

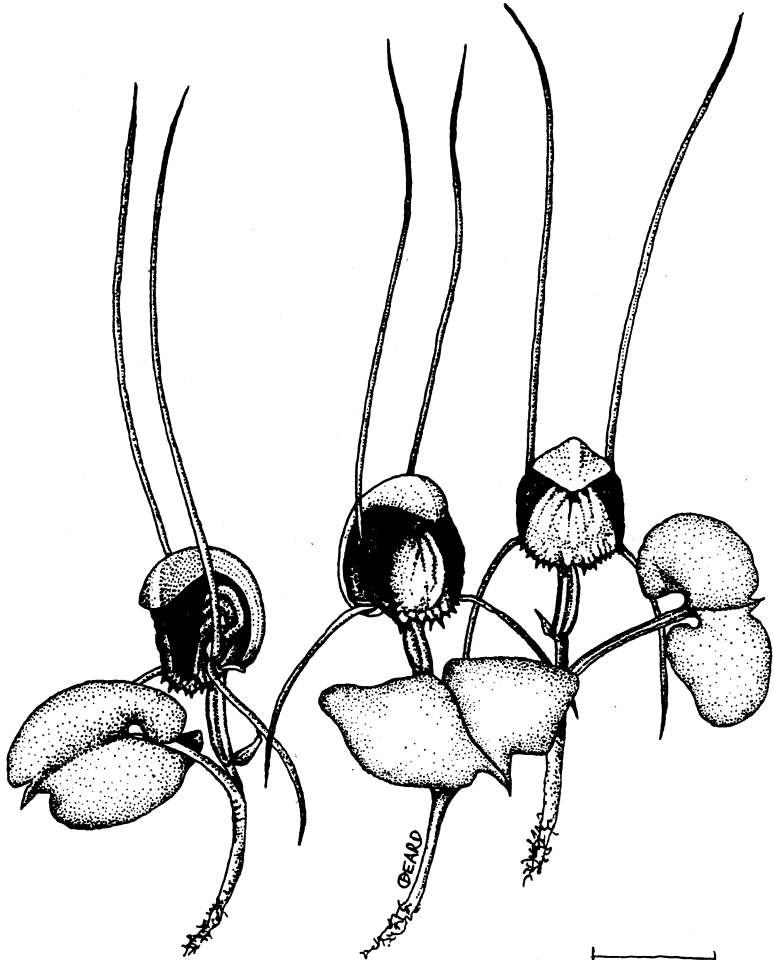


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Corybas trilobus, Mamaku Ranges, October 1996
drawing by Catherine Beard

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From the editor

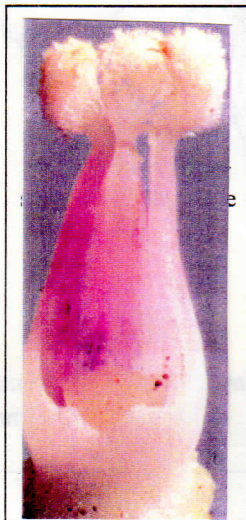
October orchids at Kaimaumu

The 14th of October 1996 found me knocking on Barbara Hoggard's door at Kaimaumu, north of Kaitia. It was a brilliant day and after a cup of coffee I gratefully headed across the road to the swamplands.

The orchids were brilliant too. I saw (a first for me) *Thelymitra carnea* in fully open flower, the last among many already in fruit. An unidentifiable insect departed as I approached, and indeed, on examination of the column, the pollinia had gone. Even *T. carnea* may enjoy the odd insect pollination in NZ (see Historical reprint in this issue).

Not so *Thelymitra malvina*. It was everywhere — wide open in the sun, seven flowers open and two closed on one stem; in some the petals and sepals reflexed back almost to lie against the ovary. The fragrance of honeysuckle was strong, but few insects were attending, and indeed, all nine columns had both pollinia intact. Strange for a species with all the marks of insect pollination (although indeed, in other plants all flowers had set fruit). Self-pollination seems to be a fallback position for *T. malvina* too. At Lake Ohia this species was also in full flower. Here again is that strange affinity with kauri, to the extent that it grows directly out of the ancient stumps of the swamp kauri.

Thelymitra intermedia was wide open, as was a tall (75cm) *T. aff. pulchella*, with white or pink flowers and blue stripes, and with column-arms that bore few if any fimbria. It is certainly a variable species in terms of the decoration of the column-arms. They were scentless, one flower open if any, with crumbly pollinia —



probably self-pollinating. All were solitary.

Thelymitra "darkie" was everywhere, and everywhere all its flowers were completely closed. It was only at North Cape a few days later that I saw my first open flower of *T. "darkie"*. *T. aemula* was open, clear blue flowers, often several open on a stem, and an occasional pink *Thelymitra* flower revealed the chunky column of *T. "rough leaf"*.

Cryptostylis subulata was still in bud, but three *Caladenias* completed the day's finds. What were they? My guess is *Caladenia alata*, *Caladenia carnea* and *Caladenia minor*, but the more I see these *Caladenias*, the less certain I am of their identity.

I was fascinated later, in the Te Paki area, to examine a freak form of *Thelymitra* aff. *longifolia*. It had nine flowers, most of them open, and all had identically deformed columns. The anther cap and midlobe had been replaced by a ciliated arm, the cilia of the typically "cotton-wool" texture, the arm similar to the normal column-arms. As Dan Hatch (*J57*: 13) explained, there are two whorls of three stamens that are variously modified in the orchid flower. The first three form the two column-arms and the front of the column (where in some *Thelymitra* it can form an extra appendage). Of the second three, two form the front edges of the column-arms and their cilia, and the third forms the midlobe of the column and the paired fertile anthers.

◀ In the Te Paki freak, this third anther of the second whorl had instead formed another column-arm. There was no fertile anther, and though the stigma seemed normal, no fruit had been set.



Kaimaumu orchids



Spider webs on *Microtis unifolia*

You will recall my assertion (J59) that *M. unifolia* is insect-pollinated in New Zealand. I photographed one at the roadside near Kaimaumuau that was covered in spiderweb. Spiders seem to know which orchids attract insects, and set their snares to catch them: but how do they know? do they look? do they watch and see which flowers are visited by insects? insects are deceived by brightly coloured flowers (which of course *Microtis* isn't) but are spiders so deceived? or can they smell? do they sniff the air, associate the fragrance of flowers with the taste of insects, and say, Hey, this is the place for a web? ➔

Corybas "quadriplex"?

Some readers will recall a slide of a very large *Corybas oblongus* from the Rimutakas that I showed at Iwitahi in 1995. It represented a small colony of ten or so plants, and what was really striking was that the leaves were up to 7cm long, and each plant had two flowers. It grew among perfectly normal small *Corybas oblongus* along a mossy trackside bank, and although it had set fruit, there were no distant plants outside the rather tight little colony. It was there in following years, pretty much the same. I assumed it was a local freak — perhaps a robust (and maybe fertile) tetraploid (4n) mutation.

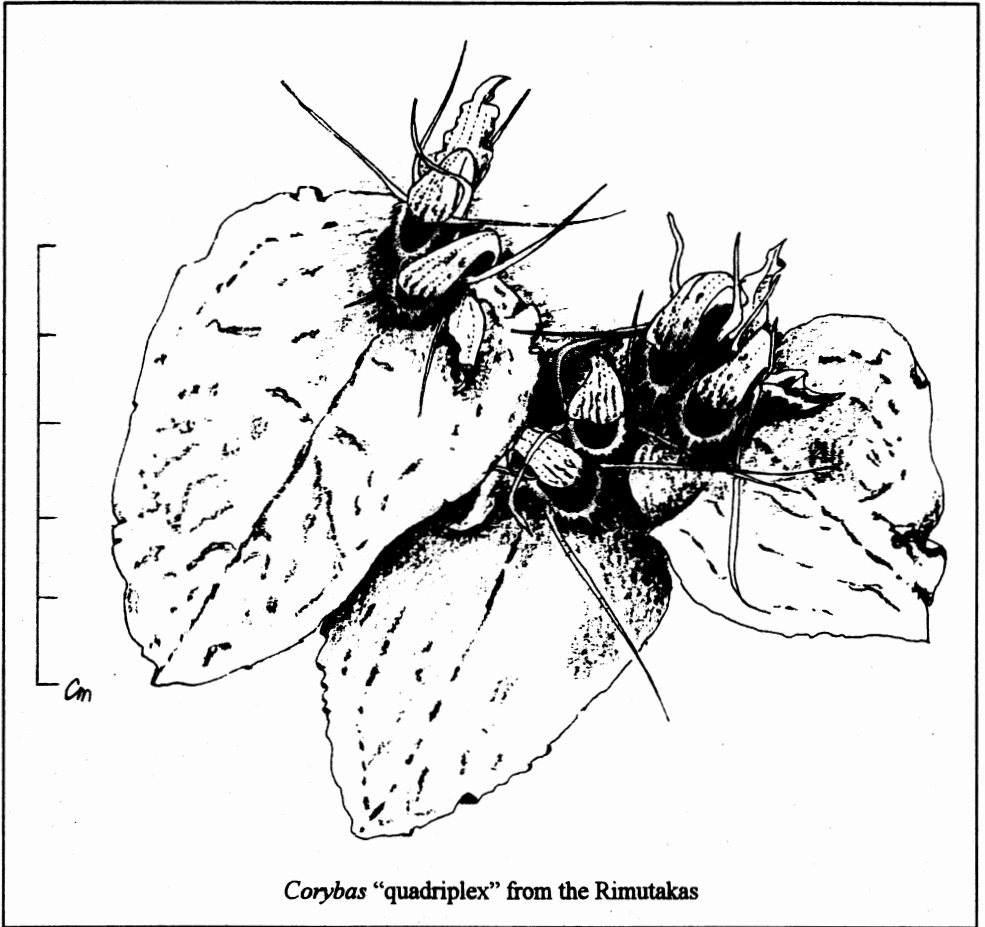
I was therefore surprised to see a similar colony near Whangarei on a mossy bank just below the monument by the Parahaki track last October.



I was even more surprised to receive an email from Catherine Beard in November after the Northland trip (discussed in detail by Eric Scanlen later in this issue). For Catherine wrote, "We turned up some good finds later in the week further on in the Shenstone Block: a strange large leathery leaved *Corybas* along the stream (in seed) which could have been a weird huge *C. oblongus*. Leaves on some of the bigger ones were 4 to 4.5cm long by about 3 or 3.5cm wide, down to about 2.5 x 2cm on the smaller individuals."

I wrote back at once with my stories, and she replied, "Yes... that sounds like the critter... some of the plants had had two flowers. The leaves were quite leathery, some with marked purplish veins, sort of raised looking. Unfortunately the flowers were too far gone to see much, but one of the remains did have that frilly edge to the labellum which suggested *Corybas oblongus* ...and they appear to be scented — the smell is quite strong even in their present squished, but not dry, state (although I don't remember it being particularly

strong at time of collecting). We have marked the spot for next year." Just as well she did, because, alas the Rimutaka colony had disappeared when I went searching for it on 11 November. Next year! Meantime here is a drawing. ➔



Corybas "quadriplex" from the Rimutakas

The maps in the *Field guide*

To those of you who wrote asking if we want to know about orchids in Ecological Regions we missed, please regard our modest efforts at mapping distributions in the new *Field guide* as a first faltering step. If you have observed since 1972 orchid species in other Ecological Regions, please do tell us. It would be good to update the distribution information with each edition.

Microtis surprises

I sent a bunch of *Microtis* gathered in October from various sites north of Whangarei to Adelaide to see what Bob Bates would make of them. He responded,

"The *Microtis* were interesting inasmuch as there were no *M. parviflora* (a species with smooth labellum margins) or *M. unifolia* (a species with thick, square labellum with crenulate margins etc) or *M. arenaria* present. The two or three species

present were *M. aff. parviflora* and *M. aff. unifolia*. I'm not sure of the distribution of true *M. unifolia* in New Zealand, but I do suspect that true *M. parviflora* also occurs in New Zealand in the far north. The NZ *M. aff. parviflora* may be *M. aemula*, a species common throughout the Pacific region. The Northland *M. aff. unifolia* is probably an undescribed species also in Australia.

"The plant illustrated (in the *Field Guide*) on p69 as *M. rara* is not that species, as *M. rara* has a labellum as long as the ovary. I suspect there may be several undescribed *Microtis* in New Zealand. Oh! similarly with the *M. unifolia* illustration (p70): that belongs to another unnamed taxon. *M. unifolia* has a longer thicker labellum and no upturned apiculus on the dorsal sepal."

[Bob went on to say, "I enjoyed the book. The little self-pollinated *Caladenia minor* are as difficult to work out in South Australia as in NZ."]

The illustration on p69 is of an Iwitahi plant; that on p70 of an Otago plant.

The first *Microtis* were discovered in New Zealand in 1769 and described in Solander's Ms. as *Ophrys porrifolia*. There may have been several species, for they were found "...in grass on hills in the vicinity of Te Oneroa [Poverty Bay]; Tigadu [Anaura Bay]; Tolaga Bay; Opuragi [Whitianga]; Motu Aro [Motu Arohia, Bay of Islands]; Totaranui [Queen Charlotte Sound].

"**Root** - of oblong, nut-brown tubers on long, flexuose, unbranched internodes as thick as a dove's quill, or sometimes more slender.

"**Leaf** - single, tubular, erect, about one and a half feet high, the scape breaking from the middle of the leaf through a long cleft. Peduncle cylindrical-subulate, glabrous, pale-green, as thick as a swan's quill.

"**Leaf lamina** - shorter than the scape, erect, terete, smooth, naked.

"**Spike** - long, narrow, many-flowered.

"**Flowers** - numerous (50-60), pedicillate, very short, green; the pedicels terete, each with a single flower.

"**Bracts** - lanceolate, concave, acute, longer than the pedicel but shorter than the ovary, about 3 lines long.

"**Calyx** - absent.

"**Dorsal sepal** - sub-rotund, concave, acuminate, forming a hood about one and a half lines diameter.

"**Lateral sepals** - spreading outwards with a small upturned apex; linear-oblong, narrowly obtuse, about half the height of the dorsal sepal.

"**Petals** - as long as the dorsal sepal but very narrow, oblong-lanceolate, acute, revolute.

"**Labellum** - oblong, as long as the petals, drooping, green; apex with a deep, slightly 2-lobed sinus, the lobes rotund, their margins undulate and crisped in front. The upper surface [of the labellum] furrowed near the base with an oblong callus, and near the sinus 2 protruding oblong calli.

"**Column** - slightly arched above the adpressed petals.

"**Ovary** - oblong-turbinate, slightly swollen above, 3-angled, only slightly ribbed, 4 lines long.

"**Capsule** - with a single chamber, 3-valved, the angles slightly ribbed.

"**Seed** - numerous." (*translated from the Latin by Dan Hatch*).

True *Microtis unifolia* was discovered by Johann Forster in Queen Charlotte Sound on 13 September 1773: he wrote in his diary, "The next morning we went over to *Long-Island* & mounted the hill, where we found several fine plants... We returned to dinner, having found a very fine Orch..." His formal description is brief and uninformative, but there is a George Forster watercolour in the British Museum (Natural History) labelled "Charlotte's Sound, NZ". If anyone is down at the Sounds in the spring, and lands on Long Island, I would be glad of a specimen.

Imagine! Many of us may never have seen *M. unifolia* in the strict sense.

TWO NZNOG BOOKS FOR SALE!



Field Guide to the New Zealand orchids

by Ian St George, Bruce Irwin and Dan Hatch

◆
The field guide, published in 1996 with the support of the NZ Lottery Grants Board, contains brief notes and black-and-white drawings of all New Zealand species, formally named or informally tagnamed, together with distribution maps resulting from the Group's Mapping Scheme.

The New Zealand orchids: natural history and cultivation

by Ian St George and Doug McCrae

◆
The natural history and cultivation book, published in 1990, and now available again after the discovery of a lost cache, contains chapters by Chris Ecroyd, Bob Goodger, Dan Hatch, Bruce Irwin, Doug McCrae, Brian Molloy, Val Smith and Ian St George, on a range of subjects.

◆
Send \$8 per copy of each to the editor
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Original papers

Te Paki Station, the northern limit

by Eric Scanlen, Papakura

Fourteen unquenchably enthusiastic NZ-Noggers set out from the Te Paki Station shearers' quarters to "beard" *Pterostylis tasmanica* and *Thelymitra matthewsii* in their lairs at the Surville Cliffs. Bob Talbot's diligent organising had "failed" to put us there at Labour weekend because of earlier bookings so it had to be the weekend before, which as it happened, still turned out to be too late for flowering specimens of the latter so the party had some early disappointment. But who has heard of a party finding the prime target(s) as planned—ever?

On Friday evening we had met our DoC keepers, Mike Heads and Tony McCluggage with their GPS positioning gear, before a barbecue dinner, expertly cooked by Bob and Kerry and welcomed by the famished fourteen. An evening stroll into the nearby Shenstone Block, to relax after a long day, saw Allan Ducker, sans whiskers, back into form spotting first some seed heads of *Corybas cryptanthus* and *C. cheesemani*, some finished *Cyrtostylis oblonga* (without kauri?) and two pink *Caladenia* on the trackside. This caused a sudden sprouting of cameras and magnifiers and of course proved that a beard is not a prerequisite for orchid spotting contrary to last year's CCCCCHOGM trip statement (NOG Journal 58) but controversy was afoot right from the start. The column innocently called the pink one *C. carnea* because it was too pale for the carmine *C. carnea* var. *bartlettii* which Bruce Irwin named it, quoting Dan Hatch. But Ian St George was sure it was *C. aff. carnea*, quoting Brian Molloy (Doug McCrae had called it *C. minor*). No blood was spilled but the dis-puted and diminutive subject proved to have four marginal calli at the base

of its midlobe. The column's two "insurance" shots of all the interesting specimens now get carefully aligned for stereo viewing. This pink *Caladenia* (Fig. 1), call it what you will, is a treasure in 3-D. Some were later found with three of the basal marginal calli, some with one, and another with none; hence these calli failed us as a recognition factor.

Caladenia "green column" was in abundance in the gathering gloom with its definitive (to the column) toothed midlobe like a miniature sawfish. Its identity was questioned only by Bruce who would separate the red and green stemmed specimens. Who among the readers can clarify these vexing species?

The Saturday push to the Surville Cliffs in Waitiki Landing's and the DoC's 4WDs, stopped about half way out on Ngati Kuri land to view the pohutukawa Money Tree where travellers' wishing coins languish in their verdigris. What was viewed? Well there was this beautiful blue *Thelymitra malvina* (Fig. 2) with several flowers open in the gathering warmth. Some of the party held up proceedings by crowding around it but the considerate ones refrained — there would be plenty more? Ian had seen them in crowds at Lake Ohia the previous week but we didn't get to see another, anywhere! There is a moral there somewhere. Tiny *Corybas oblongus* were spotted in the scrub by Graham Marshall and a few *Thelymitra aff. longifolia* were there (as everywhere).

Further bumping on the rutted tracks led the devotees to the closed serpentine mine on this plateau edged by the towering Surville Cliffs. The calm air belied the normal climate here which has forced the tea-tree scrub to its mere 300mm height.

Orthoceras novae-zeelandiae was in bud, unopened *Thelymitra aemula* were in evidence as were *T. carnea* in fruit. One finished *Pterostylis tasmanica* was located by Bob and nine scattered but unmistakable *Thelymitra matthewsii* with their solitary fruits were found after Anne Fraser pointed out one in a stable bare patch of the yellow/brown alluvium. Bare patches were common in these old volcanics but actively eroding areas never displayed the coil-leaved dark stemmed and diminutive *T. matthewsii*. *T. "darkie"* was relatively common with its much taller purplish stems and leaves. Spikes had numerous flowers, closed

like spring traps so the column hauled out secret weapon "hot-house", an aluminium foil reflector in one side of a clear plastic bag and placed this over a healthy bunch of these beauties — all to no avail. Hours later, when the thin overcast had been burnt away by the heat, the bagged blooms were still shut. Ten paces away, Allan howled his discovery of a self opened single bloom of *T. "darkie"* (Fig. 3). NZNoggers clutching magnifiers, note books and cameras, started appearing from two horizons. The column's hearing and heart-beat will no doubt recover eventually. What a fog-horn! None of the party had seen this species open (the orchid, not the fog horn!) of its own volition and no more



Fig.1: a little pink *Caladenia*



Fig.2: *Thelymitra malvina*



Fig. 3: *Thelymitra* "darkie"

were found open on this trip. The poor thing probably suffered from photo' flash burn but the film companies did well out of that unblemished blue/purple bloom.

Ian was examining every *Microtis* and was soon rewarded for his unswerving dedication by discovering *Microtis arenaria* with its hump-backed sharply tipped dorsal sepal and two lobed labellum with the midlobe pointing back — clearly visible in any 20 power magnifier. Other onion leaved orchids, here and elsewhere in the far north, were usually half-pie *M. parviflora* and *M. unifolia*. Pink flowered *Thelymitra* "rough leaf", all closed had been seen scattered around the open cast serpentine mine. The leaf had some tan scales which gave it a slight roughness but only for the first rub. An open one rewarded Allan's sharp eyes on the homeward trek and Bruce thought that a similar bloom with a squat column was *T. "Ahipara"*, tag named also by Doug McCrae. Both had a yellow helmet atop the column

and a red patch behind (Fig 4). *Thelymitra* aff. *longifolia* was common — to the exclusion of *T. longifolia sensu stricto*. The scented affiliated version leaves its southern namesake for dead. Best spikes had more than twenty blooms open at once — truly! (Fig. 5) The northern specimens have a yellow Vee notch in the front of the column top; deeper than the Vee in *T. longifolia* but not as deep as that in *T. "pseudopauciflora"*.

They are insect pollinated hence have a major adaptive

advantage over their self-pollinating, self replicating relative, *T. longifolia*. Native bees are said to mistake non-nectar-bearing *T. aff. longifolia* for the tea-tree (*Leptospermum scoparium*) but only for the first two or three visits. Not an ideal pollination system but it seems to work. Is the superior adaptive ability responsible for the pink *T. aff. longifolia* common in the north where pink tea-tree abounds? The strongest pinks (Fig. 6) stood in ranks, 30 km away at Rubbish Dump Hill, 5 m from several bee hives. Legions of Italian bees were swarming out to the tea-tree blooms but none stupid enough to be attracted by the *T. aff. longifolia* were seen by any of the party passing by or poring over these beauties with cameras and magnifiers.

Getting back to Saturday, the DoC 4WD with us six souls set off first for base and missed two fine spikes of blue *Thelymitra sanscilia* in the ditch.

Ian noticed them from the second vehicle and there was a long delay whilst they examined the closed flowers. One bloom was prised open to display the scimitar-like, bare column arms. According to Bruce, its original co-discoverer, it was more like *T. sanscilia* than the Type specimen. He does have some Irish in him. When the vanguard finally caught up with the waiting lead party, Sue Bergerson dared open the window only 50 mm to gloat about their find and revel in the despair of those who had missed it. Dinner at the Waitiki Landing restaurant was great but where did they find ten servings of excellent snapper at short notice?

Rubbish Dump Hill, a closed tip by the road to Cape Reinga, was the party's Sunday morning target for primarily, *Pterostylis*

tasmanica. Triumph! Margaret Menzies and Val Smith quickly tracked down the one and only prime specimen with its unique yellow bristled labellum (Fig. 7 & see "Featured Photographer, page 18). The clear windows in the galea displayed a yellow pollinium inside to seven photographers lined up and frustrated by the enclosing and cruel spined *Hakea sericea*. Some 40 specimens of *P. tasmanica* in fruit were eventually located in the broad vicinity, always in dappled shade atop a low erosion scarp. Curiously, the Australian *Hakea*, which disfigured the legs of all those incautious enough to wear shorts, is reclaiming the numerous eroded bare areas where its massed old seed capsules and dense needles retain sediment where other plants become established. Will it then spoil



Fig.4: *Thelymitra* "rough leaf" column

this *Pterostylis tasmanica* habitat? The column and Catherine Beard happened on two tall *Calochilus herbaceus* in the tea-tree edge of an eroded area (as reported by Doug), by a steep watercourse. One was gently released from the ever present parasitic creeper taihoa (*Cassytha paniculata*), by the column who is still kicking himself for missing an intriguing photo' opportunity. The party crowded past to get a glimpse of these red bearded, violet "tongued" rarities. Missing this year were the yellow sepalled *Thelymitra* aff. *longifolia* and one with red topped columns videoed last year by Allan. In the usual alluvial, bare and flat habitat, Ian saw a solitary *Thelymitra matthewsii* (in fruit again), previously unreported from RD Hill. Put it first on next year's list!



Fig. 5: *Thelymitra* aff. *longifolia*



Fig. 6: Pink form of *Thelymitra* aff. *longifolia*

Nearby Ian also located a lilac *Thelymitra* aff. *longifolia*? (Fig. 8) with long narrow tepals, the sepals being deflexed backwards. It had widely separated blooms on a lax stem which let the flower lie on the debris. Two similar flowers were photographed on widely separated plants at this site. This tag name, *T. aff. longifolia* covers a multiple of variants doesn't it? Just south of RD Hill, some healthy but closed *T. aemula* stood on mini-humps in a swamp and along the road edge, top-eye-of-the-day Ian,

scored a mutated, all white *T. aff. longifolia* with three column arms and cilia tufts. Anne, not to be outdone found a very late and open *T. carnea*, the only one seen on the trip.

After lunch a fresh sally was made to *T. sanscilia*, still shut and the few florets still capable of opening were too miserable to



Fig.7: *Pterostylis tasmanica*



Fig. 9: green form of *Calochilus herbaceus*

bother about. Put it second on the "next year" list! To ease the pain, a very late *Corybas cheesemanii* was found nearby, still in faded flower alongside its mates' extended seed stalks. A *Caladenia* "green column" with no marginal calli on the midlobe got priority photographic treatment but proved to be a mutant with one row of calli down the middle of the labellum and another row to the side. So the long track to the sod wall was trodden. In a damp hollow, the storied green form of *Calochilus herbaceus* (Fig 9) was in fresh, delightful flower! This albino form has been reported nowhere else in NZ. Forty metres north was a normal specimen staring at us accusingly across violet tongue and red beard through those black, beady "eyes" (glands at the base of the column wings). Along the track and in flower were also, one chewed *Caladenia carnea* (dare one say?) and *C. "green column"*. Closed were *Thelymitra aemula*, *T. "darkie"* and *T. "rough leaf"*.

In fruit were *Thelymitra carnea* and, at the track break in the sod wall, abundant *Caladenia alata*. The last has to be third on the "next year" list.

Allan's excellent videos that evening clearly(?) showed a corkscrew labellum tip on the green *Calochilus herbaceus*. The column made a fool of itself by declaring this to be clearly a different species, not an albino form at all. It further persuaded Bob and Kerry, who'd been at Spirits Bay on Sunday, to go with it back to the site on Tuesday morning for a more detailed look.

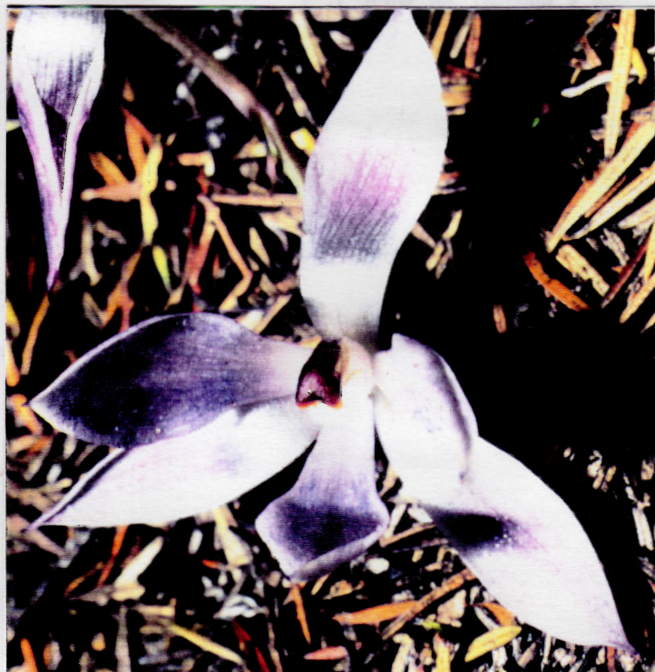


Fig. 8: a lilac ?*Thelymitra* aff. *longifolia*



Fig. 10: *Calochilus herbaceus*

Ho hum, it was the usual stepped end on the labellum just looking like a corkscrew in that crumbly video! Kerry can come again; she spotted another *Calochilus herbaceus* in bud by the track-side and two more in the ubiquitous *Hakea*, where Anne and the column had both been scouting fruitlessly. One specimen, unusual for having two (bruised) flowers open at once was delicately extricated from dense *Hakea* debris (Fig. 10).

But, getting back to Monday morning, all 14 walked up an almost orchidless long clay road then down a steeper one with more orchids, to the Kauri Block. It is a remnant of idyllic bush with a burbling stream and some interesting surprises which still could not faze Catherine but the column had better stick with the orchids.

In bud were *Thelymitra* "rough leaf", *T. aemula*, *T. "darkie"*, *Bulbophyllum pygmaeum*, *Earina mucronata* and *Dendrobium cunninghamii*. In flower were *T. aff. longifolia*, *Pterostylis banksii*, *P. rubricaulis*, *Corybas oblongus*, *Caladenia* "green column", *C. carnea?* and the *Microtis parviflora/unifolia*.

In fruit were numerous *Cyrtostylis oblonga*, *Pterostylis brumalis*, *P. trullifolia* and *Acianthus sinclairii*. A quick trip to the ridge overlooking Tapotupotu Bay revealed, in bud on the track *Thelymitra aemula*, *T. pauciflora*, *T. intermedia* (was *T. "pseudopauciflora"*) and *T. aff. longifolia*. Kikuyu had established on top of the hill where no orchids penetrated its thick green mattress but it was fine for reclining in, out of the breeze and taking in the grand view.

Ian left after lunch, for more important things — than orchid hunting? Half the party set out for Horseshoe Hill (tag named after a bare patch of that shape) to have a final but fruitless fling for *Thelymitra matthewsii*. They did find a fine *Calochilus herbaceus* with eight flowers in the spike and Catherine made an equally fine pencil drawing of one open bloom with the stepped labellum end doubled back underneath. But the column and some others, wearying from the pace and the crowd at every find, (16 souls are too many), decided to dawdle along the Shenstone track. What a dawdle! Graham found two *Calochilus herbaceus* threaded through some tea-tree debris. One much photographed specimen, had a wider open flower than previous examples and had a purple rather than violet base. All the species from Friday evening were gloated over and in bud were spotted, *Thelymitra aff. ixioides*, *T. "rough leaf"* and of course, flowering hither and thither, were scented, multi flowered *T. aff. longifolia*.

Allan, Graham and Sue (60 today!) left on Tuesday morning. The Shenstone magnetism had most of the party back again in the

afternoon after a downpour deterred them from a swamp slog — thankfully. A previous foray into a Shenstone swamp had proved barren and laborious in the extreme. A miniature and mature *Caladenia carnea?* (dorsal sepal clamped to the column), with three marginal calli at the base of the midlobe, appeared centre track with taihoa encircling its delicate stem. Whilst the column was working this over, photographically of course, Margaret was nosing around by the banks of the nearby reed choked stream and turned up a healthy colony of previously unreported, red veined, large rounded leaved, *Corybas oblongus?* It had been in fruit for say three weeks yet *C. oblongus* was videoed in fresh flower in the Kauri block only two days before? Most interesting and fourth on the list for earlier next year. In the tea-tree leaf mould were a solitary *Gastrodia aff. sesamoides* shoot and a fine colony of *Chiloglottis cornuta* with just opening flowers. Iwitahi people might find this a bore but it is uncommon in the north and was previously unreported here.

Ross Bishop and Anne left at dawn on Wednesday for her afternoon exam in Hamilton followed by Bob and Kerry. The dwindling party quietly ransacked Rubbish Dump Hill that morning, adding *Corybas cheesemani* to the local list and spotting extra fruiting *Pterostylis tasmanica*. Shenstone's reluctantly released secrets were sought again in the afternoon. The *Gastrodia aff. sesamoides* shoot had shot up 35mm in one day and numerous other shoots were in evidence, along with *Corybas cheesemani* and *C. cryptanthus* in all stages of seed stalk extension. Doug's claim that the best orchid area was south of the track, could not be confirmed; no way could be found through the thickets of *Hakea sericea* and *H. gibbosa*, its short spined cousin. *Kunzia ericoides* however, has smothered the *Hakea* in places hence it could well be only a temporary migrant in the more fertile areas.

Next year's trip, for 3 or 4 weeks earlier, was sealed with a booking with Gael Bullock for the shearer's quarters on Thursday's trip home. Five stayers called on 84 year old Barbara Hoggard at Kaimaumau for a cuppa and a chat. In her intriguing garden, thriving in a waterlogged undrained pot, were a pair of *Cryptostylis subulata* in late bud. Does this swamp dweller need its roots in anaerobic conditions like rice? Allan, Sue

and Graham had called too and, sad to say, got a drenching for their troubles, in a frontal cloud-burst which also ensured no open orchids in last year's bonanza area.

Margaret, Val and Ernie Corbett greeted the column's 3-D screening of NZ orchids that night with suitable oohs and ahs, capping a strenuous but most satisfactory week.

"A beaut weekend" — by Trevor Nicholls, Taupo

So said the 33 members of the **Iwitahi Native Orchid Weekend** camp as they prepared to leave. This was in spite of cyclone warnings, being made to labour, getting wet through and being rained out.

Friday saw everyone turning out to shift trays of orchids from the adjoining areas into the reserve — *Caladenias* [C. aff. this and C aff. the other thing plus some C. iridescence] with seed capsules. Bruce says that some of them are different to anything that he has seen elsewhere. We have found that this is the most successful method. We had almost given up hope on making a successful shift of some of the *Caladenias*. This season has seen hope renewed. After two years of using this method the seed of the first ones has come up and the plants have formed inflorescences.

Another failure to date is *Gastrodia cunninghamii*. We have tried shifting many trays of plants and we have collected seed heads and scattered the seed around without any success. One of the groups did something I have talked about but not got around to doing. They carefully excavated around a plant and found that unlike *G. sesamoides* that the tuber is not at the base of the flowering growth but a long way away. So we are trying to find and shift the tubers. Then wait to see if this works.

Among others shifted were *Pterostylis* aff. *montana*, a group that has very strong

colouration; *Calochilus robertsonii*, growing on the edge of the pines [joy was seeing one of last year's transplants in flower]; *Thelymitras*, including a number of *T. formosa*; more of the *Chiloglottis valida* that had come away again in the old original plots plus anything else that caught the eye of the diggers. Diggers? By all reports one of the bright spots was Allan Ducker stripped to his iridescent shorts wielding a spade with gusto.

In the evening we were introduced to Eric Scanlen's 3D slide show. Eric is using the technique of taking two almost identical photos of the orchids. These are then both superimposed and projected on a metallic screen. Then the audience looks at them through the wine cask glasses that Eric has made. The result is spectacular. We found a second session on the Saturday night just as enthralling.

Saturday was very windy and we decided to stay out of the trees. We had received a call from the forestry people on the Friday lunch time about the cyclone. We decided that we were not getting the effects of it and worked on in the afternoon with our orchid shift. However, now we considered it was not wise to enter the forest. So we bagged up wildling baby *Pinus nigra* from the edge of the forest for later planting in the reserve. This is part of our regeneration programme. By late morning it was getting a little damp and cool and the wind was increasing so folk

began to pack it in and head back for a cup of tea and dry clothes. The afternoon was spent quietly sharing bits and pieces. Well, over all the years that is the first time the rain has brought our programme to a halt.

Sunday morning, by all indications that rain had set in. While many cleaned up and made an early departure, the adventuresome made a trip out to the lake and made a number of finds.

A highlight of the weekend was the meals. With the extra day and what could have been very hot weather, we decided to cater for this

camp, instead of everybody being responsible for their own meals. Sue Graham did the planning, and now we have a problem. She was too successful!

There will be two work weekends on 17-19 October this year and 9-11 January next year. The campsite has been booked but we will need to know who is planning to come. The next Iwitahi Native Orchid Weekend would be 12-14 December 1997. There was a request that the Saturday programme be similar to that of last year.

Featured photographer: Eric Scanlen

The enigmatic compromise: macro-photography of New Zealand orchids

If you've had the misfortune to follow macro-photographer Eric Scanlen on an orchid field trip, you would notice him carrying a nondescript and padded day pack (with no shiny bits so it won't attract the magpies) and a bare minimum of camera gear to save him sinking too deep in the ubiquitous swamps. After 40 years of evolution of his system, the conflicting requirements of the ideal gear versus weight and bulk, speed of operation versus thoroughness (and field party frustration) and expensive gear versus his marriage, have dictated an enigmatic compromise. Apart from basic essentials such as compass, wet weather gear and sustenance, the pack holds just camera gear comprising:

1. a Nikon F801 single lens reflex (SLR) camera with 50mm f1.8 lens on 0 →49mm of automatic extension tubes (called automatic because they automatically stop down the aperture a moment before the shutter fires). He accepted the expense of this system grudgingly for Nikon's durability and

reliability. The lens / tubes combination delivers, up to life sized images on;

2. 36 exposure, 35mm, 200 ISO reversal (slide) film, either Fuji, Agfa or Ektachrome.
3. a Nikon SB24 "cybernetic" flash gun, usually through an off-the-camera cable. This flash and the through-the-lens exposure meter, ensure(?) accurate exposures automatically but only in terms of the system's program which will still overexpose a slender orchid against an unlit background. A wider flash bowl would give softer shadows.
4. a lightweight, basic tripod (no central stalk) for usually, the flash gun, not the camera.
5. a white hat plus foil reflector (potato chip packet) for the all important back-lighting.
6. for magnifications from 1 to 4.5 times, a 28mm wide angle lens with reversing ring on the front and a stop-down ring at the back, for use with the auto tubes. Wide angle lenses give big

magnifications with short extension tubes but reversal is necessary for better correction of aberrations when image distance exceeds object distance. Also, with the optical design of SLR's wide angle lenses, the object will touch the non-reversed front element at quite a modest magnification making lighting and bigger magnifications impossible but that same design keeps the reversed lens well away from the object regardless of the length of tubes or bellows used. This makes the reversed wide angle lens quite ideal for close macro work.

7. a double cable release which stops down the reversed lens (with a Bowden cable!) then fires the shutter in one long, clumsy stroke, often done by a helpful fellow orchid hunter on Eric's "Go!". The Bowden cable is an anachronism in Nikon's arsenal of otherwise great gear. Better, would be an electronic device with a touch release which would let the photographer trigger a hand-held exposure himself without losing the subject and without throwing it out of focus. The device failed on the far north trip when both ends of a tapered thread stripped out. Rather than buy new gear at Nikon's prices, Eric did a delicate mock-up job with wire and glue and it is now surprisingly, working better than ever.
8. an exposure chart to show how far away he can set the flash, for background lighting. The chart was originally designed for getting good exposures with basic camera and flash gear.
9. a variety of pastel coloured background cards for the bland, low contrast exposures necessary for photocopyable prints. For 3-D photography though, a well lit natural (messy) background is best for ones stereo pairs. The object(s) then stand out against the soft focus background so one often needs a third

shot with the pastel card for publishing in the *NZNOG Journal*.

10. a plywood and rubber-band mock-up for holding the flash bowl firmly by the reversed 28mm lens. This is convenient but gives slightly differing lighting in successive shots hence has fallen into disuse for 3-D work where identical lighting in stereo pairs is best.
11. for magnifications up to 11 times, the pack will hold Nikon's chunky bellows (along with a bar of soap to wash out the photographer's mouth?) Just finding the dim image of a *Bulbophyllum pygmaeum* flower with the bellows and a reversed 28mm lens, can take 10 to 20 minutes and the frustration would make a saint swear. Where feasible, a bulls-eye target with a hole in the middle would be worth pinning over the subject for this purpose.

There is not space in this *Journal* and the next, to explain all the reasons behind Eric's evolved system but some are elucidated below and if you have more detailed queries he would be only too pleased to answer any letters.

Dedicated NZNOG staff reporter, Llata Enoon, asked Eric some pointed questions about the more controversial aspects of his macro-photography and he filed this report.

Why use flash, when the best photographers are winning prizes with natural light photography?

In macro-photography, field depth is critically limited, even on minimum aperture (say f22) and especially on high magnifications. The object needs to be sharp with the maximum depth of field but the shutter speed will be too slow on f22 to stop camera shake and object movement, even in bright sunlight and with high speed (grainy) film. So I use the flash in most cases to freeze all movement with the, say 1/5,000th second flash duration giving me excellent colour balance and a high proportion of acceptable photos.

Why not put the camera on a tripod?

Too bulky, too expensive, too time consuming (with NZNOGroupers all waiting in line) and too difficult to align the camera for optimum plane of focus.

Why not use a macro lens?

Too expensive; but less changing of close-up tubes certainly would have its attractions. I am testing my 28→80mm zoom lens for close up work to minimise the bulk and weight of lenses to carry. Early results are first class (contrary to expectations) but reduced maximum aperture means a dimmer focusing image for big magnifications so it won't get used for the rare 11 X magnification shots.

Why not a ring flash?

Mostly because of expense — twice the price of the SB24 — but one would be nice at times. Twin flashes would be more versatile but the foil reflectors are cheaper and easier to carry if less versatile.

Is three dimensional imaging worth the trouble?

Yes it is! In paired exposures, if one keeps the lighting constant, moves the camera horizontally only 1° to 2° keeping a stationary object centred and erect, one will create an excellent stereo pair. If ones marriage then survives the extra required projector, these pairs will give excellent three dimensional viewing, bringing out unsuspected detail, provided one:

- coincides images on screen in the plane of maximum interest,



Pterostylis tasmanica: photograph by Eric Scanlen

- uses a metalised screen,
- projects through polarising filters mutually at right angles and
- issues matching polarising spectacles to everyone in the audience.

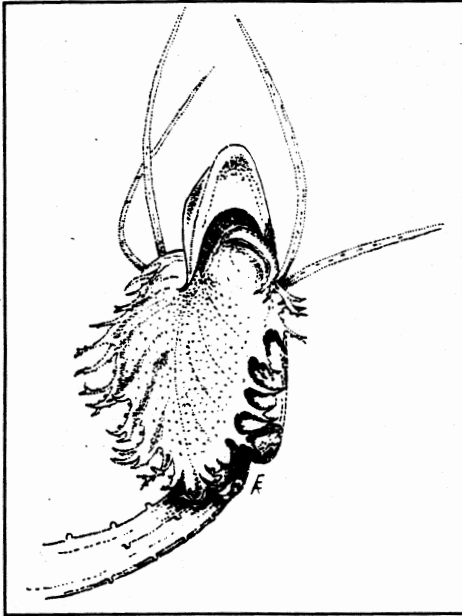
Finally, Eric, where to next with macro-photography?

Well, there are still numerous NZ orchids that I have yet to see and numerous species that need specific 3-D treatment, ask me after I get all that organised.

Notes



Anne Fraser sent this drawing of *Corybas cryptanthus* at Ohakune. Isn't it an extraordinary flower? ↓



Dave Kirk wrote to the "Orchids List Digest" (an international Internet orchid discussion group) about **velamen** (that "skin" on the rhizomes of epiphytic orchids),

"It seems that the velamen itself on the majority of epiphytic orchids consists of dead cells, specially characterised to absorb moisture and associated nutrients and conduct it along the length of the normally fully-exposed length of the root to the root tip itself.

"The 'green' root tip, if active, is where the majority of water/nutrients are absorbed into the root proper. Central to the root is the much thinner woody or tough core which conducts the nutrient solutions through to the plant, and gives the root its tensile strength.

"Some velamen looks green, especially when wet, because it reflects the true colour of the central part, or has some algae growing in it. ... if the velamen closer to the plant appears discoloured because of salts or is missing altogether, the root core is still capable of its full function and may well support more growth and activity at the distal end.

"I've seen plants of *Drymoanthus adversus* in the 'wild' here (a small sarcanthoid looking for all the world like a micro *Phalaenopsis*), with roots spread out around the branches — but with velamen missing for long stretches, exposing the threadlike inner core, but obviously supporting actively growing green root tips."



Karlie Birchall wrote (10 November), "Labour Weekend was spent down at Omaio — **East Cape area** — and I spent a day on the road into the Maungaroa Station, behind Te Kaha. Beautiful bush and the orchid population is just magic. Three different *Pterostylis* — *Pterostylis banksii*, *P. cardiostigma* and *P. irsoniana* (I think). Plus *Orthoceras*, *Microtis*, *Thelymitra*, both *Earinas* and *Dendrobium cunninghamii*. Have also found a colony of *Corybas* — *rivularis* I think, growing up on the cliffs near our bach. It's a very wet situation and the leaves are much larger than others I have seen. I am off to Auckland, Campbell and Enderby Islands on 11 December so hope to find an orchid or two while I'm there."



David McConachie wrote (14 November) from **Palmerston North**, "At our Spring Show, Don Isles and Barbara Elliot put together a native orchid display, and it recieved a 'Highly Commended' from the judges. The display included trays of *Corybas macranthus*, *C. iridescens*, *Chiloglottis cornuta* and an

unidentified *Thelymitra*; there was also slabs of *Earina mucronata* and *autumnalis* as well as *Dendrobium cunninghamii*. I put in some pots of *Corybas iridescens* and *Pterostylis* aff. *montana* — I have been trying the Aussie method of growing terrestrials with good success. I started with four *C. iridescens* last year and had twelve growths this year with ten flowers and now have six seed pods developing.

“Don and I advertised a walk to look at local orchids through the local orchid society and on 1 November eleven of us went up the Kahutarawa Rd. to Black Bridge. On the way we checked sunny clay banks and found *Microtis unifolia* in flower. We also found *Thelymitra longifolia* and *pauciflora* in bud, but the day was dull so no flowers were open. I identified them from the columns.

“One of the tracks past the bridge led up a hill through *Pinus radiata*. There we found *Chiloglottis cornuta*, with two distinct labellum colour forms, plain green and brown, which seemed to be present in equal numbers. After coming down the hill we went up the main track which was an old road. In the trees beside the track we saw a number of large clumps of *Earina mucronata* in flower and also large clumps of *E. autumnalis*.

“Later this month or early next month we hope to have another trip, this time going up North Range Rd to have a look for *Prasophyllums*, etc. Will let you know what we find.”

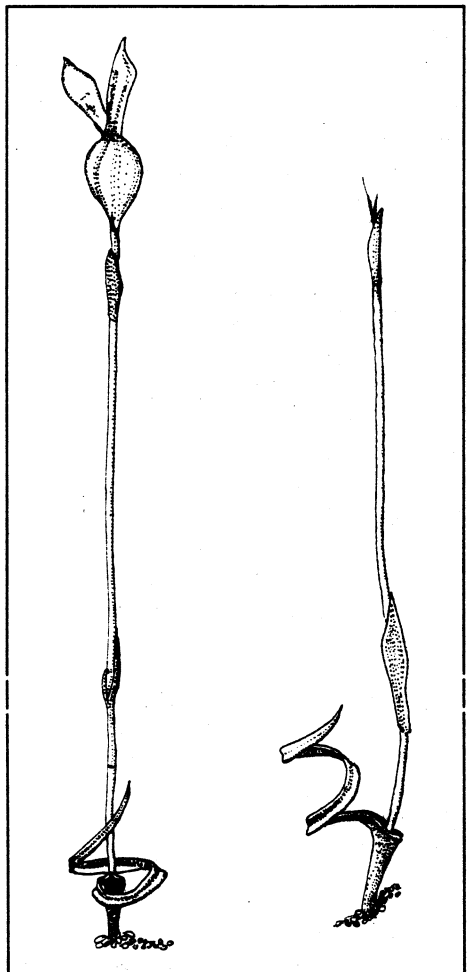


Anne Puttnam wrote (13 November), “I was part of a group (Whangarei Tramping Club) which stayed at the **Te Paki shearers’ quarters** over Labour Weekend. Four of us who are members of Royal Forest and also native orchid buffs arranged permission to venture out to North Cape on the Monday. However, this did not eventuate as the weather was so bad even our four wheel drive vehicle could not have negotiated the dry weather DoC

tracks. But all was not lost as we explored other areas and were very excited to find *Thelymitra matthewsii* just off the track which goes down to the Kauri Grove. While I have never seen it before, there could not be any other orchid which matches that description. That made my weekend!”



Here are two lifesize sketches of *Thelymitra matthewsii* at North Cape, one bearing its disproportionately large fruit with the remnants of the flower, the other unfertilised/chewed off. ↓

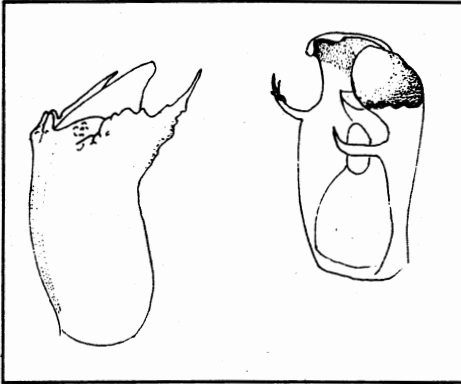




The column of *Thelymitra pulchella* at Kaimaumau (L) shows almost no fimbria. That of *T. sanscilia* often shows a few cilia ↓



The tepals of *Thelymitra malvina* at Kaimaumau open so widely they lie back onto the ovary. ↓



"Can anyone help me?" (asks Angela Abernethy), "I am starting a

PhD at the University of Canterbury under Dr David Leung, studying the micro-propagation of NZ native orchids. The first step in this project is to establish a live herbarium at the University. This will serve as a source of material for further research. It is intended that this project will create a permanent site of information and material to encourage further research.

"Another major step in this project is in vitro seed germination. I would be grateful if anybody had any "mature green" seed pods or seed of common species that they would like to donate. Contributions to the live herbarium would also be gratefully received. Of particular interest is *Bulbophyllum tuberculatum* (I already have *Bulbophyllum pygmaeum* in culture). I am also looking for *Earina aestivalis*, a form of *Earina mucronata*, for chromosomal counts and DNA fingerprinting.

"Please send orchid material to: Angela Abernethy c/o University of Canterbury, Private Bag 4800, Christchurch."



Ideas for the Journal — thanks for the many replies praising the quality and interest of the *Journal*.

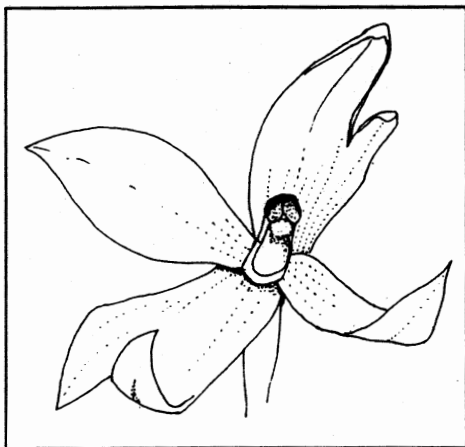
- ♦ One subscriber asked that more people write about cultivation needs, especially growing from seed.
- ♦ Another noted that as members are scattered some would appreciate get-togethers with other members when a trip is organised (*Several members wrote asking to be notified of when field trips are organised. It should be said that the only event the Group is officially associated with is the Iwitahi weekend, organised by the Taupo Orchid Society. Other field trips reported in the Journal are private, small-group affairs; if they are advertised too widely the groups can become too large to be safe for the orchids — Ed.*)
- ♦ Another wrote that she really enjoys the contact, friendship and enthusiasm of others, and the opportunity to see "new" orchids and get to "new" areas that would normally be inaccessible to her, she would also appreciate, in the Australian (or overseas) notes in the *Journal*, a brief suggestion of the

locality, time and contact for a casual visitor/holidaymaker to seek a glimpse of others' native orchids in the wild.

♦ One member, who does not do field trips herself, is nonetheless interested to read of those who do. Furthermore, "I really enjoy the section on other people's finds and orchid trips," wrote a Rotorua writer.



A *Thelymitra longifolia* flower at Te Pahi showed fused petals and sepals - a common abnormality. ↓



Ideas to improve the Code?

♦ One subscriber thought it would be nice to add, "We will not attempt to manipulate, induce fertilisation or otherwise tamper with natural orchid populations until our intended activities have been discussed at the AGM (or otherwise) of the NZNOG and a general consensus has been reached. Such activities will not take place without the prior consent of the landowner or body administering the land on which said orchids grow."

♦ Another wondered what to do if you did find an orchid you think is the only or almost the only one in New Zealand: "Ask the question, is it safe where it is? If yes, leave it where it is. If no, try and move it to a safe spot."

♦ Another member suggested that we should discourage moving orchids from one Ecological District to another.

♦ Another: ① "Taking (except for identification) should be a last resort; photographing, sketching in site should be the first, ② Small groups in any one habitat at any one time are definitely an advantage, and it is important that overhead shade and shelter is minimally disturbed when photographing especially 'one-off' finds, ③ Reticence over rare, out-of-usual-habitat, special variations of species, should be constantly rigorously maintained (beware of a friend-of-a-friend), ④ Spraying for weeds might need vigilance."

♦ "What about earthworks disturbing orchid habitat? plants should be transferred to as close a habitat as possible.

♦ Again: "I feel it's wise to try to relocate species that are relatively rare if the site is about to be destroyed for housing or some such purpose... I know of a place near Egmont where - - - dug a drain right through the only known location there of an orchid species.... I've seen other good sites on main roads buried under metres of spoil by our roadbuilders."

♦ "Orchid photographers should note that the habitats of orchids (especially rarer species) are also the habitats of other specialised and often local or rare native plants. Weeding and trampling to photograph an orchid can impact on other species' survival."

♦ "No. 8 seems unnecessary. You might as well add 'No fires, no smoking, no pets....' Goes without saying (I hope)."

♦ "After 'Take only photographs...' suggest deleting 'if a plant is scarce in a locality' — *bona fide* researchers and authors will be exempt of course, but too many lay people and NZNOG included think 'Oh, if he can take them, why not me?' and usually they have no knowledge of scarcity or growing on. In the past too many plants have been removed to domestic gardens. The culprits sometimes boast about their acquisitions."



Caladenia minor at Kaimaumu shows the typical triangular labellar midlobe, bare of marginal calli, sticking straight out. →



From our "What's this then?" department. This *Microtis* was snapped in ← the Otari Native Botanical Garden in Wellington — curious



straight lateral sepals, sticking out in all directions, and short dorsal sepal: ← another *Microtis* aff. *unifolia*?



Corybas macranthus at Shag Point, north of Dunedin, is always this lovely dark red. In other sites the dorsal sepal is usually less vivid. ↓



Mrs LP Chrystall had a large concrete urn full of flowering *Microtis* in her Foxton garden in November. The seed, she wrote, must have been in the peat potting mix.



Thelymitra nuda in NZ? On page 26 is a pink-flowered form of the interesting lilac *Thelymitra* I found at Te Paki (discussed by Eric Scanlen: Fig. 8, page 14 in this issue). It too shows the long trowel-shaped speckled petals and

sepals, and the curved, narrow speckled column with its inrolled V-shaped notch. Is this another Australian vagrant? →



Here is *Calochilus robertsonii*
↓ growing in the Iwitahi grass



↑ Here is *Pterostylis irsoniana*, photographed by Eric Scanlen, and exactly the right size to fill this small gap.

Iwitahi 97-8

Note these dates in your diary now!

Work weekends: 17-19 October 1997, 9-11 January 1998

Iwitahi Native Orchid Weekend: 12-14 December 1997.

Contact Trevor Nicholls, 33 Hinekura Ave, Taupo 2730,
New Zealand, Phone: 64-7-378 4813,

Fax: 64-7-378 3222, email: nicholls@reap.org.nz



Congratulations to **Dame Ella Campbell** on her New Year's honour, and to **Dr Brian Molloy** on the receipt of the Royal Society's Charles Fleming Award for his work on conifers and orchids. Both are NZNOG members.



Soroa Orchid Garden would like you to attend the **IV International Orchid Workshop** 19-21 November 1997, at the Reserve of the Biosphere "Sierra del Rosario" in Pinar del Rio province, **Cuba**. For more information please contact Ing. Rolando Perez Marquez, Apartado Postal No.5, Candelaria, Pinar del Rio, Cuba; fax (53) 82 5813, email cniectpr@ceniai.cu.

Native orchid hybrids for sale — proceeds to NZNOG

Before he died, Malcolm Campbell gave a Tauranga orchid grower a mother-flask of his *Dendrobium cunninghamii* x *D. kingianum* var. *silcockii* protocorms. There were 500 such plants in flasks of 25-27, ranging in November last year from 2 — 5cm tall. They are now growing well and showing hybrid vigour. These plants have been on sale at Iwitahi and at the Taranaki Summer Orchid Display, and are available now. The funds raised will be donated to the NZ Native Orchid Group as a memorial to Malcolm Campbell. If you are interested, contact Ron Maunder, Box 2107, Tauranga, ph/fax 07 5525570, or John Dodunski, 22 Hartland Place, New Plymouth, ph 06 7582060.

Historical reprint

Robert Desmond FitzGerald (1830-1892) arrived in Sydney in 1856. He was a dedicated naturalist whose hobby attained scientific standard and recognition.

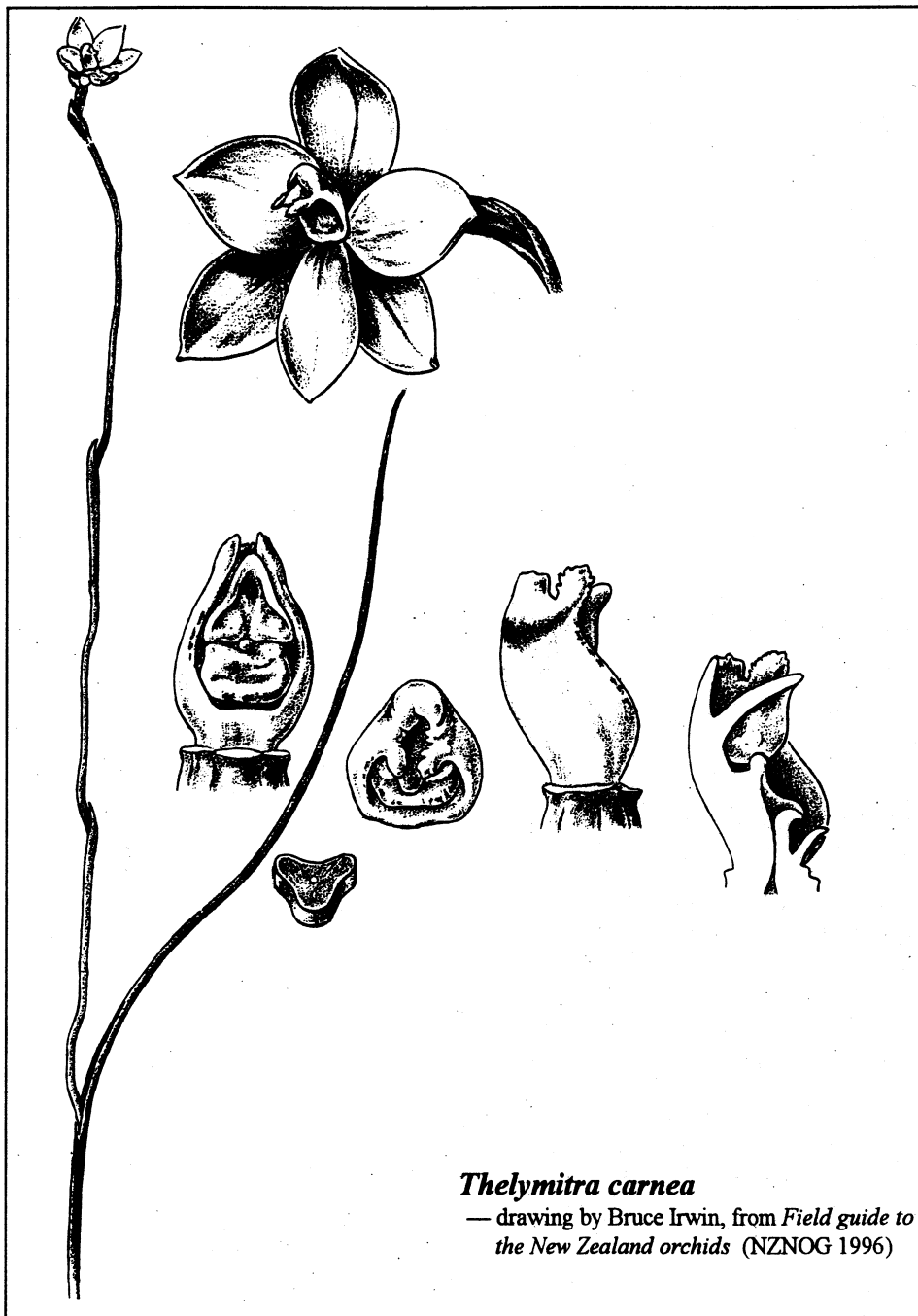
His great work was his *Australian orchids*, published between 1875 and 1894. Full editions are now very rare, but the Auckland and National Museums have copies. I have a facsimile edition printed a few years ago.

FitzGerald dedicated the first volume to Charles Darwin. In his introduction he argued some elegant points on self-fertilisation, thereby supporting Darwin's evolutionary theories —

“Mr. Darwin's proposition regarding ‘the contrivances by which Orchids are fertilized’ is, that they ‘have for their main objects the fertilization of each flower by the pollen of another flower.’ As far as I could investigate the subject in Australia, I have not been able altogether to verify this proposition; for though the great majority appear to be frequently impregnated by pollen brought from other flowers, I believe they are also frequently fertilized by their own.... Certain parts of plants and animals being wonderfully designed (or adapted) for certain ends to the palpable benefit of such plant or animal, it is argued that their life or existence being dependant on such design, they must have been so created. But what, except *inheritance*, can account for the extension of similar parts to others where they are evidently useless? The flowers of *Thelymitra ixioides* are of a beautiful blue colour, and are borne in attractive spikes. In

the centre of each flower is placed the stigma or female part of the flower; it resembles a shield, covered with viscid matter. At the top of it is inserted, in a notch, a little boss or button called the rostellum, connected with which, and behind the stigma, are the pollen masses, and on either side arms stretch out, supposed to attract and guide to the rostellum. Touch this rostellum, which is covered, as it were, with glue, with the point of a pin, and then withdraw it, and the pollen masses are at once withdrawn from behind the stigma. Return the pollen masses, now firmly attached to the point of the pin, again into the flower, and the greater part of them adhere to the viscid surface of the stigma, and the flower is fertilised. Such is the process, and the only one, by which it can be impregnated; but in nature the proboscis, or some part of an insect, acts as the pin has done in the experiment. Left to themselves, in a bell-glass, not one flower of *Thelymitra ixioides* will produce seed.

“Can there be a more perfect example of predetermined design? The bright colour to attract the insect - the arms to guide it - the projecting rostellum for it to touch - the viscid matter on the rostellum to adhere to the visitor - and the expanded shield-like stigma, covered in its turn with gum to lay hold of the pollen, when the insect either returns its head in search of honey or visits another flower, perhaps on the same spike. What trace is there of development? It is a well-adapted whole: a whole adapted to one end.



Thelymitra carnea

— drawing by Bruce Irwin, from *Field guide to the New Zealand orchids* (NZNOG 1996)

"Now examine another species of the same genus, *Thelymitra carnea*. The flowers are of a bright pink. Here are the extended arms - the shield-like stigma - the sticky rostellum and the pollen masses behind the glutinous stigma; but there is a slight modification; the pollen masses are not only behind but over the stigma, and crumble upon it whilst yet in bud, thereby fertilizing the flower, which seldom opens, and never until after fertilization. What has become of the picture

of design? For what is the colour in the flowers, seeing that they so rarely open, and then to no purpose? For what are the arms? What use is the rostellum? Without their aid, *Thelymitra carnea* is far more fertile than *T. ixioides*; in fact, every flower produces seed. Why are all those parts, so necessary in *T. ixioides*, present in *T. carnea*? Can they be accounted for by any other explanation than relationship through inheritance?"

Australian notes

① Mark Philips reported (NOSSA *Journal* 1996; 20: 85) a *Pterostylis arenicola* explosion at Wellington. He wrote, "We have been monitoring the population of the rare sandhill *Pterostylis*, *P. arenicola* at the Woods and Forest Pine Forest reserve near Wellington on the River Murray for about 15 years. In that time the population has increased tenfold. It is rare to be able to say this about any orchid population! The reasons are thought to be (1) fencing the area to exclude vehicles, (2) control of rabbits by poison wheat, ripping and fumigating warrens, (3) hand pollination and some minor weeding, (4) some very hot summer-autumn periods which help control perennial weeds, (5) removal of sheep from areas outside the reserve, which allows vegetation

to recover and stops strong winds through the reserve, (6) re-routing Highway 1 outside the reserve. The *P. arenicola* population is now thought to be 5000 plants."

② The fourth Australasian Native Orchid Conference and Show is planned for Melbourne, October 2000. Keep it in mind.

③ It was interesting to see *Adenochilus nortonii* — the only other member of the genus *Adenochilus* apart from New Zealand's *A. gracilis* — photographed, drawn by JJ Riley and discussed by David Banks, the new editor of *The Orchadian*, in the September 1996 issue. They are reproduced here with permission.

Notes on the distribution of *Adenochilus nortonii*

by David P Banks, Seven Hills, NSW, Australia.

The terrestrial genus *Adenochilus* contains only two species. The Type species, *A. gracilis* JD Hook., was described in 1853 and is endemic to the South Island of New Zealand and Stewart Island. The Australian member, *A. nortonii*, was described by Robert D FitzGerald in his *Australian orchids* in 1876.

History

This dainty orchid was first brought to the attention of Robert David FitzGerald by one of his botanical friends, a Mr James Norton, after whom this species was named. Mr Norton located flowering plants, which later included the type specimen, within a mile of the railway at Mt. Victoria — in the upper

Blue Mountains, about 120 km west of Sydney. The type specimen is in the British Museum of Natural History, London. The name *Adenochilus* refers to the glands on the labellum.

Description

A. nortonii is a small plant up to 25 cm tall with a solitary glabrous ovate to cordate leaf, at or near the base of the stem which grows from a thin and fragile modified tuberoid. The white flowers are generally produced singularly, but twin flowers have been observed on robust specimens. The dorsal sepal is hooded and gives the flower a distinctive look. The labellum is marked with deep pink to red and has a band of yellow and white calli down the middle.

It has a short life above ground as the plants are dormant from late summer to early Spring (February to September).

Distribution

Adenochilus nortonii is endemic to New South Wales. It has a disjunct distribution which has been poorly understood by native plant and orchid enthusiasts. Little has been published on this mountainous species and herbarium collections are obviously incomplete.

The first plants were recorded from Mt. Victoria. Since that time it has been found in a number of locations in the upper Blue Mountains. Here it has been found at Adelina Falls, near Lawson at an altitude of 735 metres above sea level (its lowest recorded elevation in the Blue Mountains), Wentworth Falls, Leura, Katoomba, Narrow Neck, Medlow Bath, Blackheath to Mt. Victoria at 1040 metres altitude. These locations are on the southern side of the Great Western Highway facing a southerly aspect.

Whilst there are parallel conditions on the southern side of the Bells Line of Road to the north, I know of no sightings. However, Wal

Upton has informed me of a population at Clarence, 10km east of Lithgow.

The next location north is the Barrington Tops population, 240km north of Sydney. Here it occurs at an altitude of 1585 metres above sea level, growing in sphagnum moss.

The northernmost population of *A. nortonii* occurs at Point Lookout, in the New England National Park, 75 km west of Coffs Harbour at an altitude of 1600 metres above sea level.

In the Illawarra Region/Kangaroo Valley, in the mountains west of Kiama this orchid has been found at Carrington Falls, initially by Brian Whitehead and Ron Tunstall over a decade ago. It would not surprise me if *A. nortonii* is later found at nearby Minnamurra Falls. The southern most plants were found by Graeme Bradburn in the same mountain chain at Fitzroy Falls, at an altitude of c. 600 metres. Throughout its southern range it has never been a common plant and only scattered specimens have been seen.

I would be most interested to hear from readers who can provide information to extend this distribution.

Habitat

I have noted two distinct habitats for *A. nortonii*. It is a species which always grows in shady situations and generally in high rainfall areas, as plants are never far from moisture.

Plants from the Upper Blue Mountains and the Illawarra region grow in wet and fairly heavily shaded situations, often at the base of dripping sandstone walls and caves. The soils are black and obviously heavily leached due to the constant moisture. Companion plants include a number of fern species (such as *Blechnum ambiguum*), the native violet — *Viola hederacea* — and the insectivorous forked sundew, *Drosera binata*. Sometimes it grows in very close proximity to another restricted orchid — *Rimacola elliptica*, but in a totally different niche, the *Rimacola* growing in the sandstone rock crevices above the terrestrial *Adenochilus*.

The Barrington Tops population choose the lush *Sphagnum* moss pads as their home. They receive more light than their southern cousins as they grow under a loose canopy of *Callistemon* and *Leptospermum* shrubs which grow on the banks (and sometimes in) the small mountain streams. Here the *Sphagnum* is very thick and provides a perfect home for the *Adenochilus*. As this medium is kept evenly moist due to capillary action, whilst still allowing air to the specialised root-like tuberoids. In some areas there are pure colonies of the orchid, with numerous leaves of non-flowering plants resting on the surface of the moss. I am told the New England plants grow in a similar environment. The dormant plants would get quite cold in winter as the areas in which they grow experience frosty conditions with the odd snowfall thrown in for good measure.

Flowering period

In the upper Blue Mountains, *A. nortonii* flowers from November to early December, whilst the slightly more robust plants from Barrington Tops flower from December to early January. It is interesting to note that the flowers follow the sun throughout the day, which also is an added bonus when photographing plants in situ!

Pollination

There has been nothing published to my knowledge on the pollination of *A. nortonii*. I have noticed small black flies in numbers hovering around flowers from the Wentworth Falls population. Of the 15 flowers studied, two later produced capsules. The flower stem had elongated on these fertilized plants, obviously to assist with seed dispersal. I did not witness any pollinations or observe pollen on the backs of the flies. At Barrington Tops I noted no visiting insects, even though there were scores of flowers. It is known that the flowers are not self-pollinating. Perhaps *Adenochilus* shares the same (or similar) pollinator as some of the

small-flowered *Caladenia* species, such as the *C. carnea* complex.

Conservation Status

Whilst being rare and restricted in both distribution and habitat, most of the known populations of *A. nortonii* are secure in either National Parks or State Forest. It is difficult to spot out of flower and would generally only be under threat during the flowering period by indiscriminate collection of plants by enthusiasts.

It is not known in cultivation, but may succeed in cool climates if grown in *Sphagnum* moss, kept moist, well shaded and without extremes of temperature. Growers who have previously tried to cultivate this plant note that they decline quickly after collection, rotting being the main problem. I know of no efforts to raise this species from seed. *A. nortonii* is listed among the rare or threatened Australian orchid species.

Acknowledgements

There are a number of people I wish to thank, without whose assistance this article would not have been complete.

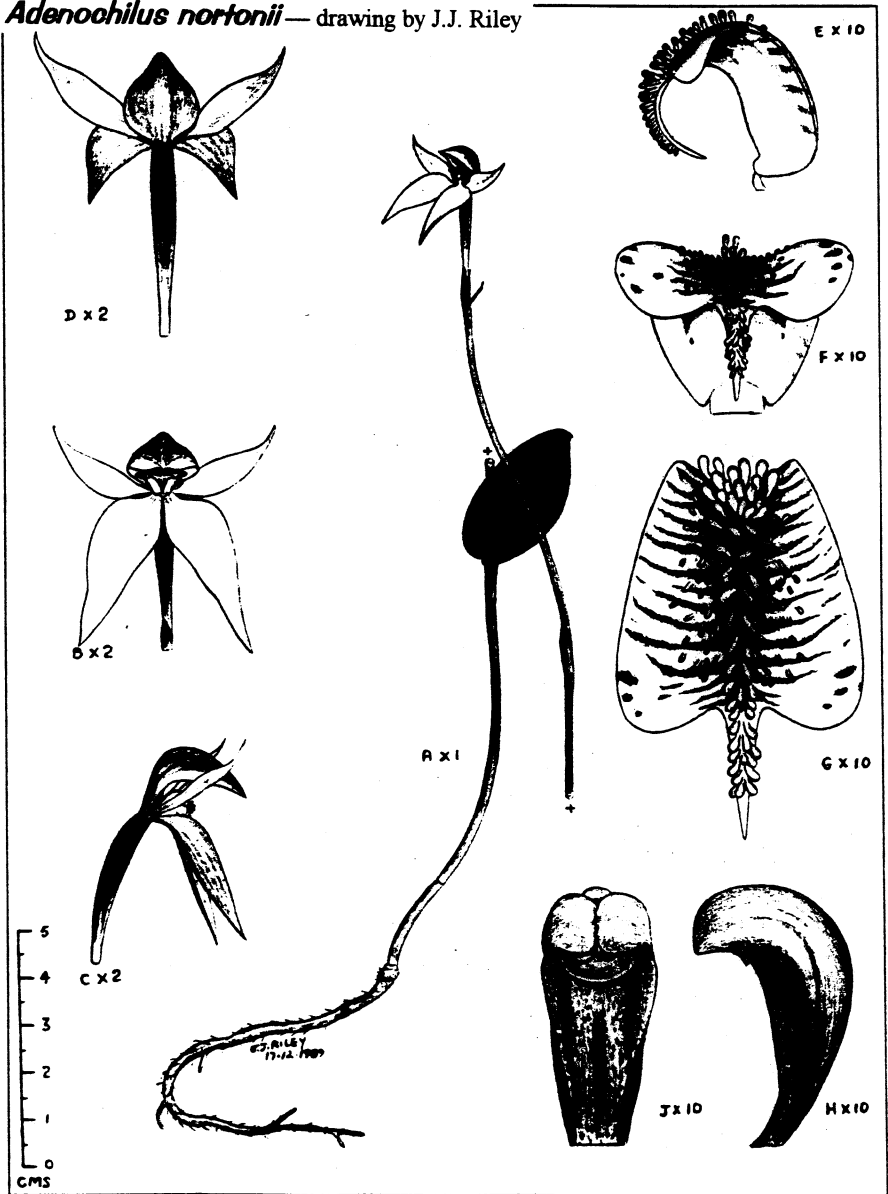
Jim Lykos and David Titnuss for company in the field on our 1995 trip to Barrington Tops. Jim is a very good guide, but a lousy weather forecaster — I think my sleeping bag is still drying out! David is well known as a skilled photographer and is also a fine cook in the bush, but whose jokes leave a lot to be desired!

John Riley for allowing the use of his fine colour drawing of *Adenochilus nortonii* (reproduced here in monochrome — Ed). John has also been most helpful, supporting and willing to pass on his vast knowledge of our native terrestrial orchids. Wal Upton and Steve Clemesha for data on additional locations in the upper Blue Mountains.

Ron Tunstall for details on the northern population of this species and Leo Cady and Brian Whitehead for first hand information on its southern distribution.

Close relations: orchids like ours

Adenochilus nortonii — drawing by J.J. Riley



***Adenochilus nortonii*, Barrington Tops - N.S.W.**

a. Plant. b. Flower front view. c. Flower side view. d. Flower rear view. e. Labellum side view. f. Labellum front view. g. Labellum top view flattened. h. Column side view. j. Column front view.

Drawing 17/12/1989 by J.J. Riley©.