14 McGill Street, Lewisham,
Sydney 2049, NSW, Australia
Phone: (02) 560 6166
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Six issues per year featuring
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Subscription rates

Surface One Year \$NZ41 or \$A34
Two Years \$NZ75 or \$A64
Air Mail One year \$NZ49 or \$A41
Two Years \$NZ94 or \$A79
Single Copy Air Mail \$NZ9.50

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ORCHID COUNCIL OF NEW ZEALAND (CONZED INC.)

P.O. BOX 489, WHANGAREI

NOTE: the new name of Orchid Council of New Zealand Incorporated does not come into force until it has been registered with the Justice Department.

THE ORCHID ADVOCATE

Official Journal of The Cymbidium Society of America, Inc.

Published bimonthly, The Orchid Advocate features articles on Cymbidiums, Paphiopedilums and other cool-growing genera. Learn about growing from many world-famous authorities.

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Pay to: CYMBIDIUM SOCIETY OF AMERICA, INC.

c/o Mrs. Richard L. Johnston, 6881 Wheeler Ave., Westminster, CA 92683 U. S. A.

Published bi-monthly
ISSN 0110-5256

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All photography by Editor
unless noted otherwise.

SUBSCRIPTIONS:

Vol. 18, 1992 (6 issues)
(Including postage and
GST): \$28.00

to be sent to:

Distribution Secretary:

MISS B. FEATHERSTON
P.O. Box 983
Whangarei

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P.O. Box 983
Whangarei

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Advertising payments
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Printed by W. J. Deed Printing Ltd
16 Bowen Street, Waiuku.
Phone: 0-9-235 7133

Orchids

IN NEW ZEALAND

incorporating 'The New Zealand Orchid Review'

OFFICIAL PUBLICATION OF

ORCHID COUNCIL OF NEW ZEALAND
NEW ZEALAND ORCHID SOCIETY

VOL. 18 No. 4

AUGUST 1992

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'What a Great Bunch'

This last weekend I had the pleasure of attending the Annual General Meeting of the **Orchid Council of New Zealand**. Not my first, but certainly the best.

Hosted by the North Shore Orchid Society and held at Birkenhead, Auckland, most of the

orchid societies in New Zealand were represented. All will sing praises of the hospitality offered to all visitors, overlooking the small glitches that inevitably occurred but which are quickly forgotten in the recollection of the much greater pleasures. All involved deserve a heartfelt vote of thanks. Even if the

weather was cold, certainly the welcome was not.

From the social on Friday night to the departures on Sunday there were smiling faces, the welcoming of old friends and the making of new, and the babble of many simultaneous conversations on subjects orchidaceous and not.



From left: Lyn Sherlock, Joy and Syd Wray and Ken Christie during the Constitution debate.

At a meeting of this type, there can be areas of dissension, especially when matters such as the constitution were under discussion, but under the excellent chairmanship of President Syd Wray, all issues were settled with such a spirit of co-operation and good will that this was arguably one of the best annual meetings ever held.

The full details of the meeting will be reported in due course, but most orchid society members will be pleased that the strange name 'CONZED'



Top: President Syd Wray presenting Ken Christie with his long service award.

Bottom: Delegates at the A.G.M.



— whatever it means — (Cymbidium Orchids, New Zealander's Esteemed Delights?!) has been laid to rest, and a name that actually means something will now apply i.e. **“Orchid Council of New Zealand Incorporated.”**

There was a wide ranging discussion on the subject of this magazine **Orchids in New Zealand**, all of which was most constructive. It certainly highlighted the issues involved, and hopefully will stimulate even greater interest in this most

important part of the orchid scene in New Zealand. I was even pleased to be told by a number of delegates and observers that now they fully understood the magazine they would take out a subscription. May there be many of them.

It was very pleasing that the Orchid Foundation announced a donation to the magazine of \$2,000 — so that the magazine could become all colour. This is a very important contribution, and I am sure all readers will appreciate the eventual

colourful result. The benefits of this donation will not be fully seen until later this year, but readers will have already noticed increased colour in this and the last issue in any case. This has been possible through very careful financial control and the co-operation and efforts of the Printer, Bill Deed.

I have always thought orchid growers a race apart, and this weekend only confirmed the high regard I hold for them. What a great bunch of people indeed. ◀



Delegates and observers at the A.G.M.

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HISTORICAL
REPRINT

ODONTOGLOSSUMS
From A Chat about Orchids
by Frederick Boyle, 1893

In 1893 Frederick Boyle in "A Chat about Orchids" wrote about odontoglossums. Their characteristics, their collection and transport to Europe. This extract, forwarded by Alf Day, still makes fascinating reading today.

Odontoglossums stand first, of course — I know not where to begin the list of their supreme merits. It will seem perhaps a striking advantage to many that they burst into flower at any time, as they chance to ripen. I think that the very perfection of culture is discounted somewhat in this instance. The gardener who keeps his plants at the *ne plus ultra* stage brings them all into bloom within the space of a few weeks. Thus in the great collections there is such a show during October, November and December as the Gardens of Paradise could not excel, and hardly a spike in the cool houses for the rest of the year. At a large establishment this signifies nothing; when the *Odontoglossums* go off other things "come on" with equal regularity. But the amateur, with his limited

assortment, misses every bloom. He has no need for anxiety with this genus. It is their instinct to flower in spring, of course, but they are not pedantic about it in the least. Some tiny detail overlooked here and there, absolutely unimportant to health, will retard

florescence. It might very well happen that the owner of a dozen pots had one blooming every month successively. And that would mean two spikes open, for, with care, most *Odontoglossums* last above four weeks.



Modern odontoglossum hybrid

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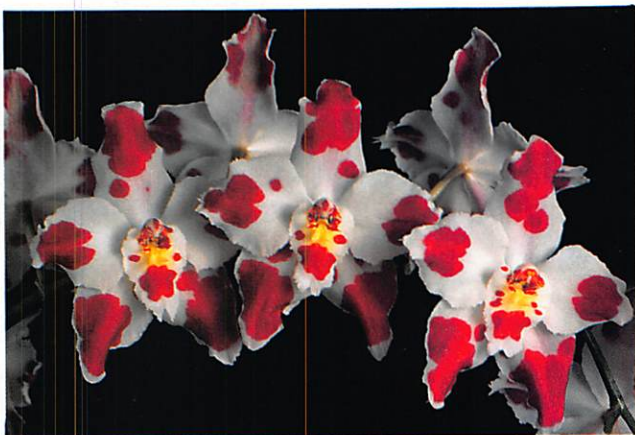


UNITED TRAVEL

**RUSSELL & SOMERS
VARIETY TRAVEL**

Another virtue, shared by others of the cool class in some degree, is their habit of growing in winter. They take no “rest”; all the year round their young bulbs are swelling, graceful foliage lengthening, roots pushing, until the spike demands a concentration of all their energy. But winter is the most important time. I think any man will see the peculiar blessing of this arrangement. It gives interest to the long dull days, when other plant life is at a standstill. It furnishes material for cheering meditations on a Sunday morning — is that a trifle? And at this season the pursuit is joy unmixed. We feel no anxious questionings, as we go about our daily business, whether the *placens uxor* forgot to remind Mary, when she went out, to pull the blinds down; whether Mary followed the instructions if given; whether those confounded patent ventilators have snapped to again. Green fly does not harass us. One syringing a day, and one watering per week suffice. Truly these are not grave things, but the issue at stake is precious: we enjoy the boon of relief proportionately.

Very few of those who grow *Odontoglossums* know much about the “trade”, or care, seemingly. It is a curious subject, however. The genus is American



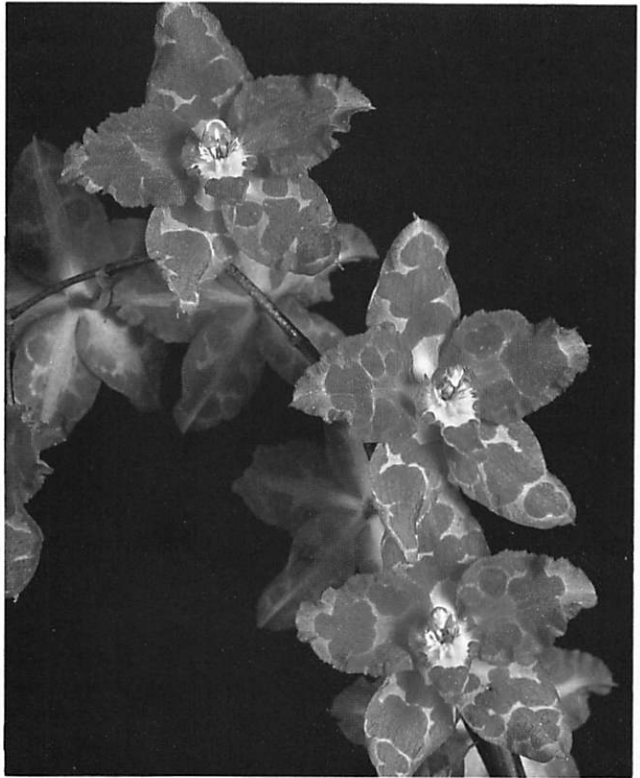
Top: *Oda*. Shelly Anne
 Grower: C. and A. McLeod, 13 WOC, Photo: Avtec

Bottom: *Wilsonara* Kendrick Williams ‘Featherhill’
 Grower: J. Ansley. Photo: G. Fuller



After you have finished reading this copy of
Orchids in New Zealand
pass it on to a friend!

exclusively. It ranges over the continent from the northern frontier of Mexico to the southern frontier of Peru, excepting, to speak roughly, the empire of Brazil. This limitation is odd. It cannot be due to temperature simply, for, upon the one hand, we receive *Sophranitis*, a very cool genus, from Brazil, and several of the coolest *Cattleyas*; upon the other, *Odontoglossum roezlii*, a very hot species, and *O. vexillarium*, most decidedly warm, flourish up to the boundary. Why these should not step across, even if their mountain sisters refuse companionship with the *Sophranitis*, is a puzzle. Elsewhere, however, they abound. Collectors distinctly foresee the time when all the districts they have "worked" up to this will be exhausted. But South America contains a prodigious number of square miles, and a day's march from the track carries one into *terra incognita*. Still, the end will come. The English demand has stripped whole provinces, and now all the civilized world is entering into competition. We are sadly assured that *Odontoglossums* carried off will not be replaced for centuries. Most other genera of orchid propagate so freely that wholesale depredations are made good in very few years. For reasons beyond our



Oda. Shelly Anne 'Tokoroa' 13 WOC
 Grower: Geyserland Orchids. Photo: Avtec

comprehension as yet, the *Odontoglossum* stands in different case. No one in England has raised a plant from seed — that we may venture to say definitely. Mr Cookson and Mr Veitch, perhaps others also, have obtained living germs, but they died incontinently. Frenchmen, aided by the climate, have been rather more successful. M. M. Bleu and Moreau have both flowered seedling *Odontoglots*. M. Jacob, who takes charge of M. Edmund de Rothschild's orchids at Armainvilliers,

has a considerable number of young plants. The reluctance of *Odontoglots* to propagate is regarded as strange; it supplies a constant theme for discussion among orchidologists. But I think that if we look more closely it appears consistent with other facts known. For among importations of every genus but this — and *Cypripedium* — a plant bearing its seed-capsules is frequently discovered; but I cannot hear of such an incident in the case of *Odontoglossums*. They have been arriving in scores of

thousands, year by year, for half a century almost, and scarcely anyone recollects observing a seed-capsule. This shows how rarely they fertilize in their native home. When that event happens, the *Odontoglossum* is yet more prolific than most, and the germs, of course, are not so delicate under their natural conditions. But the moral to be drawn is that a country once stripped will not be re clothed.

I interpolate here a profound observation of Mr Roezl. That wonderful man remarked that *Odontoglossums* grow upon branches thirty feet about the ground. It is rare to find them at thirty-five feet, rarer at twenty-five; at greater and less heights they do not exist. Here, doubtless, we have the secret of their reluctance to fertilize; but I will offer no comments, because the

more one reflects the more puzzling it becomes. Evidently the seed must be carried above and must fall below that limit, under circumstances which, to our apprehension, seems just as favourable to those at the altitude of thirty feet. But they do not germinate. Upon the other hand, *Odontoglossums* show no such daintiness of growth in our houses. They flourish at any height, if the general conditions be suitable. Mr Roezl discovered a secret nevertheless, and in good time we shall learn further.

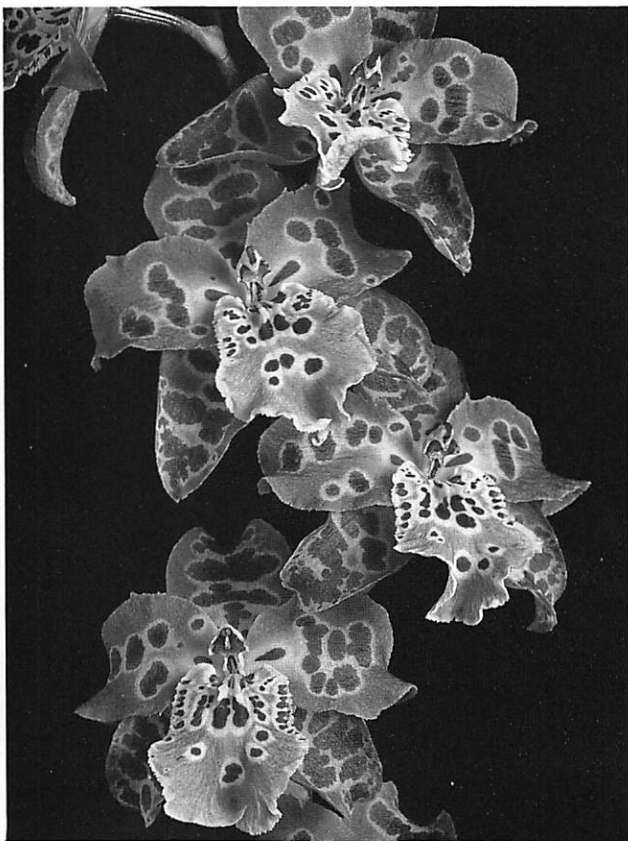
To the Royal Horticultural Society of England belongs the honour of first importing orchids methodically and scientifically. Messrs. Weir and Fortune, I believe, were their earliest employees'. Another was Theodor Hartweg, who

discovered *Odontoglossum crispum* var. *alexandrae* in 1842; but he sent home only dried specimens. From these Lindley described and classed the plant, aided by the sketch of a Spanish or Peruvian artist, Tagala. A very curious mistake Lindley fell into on either point. The scientific error does not concern us, but he represented the colouring of the flower as yellow with a purple centre. So Tagala painted it, and his drawing survives. It is an odd little story. He certainly had Hartweg's bloom before him, and that certainly was white. But then again yellow *alexandraes* have been found since that day. To the Horticultural Society we are indebted, not alone for the discovery of this wonder, but also for its introduction. John Weir was travelling for them when he sent living specimens in 1862. It is not

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surprising that botanists thought it new after what has been said. As such Mr Bateman named it after the young Princess of Wales — a choice most appropriate in every way.

Then a few wealthy amateurs took up the business of importation, such as the Duke of Devonshire. But “the trade” came to see presently that there was money in this new fashion, and imported so vigorously that the Society found its exertions needless. Messrs Rollisson of Tooting, Messrs Veitch of Chelsea, and Messrs Low of Clapton distinguished themselves from the outset. Of these three firms one is extinct; the second has taken up, and made its own, the fascinating study of hybridization among orchids; the third still perseveres. Twenty years ago, nearly all the great nurserymen in London used to send out their travellers; but they have mostly dropped the practice. Correspondents forward a shipment from time to time. The expenses of the collector are heavy, even if he draw no more than his due — and the temptation to make up a fancy bill cannot be resisted by some weak mortals. Then, grave losses are always probable — in the case of South American importations, certain. It has happened not once but



Dgma. (*Miltassia* Charles M. Fitch x *Odm*. Stroperry)
13 WOC. Grower: Geyserland Orchids. Photo: Avtec

a hundred times that the toil of months, the dangers, the sufferings, and the hard money expended go to absolute waste. Twenty or thirty thousand plants or more an honest man collects, brings down from the mountains or the forests, packs carefully, and ships. The freight alone may reach from three to eight hundred pounds — I have personally known instances when it exceeded five hundred. The cases arrive in England — and not a living thing therein!

A steamship company may reduce its charge under such circumstances, but again and again it will happen that the speculator stands out of a thousand pounds clean when his boxes are opened. He may hope to recover it on the next cargo, but that is still a question of luck. No wonder that men whose business is not confined to orchids withdrew from the risks of importation, returning to roses and lilies and daffodowdillies with a new enthusiasm.

There is another point also, which has varying force with different characters. The loss of life among those men who "go out collecting" has been greater proportionately, than in any class of which I have heard. In former times, at least, they were chosen haphazardly among intelligent and trustworthy employees of the firm. Trustworthiness was a grand point, for reasons hinted. The honest youth, not very strong perhaps in an English climate, went bravely forth into the unhealthiest parts of unhealthy lands, where food is very scarce, and very, very rough; where he was wet through day after day, for weeks at a time; where "the fever", of varied sort, comes as regularly as Sunday; where from month to month he found no one with whom to exchange a word. I could make out a startling list of the martyrs of orchidology. Among Mr Sander's collectors alone, Falkenberg perished at Panama, Klaboeh in Mexico, Endres at Rio Hacha, Wallis in Ecuador, Schroeder in Sierra Leone, Arnold on the Orinoco, Digance in Brazil, Brown in Madagascar, Sir Trevor Lawrence mentions a case where the zealous explorer "waded for a fortnight up to his middle in mud", searching for a plant he had heard of. I have not identified this instance of



Odcdm. ((*Odm. bictoniense* x *Odcdm. Dena Reinkka*) x *Onc. marshallianum*) 'Redvale' HCC/NZOS
 Grower/Photo: Ross Tucker

devotion, but we know of rarities which would demand perseverance and sufferings almost equal to secure them. If employers could find the heart to tempt a fellow creature into such risks, the chances are that it would prove bad business. For to discover a new or valuable orchid is only the first step in a commercial enterprise. It remains to secure the "article", to bring it safely into a realm that may be called civilized, to pack it and superintend its transport through the sweltering lowland to a

shipping place. If the collector sicken after finding his prize, these cares are neglected more or less; if he dies, all comes to a full stop. Thus it happens that the importing business has been given up by one firm after another.

Odontoglossums, as I said, belong to America — to the mountainous parts of the continent in general. Though it would be wildly rash to pronounce which is the loveliest of orchids, no man with eyes would dispute that *O. crispum alexandrae* is the queen of

Continued on page 121

THE SAFE HANDLING OF DANGEROUS CHEMICALS

by J. Haywood-Farmer

Chemicals and orchids go together. It is, however, important that we all know and understand these beneficial but dangerous substances. It is hoped the following articles will increase our understanding of the issues involved.

The final part of this series will appear in the next issue.

Virtually anyone who has had much to do with orchids (or any other plants for that matter) has had occasion to use chemicals, usually as fertilisers or as pesticides. Fertilisers are relatively harmless and normally need no special care except caution to keep them dry, uncontaminated and unavailable to children.

Pesticides, (a)* however, are another matter entirely. Pesticides are designed to kill pests; they usually do so by interfering in some way with the delicately balanced biochemistry of the pest. Because man also has a delicate chemical balance which closely resembles those of other living things, many pesticides are very dangerous to man. The danger may be immediate or it may be of a longer term nature. The danger may also increase as more and more pesticide slowly accumulates through repeated use. The danger may be compounded by the fact that dangerous quantities of many pesticides are impossible to detect by sight, taste or smell.

LD 50

Pesticides often are classified by a number called an LD 50 value. This number refers to the concentration of pesticide required to kill 50% of a test population of rabbits, rats, mice or other common lab animals. The concentration is expressed in milligrams (mg) of pesticide per kilogram (kg) of test animal. A chemical with an LD 50 value of 60 means that 60 mg (per animal) would be required to kill half the animals in a population of 1 kg rats, or that 3 mg (per animal) would be required to kill half of a population of 50 g mice. In terms of man, 4.56 g of this pesticide might be expected to kill half of a group of 168 lb (12 stone or 76 kg) men. This

amount is about 1 teaspoon. An LD 50 of 60 is not a particularly low value.

Interpret LD 50 values with care. There are some important points to remember.

(a)* In the context used in this article the term pesticide is a collective noun for a vast group of products to control rodents, insects, fungi, mites, slugs, snails, bacteria, viruses, weeds etc.

1. Different species have different sensitivities to any given chemical. The LD 50 for man may be much higher or much lower than that of the test animal. Man is never used as a test subject on purpose so assume that the LD 50 for man is much lower than the stated value.

2. Individual animals differ in their sensitivities to chemicals. Half the test population survives an LD 50 test but the other half die at lower doses. People with allergic reactions, weak hearts or other conditions, or who are in early pregnancy are particularly at risk. Sensitivity varies with age,

health etc. Assume you are abnormally sensitive.

3. LD 50 refers to lethal doses. You can get very ill without dying.

4. Test animals usually have very short lives and tests such as LD 50 give very little useful information on the long term effects of exposure to chemicals (such as cancer, liver, lung, kidney, and nervous system disorders.)

Removing some of the danger

Much of the danger inherent in using poisons can be minimized by handling them properly. The rules are mostly applied common sense. Below are some suggestions and things to remember to make your use, disposal and storage of pesticides safer.

A. Before you start

i. Read as much information as you can about the product you are about to use. Don't forget to read the label. Pay attention to data on toxicity and special handling requirements. Investigate symptoms of poisoning and first aid procedures. Keep

in mind that the properties of chemicals may change dramatically if they are mixed with other chemicals. Beware of heresy information; your sources may be as ignorant as you. If you have no information, treat the product as if it is very dangerous.

Nothern's "Home Orchid Growing", and the American Orchid Society Handbook "Orchid Pests and Diseases" are among the many publications with useful information on LD 50 values, use, toxic symptoms, etc.

ii. Prepare your workplace. Make sure it is clean and uncluttered. If possible make sure it is well ventilated, or pick a calm day and work outside. Avoid windy days so the vapours will not drift elsewhere. If there is a breeze stand upwind.

iii. Collect the vessels you will use. Avoid using kitchenware or the kitchen sink. In particular avoid plastic or other porous containers that might subsequently be used for food (especially by playing children).

glass and steel are reasonably safe but aluminium is not. Many chemicals are readily absorbed by plastics.

- iv. Tell someone what you are going to do and what you are using. Advise them on appropriate first aid procedures and who to contact in an emergency. Ask them to check on you periodically.
- v. Dress appropriately. Rubber boots and old, washable clothes are appropriate. Rubber or plastic gloves and a suitable face mask may be needed.

B. As you work

- i. Chemicals are relatively harmless outside the body but they can enter the body in many ways, eg, through the mouth, lungs, skin and mucous membranes. NEVER taste or smell a dangerous chemical to see if it is right.
- ii. Leave the bottle or box from which you obtained the chemical at your workplace until later. It may help to identify the poison if you get into trouble.

- iii. Do not smoke or eat while using chemicals. The heat of a burning cigarette can transform chemical vapours into even more dangerous ones. (Note, however, that smoking apparently increases ones ability to detect deadly hydrogen cyanide).

- iv. It is much easier to control liquids than vapours, gases, dusts or mists; therefore avoid spraying poisons - wash your plants instead if it is practical.
- v. Avoid skin contact with pesticides. Mucous membranes around your mouth and eyes, and cuts are particularly good sites for absorption. Your eyes are most valuable. Use rubber gloves, glasses, etc. or procedures that keep you safe.
- vi. Avoid leaving your workplace until you have completed your job and have cleaned up.

C. Before you finish

- i. Clean up promptly. Don't leave pesticides, pesticide preparations, contaminated papers, vessels, etc., around. Wash your work area thoroughly. Small

amounts of poisons can probably be disposed of by washing them away with large volumes of water or in municipal garbage. Larger quantities can be buried.

- ii. Wash your hands carefully (even if you think skin contact was avoided) or take a bath or shower. Such routine events as licking a stamp or biting your fingernails can become dangerous.
- iii. Wash your shoes and outer clothing especially if you have been using highly toxic chemicals that are quite volatile. A pair of coveralls might be convenient.

- iv. Some pesticides are very persistent and will remain on plants for a considerable period especially inside where they won't get washed off by rain. If you have been using pesticides make sure you wash your hands after your plants before you eat, smoke or shake hands with someone.

D. Storage

- i. Make sure that the containers are tightly sealed before they are stored.

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- ii. Make sure that they are well labelled with as much information as possible including identity, date opened, where purchased, handling information, etc. This information helps you to know what you are dealing with next time.
 - iii. Keep your poisons secure where children cannot get at them (locked up?) and where they will not be accidentally dislodged. Cats, earthquakes, possums, children, etc can dislodge things. Metal containers won't break easily but they will rust. Cardboard will absorb water, in general store them in dry, dark, cool locations preferably with good ventilation. Light and heat can affect the chemical and fade the label.
- Every year people die or become seriously ill from the effects of pesticides. Don't become one of them. Avoid the all too prevalent attitude "it can't happen to me." It can and, if you are not careful, it will. Only fools boast of their negligence with danger.

PLANTS—PESTS—PESTICIDES—PEOPLE

INTRODUCTION

We all enjoy growing our favourite plants. While they are, as a general rule, hardy and disease resistant, like all plants, they are occasionally subject to attack and damage by various pests and diseases. This article will:

- ★ Look at some orchid afflictions.
- ★ Consider how we can mitigate the ravages of those that do infect our plants.
- ★ Look at the characteristics of the chemical pesticides we may have to use to control their effects.
- ★ Consider safety precautions associated with the use of these chemicals.

PESTICIDE CLASSIFICATION

Pesticides are toxic chemicals which kill plant pests and diseases. There are different types of pesticides formulated for particular uses:

- ★ **fungicides** — for the control of fungal diseases.
- ★ **bacteriacides** — for the control of bacterial diseases.
- ★ **insecticides** — for the control of insect pests.
- ★ **acaricides** — for the control of mites.
- ★ **nematocides** — for the control of nematodes
- ★ **herbicides** — for the control of weed plants.
- ★ **molluscicides** — for the control of slugs and snails.
- ★ **fumigant gasses** — for the control of a range of pests in soil or in enclosed spaces such as glasshouses.
- ★ **rodenticides** — for the control of rats and mice.

Some pesticides are selective in their action. Not all fungicides, for example, will affect all fungi: others will have a wider action, with even say bacterial control capabilities.

To understand the use and application of pest-

icides, some knowledge of how they act is useful. As orchid growers, we are primarily interested in the following:

Fungicides and bacteriacides have two basic modes of action:

★ **Protectants** — The material forms a protective coating on the surface of the plant. Any fungus or bacteria landing on this coating is killed. Examples are Zineb, Rovral.

★ **Systemics** — These are absorbed by the plant tissues and translocated inside the plant to all tissues. An example is Benlate.

Insecticides, acaricides may be either

★ **Contact** - stomach poisons which kill when the insect touches the plant surface or are ingested with plant material eaten. Example Malathion.

★ **Systemic** — These are absorbed by the plant and circulated by the sap. They are especially effective against insects with piercing or sucking mouthparts. Example is Orthene.

DISEASE PREVENTION

The above discussion presupposes that chemicals

are always required. That is not always the case. So perhaps it is appropriate to consider at this point:

- how a collection can be kept disease and pest free.
- how to reduce or eliminate the opportunity for pests and diseases becoming introduced or established.

These aims can be met by:

- Buying only disease free vigorous plants:
- Observing good sanitation — keeping benches and floor free from plant debris:
- Observing good culture — water when needed, preferably allowing the plant foliage to dry off quickly, fertilise appropriately, repot when needed every 2-3 years, ensure temperatures and ventilation are adequate. It may be possible to vary your cultural practices to make conditions less suitable for any pests or diseases present or suspected.
- Quarantining new plants before introduction into your collection, inspecting, perhaps repotting, and giving preventative sprays.
- A preventative spray occasionally will

reduce the chances of any undesirable visitor becoming established.

- Observing and handling your plants regularly. If anything unusual is seen, take the appropriate action as soon as possible if it is something undesirable. If it is a pest or disease unfamiliar to you, have it properly identified, and find out as much as you can about it, and seek the best available advice concerning its control.

**REMEMBER
PREVENTION IS
ALWAYS BETTER
THAN CURE.**

CHEMICAL TOXICITY

Sometimes despite our best efforts, chemical control is appropriate, or even essential for the continued wellbeing of our collections. Before looking at the specific use of chemicals, it is appropriate to remember, *these chemicals are poisons*. They are toxic not only to the pest, but in many cases, can be toxic to you, the grower, as well.

People become poisoned by the material entering the body by the following means:

- **Dermally** by absorption through the skin.

- **Orally** by contamination of food, or swallowing the pesticide from the container.
- **Respirationally** by breathing in the vapour or spray droplets.

The pesticides can vary greatly in the danger they present to the user. They are universally classified to the degree of hazard they involve to the operator. This is expressed as the LD 50 figure, being the amount in mg of the chemical necessary to kill 50% of a population (of orchid growers!) per kg of the recipient's weight. Remember, the figure represents the amount killing 50%: some people will remain unaffected at that dose rate, others can be affected by a lower level of contamination. The figures are therefore primarily for the standard comparison of the toxicity of materials. The toxicity classification generally acceptable is tabulated as follows:

Examples are:

Very highly hazardous — Products of this toxicity are not available to amateur growers.

Highly hazardous — Meta-systox, Mesuro!®

Moderately hazardous — diazinon, dimethoate (Rogor®)

Slightly hazardous — captan, maldison (Malathion®), acephate (Orthene®), dicofol (Kelthane®), tetradifon (Tedion®).

® Registered trade name for the product.

The LD 50 figures for the main materials likely to be used by an orchidist may be printed on the packets. Lists are also published in some books, such as Northern's *Home Growing*. Remember that in an enclosed glasshouse chemical concentrations can more rapidly build up during spraying operations than is possible in the open air. Thus in glasshouses greater care is required.

SAFE HANDLING PROCEDURES

The following of these basic rules will ensure the chemicals affect only the target, and not the person applying the material.

1. Read the Label

Do this before opening the container and note the warnings and cautions. Follow instructions carefully, and take particular note of what to do in the case of accidental poisoning.

2. Lock them away

Sprays, granules and dusts must be kept locked away, out of reach of children and pets.

3. Safe storage

Keep chemicals in their original containers. Never store any pesticide in jars, cans, or other unlabelled vessels, especially not in anything associated with human food or drink such as soft drink or beer bottles.

TOXICITY HAZARD OF CHEMICALS

Classification	LD50 (oral or dermal)	Theoretical amount required to kill an 'average' human of 65 kg about 10 stone or 140 lbs) weight.
Very highly hazardous	Up to 50 mg/kg	One drop to one teaspoon taken orally or via skin or eyes.
High hazardous	50-100 mg/kg	About one teaspoonful.
Moderately hazardous	100-500 mg/kg	One teaspoon to 2 teaspoons.
Slightly hazardous	Above 500 mg/kg	About 30 - 450 grams (one ounce to one pound or more)

4. **Wear protective clothing**

The label will indicate what protection is needed, such as clothing and masks. Masks must be of the right type for the chemical being used, and must be well fitting, clean and in good order.

Toxic pesticides and chemicals can be absorbed into the body by inhalation, swallowing or direct skin contact, and all these make protective clothing essential at all times.

5. **Wash thoroughly**

The hands and face should be washed after spraying or dusting, and clothes should be changed for clean ones. Used clothing should be washed before reuse.

If a spill of chemical occurs, contaminated clothing should be removed and skin and clothing washed.

A person working with any of these chemicals should not eat or smoke before washing thoroughly.

Soap and water should be readily available so that if skin contact is made, the area can be washed immediately. In the case of chemical contamination of the eyes, they should be flushed immediately with copious amounts of clean water.

6. **Protect food & foodstuffs**

Make sure water supplies and food are not exposed to pesticides, and store the chemicals away from these.

Make sure residues cannot accumulate in puddles, streams or ponds as they are toxic to animals, wildlife and humans.

7. **Use chemicals accurately**

Make sure the strength of the mixture is correct, and that the equipment has been calibrated accurately.

8. **Dispose of empty containers**

Cans or drums should be washed out, punctured, crushed flat and buried away from water supplies. The same applies to glass containers. Combustible containers should be burnt, and the ashes buried.

Any leaks or spillages should be cleaned up immediately.

9. **Observe label directions**

Make sure all application instructions are followed: this ensures the safe and economical use of the material.

10. **Emergency action**

If a user complains of nausea, headache, dizziness, double vision or other unusual sensations, medical help should be sought immediately. First aid measures according to the label should be used until medical help arrives.

Anyone exposed to massive skin contact or inhalation of these chemicals should be rushed to a doctor or hospital. Take the chemical container with you.

It is appropriate to also remember that in the

protected environment of a glasshouse, pesticide residues can remain for some time on the foliage: thus care in handling the plants after spraying must be exercised for some time.

PESTICIDE INJURY TO PLANTS

Pesticides can injure the plant in some circumstances. This may arise from a failure to observe precautions with respect to temperatures, application rates, compatibility with other materials, and frequency of application. Injury varies from stunting, with no distinctive symptoms, to leaf-scorch, necrotic spotting, whitish banding on newly developing leaves and abnormal reddish, reddish-brown, or purplish pigmentation in the blades. Necrosis may be superficial or it may extend through the blades with distinct collapsed margins to the affected areas and to rupture of tissues.

CHEMICAL FORMULATIONS

Factors which can affect the performance of pesticides are:

★ **Formulations** — Few of the materials available are soluble in water and must therefore be mixed with other chemicals to obtain an even dispersion on mixing with water. The principal formulations are:

- ☆ *dusts* — the active ingredient mixed with a filler eg talc.
- ☆ *water soluble powders* — active ingredient dissolves in water to form a solution.
- ☆ *wettable powder* — active ingredient plus dispersing agent which mixes with water to give a fine suspension.
- ☆ *Emulsifiable concentrates* — active ingredient plus a solvent, plus an emulsifier. It mixes with water to form a milky white suspension.
- ☆ *aerosols* - pesticide and solvent stored under pressure.
- ☆ *smoke bombs* — the active ingredient is incorporated in a pyrotechnic mixture and is vapourised when the mixture is ignited.

In general there is a greater danger of phototoxicity from an emulsifiable concentrate than from a wettable powder formulation. If two pesticides are to be mixed together, check their compatibility and avoid mixtures of wettable powders and emulsifiable concentrates.

Chemicals are not normally formulated specifically for orchids, most being utilised in horticulture generally.

Therefore the suitability of products for all types of orchids must be carefully ascertained. For the commonly grown genera (*cymbidiums*, *cattleyas* etc) it can be anticipated that they will be suitable if generally recommended. Those growing a diverse collection of genera, however, may find that some pesticides will be toxic to certain genera. Always test each new material on spare plants of the different genera grown or discuss with those who may have had experience with the material before using over the whole collection. These precautions could save you from the loss of valuable plants. Most companies, while giving general recommendations, place the responsibility for the use of their products entirely on the user: if the product kills your plants and there is no problem with the product specification, the responsibility for the use of the material is yours.

★ **Surfactants** - Wetting agents reduce the surface tension of spray droplets, causing each spray droplet to flatten out to cover a larger leaf surface, and also reduce the opportunity of droplets falling off the leaf surface.

PEST CONTROL PROGRAMMES

Insecticides

This discussion will concentrate on some of the more significant problems experienced by amateur growers. The control measures will indicate certain chemicals but readers should note that these may not be appropriate in all circumstances. If you have a problem, talk it over with an experienced grower before taking drastic action: often there is more than one way of attacking a particular problem.

New products are constantly becoming available. Before using a product unfamiliar to you, try and ascertain from the manufacturer or supplier if it is suitable for orchids, and if it has been tested on them. In any case, test on a few plants of each genera grown before applying to a complete collection to ensure that no detrimental effects are caused.

Two pests, especially common on *cymbidiums*, are the two spotted spider mite, and the false spider mite.

The two spotted spider mite, more commonly just known as "red spider" obtains its name from two coloured blotches on either side of its body. It is a small insect just visible to the naked eye. These insects feed on the

undersides of leaves, penetrating the plant cells and sucking out the cell contents, producing a speckled stippled appearance on the foliage. They spin a fine web, although often this is not seen until heavy infestations become established. With a life cycle of two to three weeks, a rapid build-up in infestations can occur.

False spider mites are very small, being barely visible to the naked eye, and they do not spin webs. They cause damage to both the upper and lower leaf surface, producing generally a silvery and pitting of the leaf surface. Once the leaf surface is damaged, invasion by fungal and bacterial pathogens often occurs.

Maldison (Malathion ®) and Kelthane ® usually control these pests. Give two sprays 7 to 10 days apart to ensure a complete kill. Specific miticides, however, may be more useful, as these products are effective against the egg stages, against which the two products above have limited effectiveness. Tetredifon (trade name Tedion ®) and acephate (Orthene ®) are such specific miticides.

Red spider likes warm dry conditions and the regular misting of the foliage especially under the leaves, and the maintenance of higher levels of humidity, will often prevent heavy infestations, reducing or even

eliminating the need for chemical control.

Aphids are often found, especially on buds and flowers. Under good conditions, establishment of this pest can be rapid. Maldison will give good control, although because of continuing winged infestation and short effective life of some pesticides retreatment may be necessary. On flowers, the use of powered insecticides (eg Rose Dust) are generally considered safest.

Scale insects are sometimes troublesome. Not only do they suck the sap, but some species also produce a damaging toxin. They are difficult to control with sprays because they are generally well protected, and attack all parts of the plants. Several applications of a contact insecticide such as Maldison (with a wetting agent) may be effective, although a systemic may be more effective. Acephate (Orthene ®) is a systemic product. Often on small collections hand treatment of affected plants with methylated spirits painted on with a small paint brush, will give adequate control.

Mealybugs can often become prevalent. These soft bodied insects secrete honeydew on which a sooty mould grows. A thorough application of Maldison, especially with the addition of a wetting agent, will often be effective. A second spray application three or four weeks later may

be needed (and perhaps repeated) for total control.

With all control programmes, remember that the continued use of one material over a period of time can cause the build up of insect populations resistant to that chemical. Therefore the occasional use of another formulation is generally recommended to eliminate this problem.

Fungal and Bacterial diseases

there are a number of fungal and bacterial diseases which can affect orchids. They are generally dividable into two groups:

- ☆ those that attack the roots and stem base.
- ☆ those that affect the foliage and flowers.

Because of the variety of organisms involved, if root and stem infestation is suspected, the following actions should be immediately implemented:

- ★ Remove all infected tissue.
- ★ Destroy all infected material.
- ★ Repot in fresh (sterilised) media using new (or at least sterilised) pots.
- ★ Lower the temperature and reduce the humidity.
- ★ Improve the drainage provided by the growing container. Excessive

watering, old tight mixxes, can exacerbate the problem.

- ★ Apply a suitable fungicide, eg Benlate. Other materials may be required.

Foliage and flower afflictions can generally be controlled by the application of zineb, captan or benlate, applied at 14 day intervals. Petal blight may arise when cold damp conditions are prevalent: increasing ventilation often satisfactorily controls this problem.

Virus diseases

Viruses are small microscopic particles which multiply in living cells. The presence of a virus in a plant may not show visual symptoms: in fact the commonly considered virus symptoms are often caused by non-virus factors such as genetic abnormalities, insects, nutritional disorders, and chemicals. The viruses of orchids cause either or all of the following symptoms: mottling and streaking, necrosis and ring spotting of the foliage, and colour breaking (abnormal colours) in the flowers.

Because of their small size, virus presence can only be definitely confirmed by the use of indicator plants, seriological testing or electron microscope examination.

The *Cymbidium* Mosaic Virus, and Tomato Mosaic Virus, orchid strain, the two main orchid viruses, are

spread by sap transmission when cutting, handling and leaf contact, and through vegetative propagation. The distribution by insect vectors (aphids, mites etc) of the two commonest orchid viruses is not considered to be scientifically proven. The most important agent causing virus dissemination is man. Some of the less important viruses may be aphid spread.

Control of virus infections involves the following procedures: because of the total invasion of the plant by the virus pathogen, control is difficult. This is complicated by the fact that the nuclear chemistry of the plant and virus is so similar to make chemical control almost impossible.

All plants obtained should be from virus free stock. It has been found that seed obtained even from virused plants, will be virus free, and then this gives one avenue for the obtaining of virus free plants.

Plants obtained by vegetative propagation (divisions or mericlones) from infected plants, will in turn be infected. Thus source plants must be virus tested to ensure they are clear. The use of heat treatment and plant tissue multiplication with virus testing enables infected plants to be cultured in some cases.

In the growing area the aim must be at control to prevent mechanical and sap

transmission. Virus is highly infectious, and to prevent spread to healthy plants the following precautions should be observed:

Isolation — Known high health orchids should be kept separate from those of unknown health status.

Sterilisation — Of cutting equipment by flame during use.

Plant spacing — The keeping of plants from touching prevents spread, although may, however, be confined to just suspected plants in practical application.

Hygiene — Protect potting tables by paper, cleaning up after each plant.

Remove and destroy any infected plants. ◀

P. C. Tomlinson

CORRECTION

My writing is not the best, and I do not see the captions before they are printed, but many readers will have corrected the name on page 88 in the last issue.

Cymbidium
Tijuana Punity

SHOW DATES 1992

DATE	SOCIETY	VENUE, ADDRESS
Aug 22/23	KAPITI	War Memorial Centre, Pehi Kupa Street, Waikanae
Aug 29/30	OTAGO	St Peter's Church Hall, Hillside Road, Dunedin
Aug 29/30	NORTH SHORE	Auck Technical Institute, Akoranga Drive, Northcote, Auckland
Sept 5/6	HOWICK	All Saints, Cook Street Hall, Howick
Sept 5/6	POVERTY BAY	Boys High School, Stanley Road, Gisborne
Sept 4/5/6	WHANGAREI	Forum North Exhibition Hall, Rust Avenue, Whangarei
Sept 12/13	SOUTH CANTERBURY	West End Hall, Timaru
Sept 12/13	HIBISCUS COAST	Community Hall, Main Road, Orewa
Sept 12/13	NORTH OTAGO	
Sept 11/12/13	HAWKES BAY	Lindisfarne College Hall, Pakowhai Road, Hastings
Sept 11/12/13	SOUTH AUCKLAND	Papakura Community Centre, Great South Road, Papakura
Sept 18/19/20	TAURANGA	Greerton Hall, Tauranga
Sept 19/20	LEVIN	Horowhenua College Hall, Weraroa Road, Levin
Sept 19/20	TAUPO	Great Lake Centre, Tongario Street, Taupo
Sept 25/26	BAY OF ISLANDS	Union Church Hall, Kerikeri
Sept 25/26/27	NEW ZEALAND	Mt Albert War Memorial Hall, New North Road, Mt Albert Auckland
Sept 26	TOKOROA	St John's Hall, Logan Street, Tokoroa
Sept 26/27	CANTERBURY	5th South Island Seminar. Horticultural Centre, Christchurch
Sept 26/27	MANAWATU	Convention Centre, Main Street, Palmerston North
Oct 1/2/3	MARLBOROUGH	St Christopher's Hall, Redwood Village, Blenheim
Oct 2/3	WAIROA	Memorial Hall, Queen Street, Wairoa
Oct 3/4	WAIKATO	Hamilton Gardens Complex, Cobham Drive, Hamilton
Oct 3/4	SOUTHLAND	Hansen Hall, Invercargill
Oct 3/4	WANGANUI	Boys College Hall, Ingestre Street, Wanganui
Oct 9/10/11	TARANAKI	21st Anniversary, West Point Complex, New Plymouth
Oct 9/10/11	NELSON	Stoke Memorial Hall
Oct 24/25	WAIRARAPA	McGregor Hall, Masterton
1993		
Sept 10/11	GORE	2nd South Island Show. James Cumming Wing, Arkwick Street, Gore

THIS LISTING, IN THE FORMAT SHOWN, IS AVAILABLE **FREE OF CHARGE** TO ALL SOCIETIES AFFILIATED TO THE ORCHID COUNCIL OF NEW ZEALAND.

TO ENSURE PUBLICATION, PLEASE ENSURE, FULL DETAILS ARE FORWARDED AS SOON AS SHOW DATES ARE FINALISED.

Continued from page 108

this genus. She has her home in the States of Colombia, and those who seek her make Bogota their headquarters. If the collector wants the broad-petalled variety, he goes about ten days to the southward before commencing operations; if the narrow-petalled, about two days to the north — on mule-back of course. His first care on arrival in the neighbourhood — which is unexplored ground, if such he can discover — is to hire a wood; that is, a track of mountain clothed more or less with timber. I have tried to procure one of these “leases”, which must be odd documents; but orchid-farming is a close and secret business. The arrangement concluded in legal form, he hires natives, twenty or fifty or a hundred, as circumstances advise, and sends them to cut down trees, building meantime a wooden stage of sufficient length to bear the plunder expected. This is used for cleaning and drying the plants brought in. Afterwards, if he be prudent, he follows his lumbermen, to see that their indolence does not shirk the big trunks — which give extra trouble naturally, though they yield the best and largest return. It is a terribly wasteful process. If we estimate that a good tree has been felled for every three scraps of *Odontoglossum* which are

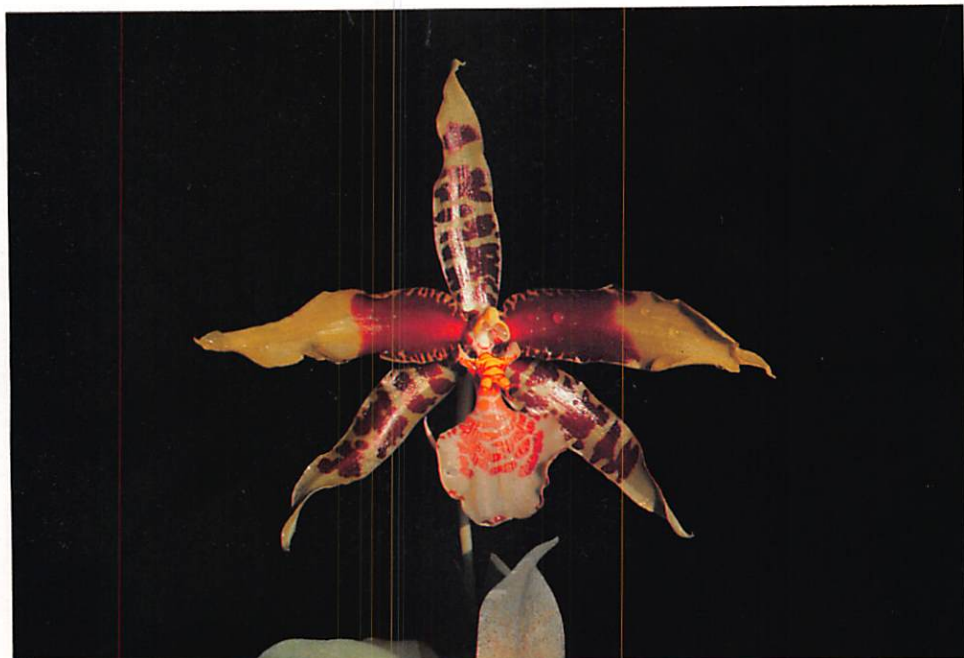


Odm. (Ingera 'Brilliance' x Royen)

now established in Europe, that will be no exaggeration. And for many years past they have been arriving by hundreds of thousands annually! But there is no alternative. An European cannot explore that green wilderness overhead; if he could, his accumulations would be slow and costly as to raise the proceeds to an impossible figure. The natives will not climb, and they would tear the plants to bits. Timber has no value in those parts as yet, but the day approaches when Government must interfere. The average yield of *Odontoglossum crispum* per tree is certainly not more than five large and small together. Once upon a time Mr Kerbach recovered fifty-three at one

felling, and the incident has grown into a legend; two or three is the usual number. Upon the other hand, fifty or sixty of *O. gloriosum*, comparatively worthless, are often secured. The cutters receive a fixed price of sixpence for each orchid, without reference to species or quality.

When his concession is exhausted, the traveller overhauls the produce carefully, throwing away those damaged pieces which would ferment in the long, hot journey home, and spoil the others. When all are clean and dry, he fixes them with copper wire on sticks, which are nailed across boxes for transport. Long experience has laid down rules for each detail



Rossioglossum grande

of this process. The sticks, for example, are one inch in diameter, fitting into boxes two feet three inches wide, two feet deep, neither more nor less. Then the long file of mules sets out for Bogota, perhaps ten days' march, each animal carrying two boxes — a burden ridiculously light, but on such tracks it is dimension which has to be considered. On arrival at Bogota, the cases are unpacked and examined for the last time, restowed, and consigned to the muleteers again. In six days they reach Honda, on the Magdalena river, where, until lately, they were embarked on rafts for a voyage of fourteen days

to Savanilla. At the present time, an American company has established a service of flat-bottomed steamers which cover the distance in seven days, thus reducing the risks of the journey by one-half. But they are still terrible. Not a breath of wind stirs the air at that season, for the collector cannot choose his time. The boxes are piled on deck; even the pitiless sunshine is not so deadly as the stewing heat below. He has a store of blankets to cover them, on which he lays a thatch of palm leaves, and all day long he souses the pile with water; but too well the poor fellow knows that mischief is busy down below. Another

anxiety possess him too. It may very well be that on arrival at Savanilla he has to wait days in that sweltering atmosphere for the Royal Mail steamer. And when it comes in, his troubles do not cease, for the stowage of the precious cargo is vastly important. On deck it will almost certainly be injured by salt water. In the hold it will ferment. Amidships it is apt to be baked by the engine fire. Whilst writing I learn that Mr Sander had lost two hundred and sixty-seven cases by this latter mishap, as is supposed. So utterly hopeless is their condition, that he will not go to the expense of overhauling them; they lie

at Southampton, and to anybody who will take them away all parties concerned will be grateful. The expense of making this shipment a reader may judge from the hints given. I could give an incident of the same class yet more startling with reference to *Phalaenopsis*. It is proper to add that the most enterprising of Assurance Companies do not yet see their way to accept any kind of risks in the orchid trade; importers must bear all the burden. To me it seems surprising that the plants can be sold so cheap, all things considered. Many persons think and hope that prices will fall, and that may probably happen with regard to some genera. But the shrewdest of those very shrewd men who conduct the business all look for a rise.

Odont. harryanum always reminds me — in such an odd association of ideas as everyone has experienced — of a thunderstorm. The contrast of its intense brown blotches with the azure throat and the broad, snowy lip, affect me somehow with admiring oppression. Very absurd; but *on est fait comme ça*, as Nana excused herself. To call this most striking flower *harryanum* is grotesque. The public is not interested in those circumstances which give the name significance for a few, and if there be any flower which demands an

expressive title, it is this, in my judgement. Possibly it was some Indian report which had slipped his recollection that led Roezl to predict the discovery of a new *Odontoglot*, unlike any other, in the very district where *Od. harryanum* was found after his death, though the story is quoted as an example of that instinct which guides the heaven-born collector. The first plants came unannounced in a small box sent by Senor Pantocha, of Colombia, to Messrs Horsman in 1885, and they were flowered next year by Messrs Veitch. The dullest who sees it can now imagine the excitement when this marvel was displayed, coming from an unknown habitat. Roezl's prediction occurred to many of his acquaintance, I have heard; but Mr Sander had a living faith in his old friend's sagacity. Forthwith he despatched a collector to the spot which Roezl had named — but not visited — and found the treasure. The legends of orchidology will be gathered one day, perhaps; and if the editor be competent, his volume should be almost as interesting to the public as to the cognoscenti.

I have been speaking hitherto of Colombian *Odontoglossums*, which are reckoned among the hardiest of their class. Along with them, in the

same temperature, grow the cool *Masdevallias*, which probably are the most difficult of all to transport. There was once a grand consignment of *Masdevallia schlinii*, which Mr Roezl despatched on his own account. It contained twenty-seven thousand plants of this species, representing at that time a fortune. Mr Roezl was the luckiest and most experienced of collectors, and he took special pains with this unique shipment. Among twenty-seven thousand two bits survived when the cases were opened; the agent hurried them off to Stevens's auction-rooms, and sold them forthwith at forty guineas each. But I must stick to *Odontoglossums*. Speculative as is the business of importing the northern species, to gather those of Peru and Ecuador is almost desperate. The roads of Colombia are good, the population civilized, conveniences abound, if we compare that region with the orchid-bearing territories of the south. There is a fortune to be secured by anyone who will bring to market a lot of *O. noveum* in fair condition. Its habitat is perfectly well known. I am not aware that it has a delicate constitution; but no collector is so rash or so enthusiastic as to try that adventure again, now that its perils are understood; and no employer is so

reckless as to urge him. The true variety of *O. hallii* stands in much the same case. To obtain it the explorer must march in the bed of a torrent and on the face of a precipice alternately for an uncertain period of time, with a river to cross about every day. And he has to bring back his loaded mules, or Indians, over the same pathless waste. The Roraima Mountain begins to be regarded as quite easy travel for the orchid-hunter nowadays. If I mention that the canoe-work on this route demands thirty-two portages, thirty-two loadings and unloadings of the cargo, the reader can judge what a "difficult road" must be. Ascending the Roraima, Mr Dressel, collecting for Mr Sander,

lost his herbarium in the Esequibo river. Savants alone are able to estimate the awful nature of the crisis when a comrade looses his grip of that treasure. For them it is needless to add that everything else went to the bottom.

One is tempted to linger among the *Odontoglots*, though time is pressing. In no class of orchids are natural hybrids so mysterious and frequent. Sometimes one can detect the parentage; in such cases, doubtless, the crossing occurred but a few generations back: as a rule, however, such plants are the result of breeding in and in from age to age, causing all manner of delightful complications.

How many can trace the lineage of Mr Bull's *Od. delectabile* — ivory white, tinged with rose, strikingly blotched with red and showing a golden labellum? or Mr Sander's *Od. alberti-edwardi*, which has a broad soft margin of gold about its stately petals? Another is rosy white, closely splashed with pale purple, and dotted round the edge with spots of the same tint so thickly placed that they resemble a fringe. Such marvels turn up in an importation without the slightest warning — no peculiarity betrays them until the flowers open; when the lucky purchaser discovers that a plant for which he gave perhaps a shilling is worth an indefinite number of guineas.



Odcdm. (*Odm. bictoniense* x *Onc. forbesii*)

Two Autumn Flowering Orchids

For this issue, let us look at two intergeneric hybrids, which flower during Summer or into Autumn and add a real splash of colour to any orchid house (as well as inside the home).



Wilsonara Kendrick Williams 'Featherhill'
Grower/Photographer: Ross Macdonald.

Wilsonara Kendrick Williams 'Featherhill' produces a branched stem from the base of a mature pseudobulb. The plant illustrated, had 40 flowers on the stem from the second pseudobulb. These flowers will last for at least six to eight weeks.

Oncidium, *Odontoglossum* and *Cochlioda*, will be found in the breeding of the genus *Wilsonara*. Kendrick Williams resulted from the crossing of *Wilsonara* Autumn and *Odontioda* Ray Buckman. In its hybridizing can be found the species *Oncidium tigrinum* (which originates from Mexico, where it is found epiphytic on Oak trees at 2000-2500 n altitude), *Odontoglossum crispum* (which originates in Colombia at 2250-3000 m in the Andes) and *Cochlioda noezliana* (an epiphyte which originates in the Andean region of Peru). This last species has vivid red flowers.

With these cool growing species in its breeding, there is no difficulty growing this plant in an unheated orchid house. It

responds to light to medium shade with year-round misting and watering. A variety of fertilizers, given following watering, appear to be beneficial.

Vuylstekeara Cambria 'Plush' produces up to 10-15 attractive flowers on its arching stem. These also, are long-lasting.

This intergeneric hybrid includes *Miltonia*, *Odontoglossum* and *Cochlioda* in its breeding. *Vuyls. Cambria* was registered in 1931. It was produced by crossing *Vuyls. Rudra* and *Odontoglossum Clonius*. The variety 'Plush' was awarded in 1967. Species to be found in breeding of this plant include, *Miltonia*

vexillaria (which originates from Ecuador), *Cochlioda noezliana* and *Odontoglossum crispum*. (See above.)

This plant prefers light shade and regular misting and watering throughout the year (less moisture in the winter of course).



Vuylstekeara Cambria 'Plush'
Grower/Photographer: Ross Macdonald.

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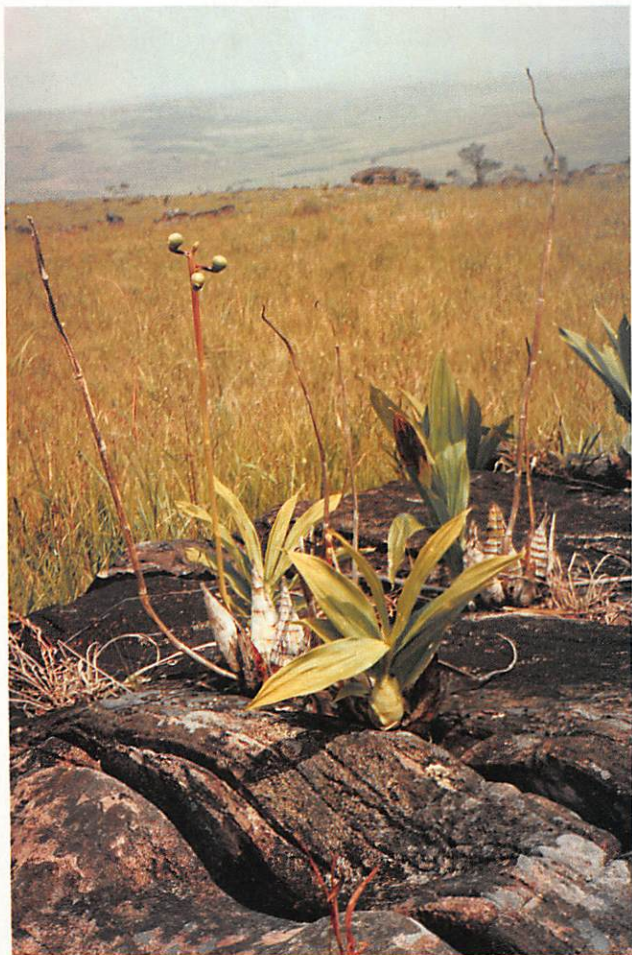
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Through a production oversight, a number of interesting photographs were omitted from Eric Hobbs' article which appeared last month. These are now reproduced here.



Gran Sabana - July wet season.



Top: Mt Roraina summit, an island of orchids and plants on swamp.

Bottom: Eric Hobbs just below summit of Mt Roraian, Venezuela.

Photos: Eric Hobbs



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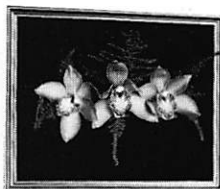
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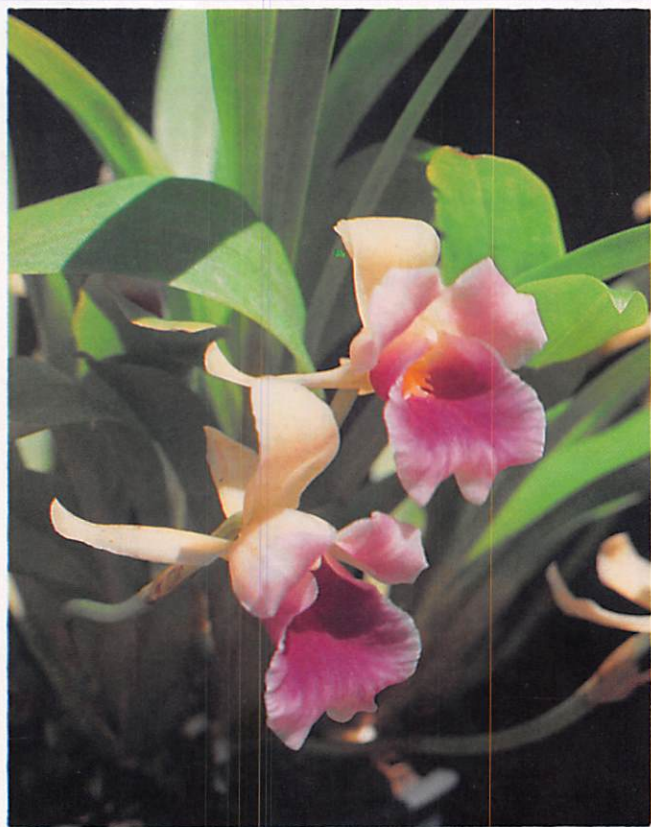
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Cochleanthes discolor



This striking orchid is one of 14 species of the genus *Cochleanthes* distributed throughout the American tropics. *Cochleanthes discolor* is not considered to be a common orchid in nature, (Cuba, Honduras, Costa Rica, Panama and Venezuela) it is also not widely seen in local collections. It is, however, an eye catcher, as this plant grown by Jeff and Margaret Anderson of Wellington attests.'