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Contents

Editorials

The *Cyrtostylis* controversies

Cyrtostylis has been identified with *Acianthus* from time to time. Furthermore the two New Zealand species have been regarded as identical. What is the background?

1810: Robert Brown described *Cyrtostylis,* saying "This herb grows with *Acianthus,* with which it has a very strong affinity". He noted that *Acianthus* lacked column wings, while the column apex of *Cyrtostylis* was "dilated"; he gave *Cyrtostylis reniformis* (Australia) as the Type. [1]

1853: JD Hooker described *Cyrtostylis oblonga, C. rotundifolia* and a large version he called *C. macrophylla.* [2]

1860: Hooker included Brown's *C. reniformis* in his Tasmanian flora. He noted that *Cyrtostylis* is similar to *Acianthus* "but with the column dilated at the apex" (i.e. column wings). [3]

1864: Hooker included his *C. oblonga* and *C. rotundifolia* in the NZ Flora - admitting that his *C. macrophylla* was just a "large state" of the latter. [4]

1906: Cheeseman included *C. oblonga* in his NZ flora, remarked that Hooker's *rotundifolia* was "altogether like the Type" (*oblonga*), and reduced it to varietal rank with "I have been compelled to sink *C. rotundifolia* as a species. It differs in no respect except in the width of the leaf, and in several localities I have observed the two forms growing intermixed and gradually passing into each other". [5]

1906: Rudolph Schlechter wrote on the New Caledonian orchids, saying "The genus *Cyrtostylis* can in no respect be distinguished from *Acianthus.* The individual floral segments and the column of both genera are quite identical. The location of the leaf is immaterial, all the more so since in *Acianthus* leaves occur low down on the stem, whilst in less robust specimens of *Acianthus reniformis* Schltr. (*Cyrtostylis reniformis* R.Br.) and *A. oblongus* Schltr. (*Cyrtostylis oblonga* Hook f.) they may be found higher up on the stem". [6]

1946: Rupp and Hatch reduced *oblongus* to a variety of *A. reniformis*; they admitted that the NZ plant was smaller than *A. reniformis* "but apart from this and the oblong leaf we can find nothing to distinguish them". Hatch was convinced that Cheeseman was right in sinking *C. rotundifolia* Hook f. "In the Australian plant the leaf is by no means always reniform, but is often orbicular or even cordiform". [7]

1970: Moore lumped all variations on the names *oblonga* and *rotundifolia* into *A. reniformis*: "...considerable range in shape and size of the leaves in NZ and the differences from the Australian plants seem rather slight". [8]

1987 Jones and Clements reinstated the genus *Cyrtostylis,* the Australian and NZ species *C. reniformis* and the NZ species *C. oblonga* [9]. They listed the differences between the two genera in a table (reproduced here), and separated out a large (Australian) version of *C. reniformis* (*C. robusta*).

TABLE
Comparison of *Acianthus* R.Br. and *Cyrtostylis* R.Br.
(From Jones D.L. and M.A.Clements. *Lindleyana* 1988; 2: 156-160.)

Feature	*Acianthus*	*Cyrtostylis*
Leaf shape and colour	Leaf cordate to palmate, dark green above,reddish purple or green beneath	Leaf reniform to ovate, light to medium green or grey-green above, white and pellucid beneath
Leaf orientation	Held well above soil surface on a petiole	Ground-hugging and sessile
Leaf venation	Midrib + intramarginal vein, 1 pair of secondary veins not parallel to margin	Midrib + intramarginal vein, 3 pairs of secondary veins +/-parallel to margin
Sepals & petals	Sepals >> petals; tips terete, caudate, glandular	Sepals & petals of similar length; tips acute or obtuse, nonglandular
Labellum shape, surface, and glands	Lab. +/- cordate, concave or convex, basal glands tonsil-like, prostrate, or vestigial, surface smooth or papillate	Lab. +/- oblong, flat, basal glands erect, conical, with a flat central plate on lamina, surface smooth
Column features	Col. curved, conspicuously gibbous behind anther, wings absent or vestigial	Col. curved, not gibbous behind anther, wings prominent
Pollinarium	4 pollinia, attached directly to viscidium	4 pollinia, + viscid material, viscidium absent
Pollinia shape & texture	Clavate, hard, waxy	Boomerang-shaped, falcate, mealy
Symbiotic fungi (Warcup, 1981)	*Tulasnella calospora, T. cruciata*	*Sebacina vermifera*

I have known *C. reniformis* from around Wellington for a couple of years - pink to brickred flowers with round to somewhat elongated leaves, flowering in midSeptember, 1-3 flowers per stem. I gathered *C. oblonga* this year from north of Auckland, flowering in midAugust - light pink flowers, some quite devoid of pink pigment, up to 5 per stem, leaves short to long oval; they remained fresh in water for eight weeks, giving me plenty of time for a direct comparison between the two species.

I could detect no differences between the flowers, and the longest leaves of *reniformis* were at least as long as the shortest ones of *oblonga.*

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Caladenia in New Zealand

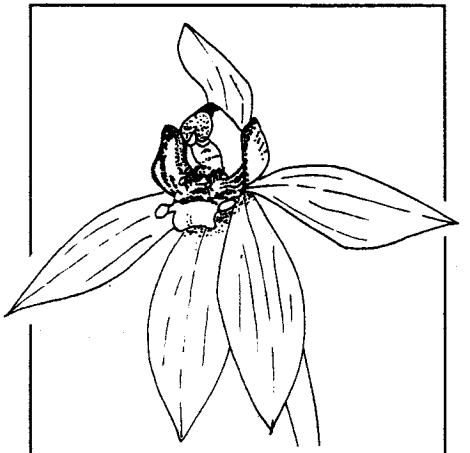
There has been a good deal of disagreement about the names of the New Zealand forms of *Caladenia.* The last classification was by Moore [1], who listed only *C. lyallii* and *C. carnea*, lumping all other previously described forms as varieties of *C. carnea.* Since then a number of commentators have pointed out differences within Moore's interpretation of *C. carnea* and *C. lyallii*, notably Johns & Molloy [2], Hatch & McCrae [3], Hatch [4], McCrae [5], and Gibbs [6, 7].

The most recent accounts are Australian - descriptions by Jones o what he calls the "small-flowered *Caladenias*" [8], and a more detailed taxonomy by Clements [9], where the lists of synonyms indicate the history of nomenclature for each species.

I have attempted to apply Jones and Clements to my current understanding about the New Zealand forms. Simply stated: there appear to be two species included in *C. lyallii,* one of them undescribed; and five or six species

included in Moore's interpretation of *C. carnea:* they are *C. alata, C. carnea* var. *carnea, C.* aff. *iridescens, C. minor* and *C.* "green column".

Caladenia alata R.Br.



Caladenia alata

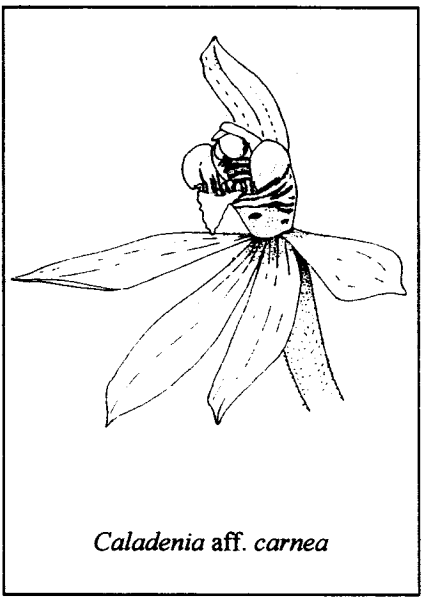
Syn. Caladenia minor JD Hook var. *exigua* Cheesem.,
Caladenia exigua Cheesem.,
Caladenia catenata (Smith) Druce var. *exigua* (Cheesem.) WM Curtis.

Leaf: 6cm x 3mm, linear, dark green. **Stem:** 10cm, thin. **Flowers:** 1-2, white/pink, 10mm across. **Dorsal sepal:** erect. **Petals and sepals:** 6mm, spreading, narrow, pointed. **Labellum:** *midlobe:* yellow-orange, recurved, single prominent callus at either side of base; *lateral lobes*: erect, embrace column, purple-banded; *calli:* stalked, clubbed, yellow, 2 rows nearly to apex. **Column:** red-banded. **Distribution:** Whangarei and northward. **Notes:** Robert Brown noted its distinguishing features in 1810,

> "Sepals and petals - very acute, the petals spreading, column and labellum striped, labellar glands in 2 rows, the base of the midlobe with a single tooth on either side, disc without glands. Leaf - linear."

Caladenia* aff. *carnea

Syn. Caladenia carnea R. Br. var. *bartlettii* Hatch,
Caladenia catenata (Smith) Druce forma *carnea* (R.Br.) Halle



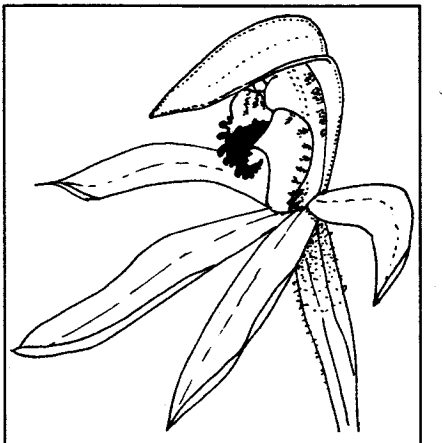
Caladenia aff. *carnea*

Leaf: 15cm x 4mm, linear, dark green. **Stem:** to 25cm. **Flowers:** 1-3, pink/white/greenish, to 20mm across. **Dorsal sepal:** erect to incurved. **Petals and sepals:** 9mm, flat, greenbacked, hairy. **Labellum:** white with red bars; ***midlobe:*** triangular, yellow, with short marginal teeth; ***lateral lobes:*** erect, column-embracing; ***calli:*** stalked, clubbed, yellow, 2 rows to bend, then often 4. **Column:** red-barred. **Distribution:** throughout NZ. **Notes:** (see plate 13 in Johns & Molloy [2]); this name still serves as a catchall for poorly understood forms. Clements listed five other Australian varieties, and Jones three, none of them reported from NZ. Jones wrote of *C. carnea* in Australia,

> "*C. carnea* is an extremely variable species which exists in a wide range of forms. Flower colour ranges from greenish through white to pale pink and bright pink. Plants range in habit from small to robust, in flower size, in width and orientation of the perianth segments and in features of the labellum. A detailed study of the complex is badly needed."

Caladenia catenata
Syn. Arethusa catenata Smith,
Caladenia alba R.Br.,
Caladenia carnea R. Br. var. *alba* (R.Br.) Benth.
This is a white Australian species: David Jones did not mention NZ in the distribution, and our white form seems to be something different. Clements says Brown's *C. alba* was a good name for it, but Smith (1804) had already described *Arethusa catenata* by the time Brown got into print (1810).

Caladenia* aff. *iridescens
Syn. Caladenia carnea R.Br. var. ***minor*** (JD Hook.) forma *calliniger* Hatch.



Caladenia aff. *iridescens*

Leaf: 10cm x 2mm, linear. **Stem:** to 40cm. **Flowers:** 1-2, 15mm across, bronze-greenish. **Dorsal sepal:** curved forward over column. **Petals and sepals:** spreading, upcurved, dark-backed. **Labellum:** white with a few red bars; ***midlobe:*** chocolate-coloured, recurved, edged with calli; ***lateral lobes:*** erect, column-embracing; ***calli:*** 2 rows almost to apex of midlobe, chocolate coloured, clubbed. **Distribution:** Iwitahi and north. **Notes:** Hatch reported Clements' discovery of NZ plants (from Kaitaia, collected by HB Matthews in 1920; and Huia, by

K.Wood, 1951) at Missouri [4]. Australian plants have 4 rows of granular-headed calli to the apex of the midlobe: McCrae has suggested that NZ plants may be different (with only two rows of calli, often not reaching the apex), and that Matthews' name *C. calliniger* may be appropriate [5].

Caladenia minor

Syn. Caladenia carnea R.Br. var. *minor* (JD Hook.) Hatch,
Caladenia catenata (Smith) Druce var. *minor* (JD Hook.) WM Curtis,
Caladenia variegata Colenso,
Petalochilus calyciformis R.Rogers,
Petalochilus saccatus R.Rogers,
Caladenia carnea R.Br. var. *pygmaea* R.Rogers.

Leaf: 5cm, threadlike. **Stem:** to 10cm. **Flowers:** single, bright pink, 8mm across. **Dorsal sepal:** curved forward, narrow. **Petals and sepals:** 8mm, blunt, upcurved. **Labellum:** broad, stiff; ***midlobe:*** yellow, small, triangular, not recurved but sticks straight out; ***lateral lobes:*** upright to incurved, column-embracing; ***calli:*** 2 rows, short and clubbed, not extending onto midlobe. **Column:** dark anther cap. **Distribution:** Whangarei, Wellington. **Notes:** a tiny plant whose flowers often do not open.

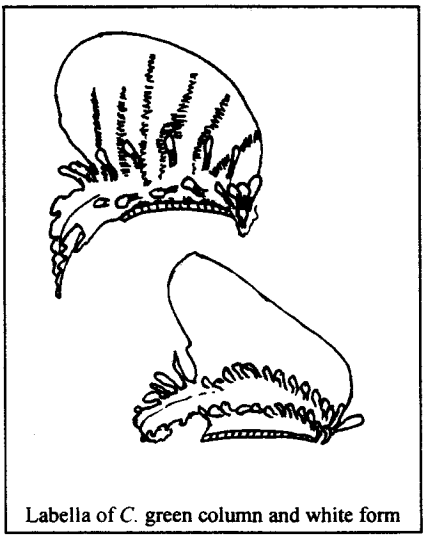
Caladenia minor: watercolour by Lydia Blumhardt, reproduced with permission from Auckland Museum

***Caladenia* "green column"**

Leaf: 12cm x 4mm, linear. **Stem:** to 20cm. **Flowers:** 1-2, white/greenish. **Dorsal sepal:** erect, slightly curved forward. **Petals and sepals:** white, downpointing. **Labellum:** red-barred; ***midlobe:*** sticks straight out, marginal calli to tip; ***lateral lobes:*** erect, column-embracing; ***calli:*** 2 rows, clubbed, stop short of midlobe. **Column:** red-barred. **Distribution:** throughout. **Notes:** McCrae noted differences from Matthews' *C. viridis*, of which he wrote "This species is easily recognised by the light green colour and very hairy stems. Plentiful in places north of Auckland, in forest or old Leptospermum scrub. Kaitaia - HBM; H.Carse" [5]; the species is illustrated in Johns & Molloy [2] (plate 11), and there is a line drawing in St George [10]. The white (or yellow) form illustrated in Johns & Molloy plate 12 may be a simple colour variant of this species, or may be an undescribed species;

flowers I have examined have a broader dorsal sepal, a less smoothly rounded anterior angle to the lateral lobes, a longer, more finely toothed and recurved midlobe, and greater numbers of labellar calli compared with *C.* "green column".

Caladenia "green column"



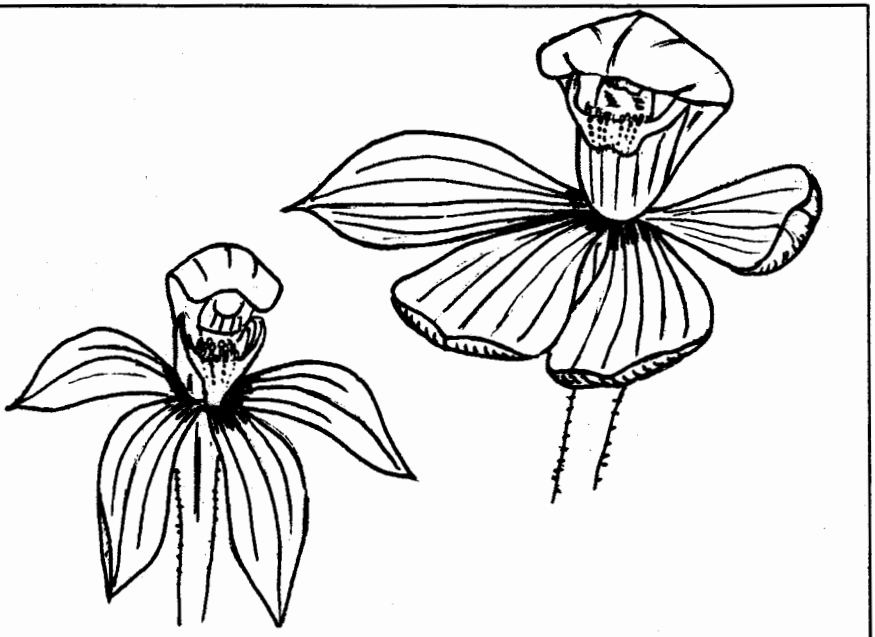
Labella of *C.* green column and white form

Caladenia lyallii
Syn. Caladenia alpina R.Rogers

Leaf: 20cm x 10mm, straplike. **Stem:** to 25cm. **Flowers:** 1-3, white, green-pink on outside, 30mm across. **Dorsal sepal:** broader than labellum, curved forward over column. **Petals and sepals:** 15mm, broad, oval, flat, the petals curved so that both sepals and petals point forward. **Labellum:** white with red spots and bars; ***midlobe:*** broad, pointed, recurved with toothed margins; ***lateral lobes:*** not so clearly distinct from midlobe as in other species, erect and column-embracing; ***calli:*** 4 rows to middle of midlobe, yellow, clubbed. **Column:** red-barred. **Distribution:** Iwitahi south. **Notes:** Gibbs has pointed out two forms [6], illustrated in [7] (t20); the larger of these matches plants from Otago, and the smaller is here tagged *C.* "aff. lyallii".

***Caladenia* "aff. lyallii"**

Leaf: 15cm x 4mm. **Stem:** 15cm. **Flowers:** single, white, 15mm across. **Dorsal sepal:** more upright than in *C lyallii*, broad. **Petals & sepals:** 10mm, straight, narrow, oblong, spreading. **Labellum:** ***midlobe:*** no red stripes, otherwise similar; ***lateral lobes:*** ; ***calli:*** 4 rows to middle of midlobe. **Distribution:** so far only reported from Iwitahi. **Notes:** this is a more slender plant than *C. lyallii,* with perhaps greater affinities with the other NZ species, except for the 4 rows of calli and the colour.



Caladenia "aff. lyallii" and *C. lyallii* (drawing by Max Gibbs).

Acknowledgement

I am grateful to Dan Hatch for translations and for quotes from Matthews.

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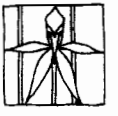


Insects observed pollinating *Thelymitra longifolia*

Sunday 11 December was a long, blue, warm, lazy early summer day and Kaitoke beckoned. The air buzzed with insects, the manuka sighed with the gentlest of zephyrs, the tuis sang challenges from the trees. And the trackside sparkled with the white stars of *Thelymitra longifolia* - with the blue or pink of an occasional *T. pulchella, T. hatchii, T. decora,* or even the odd pink *T. longifolia.* But wait - did the black column of that *T. longifolia* move?

A struggling insect had caught my eye - a small black gnat-like insect, face-to-face with the column, its mouth parts working in the cilia, its legs clutching the column, its abdomen against the stigma. I wrestled with my camera-bag: it finished wrestling with the column and departed. I walked on.

Up further I saw the same affair. The insect was going about its work with gusto - whether it was feeding, fighting, making love, or attempting rescue breathing, I couldn't tell (who can in these circumstances?), but this time I had the camera ready, and caught it just as it came up for air, with - bingo! - twin pollinia stuck to the end of its abdomen. It carried them briefly to another flower, but did not deposit them there, flying off before I could catch it. Further on I again watched this performance, took further photographs, and tried to catch the insect - but found my Vegemite jar a poor weapon, and watched ruefully as it flew away.

This all happened between one-thirty and two-thirty. The three *T. longifolia* plants involved differed little if at all from their neighbours - they certainly had grooved, upright leaves, less horizontal and straplike than usual. Their flowers were the normal size, perhaps a little bigger, and their post-anther lobes were coarser, more tuberculate than usual. Pollen granules were scattered over the flower parts, even as far as the back of the column. And the flowers were **scented:** not strongly, but quite distinctly scented. *(Hint: if your sense of smell isn't what it used to be, put a couple of flowers into a small wide-topped plastic bottle - I use a Maggi Chicken Stock empty - warm five minutes in your pocket, then poke your nose into the bottle and inhale).*

These insect-pollinated versions of *T. longifolia* are known from Northland, but not, as far as I am aware, from this far south; and I have not read any record of insect-pollination actually having been observed.

At least I had not until Bruce Irwin wrote on 1 January, "Oddly enough I probably saw a similar performance on the Hapuakohe Range (in late November). *What I presumed to be a black native solitary bee was clasping the column of a flower. It remained there for several seconds but flew off when I tried to get a closer look. The bank beside the Thelymitras was riddled with holes of these solitary bees. One emerged while I was looking. A plant I brought home has set seed very freely. Are the bees (?) particularly good pollinators? or are the flowers selfing? or are both mechanisms working?*

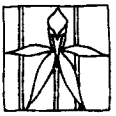
The photographs I took are not of the highest quality. If you think orchid macrophotography is difficult you should try photographing insects in the wild. Greg Sherley of DoC in Wellington is pretty sure that my slides

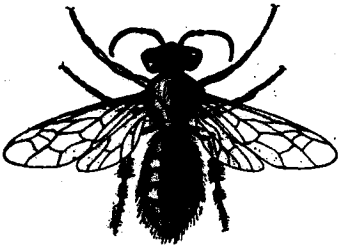
show a native bee, probably *Leioproctus fulvescens.*

Cheeseman noted that as the column lengthens, the anther-cap rises with it, leaving the pollinia stuck to the back of the stigma. In the flowers I examined that's exactly where they were, or else they were missing, along with the rostellum. Where the pollinia were present, they could be removed by touching the rostellum.

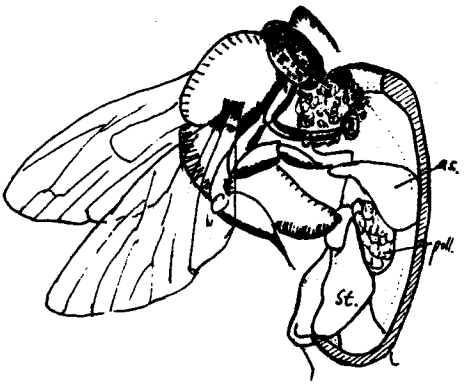
An insect embracing the column would only have to touch the rostellum with the tip of its abdomen in order to remove the pollinia intact and carry them off to another plant: I saw that happen. But a vigorously moving insect, engaged in one of the activities listed in paragraph 3 above, could as easily break up the pollinia, and leave pollen fragments scattered about the flower parts, including the stigma.

Two days later the sun returned after a brief southerly; the flowers were all closed and fertilised, for all the world as if they had been self-pollinated.

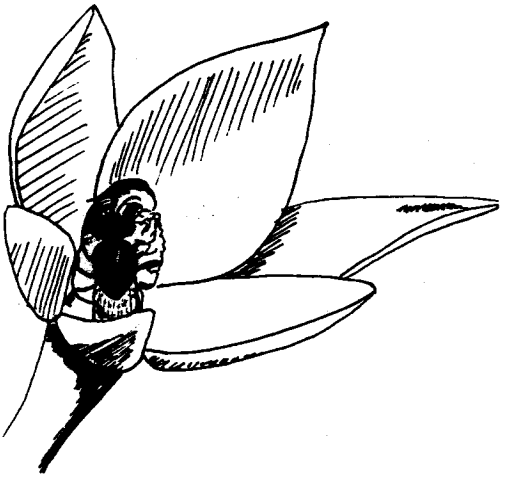




The native burrowing bee, *Leioproctus fulvescens*



This is probably how the insect removed pollinia from *Thelymitra longifolia*

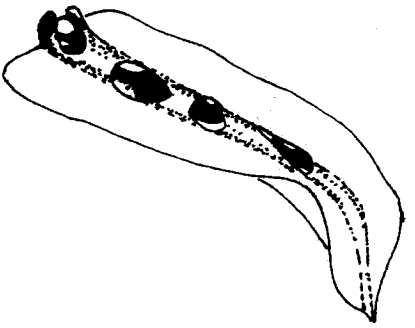


The insect on *Thelymitra longifolia*

Notes

❀**Error in *NOGJ* 52:** *Thelymitra aemula* was left off the list of species.

❀**John Dodunski** wrote (13 September), "I must ask if you have ever noticed the nectar flow from the labellum of *Cyrtostylis reniformis*. I have a number of plants growing at home in pots and I noticed the labellum glistening with liquid. I tasted this liquid and found it very sweet. I have never heard of nectar flow in any of our native orchids before".



Nectar droplets on the labellum of *Cyrtostylis reniformis*

As a matter of fact I have noticed the nectar of *Cyrtostylis reniformis* this year too. **Thomas Cheeseman** noted it over 100 years ago and wrote on the nectar of *Acianthus sinclairii* and *Cyrtostylis oblonga* in 1874: his paper answers John's question, and is reproduced in the Historical Series in this issue. Cheeseman thought the nectar was secreted at the base of the labellum and "trickled down each side of the midrib". My observations suggest that the nectar is too sticky to run, but is formed in beads, presumably from glands along the length of the labellum, between the labellar ridges - *Ed.*

❀Pat Enright wrote, "On 27 August 1994 Olaf John and I were botanising along the coast at Cape Turakirae looking for native mistletoes and the rare shrub *Muehlenbeckia astonii.* We noted *Microtis unifolia* and *Thelymitra longifolia* (not in flower but the leaf shape was indicative and it is the only *Thelymitra* recorded from the area). This *Thelymitra* is quite tolerant of coastal conditions and grows in cracks and crevices in the rocks. I have seen it right down to the splash zone on St Martin's Island in Otago harbour.

"During the search we also found *Dendrobium cunninghamii* with a very tight growth habit due no doubt to the exposed site and the windy conditions, and *Earina mucronata.*

"A check of the literature available on this section of the coast provided a paper by R.Bagnall in *NZ Journal of Botany* 1975, Vol 13 with a comprehensive species list, and a more

recent one drawn up by AP Druce (July 1994). The notable thing was the orchids we had not seen. They were *Acianthus sinclairii, Caladenia carnea* agg., *Corybas rivularis, Earina autumnalis, Prasophyllum colensoi, Pterostylis banksii.*

"A further visit on 16 October yielded *Corybas macranthus* in flower on a steep wet bank under a karaka grove between Barney's Hut and Windy Point. Just above this bank *Pterostylis graminea* was just coming into flower.

"8 October, Puffer track: *Corybas oblongus* was just coming into flower as was *Pterostylis graminea. Aporostylis bifolia* was in leaf only. There were several species of *Thelymitra*, some in bud but most showing only leaves.

"15 October, Butterfly Creek Track: *Corybas oblongus* (no flowers) only a small patch. *C. macranthus* with some lovely big flowers, and *C. trilobus* (no flowers). *Pterostylis banksii* was coming into full flower with one or two flowers fully open. *P. alobula* was in seed and was found in three places ranging from dry banks under scrub to a fallen log in a much damper situation. *Acianthus sinclairii* was only showing seedgeads, on a clay bank under open beech forest. Two species of *Thelymitra* were seen in bud.

"22 October, up Shingle Fan No.3 on the main road between Kekerengu and Kaikoura: This area is very colourful this time of year na in full flower. A walk up the creek bed and onto the ridge tops yielded a lot of orchids but not much variety. *Pterostylis banksii* was in flower and *P. alobula* was found in seed. A few small patches of *Corybas macranthus* were just coming into flower and *C. trilobus* with leaves that were scarcely trilobed on most plants had neither flowers nor seed. *Thelymitra* was present on drier banks but scarcely in bud.

"23 October, Ure/Waimea river valley and up Mt Ben More: this was a fascinating area both botanically and geologically. There is a very narrow gorge to negotiate called Sawcut Gorge where the river has made a deep incision in the limestone. *Pterostylis banksii* was once again found in flower as was *Corybas macranthus. C. orbiculatus* (*C.* "short tepals") was just past flowering but a couple of plants still had flowers showing. As with the previous day I saw no epiphytic orchids at all.

"On Mount Ben More just before leaving the beech forest at around 3000 ft *Chiloglottis cornuta was growing on an old log and not far away was a small patch of C. trilobus* whose flowers were without any red in them at all.

"Other items of note were the *Ranunculus insignis* which was in full flower on the bluffs, and an uncommon fern *Pleurostylis rutifolius* which grew in cracks in the limestone in one or two places.

"29 October Taita Scientific Reserve: this foray was to look for *Pterostylis tasmanica* and *P. nana* which were listed in Tony Druce's paper on the reserve. We were disappointed by not finding either species but did see some very nice flowering specimens of other species.

"*Pterostylis graminea* was very

common and in full flower. *P. banksii* in contrast was found in only one spot near the bush edge. *P. alobula* and *P. trullifolia* were in seed, the former much more common.

"*Corybas oblongus* was found in isolated patches with a few flowers, but one notable patch had cream flowers. Near this patch were the only plants of *Caladenia minor* that we saw - unfortunately not yet in flower. In a grassy clearing *Thelymitra longifolia* and *Microtis unifolia* were in bud. *Earina mucronata* and *Chiloglottis cornuta* were noted.

"This reserve is not open to the public and permission must be obtained before going in. The tracks are now a bit overgrown but still passable. Our trip was rather rushed and I am sure that a more thorough search especially under the manuka may produce the elusive *Pterostylis*, although Tony Druce advises that most of the suitable habitat may now have been lost to the gorse."

❀ **William Colenso** was at Turakirae Point in 1845 and wrote in his *In memoriam* on *Earina autumnalis* there:

> "... at Turakirae I again detected this Orchideous plant... in stony hollows among crags; and growing with it a closely allied genus, *Dendrobium* (perhaps *D. cunninghamii,* but with undeveloped flowers and apparently distinct,) both wearing the same low stunted caespitose grassy appearance, but very healthy. At first I thought it must be a new species, as I had never before found it off a tree, where it usually grows long".

In 1883 he described *Dendrobium lessonii* because he concluded that this stunted *Dendrobium* was indeed a new species - his description is reprinted in the Historical Series in this issue. Cheeseman could not agree that *D. lessonii* (Col.) was at all different from *D. cunninghamii* and lumped them in 1906 - *Ed.*

❀.Barbara McGann "had a scout around Shag Point (north Otago) in midNovember and came across a dozen *Caladenia catenata* (wonderful pink flowers, stems 7-8cm), *Corybas macranthus* (flowering well), *C. rivularis* I guess (short green 'candle-and-wick' seedhead just above leaf), *Thelymitra pulchella* (one in full flower), *T. longifolia* (flowering with five 3mm, translucent orange-coloured 'insects' dashing around inside one flower), and other *Thelymitras* growing on."

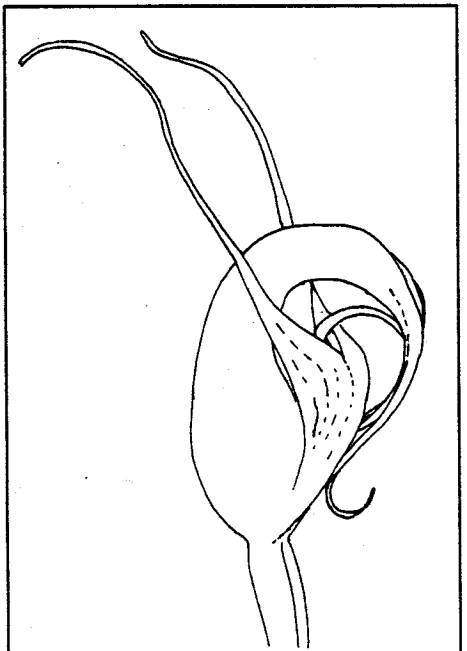
The pink Caladenia would now be called Caladenia aff. *carnea; - all the Otago plants of Corybas rivularis ssp. I have seen were identified by Bruce Irwin as Corybas "A"; the 'insects' inside T. longifolia is an interesting observation - see editorial above - Ed.*

❀ I was driving through Molesworth Station in early January and was mortified to see the extent of the *Hieracium* weed menace: the hills looked blue and bare. On the flats a few gentians and a lot of *Prasophyllum colensoi* were the only plants apparently able to pierce the dread carpet.

Later at Jollies Reserve near Hanmer I

saw *Thelymitra decora* - 10-15cm plants with one or two widely open flowers, many without spots, and a few lacking tubercles on the post-anther labe of the column: similar to other South Island forms from Shag Point and reported from Banks Peninsula by Brian Molloy.

On 5 January at Arthurs Pass *Pterostylis oliveri* was in full flower, and it was interesting to see the large South Island form of *Caladenia lyallii* at 1373 metres altitude near the Temple Basin huts - it is bigger than either of the Iwitahi forms (see editorial in this issue).



Pterostylis oliveri

On 10 January there was no sign of *Yoania australis* at its site near Collingwood.

On 12 January I walked the first day of the Abel Tasman National Park, and renewed my acquaintance with Dumont D'Urville and his crew who were there in 1827 - it was in Tasman Bay that Pierre-Adolphe Lesson first found and drew *Diuris (Orthoceras) novae-zeelandiae,* and the plants are still there aplenty. In Lesson Stream I saw a seeding colony of *Corybas rivularis,* but Lesson did not find it there in 1827 - the only other orchids he mentioned were *Thelymitra longifolia, Dendrobium cunninghamii* and *Earina autumnalis.*

❃.Cynthia Aston wrote, "On 30 November four of us walked up the Waihaha track (from the Western Access Rd) to check on various orchids, particularly the effects of a long cold winter and a late spring. Strong winds had left the area crackling dry. However the orchids seem if anything stimulated in their flowering. *Pterostylis banksii* were a mass of perfect blooms. *P. foliata* showed only small buds: this species is not discriminating in its choice of home - a scrubby track corner with very loose soil which slips in dry weather and washes down in wet.

"We were anxiuos to check on *Calochilus robertsonii* (unofficially called the bearded lady) previously found on one of the rock outcrops along the track and in a couple of other localities. But the lady had walked! Two new findings, one a group of several fresh-looking beautiful plants in flower almost on the track.

"Once the sun came out there were plenty of *Thelymitras* open, mostly *T.*

longifolia but also a blue with dotted petals (*T. decora?*)

"A colony of *Corybas oblongus* was looking tired but still about to flower.

"Back home in Taumaranui I have for the first time in thirty years found a *Gastrodia cunninghamii* in flower at the edge of my drive. Previously they have appeared under tall kanuka, but this one (2ft tall, about 30 fls) was in association with ivy, English oak and a large White Pearl rhododendron."

❀.Mrs LP Chrystall wrote, "Only found 30 *Gastrodia minor* under my pines this December".

❀.The 1994 Iwitahi conference was a great success - a credit to all who participated.

The papers varied from the scientific and esoteric to the artistic and colourful; we were educated and entertained by a fine mix of speakers on a fascinating array of topics. We met and chatted informally on an even wider range of subjects. The orchids were there as usual, justifying the whole event.

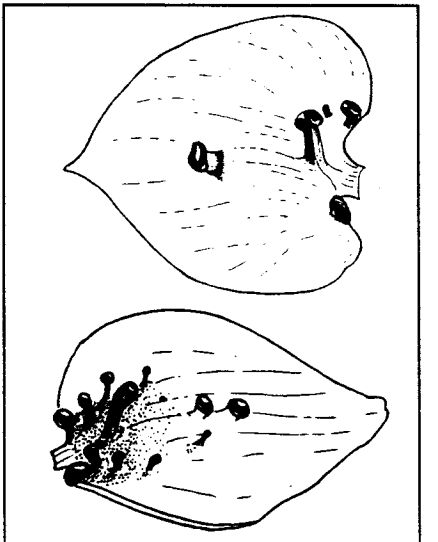
The organisation was subtly but expertly orchestrated by the Taupo Orchid Society members, and we thank them.

My special thanks to Trevor Nicholls for being the driving force, for the huge effort I know he put into this event, and for his report in this issue.

The new colony of *Chiloglottis valida* appears not to have arisen from the old one. Although plants originating from the first Iwitahi colony do set seed, there is no hint of anything more than vegetative spread around known colonies. Furthermore the labellar calli on all plants from the first colony show a broadly similar pattern, but the labellar calli on the plants of the new colony are quite different. In the midline of the labellum there is still the stalked main central gland near the base; but the broad sessile apical gland has been replaced by two similar midline structures, and there are four pairs of lateral glands instead of one or two. The pattern in Australia is just as variable according to Jones [1].

Reference

1. Jones DL. New taxa of Australian orchidaceae. *Chiloglottis valida* D.Jones. *In* Australian Orchid Research 1991; 2: 43-4.



Labella of *Chiloglottis valida*: old colony above and new colony below

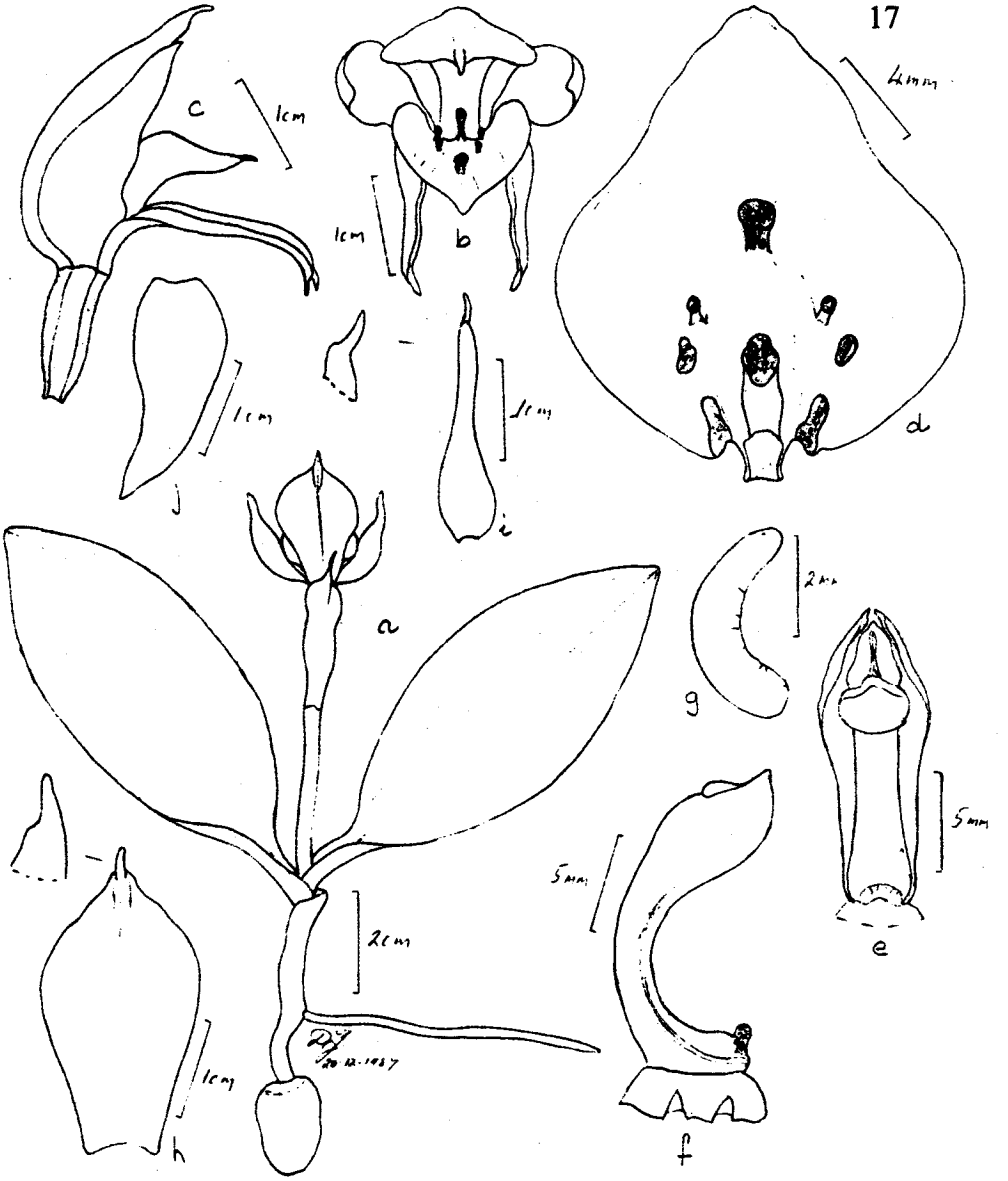


Fig. 54. *Chiloglottis valida* (Ginini Flats, ACT, D. L. Jones 5453), a) plant, b) flower from front, c) flower from side, d) labellum from above, e) column from front, f) column from side, g) pollinium, h) dorsal sepal, i) lateral sepal, j) petal.

(From Jones DL. New taxa of Australian orchidaceae. *Chiloglottis valida* D.Jones. *In* Australian Orchid Research 1991; 2: fig 54.)

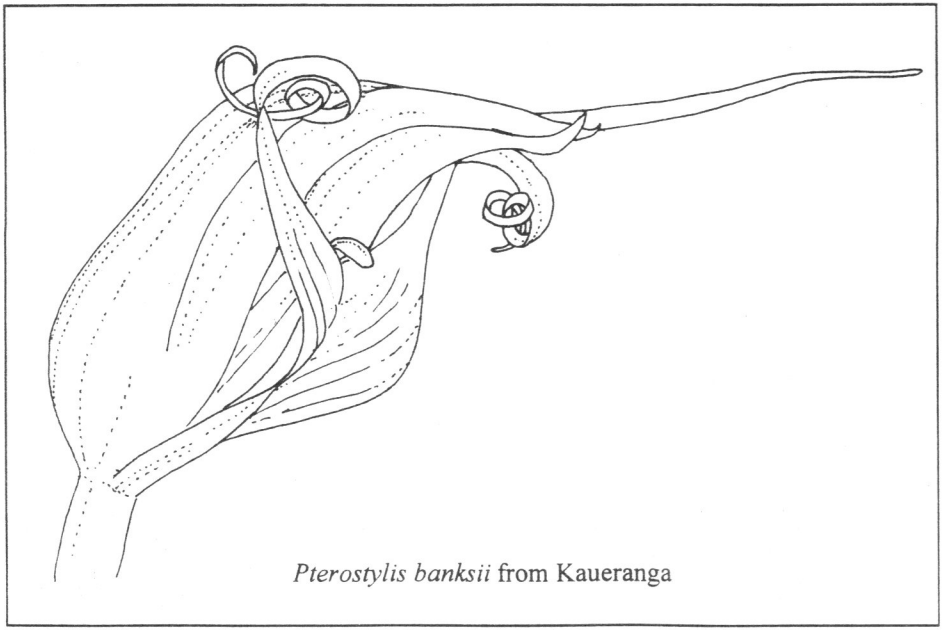
❀.Ken and Cath Wilson wrote (28 December), "We've had a wonderful time around Haast Pass falling out of the car into groves of orchids.

"Yesterday we found a colony of *Adenochilus gracilis* with a completely white labellum (perhaps 12 plants) growing on the Pass itself. A few feet away several flowers showed very slight touches of red near the base of the labellum, while other flowers up the track were quite normal in colouring.

"Today we found a very large colony of what looks like *Pterostylis montana,* up to 80 or 90 plants in places, near Lake Moeraki. Most were seeding, but among the open flowers there were groups where the lateral sepals were tightly curled over.... The flowers themselves were fresh-looking and otherwise undamaged and robust, so I doubt that this would be sun-damage. Have you seen this before?

"PS the weather down here is quite unseasonal - brilliant blue skies, with occasional dramatic clouds."

The weather down there is always like that. Yes, Pterostylis montana's lateral sepals are usually flat (not rolled into a filament), so they often do curl forward. Mind you, the lateral sepals even of Pterostylis species that are normally rolled, are sometimes flat and curled forward - as in a pale specimen of P. banksii I saw at Kaueranga near Thames: illustrated here - Ed.



Pterostylis banksii from Kaueranga

Orchid artists

Helen Kirkland Dalrymple (1883-1943)

The Otago Girls' High School magazine noted at her retirement in 1938 -

"Miss Dalrymple is remarkable for the wide variety of her gifts. She played the viola in the School Orchestra; her delicate painting and drawing were always at the service of the School; she is devoted to outdoor life, and has become an authority on certain forms of plant life in New Zealand . . . . Just lately she has published an attractive little book - on "Orchid Hunting in Otago, New Zealand" daintily illustrated by herself."[1]

A watercolour of *Corybas macranthus* still hangs with a group of her botanical watercolours in the Deputy Principal's office at the School. It was published along with five other colour plates and a number of pen sketches of orchids in her book, [2] the first of the New Zealand local orchid publications.

Helen Dalrymple was the younger daughter of the Rev A.M. Dalrymple of Puerua, South Otago. She won the Junior Scholarship from Waitopeka School in 1896, the Senior Scholarship from Balclutha District High School in 1898, and attended Otago Girls' High School 1899-91. [3]

There she was taught by G.M. Thomson, the respected botanist whose papers on the fertilisation of native orchids appeared in the *Transactions of the N.Z. Institute*, and who was a founder of the Portobello Marine Biological Station on the Otago Peninsula. She was taught art by Fanny Wimperis, and gained a certificate in easel drawing in 1890. She went on to a B.A. at Otago, having won a women's scholarship in 1902.

After some years in Winton and Napier, she joined the staff at Otago Girls' High School in 1913, and for years taught botany there. She is remembered by one of her ex-pupils as an enthusiast, a gentle person with great strength of character. In 1915 she was one of those responsible for reviving the Dunedin Naturalists' Field Club, and she was its president for several terms. The minutes of the meeting of 19 April 1943 - three days after her death - pay tribute to her -

". . . she had been the life of the Club and it is largely owing to her enthusiasm and activities that the Club enjoys its present prosperity"

Her legacy to the Club helped fund the 1962 reprinting of its booklet *Native plants of Dunedin and its environs*. In addition to her orchid book, Miss Dalrymple wrote *Fungus hunting in Otago, New Zealand*, with her own watercolour illustrations.

The Field Club minutes of 30 November 1936 record an outing to Patmos Avenue in the Leith Valley, Dunedin -

". . . Rare and beautiful native plants

grow in profusion in idyllic surroundings. Of these plants pride of place is given to the rarest, the epiphytic orchid *Sarcochilus adversus*, which in this favoured spot grows on three distinct host trees, the broadleaf and the yellow and white mapou or lemonwood . . . . The *Sarcochilus* was examined carefully, the bunchy tufts of purple spotted leaves, waxy blooms of yellowish green and withering whitish aerial roots adhering to the bark making a very quaint and interesting study." [4]

Drymoanthus "spotted leaf" has now been formally described as *D. flavus* (see pp29-35 in this issue). In 1990 I found a single plant in the same area of bush at Patmos Avenue.

References

1. Retirement of Miss H.K. Dalrymple. *Otago Girls' High School Magazine,* 1938.
2. Dalrymple H.K. *Orchid hunting in Otago, New Zealand.* Dunedin, Coulls Somerville Wilkie, 1937.
3. Obituary, Miss Helen K. Dalrymple. *Otago Daily Times,* 19 April 1943.
4. Dunedin Naturalists' Field Club. *Minutes,* 30 November 1936. Hocken Library.

Corybas macranthus, watercolour by Helen Dalrymple

Dorothy Jenkin (1892-)

Dorothy Venning was born in London. She attended the Royal College of Art before and during World War I, and took a special interest in floral art. She and fellow student Thomas Hugh Jenkin ARCA were married in 1918. They came to New Zealand in 1922, with family, and took up a position at the Dunedin Art School; there were commissions for work in Dunedin, and they exhibited at the Dunedin and South Seas Exhibition in 1925.

In 1930 they moved to Invercargill where Mr Jenkin became head of the Art Department at the Technical College. Dorothy Jenkin taught art at Southland Girls' High School and Gore High School. She was a foundation member of the Invercargill Art Society and exhibited often there; still lifes were a specialty. She was fully involved in the acquisition of Anderson Park as Invercargill's Art Gallery.

In retirement in 1952 she moved to Stewart Island, and so began her interest in native orchids and fungi. During the nineteen-sixties she produced a series of watercolours of these for the Rakiura Museum which has made prints (including *Corybas acuminatus*) of these

Corybas acuminatus - watercolour by Dorothy Jenkin

available to the public,.

Her paintings are skilful, delicate illustrations, much sought after by visitors to the Island. Among them is a painting of the undescribed *Gastrodia* "long column", and I have another of *Drymoanthus flavus:* she was a keen observer.

I am indebted to Michael Jenkin for biographical details.

Close relations

Corybas pictus

from Chan CL, Lamb A, Shim PS, Wood JJ. *Orchids of Borneo* Vol 1. Sabah Society and Bentham Moxon Trust, Kew. 1994

Historical reprints

Cheeseman TF. On the Fertilization of *Acianthus* and *Cyrtostylis*. *Transactions of the New Zealand Institute* 1874; 7: 349-352.

1. *Acianthus sinclairii.*

In examining the fertilisation of this plant, we do not find contrivances so remarkable and unique as those that obtain in *Pterostylis*, or in other of the New Zealand Orchids; on the contrary, the mode employed is simple, and presents few features of interest. Yet, if the completeness of any method of fertilisation is to be judged of by the results obtained, as undoubtedly it should be, we must regard that of *Acianthus* as one of the most perfect of the many different modes in use among our Orchids.

The flowers, varying in number from one to twelve, are minute, and of an inconspicuous appearance. The lip, which is horizontally spread out in front of the flower, or slightly deflexed, is ovate-lanceolate in outline, and greatly concave, so as to form a kind of bucket. At its base it is furnished with two large glands, and the margins and point are also plentifully studded with minute fleshy papillæ. The column is somewhat curiously shaped. At first it is erect, but towards the summit suddenly arches over the lip, and is much thickened and expanded. The anther is terminal, two-celled, each cell possessing two pollinia, which are deeply bilobed, so as to resemble a horse shoe in shape. The stigma is a deep circular hollow situated just below the anther; and, by the arching of the upper part of the column, hangs directly over the lip. The rostellum is placed on its upper margin. It consists of two triangular projections, which at first are cellular, but ultimately resolve into masses of viscid matter, covered with an extremely delicate membrane. As the flower expands, the connection of these projections with the rest of the column becomes very slender, so that at last they can be detached by a comparatively slight touch, leaving the upper margin of the stigmatic chamber quite plane.

Long before the flower opens, each lobe of the anther splits gradually from base to apex, allowing the included pollinia almost to touch the upper part of the rostellate points. The pollinia then emit a number of excessively delicate thread-like projections, which reach the rostellum, and become firmly attached to it. So that, in a fully expanded flower, each set of pollen-masses is quite free from its anther cells, but they are firmly attached by their bases to their respective rostella, neither of which can be removed without bringing away the pollinia.

The glands at the base of the lip secrete nectar, which is stored up in the cavity just in front of them. From this circumstance alone we might surmise

that the flowers would be frequently visited by insects, and a little observation soon shows this to be a fact. On a warm sunny day it is almost impossible to watch a bed of this Orchid for any length of time without seeing numerous Diptera flitting from flower to flower, busily engaged in robbing them of their sweets.

If we now call to mind the manner in which the column arches over the lip, we can easily see that an insect crawling into the flower to get at the supply of nectar can hardly avoid touching one of the points of the rostellum, ranging almost directly over it; if it did so, the delicate exterior membrane would be at once ruptured, and the viscid mass firmly glued to the insect's back. Thus, on withdrawing from the flower, the visitor would carry away with it not only the portion of the rostellum which it had touched, but also the attached pair of pollinia. These (from each pollinium being nearly subdivided into two) would form four little projections standing rigidly erect on the back of the insect; and consequently, when conveyed to another flower, can hardly fail to strike the overhanging stigmatic chamber, which is sufficiently viscid to detach a portion, at least, of the pollinia from the body of the insect, thus ensuring the fertilisation of the flower.

As I have several times seen insects remove the pollinia, and on one occasion also seen a pollen-mass left on the stigma, there can be little doubt that fertilisation is conducted on this plan. That insect aid is absolutely required is proved by the fact that the pollinia remain in their cells, and never reach the stigma, when the plant is covered up or allowed to expand its flowers in a room. But, under natural conditions, the flowers are so frequently visited that the pollinia are generally removed directly after the opening of the blossoms; while the large proportion of capsules produced is good evidence of the completeness with which the visitors perform their duties. Out of eighty-seven flowers, borne on fourteen plants, no less than seventy-one matured capsules, and of those that had failed to do so, many were imperfect ones situated at the summit of the panicle, and probably incapable of producing seed. Another set, from a different locality, had borne forty-seven flowers, of which no less than forty-four had ripened capsules.

The fact that almost every perfect flower produces a capsule, is in remarkable contrast to what occurs in several other genera of our Orchids. For instance, *Pterostylis* is fertilised on a plan much more complex, and the co-adaptation of the various parts of the flower is so complete that almost every insect that fairly enters the flower must remove the pollinia, which is not the case in *Acianthus*. Yet, from some reason, probably from the want of sufficient attraction, the flowers are comparatively seldom visited, and consequently few capsules produced. In my account of the fertilisation of this genus, (Transactions of the N. Z. Institute, Vol. V, p. 356.) I have

estimated that about one quarter of the flowers produce capsules; but from subsequent observations I am now convinced that the number is much less. *Corysanthes* offers a case of imperfect fertilisation even more singular. In all the species the proportion of capsules produced is very small, and large patches can often be found that have failed to mature a single one. As an illustration, a bed of *Corysanthes triloba*, in a favourable situation for the visits of insects, expanded, during the last season, over two hundred flowers: yet of this large number only five succeeded in ripening capsules. We must be cautious, though, in assuming that the imperfect fertilisation of these plants is of much real disadvantage to them. In many districts *Pterostylis trullifolia* is quite as abundant as *Acianthus*; while the less general distribution of the species of *Corysanthes* is probably due to their organization not being so well adapted to a variety of conditions and habitats, rather than to the scarcity of seed produced. In their special localities they are often abundant.

2. *Cyrtostylis oblonga.*

The great resemblance that this plant bears to *Acianthus*, induced me to suppose that its fertilisation would be conducted on the same plan, and this appears to be the case. We find in *Cyrtostylis*, as in *Acianthus*, the lip horizontally spread out, secreting abundance of nectar; the column arching over it; the points of the rostellum hanging downwards, with the pollinia firmly fastened to their upper margins; together with other contrivances, all apparently co-ordinated, so that an insect, having once entered the flower, can hardly avoid attaching itself to the pollen-masses, and removing them on its departure.

On comparing the flowers of the two plants, we at once find a difference in the structure of the lip. In *Acianthus* this organ is concave, for the purpose of storing up nectar to serve as an attraction for insects: in *Cyrtostylis* it is narrow, and quite plain; but the same end is attained by allowing the nectar slowly to trickle down each side of the midrib. The secreting glands at the base of the lip are much smaller than in the former species, while the papillæ on the margins and points are totally wanting. The column agrees with that of *Acianthus* in most features, but is broadly winged on each side. This may be of use as a protection to the stigma, or perhaps the projections serve as guides for the proper withdrawal and insertion of the pollen-masses, No difference worth mention is found in the stigma, or rostellum; and the mode of attachment of the pollinia to the latter organ appears to be precisely the same in both plants. In the shape of the pollen-masses themselves, however, we find a marked divergence, for instead of being nearly subdivided, as in *Acianthus*, they are simply falcate in shape. They are laterally much compressed, and extremely friable.

Notwithstanding the minuteness of the flowers, they are frequently visited by insects, chiefly minute species of Diptera. The pollinia, however, are not removed with the same regularity and precision as in *Acianthus*, nor is such a large proportion of capsules produced. I find, though, that specimens from some localities give very discordant results in this respect, although as a rule there can be no doubt that the proportionate number of capsules matured is much less thon in *Acianthus*.

I have made no observations on the fertilisation of the only other species of *Cyrtostylis* (*C. rotundifolia*) native to New Zealand. The difference between the two plants is so slight (if indeed it is sufficient to allow a specific distinction being maintained) that I can entertain no doubt but that, on investigation, the mode of fertilisation will be found to be the same for both species.

From **Colenso W. Descriptions of a few new Indigenous Plants.** ***Transactions of the New Zealand Institute*** **1883; 15: 321-339.**

Dendrobium lessonii, sp. nov.

Plant epiphytal and terrestrial; an erect and pendulous, diffuse slender shrub, often much-branched; *branches* 6 inches to 4 feet long, wiry, terete, hard, and brittle; main stems $\frac{1}{8}$ of an inch in diameter; colour of stems and branches, some darkish-umber-brown, and some bright yellow, glossy and horny, ringed with dark scar-like joints, $\frac{1}{4}$–1 inch apart, under the dry scarious sheathing leaf-bracts, which long remain. *Leaves*, alternate, $\frac{3}{4}$–$1\frac{1}{4}$ inch long, 1–2 lines broad, 3–6 lines apart, sub-linear-lanceolate, or sub-ovate-acuminate, broadest near base, sessile, spreading, often falcate and twisted, coriaceous, semi-rigid, smooth not glossy, pale or yellowish green, margins entire, obscurely 10-nerved, midrib sunk and obsolete, somewhat concave, suddenly slightly thickened on the under side 1–3 lines from apex, with a slight corresponding notch in each side, tip obtuse, vaginant, sheaths

truncate, longitudinally and regularly striated, and finely corrugated transversely. *Flowers*, white, membranaceous, few, scattered, usually 2 (sometimes only 1, very rarely 3) in a short loose raceme on a stoutish erect peduncle shorter than the leaves, always bursting at a right angle from the internode in the branchlet, and generally alternating with the leaves, never axillary nor opposite to a leaf; peduncle glabrous, shining, with 2–3 rather distant sheathing bracts, truncate and obtuse; pedicels, 2–3 lines long, bracteoles sheathing, acute; *perianth* nearly 1 inch in diameter, open, expanding, segments of equal lengths; *sepals*, ovate-acuminate, 5-nerved, margins entire, upper one the smallest, the 2 lateral ones with a very small round spur at their base; *petals* recurved, oblong-ovate, obtuse, with a minute point, margins also entire; *labellum* 3-lobed, the 2 lateral lobes small, oblong, obtuse, conniving, margins finely notched; middle lobe large, longer than broad, veined, sub-rotund (or sub-panduriform or broadly obovate), apiculate, margin sub-crenulate with a slight notch on each side, sides conniving, and 4 longitudinal elevated and shining green (or yellow-green), lamellæ near the base, which are bluntly toothed or crested; *column* slightly winged near apex, light green; *pollen masses* yellow. *Ovary*, 2–3 lines long, green, shining, obscurely striate.

Hab. In forests, Norsewood, Hawke's Bay district, North Island, high up in the forks of pine trees (*Podocarpus spicata*), and sometimes on the ground in dry stony hills under *Fagus* trees, flowering in November; 1879–1882; also among rocks near the sea at Cape Turakirae (the south head of Palliser Bay), 1845–6: *W.C.*

Obs. I.—The main branches of this plant are often very regular and spread out flat, bearing a bi-tri-pinnate frond-like appearance, from the side branchlets of equal length springing at about equal distances from the main stem; a few leaves on stout and strong young shoots are 1¼ inch long and 2½ lines broad; the branchlets and peduncles shoot alike erumpent at right-angles with the stem. Although I have (rarely) seen a raceme bearing 3 flower-buds, I have never seen one with all three open, the upper one seemed to be abortive; which is also often the case when there are but 2. In some flowers (on the same plant) the 2 lateral lobes and the extreme base of the middle lobe of the labellum, the throat and column, are dark pink; in a few others the same parts are slightly speckled with pink.

Obs. II.—I have long known this plant, and, though I early obtained specimens with a few unopened immature flowers from the rocks at Palliser Bay in 1845, and subsequently assiduously sought for good flowering specimens, I never detected any such until 1881, when my long previous suspicions of its proving to be distinct from the northern form (*D. cunninghamii*) were fully confirmed—I having well known and very often admired and gathered that elegant species in its native forests, where it is often to be met with. There is much however at first sight, and with only immature flowering specimens, to confound this species with that plant; indeed, it is only by careful examination of several fresh specimens, dissection and comparison, that their specific differences are perceived, which are chiefly in the labellum, its form and the number and size of its lamellæ (which in *D. cunninghamii* are always 5); the colour, too, of its flowers is widely different, these are also smaller and much fewer in number, usually only 2 on a peduncle, and never assume the panicle form; and also its dwarf terrestrial habit.

Obs. III.—I believe this plant to be identical with the *D. biflorum* of A. Richard, which was originally discovered by Lesson, the naturalist of the French expedition under D'Urville, in Tasman's Bay, Cook Straits, in 1827, and published by Lesson and Richard, with a very full description and a folio plate, in 1832; and, therefore, I have great pleasure in naming it after its original discoverer. That New Zealand species, however, was confounded by them with *D. biflorum* of Swartz, (then a very little known species, discovered by G. Forster when with Captain Cook in the Society Islands), which species, though very nearly allied, bears only two lamellæ on its labellum. On R. Cunningham re-discovering* the Northern New Zealand plant, (which now bears his name,) it was described by Lindley with a plate,† as being quite distinct from the *D. biflorum* of Swartz. Lindley, however, believed Richard's New Zealand South Island plant to be identical with Cunningham's North Island one, *D. cunninghamii*. And I think that Sir J. D. Hooker, subsequently adopting Dr. Lindley's opinion, also believed Richard's South Island plant to be the same as our Northern one; which it certainly closely resembles at first sight in many particulars, although Richard's life-size plate with dissections shows a difference, particularly in its 4-crested labellum.

New species

A new species of *Drymoanthus* (Orchidaceae) from New Zealand, and typification of *D. adversus*

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Abstract A new species of orchid, *Drymoanthus flavus*, is described and illustrated. It is a diploid species previously confused with its probable tetraploid derivative, *D. adversus*. Both orchids are endemic to New Zealand and broadly similar to *D. minutus* from Australia and *D. minimus* from New Caledonia. *D. flavus* occurs sparingly from the central North Island to Stewart Island but is relatively common in the south-eastern South Island. It was probably once more widespread, and may have been displaced from many areas by *D. adversus*. Alternatively, it may have more precise habitat requirements. It is considered to be a relict and local species in need of further survey and monitoring. The name *D. adversus* is lectotypified.

Keywords Orchidaceae; *Drymoanthus*; *D. adversus*; *D. flavus*; new species; taxonomy; nomenclature; chromosomes; New Zealand flora

INTRODUCTION

> "You see the coloured study of *Sarcochilus* on page 2. That particular specimen was growing on a white mapau tree in bush up the Leith Valley, near Dunedin. This orchid had not been collected for a long time, and then the very sharp-eyed lady president of the Dunedin Naturalists' Field Club found it, and when it was in flower in November invited me to go and see it. I was very thrilled seeing it on three different trees, fairly close together, on the white mapau, the red mapau, and high up on a broadleaf. Eight months later when school-girl campers were boiling their billies at Sweet Water Creek, Pounawea, under a grove of totara trees, the camp mother (this same sharp-eyed lady) looked up and saw our friend *Sarcochilus* on a tree a yard or two away. We found the plant then on several other totaras, like little green rosettes on the bare pinkish brown bark. At Stewart Island we found the same plant on mutton bird scrub close to the Observation Rock at Oban." (Dalrymple 1937).

This statement, with its accompanying colour illustration, is the first positive reference we can find to the new species of *Drymoanthus* described here. It also placed on record some of the principal hosts of this epiphytic orchid, and defined precisely its main area of distribution, from Dunedin south along the coast of Otago and Southland to Stewart Island. Moreover, it demonstrates the value of documenting such field observations.

Dalrymple assigned this orchid to *Sarcochilus adversus* Hook.f., the earlier name of the species now treated as *Drymoanthus adversus* (Hook.f.) Dockrill (Moore & Edgar 1970). Earlier and later authors and collectors made the same assumption (e.g., Thomson 1880; Wilson 1982; and herbarium specimens cited here). The distinctive characters of this taxon became apparent from a study of southern New Zealand orchids by one of us (St George 1989, 1992). Further surveys and studies have extended knowledge of its distribution and confirmed its standing as a distinct taxon worthy of recognition at specific rank. This action is taken below, and the name *Drymoanthus adversus* is lectotypified.

TAXONOMY

DRYMOANTHUS NICHOLLS, *Victorian Naturalist 59*: 173, f. A–L (1943)

Type species: *Drymoanthus minutus* Nicholls, *Victorian Naturalist 59*: 175, f. A–L (1943).

B93070
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Note: A small genus of at least four species, including the one described below.

New species

D. flavus St George et Molloy sp. nov. Fig. 1

DIAGNOSIS: *D. adverso* similis differt autem statura minore, foliis tenuioribus magis coriaceis ellipticis vel lanceolatis acutis saepe maculatis, floribus flavis, labello a distalibus laminae callibus destituto, capsulis saepe maculatis, et chromosomatum numero $2n = 38$, diploideo.

Similar to *D. adversus* but differing in its smaller size, thinner more leathery elliptic to lanceolate acute frequently spotted leaves, yellow flowers, labellum lacking distal lamina calli, frequently spotted capsules, and chromosome number $2n = 38$, diploid (cf. Fig. 1, 2).

HOLOTYPUS: New Zealand, Otago, Tahakopa Bay Scenic Reserve; coastal conifer-broadleaved forest nr sea level; epiphytic on *Podocarpus totara*; *B.P.J. Molloy*, 10 November 1992; CHR 482355; isotypi, K, CANB, WELT, AK.

DESCRIPTION: Small perennial evergreen epiphyte, forming branched leafy often tangled tufts (2–)3–6 (–8) cm diam., with many tangled or spreading, white to brown, cord-like roots to 45 cm × 2 mm, adhering to surface of bark or rock. Stems 20–40 mm long, often shorter, horizontal or inclined, supporting (2–)3–6(–8) flat or channelled live leaves above a ± dry lower part covered with old imbricating leaf bases and withered persistent peduncles. Leaves (1.0–)3–5(–7) × 0.5–1.5(–2) cm, elliptic to lanceolate with acute to acuminate, often twisted tips; crowded alternate, imbricate at base and arranged distichously; green or yellowish green, frequently purple spotted, glabrous, thick, leathery. Racemes 1 or more per stem each year, to 50 mm long, arising from among leaves; stout and stiff, green or yellowish green streaked with purple, turning pink with age, bearing (1–)2–6(–10) alternate slightly fragrant flowers, 4–5 mm across, on pedicels 2–3 mm long, each subtended by a narrowly ovate to lanceolate membranous bract c. 2 mm long. Flowers at first yellowish green, often flecked with purple on the outside, becoming more yellow at anthesis, even more so when dried. Ovary 2.5–3 mm long, linear oblong, straight. Sepals and petals subequal, ± fleshy, oblong obtuse, slightly cucullate at tips; spreading fairly widely but projected forwards and inwards to form a cup. Dorsal sepal 3.5–4.0 × 1.5 mm; lateral sepals slightly shorter; petals 2.5–3.0 × 1.5 mm. Labellum c. 2.0 × 1.8 mm, projected forwards, immobile, concave, channelled; apex thickened, fleshy, slightly emarginate and folded inwards, clear yellow; 2 green, raised, nectariferous swellings at base; lacking distal lamina calli. Column 1.5 × 1.0 mm, inclined slightly forwards, cylindrical, yellowish green. Anther 0.7 mm long, with a prominent sharply pointed rostellum 0.3 mm long; anther cap 0.7 mm across, doubly convex, broadly ovate acute, creamy yellow. Stigma 0.4 mm across, concave, deeply sunken. Pollinarium consisting of 4, globular to obovoid, yellow, mealy pollinia in 2 unequal pairs; stipe 2-fid, viscidium flat, ± shield-shaped. Capsule to 15 × 5 mm, fusiform, yellowish green and purple spotted, containing numerous seeds c. 0.5 × 0.1 mm, with intermixed twisted hygroscopic hairs 4–5 mm long.

FLOWERING: Plants of *D. flavus* flower annually beginning in October and continuing into November. Floral induction seems to occur in the summer preceding flowering, and new racemes appear in April and grow steadily through the winter. Very small plants with two leaves, each c. 1.0 cm long, are capable of flowering. Although the flowers are structurally adapted for insect pollination, they are probably self-pollinating as well, since a high proportion of flowers on cultivated plants form capsules when screened from insects. *D. adversus* has a similar pattern of floral induction, flowering, and seed set.

FRUITING: Capsules are fully formed from late December to January, mature slowly, and begin to dehisce about July, by which time new racemes are well advanced. Seed release occurs over a long period and is assisted by the movement of hygroscopic hairs within the capsules. Although some seed is undoubtedly dispersed more widely by wind, much is shed close to parent plants, giving rise to many seedlings horizontally along branches and vertically down stems. This may also reflect the availability of fungal symbionts necessary for germination and seedling establishment. Old capsules are long-persistent; peduncles or raceme axes even longer.

CHROMOSOME NUMBER: $2n = 38$ (M. I. Dawson pers. comm.; vouchers CHR 481958, 481959). This somatic number is regarded here as diploid, with an effective base number of $x = 19$. By comparison, the somatic number determined for *D. adversus* is $2n = 4x = 76$, tetraploid (M. I. Dawson pers. comm.; vouchers CHR 481955, 481956).

DISTRIBUTION: An endemic and relict species, *D. flavus* occurs sparingly in localised populations on the Paeroa Range near Rotorua; the Aorangi Range

in southern Wairarapa; Eastbourne Hills, Wellington; Mt Richmond Range and Whangapeka River, Nelson; near Lake Brunner, Westland; and from Dunedin south to Invercargill, southern Fiordland, and Stewart Island, including Codfish Island. Throughout much of its range, *D. flavus* is sympatric with *D. adversus*, which is usually the more common species. From Dunedin south, however, *D. flavus* is the more common and often sole member of the genus present, giving the impression that it may have been displaced from its former territory by the larger, tetraploid *D. adversus*. Alternatively, *D. adversus* may be better suited to a r nge of New Zealand environments, hence its much der distribution throughout the country.

REPRESENTATIVE SPECIMENS: SOUTH AUCKLAND: Waikite Valley, Te Kopia thermal area, Paeroa Range, NZFRI 19702, *C.E. Ecroyd*, 1991. WELLINGTON: Near Mt Surf, Aorangi Ra., S Wairarapa, CHR 245028, *A.P. Druce*, 1972; Eastbourne Hills, Wellington, CHR 482356, *P.J. de Lange 1178 & A. Silbery*, 1991; above Gollans Stm, hills E of Wellington Harbour, CHR 482357, *B. Mitcalfe*, 1992. NELSON: Wairoa River, Mt Richmond Range Forest Park, CHR 482358, *J.M. Jenks*. 1991. WESTLAND: Lake Brunner, Westland, CHR 63965, *W. Mackay*, 1925. OTAGO: Leith Valley and rocks at Sawyers Bay, West Taieri bush, WELT 78262, *S.W. Fulton 272*, 1880; head of NE Valley Dunedin, WELT 18419, *D. Petrie*, 1892; St Leonards, Otago Harbour, WELT 18416, *B.C. Aston*, 1895; Sweetwater Creek, Newhaven, South Otago, CHR 482941, *I.M. St George*, 1989; Aurora Ck Road, Catlins, SE Otago, CHR 482358, *J.M. Jenks*, 1990. SOUTHLAND: nr Invercargill, WELT 65800, *T.W. Kirk*, 1895; Tokonui, Southland, AK23309, *R.A.S. Browne*; Sandy Point, Invercargill, Southland, K, *W.A. Sledge 327*, 1929; Lake Hauroko, CHR 253491, *P.N. Johnson*, 1974. STEWART ISLAND: Stewart Island, WELT 18395, *T.W. Kirk*, 1893; Masons Bay, Stewart Island, CHR 1877, *J.W. Murdock*, 1910–11; Observation Rock, Stewart I., WELT 65798, *E.A. Willa*, 1960; Sealers Bay, Codfish Island, CHR 479136, *I.M. Ritchie & A. Whitaker*, 1966.

HABITAT: *D. flavus* is most often encountered as a low epiphyte on trunks, branches, and twigs in well-lit humid forests close to rivers or the sea, or on ridges that are often shrouded in mist or cloud. In the Catlins District, it is common in the emergent heads of *Dacrydium cupressinum** (J. Jenks pers. comm.), suggesting that it may be a preferential high epiphyte like *D. adversus*. It has also been recorded from rocks on Otago Peninsula (Thomson 1880; P. Enright pers. comm.), although it is not nearly as common on this substrate as *D. adversus*. *D. flavus* is not easily detected in humid forest when growing among other epiphytes such as foliose lichens and especially the fern *Pyrrosia eleagnifolia* (Bory) Hovenkamp.

HOST SPECIES: *D. flavus* is epiphytic on several indigenous trees and shrubs. Recorded hosts include *Brachyglottis rotundifolia*, *Dacrydium cupressinum*, *Dracophyllum longifolium*, *Griselinia littoralis*, *Hedycarya arborea*, *Kunzea ericoides*, *Leptospermum scoparium*, *Melicytus ramiflorus*, *Myrsine australis*, *Nothofagus cliffortioides*, *N. menziesii*, *N. solandri*, *N. truncata*, *Olearia rani*, *Pittosporum eugenioides*, *P. tenuifolium*, *Podocarpus hallii*, *P. totara* (and hybrids), *Prumnopitys ferruginea*, *Sophora microphylla*, and *Weinmannia racemosa*. *D. flavus* has not been recorded as growing on adventive trees or shrubs.

ETYMOLOGY: The epithet *flavus* refers to the predominant and constant yellow colour of the flowers.

ILLUSTRATIONS: *D. flavus* is illustrated in colour in Dalrymple (1937, p. 2) as *Sarcochilus adversus*; in Natusch (1968, p. 5) as *Sarcochilus*; in Wilson (1982, p. 468) as *Drymoanthus adversus*; in St George (1989, p. 9) as *Drymoanthus* new sp. "Otago/Southland"; and in St George (1992, p. 40) as *Drymoanthus* "spotted leaf".

RELATIONSHIPS

D. flavus is most similar to tetraploid *D. adversus*, which is almost certainly an autoploid derivative of *D. flavus*. There are a number of morphological similarities between these two (cf. Fig. 1, 2), hence the confusion in the past. The purple spotting of the leaves, more characteristic of *D. flavus*, is often seen on plants of *D. adversus* and is clearly an inherited character. Leaf spotting, however, is not a constant character of *D. flavus*. Many plants have spotless leaves, and in others the pigmented spots present in the fresh state disappear upon drying.

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*Nomenclature follows Cheeseman (1925), Allan (1961), and Connor & Edgar (1987) for indigenous New Zealand species, unless stated otherwise.

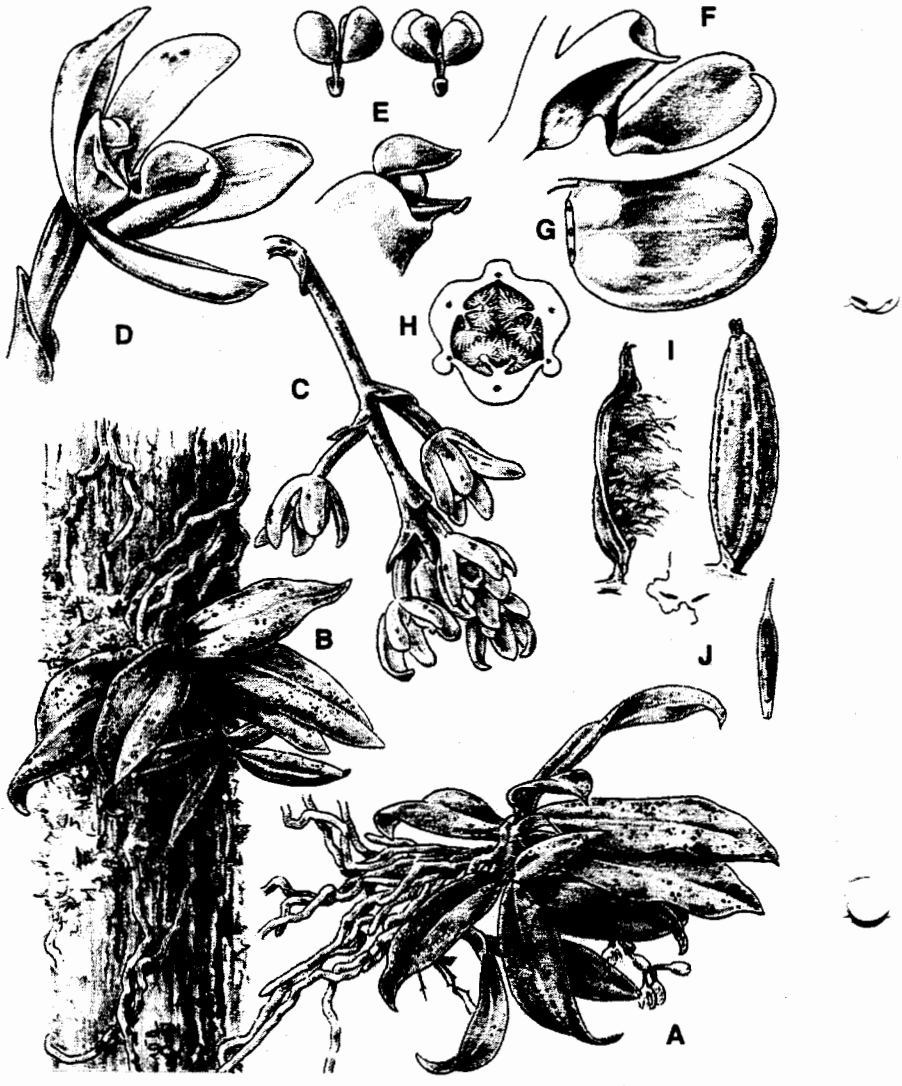

Fig. 1A–J Habit, vegetative, and reproductive features of *Drymoanthus flavus*: **A**, mature flowering plant, ×0.6; **B**, mature fruiting plant, ×0.6; **C**, inflorescence, ×2; **D**, flower, ×6; **E**, pollinarium, ×12; **F**, section through labellum and column, ×9; **G**, labellum from above, ×9; **H**, section through capsule, ×2.5; **I**, mature capsules, ×1.2; **J**, hygroscopic hair and two seeds ×1.5, one seed ×12. *(Drawing: J. B. Irwin)*

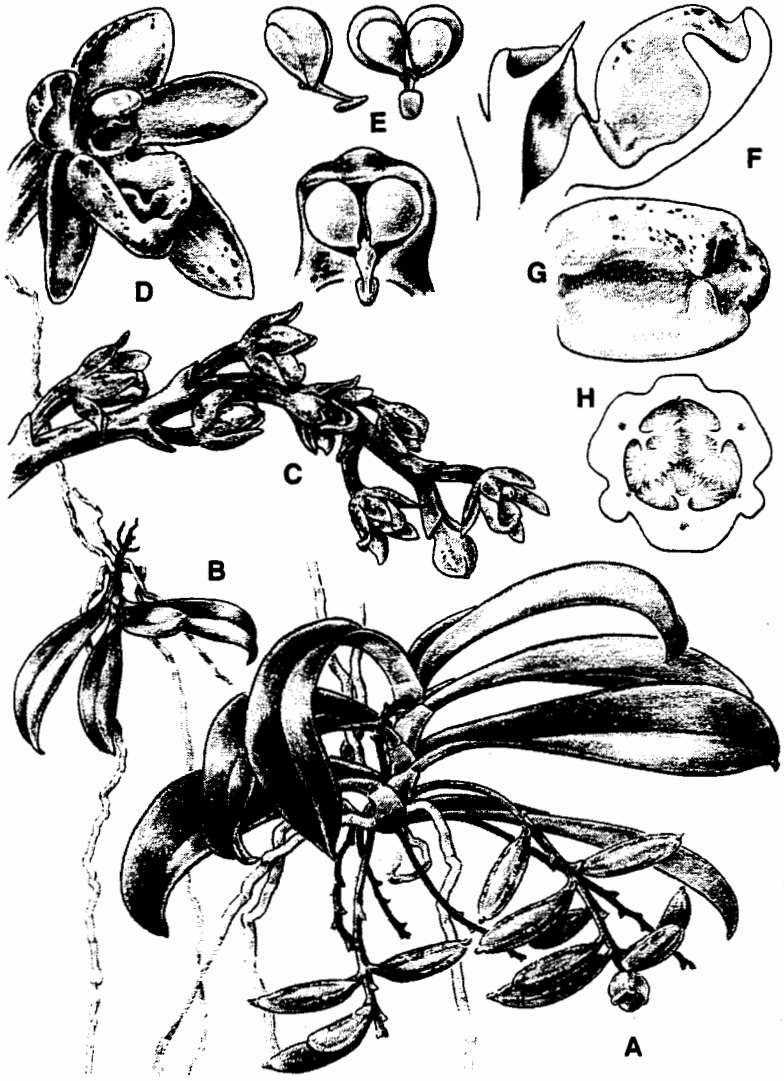

Fig. 2A–H Habit, vegetative, and reproductive features of *Drymoanthus adversus*: **A**, mature fruiting plant, ×0.6; **B**, young plant, ×0.6; **C**, inflorescence, ×2; **D**, flower, ×6; **E**, pollinarium, ×12; **F**, section through labellum and column, ×9; **G**, labellum from above, ×9; **H**, section through capsule, ×3.6 (see also fig. 37, Moore & Edgar 1970). *(Drawing: J. B. Irwin)*

The presence of nectariferous swellings in *D. flavus* and of non-secreting lamina calli in *D. adversus* are interesting evolutionary contrasts, reflecting different strategies for attracting potential pollinators. *D. flavus* and *D. adversus* are also superficially similar to *D. minutus* Nicholls, endemic to north-eastern Queensland (Jones 1988), and *D. minimus* (Schltr.) Garay, endemic to New Caledonia (Hallé 1977). The fresh flowers of the former are green with a white labellum, whereas those of the latter are greenish yellow, becoming yellow orange at anthesis. The somatic chromosome number of *D. minimus* is $2n = 38$, diploid (M. I. Dawson pers. comm.; voucher CHR 483434), and we suspect that *D. minutus* will also prove to be diploid.

CONSERVATION STATUS

D. flavus is present in several protected natural areas and in forest remnants on freehold land. In the northern part of its range only a few plants have been recorded. The largest known populations occur in the Catlins forests of coastal south-eastern Otago. On the basis of present knowledge, we regard *D. flavus* as a "local" species, *sensu* Cameron et al. (1993), in need of further survey and monitoring.

TYPIFICATION OF *D. ADVERSUS*

Drymoanthus adversus (Hook.f.) Dockrill, *Australasian Sarcanthinae*, 32, t. 3 (1967)

based on *Sarcochilus adversus* Hook.f., *Fl. nov.-zel. 1*: 241 (1853).

Type collection: "Northern Island. Opurangi, *Banks and Solander*. Bay of Islands and Wairarapa, *Edgerley, Colenso*."

Lectotype (here chosen, see below): *Colenso 1957*, K!; lectoparatypes: *Edgerley*, K!, *Banks and Solander*, BM!, AK108367!, WELT 63870!

= *Sarcochilus breviscapa* Colenso, *Trans. & Proc. New Zealand Inst. 14*: 332 (1882).

Type collection: "High up in forks of large pine trees (*Podocarpus dacrydioides* and *P. totara*), "Seventy Mile Bush" (1878–80), and at Glenross (1881, *D.P. Balfour*), Hawke's Bay; flowering in September."

Lectotype (here chosen, see below): *W. Colenso*, WELT 24268!; lectoparatype: *D.P. Balfour* (not seen).

Notes: The lectotype of *Sarcochilus adversus* matches Hooker's protologue and consists of one leaf 7 × 1.8 cm, one inflorescence 3.4 cm long bearing 11 flowers, and Hooker's pencil sketch of one flower. Mounted with the specimen is a label, in Colenso's hand, which reads "1957 Sarcochilus ? latifolia W.C." In Colenso's letter to W. J. Hooker ("A list of Botanical Specimens put up for Sir W.J. Hooker, July 1848, finished in September"; original at K, copy at CHR) is the entry "1957 Orchid, epiphyte – of which I have 2 leaves and 2 racemes of flowers – which I divide with you. This is like some I sent you from Bay of Islands (Sarcochilus falcata?) but the flowers are smaller and leaves larger. From Wairarapa." A flower restored from the lectotype and examined by us bore the distinct labella calli characteristic of the taxon which we now interpret as representing *D. adversus*.

The lectotype of *Sarcochilus breviscapa* matches Colenso's protologue and consists of a single flowering specimen mounted on thick card on which is written, in Colenso's hand, "Sarcochilus a curious air-plant, epiphytal orchid (scarce) ? S. breviscapa Col. Described Trans. N.Z.I. vol. XIV". Colenso's protologue and a flower from the lectotype examined by us confirm that this taxon is conspecific with *D. adversus*.

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Conference report

Iwitahi 1994

by Trevor Nicholls, Taupo

Seventy nine people from Lincoln to Whangarei came to Iwitahi 1994. It was a high point in the annual field days that have been organised by the Taupo Orchid Society over the years. These have gradually become centred on Iwitahi and around the native orchids under the *pinus nigra* in the Kaingaroa Forest. To mark the occasion of the establishment of the new reserve as a heritage park, Ian St George saw an opportunity to hold a native orchid conference, something he has long dreamed of having.

Well, Forestry Corporation, who has given us the reserve, had not managed to have all the legal details completed in time for the recognition of the reserve as a heritage park to take place. This gave us the opportunity to get on with the real work of the weekend - the conference.

Ten kilometres from our usual base at the Outdoor Education Centre is the new Rangitaiki community hall. This was where the conference was held. While it was not up to the standard of the Aotea Centre, it was ideal for what we were doing and handy to the camp and reserve.

The opening session of the conference by Cathy Jones on the flora of the Central Volcanic Plateau took us through the vegetative, climatic and floral patterns of the region. After dinner on the Saturday night Brian Molloy used his session to try out some of his thinking on us of our

alpine orchids . After having listened to talks on how some of our native orchids are threatened with extinction, the hybridising efforts that are going on, how the orchids get around to getting fertilised, the variations to be found in some of the species and looking at some first rate slides we were back where we began. Brian was explaining to us that the group of orchids that are found in the Iwitahi area are related to the fact that it fits into a near alpine climatic zone.

We were very privileged in our group of speakers and without any prior consultation the various sessions dovetailed together in a way that gave a unity to the conference. Those attending, collectively, had a vast knowledge of our native orchids and readily shared this with the rest of us.

The usual BBQ on the Saturday night was replaced by a catered dinner and this allowed us to stay at the hall and conclude the conference that evening.

Seek and ye shall find, said Bruce Irwin on the Friday night of the conference. On the Sunday morning of 4 December John Brigham did just that. Prior to the start of people going out on various tasks, he and a group of others set out to have a look around the area adjoining the new reserve. They came upon a find that we have always been hoping would happen - another naturally occurring stand of *Chiloglottis valida.*

The stand was approximately four metres by eight metres, which points to the probability that it was established at the same time as the original colony. On first appearances it would appear to have have sufficient differences to suggest that it is a separate clone. There were a good number of flowers. One report had it that there were twenty to thirty flowers and another that there were over fifty.

All thoughts of dividing up the folk available into various working parties were totally abandoned. It was a case of everybody wanting to see this find and then there was the need to begin the task of shifting as much as possible into the new reserve before everyone began to think of starting for home.

The mass of plants was divided between two parties. One group put its plants in three groups in the northern end of the reserve. The other party planted theirs in two plantings in the southern end. They have all taken the shift well and some of them even flowered since. The southern lot have had to be covered by wire netting to curtail an over active thrush.

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