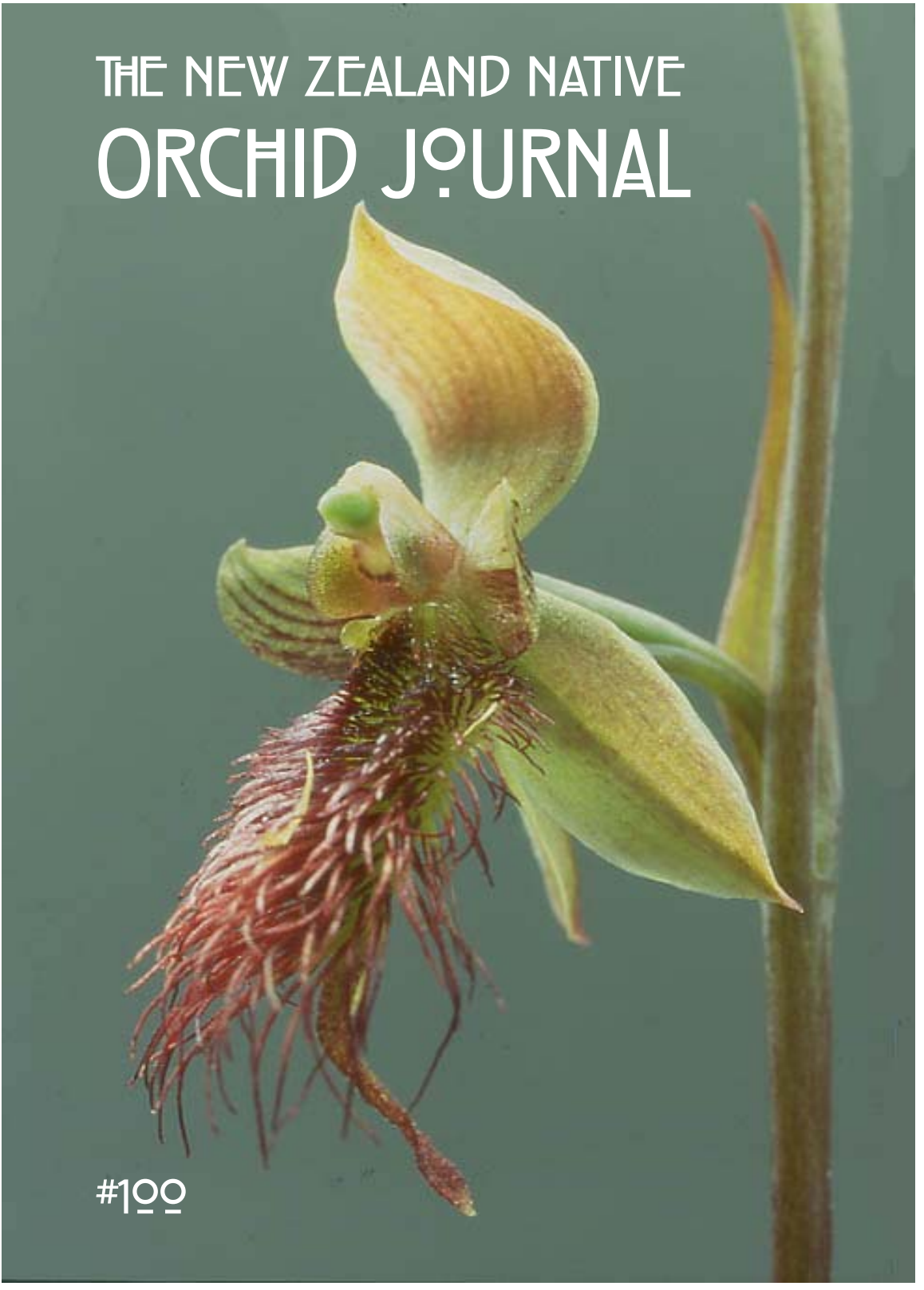
THE NEW ZEALAND NATIVE ORCHID JOURNAL



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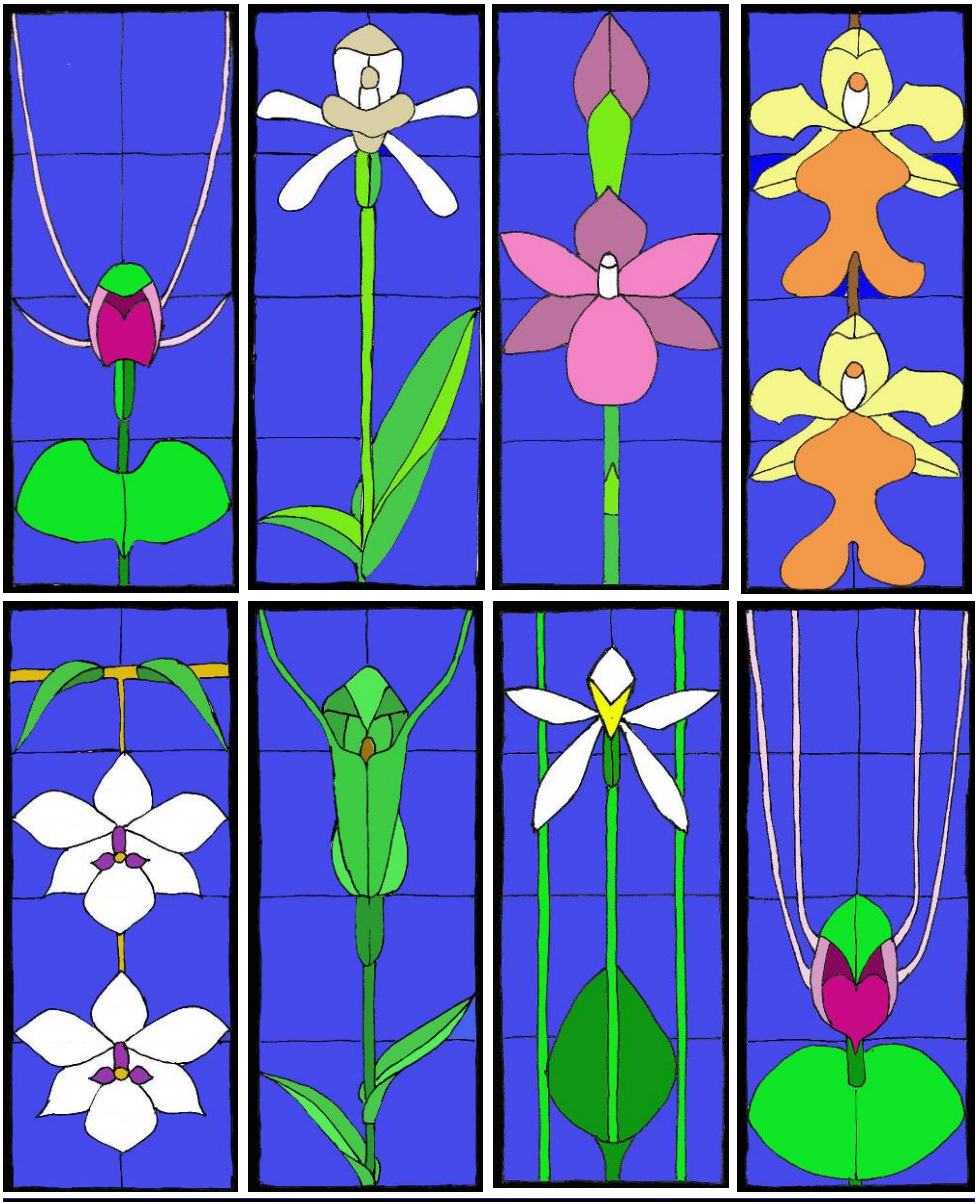
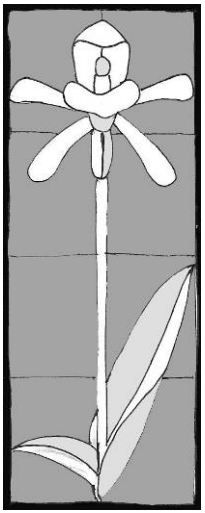


SOME NZ ORCHID DESIGNS FOR STAINED GLASS

IAN ST GEORGE



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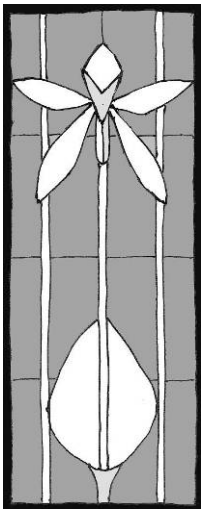


EDITORIAL: IAN ST GEORGE

1. This is the 100th issue of the Journal

Dorothy Cooper received such an enthusiastic response to her book, *A field guide to New Zealand native orchids,* published by the Wellington Orchid Society in 1981, that she started a native orchid group to keep up with the correspondence.

The first issue of the *Newsletter* appeared in March 1982, and is reprinted in facsimile in the centre pages of this issue of the *Journal*.

Her editorial in *Newsletter No.2* is self-explanatory,

What a wonderful response to what I thought might have been a useless idea!

I am pleased to report that we have over 80 members, from the far north to the far south, giving us great opportunities, and subs are still coming in. Many thanks for all your encouraging letters, and special thanks to the Thames Valley Orchid Society who kindly donated $20 towards the cost of setting up this group.

A few snippets "If your group will emphasise the 'study' of our orchids plus the need to conserve, with information on seed collecting and growing for those who 'must have' then I will be pleased to join."

"The very worst that could happen would be competitive display... until we have learnt to efficiently propagate them."

"Too many species of plants have been lost, and no way can we reverse our wrongdoings, yes, perhaps when we can grow them from seed then we can all have our own little collections but at the moment I am happy to view them in their own environment and know that they will grow on there for longer."

"I am pleased to find the N.Z. orchids relatively common after several years of searching out British examples, and would hope that the Native Orchid Group would actively discourage collecting."

"I have wished that my own recording could have some meaningful objective and now can add to the collective pool of information that this group could provide."

Letters were overwhelmingly in favour of leaving plants where they are until we can successfully grow them from seed; thank you again for your responses — I only wish that there was room to publish them all.

Could I please thank those who have already contributed to the newsletter, and remember, there can't be a newsletter without news: we would like to hear from you all.

Dorothy continued cheerfully (despite the faintly lukewarm comments above) as editor of the first 20 issues of the *Newsletter,* typed it and copied it by Gestetner, and was only occasionally the grateful recipient of enough copy to extend to 8 pages. She is one of a small distinguished band of NZ orchidologists whose "first mover" contribution has been outstanding.

I took over an already successful publication from *Newsletter* 21, which was typed into my old Apple Europlus II, printed

on the dot-matrix printer, pasted up, and reduced by photocopying on the Dunedin Medical School photocopier. The sub was $5. One reader complained immediately about the small print. *Plus ça change; plus ça mêmechose.*

Newsletter 25 first carried the new logo, designed by Bruce Irwin. No. 50 first carried colour, No. 52 set a record at 48 pages. We celebrated No. 75 with a colour cover, and that became the norm after No. 93.

Now we are at No. 100. Copy comes in by email or disk, and is transferred to Microsoft Publisher. I email the completed file to the printer, who sends the bill to Judith Tyler and the journals to me and I stuff prepaid envelopes printed using Mailmerge.

It's not difficult nowadays.

I too thank those who have contributed to the journal, and remember, there can't be a journal without news: we would like to hear from you.

2. Orchid nectaries

Nectar

Nectar is an exudate from plant tissues. It is produced in floral structures called nectaries. The nectary is simply an epidermal area composed of many permanently open stomata, which "bleed" a sugary liquid. The nectar may accumulate in the base of the flower, or perhaps even in a long pouch called a nectar spur.

Nectar is produced by the flowers in order to attract pollinating animals. Nectaries are generally at the base of the perianth, so that pollinators are made to brush the flower's reproductive structures while accessing the nectar. Nectar that is produced outside the flower is generally produced to attract predatory insects. They will eat both the nectar and any plant eating insects around, thus functioning as "bodyguards". Some carnivorous plants will use nectar to lure prey insects into the trap organs of the plant. Nectar is economically important as it is the sugar source for honey.

The main ingredient is sugar – glucose, fructose, saccharose – but there are also amino acids, lipids, organic acids, minerals, vitamins, enzymes, antioxidants, ions and metabolites. The European orchid *Epipactis helleborine* appears to inebriate its insect visitors, and its nectar contains narcotic/hallucinogenic compounds, as well as ethyl alcohol, thought to be from yeast fermentation of the sugars [1].

Orchid nectar

A comprehensive survey from 117 orchid species in the literature and from field studies of fruit set, showed that nectariferous orchids are more successful in setting fruit than are nectarless species. Overall fruit set figures for nectarless and nectariferous orchids were 19.5 and 49.3% for North America, 27.7 and 63.1% for Europe, 41.4 and 74.4% for the temperate southern hemisphere, and 11.5 and 24.9% for the tropics, demonstrating that the dichotomy is consistent across all geographical areas. On average, the provision of nectar doubled the probability of fruit set in both temperate and tropical areas [2].

M.Stpiczyska, K.L.Davies and A.Gregg reviewed nectar secretion in Orchidaceae [3]. The morphology of orchid nectaries has been widely studied; van der Pijl and Dodson [4], and Dressler [5] believe the "lily-like ancestors of the orchids probably had shallow nectar glands between the perianth and the ovary". In extant orchids, however, nectar is not produced in septal glands but in a relatively shallow nectary on the lip or tepals or between the column and the lip (e.g. *Bulbophyllum, Cirrhopetalum, Epipactis, Listera, Pleurothallis, Stelis*), in glandular ringlike nectaries at the top of the receptacle or in spurs (e.g. *Angraecum*) or in tubular nectaries embedded in the ovaries (e.g. *Brassavola, Rhyncholaelia*). Other orchids (e.g. *Cymbidium, Grammatophyllum, Vanda*) produce nectar at the base of the outer surface of the tepals, and the mentum may also function as a nectar spur (e.g. *Scaphyglottis, Dendrobium*). However, only rarely has the column ever been observed to secrete nectar (e.g. *Stelis*). The orchid *Maxillaria coccinea*, whose flow-

ers produce copious amounts of nectar, has (for instance) a "faucet and sink" arrangement: "the nectary is represented by a small protuberance on the ventral surface of the column and nectar collects in a semisaccate reservoir formed by the fusion of the labellum and the base of the column foot. The nectary comprises a single layered epidermis and three or four layers of small subepidermal cells. Beneath these occur several layers of larger parenchyma cells". The colour and shape of *M. coccinea* suggest it is ornithophilous (bird pollinated); a protuberance similar to its nectary is found in the entomophilous (insect pollinated) species *M. parviflora*.

The authors point out that some orchids (e.g. Oncidiinae) have a protuberance on the ventral surface of the column called a *tabula infrastigmatica.* It is not a nectary, but serves as an anchor for insects, who grasp the tabula with their mandibles, leaving their legs free to collect reward.

Some species conserve energy by resorbing their nectar when it is no longer needed. For instance pollination triggers nectar reabsorption in flowers of the epiphytic orchid *Mystacidium venosum*. The amount of sugar in the nectar of *M. venosum* decreased by more than 50 percent within 72 hours of pollination. Hand pollinated flowers from which nectar was previously removed set significantly smaller fruit with a lower percentage of viable seeds than hand pollinated flowers containing nectar, suggesting that resources reclaimed by nectar resorption are allocated to fruit production [6].

Australasian orchid nectar

The major syndromes in Australian orchids are wasp pollination by pseudocopulation (15 species) and the bee pollination syndrome of food mimicry (5 species – here the orchid suggests that food, pollen or nectar, is available by appearance or fruity fragrance, but conserves its energy by failing to provide it).

Nectar and pollen reward systems do operate in a small number of species [7]. Australia's *Dendrobium smilliae* is a nectar producing, bird pollinated epiphyte, and New Zealand's *Winika* and *Earina* species produce nectar and are insect pollinated [8].

Kores [9] reported an analysis of Diurideae, and in it he wrote, "Prasophyllinae … appear to have … secretory tissue at the base of the labellum. Australian species of *Acianthus* and *Cyrtostylis* are reported to secrete nectar from paired glands at the base of the labellum (Jones [10]). Secretory tissue associated with the base of the labellum has also been reported within New Caledonian *Acianthus* by Kores [11] and for species of *Genoplesium* and *Prasophyllum* by Jones et al. [12]. Nectar production in *Microtis* has been suggested by Peakall and Beattie [13]. In their study of pollination in *Microtis parviflora*, they noted that ants forage persistently, visiting individual flowers and inflorescences repeatedly for nectar. They also observed that ants visited only newly opened flowers and that pollinia attachment and pollen transfer to the stigma occurred while they probed the base of the labellum. There are no reports of nectar production in *Townsonia* or *Corybas*, but the former is reported to be autogamic while the latter relies on pollination by deceit [12]. As a consequence, the secretory function of the labellum may have been secondarily lost in these genera".

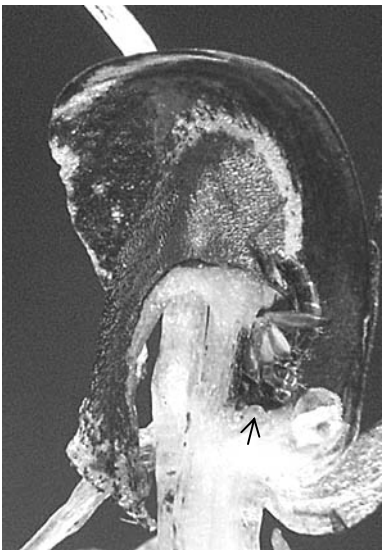
The critically endangered Australian *Prasophyllum robustum* is fragrant, and its labellum "produces quantities of nectar on which a wide range of insects feed. Some of these, particularly native bees wasps and beetles, are effective pollinators" [14]. The strong fragrance, swarms of insects and often chewed appearance of *P. hectori* suggests some similarities (see photograph **opposite, above**).

The Australian *Caladenia arenaria* may secrete a floral scent suggesting it offers nectar; visiting insects pollinate the flower in their search for the nonexistent reward.

Weston and colleagues listed Sydney orchids and their pollination mechanisms: those that produce nectar are *Acianthus caudatus, Calanthe triplicata, Genoplesium* spp., *Microtis* spp., *Prasophyllum* and *Spiranthes.*

New Zealand orchid nectar
Carlos Lehnebach's masters study [8] at Massey is the only one I know of that specifically mentions nectaries in NZ orchids (see p8).

A well-chewed flower of *Prasophyllum hectori,* Tangiwai.



Brian Tyler's fungus gnat dead inside *Nematoceras iridescens,* Levin.

From the Australian work mentioned above, the following NZ terrestrial orchids seem likely to produce nectar: *Microtis* spp., *Prasophyllum* spp., *Genoplesium* spp., *Spiranthes,* and *Cyrtostylis* spp.

What about *Nematoceras?* There is a protruberance at the base of the column of *Nematoceras* species. The pollinators are fungus gnats; some adult fungus gnats drink nectar. The position of dead bodies of fungus gnats found in *N.* "Craigielea" and *N. iridescens* (**below left**) suggest that the protruberance (arrow) is what they seek: is it a tabula infrastigmatica or is it a nectary?

And what about those *Corybas cheesemanii* spurs? are they really spurs? do they contain nectar? It seems unlikely in a self pollinating species.

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3. Carlos Lehnebach's papers on the pollination of New Zealand orchids [1, 2]

The Chilean postgraduate student Carlos Lehnebach wrote his Masters thesis on the *Pollination ecology of New Zealand orchids,* and from it has co-authored, with his colleagues at Massey University, two important papers, one on epiphytes and one on terrestrials.

His methods were similar in both studies: he studied live plants in the wild, and among other things tested self-pollination by bagging flowers; tested for apomixis by removing pollinia, then bagging; tested for self-compatibility by bagging until the stigma was receptive, hand-pollinating with pollinia from the same inflorescence, then re-bagging; cross-pollinated by hand; and observed natural pollination. He stained flowers looking for osmophores (scent glands). He looked for pollinators in the field. In the epiphytes he assessed nectar production.

Epiphytes

Earina autumnalis and *Earina mucronata* are self-compatible, whereas *Earina aestivalis* and *Winika cunninghamii* appear to be partially self-incompatible. All four orchids are incapable of autonomous selfing and are therefore completely dependent on pollinators to set fruits. Floral visitors observed in *Earina* belong to *Diptera, Coleoptera* and *Hymenoptera* and to *Diptera* and *Hymenoptera* in *W. cunninghamii.* Thus, unlike many epiphytic orchids in the tropics, the orchid-pollinator relationship in these orchids is unspecialised and flowers are visited by a wide range of insects. Putative pollinators are flies of the families *Bibionidae, Calliphoridae, Syrphidae* and *Tachinidae*. All four orchids display anthecological adaptations to a myophilous pollination system such as simple flowers, well-exposed reproductive structures, easily accessed nectar and high pollen : ovule ratios.

Some snippets of general interest

- None of these species set seed through apomixis or autonomous self pollination; therefore they depend entirely on pollinating agents for their reproduction.
- Osmophores (scent glands) were difficult to identify by staining in *E. autumnalis* (despite its strong fragrance); top and base of column in *E. mucronata* and *E. aestivalis,* as well as tip of lip under nectary in *E. mucronata.* Column wings, around stigma and lateral lobes and ridges of labellum in *Winika.*
- Nectaries: *E. autumnalis* has two short crescent shaped ridges near the base of the labellum; these leading down to a small, brightly coloured pit, the nectary. *E. mucronata* and *E. aestivalis* have, near the base of the labellum, two inconspicuous ridges leading down to a small pit where the nectary is located. In *Winika*, the three lobed labellum is attached to the column by a column foot, where the nectary is located.
- The energy content of the nectar produced by these orchids per flower is substantial, and similar to that of NZ plants that attract honeyeater birds.
- Nectar seems to be the only reward offered; the pollinia are strongly packed and waxy, and very difficult to break apart mechanically so are unlikely to be harvested by flower visitors.
- Many insects visit the flowers and that may reflect the rich reward they offer, but it also makes them more vulnerable to visits by nectar thieves – exotic or generalist nectar feeding insects – causing pollen loss.
- These orchids may be significant nectar sources for the local insect community, especially *E. autumnalis*. This orchid was the only rewarding species flowering from autumn to early winter near the population studied.
- *E. autumnalis* was visited by seven insect species, mainly dipterans, but only the cosmopolitan syrphid fly *Eristalis tenax* was captured twice carrying the four pollinia attached to the

mouthparts, and is regarded as a probable pollinator.

- Thus pollination of these NZ epiphytic orchids is neither highly specialised nor species specific. All four appear to be primarily pollinated by generalist Dipterans. They have simple, scented, white yellowish flowers, with easy access to the nectary, well exposed reproductive structures and high pollen/ovule ratios – all considered as floral adaptations to this pollination syndrome. The most outstanding feature of the reproductive biology of NZ flora is the large proportion of plants pollinated by dipterans – more than on any other landmass of continental origin.

Terrestrials

The researchers studied the pollination ecology of four terrestrial orchids: *Gastrodia cunninghamii* (or was it *G.* "long column"?), *Thelymitra longifolia*, *Pterostylis alobula*, and *P. patens*. Reproduction of these orchids relies on contrasting reproductive strategies. *Thelymitra longifolia* is predominantly self pollinated, whereas both *Pterostylis* species are cross pollinated and have an absolute dependence on pollinators. *T. longifolia*, *P. alobula*, and *P. patens* are self compatible. Results for *G. cunninghamii* were unclear. Insect visits are uncommon in these species and were observed only in *G. cunninghamii* and *P. alobula*. Aphids were usually found inside the flowers of *G. cunninghamii*, but the role they may have as pollinators is undetermined. In *P. alobula*, male fungus gnats of *Zygomyia* (Mycetophilidae: Diptera) were considered pollinators. The two *Pterostylis* species are more likely to be adversely affected by disruption of the plant pollinator mutualism because of the specialist nature of the plant pollinator interaction.

Snippets

- All 4 spp. are scentless to humans, but all stained in a way that suggested scent glands are present—especially on *Pterostylis*, around the column, lip and sepal tips.
- *T. longifolia, P alobula* and *P. patens* are self compatible. Autogamous self pollination occurred only in *G. cunninghamii* and *T. longifolia.* Natural fruit set was low in the *Pterostylis*, especially in *P. alobula.*
- Male fungus gnats of the genus *Zygomyia* were found alive and dead in *P. alobula.*
- *T. longifolia* has a mixed pollination strategy: it is autogamous, but cross pollination can occur. Indeed, flowers may remain open after deposition of pollen on the stigma, in case a pollinator (a burrowing bee, *Leioproctus fulvescens*) should visit. Self pollination is a fallback position in case bad weather or competition from other flowers makes pollinators scarce.
- *P. alobula* probably attracts its male fungus gnat insect pollinator by sexual deceit, with the emission of a species-specific sexual attractant; pseudocopulation or sapromyophily seem unlikely. The insect enters, triggers the labellum, is imprisoned, and then crawls down attracted by light entering via the clear "windows" of the flower's base, then up the tunnel formed by the labellum and column wings, to detach pollen and emerge to pollinate another flower. This may be the first species-specific insect pollinator system recorded for New Zealand.
- The reproductive success of *P. alobula* is limited by (1) winter flowering, when insects may be scarce. It adapts by long floral persistence (a month for individual flowers), a long flowering season (4 months), and a high count of pollen grains; (2) herbivory by the native leaf-roller caterpillar; (3) deposition of *Pinus nigra* pollen on the stigma, reducing the surface area available for *P. alobula* pollen; (4) habitat disturbance.

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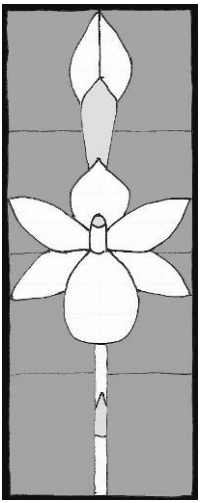
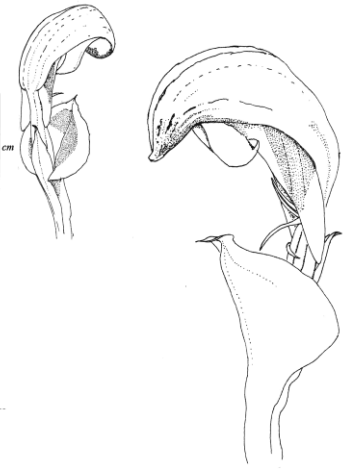


ELEMENTARY: ED HATCH

with drawings by Bruce Irwin and Ian St George
Dan Hatch celebrated his 87th birthday in May 2006—Ed.

9. *Corybas*

(named for the Phrygian Corybantes who danced, after getting suitably sozzled, in honour of the goddess Rhea Cybele)

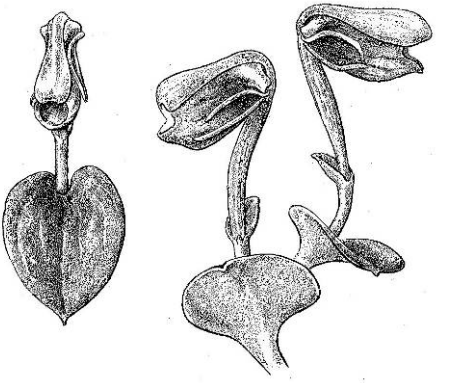


1: *Corybas cheesemanii*

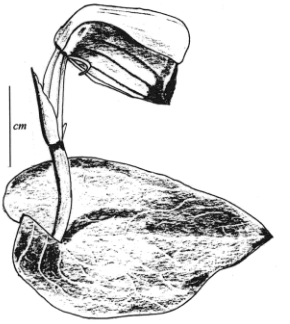
(T.F. Cheeseman, curator of the Auckland Museum, AK, for 50 years)
Easily identified by the 2 closed conical spurs at the base of the labellum. While this is normally a green leaved plant with flowers borne above the surface, it becomes on occasion saprophytic, loses its leaf and chlorophyll, and the flower does not rise above the surface litter. In this condition it can be confused with *C.cryptanthus*, so look for the conical spurs.
Distribution – endemic – Three Kings Is. North Id.: and the Sounds/Nelson district of the South Id.: Chatham Is. In the north it prefers mature manuka/kanuka scrub, or taraire forest.
Flowers – May-August – self pollinated.

2: *Corybas carsei*

(Harry Carse, schoolteacher/botanist)
Superficially similar to *C.rotundifolius*, it is a much smaller plant, confined to *Empodisma* bogs and readily identified in the field by the cleft apex to the dorsal sepal. It is very close to the Australian *C.fordhamii* which grows in a similar habitat
Distribution – endemic – currently only known from Waikato bogs where it is being monitored by the DoC. It originally occurred in bogs at Kaitaia, Cambridge, and Tauhei
Flowers – September – insect and/or self pollinated.



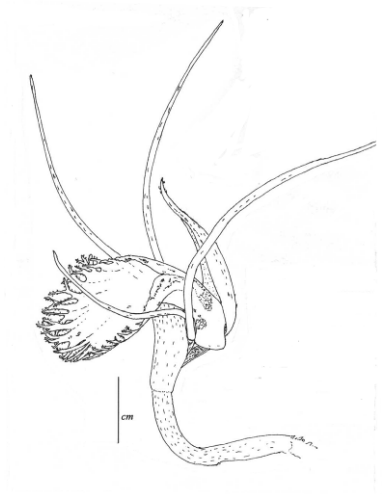
3: *Corybas rotundifolius*



(round leaved)
Similar to, but larger than *C. carsei*, and lacks the cleft dorsal sepal
Distribution – endemic – North Id: now confined to scrub and light forest between the North Cape and Warkworth; specimens in herbaria suggest that it once extended much further south.
Flowers – July – self pollinated.

4:*Corybas cryptanthus*

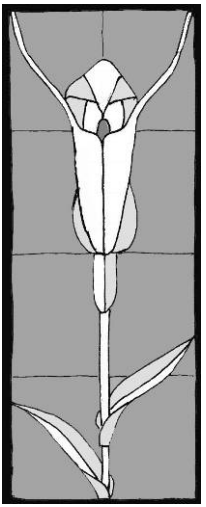
(hidden flower)
This plant lacks chlorophyll and an expanded leaf, and the relatively large flower does not usually appear above the moss and litter in which the rhizome lives. Consequently, unless discovered by accident (such as being sat on for lunch), the first indication of the species' presence is the tall, leafless, red-flecked seeding peduncle. Some flowers however, lack the red pigment, in which case the peduncles are also colourless, but always of course without an expanded basal leaf. This can be confusing when the plant grows, as it sometimes does, with *C.cheesemanii*. Minute rudimentary tubers are present in the axils of the rhizome bracts, but seldom develop.
Bruce Irwin discovered that the petals in this species are longer and more robust than the lateral sepals, reversing the normal procedure.
When the flower is fertilised the elongating peduncle, in order to protect the developing ovary, bows its head so to speak and shoves upwards with it shoulders, straightening out once it is clear of the clutter.(cf beans and *Podocarps*). In the other *Corybas* species, which open their flowers above the surface and are protected in the bud by both the floral bract and the folded leaf, the peduncle grows straight up.



Distribution – endemic – Three Kings Is. North and South Is.
Flowers – July-August – self pollinated.

5: *Corybas oblongus*

(the oblong leaf)
Easily distinguished by the pale fimbriate edge to the reddish labellum, and the oblong apiculate leaf which in mature plants has reddish veins on the underside. The juvenile is usually 2-leaved and this character is often carried over to mature plants.
Distribution – endemic – Three Kings Is: North, South, Stewart, Chatham, Auckland and Campbell Is.
Flowers – October-January – self pollinated.



ORIGINAL PAPERS

Classifying preferred terrestrial orchid light environments

By Angela Abernethy, Hamilton

Many texts give vague descriptions of the preferred growing conditions of NZ native orchids. These publications often use terms such as "prefers light regions" or "commonly found in dark conditions". These are highly subjective descriptions, that are based more on anecdotal evidence than scientific measurement or investigation. My Ph.D. research investigated the light environments of selected terrestrial native orchids in New Zealand. This study involved measuring the light environments of 480 plots distributed over 20 forest sites around the South and Stewart Islands. As part of this work I examined whether the preferred light environments of orchid species could be classified into simple groups (as used by various authors), or whether their preferences varied too widely to fit this simplistic model.

A plant on the forest floor receives a combination of direct and diffuse light. A plant receives direct light only when the sun is shining directly through an opening in the canopy (a sunfleck). The amount of direct light energy reaching the forest floor will depend on the position of the sun (which varies both during the day and over the season), the position of canopy holes and prevailing weather conditions. The amount of diffuse light energy reaching the forest floor will depend on the overall canopy density as well as the source of obscuration (cloud *vs* canopy). The overall light environment experienced by a plant is the combination of both direct and diffuse light energy (total energy received) as well as the relative proportions of each light type. Consequently, the forest floor light environment cannot be described by a single parameter. This makes it difficult to define simple light environments (e.g. "light" and "dark" conditions) from forest measurements.

Reconnaissance was carried out at each site to locate orchid colonies. Plots of 5m x 5m were laid out in various selected or random locations. The forest canopy directly above each plot was photographed using a Nikor® 8mm f/2.8 hemispherical lens which was tripod mounted and aligned with magnetic North. Any orchids found in this plot were identified and counted. Images were analysed using a computer program (see thesis for details). This information was combined with regional weather data to generate estimates of typical light environments during the growing season of each species. The analysis generated a total of 8 parameters per photograph, each characterising a specific aspect of the light environment. Having multiple parameters per photograph made it difficult to group species into clusters preferring similar light

environments. Consequently, a statistical method called Multiple Discriminant Analysis (MDA) was used, which determined species clusters by examining patterns in all parameters simultaneously. Analysis was performed for the 13 species which were most regularly found at the survey sites.

Results of the MDA analysis are shown the Figure. Points clustered in close proximity represent species which were found under similar overall light environments. Grey ellipses shown on the plot represent three distinct light environments, described here as high, medium and low.

Forest floor light environments can be described quantitatively, however they are sufficiently complex that they cannot be expressed completely using only one or two parameters.

However use of suitable statistical tools showed it was possible to classify the typical or preferred light environment of these species into three simple groups. This is consistent with the classifications broadly used in literature. Most significantly, the classifications were based on quantified light environments rather than traditional *ad hoc* estimates of light levels.

It is interesting to note that all four species in the low light grouping are *Pterostylis*. These species are not confined to low light conditions, but are considered to be well suited to this light environment, and able to out-compete other species in this niche. Subsequent studies showed that the species *P.banksii* and *P.graminea* were able to survive in considerably higher light environments in

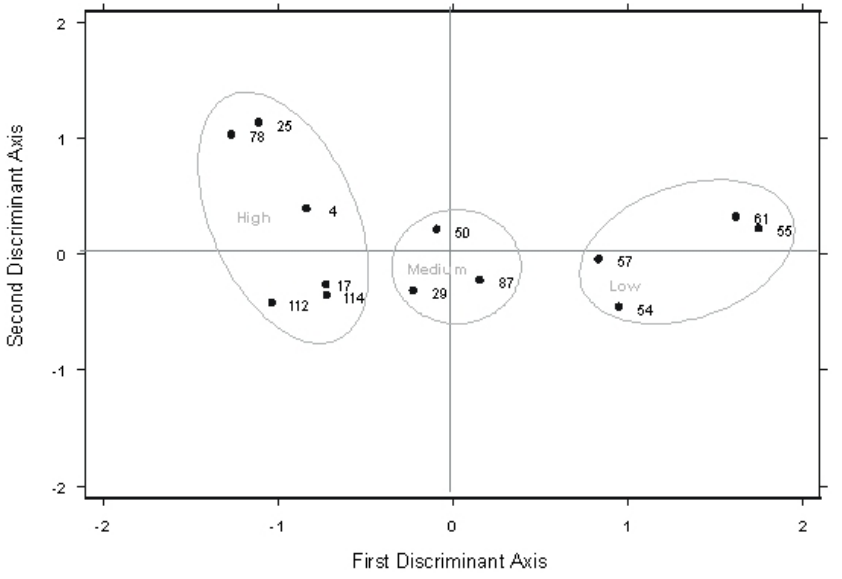


Figure: MDA analysis slowing groupings of species preferring similar light environments. Individual light environments shown by the grey ellipses.

Aporostylis bifolia = 4, *Caladenia 'aff. carnea'* = 112, *Caladenia nothofageti* = 114, *Chiloglottis cornuta* = 17, *Corybas oblongus* = 25, *Corybas trilobus* = 29, *Microtis unifolia* = 50, *Pterostylis 'aff montana'* = 78, *Pterostylis alobula* = 54, *Pterostylis areolata* = 55, *Pterostylis banksii* = 57, *Pterostylis graminea* = 61, *Thelymitra longifolia* = 87.

the absence of competition. This finding is consistent with occasional observations of *Pterostylis* colonies growing in surprisingly bright conditions. The "preferred" light regimens identified in this study (shown in the Figure) represent the realised niche for each species, i.e. conditions under which they are best able to outcompete other species. Some of these orchid species may actually prefer an alternative light environment, but be unable consistently to maintain populations under these conditions due to overwhelming competition from other species.

References

Abernethy A.K. (2002); *Light regimes as a control of terrestrial orchid distribution in New Zealand*. Ph.D, University of Canterbury.

When is a species a species?

By Graeme Jane, Tauranga

Many people assume that a tag name implies the existence of a species. That is not at all true. For a name to be accepted a species it must be formally described according to the *International Code of Botanical Nomenclature.* This derives from the original work and concepts of Carl Linnaeus some 150 years ago. Originally Linnaeus set out to provide a better system than that of common names which often provided several names for the same plant or used the same name for several different plants, especially across international borders. He could also see floral and other similarities between many common plants which provided a framework for identifying and naming them.

This led to the binomial concept where similar species were grouped in genera. The binomial name (or perhaps surname) provided a clear link between similar plants. At a higher level the genera were grouped in families, families in orders etc. As knowledge expanded some of these groups became very large so subgenera and subfamilies etc were added. Also as the species became better understood subdivision was found desirable to describe the range of variation. Thus the species concept evolved to include subspecies, varieties and forms. The last perhaps too recognised that many different cultivated plants derived from the same species through plant breeding (eg cabbage, cauliflower, brussel sprouts, etc) are all derived from the same species.

Today, the concept of a species is based on a formal description in Latin (sometimes quite brief) setting out the key characters the author sees as distinctive about it, or sometimes only how it differs from a similar species. A single preserved specimen (for plants, usually pressed) is then normally designated as the type specimen. It is usually a typical example, but where the plant is named before its full range of variation is known this may not be true.

In the past, a range of specimens showing the author's concept of the species may have been designated as a type, and prior to about 1930 a type was not necessarily identified and must be now selected from the range of material the author had available at the time he prepared the description. This has occasionally led to what are now regarded as separate species being represented in the original type collection. In other cases the original material has been lost (eg the Paris and Berlin herbaria were bombed during World War II). In cases where the description is clear and collection records are sufficiently precise, fresh material from the original collection site can be designated (as a neotype).

Perhaps the point of the above detail is to show the care that is taken in formally describing a species. Informal names (tag names) are

widely used in New Zealand with over 200 tag names in use. They often arise where an observer is not satisfied that a particular population of plants seen (perhaps on a single field trip) fits easily within the range of variation of a described species. It provides a label until more is known about the taxon.

Some tag names are used for varieties described in the flora which some people regard as distinct species. Sometimes their origin can be found in footnotes in the flora.

Sometimes the tag names are short lived because the population is later identified to have arisen through active hybridism (ie parents can be identified) or is seen in other areas to grade into a particular species. Also, perhaps consultation with colleagues and herbaria enables the population to be identified as falling within the range of variation of an existing species, possibly at one extreme end.

In many cases the name may be sustained for many years until someone finds the time (and money) to investigate the variation and show definitively that a particular status (not necessarily species, it could be a variety or subspecies) is appropriate. The status of some taxa is particularly difficult to resolve even through cultivation, breeding experiments and DNA profiling. Hence many years, sometimes decades may be required to sort out a series of taxa (with separate tag names). Daisies can be particularly difficult because a high level of self fertilisation gives very uniform populations which produce a wide range of hybrids when outcrossing occurs (sometimes with other genera).

In a few cases (it seems often in NZ) tag names are created by orphaning. The Australians (applying Aussie rules) often leave New Zealand taxa without a name when revising a genus. This sometimes occurs where the distribution of an Australian plant formerly stated to include New Zealand no longer does so (ie the action is passive), or the author specifically states that the New Zealand plants formerly regarded as the same as the Australian are not. In both cases the author is basically saying "you sort out your own mess"! Here the species may add an aff. (affinities) or cf. (compare with) to the original name (eg *Thelymitra* aff. *ixioides*).

Thus the use of a tag name does not define the plant as a species because it may not be supported by and identified with a herbarium specimen and certainly has not passed through the rigorous sieving process required ensure a sound decision has been made. Thus the status, whether species or variety (or sometimes even which genus it belongs to) has not been properly resolved.

The simplest first steps to sorting out relationships between apparently different taxa is to grow them under the same conditions either by cross-transplanting or by marking and observing the same plants over several years. Growing orchids from seed collected from the distinctive plants can also sort out how stable the variation is. If the seed does not produce plants like the parent then you have a problem. These are useful steps a keen amateur can carry out perhaps to resolve some of the debates over the validity of tag names in use.

The genesis of our Group

By Gordon Sylvester

About 1977-78 the Wellington Orchid Society had its first orchid show in the green room of the old Wellington Town Hall. I rang the Secretary and asked if they wanted a display of the native orchids from the Wellington region as part of their display. This offer was taken up. It was there I first met Dot and Roger Cooper. We developed a friendship and formed a loose arrangement to go searching for orchids in and around the Wellington area. Dot was also publishing a series of short articles on the native orchids she had found while accompanying Roger in the Cobb Valley area carrying out some of his work related research.

Together these events generated a bit of interest among other orchid growers. They wanted to accompany both of us on our forays, this led to several field trip and day trips into the local easy bush tracks. With up to forty pairs of eyes joining in, it was a much simpler task to cover larger areas in the search for new records. Some of these trips extended to Kapiti Island.

The only published material was the second volume of the *Flora of New Zealand*, and other much older publications available in the local libraries. Then we discovered that the Royal Society of New Zealand had copies of ED Hatch's papers available as well. This to us was a real treasure trove of illustrations and descriptions.

Several discussions occurred over several months about the interest in forming a native orchid group, but not affiliated to the Orchid Council of New Zealand. Some discussions at several Council meetings as well as some articles published in their journal revealed there were a few like minded individuals scattered around the country. The earliest decision was to keep it simple: a foolscap newsletter and casual meetings in the field. Several likely contributors were approached for a store of articles for the first few issues. And suddenly the group was born.

The first 20 issues were printed in Lew Wyatt's garage on an old AB Dick press belonging to the Wellington Orchid Society, printed double sided on foolscap paper and simply stapled at the top. Dot decided to step aside from the editorship and asked Phil Tomlinson and myself if we would take over the editorship: we both declined. An appeal in the journal produced a response from the depths of Dunedin and Ian St. George assumed the mantle.

Some discussions over the years revolved around affiliation with the OCNZ but this was always politely and firmly vetoed, on the grounds we could remain neutral if any controversial matter arose.

Where to now? We are still relatively unknown outside of the group and in some respects this is an advantage. We are not seen as a pressure group and some land stakeholders are willing to allow access to areas that would otherwise be "off limits". As for publications this takes an enormous amount of time and up front resources. And of course materials to sell onwards, which then becomes a balancing act between relevant and current, and waste paper and redundant. The *Field Guide* is a good publication and I have always said it should be loose leafed format, so that any updating could be carried out to subscribers, who of course would be the original purchasers – if those purchasers decide to take up the offer – who would then get updates when they were issued.

The *Journal*? well what can one say? From a modest printed foolscap newsletter to an A5 format journal with colour, and we don't have to separate the various illustrations and then paste them up in the appropriate boxes. I will close with a resounding thank you to Ian and later to the editorial team for the time and effort they have put into the publication. It has not been an easy ride but our heartfelt thanks go to all those involved over the years in producing a publication we can be proud of.

Finally congratulations to the Group on achieving our 100th *Journal*: may we go from strength to strength.

To split or to lump? that is the question

by Bruce Irwin, Tauranga

Graeme Jane's "Plant Names" [J98 p10] discussing *Caladenia alata*, explained succinctly some relevant rules of the *International Code of Botanical Nomenclature* (ICBN), and how they should be interpreted. But clearly the rules of nomenclature were resolved by experienced botanists for the guidance of other botanists. Taxonomy is not a primary school subject, but some understanding of it is necessary when discussing an apparently new species.

One very real difficulty in achieving the correct interpretation of the rules, is the fact that people, like plants, can and do exhibit considerable variation. For instance many amateur botanists, finding an orchid which shows a noticeable difference from others in the same colony, consider it to be a separate species. They apparently overlook the very many similarities it shares with all the others in the colony. Such people may be regarded as "splitters"

Other generally more experienced botanists, though they may see that the plant shows an apparently significant difference, notice also the many more important similarities. Such people may be regarded as "lumpers". Which attitude is correct?

Perhaps these terms should be applied only when a person splits or lumps without having given the matter sufficient thought, or has done so against ICBN rules or sound advice from others. A botanist should split when it is clearly appropriate to do so. Let us ponder the problem for a while.

The first thing we should consider is that differences and similarities should be of structure, not of colour. Colour alone is not accepted as indicating a separate taxon. Colour is magic. Clear blues, reds and yellows can combine to make a deep glowing black. I have demonstrated this truth to many students of watercolour. They have read that this is so, but need to see it happen before they really believe it. Yes, colour is magic, but don't be seduced by it as so many splitters have been. I shall make one concession. Unusual colours may indicate that structural differences may also be present. Referring again to students of watercolour, they know that trees are green, and they know that blue and yellow combine to make green, so their early attempts to match foliage result in a horrid hue resembling bile. They find it difficult to accept that leaves contain a certain amount of red. Below a certain strength, red barely affects the appearance of green, but being a very powerful pigment, at greater strengths it can overpower the greens. Many of you will notice that some *Pterostylis* plants, such as *P. agathicola*, *P. irsoniana* and *P. irwinii*, appear to have red or brownish stems, and their flowers and leaves are striped red, whereas others in the same colony may show only pinkish sepal tips and are otherwise completely green. A very small variation in strength of red pigment causes a significant change in appearance. See Dan Hatch's note in J99 p16.

Splitters will argue that rare and endangered species cannot be adequately protected until their existence is documented and they are formally named. On the face of it, that seems logical. But however conservationists may plan to protect them, deer, pigs and possums are not impressed. If a plant is a tasty morsel they will eat it, named or not. Life is a struggle for many small plants, and they are often found in poor soils. Is that what they prefer? Perhaps not. I am inclined to think that competition from more vigorous plants often dictates where they can grow. To protect orchids it may be necessary to control more vigorous plants. Possibly to avoid competition, orchids are sometimes discovered in swampy habitats, so it is presumed that that is what they prefer. *Thelymitra aemula* is such a plant. It comes as a surprise to find it flowering happily alongside *T. matthewsii* on sun-baked eroded sandstone, where it has few competitors. Such plants should not be thought of as distinct

species merely because they have chosen to grow in a very unusual habitat.

It is important not to lose sight of closeness or distance in relationships between species. Relationships are the very basis of the binominal system of naming plants. We need not be concerned about the higher taxonomic categories. Generic and specific names are our concern. The name *Corybas* conveys a general impression of plants within the genus, because it groups together plants which are very closely related. The specific name *trilobus* defines the plant which differs sufficiently to be considered a separate species. One difficulty is that there are roughly as many concepts of a species as there are botanists. Hence the existence of splitters and lumpers. Once orchid enthusiasts have become familiar with the names of species in the genus *Corybas*, it is disconcerting to find that Australian splitters, with the bit firmly between their teeth, have split the genus *Corybas* into several smaller genera. Several species were transferred to *Nematoceras* (an early name for *Corybas* in New Zealand), but other New Zealand species have recently been given quaint generic names such as *Anzybas*, *Molloybas* and *Singularibas*. Hopper and Brown point out that these could have been placed in separate sections within *Corybas* or treated as subgenera, in which case the need to learn a new name would be avoided, as would the outcry from botanists throughout Australia and New Zealand. The ICBN seeks to maintain stability of plant names.

Another point worth remembering is that it is not mandatory to accept a new name just because it has been published. A validly published old name remains valid provided that when used, it is followed by the author's name or an abbreviation.

My contention that 7 or 8 separate taxa were lumped under the name *Corybas rivularis s.l.* branded me a splitter – a rather reluctant splitter. I had set out to map the distribution of the 2 forms of *C. rivularis* I then recognised, but time and time again, quite different forms showed up which could not be placed within either of the first two plants, now named *Nematoceras iridescens* and *N. papa.*

Now I should like to indulge in a little lumping – I predict that *Thelymitra* "darkie" which can be found on well drained hillsides as well as in rather moist habitats, will be recognised as identical with *T.* "ahipara", which was discovered in exceptionally wet habitats, and presumed to be confined to them. Why do I say this?

Both plants have the same unusual chromosome number – 4n = 60, a number not shared by any other New Zealand species.

The columns of both are indistinguishable.

The rather paler colours of *T.* "ahipara" cannot be regarded as a reliable diagnostic character.

Do I prefer lumpers to splitters? Both have a place within taxonomy. The problem is keeping them in their place.

I thank Graeme Jane and Dan Hatch for helpful comments, and Dan for putting this on disk.

A complete guide to native orchids of Australia by David L Jones

This book is a complete and comprehensive guide to every named species, subspecies and natural hybrid of Australian native orchids. It is designed to make identification easier and hopefully will encourage more people to take an interest in these fascinating plants. Botanical terms are kept to a minimum and are explained in the glossary. Name changes, the bugbear of all orchid enthusiasts, are cross referenced in the index to provide a quick guide for locating any species in the book.

Introductory text: a brief introduction includes growth features, floral features, orchid names, pollination, natural hybridisation, effects of fire, seed germination and mycorrhizal fungi, ending with brief notes on basic growing requirements. This section is superbly illustrated with colour photos including many of orchid flowers being pollinated by insects.

Coverage: descriptions, distribution data, habitat details and notes for 1304 taxa of Australian orchids arranged in 193 genera. Terrestrial and epiphytic orchids are treated in separate sections. Related or similar genera have been grouped in separate chapters to aid with identification. In the larger genera, species with a similar general appearance are grouped together, also to facilitate identification. An alphabetical layout is used throughout. Common names are included.

Illustrations: each genus is illustrated by a line drawing which shows the main vegetative features of the plants and some aspects of the flowers. A colour photograph accompanies nearly all species and in some cases extra photos have been included to show floral variation, close up details or aspects of the plants.

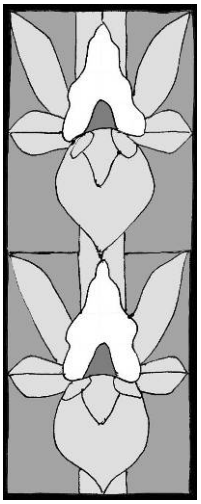
Specifications: Publisher: Reed New Holland, Format: 300 x 230mm, about 500 pages, 200 line drawings, 1430 photographs, cased and jacketed, printed on 140gsm gloss art stock.

Price: This publication has been subsidized by legacies to the Australian Orchid Foundation. This will enable the publishers to market the book at an affordable price ($A75.00 in Australia; NZ price applied for).

It can be ordered from the AOF (Ms Barbara Duncan, secretary, phone: 03 93795382, fax: 9379 0025, e-mail: bmary.d@bigpond.com.au).

Orchidaceous Books is also taking orders

(books@orchidaceousbooks.com.au).



EPONYMOUS* ORCHIDS: VAL SMITH—

James Hector (1834-1907)
Prasophyllum hectori

James Hector was born in Edinburgh, the son of Alexander Hector, a conveyancer and Writer to the Signet (solicitor) and his wife Margaret Macrosty. After attending Edinburgh Academy and High School, he worked briefly in his father's office. An interest in natural science led him to study medicine at Edinburgh University as an avenue towards a scientific career, and he graduated in 1856. In 1857 he was recommended by leading Scottish geologist Sir Roderick Murchison, for the position of surgeon and biologist on an expedition under John Palliser to explore and map western Canada. Two years of adventure and hardship established Hector as an accomplished scientist and intrepid explorer. Kicking Horse Pass, discovered by Hector and named after an accident that nearly killed him, is now crossed by the Canadian Pacific Railway, and marked by a monument to his work.

Hector returned to Edinburgh and, again on the recommendation of Murchison, was appointed director of the Geological Survey of Otago, New Zealand. He arrived here in 1862 with letters of introduction from Sir JD Hooker to Haast and Buchanan, and set about assembling the nucleus of a staff and exploring the terrain and resources of Otago. He organised displays of maps and collections showing the work of the survey at the NZ Exhibition in Dunedin in 1865.

When his three-year appointment as provincial geologist expired in April 1865, he accepted the joint appointments of first director of the New Zealand Geological Survey and director of the newly formed Colonial Museum and Colonial Laboratory in Wellington. His responsibilities included the Botanical Gardens, Meteorological Department and Colonial Observatory, custody of standard weights and measures, and the Patent Office library. When the New Zealand Institute was set up for the advancement of science, Hector became its manager as well. He was often asked for official advice, and wrote a prodigious number of scientific papers and reports, but also continued to do fieldwork with Buchanan in many parts of the country.

In 1868 he married Maria Georgiana Monro, daughter of David Monro, speaker of the House of Representatives; they had three sons and three daughters. He retired in 1903 and travelled to Canada, where official recognition of his work on the Palliser expedition was blighted by the sudden death of his son Douglas, who had accompanied him. James Hector died at Lower Hutt three years later. During his lifetime he received many honours, and in 1911 the New Zealand Institute honouring him by establishing the Hector Medal and Prize as its major award for excellence in research. His name is also commemorated in an alpine cushion plant, *Hectorella*, first discovered by him, and at least seven other plant species.

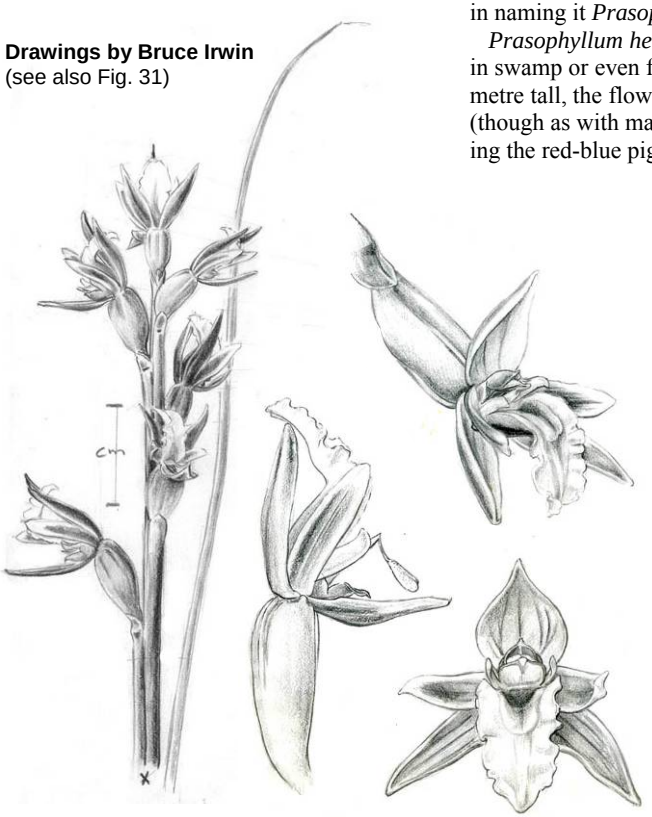
Prasophyllum hectori

(Buchanan) Molloy, D.L.Jones & M.A.Clem. *Orchadian* 15: 41 (2005).

John Buchanan named a plant that he took to be a *Gastrodia,* after his friend James Hector (*Gastrodia hectori* Buchanan. *Trans. & Proc. New Zealand Inst.* 19: 214 [1886]). Buchanan wrote that it had been collected near Picton, and had been seen on the Conway River.

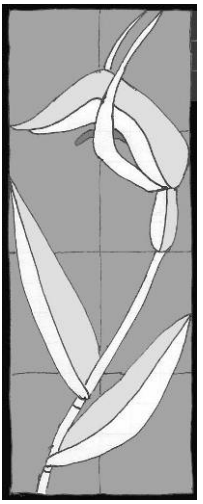
Thomas Cheeseman was sent plants from the Maungatapere swamp near Whangarei by Harry Carse, and from Great Barrier Island by Thomas Kirk, and found it himself at the Ngaere swamp in Taranaki; he identified these plants with the Australian *Prasophyllum patens* in 1906, and noted that *Gastrodia hectori* was a *Prasophyllum*, "probably *P. patens* R.Br." The NZ plant was later recognised as different from *P. patens,* was known for some years as *P.* aff. *patens,* until eventually Brian Molloy and colleagues used Buchanan's specific epithet in naming it *Prasophyllum hectori.*

Drawings by Bruce Irwin
(see also Fig. 31)



Prasophyllum hectori is a wetland plant, in swamp or even flowing water; up to a metre tall, the flowers flushed red/purple (though as with many orchids, a form lacking the red-blue pigment occurs in some regions). The labellum is uppermost on a short claw, sharply bent at the middle, with a smooth rather narrow callus that reaches just around the bend; its margins are undulating and white. The flowers are strongly perfumed, and a range of insects swarm around it in late summer evenings. It is acutely threatened, and nationally vulnerable, hanging on in a number of North, South and Chatham Island wetlands.

*** eponym**, *n.* **1** a person (real or imaginary) after whom a discovery, invention, place, institution, etc, is named or thought to be named. **2** the name given. (*Oxford English Reference Dictionary*) – e.g. Leornardo da Vinci Airport, von Willebrand disease, Ho Chi Minh City, Charcot joints, Mt Hector, the Pasteur Institute, the Merck Manual, *Sullivania minor* and *Prasophyllum hectori.*



THE VARIOUS CONTRIVANCES

The New Zealand terrestrial orchid flora is unique because most self pollinate: the various contrivances by which the New Zealand orchids are fertilised by themselves are recounted here.

1: *Pterostylis*

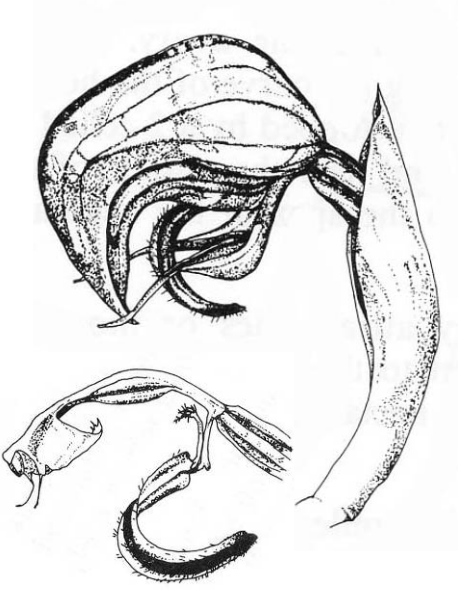
The *Pterostylis* best adapted for insect pollination would have to be *P. nutans.* the "nodding greenhood". In Australia it is one of the most widespread of the native terrestrials, but in New Zealand it makes only occasional landfall, but soon dies out after a period of vegetative local spread. In NZ it lacks its insect pollinator, and so forms no seed.

One can see why self pollination is impossible. The flower leans so far forward that any pollen that does fall from its anther misses its stigma by a country mile.

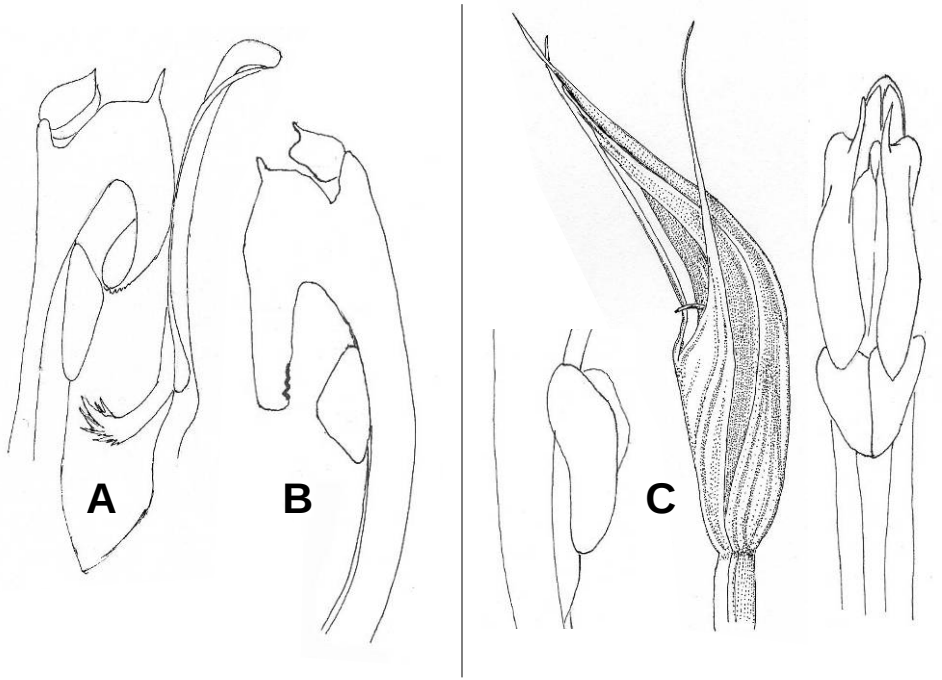
To a lesser extent the same can be said for the insect pollinated NZ *Pterostylis* species—*Pp. agathicola, graminea, banksii, areolata* for instance—the flowers lean forward, the stigmas are flat, and the pollinia are cohesive, fragmenting only with difficulty. Self pollination is difficult, but perhaps not impossible.

What NZ does uniquely have, is a group fully adapted for self pollination.

These have upright flowers with small openings, noncohesive pollen that fragments easily, and prominent, often bulbous stigmas, that form a shelf to catch the falling pollen. They include *Pp. cardiostigma, humilis, paludosa, foliata* and the little bronze grassland *P. montana* agg. taxon structurally very similar to *P. paludosa.*

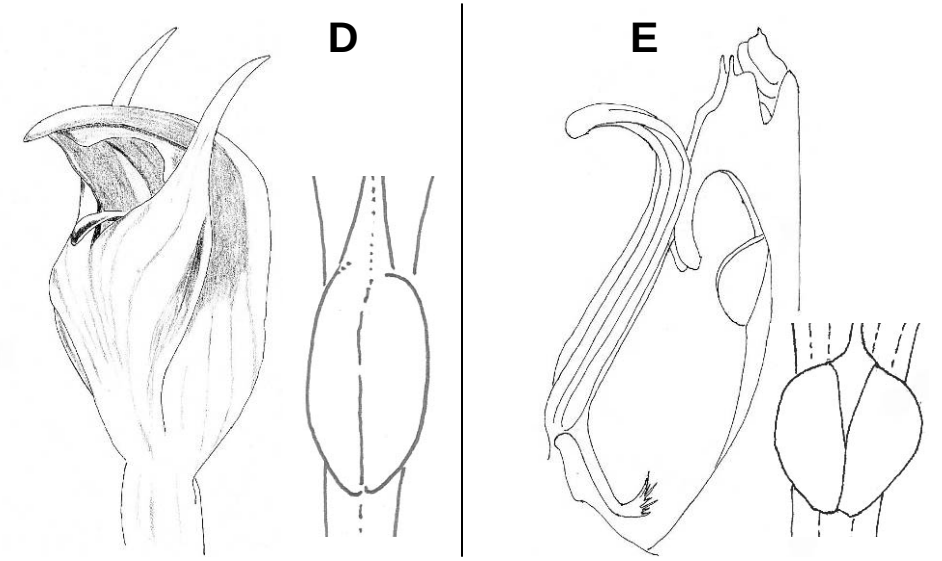


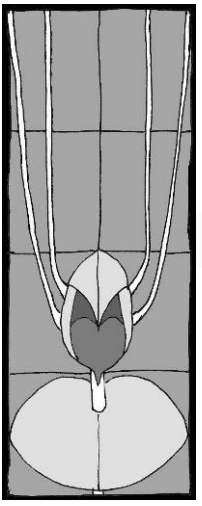
Pterostylis nutans
illustrations adapted from Bates & Weber. *Orchids of South Australia*. Govt Printer, SA, 1990.
Note the nodding floral stance making self pollination impossible.



Self-pollination devices in NZ *Pterostylis*

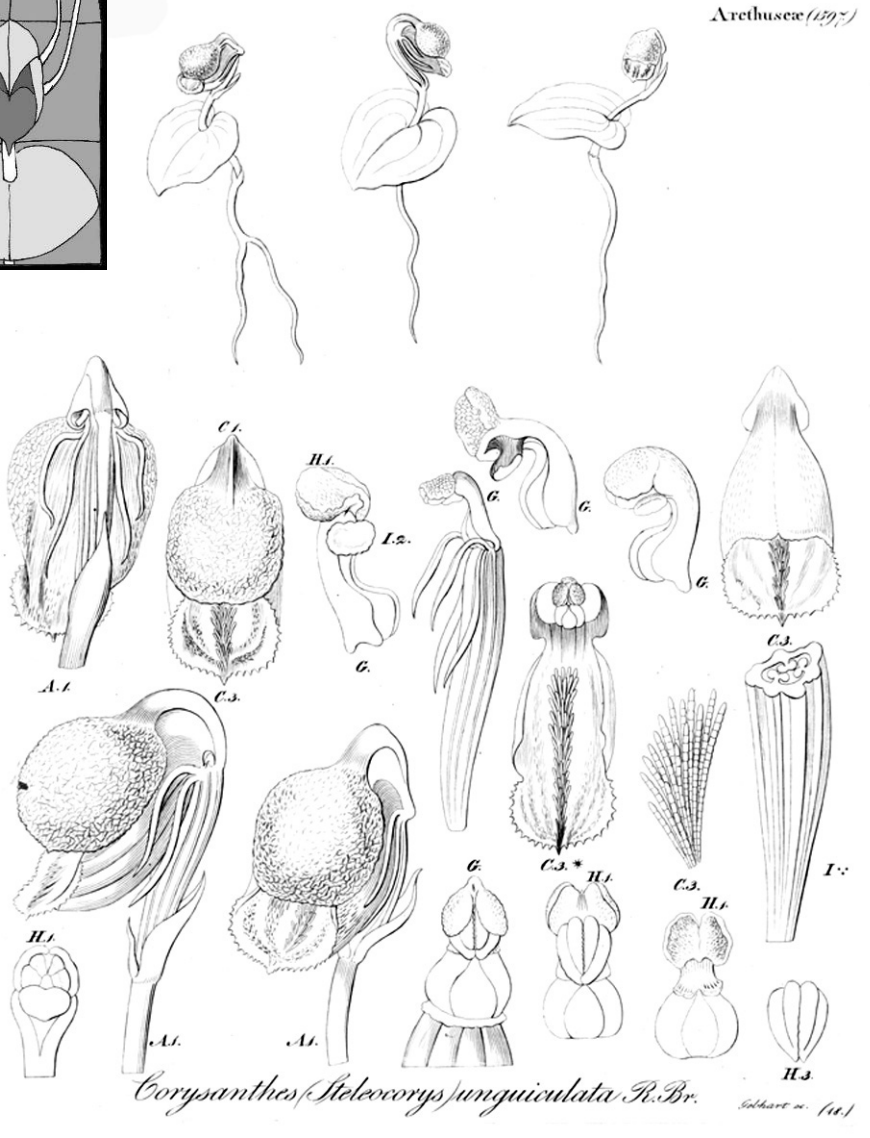
Note the upright flower and prominent stigma of **A:** *P. paludosa;* **B:** *P. montana* agg; **C:** *P. cardiostigma*; **D:** *P. foliata*; **E:** *P. humilis.*



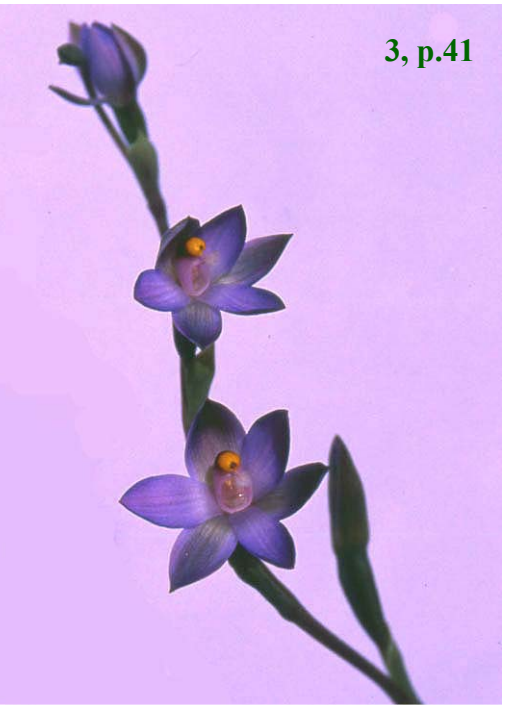


CLOSE RELATIONS: ORCHIDS LIKE OURS

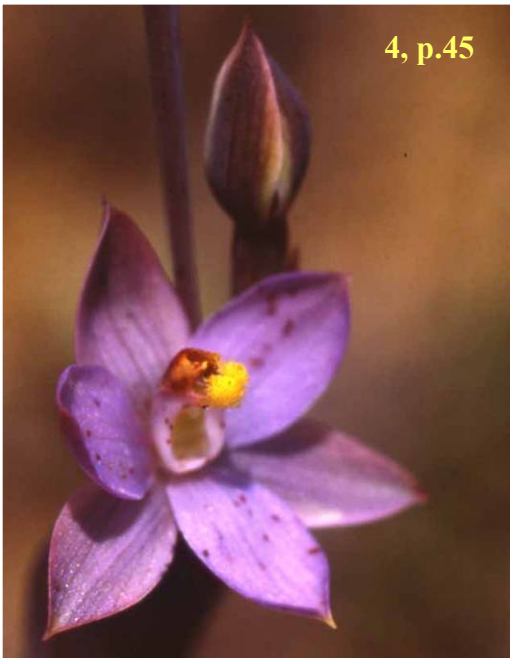
Anzybas unguiculatus painted by Ferdinand Bauer,
engraved by A Gebhardt,
published in S Endlicher's *Iconographia Generum Plantarum* (1838).




1, p.42


3, p.41


2, p.42


4, p.45

5

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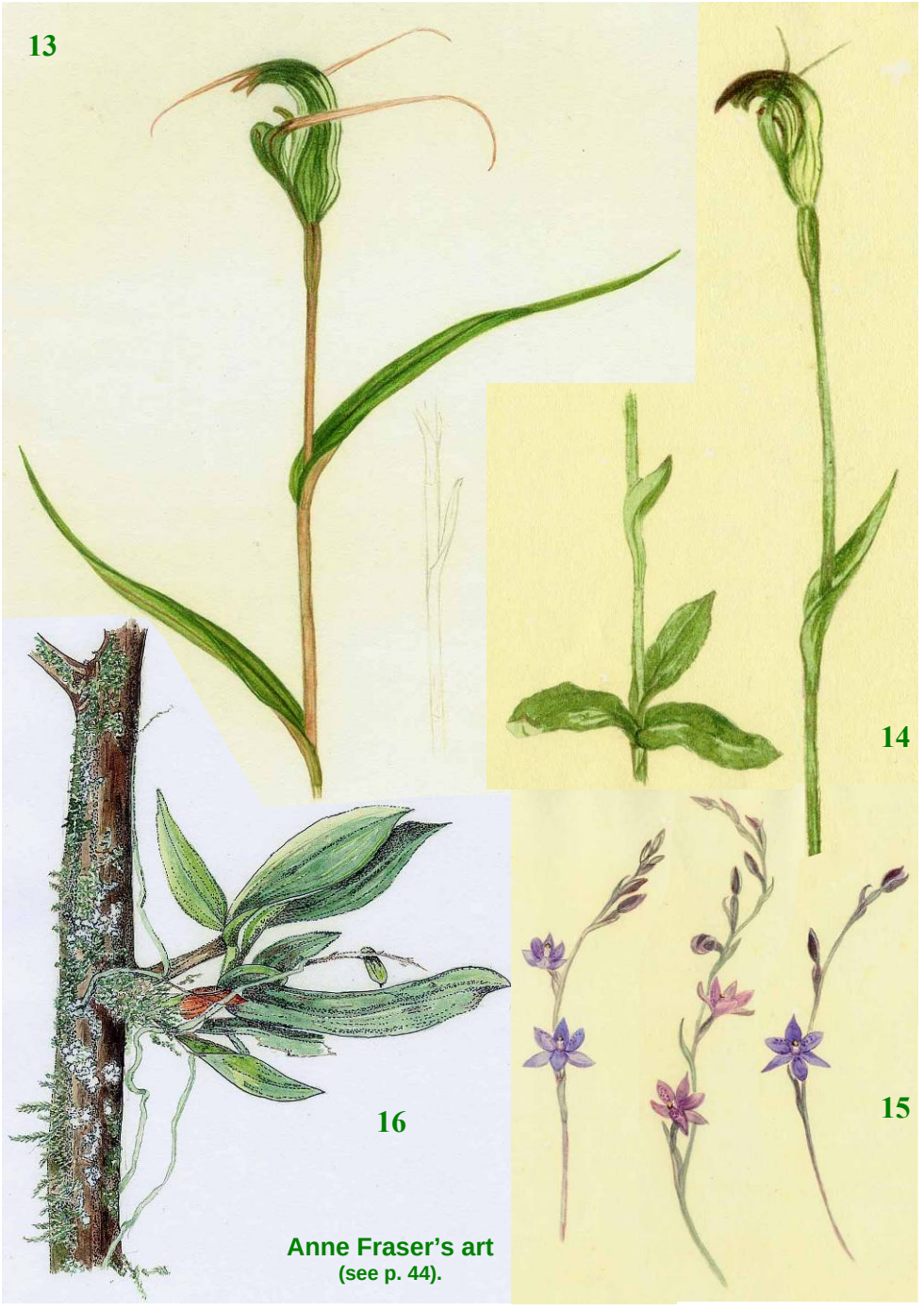
Ann Green: see p.45.

7

8

Ian Reid's Opuatia swamp photographs from early in December 1994, p.41.

A *Thelymitra cyanea* alba, still with yellow postanther lobes and yellow spiral column arms but totally lacking in the normal blue; and a *Thelymitra formosa* not with yellow or even orange cilia but bright red.



Anne Fraser's art
(see p. 44).

FACSIMILE: NZNOJ No 1

14 Avalon Crescent,
Lower Hutt.
March 1982.

NATIVE ORCHID GROUP

Dear friends,

This newsletter, I hope, will set the ball rolling for a fund of information on our native orchids. For several years now, I, and others, have wanted to start a native orchid group and the publication of my book has created a host of correspondence that I'm having difficulty keeping up with! Anyone who ordered my book through the Wellington Orchid Society will automatically receive a copy of this newsletter. Anyone else interested in receiving it could drop me a line and your name will be added to the mailing list.

By being member's contributions on any aspects of our native orchids, we can circulate information throughout New Zealand to many people now interested in this section of our flora. Questions can be answered and discussions can take place and we can communicate ideas to the benefit of all when we're so widely separated.

Perhaps a membership list could be distributed with names and addresses so that members travelling around New Zealand could contact interested people in the area.

I am envisaging 3 or 4 issues of this newsletter a year to start with. Beyond that - we may form a formal society, or a branch of the ANOS (Australasian Native Orchid Society - see advertisement elsewhere) - anything could happen! We may have annual field trips, which our members from all over the country could attend.

So..... Could anyone wishing to become a member and thus receive future issues for this year, please send $3.50, to cover costs, with name and address, to me at the above address.

Yours hopefully!

Dorothy Cooper.

.....

To start suggestions: ... I think our main aims should be the study and conservation of native orchids. Apart from some epiphytes and a few of the commoner Pterostylis species, there are few of our native orchid species that we seem to be able to grow 'permanently' at home. Even after 'saving' them from bulldozers, plants are often lost anyway.

Having been on trips with Botanical Societies whose members are quite happy to study, record and perhaps photograph plants without feeling they have to try and grow them at home, I can't see why we can't have 'orchidists' all over New Zealand recording, studying and reporting, without collecting the plants; to the benefit of all those who will be able to read their notes and to the benefit of the orchids too. Imagine several hundred interested people collecting orchids from our bush, losing them, taking more etc. It wouldn't be very long before many species became locally extinct.

There have been suggestions that we should grow more native orchids, that they should be entered in orchid shows etc. I feel it would not be long before species disappeared in many areas, rare plants would be gathered as 'prize' specimens and would be lost to future New Zealanders. This sort of thing has already happened in England and Australia where native orchids are now strictly protected. I think for once we should learn from other's mistakes and stop this from happening here.

Until we come up with a viable way to grow from seeds, I suggest we should leave our native orchids to grow where they belong.

.....

There you are; now write in and let us know your views!

For those of you who are trying to grow our terrestrials we include in this first newsletter hints for cultivation from Jim Forrest of Te Puke - the only person I know of who grows terrestrials successfully.

GROWING NATIVE ORCHIDS IN NEW ZEALAND

Jim Forrest

Many people have found growing native orchids a heart-breaking process, perhaps I've been lucky as I have always had reasonable success.

Pots: Either clay or plastic seem equally suitable and lately I've been using ice cream containers. I don't think the container matters, it's the mix and your growing methods that are more important. If you use plastic then 10cm or 12.5cm are most suitable. Clay pots can be larger as they dry out more quickly. Very small pots are alright but you need to watch that they don't dry out.

Mix: I use what we have locally, namely pumice sand. If I had the time I'd make a different mix for each genus, but as I have so many a basic mix has to do. It's 3 parts coarse sand and 1 part of partly rotted leaf mould or very old sawdust. The main problem with sawdust is that it's difficult to wet once it's dry. If neither is available some peat will do, but most seem to grow satisfactorily in straight sand. When I pot I keep a supply of sand and leaf litter at hand and add extra of each depending on which genus I'm doing.

Potting: This can be carried out any time after the plants die down, but ideally should be complete before new growth starts as it's easy to break the new shoots. In Te Puke this can be as early as January, but will vary from place to place. Take a clean pot and cover the drainage hole(s) with some material such as sphagnum, gigi (Astelia), half-rotted leaves, tree fern or bracken. Fill with mix and tamp down firmly. Plant the tubers right way up - depth depends on size of tuber, the bigger they are, the deeper, but I average 1-2cm of mix on top of mine. Large plants like some of the Thelymitras need to be quite deep or they'll fall out of the mix. On top of each pot I put a centimetre of chopped pine needles to prevent rain from washing the mix out of the pots.

Manure: I do not put any fertiliser in the mix, but foliar feed with very dilute cow manure or similar organic mix during the growing season.

Culture: During the growing period I keep most of the pots in a shade house, partly to control the amount of water they receive, but mainly to keep them away from blackbirds which dig out the pots. When the plants die down they are placed in a cool airy shed for a rest. In the new year a watch must be kept to see if there is any sign of shoots, if so the pots need to be brought out and watered. Water carefully until the plants are growing freely. If you look in a pot you will see why, the tubers send up shoots first, then the roots develop at the base of the shoot.

Pests: Aphids and thrips are a pest here, slugs and snails. Thelymitras in particular are subject to rust and leaf rot. So far I've not solved this problem, but a copper spray will hold it in check, and don't keep the pots in a closed air situation.

.....

Recommended: The Australasian Native Orchid Society - ANOS

Annual Membership $10.00 (Australian) which covers four issues of 'The Orchadian' - excellent reading and full of information on native orchids, mainly in Australia, but as so many of our species occur there also, of great interest to all New Zealanders.

Send Bank draft or International money order to:

The Secretary, ANOS, C/- B & C Mailing Service Pty.Ltd.,

Box 4142, G.P.O. Sydney, N.S.W. 2001, Australia.

ODD THINGS ABOUT ORCHIDS

E.D.Hatch

Corybas orbiculatus is perhaps unusual in liking to grow in running water, and in my experiance is found in no other habitat. In the Waitakeres it will be found clinging in masses to the mossed rock faces beside small waterfalls and along the wet walls of gorges. But its most remarkable choice of a home is the sea cliff at Kaitarakihi. In seepage areas and in the little streams that tumble into the tide, the orchid grows among the rootlets of pohutukawa and the clutter and tangle of Machaerina and Astelia, exposed to the blustering south-west wind, and a mere metre or so above the breaking waves. They must live with mycorrhiza for the layer of moss and peat on the rock is not more than 4mm deep, barely enough to cover the orchid tuber. One would imagine the environment to be too tough, but on reflection I suppose it is no worse than that endured by the Earina and Dendrobium which cling to the pohutukawa roots alongside.

Talking of toughness - I found, last November, about half way through the old diversion tunnel at Kakamatua, a single plant of Corybas aconitiflorus. In semi-darkness, with a strong cold draught constantly screaming in from the sea, and seepage water lying in little lakes on the floor, a less pleasant place to live would be hard to imagine. The orchid seed had apparently blown in, germinated on a block of sandstone that had fallen from the roof, flowered, been pollinated, and produced a seeding peduncle 10cm tall. They do say that this species has subterranean tendencies!

I have noticed for many years that Chiloglottis cornuta is often more robust and more abundant in exotic pine plantations than in the native bush nearby. This could be due to the heavy concentration of mycorrhizal fungi associated with the pines.

.....

A MATTER OF EVOLUTION

Phil Tomlinson

One noticeable feature of our native orchids is the variability even within species. This may arise from both genetic and environmental factors and can make identification of some species difficult. Contact throughout the country can only increase our understanding of these plants.

On a worldwide scale, the more spectacular epiphytic orchids come mostly from the tropical regions. The so called temperate regions, in which New Zealand is situated are the home of a lot of terrestrial (ground living) orchids, though there are exceptions to this broad classification. Terrestrial orchids are generally considered to be more primitive than epiphytes, and many of our native orchids produce tubers (swollen underground storage stems) rather than the pseudobulbs produced by the more evolved epiphytes.

One of the features of the orchid family is that species often have a specific pollinator. This pollinator relationship does not generally seem to have developed to the same degree amongst the terrestrials, allowing for greater exchange of genetic material resulting in greater variation between plants of the same species and less stability in species characteristics. This can make their study more difficult but also more interesting.

Some of our orchids are cleistogamic (self-pollinating) which would normally be a disadvantage in evolutionary terms as, if it happens exclusively, it restricts the exchange of new genetic material making the species less able to adjust by natural selection to changing environmental conditions. One must also wonder what evolutionary pressures caused the Thelymitra species to show little lip differentiation producing a somewhat 'un-orchid-like' flower.

It is always interesting to look at plants and ask "Why did it evolve in that way?" Often you cannot obtain an answer but it is sure to provide plenty of mental stimulation.

.....

DISTRIBUTION OF NEW ZEALAND ORCHIDS

Gordon Sylvester

New Zealand currently has 22 genera of orchids as described in 'Flora of New Zealand' Vol.2, and 'The New Zealand Journal of Botany' but new discoveries are still being made. We do not have any genera confined to New Zealand, all are found elsewhere, from the Pacific Islands - Fiji and Samoa in the east, to Malaysia in the west, Japan in the north and Macquarie Island in the south.

E.D.Hatch published a probable line of evolution for New Zealand genera with their centres of development and movement. Other writers have discussed the pros and cons of land bridge movement, west wind drift, and carried on bird's feathers, the last two for seed only. Whatever the mode of movement, there has been sufficient isolation for several distinctive species to evolve from the Australian stock, and recent discoveries of Australian orchids in New Zealand by people curious enough to try and identify them shows that there is a bright future for new discoveries in this country.

The most cosmopolitan species is Spiranthes sinensis. Other genera with a wide range are Corybas, Gastrodia, Microtis, Bulbophyllum, Dendrobium and Yoania, all recently reported as occurring in Taiwan, their northern limit. But even the most restricted range genera could turn up surprises somewhere.

.....

FIELD TRIP TO THE PUFFER TRACK, KAITOKE.

Dorothy Cooper

On the 12th December 1981 the Wellington Botanical Society held a field trip to the Puffer which is located at the southern end of the Tararuas, just north of Upper Hutt. The trip was specifically to look at orchids and the following species were recorded:

Acianthus reniformis - leaves only, not common;
Aporostylis bifolia - in bud, common in 2 localities;
Caladenia catenata - in bud and flower, common;
C.lyallii - seed head, 2 plants at higher altitude;
Chiloglottis cornuta - in flower, a few large patches;
Corybas oblongus - in flower, very common;
C.trilobus - leaves only, not common;
Microtis unifolia - in flower, common;
Orthoceras strictum - in bud, green form, not common;
Prasophyllum colensoi - in flower, common at higher alt.
Pterostylis banksii - past flowering, not common;
Pterostylis graminea - in flower, common;
P.montana - in flower, higher alt.
P.plumosa - in flower, not common;
Pterostylis n.sp. - I have described this species and submitted it to J.of Botany with the name P.cardiostigma; flowering.
Thelymitra decora - in flower;
T.dentata - in flower;
T.formosa - leaf only;
T.hatchii - in flower;
T.ixioides - in flower;
T.longifolia - in flower;
T.pauciflora - most past flowering;
T.pulchella - in flower;
T.venosa - in bud;

epiphytes: Dendrobium cunninghamii, Earina autumnalis, E.mucronata, none in flower.

27 in all!

.....

DID YOU KNOW: Chiloglottis gunnii Lindl., an Australian species not previously recorded in New Zealand, has recently been found in Christchurch, and a few weeks later, in Nelson!

Correct name: Microtis unifolia (one leaf)
not Microtis uniflora (one flower)

genus is singular, genera is plural;
species is singular and plural.

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Eric Scanlen's alba forms
see p.45


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Bob Goodger's photographs—see pp.45-6.

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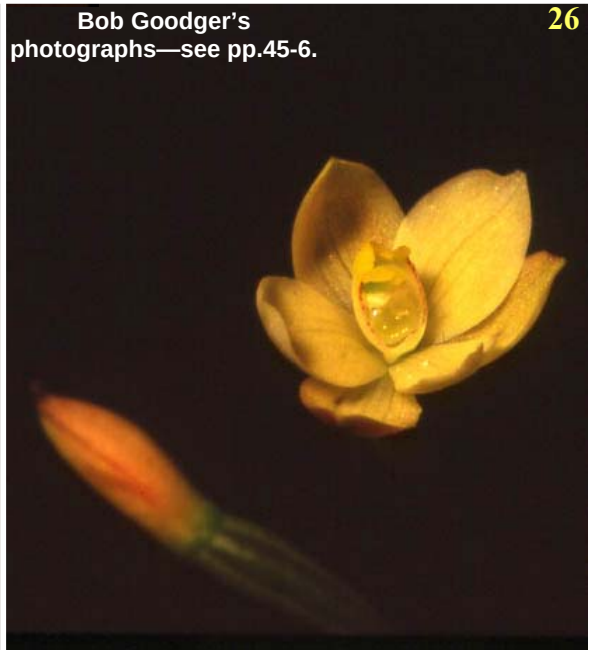


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***Prasophyllum hectori* flowers:** watercolour sketch by Bruce Irwin, labelled "Pureora 9 Feb 84". See p.21.

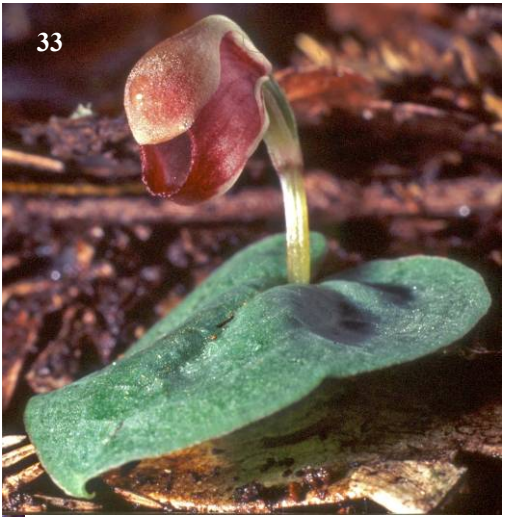
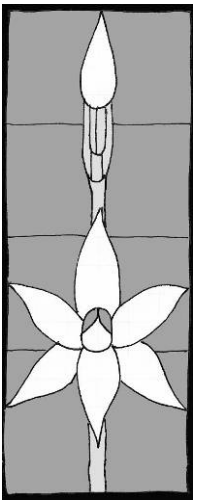


Fig. 32 *Anzybas rotundifolius* "late pale" RH Matthews' 1899 tag, flowers in August in the far north. Note the pollinia visible through the translucent labellum, the pale pink colour and the flat leaf. Gary Penniall's slide from 27 August, Te Paki. **See pp. 56-57.**
Fig. 33 *Anzybas rotundifolius* "early dark", July flowering plant from Ngunguru, 8 July, 1995. Note the darker colour and the contoured leaf and earlier flowering to highlight its probably different evolutionary path.



HISTORICAL REPRINT

from TF Cheeseman's *Illustrations of the New Zealand Flora*, Vol.II, Government Printer, 1914. Drawings by Miss Matilda Smith, engraved by John Nugent Fitch.

PRASOPHYLLUM PUMILUM AND PTEROSTYLIS TRULLIFOLIA.

FAMILY ORCHIDACEÆ.] [GENERA PRASOPHYLLUM, R. BR., AND PTEROSTYLIS, R. BR.

Prasophyllum pumilum, Hook. f. Fl. Nov. Zel. i, 242; Cheesem. Man. N.Z. Fl. 675.

Pterostylis trullifolia, Hook.f. Fl. Nov. Zel. i, 249 Cheesem. Man. N.Z. Fl. 682.

Prasophyllum pumilum was originally discovered by Mr. J. Edgerley, a gentleman of considerable scientific attainments, who collected plants in the northern portion of New Zealand in the years 1841-42, and who forwarded his specimens to Sir W. J. Hooker at Kew. I do not know the exact station in which Mr. Edgerley obtained the species, but as his travels were confined to the district between the Hauraki Gulf and the Bay of Islands it must have been somewhere within those limits. A little later it was gathered by Mr. Colenso, probably at the Bay of Islands; and, according to the "Handbook," it was collected in the vicinity of Auckland by Dr. Sinclair. Its southern limit, so far as I am aware, is on the *Leptospermum*-clad hills between Rangiriri and the Whangamarino River, where I observed it many years ago. Both Mr. Kirk and myself have gathered it in several stations near Auckland, although (as in all its localities) in small quantity. I have also collected it at Coromandel, in several stations between Helensville and Port Albert, at Whangarei, at the Bay of Islands, and at Mongonui. Mr. R. H. Matthews and Mr. Carse have both found it to be "not uncommon" near Kaitaia, and Mr. Kirk has recorded it from the tract of country between Parengarenga and the North Cape. It is purely a heath-plant, and I have never seen it except on the comparatively bare clay hills which are so frequent in the North Auckland Peninsula, and which, from the quantity of kauri resin that has been dug from them, are locally known as "gum-lands." The vegetation on these hills is mainly composed of stunted *Leptospermum scoparium*, mixed with varying proportions of *Pomaderris phylicæfolia* and *P. elliptica* (and less commonly *P. Edgerleyi*), *Leucopogon fasciculatus, Dracophyllum Urvilleanum*, and other shrubs, together with some sedges, *Pteris aquilina*, and several small herbaceous plants. It is in open places of perhaps a yard or so in extent, often covered with *Campylopus* and other mosses, that the


Plate 194.
A
B
M. Smith del.
J.N.Fitch lith.
West,Newman imp
A. PRASOPHYLLUM PUMILUM, Hook.f. 1-5.
B. PTEROSTYLIS TRULLIFOLIA, Hook.f. 6-12.

Prasophyllum is usually found.

Prasophyllum pumilum belongs to an altogether different section of the genus to that which includes *P. Colensoi*, figured in the previous plate, and which bears the name of *Genoplesium*. In it the lip is articulated on to a flat ribband-like projection from the base of the column, and is more or less mobile. Its nearest ally, according to Hooker, is the Tasmanian *P. despectans*, with which I am not acquainted; but it is also comparatively close to the New Zealand plant which I have for the present referred to the Australian *P. rufum,* but which differs from *P. pumilum* in the horizontal (not deflexed) flowers, in the narrower lip and lateral sepals, the latter being tipped by a minute gland, and in the narrower lateral lobes of the column.

Pterostylis trullifolia is another of the discoveries made by Mr. T. Edgerley, having been collected by him at the Bay of Islands in 1841. About the same time, or very shortly afterwards, it was gathered by Mr. Colenso in the same district. Since then it has been observed by every botanist who has examined the vegetation of the northern portion of the North Island, for, so far as the district to the north of the Bay of Plenty and Kawhia is concerned, it is one of the most abundant of the terrestrial orchids. In the southern portion of the North Island it is decidedly rare and local, although it extends to the neighbourhood of Wellington. In the South Island the only locality yet recorded is Mount Peter, in northern Marlborough, where it was detected some years ago by Mr. J. H. Macmahon.

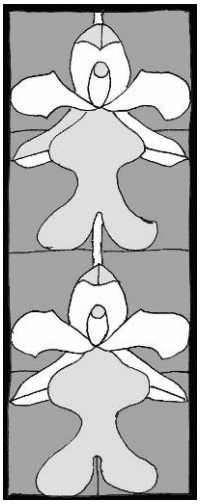
P. trullifolia has a somewhat wider range of habitats than *Prasophyllum pumilum*. Although often found on *Leptospermum*-clad hills, it requires more shade than the *Prasophyllum*, and delights in sheltered nooks in tall *Leptospermum*, where there is a plentiful supply of humus and not too much moisture. It is also common in mossy places in tolerably dry and open forest, but is seldom seen where the forest is thick and dense. Its altitudinal range is from sea-level to 2,000 ft. or a little more. Two well-marked varieties are commonly seen. The first, which must be regarded as the type, has a rather large flower often an inch in length, and the petiolate radical leaves are usually present in flowering specimens, and frequently very numerous in barren ones, forming a conspicuous rosette. The other variety, which may be distinguished as var. *gracilis*, is taller and more slender, with a smaller flower varying from ½ in. to ⅔ in. in length; the cauline leaves are narrower, the radical leaves are seldom present in flowering specimens, and in barren plants are fewer in number and smaller. Both varieties are figured in the accompanying plate.

The genus *Pterostylis* has a very similar geographical distribution to that of *Thelymitra* and *Prasophyllum*. It contains approximately about fifty species, of which thirty-six or thirty-seven are Australian. Eleven species are found in New Zealand, two of them being the same as Australian forms; three are known from New Caledonia, one of them being probably identical with an Australian species; and a single species (*P. papuana*, Rolfe) is found in New Guinea.

PLATE 194A. *Prasophyllum pumilum*, drawn from specimens collected by Mr. R. H. Matthews near Kaitaia, Mongonui County. Fig. 1, two flowers; 2, the two lateral sepals, connate at the base 3, lateral petals, up, and column; 4, side view of lip and column; 5, front view of column, with the ribband-like base of the lip. (All enlarged.)

PLATE 194B *Pterostylis trullifolia*, drawn from specimens collected in the vicinity of Auckland. Fig. 6, flower (x 4); 7, a single petal (x 2); 8, lip and column (x 4); 9, lip with its appendix (x 6); 10, front view of column, with the wings spread open (x 6); 11, tip of appendix to the lip, highly magnified.

Prasophyllum pumilum is now known as Corunastylis pumila; the Pterostylis drawn here is now split from P. trullifolia, and is known as Pterostylis (Diplodium) alobula—Ed.



NOTES ETC

Anne Fraser emailed (3 December 2005), "Having sampled **the Waihaha track** with the contingent from Taranaki prior to the Waikaremoana get together I decided a repeat trip was warranted on the way home. The delights of the shrub land would appeal to my friend Maureen's botanical expertise, and as it turned out a good number of orchid species were revealed. We had made a short visit to Iwitahi the previous day and were rewarded with two large areas of *Chiloglottis valida* both with a number of flowers. The work that has been done in the Reserve is a credit to the organizers.

"Having stayed in Taupo overnight we were on the spot in good time at Waihaha. The weather was pleasant, with a light wind and although rain showers still blotted out the eastern ranges it became fine and warm as the day progressed. *Pterostylis* were plentiful along the track side especially *P. patens* sometimes in groups with numbers of flowers. *P. banksii* and *P. cardiostigma* appeared higher up the track, both robust and in full flower. A bonus was three plants of *P. humilis*, one of which had flowered. Bruce Irwin assured me it would most likely be this species. A group with smaller flowers and short paler erect laterals but without a twisted labellum was attributed to *P.* aff *montana* agg. Also seen was a very slender leaved plant under tall vegetation which was obviously none of the species already noted, and which we hesitated to name – *P.irwinii* or *P. graminea*?

"Several *Thelymitra* were encountered, most with flowers near opening. *T .longifolia* was common and some with the broad leaf looked more like *T.* aff. *longifolia* but flowering would be later so perfume could not be detected.. *T. nervosa* and several lovely *T*. aff. *ixioides* well up the ridge track had purple flowers with black spots and lavender cilia. Near the beginning of the shrub land a single specimen of *Prasophyllum*, probably *P. colensoi* was recorded and a good number of *Orthoceras* will flower later. The *Calochilus* sp. pointed out by the Taranaki group was still no where near opening. A flowering colony of *Corybas oblongus* also vetted by them had strong red fringes at the flower opening and red veined leaves. A colony Maureen and I found higher up was covered with flowers and had green 'eyelashes' without red veining in the leaves. Several *Caladenia* species were noted, two eyecatching pink flowers with two neat rows of matching calli and unornamented white labellum tip. Other plants were attributed to *C. chlorostyla*.

"I had remarked during the walk that we should see *Drymoanthus* in the area and the highlight of our day was exactly that, spotted by Maureen as we took a brief break. This find was not *D. adversus* however but the small yellowish, narrow spotted leaved species which I have found sparsely on the farm here and which I hesitate to name as I am not familiar with *D. flavus.* This plant was on Kamahi (Weinmannia). I have only found it

on Knightia, and only when one is blown down. The discovery of lovely soft pink flowers on the rare *Pittosporum turneri* on the roadside on the way home satisfied the botanist in Maureen. A good finale to a much more than ordinary week end."

Surprises for Ian Reid from a **restiad swamp at Opuatia** early in December 1994: Eric Scanlen wrote, "the colour shots (**Fig. 9-12**) show a *Thelymitra cyanea* alba, still with yellow postanther lobes and yellow spiral column arms but totally lacking in the normal blue; and a *Thelymitra formosa* not with yellow or even orange cilia but bright red. Another shot showed the hypochromic *Prasophyllum hectori* normal from this area [J98:9] in the boggy raised centre of the swamp. It had a root system 2-3m long which could explain how the normally coloured specimens at Pureora [J54:2] establish out in flowing water in a reed choked stream. Is this the yellow taxon reported by Peter de Lange from the Chatham Islands [J83:8]?

Photographs above: Alva Gosling's *Thelymitra* saved from a heap of Northland pine bark. See also **Fig.41** p.25: is it *T. malvina?*

Alva Gosling wrote (29 March), that five years ago he bought a cubic metre of pine bark for his Henderson garden, and heaped the surplus beneath a medium sized conifer for future use. Two months later what appeared to be a *Thelymitra* leaf blade appeared near the bottom of the heap, then a flower stem that withered before the buds opened. He carefully transferred the plant and bark pieces to a pot, and ascertained from the odour that the bark was *Pinus nigra*. Over the next four years the plant produced leaves but the flower stems again died back before the buds opened. In December 05 several leaves were well formed, then three flower stems (the longest 45cm), with good buds by midjanuary 06, the flowers opening at long last in early February, "after years of testing my patience". He watched the flowers "almost hourly" awaiting the optimum time for photographs, and eventually obtained the slides from which the scans at right (and in colour: **Fig.3**) were taken. "I would be most grateful for any help you can provide on identification," Alva wrote, "and am quite pleased I may have **saved ONE native orchid**." *What is it? Well, I am always chary of making identifications solely from photographs, but the column and general structure look remarkably like that of the rather rare Thelymitra malvina to me (though it could be another taxon in the Thelymitra pauciflora complex); perhaps its initial failures to flower are because this is its southernmost record, and the Henderson climate may be a bit nippy for it—Ed.*
Alva did some detective work: his bark was supplied by McClures ITM Building supplies, who obtain their timber from near Dargaville, but also in the past from the Kaitaia-Awanui region.

They come down from the north for debarking and treatment, so the conditions are not favourable for orchid seeds or seedlings. A few years back logs were brought by road from near Kaitaia to Moerewa or Kawakawa, then railed to Auckland. "Were there *T. malvina* seeds on those logs? The possibilities seem endless…. Have *T. malvina* seeds blown into Auckland from across the Tasman and touched down in McClures yard – on their bark piles? Have they survived from the north in bark on logs? Have seeds arrived in Auckland on severe northerly winds? Have seeds arrived in Auckland on the clothing of timber workers, particularly truck drivers – or on their trucks? Will we ever have confirmation?"

Graham Randle wrote, "I have purchased a scanner to copy my many slides and I thought you may be interested in some of them as they are copied. This plant (**Fig.1**) was found (in the 1960s) behind Upper Hutt not far up the hill from Wallaceville research station in an open area that was once there. I was down there last weekend (not on the hill); it is now overgrown compared to what it was like when I lived there in the 60s but I noticed that there has been a fire on the hill, so it may be a good area once things start growing to look for this orchid again." *I know of only one plant of* ***Pterostylis (Plumatichilos) tasmanica*** *near Wellington nowadays – Ed.* Graham sent another scan of a 1960s slide of an unidentified orchid from Mt Holdsworth (Tararuas). *It appears to be* ***Pterostylis areolata*** [see J99 p23, Fig.5 & p16] – *Ed.* Graham continued, "The Wellington area was a great place for orchids when I lived there. I was a member of the Hutt Valley tramping Club and was out most weekends in the hills. We had a small group of people in the Club who were interested in photographing plants. I had always been interested in orchids since my mother showed me one (she was shown them by her family in the same black beech bush area where Janet Frame's book *Lagoon* stems from—she was my mother's cousin). When I was a small boy about eight on the Domain Track in Picton where we lived, there was a *P. banksii,* and even today, fifty-five years since I first saw them, when I visit Picton to see family I visit the track, and lo and behold, growing in about the same place are these plants, as well as other species that I found in later years. So if the conditions are fine one should be able to return to these places and hopefully find them once again."

Ron Whitten emailed, "The **strange plant from Sardinia** [J99] looks like an anthocyanin-free *Arisarum vulgare.* The normal form is dark brownish-purple with white stripes. It is a relative of *Arum*."

The **Cheeseman Symposium 2006,** Auckland 20-22 November, will celebrate the centenary of the first full flora treatment to be published by a resident New Zealand botanist, Thomas F. Cheeseman's *Manual of the New Zealand Flora* (1906). The conference is being organised by the NZ Plant Conservation Network, with the NZ Botanical Society, Auckland Museum, Auckland Botanical Society, Landcare Research and the University of Auckland. The registration form: http://www.nzpcn.org.nz/Documents/Registration-06.pdf. More details on the Network website (www.nzpcn.org.nz) under Conservation info/Events/Conferences or at the following link: http://www.nzpcn.org.nz/news_events/conference.asp. Conference session headings include: Early botanists, New Zealand and Pacific Floras, Biodiversity informatics, Pollination and reproductive biology, Science, conservation and conservation management. There will also be plant conservation workshops organised by the Network. A call for papers is included in the registration form referred to above.

Eric Scanlen sent this photograph of "the Waitarere rescue squad straight after the salvage of all the *Chiloglottis trapeziformis* they could lay their hands on, about 25 colonies, on 8 May 2002. L to R back row are Brian Tyler, Geoff Monk, Ian Townsend; front row, Trevor Nicholls, Doreen Abraham, Leita Chrystall and Pauline Jackson; photographer Eric Scanlen. All the *Pinus radiata* in the background were felled soon after probably leaving little remnant of the original orchid population.

Te Paki

October field trip
contact Eric Scanlen

The Manawatu Standard of 04 May 2006 reported that "a horticultural scientist's passion for rhododendrons germinated into a $5000 fine after **she smuggled prohibited seeds into New Zealand**". A parcel from Britain addressed to the scientist was intercepted at Auckland International Airport. It contained 26 packets of seeds and an order form listing 52 rhododendron species, six of which are illegal to import into New Zealand. She had written on the order form: "Please post my seeds in a plain, unmarked envelope with no indication of contents to ensure smooth arrival in New Zealand." Another parcel of seeds was also intercepted. The Crown prosecutor said the scientist knew her actions were "illegal and dangerous". Her counsel said his client had no previous convictions, made no financial gain from importing the seeds and had cooperated with authorities. Judge Gregory Ross said her offending was premeditated and "somewhat clandestine". He fined her $2500 for each of the two counts. *Orchid enthusiasts tempted to import or export orchid seed should think twice. This arrived from Argentina by email recently: "Hello. Very cordial greetings. I congratulate them for their beautiful one it paginates in Internet and for their excellent work with the orchids. I love the orchids. I love to sow seeds of orchids. I built a small and humble laboratory in my house. I sowed some species. It is very difficult for my to get seeds of orchids. Is it possible that you send me some seeds of orchids????? From already thank you. Good luck for you. Good floraciones. Good business. I wait their answer. Until soon." Don't do it—Ed.*

Buller conservationist, NZNOG member and occasional contributor to this *Journal*, **Leicester Kyle** died in July. He founded the Millerton and Plateau Protection Society. He was awarded a DoC community award in 2005, after discovering *Powelliphanta millertonii*—a species of giant snail.

STOP PRESS

TRAGEDY AT IWITAHI

Fire destroyed the kitchen/dining room block at Iwitahi in midjuly, Max Gibbs reported. The damage is so extensive the building appears to be a write-off, and plans are under way for its replacement.

Meantime the hall building will be used for functions, and Robbie Graham reports that Iwitahi06 will go ahead as planned in December (see p.15).

Anne Fraser wrote, "I was interested to see the reference to **pigs seeking orchid tubers** in the latest Journal. My grandson who is a keen hunter, was following an old bush road a while ago and was surprised to see that pigs had poked their noses into the ground along the sides of the road. There wasn't major pig rooting, just neatly poked holes for some distance. On seeing withered orchid stems lying there he lifted some and found no tubers at the base, and concluded that the pigs were actively seeking the orchid tubers. I remember seeing orchid species there, *Thelymitra cyanea* (it is quite swampy) and another species quite robust but not in flower so I am not certain of its identity. *Thelymitra long(folia* and *Pterostylis* species were in the drier areas. I hope the pigs don't make too much of a habit of doing this, it could decimate the populations". *Anne also sent her watercolours of Pterostylis banksii, P. foliata, and Thelymitra spp. painted in the 1960s, and her pen and wash portrait of Drymoanthus adversus:* **Fig.13-16**—*Ed.*

Ferdinand Lukas Bauer, born 1760 in Feldsberg, Lower Austria; died 1826 in Vienna, was a member of the British Matthew Flinders Expedition to Australia (1801-1805). Bauer's numerous watercolours recorded plants and animals, many of which had already died out by the end of the 19th century. The emperor Franz I of Austria acquired Bauer's collections and drawings for the Combined Imperial Natural History Collections. Some of his 2000 pencil drawings are now in the Museum of Natural History Vienna. The Czech-born Vienna-based botanist/priest Stephan Friedrich Ladislaus Endlicher 1804-1849 included engravings by the Viennese A. Gebhardt (fl. 1840-1860) of Ferdinand Bauer paintings in his *Iconographia Generum Plan-*

tarum (1838). This issue we begin a series of Gebhardt engravings of Bauer drawings from Endlicher – see "Close Relations", p.24.

Brian Molloy emailed (26 Apr 06), "I have to bow to the greater wisdom of the compilers of the *Index Kewensis* and accept that ***Nematoceras* epithets must be neuter.** Thus my Canberra colleagues and I will now be using *Nematoceras macranthum, trilobum, orbiculatum, longipetalum, acuminatum, hypogaeum, rivulare*. *N. papa* and *iridescens* are not affected".

What's this then? I took the photograph (**Fig.4**) at Longbush, near Invercargill, in Dec '87. *Thelymitra hatchii* were everywhere, wide open, spotless and magnificent. I thought the spotty little number was a herbicide-affected *T. hatchii* at the time, and certainly it was right beside the road, and there were no more like it.

Ruahine Ramble

The educational centre Sixtus Lodge at Apiti, North of Fielding and East of Mangaweka, has been booked for 17-19 November.
It is right at the foot of the Ruahine Ranges where there are good native orchid sites.
As the lodge is very comfortable it is a great spot for nonwalkers.
The fee: $10 a person per night.

■

To register your interest or queries, contact
Don Isles 06 3569609
or e-mail dawn.don@inspire.net.nz
33 Swansea St Palmerston North.

Ann Green sent a selection of photographs taken recently:
Fig.5 *Caladenia chlorostyla,* Peninsula walk, Lake Rotoiti (S.Is) 30 Dec 05.
Fig.6 *Drymoanthus adversus.*
Fig.7 *Earina aestivalis* (?) Percy's Reserve, Lower Hutt, 24 Dec 05.
Fig.8 *Gastrodia* aff. *sesamoides,* Jasper Creek track, Kauaeranga Valley, Thames, 4 Dec 04.

Eric Scanlen sent a selection of photographs of **"alba" forms of NZ orchids.**
Fig.17 *Thelymitra imberbis* Hook. *f.* physically similar to pinkish *T. carnea* but flowers open more easily so it may be insect pollinated.
Fig.18 *Thelymitra* aff. *longifolia* alba from Scott Point shows no purplish back to the sepals but has a brown back to the post anther lobe.
Fig.19 *Thelymitra longifolia* alba from Comet Track in the Kawekas has no purplish sepal backs or any brown on the post anther lobe.
Fig.20 *Aporostylis bifolia* lacking the maroon outer midrib to the sepals and the leaves are all green too.
Fig.21 *Singularybas oblongus* alba from Duder's Bush Clevedon 1979 does retain red leaf and floral bract veins. Note the ragged labellum fringe.
Fig.22 *Singularybas* "Greymouth" with very long petals above, labellum round mouthed with tidy fringe (recurved margins) as in *S.* "aestivalis" but no "dentiform papillae" on the disc, more akin to *S. oblongus* yet lacking its wavy margin to the floral bract. No sign of any red in flower, leaf or bract so the Column took his own advice, stopped trying to squeeze it into one or other known taxon and tagged this for the Greymouth site where a huge colony thrives beside a mountain-bikers track. Flowers mid-December. See also J87:8 Fig 14.

Beryl Goodger sent a large box of her late husband Bob's slides of native orchids. Bob's photography was celebrated by frequent contributions to this Journal, a series of native orchid studies printed in *Orchids in New Zealand,* and a slideshow of native orchid studies available through the NZ Orchid Council. He was a genius at macrophotography in the days

before digital cameras, when such work was much more difficult than it is now. Beryl has kindly given permission for Bob's slides to be used in the Journal, and from time to time we will see more of them. How did he find those magnificent specimens?
Fig.23 *Thelymitra sanscilia,* Warkworth.
Fig.24 *Pterostylis puberula,* Thames, 1991
Fig.25 pink *Thelymitra pauciflora,*
Te Puke/Rotorua Rd, Nov. 84.
Fig.26 *Thelymitra carnea,* Lund's Rd, Oct. 86.

John Palmer sent copy from Essay VII ("**On the Preparation, Culture, and Uſe of the Orchis Root**") of a work by Dr. Alexander Hunter (1729-1809): Georgical essays: by A. Hunter, M.D., F.R.S., London 1777. It's a wonderful example of the way scientific discovery and thought developed as the Age of Elegance became the Age of Enlightenment—and the prudish use of Latin for the sexy bits at the end is delightfully coy.

SALEP is a preparation of the root of Orchis, or Dogſtones, of which many ſpecies are enumerated by botanical writers. The Orchis maſcula Linn, ſp.ſl. is the moſt valued, although the roots of ſome of the palmated ſorts, particularly of the Orchis Latifolia, are found to anſwer almoſt equally well. This plant flouriſhes in various parts of Europe and Aſia, and grows in our country ſpontaneouſly, and in great abundance. It is aſſiduouſly cultivated in the Eaſt; and the root of it forms a conſiderable part of the diet of the inhabitants of Turkey, Perſia, and Syria. A dry, and not very fertile ſoil is beſt adapted to its growth. An ingenious friend of mine, in order to collect the ſeed , tranſplanted a number of the Orchiſes into a meadow, where he had prepared a bed well manured for their reception . The next ſpring few of them appeared, and not one came to maturity, their roots being black and half rotten. The ſame gentleman informed me that he had never been able to raiſe any plants from the ſeed of wild Orchis; but he aſcribes his want of ſucceſs to the wetneſs of the Situation in which he reſides. I have now before me a ſeed pod of the Orchis; the contents of which, to the naked eye, ſeem to be ſeed corrupted and turned to duſt, but, when viewed through a microſcope, appear evidently to be organised, and would, I doubt not, with proper culture germinate, and produce a thriving crop of plants. The propereſt time for gathering the roots is when the ſeed is formed, and the ſtalk is ready to fall, becauſe the new bulb, of which the ſalep is made, is then arrived to its full maturity, and may be diſtinguiſhed from the old one by a white bud riſing from the top of it, which is the germ of the Orchis of the ſucceeding year. Several methods of preparing ſalep have been propoſed and practiſed. Geoffrey has delivered a very judicious proceſs, for this purpoſe, in the Hiſtoire de l'Academie Royale des Sciences, 1740, and Retzius, in the Swedish Tranſactions, 1764, has improved Geoffrey's method. But Mr. Moult, of Rochdale, has lately favoured the public with a new manner of curing the Orchis root, and as I have ſeen many ſpecimens of his ſalep, at leaſt equal, if not ſuperior, to any brought from the Levant, I can recommend the following, which is his proceſs, from my own knowledge of its ſucceſs. The new root is to be waſhed in water and the fine brown ſkin which covers it is to be ſeparated by means of a ſmall brush, or by dipping the root in hot water, and rubbing it with a coarse linen cloth. When a ſufficient number of roots have been thus cleaned, they are to be spread on a tin plate, and placed in an oven heated to the uſual degree, where they are to remain ſix or ten minutes, in which time they will have loſt their milky whiteneſs, and acquired a tranſparency like horn, without any diminution of bulk. Being arrived at this ſtate they are to be removed, in order to dry and harden in the air, which will require ſeveral days to effect , or, by uſing a very gentle heat, they may be finiſhed in a few hours*.
Salep, thus prepared, may be afforded in this part of England, where labour bears a high value, at about 8d. or 10d. per lb. And it might be ſold ſtill cheaper if the Orchis were to be

*Vid. A letter from John Moult to the author, containing a new method of preparing Salep. - Phil. Tranſact. vol. 59.

cured without ſeparating from it the brown ſkin which covers it: A troubleſome part of the proceſs, and which does not contribute to render the root either more palatable or ſalutary. Whereas the foreign ſalep is now ſold at 5 or 6s. per lb. The culture of the Orchis, therefore, is an object highly deſerving of encouragement from all lovers of agriculture. And as the root, if introduced into common uſe, would furnish a cheap, holeſome, and moſt nutririous article of diet, the growth of it would be ſufficiently profitable to the farmer. Salep is ſaid to contain the greateſt quantity of vegetable nouriſhment in the ſmalleſt bulk. Hence a very judicious writer, to prevent the dreadful calamity of famine at ſea, has lately propoſed that the powder of it should conſtitute part of the proviſions of every ſhip's company. This powder and portable ſoup, diſolved in boiling water, form a rich thick jelly, capable of ſupporting life for a conſiderable length of time. An ounce of each of theſe articles, with two quarts of boiling water, will be ſufficient ſubſiſtence for a man a day*, and, as being a mixture of animal and vegetable food, muſt prove more nouriſhing than double the quantity of rice cake, made by boiling rice in water; this laſt, however, sailors are often obliged ſolely to ſubſiſt upon for ſeveral months, eſpecialiy in voyages to Guinea, when the bread and flour are exhauſted, and the beef and pork, having been ſalted in hot countries, are become unfit for uſe.† But as a wholeſome nouriſhment, rice is much inferior to ſalep.

I digeſted ſeveral alimentary mixtures prepared of mutton and water, heat up with bread, ſea biſcuit, ſalep, rice flour, ſago powder, potatoe, old cheeſe, &c. in a heat equal to that of the human body. In forty-eight hours they had all acquired a vinous ſmell, and were in briſk fermentation, except the mixture with rice, which did not emit many air bubbles, and was but little changed. The third day ſeveral of the mixtures were ſweet, and continued to ferment; others had loſt their inteſtine motion, and were ſour; the one which contained rice was become putrid. From this experiment it appears that rice, as an aliment, is ſlow of fermentation, and a very weak corrector of putrefaction. It is therefore an improper diet for hoſpital patients, but more particularly for sailors, in long voyages, becauſe it is incapable of preventing, and will not contribute much to check the progreſs of that fatal diſeaſe, the ſea ſcurvy *. Under certain circumſtances, rice ſeems dispoſed of itſelf, without mixture, to become putrid, for, by long keeping, it ſometimes acquires an offenſive foetor, nor can it be conſidered as a very nutritive kind of food, on account of its difficult ſolubility in the ſtomach. Experience confirms the truth of this concluſion; for it is obſerved by the planters in the Weſt - Indies, that the negroes grow thin, and are leſs able to work whilſt they subſiſt on rice. Salep has the singular property of concealing the taſte of ſalt water†: a circumſtance of the higheſt importance at ſea, when there is a scarcity of freſh water. I diſſolved a drachm and a half of commom ſalt in a pint of mucilage of ſalep, ſo liquid as to be potable, and the same quantity in a pint of ſpring water. The ſalep was by no means diſagreeable to the taſte, but the water was rendered extreamly unpalatable.

This experiment ſuggeſted to me the trial of the orchis root as a corrector of acidity; a property which would render it a very useful diet for children. But the ſolution of it, when mixed with vinegar, ſeemed only to dilute, like

* Potable ſoup is ſold at 2s. 6d . per lb. ſalep, if cultivated in our own country, might be afforded at 10d. per lb, the day's ſubſiſtence would therefore amount only to 2.5d.

†Vid. Dr. Lind's Appendix to his Eſſay on the diſeaſes of Hot Climates.

*Cheeſe is now become a conſiderable article of ſhip proviſions. When mellowed by age, it ferments readily with yeaſt and water, but ſeparates a rancid oil, which ſeems incapable of any further change, and muſt, as a ſeptic, be pernicious in the ſcurvy; for rancidity appears to be a ſpecies of putrefaction. The ſame objection may be urged, with ſtill greater propriety, againſt the uſe of cheeſe in hoſpitals; becauſe convaleſcents are ſo liable to relapſes, that the ſlighteſt error of diet may occaſion them. Vid. Percival's letter to Mr. Aikin. Thoughts on Hoſpitals, p. 95.

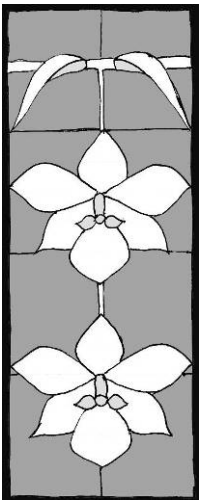
†Vid. Dr. Lind's appendix.

an equal proportion of water, and not to cover its ſharpneſs. Salep, however, appears, by my experiments, to retard the acetous fermentation of milk, and conſequently would be a good lithing for milk pottage, eſpecially in large towns, where the cattle being fed on ſour chaff, must yield ſufficient milk. Salep, in a certain proportion, which I have not yet been able to aſcertain, would be a very uſeful and profitable addition to bread. I directed one ounce of the powder to be diſſolved in a quart of water, and the mucilage to be mixed with sufficient quantity of flour, ſalt and yeaſt. The flour amounted to two pounds, the yeaſt two ounces, and the salt to eighty grains. The loaf when baked was remarkably well fermented, and weighed three pounds two ounces. Another loaf, made with the same quantity of flour, etc. weighed two pounds twelve ounces; from which it appears the the ſalep, though uſed in ſo ſmall a proportion, incresed the gravity of the loaf ſix ounces, by absorbing and retaining more water than the flour alone was capable of. Half a pound of flour and an ounce of ſalep were mixed together, and water added according to the uſual method of preparing bread. The loaf when baked weighed thirteen ounces and a half; and would probably have been heavier, if the ſalep had been previoſly diſſolved in about a pint of water. But it should be remarked, that the quantity of flour uſed in this trial was not sufficient to conceal the peculiar taſte of ſalep.

The reſtorative, mucilaginous, and demulcent qualities of the Orchis root render it of conſiderable uſe in various diſeaſes. In the ſea ſcurvy it powerfully obtunds the acrimony of the fluids, and at the ſame time is eaſily aſſimulated into a mild and nutricious chyle. In diarrhoeas and the diſentry it is highly ſervicable by ſheathing the internal coats of the inteſtines, by abating irritation, and gently correcting putrefaction. In the ſymptomatic fever which ariſes from the abſorption of pus, from ulcers in the lungs, from wounds, or from amputation, ſalep uſed plentifully is an admirable demulcent, as well as adapted to resist that diſſolution of the craſis of the blood, which is ſo evident in theſe caſes. And by the ſame mucilaginous quality, it is equally efficacious in the ſtrangury and dyſury; especially in the latter when ariſing from a venereal cauſe, becauſe the diſcharge of urine is then attended with the moſt exquiſite pain, from the ulcerations about the neck of the bladder, and through the courſe of the urethra. I have found it alſo an uſeful aliment for patients who labour under the stone or gravel*. From theſe observations, ſhort and imperfect as they are, I hope it will ſufficiently appear that the culture of Orchis root is an object of conſiderable importance to the public, and highly worthy of encouragement from all patrons of agriculture. That taſte for experiment, which characteriſes the preſent age, and which has ſo amazingly enlarged the bounderies of ſcience, now animates the rational farmer, who fears not to deviate from the beaten tract whenever improvements are suggeſted, or uſeful projects are pointed out to him, Much has been already done for the advancement of agriculture; but the earth ſtill teems with treaſures which remain to be explored, The bounties of nature are inexhauſtible, and will for ever employ the art, and reward the industry of man.

* Ancient chemiſts ſeem to have entertained a very high opinion of the virtues of the Orchis root, of which the following quotation from the Secreta secretorum of Raymaund Lully, affords diverting proof. The work (see # below) is dated 1565 (sic.) (*Translation by John Palmer—Ed*): The sixth herb; Satirion is a herb known to many; collect 4 lb of this root on January 20th; pound strongly and place the pounded mass in a brass pot with 20 small openings like atoms in the lid, & place inside with the previously mentioned gathered items 3 lb of hot cows' milk as it is milked from the cow & 1 lb of honey, 2 lb of aromatic wine & place again for 20 days in the sun & preserve & use. Of this dose to the weight of 3. 4. and at the tenth hour of the day show to a post menstrual woman she will conceive the same night if a man has relations with her.

Probably: Llull, Ramon, 1232?-1316 Secreta secretorum Raymundi Lullii et Hermetis philosophorum : in libros tres divisa. Cum opusculo D. Thomae Aquinatis, De esse & essentia mineraralium [sic], & Cornelii Aluetani Ansrodij De conficiendo diuino elixire libellus Coloniae: Apud Gosuinum Cholinum., anno M.D.L.



FROM THE AUSTRALIAN GROUPS

A.N.O.S. Victorian Group

Helene Wild (Life Member and current Editor of the *Bulletin*);
helene.wild@optusnet.com.au

We have some pretty amazing orchids here in Victoria but, because we are situated at the cooler south-eastern corner of our island continent, they are predominantly terrestrial – lots of *Caladenia*, *Pterostylis* and *Thelymitra* spp. as well as *Acianthus* and *Cyrtostylis*, *Calochilus*, *Chiloglottis*, *Corybas*, *Cryptostylis*, *Diuris*, *Genoplesium* and *Prasophyllum*, *Microtis*, and several other genera each with just a few representatives. We share some terrestrials with you New Zealanders, but we have scores of beautiful and fascinating species you won't ever get to see at home.

Only five epiphytes grow naturally in Victoria, namely *Dendrobium speciosum* var. *speciosum*, *Dockrillia striolata*, *Plectorrhiza tridentata*, *Sarcochilus australis* and *S. falcatus*.

With around 450 single and family memberships, A.N.O.S. Victorian Group is one of the largest native orchid societies in Australasia. We like to think the popularity of the group reflects our interesting and well run meetings, the willingness of members to share information, and the wide range of activities that we organise each month. Country, interstate and overseas visitors are always welcome at our monthly meetings and special interest group activities.

In addition to our regular first Friday of the month meetings, we also organise other activities that cater for the diverse interests of Society members.

One Sunday afternoon each month, Epiphyte Study Group members meet to discuss orchids in cultivation. At one of these gatherings, we may study an epiphytic or lithophytic species, focus on a particular type of hybrid, talk about orchid mixes and fertilisers or share experiences of flasking and deflasking Australasian epiphytic orchids. Every once in a while, the group will travel to see epiphytic orchids in their natural habitats.

The Terrestrial Study Group Coordinator organises field trips to locations in Victoria so members may see ground orchids growing *in situ*. While most activities occur on a Saturday or Sunday, there are occasional weekends away and there is an annual four day Melbourne Cup Weekend trip to an orchid rich region in Victoria or interstate.

We also have a Terrestrial Seed Group whose members are developing the skills necessary to raise terrestrial orchids successfully from seed. Members of this group are also studying the relationships between native orchids and mycorrhizal fungi.

Our annual Tuber Bank provides a wonderful service by making terrestrial orchid tubers available to financial members of A.N.O.S. Vic. Terrestrial orchid growers are encouraged to donate their excess tubers to the Society and they are then distributed amongst other growers. A nominal fee covers the cost of postage and packaging. Unfortunately we are not in a position to send tubers overseas.

Once a month, the New Members Group congregates at one of our experienced grower's homes. At a typical meeting, attendees will inspect their host's orchid collection and discuss one aspect of orchid culture. Occasionally, the group will join an Epiphyte or Terrestrial Study Group meeting, thus encouraging the newcomer to participate in other activities.

From its inception, the Victorian Group has been conservation conscious. We were one of the first groups to appoint a Conservation Officer, and our dynamic Conservation Group is involved in the campaign to save significant orchid sites. We are also looking after several endangered species, and some members of this group are working with other organisations as part of a coordinated approach to orchid conservation.

One of the great success stories of our Conservation and Terrestrial Study Groups, in concert with Melbourne Zoo and others, is the recovery of *Diuris fragrantissima* from the brink of extinction. Only a handful of plants were known to remain in the wild when the Society received a surprise call from the horticultural staff at Melbourne Zoo. A few years previously a researcher (who was moving to another area) asked if they would mind three pots of *D. fragrantissima.* The pots were never reclaimed and the plants needed repotting, but the gardeners didn't know what they should do. Our Terrestrial Study Group came to the rescue and held a working bee at the Zoo. As a result, some of the plants were distributed amongst our most experienced growers and, under their care, numbers began to increase significantly and, today, *D. fragrantissima* is grown by many members. Seven hundred plants were returned to a nature reserve in their former grasslands habitat and two thirds of those plants appeared this year (**Fig. 27**).

The group's social activities are many and varied and include an annual dinner at a restaurant or hotel and summer evening barbeques at members' homes. The Society's annual Spring Show, held at the Mt. Waverley Community Centre during peak flowering season (23 and 24 September this year), is the highlight of our growing year and showcases our beautiful native orchids to the general public.

Our large membership also reflects the excellence of the *Bulletin*, our 14-page monthly newsletter that informs members of meetings, group activities and Society news. A comprehensive Last Meeting report includes a list of plants benched that month, and a typical issue contains a plant of the month, group reports and general interest articles written by Society members. There are two versions of the *Bulletin* – a black and white photocopied version that is snail mailed to approximately 250 households, and a full-colour electronic version that is e-mailed to about 200 memberships within Australia and beyond. A.N.O.S. Vic. also exchanges newsletters with several other societies, including The New Zealand Native Orchid Group. Would you like to receive one complimentary copy of our E-*Bulletin* for assessment? Send your request to helene.wild@optusnet.com.au or visit the Society's web site: http://www.anosvic.org.au.

The Committee and members of A.N.O.S. Victorian Group congratulate the New Zealand Native Orchid Group on their 25th anniversary and the 100th edition of their excellent and informative *Journal*. We wish our friends from the land of the long white cloud many more years of happy and successful orchiding.

Western Australian Native Orchid Society

By Noel Clarke, vice president WANOS

Congratulations to your Group on successfully attaining your 25 years' activity. Thank you for inviting us to contribute.

The Western Australian Native Orchid Society was formed in 1974 by a group of

members of the West Australian Orchid Society, initially as a subgroup and subsequently as an entity of its own. Membership of our Group has varied reaching about 150 members but these days is down to about 100 mostly city and country with a few interstate and one American member.

We meet monthly on the third Wednesday from March to November at the Kings Park offices. Any of your members visiting Perth at meeting time are welcome to attend the meeting and join us on any trips we have organised. We always have a guest speaker; recently we have had a few PowerPoint presentations courtesy of a grant from the Lotteries Commission of WA that enabled us to purchase a laptop and digital projector.

We have several field trips during the year mostly covering 300 km. We take advantage of long weekends to visit distant locations such as Esperance and Walpole. The current price of petrol has put a damper on these activities this year along with a very dry season. Some members who have gone on individual trips have reported less or no sightings, though the underground orchid flowered because of showers we had in January. In normal years our orchids can be seen throughout the year sometimes involving long distances for just one species.

For the last few years DRF species *Caladenia huegelii* has been a focus of attention as developers eye the areas it grows on. *Thelymitra variegata* in its differing coloured forms is of interest to locals and visitors (see **Fig. 28**). It varies from the northern to the southern section of SW WA, the best being in the Ongerup area.

Our Group is affiliated with the WA Conservation Council with two representatives. Over the years we have successfully lobbied to save orchid populations from demise by road building or development of land. It has not been all plain sailing however; we have lost a few.

Some members in our early days attempted growing orchids mostly obtained on rescue digs when land was being cleared. Most attempts were failures. Some members still persist with a modicum of success in the light of successful techniques discovered by researchers at the Conservation and Land Management laboratory in Kings Park. My personal observation is that it's better to leave them where they grow for others to see and enjoy.

Our email address is wanoscg@iinet.net.au. Our web address is wanativeorchidsociety.net.au.

Mackay & District Group of the Australasian Native Orchid Society

By Jim Quinlan, President and Noeline Quinlan, Secretary/Treasurer

ANOS Mackay and District Group Inc. came into being in 1990 to cater for members who have a passion for our Australian native orchids. ANOS is a group that also has an interest in any orchids originating from the Australasian Plate for example, from Irian Jaya, Papua and New Guinea, and also Island groups to the East and South including New Zealand.

Our Patron is Mr. Bill Lavarack of Townsville. Bill is well known for his works on Australasian native orchids, having been on a number of orchid expeditions and also written a number of books in collaboration with other authors.

Dendrobium bowmanii is our group emblem which grows prolifically in this area. It grows up in the mountains down to sea level and dry areas to wet areas.

There are close to 100 species of orchids growing in our area, both epiphytic orchids and terrestrial orchids. We have lowland orchids, namely *Den. discolour, Den. canaliculatum, Sac. armitii*, some of the Habenarias, *Geodorum densiflorum* and *Phaius tankervillae*, some of which grow very close to the beach. We have tropical

rainforests where a different group of orchids grow, such as *Den. speciosum* var *curvicaule* (**Fig. 29**), *Den. gracilicaule, Den. tetragonum*, *Den. aemulum, Den. monophyllum,* Oberonias, Plecterhizas, Liparas, Bulbophyllums, *Sarcochilus, Glossodia major,* Caladenias, Thelymitras, *Corybas* and *Pterostylis*. Out west the drier orchids, like *Cym. canaliculatum, Cym. suave* and *Sarc. ceciliae* will grow. Flowering season is all year round with a different species flowering every month.

Our area is also the only known area in the world where the famous *Den. schneideri* var. *major* is found. It grows high up in the Hoop Pines on the high ridges of the Eungella National Park and the Crediton State Forrest. There are two natural hybrids, X *gracilimum* and X *ruppiosum*, found in our area, however, to date only X *gracilimum* has been sighted by our group.

The Mackay District is unique in that it is surrounded by a dry area. This dry area starts south at about St Lawrence, then west to the Great Dividing Range and north to about Bowen. It would also seem that the gene pool here is unique as there are quite a number of orchids from this area winning shows and awards down south.

ANOS Mackay and District Group Inc. meets at least once a month when we bring in orchids in flower for a popular vote. Meetings are a very casual affair; business is done very quickly so we can get to the more important topic of discussing orchids. When the opportunity arises we have guest speakers, slides, demonstrations on caring for native orchids. We have 17 members in our group. A newsletter is sent to members prior to each meeting. Meetings second Thursday of the month at the Mackay Regional Botanic Gardens, Lagoon St, Mackay, 7.30pm.

Our group promotes the cultivation of native orchids for resale, thereby encouraging people to purchase these plants rather than take them from the wild. For this purpose members of our group propagate Australian native and Australasian native orchids. In the cooler months we like to go bush on the look out for new species of orchids, and to check on the ones we already know about.

We are working with the Mackay Regional Botanic gardens, teaching the staff how to care for native orchids in our area. We put up three orchid displays per year for the public and this is rewarded by the number of queries about the different orchids.

The Native Orchid Society of South Australia

By Cathy Houston, Secretary

The Native Orchid Society of S.A. owes its foundation primarily to Roy Hargreaves and Les Nesbitt, the latter now being our Patron. Both saw a need in South Australia for a group to cultivate and propagate rescued native orchid species and to promote the need to conserve and protect South Australia's native orchids. We promote the conservation of native orchids through cultivation, and preservation of naturally occurring plants and habitat.

Meetings are held on the fourth Tuesday of the month (February - November) and visitors are welcome. Eleven Journals are published through the year. We have well over 100 financial members with about 50 attending monthly meetings. Both terrestrial and epiphytic orchids, including hybrids, are benched and judged at each meeting. Donated plants are raffled; there is a trading table and a library from which books can be borrowed. We've had a wonderful variety of speakers in the last year: Reg Shooter on the Dijon orchid conference, Tom Milne on reptiles, the Tindalls on highland orchids, Brendan Killen on orchids of Lord Howe Island and Qld, Renate and Susan on their postgraduate orchid projects, Dr. Topa Petit on studies of the endangered orchid *Caladenia behrii* and Les Nesbitt on his AOF project on growing spider

orchids from seed. Les is one of two members who received an AOF grant for research into SA orchids. In addition to these sociable occasions there are other events such as the Annual dinner in May, the Christmas party and fund raising auction in November plus an end of year Society barbecue.

NOSSA has a highly motivated and dedicated conservation group which participates in various conservation projects. Much of the work undertaken by members is associated with the management and actions designed to conserve species now listed as nationally endangered. It is done in association with Lofty Block Threatened Orchid Recovery Program (LBTORP) and Threatened Plant Action Group. Actions include weed control, monitoring populations and life stages, searching, protecting plants and more. This group attended over 20 working bees last year. We have an appointed conservation officer, who helped to save two areas of bush from damage or development last year.

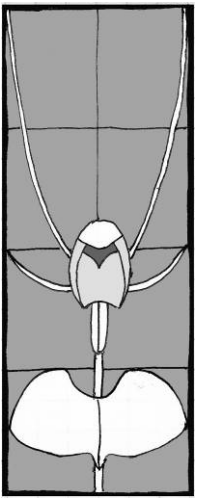
We have many subgroups working on projects: the conservation group has already been mentioned, a terrestrial study group meets irregularly to share knowledge and observations of S.A. orchids, new members' activities encourage and teach members about a wide variety of subjects relating to orchids and members help to run stalls at Garden Shows, Australian Plant Society sales etc., thereby bringing their knowledge to the public. There are regular judges' meetings which assist judges and wouldbe judges in their understanding of orchids. A tuber bank is available to members. Each year a Conservation Park is nominated for special survey. The electronic report for Caroona Creek C.P. is available. Field trips are held regularly during the main orchid season so that members can appreciate orchids in their natural setting. There is an orchid in flower every month of the year, but the main flowering starts gradually from about June and continues to near the end of November. South Australia is the only Australian state that has just terrestrial orchids.

Our Spring Show is held in mid September when members show their skills at growing Australasian orchids. A great array of flowering orchids is on display to the public. Sales of orchid plants raise funds for the Society.

The last 12 months has seen NOSSA join the electronic age in many ways as our journal can now be delivered electronically; our photographers use digital cameras and anyone who receives their journal by email receives a colour supplement; our editor now receives most articles in electronic form; our Treasurer keeps the books on an electronic spreadsheet; our resident computer whiz Ben has set up an excellent and evolving NOSSA website at www.nossa.org.au and we have bought a data projector to replace our slide projector which will, of course, be kept for speakers with slides.

Members found/recognised several new orchid species in SA last year. The 1978 *Flora of South Australia* recognised 120 species, *Orchids of South Australia* in 1990 treated about 150 species, the 2005 Systematic Census Report recognised 240 species and the new Electronic Orchids SA 2006 treats 300 species! This incredible increase in understanding of our native orchids is due almost solely to NOSSA members. South Australia has a number of endemic orchids. One of these is *Caladenia macroclavia* (**Fig.30**), recognised as critically endangered. Known numbers for this orchid were about 50 plants in 2005. By the end of the season, through the LBTORP, numbers had been lifted to about 75. That is, the whole world population is about 75 mature plants! Orchids such as this need our help.

The new Electronic Orchids of South Australia 2006 will soon be available on www.nossa.org.au.



THE COLUMN: ERIC SCANLEN

1. *Thelymitra* aff. *longifolia* "stunted"

Fig.34 shows Bev Woolley's eye admiring this denizen of sandy track sides at Scott Point. By rights it should have been tagged *T.* "V-shortifolia", because that short, Vee section, curled leaf is quite unlike the long, floppy, strap-like one sported by *T.* aff. *longifolia* or the more southern *T. longifolia*, even though the flowers from all three bear an uncanny resemblance to each other. The Column's unusually long tag name (anathema for indexing) was only to deter the brickbat hurlers because no one seems to mind a writer adding a tag to a taxon with which they are already familiar. At Scott Point (head of Ninety Mile Beach) these plants cannot be missed and for years the field parties just ignored them as starved and struggling *T.* aff. *longifolia*. Bruce Irwin first gave them Journal mention with half a sentence in J65:15, Dec. 1997. But on 10 Oct. 2002, we spotted them with healthy, wide-open flowers [J86:10,12 Fig.02] and interest was definitely "stirred but not shaken".

A permitted collection for Dr Brian Molloy on 31 Oct 2004, saw the team studying a range of these plants, finding that height varied from the 40mm of the J86 plant to say 150mm, possibly depending either on nutrients available or because of hybridisation with the other forms of *T.* aff. *longifolia*? Bev posed for Fig. 34 on that same day. Brian has sent this specimen to his colleagues in Canberra (pers. comm.) for DNA sampling of its ITS portions of the genome, which is known for its fairly consistent separation of genera and species. No news as yet.

Going back 107 years, R.H. Matthews saw this orchid, it seems, near Kaitaia and he sent some specimens to T.F. Cheeseman on 19 Sept. and 3 Oct 1899. Cheeseman seemed to be unimpressed, going by the lack of response in the Matthews' correspondence to him. RHM mentioned this orchid several times in later letters and asked Cheeseman about it finally on 5 Oct 1903. No more is heard of it in RHM's letters so one is left wondering what Cheeseman's replies were, to quell such an active interest. There is no mention of it in Cheeseman's 1906 and 1925 Manuals. Like RH Matthews, the Column sees the curled V section leaf, diminutive stature and sand habitat as distinct from *T.* aff. *longifolia* and wonders why it has been ignored for so long.

If one looks at Thomas Duncanson's June 1823 watercolour of "*T. longifolia*" [J92:8,13] it could have been Bev's plant he painted it from, at Kew 147 years ago; they look so similar. But, according to the original ink script with the painting, Thomas's plant was sent to Kew in 1822 by Allan Cunningham from *New South Wales*, of all places, whence it has never otherwise been reported. Possibly someone from New Zealand had delivered it to Cunningham who, incidentally, had been in Australia since 1816 and he sent this curiosity on to Kew. Other possibilities are covered in the Editor's J92 article but the upshot was that Duncanson painted *T.* aff. *longifolia* "stunted" as sure as "eggs is eggs", wouldn't you say?

2. An historic document

On 27 November 1969, after consultation with Dan Hatch who had identified the orchids for me, I sent three slides to Dr LB Moore to try and convince her that *Thelymitra ixioides* (as we knew it then) flowered a month earlier and was different from *T. aemula*. They were growing in adjacent sites in the Hunua ranges which gave one an ideal opportunity to compare species. **Fig. 35-37** show cropped versions of the pictures I sent, and her polite and encouraging reply is reproduced on the next page. Time and chromosome counts have elucidated matters but the Column's inclusion of *T. tholiformis* here only helped to "prove" the variability within the species. Be wary of that phrase; it is beloved of lumpers.

Correspondence to be addressed to:
THE DIRECTOR

IN REPLYING PLEASE REFER
TO: B.D.

NEW ZEALAND

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH
BOTANY DIVISION

Telephone: 65 342 Christchurch
45 Lincoln
YOUR REFERENCE:

Private Bag, Christchurch
New Zealand
27 April 1970

Mr E.A.Scanlen,
Moumoukai,
R.D.3, Papakura.

Dear Mr Scanlen,

With your latst letter of 13th January you sent me some fine colour slides of Thelymitra, and I am ashamed that I have not returned them sooner. This, I assure you, was not through lack of interest, but simply that I have been preoccupied with other matters this year.

Your slides are certainly clear and very beautiful, and show differences between flowers and columns very well, but I still feel unhappy about names. There seems to be a range of forms, without really clearcut differences in several correlated characters, as there should be for two species.

	2266	Australian card	2269	2274
Petals	Spotted	Spotted	Plain	Plain
Column-top	Reddish	Yellow	Yellow	Yellow
	Tuberculate	Toothed?	Toothed	± Smooth?
Side-lobules	Distinct	Distinct	Distinct	Obscure

The Australian card seems to bridge the gap between 2266 and 2269, and 2274 is further away again, and is more like Hatch's figures.

I am very grateful to you for your continued help with these flowers, and your slides and specimens have taught me a lot, even though I cannot feel that the problem is solved. You are fortunate in that you can recognise two distinct species, and that there are two acceptable names available for them.

I am returning the three slides with many thanks.

Yours sincerely,

L. B. Moore

L.B.Moore

3. *Anzybas* pale and dark

RH Matthews' *Anzybas rotundifolius* "late pale" of August 1899, consistently flowers in August when the July flowering and commoner "early dark" has finished. He sent specimens of both to TF Cheeseman at AK, (the Auckland Museum Herbarium) and Cheeseman was pleased to reclassify "it" incorrectly as *Corysanthes Matthewsii*, thinking that Colenso's *C. rotundifolia* Hook. f. applied to *C. rivularis* Hook. f. but that's another story. Cheeseman was also too thorough in applying the *don't-describe-albinos* principle and so ignored the rare "late pale" – which is no albino – almost into oblivion. RH & HB Matthews mentioned several times that they thought these were separate taxa, as you can read in *Matthews and Son on Orchids* [1] but they made no apparent impact on Cheeseman. HB Matthews didn't help in his letter of 7 August 1912, by saying that the "late pale" flowered a month *earlier* despite him his sending specimens a month later in August! This was shortly after his father, RH Matthews had died so he can be excused for the muddle.

These two tiny orchids flowered a month apart in 1899 and 1912 and of course, still do today but due to its complete exclusion by Cheeseman in both his 1906 and 1925 Floras, "late pale" just never entered the literature until the late Noeleen Clements [(J36:9 Dec. 1990)) reported "albino" and normally coloured *Corybas* aff. *unguiculatus*, as they were then known, in kauri/taraire bush in ER 6 (Mangonui to Bream Tail) to keep the exact site secret. Word has it that it was at Brattys Reserve, Ngunguru so a visit there in August now becomes a must. Noeleen implied that they were both flowering together on 30 July 1988. Her 1994 *Field Guide* [2] which was once the Column's orchid bible, thus made no mention of the supposed albino *Corybas rotundifolius* as it had then become. Dr. Lucy Moore also directed Ian St George to some near Warkworth where he photographed "early dark" in the light shade at the edge of the bush and "late pale" in the darker depths but also flowering at the same time so there must be a brief period of overlap. Dr. Moore would by then have realised her error in the 1970 *Flora*, of lumping *A. carsei* and *A. rotundifolius* as the Aussie *Corybas unguiculatus*. Both species are mentioned in the *Flora* in the fine print but, as with Cheeseman and Noeleen Clements, there is no reference at all to "late pale". See how effective that *don't-describe-albinos* principle can be in keeping pale species from us?

The Column, has been hunting Allan Ducker's *Anzybas rotundifolius* at Bream Tail Reserve for eleven years but always in July because that's when the "early dark" form was always found in flower elsewhere. Only "late pale" seems to grow at Bream Tail, so Allan and the Column were always too early, blissfully unaware that this was a late flowering taxon because of its absence from the literature. So those seen were either buds, on 7 July 1995 [(J57:18; 76:40)) or a mutated open one which thus went unpublished, on 16 July 2005.

Gary Penniall came across some magnificent open "late pales" at Te Paki's Shenstone Block on 27 August 2002. His cropped pic of it got into J87:25 Fig 3, and still it didn't register with the proof reading Column *that it flowered late*. Only whilst he was compiling *Matthews & Son on Orchids* did the light finally dawn. **Fig. 32** is Gary's classy photo from that field trip and **Fig. 33**, for comparison, is the Column's shot of an early dark of 8 July 1995, from Ngunguru where this form flowers well among the kauri. No one in that memorable field party of seven saw any "late pales" but 8 July was of course far too early in the season to expect them. A morphological difference (that the taxonomists crave) may be the leaf structure; contoured on "early dark" and flat on "late pale". These leaves would both look flat in dried specimens but the difference shows in most photos although one of the Column's slides of a "late pale" bud at Bream Tail [(J76:40)) is definitely on a contoured leaf. Possibly the exception to prove the rule? Back on 27 August 2002 at Te Paki,

Gary also photographed an "early dark" mutant with a short and twisted dorsal sepal. But that only proves that mutants often flower out of season, doesn't it?

Anyone that doubts that "late pale" is a different taxon from "early dark" because of similar looking flowers, please consider the how slender is the possibility of their cross pollinating when peak flowering is a month apart and *A. rotundifolius* is said to be self pollinating. Doesn't that mean that they are *plants following different evolutionary paths*? How's that for a concise definition of "different species"?

The "late pales" are uncommon but widespread from Te Paki, Kaitaia, Ngunguru, Bream Tail Reserve and Warkworth. By all accounts, both taxa have been found together at all those sites except Bream Tail Reserve where only "late pale" has been reported.

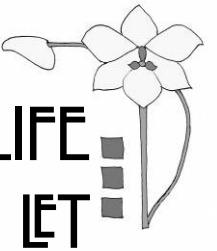
Acknowledgements
Many thanks to Allan Ducker for introducing the Column to Bream Tail Reserve plants, to Gary Penniall for submitting his slides for publication and, to Don Pittham for information about Brattys reserve and Ian St George for his contribution. RH & HB Matthews deserve especial accreditation for first bringing these taxa several times to the notice of the top New Zealand botanist of their day, despite the rebuffs they obviously received for daring to propose a pale form as distinct.

References

1. Scanlen, E.A. *Matthews and Son on Orchids* NZ Native Orchid Group's *Historical Series* 2006; No. 14.
2. Hollard, V. & Clements, N. *A beginner's field guide to the native orchids of New Zealand*, 1994.

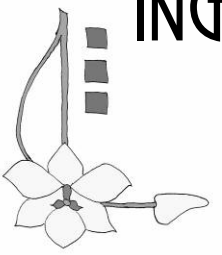
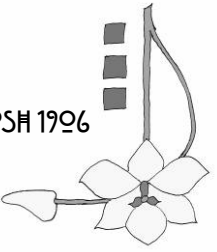
4. Les belles inconnues

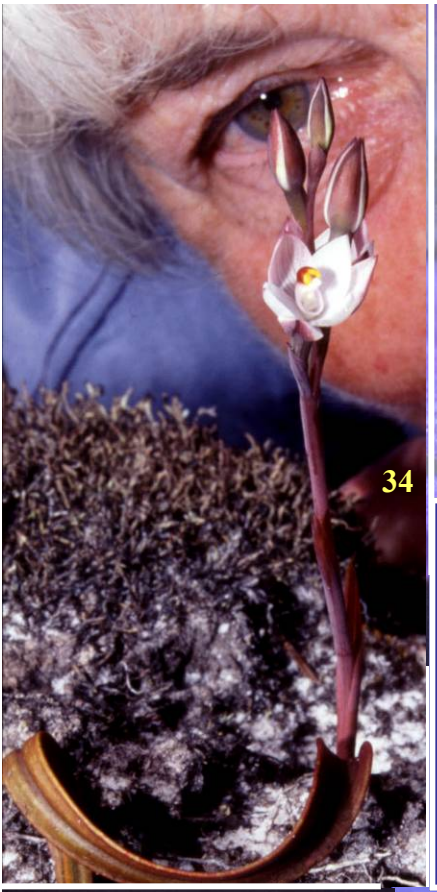
See **Fig. 38-39**, outside back cover.

ART IS THE FLOWER, LIFE THE GREEN LEAF. LET EVERY ARTIST STRIVE TO MAKE HIS FLOWER A BEAUTIFUL LIVING THING, SOMETHING THAT WILL CONVINCE THE WORLD THAT THERE MAY BE, THERE ARE, THINGS MORE PRECIOUS, MORE BEAUTIFUL, MORE LASTING THAN LIFE ITSELF.

CHARLES RENNIE MACKINTOSH 1906



From “The Column” p.54-5.

Fig.34: *Thelymitra* aff. *longifolia* “stunted” with Bev Woolley’s eye

Fig.35: *Thelymitra aemula* column, from D/S of Mangatangi Dam site, tepals held open with finger-nail polish.

Fig.36: *Thelymitra* aff. *ixioides* column only, from D/S of Mangatangi Dam site.

Fig.37: *Thelymitra tholiformis* from D/S of Mangatangi Dam site, originally labelled *T. aemula* but only properly identified after 1990 when Dan Hatch and Brian Molloy published it as a distinct species.

Les belles inconnues (“The Column” p.57).

Fig 38 HB Matthews' Caladenia “nitida rosea” from Scott Point with 3-4 calli to the base of each midlobe margin and dark red column back. Out of view, a wide maroon stripe down the backs of the tepals. Not uncommon in lowland Te Paki in the far north but isolated plants occur the length of the North Island into the montane zone.

Fig 39 Caladenia aff. variegata from the Aorangis is difficult to separate from C. “nitida rosea” in a key. But note, only bumps on the midlobe margin, its uncluttered twin rows of disc calli closer together, bright green column back and a pale green band down the backs of the five tepals with maroon midribs. It has a more southerly montane to subal-