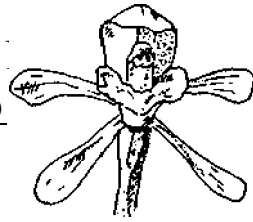




New Zealand Orchid Group

Newsletter No 25, March 1988.
Editor: Ian St George,
45 Cargill St.
DUNEDIN.



Editorial

Sincere thanks to all of you who have paid your subscriptions so promptly. A receipt is enclosed - or, if you have not paid, a reminder is enclosed with this (your last) *Newsletter*. T-shirts and sweaters will be despatched when they are available - soon I hope. Orders for garments are now closed. Badges will come with the next issue.

There was overwhelming support for our affiliation with the Australasian Native Orchid Society, and I have made formal application on your behalf to do that.

The Iwitahi forum was as resounding a success as Kaitaia, and those of us who attended are very grateful to the organisers - and the Group is grateful to Max Gibbs for raffling his watercolour for our funds. These local gatherings show us new orchids, but even more importantly, they attract new people, bring us into contact with likeminded enthusiasts, put faces to what have been only names, and by the exchange of knowledge, modify old ideas and spur new ones. Max Gibbs gives a full report in this issue. Pencil in 10-11 December 1988 for something in the South: we think we might be able to show you a thing or two.

Notes

◆ An "appalled" ex-member wrote after we asked whether we should affiliate with the Australasian Native Orchid Society: "...No is my answer to being swallowed up by the ANOS.... When Dorothy Cooper first founded this *little* group it was a credit to her and like-minded NZ native orchid lovers and conservationists, why is this not now enough? I would be pleased if you would delete my name from your subscription list...." *The vote from members was in favour - but lest others might have interpreted this Associateship as being swallowed up, an unwieldy increase in size, or a loss of credit for Dorothy Cooper and the founding members, I hasten to reassure them that we will continue exactly as before, as a small New Zealand Native Orchid Group, with our own Newsletter, our own mailing system, and our full autonomy. Formally associating with ANOS simply means we will have a greater opportunity to communicate with orchid lovers and conservationists from across the Tasman - Ed.*

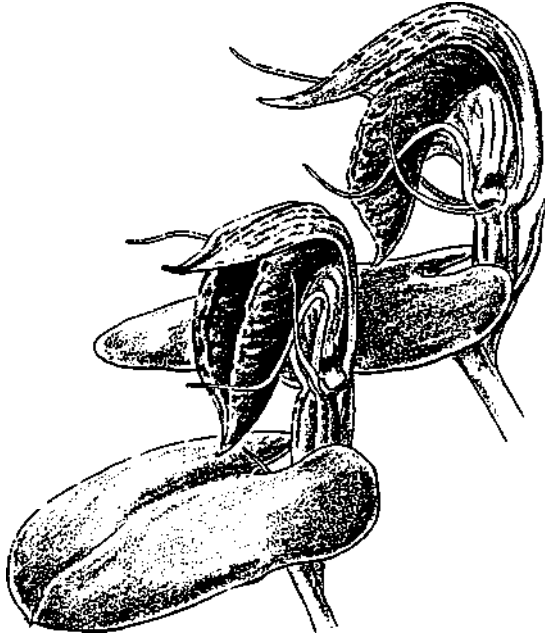
◆ For those interested in subscribing to *The Orchadian*: Australasian Native Orchid Society, Box C106, PO Clarence St, Sydney, NSW 2000, Australia: Subscription AS12.50.

◆ *WHOOPS!*: in *Newsletter 24 Calochilus paludosus* and *Calochilus herbaceus* were misspelt, and *Pterostylis graminea* and *Pterostylis rubricaulis* were left out of the Taumatarea list. Sorry about that.

◆ Phil Chandler of Wellington writes, "On 18 October on a visit to the north side of Lake Porirui, at the SW of Lake Wairarapa, the following were found: *Acianthus forficatus*. *Acianthus reniformis* - both with capsules from which seed had been discharged; both fairly plentiful. *Corybas trilobus* - one patch only, no flowers. *Corybas macranthus* ? - only one small patch; the identification was from leaves

and is doubtful. *Microtis unifolia* - fairly plentiful in groups; one plant in bud. *Pterostylis graminea* - one plant in flower. *Pterostylis banksii* - fairly plentiful in bloom and in bud. *Thelymitra* - several unidentified species; *T. longifolia* was one and was in bud. *Earina mucronata* - at least one plant in bud. *Drymoanthus adversus* - numerous plants in one locality all in full bloom. Thanks, Phil, that is exactly the kind of local information we need: others, please send in your findings - Ed.

◆ Has anyone seen this orchid? Bruce Irwin first saw it forty years ago near Wanganui, and at the time he thought it was a freak. But Jean Jenks tells him she has seen plants in several South Island localities. Irwin's plants had a greenish dorsal sepal and very dark red labellum. If you have seen it, let him (and us) know - his address is 192 Bellevue Rd, Otumotai, Tauranga.



◆ Dan Hatch writes: "I found Mr Ross's note in *Newsletter* 24 p 5, on some leafless, non-green, semi-subterranean flowers of *Corybas cheesemanii* most interesting. In my original description (*Trans. R.S.N.Z.* 79: 1952 p 367) of *Corybas saprophyticus* (*Corybas cryptanthus*) I wrote this - 'Although *Corybas aconitiflorus* belongs to a different section of the genus, it will serve to show how several evolutionary tendencies have been carried to their logical conclusion in the new species. In *Corybas aconitiflorus* the stem is often horizontal and consequently buried, the leaf frequently very small and the flower barely manages to struggle through the surface debris....' I also noted that both species had, in the course of this degeneration, lost their secondary bract. And in the original draft of the much discussed checklist 18.6.1986, under *Corybas cheesemanii*, I wrote - 'this is rapidly degenerating into a saprophyte - cf. *Corybas cryptanthus*, also cf. chromosome counts, although they belong to quite different sections of the

genus....' Twice since 1952 I have been fooled into thinking these saprophytic *Corybas cheesemanii* were *Corybas cryptanthus* and have had to blush and retreat. The saprophytic forms are more common in the deep mould of taraire forest than in their normal kanuka environment".

◆Of interest in the south: *Thelymitra pulchella*, *T. venosa*, and *T. hatchii* still in full flower in the Hunter Hills in the Catlins in the last week of January:

Gastrodia sesamoides (the brown, tuberculate version), about forty stems in a couple of square metres at Waituna Reserve near Invercargill; *Aporostylis bifolia* three metres up moss-covered treeferns by the Dusky Sound track; one huge (leaf 1 cm diameter, flower 4 cm diameter, plant 30 cm tall) *Caladenia lyallii*, with six rows of calli on the labellum, on Swampy, near Dunedin; and a solitary *Gastrodia minor*, out in the middle of a paddock, in association only with tussock, grass and other herbs, on the Horse Range - Ed.

◆Doug McCrae writes: "Following information given me by Maureen Young, I took the short track from S.H.5 up to meet the loop track. Maureen had told me that if I went to the left of the junction, I would find *Calochilus paludosus*, *C. robertsonii* and an array of *Thelymitra* species. After five minutes' walk I noticed a divot hole, spoil on the track and no attempt to disguise what had been done! Over the next fifteen minutes I regularly encountered similar vandalism. In all, I counted twenty holes of various sizes and estimated that at least that many plants had been removed. In fact I did not see any orchids except about four plants of *Thelymitra longifolia*. I found this destruction absolutely disgusting. It had obviously been done within the twenty-four hours prior to my encountering it. I have a fair idea as to who the culprit may have been and would welcome any information on vehicles parked at the entrance to the track off S.H.5 on Sunday afternoon 6 December. If you have any information about this, please contact me in strict confidence - Paranui, RD 3, Kaitaia. Phone 509 Peria".

Good grief! How long must it take before we wake up to the need to conserve these plants in the wild? How long before we realise that to take them from a reserve is a destructive crime, one doubly so with the knowledge the thief clearly had? - Ed.

Mapping

Thanks to those who have sent in reports for the mapping scheme. I hope others are using the report forms, and will keep them until the District boundaries are defined and the maps available.

Brian Molloy suggests (see his article below-) that we record, among other data, the host trees and rock or soil types for perching orchids - an excellent idea. Those who can do this should use the "habitat" section of the report form.

Application to the Lottery Board for further funding for the second year of the scheme will be made this month.

Articles

The material in the following article has appeared in an earlier Newsletter, but after it was presented at the Iwitahi forum in December, several people asked to see it again. Chris Ecroyd (S3 Raniera Place, Rotorua) would like to hear from others who have tried this method. So would we - Ed.

Drying orchids
by Chris Ecroyd, Rotorua.

No doubt others have found that herbarium specimens of orchids pressed and dried in the usual manner are difficult to work with. The flowers are generally distorted and you can never quite see the critical part you need unless the specimen has been pressed with great care. A simple solution to this problem is to dry the flowers by immersing them in finely powdered silica gel (40-60 mesh) with some indicator crystals added. From time to time the silica gel will need to be oven-dried. Spread the crystals out in a flat container and dry at 190° C until the indicator crystals turn blue again. The silica gel can be kept ready for use in an airtight container of suitable size.

Drying should take three to five days depending on the size of the plant and the dryness of the gel. Once dried, specimens can be stored in airtight jars and if kept dry, the natural shade and structure of the flower can be retained indefinitely. The dried flowers readily absorb moisture from a damp atmosphere and become limp. Alternatively, the dried flowers can be treated like normal herbarium specimens though larger flowers like *Pterostylis* may need to be pressed lightly.

The results so far with *Caladenia*, *Pterostylis*, and *Spiranthes* have been encouraging. Detailed flower structure can be clearly seen but the colour retention which is initially very good has slowly faded in some specimens since drying.

Notes on *Pterostylis humilis* RS Rogers
by ED Hatch, Laingholm.

Illustration A:
In January 1921 HB Matthews found seeding plants "near the haunted whare, Waimarino" (the shepherd's hut which used to stand beside the Tawhai Falls, on State Highway 48 - the road up to the Chateau Tongariro). Matthews dug up the plants, pressed the specimens and took the tubers back with him to Auckland, where he planted them out in a wooden seed tray.



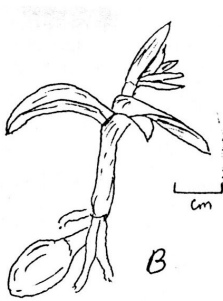
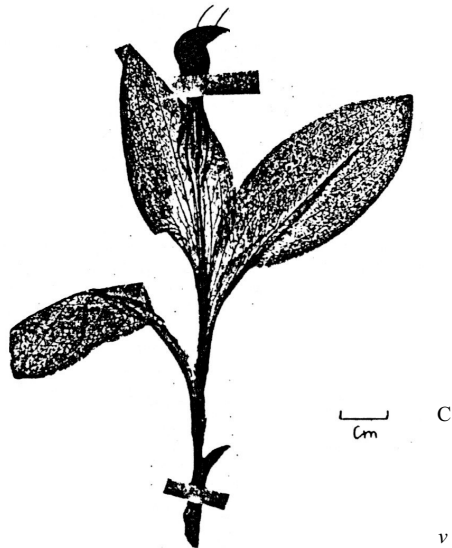


Illustration B: By 23 October 1921 these tubers had produced stunted plants with malformed flowers, nothing like the species as it grows in the mountains. Matthews nevertheless packed these specimens in spirit and sent them off to Dr Rogers in Adelaide, along with a photograph showing one of them beside an original pressed seeding specimen. (I copied the illustration from the photograph which wouldn't xerox satisfactorily). Rogers described *Pterostylis humilis* from the stunted spirit specimens, at the same time mentioning the photograph of the large-leaved plant.

Illustration C: A normal flowering specimen (already fertilised) which I collected from the upper Rangipo desert 10 December 1944. The species is self-fertile and it is seldom that unpollinated flowers are found. *Pterostylis humilis* is the only orchid I have ever seen actually flowering in the snow! In 1945 I chose one of Matthews's Illustration A specimens to be the lectotype for the species (AK 108491).



References: all the relevant papers are listed in Flora 2: pp 141-2 either under *Pterostylis humilis* or *Pterostylis enosa*.

A letter to the Editor of *NZ Science Teacher*

by Morley West, Rotorua. *

It was with considerable interest and warmth that I recently read the new 7 Biology Draft Prescription. The various people concerned with the production of this document must be congratulated. The emphasis away from a UK dominated prescription towards one designed as an introduction to NZ biology for young New Zealanders is a worthy change. I've often wondered why the evolution of the horse should appear academically important to NZ biology students in a country which has many fascinating and unique evolutionary stories of its own (e.g. robins and tits; hebes and *Nothofagus*2).

There is, however, one area of the draft prescription which I would like to correct. The information on the NZ orchids is, at least, an over simplification. To

state that all NZ orchids are Insect pollinated is not true. There is considerable literature to the contrary.

The evolutionary origin of our orchids has occurred largely outside of New Zealand. The biogeographic elements are largely Australian and to a lesser (?) extent Malayo-Pacific. Johns and Molloy report that

"Of the present 22 recognised genera, only three - *Yoania*, *Aporostylis* and *Earina* - are not shared with Australia, and of these only one - *Aporostylis* - is restricted to New Zealand."

On the other hand the local insect fauna is relatively sparse. These two situations have led to a

"strong secondary tendency towards self-fertilisation or even cleistogamy (self-fertilisation within the unopened flower)."⁴

Johns and Molloy also report that

"NZ orchids are pollinated by insects or are self-pollinated by gravity or other means. In some orchids like *Thelymitra pauciflora*, *Yoania australis* and *Spiranthes sinensis* the flowers barely open or do not open at all, and yet produce ample seed. Orchid pollination has probably been studied more than any other aspect of orchid biology. In this country the pioneer studies of the botanists Thomas Cheeseman and George Thomson in the last century have not been repeated and there is still a great deal to learn about the mechanism and the results in our orchids. Although most species seem to be adapted for insect pollination by their form and colour, and some secrete nectar, a good many seem to be self-pollinating and self-fertilising."⁵

The report by Cheeseman of the fertilisation of our beautiful "un-orchid-like" sun orchids *Thelymitra* makes fascinating reading. Not only is it a good example of the style of scientific writing of some 100 years ago but it also shows the influence of the evolutionary thought of Darwin. Cheeseman reports on the Intensive long term observation of *Thelymitra* emphasising not only the cleistogamic nature of the species *Thelymitra longifolia* but also on its evolutionary success,

"... is probably the most abundant orchid in the North Island. Its favourite station is on clay hills, but it can also be found on dry rocky places, and even in wet swamps; in short, in all soils and situations, with the exception that it is rarely (if ever) seen in the dense forest, although often luxuriating in the shade of the "tea-tree scrub". As might be predicted in a plant having such a wide range of habitats, it is extremely variable.

Small specimens are often seen barely two inches in height, with a narrow leaf and single small flower. Every intermediate can be traced between this and the large stout form eighteen inches, or even two feet, high, with a broad leaf, and a spike of from ten to twenty flowers."⁵

and the Important statements for its evolution

"The flowers are quite scentless, and I have never observed that any nectar is secreted."⁶

and that

"Few of our indigenous species mature seed so abundantly as *Thelymitra longifolia*, almost every flower produces a ripe capsule.... it is obvious that we have to do with a case of self-fertilisation."⁶

So please, teachers of 7 Biology, if you use orchids in your teaching of NZ evolution, mention that some of our orchids are cleistogamic, a situation that

would normally be disadvantageous in evolutionary terms, as, if it occurred exclusively, it would not only restrict the exchange of genetic material but also restrict speciation by natural selection to changing environmental conditions. However, due to abundant unoccupied ecological niches and the paucity of suitable pollinators, we have in the case of some NZ orchids a situation enabling the successful evolution and colonisation of self-fertilising plants.

References

1. Readers' Digest complete book of New Zealand birds, 1985. pp 282-285.
2. CA Fleming. *The geological history of New Zealand and its life.* 1979.
3. Johns J and B Molloy. *Native orchids of New Zealand.* 1983. p 95.
4. Hatch ED. The structure of orchid flowers. *NZ native orchid group Newsletter number 9.* 1984. p 5.
5. Johns J and B Molloy. *Native orchids of New Zealand.* 1983. p 7.
6. Cheeseman T. On the fertilisation of *Thelymitra*. *Trans. NZ Inst* vol 13.1880. pp 291-296.

Native orchid forum report, Iwitihi 5-6 December 1987

by Max Gibbs, Taupo.

Iwitihi in the Central Volcanic Plateau of the North Island was the setting for a native orchid forum in December 1987. It was centred around the newly designated native orchid reserve established by Timberlands BOP in recognition of the valuable native orchid habitat provided by the pine trees and the imminent logging of the area. The object of the forum was to introduce people to the vast numbers of orchids and the numerous species found at Iwitihi and to attempt to evaluate the resource. Based on information gained the Taupo Orchid Society hoped to identify orchid groups either not present or scarce in the reserve to enable their transfer to the reserve before logging resumed.

The Iwitihi Outdoor Recreation Centre served as a base and accommodation for about seventy people, with more from the Forest and Bird Protection Society joining us on the Saturday morning. The weather was overcast and windy, and those who arrived on Friday night were treated to a noisy westerly storm lashing the pine forests. After a welcome to the visitors (who had come from Kaitiaki to Dunedin, with a couple from West Germany), and a brief introduction to the area and proposed timetable, the group moved outside to investigate the orchids in the immediate vicinity. *Calochilus robertsonii* was prominent beneath the tall gum trees, although the storm had damaged many of the flowers. The *Thelymitras* were not open, but three species were identified - *Thelymitra longifolia*, *T. pauciflora*, and *T. decora*. The striped *Thelymitra* identified as *T. venosa* by Dorothy Cooper in December 1985 was not found and may be the first casualty of the logging.

Prasophyllum colensoi was also found on the roadside as the group moved towards the pine forest. Under the pines the wind was no longer obvious, except for the noise of the trees crashing together and the continuous rain of pine needles and small twigs. A pine forest is not the safest place in a high wind, but we had no casualties: we did have to help four people find the camp - they were "late for lunch"!

A copy of Johns and Molloy's *Native orchids of New Zealand* was presented to the representative of Timberlands BOP for their library. Chris Ecroyd explained the criteria for taking plant specimens, and Bob Goodger demonstrated his close-up

photographic system. The point was made about random wandering in pine forest and the group split up under leaders to investigate the reserve and surrounds.

The reserve is a five hectare block of *Pinus nigra*. The *P. nigra* stands at Iwitahi have little dense undergrowth (mostly scattered ferns), so large expanses of pine needle mats allow the orchids to grow through. The initial impression is of a barren area devoid of plants, but then the brilliant white stars of *Adenochilus gracilis* catch your attention, and you become aware of myriads of these tiny orchids, with densities from one or two per square metre to more than fifty. Patches of flowering *Chiloglottis cornuta* with 50-100 plants per sq.m, become obvious as do patches of *Corybas trilobus* (leaves only). Where moss replaces the pine needles in shallow depressions, colonies of *Aporostylis bifolia* were in bud. *Caladenia lyallii* were dotted sparsely, and were just over; even less common were *Caladenia iridescens* and the pink form of *Caladenia catenata*, isolated plants or in groups of ten or so. *Thelymitra decora* was found in widely scattered groups of up to twenty per sq.m. *Pterostylis banksii* var *patens* was in clumps of 60-100 plants in several places, while *Pterostylis cardiostigma* maintained a solitary vigil wherever it was found. *Microtis unifolia* and small *Caladenia catenata* plants grew in large numbers along the margins of the pines. Unfortunately no plants of *Chiloglottis gunnii* were found in the reserve, and despite a wide search only the original clump of several hundred plants was found; some of these were still in flower, but no seedpods were seen, and apparently the plants were being grazed by local animals.

The evening indoor barbecue was followed by informal talks, slide shows and discussion. Bob Goodger showed us excellent slides, augmented by recent slides from Kaitaia. Chris Ecroyd demonstrated a new technique for preserving orchid specimens (reported elsewhere in this issue - Ed.)

Identification of some orchids raised discussion. *Caladenia catenata* specimens that matched Johns and Molloy's plates 11-13 were found, together with some that did not: the short *C. catenata* (plate 11) was found as large patches near the edges of the forest whereas the pink form (plate 13) was a much taller isolated plant deeper in the forest and had a similar appearance to *Caladenia iridescens*. *Corybas trilobus* also received much attention as various forms had been found: apart from the green-flowered plants reported in the last Newsletter, plants were found with very small leaves, and others with heavy red stripes almost covering the leaves. The unnamed *Pterostylis* similar to *Pterostylis graminea* were examined and discussed. *Gastrodia minor* stems from last year were reported.

Alan Locke won the raffle and a water colour of *Pterostylis banksii*. Proceeds of \$69 were donated to the NZ Native Orchid Group.

On Sunday other areas of *Pinus nigra* were explored, but the finds were similar to those of Saturday, though *Corybas macranthus* (flowering), *Corybas acuminatus* (leaves) and *Gastrodia cunninghamii* (buds) were added. At a later visit *Gastrodia cunninghamii* and *Gastrodia minor* were confirmed. *Gastrodia sesamoides* was not present.

It was a good forum and enjoyed by all. A repeat has been requested for December 1988.

The following is a list for the Iwitahi area of the Kaingaroa Ecological District taken from the list compiled by Chris Ecroyd. Notes on flowering are for 5-6 December.

(fl=flowering, b=buds, s=seedpods, otherwise only leaves were found. a=abundant, c=common, u=uncommon, r=rare - indications only).

Adenochilus gracilis fl,a; *Aporostylis bifolia* b,a (two forms, spotted leaves and without spots); *Caladenia catenata* (two distinct types, one with pink petals and sepals, and a short yellow labellum - pi 13 Johns & Molloy - fl,r; one with greenish white petals and longer labellum tip - pi 11 Johns & Molloy - fl,u (fl,a!

27Dec87); *Caladenia iridescens* fl,u; *Caladenia lyallii* fl,c; *Calochilus robertsonii* fl,u (localised populations on road sides); *Chiloglottis cornuta* fl,a (most common orchid present - forms extensive carpets); *Chiloglottis gunnii* fl,r (only one clump known in the area); *Corybas acuminatus* r (two patches found); *Corybas macranthus* fl,r (three patches found); *Corybas trilobus* s,a (second most common orchid present, forms large mats - four forms noted: red fls/large leaves, green fls/large leaves, small leaves, heavily matted large leaves); *Earina mucronata* r (found only on newly fallen trees); *Gastrodia cunninghamii* b,r (only ten plants found - 27Dec87 fl,r); *Gastrodia minor* r (only last year's stalks found (fl,c! 27Dec87); *Microtis parviflora* fl,r; *Microtis unifolia* fl,c (only fl in open); *Orthoceras strictum* b,r; *Prasophyllum colensoi* fl,r (on road margin only); *Pterostylis alobula* r (few plants Aug87); *Pterostylis banksii* fl,r; *Pterostylis cardiostigma* fl,u; *Pterostylis* sp (cf *Pterostylis graminea*) fl,r (larger fl than *P. graminea*)-, *Pterostylis patens* fl,u (occasional clumps under pines); *Thelymitra decora* fl,c (in forest and on roadside, fls closed); *Thelymitra longifolia* fl,c (road sides, fls closed); *Thelymitra pauciflora* fl,c (road sides, fls closed); *Thelymitra* sp (Dec 85, striped fls identified as *Thelymitra venosa* by D Cooper, not found Dec 87; *T. pulchella* or *T. dentata* possibly present but not confirmed).

Host range of native perching orchids

by Brian Molloy, Botany Division, DSIR, Lincoln.

Seven species of perching orchid are endemic to New Zealand: *Bulbophyllum pygmaeum*, *B. tuberculatum*, *Dendrobium cunninghamii*, *Drymoanthus adversus*, *Earina aestivalis*, *E. autumnalis*, and *E. mucronata*. With the possible exceptions of *Bulbophyllum tuberculatum* and *Earina aestivalis*, these orchids grow happily on rocks (lithophytes) as well as on trees (epiphytes). Indeed some seem perfectly happy in mineral soils, although in certain cases a close inspection will reveal the orchid still attached to a fallen tree branch embedded in soil, or on large, partly submerged stones or boulders. In New Caledonia I have seen *Earina deplanchei* and *E. floripecten* growing only in stony soils derived from ultramafic rocks high in toxic minerals to which they are adapted, whereas *E. valida* grows only on trees as far as I could see. For these reasons I have preferred to use the more general and all-embracing term "perching orchid" rather than the more specific "epiphyte", usually reserved for plants growing on other plants, more often trees.

On the deep peats of the southern tablelands of the Chatham Islands, some terrestrial or ground orchids, especially greenhoods, are often found perching on tree fern trunks, but these are special circumstances. Perhaps the situation occurs on the mainland as well? Someone may know?

We seem to know very little about the host range of our perching orchids and we should begin to accumulate this information, preferably as part of the mapping scheme. The distribution of both orchids and their hosts may exhibit regional patterns of interest.

What trees support perching orchids and what orchids occur together on the same host trees? How many native conifers and tree ferns are involved? Are introduced trees suitable hosts in the wild? Are perching orchids only found high up in the crowns of trees, or are they low down on basal branches and/or trunks - or are they found in both stations? What rock types support these orchids: sandstones, basalts, limestones etc? What major soil types are involved? (Geological and soil maps are available for most regions of New Zealand).

Are there any cases where our perching orchids mimic their hosts in leaf or stem colour or design, as for example *Dendrobium teretifolium* on *Casuarina glauca*

in Australia? Perhaps not, but we should at least keep this aspect in mind as well. Now it may be that our perching orchids have a wide host range and are very non-selective. On the other hand they may have a restricted host range and reveal some interesting regional features. Only a deliberate and systematic recording will tell. I suggest that we start gathering this information now, checking the identity of tree species, rock and soil types with local experts if in doubt. These data can then be submitted to the editor of this Newsletter along with our mapping returns. I will be happy to help collate this particular information at a later date.

Orchids from Oxford, North Canterbury

by Thom Pendrigh, 27 Burnett St, Oxford.

This orchid season has been particularly satisfying for me. Most of the queries that arose from previous seasons have been eliminated and a new list is on hand for next season.

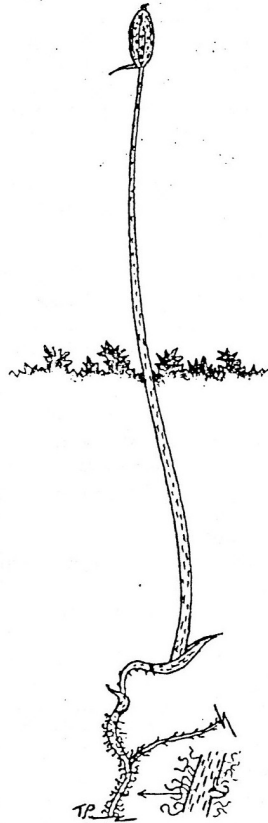
A trip to Arthurs Pass was an opportunity to see a new range of orchids. Unfortunately we were too early to see *Lyperanthus antarcticus* flowering and a little too late for *Townsonia viridis*, though the delicate beauty of *Pterostylis oliveri* made the trip well worth while.

Opossums at Arthurs Pass and here at Oxford are a nuisance, especially to the orchid flower stems. Buds that are ready to open one evening are gone the next morning, leaving only a bare stalk. This has delayed my confirming **Gastrodia minor**.

New finds for me this season in the Oxford area have been *Caladenia carnea* (with a yellow-green flower), *C. lyallii*, *Thelymitra pulchella* (with no stripes), *T. formosa*, probably *Gastrodia minor*, and *Corybas cryptanthus*.

This last find is illustrated - there were eight stems, some in deep moss, so I was able to expose some of the root systems without damage. On 30 January 1988 I found about forty more seed stems, also at Coopers Creek, Oxford, but 1.5 km from the first find. Most seed capsules were empty, but a few still had seed ready to fall. I marked the position of some plants so they can easily be found next season.

The *Caladenia carnea* plants have increased in numbers this season and there were many more plants with buds - unfortunately opossums or sheep ate many of them. *Corybas trilobus* and *C. macranthus* had very few flowers, and in one area I regularly visit *C. trilobus* and *C. rivularis* had no flowers at all. Over the last two seasons the number of plants in the colonies has increased and the colonies are expanding, especially *C. trilobus*.



THOM PENDRIGH 27 BURNETT ST.

OXFORD N.C.

Chiloglottis cornuta also flowered poorly. I saw very few well developed open flowers although seed stems are quite common now. Thelymitras: the weather was unfavourable for many flowers to open, especially *T. longifolia*, although *T. pulchella* once again put on a good display. *Pterostylis irsoniana*: in 1986 I saw only one flowering plant. This season I found several areas with scattered plants, so they are not uncommon here.

From various locations in the Oxford area, August 1977 to January 1988: *Caladenia lyallii*, *C. carnea* (three colour variations: grey-white petals and sepals, red-stripped labellum; pale mauve petals arid sepals, red-stripped labellum; entirely yellow-green, no red stripes), *Chiloglottis cornuta*, *Corybas macranthus*, *C. trilobus*, *C. rivularis*. *C. cryptanthus*, *Gastrodia cunninghamii*, *G. minor* (not yet confirmed), *Microtis unifolia*, *Prasophyllum colensoi*, *Pterostylis banksii*, *P. areolata*, *P.*

montana, *P. irsoniana*, *P. tristis*, *P. cynocephala*, *Thelymitra longifolia*, *T. pauciflora*, *T. hatchii*, *T. formosa*, *T. pulchella* (striped petals and yellow column- tip, and no stripes and yellow bulges on column-tip).

From Arthurs Pass, 1-3 January 1988: Klondyke Corner, *Chiloglottis cornuta*, *Corybas trilobus*, *C. rivularis*, *Gastrodia cunninghamii*. From Daisy Flat, *Aporostylis bifolia*, *Prasophyllum colensoi*, *Pterostylis oliveri*. From Upper Bailey Valley track, *A. bifolia*, *C. cornuta*, *C. trilobus*, *P. oliveri*. From Coral track, *A. bifolia*, *Lyperanthus antarcticus*, *P. oliveri*. From Greyneys Flat Wheelchair track, *C. cornuta*, *C. trilobus*, *P. oliveri*, *P. irsoniana*, *P. graminea* (?sp). From Bridal Veil Falls area Nature Walk track, *Townsonia viridis*, *A. bifolia*, *C. trilobus*, *L. antarcticus*, *Prasophyllum/Microtis* sp., *P. oliveri*. From Scotts track, *T. viridis*, *A. bifolia*, *C. trilobus*, *P. colensoi*, *P. oliveri*, *Pterostylis* sp. (*banksii* or *oliveri* var.), *T. hatchii*.

Some notes on Caladenias.

by Doug McCrae, Paranoi, Kaitaia, drawing by Bruce Irwin.

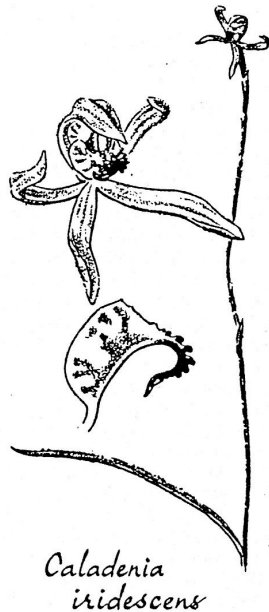
Caladenia calliniger and C. iridescens.

If you read both the original descriptions you will note that *Caladenia iridescens* RS Rogers is described as having labellar calli arranged in four rows. Matthews in his description of *C. calliniger* notes calli arranged in two rows.

On the way to Iwitahi I was fortunate to visit Chris Ecroyd and view his orchid herbarium material. He provided me with a copy of the original description of *C. iridescens*, but it wasn't until I read this during my return journey that I realised that it did not agree with *C. calliniger*.

Although on some the calli were a little scattered, the plants I saw at Iwitahi (where it was common) all had two rows and these plants agree with *C. calliniger* Matth. I brought this to Dan Hatch's attention, and he agrees there has been a mixup. Mark Clements could probably have had extreme difficulty in discerning the rows of calli on an old pressed specimen of *C. calliniger*.

As with other New Zealand species which are similar to Australian ones, *C. calliniger* and *C.*



caliniger and *C. iridescens* appear similar, but perhaps are not the same.

Caladenia minor and *C. viridis*.

Two *Caladenia* spp. found at Iwitahi were what looked like a light mauve form of *C. minor* and a green species which is identical to a plant depicted in Johns and Molloy (plate 11). The species from the far north (Matthews's *C. viridis*) is not identical with plate 11 and is a different species. I also saw this at Waipoua where it was not uncommon. The northern species has white calli. Other differences are -

	Green sp. (Plate 11)	White/green sp. (<i>C. viridis</i>)
Leaf	Narrow (2-3 mm).	Wider (3-5 mm).
Stem	Dull green or reddish with bract about halfway or higher; clasping.	Bright green with bract always below halfway (or absent); not clasping.
Flower	Solitary (sometimes two) - small.	One to three (commonly two) - larger.

Will the real *Pterostylis montana* please stand up?

by Ian St George, Dunedin.

At least two rather similar *Pterostylis* have each been called *Pterostylis montana* by Otago naturalists. Are they different species?

Of what Hatch (*TRNZ* 2, 1949. 77: 238) later termed the "Australis group" of *Pterostylis*, Hooker (*Handbook of the NZ Flora*, 1864. i: 268) described only *P. banksii* (in which he included *P. australis*), and *P. graminea*.

Cheeseman (*Manual of the NZ Flora*, 1925. 2: 349-352) included *P. banksii*, *P. australis*, *P. graminea* (including var. *rubricaulis*), *P. areolata* and *P. oliveri*.

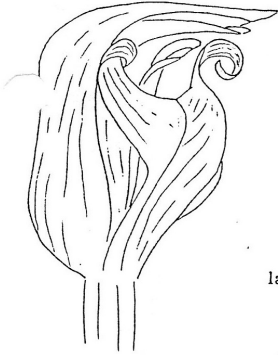
Hatch included in his Australis group *P. banksii* (var. *typica* and var. *patens*), *P. australis*, *P. graminea*, *P. areolata*, *P. oliveri*, and described *P. montana* — (var. *typica* and var. *rubricaulis*). In his Falcata group he described, among others, *P. furcata* var. *linearis*. We can dispense with *P. banksii*, *P. australis*, *P. areolata* and *P. oliveri*, and we are left with his *P. graminea*, *P. montana*, and *P. furcata* var. *linearis*.

Moore (*Flora of NZ II*, 1976. 132-147) shifted Hatch's *P. montana* var. *rubricaulis* to *P. graminea* var. *rubricaulis*. She kept his *P. montana* but included in it his *P. furcata* var. *linearis*, saying "Description, figures and plants from the original gathering all suggest *P. montana*". Others disagree, and *P. linearis* is now regarded as a quite separate species.

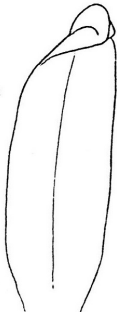
P. montana has stayed, and in a line from Hatch through Moore, is drawn by Irwin in Moore and Irwin's *Oxford book of NZ plants* (1978. p194-5), described in Dorothy Cooper's Field Guide to NZ native orchids (1981. p 63) and is photographed in Johns and Molloy's Native orchids of NZ 1983. p 50, plate 71). Our Otago plants that have been called *P. montana* are similar to each other in many ways but differ as follows -

Plant 1

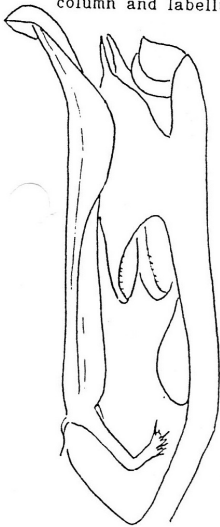
flower



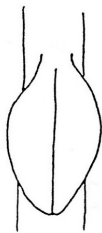
labellum



column and labellum



stigma



Plant 2



Plant 1

Leaves:

Bronze/green with varying amounts of red.

Flower:

Boxy.

Lateral sepals

Blunt, more or less curled dark tips, not overtopping the galea. Separated in early bud.

Petals

Blunt.

Labellum:

Oblong, the tip very twisted. Midrib: very prominent. Longer than column.

Stigma:

Short, cordate, overlaps column at each side.

History:

Matches drawings in Flora 2, Cooper, photograph in Johns and Molloy, and drawing in Moore and Irwin.

Plant 2

Yellow-green

More slender.

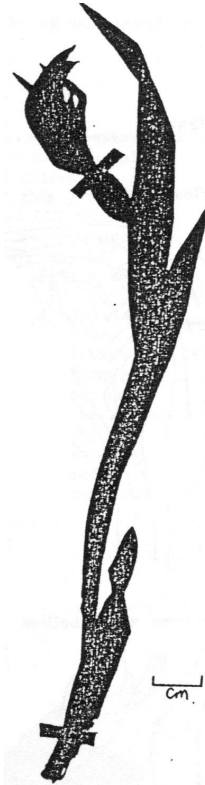
Acuminate, overtopping the galea. Not separated in early bud.

Acuminate.

Ovoid, less twisted at the tip. Midrib less prominent. Shorter than column.

Long and oval, not overlapping column

Matches Hatch's original drawing of *P. montana* var. *typica* (Plate 22 in TRSNZ 77).



Both grow in tussock grassland and flower here in November/December. A plant with a very similar flower to that of Plant 2 grows in the Catlins forests of South Otago; it has more red pigment or is dark rather than yellow-green, and it flowers a month earlier; another in bush around Dunedin has the same flower, but the big broad leaves of *Pterostylis australis*; and there are other "affinis montana" forms as far north as Ruapehu.

The anatomical differences between similar *Pterostylis* species are difficult. Flowers with different gross shapes (*Pterostylis banksii*, *P. montana*, *P. areolata*, *P. venosa*) look similar when the petals and sepals are dissected off. Claimed diagnostic differences (in the shape of the stigma, length of column cf. labellum, shape of labellum,

P. MONTANA - TYPICA
HOLOTYPE
Halfmoon Bay
Stewart Island
 11.1946 -
Geoff Smith

shape of column wings, length of column horns, etc) seem small in this group.

Are the two described here really different? Whether or not, we are left with some problems.

If they are different species, which is *Pterostylis montana*? The holotype (AK 24628) was collected for Hatch from Stewart Island, and he described the lateral sepals as acuminate (without caudate points) and shortly exceeding the galea. Hatch wrote to me on 2.12.86, "In *Flora II* Lucy Moore added plants with a cordate stigma, which occurred in none of the Stewart Island plants in the type batch.... (The) drawing in the Oxford book shows a stigma which is not typical of *P. montana*." The holotype is shown here, but little can be deduced from the photocopy.

Are they the same species? Are these simply a series of local florulae which differ according to regional ecological variations (Hatch, *ibid*)? If they are the same, then within-species differences in the characteristics of column and labellum appear to be as great as some between-species differences. We are left pondering about how useful these diagnostic characters really are.

Australian Notes

◆John C Marsh (Native Orchid Society of South Australia Journal 1987: 11, 83): "The species *Pterostylis nutans* is very widespread in its habitat. It occurs throughout the temperate regions of Australia appearing in most of the Southern States.... The common name 'Nodding greenhood' comes from the flowering habit of the plant. When the plant is in full flower the opening at the front of the flower is in such a position that it is pointing towards the ground, and the plant looks as if its head is lowered in a nodding pose. This particular feature is one of the identification characteristics of *P. nutans*".

◆George Nieuwenhoven (NOSSA Journal 1897: 11, 90): "*Spiranthes sinensis* and *Cryptostylis subulata* have similar cultural requirements preferring always to be kept damp in keeping with their preferred habitats of bogs or marshes."

◆John Hunwick (NOSSA Journal 1987: 11, 61) "...differentiated between preservation - defined as 'left untouched and unmodified for the sake of assuring a permanent habitat solely for the flora and fauna'; conservation - defined as 'the wise use of our bushland' (does not imply preservation); use - implies dramatic modification of the bushland generally rendering it foreign or hostile to most or all native flora or fauna."

◆R Bates (NOSSA Journal 1987: 11, 67): "...cultivation can and does play an important part in the preservation of plants.... The sandhill form of *Pterostylis cucullata* was recently re-introduced back into the wild in South Australia from plants rescued from an area near Fairview Park some 20 years ago. I have in cultivation at least twenty orchids which no longer grow within 10km of where they were collected, and I know of twice that number in interesting forms which were not put into cultivation and have now been wiped out by habitat destruction.

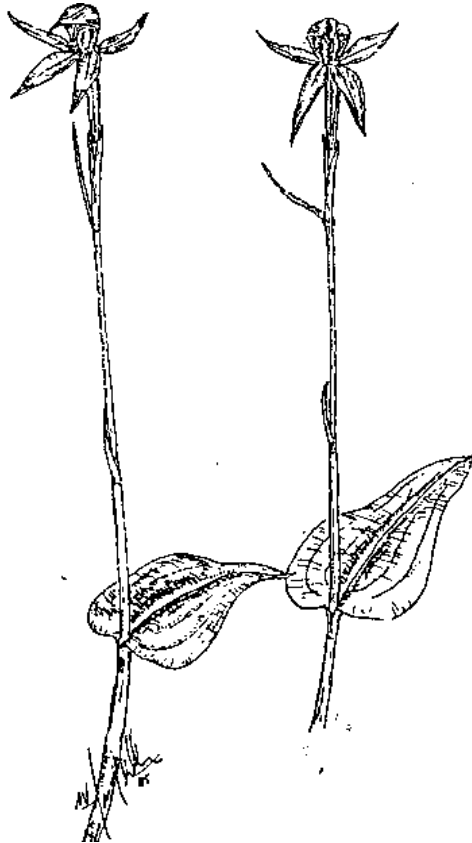
Pterostylis erythroconcha is known from the southeast of South Australia only from plants collected on a NOSSA rescue dig. Such examples are numerous and I am in favour of placing in cultivation not only all the species but indeed all of the various forms of our native orchids (excepting those which are known to be difficult to cultivate). This would be a backup against loss of those forms in the wild.

Even in conservation parks there is no guarantee of survival. There are several cases where the only known population of an orchid within a park was destroyed through widening of fire-breaks, road construction, by fire and in one

case due to a buildup in the numbers of kangaroos, not to mention the construction of golf-courses.

Cultivation can therefore ensure preservation of a wide gene-pool of many orchid forms.

Obviously at the opposite extreme, indiscriminate collection of orchids from the wild (for cultivation) can have a detrimental effect. It is one thing to take a single tuber of a colony-forming species from the roadside and build it up into a pot full of the species, but quite unacceptable to dig up dozens of non colony forming species from the centre of a conservation park



Adenochilus gracilis, Iwitahi 1,1/12/85.

Drawing by Max Gibbs