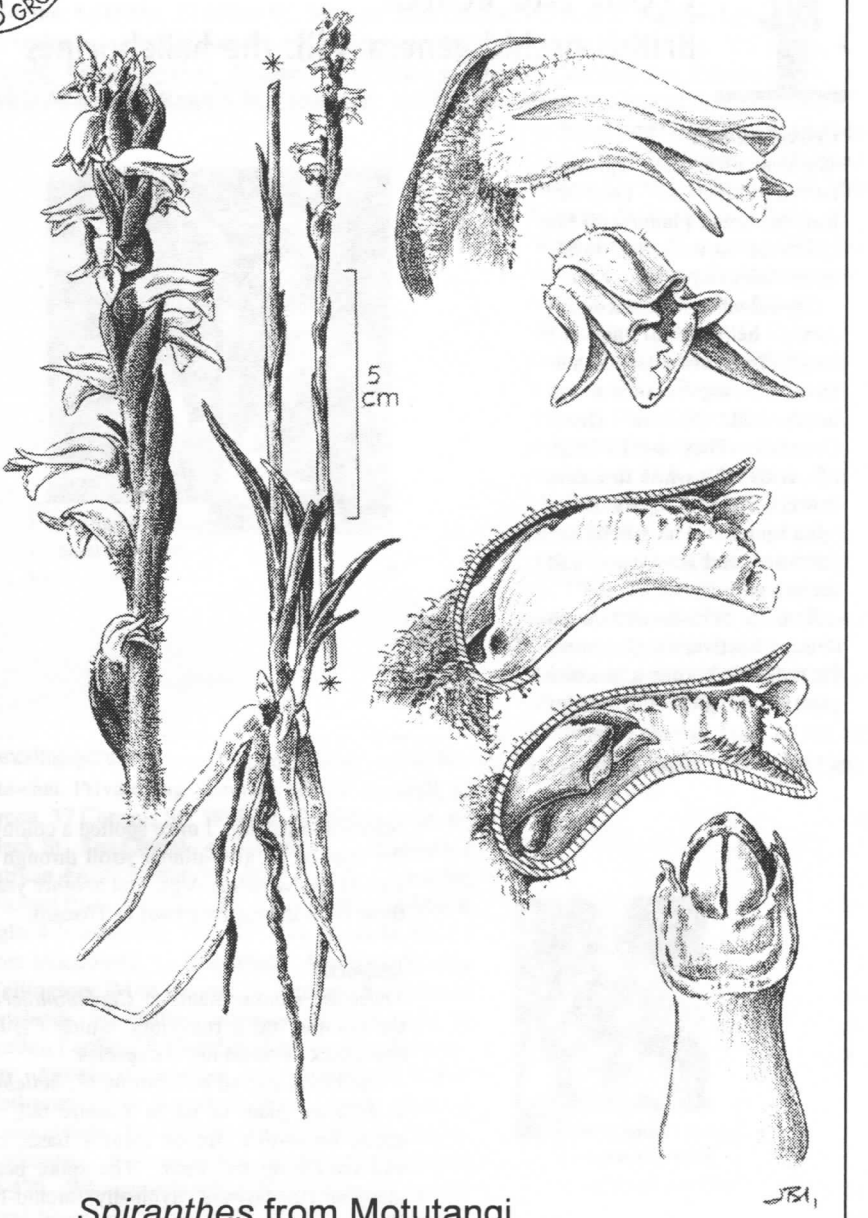
ISSN 1170-4543



Spiranthes from Motutangi
– drawing by Bruce Irwin

The New Zealand Native Orchid Group *Journal* for June '99: No.71

Contents

 The *Journal* is published quarterly from March, and deadline for copy is the first of the month preceding. We prefer copy to be typed or sent on disk or by email. **Subscription** $25 in NZ, $30 elsewhere.
Editor: Ian St George, 22 Orchard St, Wadestown, Wellington, phone 04 4994227, fax 3894178, istge@rnzcgp.org.nz.
Conservation officer: Peter de Lange, Department of Conservation, PO Box 68908 Newton, Auckland, phone 09 846 4947, email pjdelange@xtra.co.nz. **ANOS liaison**: David McConachie, 15 Battersea Place, Palmerston North, phone 06 3586559, email 9702288@ucol.ac.nz.

From the editor

British orchid genera VIII: the helleborines

Cephalanthera

The genus has three representatives in Britain. They are leafy-stemmed plants with lax spikes of flowers that rarely open completely.

Cephalanthera damasonium (white helleborine) and *C. longifolia* (narrow-leaved helleborine) are common in beechwood in the Home Counties. They are 15-60cm tall, with 5-20 white to cream flowers, whose tepals never open widely. The labella are patterned, and are attractive to the bee pollinators.

Rare in Britain, and much more attractive, is *C. rubra,* the red helleborine, a graceful plant with pink flowers of beautiful intensity. I once spotted a colony near the road on an after-dinner stroll through a village in the Maritime Alps, and another year saw them from the car by a road in Tuscany.

▲ *Cephalanthera rubra*

Epipactis helleborine ▲

Epipactis

These are similar plants to *Cephalanthera,* but the column has a rostellum, which *Cephalanthera* lack. Britain has six species.

The broad-leaved helleborine *(E. helleborine)* is a strong plant of up to a metre tall. Dark green broad-oval leaves form a basal cluster and reduce up the stem. The spike bears as many as 100 flowers, "typically" orchid-like in shape, green and pink. They flower late (September) and are pollinated by wasps.

Book reviews

1. Philip Keenan. *Wild orchids across North America: a botanical travelogue.* Timber Press, Portland, Oregon, 1998. US$39.95

This is a series of essays on days spent in the field in search of the truly remarkable wild orchids of the United States (north of Florida where the orchids are tropical) and Canada.

I approached it with slight foreboding: it was American, looked overly glossy, and at first dip seemed somewhat self-congratulatory. I had lent it to a friend who was unimpressed. Indeed, the consistent use of the present tense, while providing a sense of immediacy, grows tiresome (and sometimes just silly: for instance "I take the trail 'less traveled' one day in the middle of July many years ago..."). Furthermore, although the prose is often warmly chatty, and at times quite lyrical, it plunges into purple patches (you be the judge: "Autumn's blast of brilliant colors is prelude to winter, while spring's symphony of green precedes the sumptuous surge of summer"). There's even the odd misplaced adjective to delight the grammarian (one flower is said to look like a "fanciful elf"). Nonetheless I was pleasantly surprised.

Any orchid enthusiast will recognise the thrill of the search and the excitement of discovery, and Keenan's delight is infectious: his love and respect for orchids come through strongly. Further to that he has read widely on each subject and quotes historical material and contemporary sources aptly. He has a broad knowledge of the ecology and plant associations of the orchids, of geology, and of birdlife and birdsong, and he mixes interesting snippets of these into each piece.

Keenan's photographic technique is nicely varied: a mix of flash photographs with natural backlit and frontlit shots in habitat. At times his film was too slow for the ambient light and the flowers are annoyingly blurred by movement or insufficient depth of focus; he rather overdoes the glistening droplets of water on flowers: (I'd rather leave the "raindrops on roses" to Julie Andrews in favour of a few more dry blooms). But his subjects are magnificent and for the most part his treatment of them is refreshingly original and in a number of instances staggeringly lovely.

This is a beautifully presented book, using the best quality paper, and hardbound. It should please both bibliophile and wild orchidophile.

2. Susan Orlean. *The orchid thief: a true story of beauty and obsession.* William Heinemann, London, 1998. To be distributed by Random House in N.Z.

This is about the tropical orchids of Florida. Well, it's actually about a man who, among other extraordinary activities, stole a lot of epiphytes from a Florida swamp reserve. It's also about just about everything that ever fascinated you about orchids: the history, sexuality, medicinal uses, taxonomy, hybridisation, gossip, skulduggery, the collectors, Victorian Orchidomania, cloning, everything. Orlean has done her research well, and has produced a goldmine of orchid lore.

The book is of course as much about people as it is about orchids, and indeed at times it's hard to tell the difference: the orchids, the historical characters involved with them, and the folk of Florida all have something strange about them, something exotic, heady, obsessive, phony.

She is a reporter from New York but she writes in a deceptively ingenuous style about the ways of orchid folk. She does so with cynical humour, recognising that the strange and gorgeous are often just pompous and pretentious, and sometimes just silly.

This is a lovely, straightforward, clever, funny, wistful, sardonic book. Give it to an orchid lover or a book lover this year.

—Ian St George

Thelymitra "Comet"

Bill Liddy named the plant he found west of Napier in 1990 *Thelymitra* "Comet", but he has not been able to find it since. ("Because of its altitude in some years this area has frost and snow at flowering time", he wrote).

Bill sent tubers to Bruce Irwin. Bruce wrote to him (8 August 92), "My plants of *Thelymitra* "Comet" came into growth early but slowed down during winter. They all look healthy and one plant already has a flower spike just starting to show."

Bruce gave tubers to Jim Forrest. Jim told me, "I grow on a mix of pumice, bark and a bit of sterilised soil. I usually don't use manures but if it's available add old lumps of cow manure that has stood for at least six months. During the growing period they get a spray of very dilute foliar feed (fish) along with everything else. I've grown usually in full sun or at least sun for most of the day.

"Under my system they never make very large leaves and as the season progresses become a bit tatty. Plants are already (23 March) well up. Flowering has varied between late August to October. They all flower and stay more or less open all the time. I have never had any seed form. I've tried hand pollinating, still with no result.

"They certainly thrive as every year has seen a 3-400 percent increase in tubers. These normally all flower the next year. Because they increase so quickly I've given them away."

Among those Jim Forrest gave tubers is David McConachie. He told me the flowers are quite fragrant, suggesting at least one of the parents must be a fragrant, insect-pollinated taxon (cross-pollination between species almost requires that). He has had some trouble with fungus infection, and has not enjoyed the increase Jim Forrest described. The photographs are David's.

Shimanami in Japan

I was delighted to be asked to attend and speak at a conference on orchid conservation held in conjunction with an international orchid show to celebrate the opening of a long bridge connecting several islands in Japan's inland sea. The opening was one to celebrate, for the bridge was 40 years in the planning and is called *Shimanami* (the wave). The conference attracted speakers from Nepal, Perth, Tasmania, Russia, England, Sabah & Sarawak, Indonesia, Singapore and Madagascar as well as several from Japan. It was good to see the wild orchids of several countries reviewed, and to hear of efforts to conserve them, but sad to hear of continuing loss by habitat destruction and commercial enterprise by man. The first activity of conservation is identification and description: you can only conserve what you know you have. Another activity is fundraising: poor countries cannot conserve their lion's share of the world's orchid heritage alone, and several seek to form partnerships with wealthier countries. Another activity is making orchids freely available: few doubted the value of cloning, propagation from seed and hybridising of native species as a means of conserving plants in the wild. The conference organisers are to publish full proceedings, and material from various presentations will appear in the next few issues of the *Journal*. — *Ian St George*

BOOK LAUNCH!

A NATURE GUIDE TO THE NEW ZEALAND ORCHIDS

You are invited to the official launch of this new book at an Auckland Botanical Society meeting on 1 September [7pm for 8 at Kohia Teachers Centre, Auckland College of Education, Epsom Ave (near the Mt Eden shops), Gate 2 (top level carpark) or Gate 1 (closest parking)], where the author will speak on

"Auckland's orchids".

The text of the book is written by Ian St George, with photographs by the author and by several NZNOG members.

The recommended retail price is $39.95. The NZNOG will have some available at $32. If you would like to order, please send your cheque to the editor before 1 August.

From the bulletin boards

Dr Guido J. Braem wrote to *Orchid-guide Digest* on new taxa in *Paphiopedilum*, demonstrating that first publication of a new species still attracts competition: "... as expected, several people had their go at it. Here is the result:
1) ***Paphiopedilum tranlienianum*** Gruss et Perner, 1998, *Caesiana*, 11 (1998): 63-73.
Synonym: *P. caobangense* N.T.Tich, 1999, *Hoa Canh* (1999), 1: 14, *nom invalid* (because no Latin description and no valid type designation). Described from North Vietnam: 'Vietnam, Provincia Bac Thai *loco non indicato* ...'.
Type: 'October 1998, leg. O.Gruss November 1998' named for by Mrs. Tran Ngo Lien. This is a species in the 'insigne-complex' closely related to *P. barbigerum*.
2) ***Paphiopedilum vietnamense*** Gruss et Perner, 1999 (12 Jan.), *Orchidee*, Suppl. (1999), 5: 1.
Synonym: *P. hilmari* Senghas & Shettler, 1999, *Journ. Orchideenfreund* 6: 4.
Synonym: *P. mirabile* W.Carvesto et G. Chiron, 1999 (19 Feb.), *Orch. Cult. Protect.* 38, 2 : 32.
Described from N.Vietnam. The first two publications are from Germany, the last one is from France. Gruss and Perner made 'the race' by 12 days over Senghas & Shettler. Cavestro & Chiron came 3rd.

Jay Pfahl of Florida wrote, "Just got back from the **Dominican Republic**. What a great time, I saw *Bletia patula* in bloom by the hundreds and it was a sight to see. Hundreds of four foot spikes on a dirt cliffside, above a roadcut, pink and fragrant waving in the Caribbean breeze. I also saw a native red reedstem epidendrum with a small lip and very flat starshaped flowers, and *Epi. difforme* was in bloom as well. On a fencepost along a highway I spotted a small group of equitant *Oncidium* with very flattened yellowy fans, and a 7 inch spike with pure white flowers and a yellow lip and fragrant to boot. All in all in 5 days I saw 25 different species with 8 blooming."

A **Sri Lankan** contributor wrote, "I had a very pleasant surprise on my evening walk in Colombo today. On a huge bough not less than forty foot above ground I saw a white cloud of scores of flowers of *Dendrobium crumenatum* shimmering in the dusk. (It was too high up to catch the fragrance)."

Are the **Earinas of the Pacific islands** really Earinas or aren't they? Tamotsu Hashimoto described two new species from Vanuatu (*E. sigmoidea* and *E. santoensis*) in *Annals of the Tsukuba Botanical Garden* 1997; 16: 1-7. You can see colour pictures of them on http://www.tbg.kahaku.go.jp/Tsukuba_Botanical_Garden/i/i100000e.htm.

George and Kathy Norris of Spring Orchids, Texas, wrote, "an interesting bit of news...we just got a contract to supply 50 humongus African species specimen-sized orchids for the new 6.5 acre **gorilla habitat** at the Bronx zoo. Some of the plants are 30 year old plants and cost as much as $400 each. The budget for this project is $43,000,000 and it will open May 18th. They expect more than 3,000,000 visitors this year. It is a Wildlife Conservation Society special breeding project expected to produce about 20 to 30 baby gorillas a year. There will be more than 60 gorillas plus about 200 compatible species of mammals, birds and reptiles. This will really be something to see if you are in the New York area."

Other islands' orchids: Samoa

– extracts from Philip Cribb & W. Arthur Whistler. *Orchids of Samoa.* RBG, Kew, 1996.

The Samoan flora ranks as one of the best explored and described of those of the Pacific archipelagoes. The early work of German and British collectors and botanists and the more recent collecting by American botanists have provided a sound basis for this treatment of the orchid flora. The present account includes 101 species in 47 genera, an increase of about 20% over the previous treatment of Samoan orchids by Schlechter (1911). Bearing in mind the size of Samoa, it has a rich orchid flora. The large islands of Savai'i and 'Upolu have the largest number of species with the numbers dropping significantly on the smaller ones. We suspect that few additional species await discovery; perhaps another half a dozen on further exploration of some of the remoter regions.

The orchid flora has close affinities with those of the adjacent larger archipelagoes of Fiji, Samoa, the Society Islands, the Solomon Islands and Vanuatu as well as with the impoverished orchid floras of the many smaller islands of the South West Pacific. Sixty-nine species are shared with Fiji; 60 with Vanuatu; 48 with the Solomon Islands; 42 with New Caledonia; 36 with New Guinea; and lesser numbers with some of the smaller archipelagoes such as Tonga and the Society Islands. The affinities of the orchid flora of the region as a whole lie with that of the large island of New Guinea, some 4000km to the west of Samoa. Samoa shares 36 species with New Guinea, while most of those Samoan orchids that are not found in New Guinea have close relatives on that island.

Considering its isolation, Samoa has relatively few endemic orchids and a far lower percentage than large (and much more ancient) islands such as New Caledonia and New Guinea but about the same as the smaller archipelagoes of the region. About 15% of the orchids are endemic; this may well be an overestimate because of the uncertain taxonomy and debatable synonymies of the orchids of neighbouring archipelagoes. Those species that are endemic ... all have close allies in neighbouring islands and are best considered as neo-endemics....

Apart from the recent human introductions ... it is probable that orchids arrived in Samoa as wind-blown seed from adjacent archipelagoes. The most likely scenario is one of the orchids island-hopping through the archipelagoes from New Guinea. The high number of species that Samoa has in common with Fiji supports this. The establishment of plants must have relied upon the incoming seed meeting a fungus that it could utilize mycotrophically. Many orchids are able to spread vegetatively by means of tubers or rhizomes. This would remove the barrier to establishment that might have arisen if suitable pollinators were unavailable in the area. However, many Pacific Island orchids appear to be self-pollinating, at least to some degree. Examination of specimens shows that most flowers set fruit in many Samoan orchids.... We suspect that self-pollination is common in Samoan orchids and that cross-pollination may be rather a rare occurrence.

Samoa may have five genera in common with New Zealand (Bulbophyllum, Corybas, Cryptostylis, Earina and Spiranthes) but only one species (Spiranthes sinensis). The Corybas is C. betchei, rather similar to our C. cheesmanii, the Earina E. valida, probably not an Earina — Ed.

Close relations: orchids like ours

Spiranthes sinensis from Seidenfaden G and JJ Wood. *The orchids of peninsular Malaysia and Singapore.* Olsen & Olsen, Fredensborg, 1992, p47.

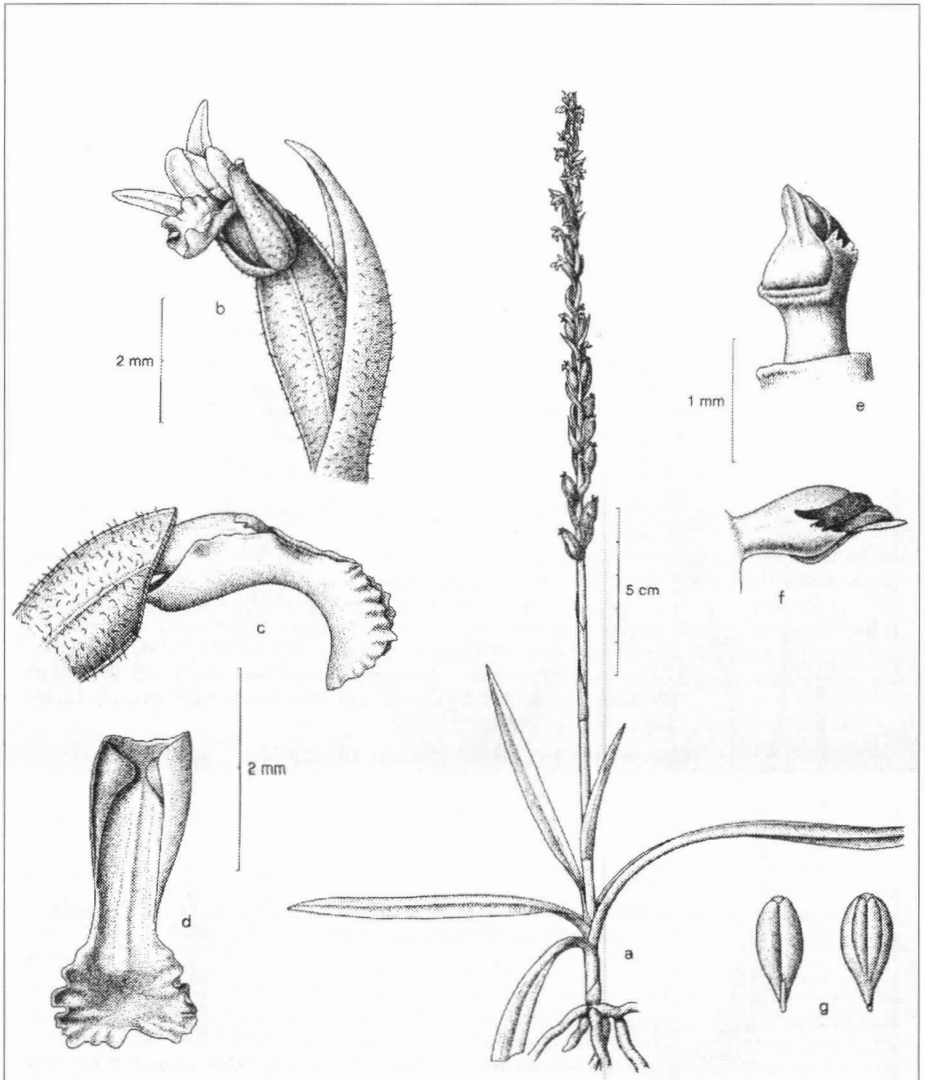


Fig. 13. *Spiranthes sinensis* (Pers.) Ames. a. plant, b. flower, c. column and lip, d. lip, e. and f. column, g. pollinia. (After King & Pantling).

Original papers

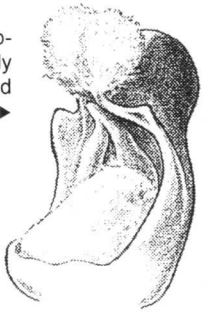
An update on *Thelymitra* "Whakapapa"

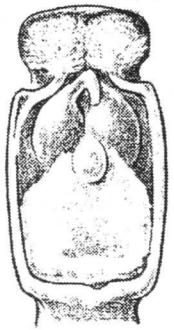
by Bruce Irwin, Tauranga

When I first wrote about *Thelymitra* "Whakapapa" (J54 p7), my experience with this taxon was limited to plants within three kilometres of Whakapapa village. What I wrote was appropriate for those plants. Since then however, I have found colonies in the Mangatepopo Valley and at Turoa which, although apparently *T.* "Whakapapa", did not have markedly rectangular frames formed by the column wings, nor it seemed, the upward facing spurs just below the column arms. To add to the confusion, almost all Mangatepopo plants lacked the expected pink flower colour. The inner surfaces of the tepals were white, though some carried small flushes of violet. How could I maintain that these plants were an undescribed taxon? Only the very late flowering time and the fact that the narrow channelled leaves arched upwards instead of lying prostrate, indicated that they were not *T. longifolia* sensu stricto — weak evidence indeed.

I had hoped to spend time this season, finding out why some colonies of *T.* "Whakapapa" seemed loath to acknowledge their distinctness but this particularly hot summer has advanced the flowering time. When Anne Fraser, Eric Scanlen and I visited known colonies on the Waitonga Falls Track on 30 January, it seemed that flowering had already finished. Fortunately, late that afternoon, we found the last few flowers on a small colony in partial shade. Eric captured the column in 3-D, but to see the small spurs clearly, he had to view the column from ABOVE. At last the penny was about to drop.

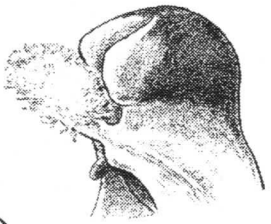
1. When spurs turn upward they are easily seen from the front and somewhat below ▶

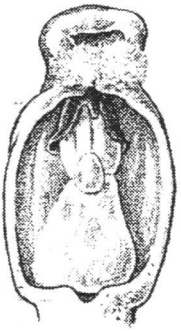




◀ **2.** and the column appears rectangular in front view

3. When spurs turn downward they are most easily seen from the side and above ▶





◀ **4.** Viewed from the front the column appears oval in outline and the spurs are unobtrusive

When I first realised that *T.* "Whakapapa" must be a distinct taxon, I observed the key characteristics by looking at the column from IN FRONT and somewhat BELOW. Subsequent colonies were all examined from this viewpoint. It did not occur to me that the spurs might face horizontally or even somewhat downward. What excuse can I offer to explain this lapse? Ten years ago, with younger sharper eyes, it probably would not have occurred, but recently I have found it difficult to examine the columns of *Thelymitra* flowers using a small X10 hand held lens. Only one eye can be used, so the image is strictly two dimensional. Any spur or projection, viewed edge on, is difficult to detect. Then there is the very real problem of contorting an ageing frame to bring the eye down to the level of the flower. These difficulties, together with several others not listed, result in my patience wearing thin. Each examination of a column is a little less thorough than the previous one. Is it any wonder that a keen photographer of my acquaintance, becomes utterly irascible in similar circumstances?

The inconsiderate behaviour of *T.* "Whakapapa" in allowing the spurs on the column wings to turn upwards on some plants, downward on others, has a marked effect on the shape of the column as seen from the front.

Because the 1999 flowering season was virtually over by 30 January, it was impossible to check other colonies particularly those at Mangatepopo, to see whether they also adopt the downward facing spurs observed at the Waitonga Falls Track plants. That will be a task for next season.

Awhitu chronicle

by Patricia Aspin, Waiuku

My interest in N.Z. orchids was re-awakened last winter when, as part of a working bee group from Awhitu Landcare, I was helping with the final construction of the Matakawau Bush Track. On a ponga log, I noticed, in flower, a wee plant with a heart shaped leaf. Barry Lee, a co-worker didn't know what it was either. I thought it was an orchid so looked up my 35 year old references and there it was — *Acianthus fornicatus* var. *sinclairii*. And so began the "orchid bug". I passed this bug on to my friend Stella Christoffersen via photographing this *Acianthus* and now between us, we hope to complete a survey of the bush areas on the peninsula. We have found the *Field guide to the New Zealand orchids* extremely valuable and so far have identified 21 species and are confident of adding more e.g. *Pterostylis alobula* or *P. brumalis*.

Corybas cheesemanii was one of our first puzzles. Stella had seen the flower pre-"orchid bug", had sketched it but not photographed it. She took me to the site in their QEII covenant at Kohekohe. It was under a taraire on the side of a gully. There were these "tiny little things", some with elongated peduncles, some with capsules close to the leaf and isn't it strange how the more your eye gets tuned in, the harder it is to find where to put your foot? Several colonies have since been found in Barry Lee's bush at Awhitu. The last bit of uncertainty regarding identification was dispelled by Eric Scanlen when he confirmed for us that these were indeed *Corybas cheesemanii*.

Orchid hunts didn't begin until November. Field trips have mainly concentrated on Barry Lee's 24 hectares of bush at Awhitu and have yielded —

Acianthus sinclairii — many showing up and seeding strongly in November.

One site really intrigued me. In a small square of 150mm, we have *Acianthus sinclairii, Pterostylis cardiostigma* and *Microtis unifolia* all together under an old pine on a ridge top;

Caladenia chlorostyla — several sites scattered throughout. I was showing Barry our discoveries and placing markers for him. We were accompanied by an American friend taking a break from computer work and after two hours, she had to return but it only took her ten minutes to get back — such is the speed of the orchid enthusiast! She left just before I saw my first *Caladenia* in 35 years — and they've been on my doorstep all along! First flowers noted on 18 November 98. On 2 December Stella found another, also on the ridge but with three buds. Eric tells us it is unusual to have more than two flowers per stem. When I returned a week later to check progress, a caterpillar had eaten off the stem. Oh woe! Now Stella likes bugs, but she reckons she is going to carry some Derris dust next season! The site has been marked.

Chiloglottis cornuta — some occurring on track or track side. Appearing 11 November, in flower 24 November to 21 December. A few still observed on 27 January 99.

Corybas cheesemanii — several;

C. macranthus (common);

C. oblongus — on most mossy banks, 3 in flower on 4-11-98, one still in flower on 21 December;

C. trilobus — common with several leaf variations but no flowers observed;

Earina mucronata — few. There is a notable lack of epiphytic orchids in this bush. We finally discovered one on nikau in bud 10 December and then three others, with no sign of having flowered, on 27 January.

Gastrodia* aff. *sesamoides — one colony here. What an exciting discovery this was. Ever since I was given *Plants of New Zealand* by Laing and Blackwell in 1959, I've wanted to see a *Gastrodia* as photographed in the book. So what, if the photograph is poor by today's standards? It was good enough for me to be able to recognise what was in front of us as we rounded the bend in the track, "Wow, *Gastrodia*! *Gastrodia*!!" A total of 12 plants was recorded over several visits. Barry's little dog always comes with us on our rambles and horror of horrors, once while my back was turned, he chewed off some of the flowers on one stem! He ate one of my *Gastrodia* — unpopular pup for a few moments! It has been a real thrill to find these occurring in the native bush habitat under kanuka, ponga and tanekaha;

Microtis unifolia — many occurring in the open areas. In bud 4 November, last flowers were observed on 27 January. Does this orchid grow under bush canopy? We have leaves 300mm long, terete, emerald green but so far, no sign of being in bud (did a pregnancy test by feel!). Two areas noted. Eric saw it but just changed the subject;

Orthoceras novae-zeelandiae (I learned it as *O. solandri* 35 years ago.) I adore this orchid and was thrilled to see them begin appearing on the clay tracks on 4 November. Barry was given strict instructions not to ride over them in his 4 wheeler bike. All the hot, dry, exposed tracks sprouted *O. novae-zeelandiae*, some greenish flowers, some dark purple, up to 12 flowers on a stem. The topmost flowers observed on 27 January with good seed set on lower parts of stems;

Pt. agathicola — many under kauri in flower 4 November and still the odd one on 10 December. One large kauri had a full circle of hundreds, many seeding but those flowers remaining were pointing towards the north, albeit uphill (J69 p23);

Pterostylis alobula (unconfirmed) — 2 sites. Both juvenile rosettes and adult seeding forms observed;

P. banksii — many in flower 4 November, a real "smiling" specimen 300mm tall noted on 11th;

P. cardiostigma — as common as *P. banksii* and just as happy in bush as in scrub or under the old pine on the ridge top, in flower 4 Nov.-2 Dec;

P. trullifolia — many scattered throughout and they especially seem to like old kauri stumps. One stump was completely covered on the northern side with juvenile rosettes and the seeding adult forms. One flower remained 4 Nov. and by 10 Dec. the dry had set in and there was no sign of this wonderful little garden;

Danhatchia australis (photo: Eric Scanlen)

Thelymitra longifolia — many. Until now, all *Thelymitra* were *longifolia* to me. Thanks to the *Field guide* and magnifiers (and hours getting grubby knees and backside) we have identified:

T.* aff. *longifolia — some occurring. Difference from *T. longifolia* was explained by Eric. Now we have our own more powerful magnifiers, we can really get down to the nitty-gritty next season;

T. pauciflora — some and

T. tholiformis — few.

An extensive search for *Danhatchia australis* in the taraire and nikau on 27 January drew a blank.

The Matakawau reserve has eight of the above mentioned and includes a colony of 34 *Gastrodia* aff. *sesamoides* under the area of pines. I searched here only after excitedly reporting our find at Barry's to Eric and found 34 plants.

The Christoffersen property at Kohekohe has so far revealed seven species. Stella's most exciting find was two young *Drymoanthus adversus* on totara — her eye is now very good, for these are well hidden among the leather fern (*Pyrrosia serpens*). I have to admit that when I went to see (you know how you itch to see once you know an orchid is there?) we could only find one! Stella went back next day to prove to herself there were really two and of course there were. I have also found one with speckled leaf in Ray Morley's property adjacent to the Matakawau Reserve. From my photo', Eric declares this to closely resemble a speckled leafed colony at Anne Fraser's place at Ongarue. Flowers will be keenly sought for a positive identification. Another seven *Drymoanthus* showed up on taraire by Bev and John Seller's driveway, across the road from Morley's property.

A visit to Jack Harper's property, also at Kohekohe, resulted in nine species being identified. Jack has undertaken extensive spraying to eradicate wandering jew (*Tradescantia flumenensis*) and mexican daisy (*Erigeron karvinskianus*) from his fenced off bush areas and the orchids are moving in. He was thrilled for us to spot his orchids for him on 25 November. He has many *Earina mucronata* as well as several *Corybas* and *Thelymitra* species.

After a break over hay/Christmas/family times, the eagerness to hunt for *Danhatchia australis* was great. On 25 January I visited

the taraire bush area on K. Hamilton's property near Tindalls Road. I entered the bush, climbed the fence and it hit me—that same "wow power", just like when we found the first *Gastrodia.* Only two minutes of looking and there were two clusters of mushroom coloured stems. I was so elated. One flower was open. I ran to the neighbours and phoned Stella. She downed tools and came right away. Her daughter Elizabeth came too and during the subsequent photo session, Elizabeth spotted another group nearby. This colony occurs within 4m of taraire trunks and in close proximity to young nikau. Puriri is also close by. The groups had clusters of 10, 10, and 12 stems. Most were seeding on 150mm stems, some were still emerging and one flower was open. We searched the rest of the taraire bush but although deep in leaf litter, it yielded nothing until we got back into an area that "felt right". Stella spotted the second lot. Again similar to the first situation within 5m of taraire trunks , young nikau and puriri relatively close by.. This area had four groups of 2, 3, 6 and 7 stems, again in similar stages to the first lot. This colony is about 15m from the main Awhitu Road and the other is about 20m from the same road. Another taraire area was intensively combed at Kohekohe but we found no more *Danhatchia.* This bush area, recently fenced off on G. Dickey's property, has an abundance of *Earina mucronata.*

We look forward to many more happy hours and hope we can interest other members of the NZ Native Orchid Group to explore with us.

Iwitahi happenings

By Trevor Nicholls, Taupo

1. In the autumn last year a group of us worked regularly, removing the *Pinus contorta* growing along the roadside outside the camp. This was to stop them from swamping the orchids growing there under the Eucalyptus, particularly *Calochilus robertsonii.*

One of the unexpected outcomes was our experience of the *Orthoceras novae-zeelandiae.* We knew that they were to be seen there in flower from mid December until about 2 February. The first thing we found was there many more of them than we had been aware of. The next thing that became obvious was they not only had a long flowering period but new plants kept coming into flower: the later flowers and plants were smaller, making us wonder if they were first flowering plants/tubers. They had a much longer flowering period than we had been aware of or is normally quoted (*qv* in ED Hatch: J67 p11). The last flowers to open were seen at the end of March. A fortnight later, in April, the last of the flowers were obviously on the decline and no new ones were seen. From early in May we kept seeing young short fresh green grass like leaves that we came to decide must be an orchid. It was not until late into May that we had proof that they were actually the next season's crop of Orthoceras appearing. We came upon a plant that had just finished flowering and beside it was the spent seed head and stalk from the previous season and beside it the young grass like growth of the next cycle. Where was the camera? Murphy had it.

2. The Iwitahi Native Orchid Weekend December 11 - 13 had a group of 37 folk from the age of 7 to 70+ in attendance. At the first weekend that the new reserve came into being a survey had been carried out. Chris Ecroyd persuaded us to do a

number of things that would result in a better knowledge of the reserve and what was happening in it.

The first was to develop a grid system. This we did by marking it out in 50 metre blocks. Next on the marker of each of these blocks we marked out an area 5 metres by 5 metres. At the annual camp every one was out in teams recording what was growing in each of these areas, orchids and other. This year was the beginning of the first 5 year cycle and so everyone went out on the Saturday morning to record the present state of these plots. One of the side advantages of this activity was that everyone got to see the reserve in fine detail.

Thelymitra circumsepta: plants above, and freak flower below

Ever since the establishment of the reserve we have been looking out for *Corybas cheesmanii* and it had not been seen. We have even tried transplants with no known success. Ten days before the camp some of the locals were working in the reserve and came across two separate lots of *C. cheesmanii*. During the survey five more lots were found. Where have they been all this time? Or was it just a good season for them? One group is right beside the path we normally use to enter the reserve and we have been keeping a close eye on them and their progress/life cycle.

On the Saturday afternoon the NZNOGgers went hunting for colonies of native orchids to transplant. The members of the Waikato Forest and Bird Society present plus a group from the Auckland Botanical Society used their skills to name the ferns in "the fernery". When this was finished they then went looking to see what else was in the Reserve that was not represented in "the fernery".

Sunday was the morning everyone, who had not already seen them, trooped off to see the monster, strange, suntanned, enormous, unknown Thelymitra before going to do whatever they planned to do. The first lot found were between the road edge and the replanting of the block opposite the old reserve. They stood over 900 mm high and stalks thicker than a lead pencil. There were five plants in the group and they were coming into bud. Another two groups were found near by, in an area that abounded in plants of *Gastrodia* aff. *sesamoides* and *C. cheesmanii*. When they flowered, in mid January, Bruce Irwin confirmed that were what was formerly known as *T. formosa*. From examining the flowers he was not sure that the new name, *T. circumsepta* was the right choice. The were two distinct colours of flowers, the more usual blue and a pink form which has not been seen around there before. One of the blue flowering plants had a beautifully formed eight-sepalled flower.

3. The *Thelymitra circumsepta* have been coddled. The photographed

group were protected by having wire netting around them. At the time they were in flower another of the groups had been browsed to about half their original height. So we moved them to the edge of the new reserve into a similar environment. Just over a fortnight later the flowering plants had set seed and it was ripe. So we shifted them to a similar position. We marked the third group individually. We intend to shift them when they have become fully dormant. Maybe we will get it right with one lot.

Driving out a hole into the forest was casually noticed. It became real when we walked in to find uprooted trees. Two young men working for the logging contractor having some slack time the previous Friday afternoon had gone for a tiki tour through the reserve with their bell loaders. After two meetings with Fletcher Challenge Forests' staff, at one of which the contractor was present, it was agreed that the two involved would spend eight Saturdays working in the reserve, at our direction; that one tree that would change the environment for the orchids would be manually cut up and manually carried out of the forest; that the young regenerating *P. nigra* that had been pushed over would, where possible, be staked up; that the hole be replanted with young natives to restore the integrity of the forest edge; that a 20m-wide strip of clear-felling be done along the north-western [taped] boundary of the Reserve to stop 20m from the southern edge of the forest to give a wind break. We are very pleased with this latter action. It is something we have wanted all along and had been told it was impractical. 'Tis done! This will go a long way to allowing that boundary to establish itself prior to the felling of the remainder of the neighbouring trees in two years. We are very fortunate that damage done is not worse than it is. Being philosophical, mother nature will do the best job of restoration.

A Postscript: in the middle of the year all the paperwork of establishing the Reserve was completed when we received a letter from the Taupo District Council stating that they had placed a Heritage Order on the Reserve.

During the year we have maintained a regular patrol of the bait stations in the Reserve. The financing of this has been made possible by the thoughtfulness of those who were responsible for disbursing the funds of the Kapiti Orchid Society at the time it was wound up.

One of the highlights of the year has been the spectacular display of flowering spikes, in great bunches, of *Gastrodia* aff. *sesamoides*.

The New Zealand genera 8:
Acianthus, Townsonia, Genoplesium

by ED Hatch, Laingholm, Auckland.

1: *Acianthus* R.Br. *Prodr.*1: p321 (1810).

Genotype—*A. exsertus* R.Br.*ibid.*

Name = sharp flower, the pointed sepals.

A small Australasian genus of around 25 species, with its headquarters in New Caledonia. Other species occur in Australia, Tasmania, New Guinea and the Solomon Is. New Zealand has one endemic species, derived from the Australian *A. fornicatus*.

1: *Acianthus sinclairii* Hook.f. *Flora NZ* 1: p245 (1853).
Named for Dr. Andrew Sinclair. Naval surgeon, Attorney General, and secretary to Governor Fitzroy.
Distribution—endemic—Kermadecs; Three Kings; North; South; Stewart; Chatham Is.
Type locality—Auckland. Sinclair (K)
Flowers—June-August—insect pollinated.

2: *Townsonia* Cheesem. *Manual NZ Flora* p691 (1906)

Named for William Townson, a pharmaceutical chemist who found it while making a botanical survey of the Nelson mountains.
Genotype—*T. deflexa* Cheesem. *ibid.* p692
A genus of 2 species, one, *T. viridis* (Hook. f) Schltr. in Tasmania; and one, *T. deflexa* Cheesem. in New Zealand.
Differs from *Acianthus s.s.* in the obtuse sepals, and in the fleshy, perennial, horizontal rhizome. The rhizome nodes produce petiolate leaves and tubers on very short branch rhizomes. Flowering peduncle with a sessile foliose bract about the centre. *Townsonia* appears to occupy the same position in relation to *Acianthus* as does *Adenochilus* to *Caladenia.*

1: *Townsonia deflexa* Cheesem. *ibid* p692
Name = the deflexed lateral sepals
Distribution—endemic—North Id.(Mt Ruapehu and Tararua Ra.); South, Stewart, Auckland and Campbell Is.
Type locality—Mt. Rochfort, Nelson. November 1904, W. Townson (Lecto- AK 3626)
Flowers—November-January—self pollinating.

3: *Genoplesium* R.Br. *Prodr.* 1: p319 (1810).

Name = the close affinity with *Prasophyllum.*
Genotype—G. *baueri* R.Br. *ibid.*
A genus with some 34 species in Australia; 2 of them extending to NZ. *Genoplesium* s. s. was originally a monotypic genus, but in 1989 Jones & Clements transferred all the pygmy prasophylls to it, effectively halving *Prasophyllum.*

1: *Genoplesium nudum* (Hook.f) Jones & Clements *Lindleyana* 4 (3): p144 (1989).
Name = naked—the absence of a leaf-lamina.
Basionym—*Prasophyllum nudum* Hook.f *Flora NZ* 1: p242 (1853).
Leaf lamina ± absent, the raceme breaking through near the top of the leaf. Flowers dark red, seldom found open, labellar callus dark red, cleft by a linear, greenish depression.
Distribution—Australia—Tasmania; Victoria; NSW; New Zealand—North Island—from Auckland southwards; South Island—Sounds/Nelson district; Chatham Is.
Type locality—Onetapu desert, east of Mount Ruapehu. W. Colenso 19 February 1847. (K).
In Memoriam etc. p39 (1884)—'together with a rather scarce orchideous plant, *Prasophyllum nudum*;'
Flowers—April-June—self pollinated.

2: *Genoplesium pumilum* (Hook.f.) Jones & Clements *ibid.*
Name = the very small plant.
Basionym—*Prasophyllum pumilum* Hook. f. *ibid.*
Leaf lamina extending well into the raceme, but seldom overtopping it. Flowers creamy-green with red markings, opening freely. Labellar calli of several inconspicuous green ridges.
Distribution—Australia—Tasmania, Victoria; NSW; Queensland; New Zealand—North Island—northern half; South Island—Sounds/Nelson district.
Type locality—Northern island, NZ, Edgerly (Syn- K)
Flowers—April-June—self pollinated.

Observations on orchid distribution and flowering times in Nelson and Marlborough

by Graeme Jane and Gael Donaghy, Takaka

The last year has been a busy one, mostly in Golden Bay-Nelson but with some excursions as far north as Cape Reinga and as far south as Mason's Bay. The following data are derived from nearly 700 records from 145 sites over the last two seasons (1997-99) concentrating on those from Nelson and Marlborough.

1. New records

Caladenia alpina: Kill Devil, NW Nelson
Caladenia chlorostyla: NW Nelson, Nelson, Richmond, Sounds, Wairau, Spenser. Widespread common. Cannot satisfactorily distinguish it from *C. nothofagetti* as albino forms link the range of characters.
Corybas "rivularis Takaka Hill": not properly resolved yet. Flowers earlier than *C. macranthus* at the same site. Seen at Takaka Hill, Cobb and Paparoas.
Corybas "sandhills *trilobus*": NW Nelson. Unresolved very early flowering form.
Corybas "Waiouru": NW Nelson, Nelson, Richmond, Sounds, Marlborough, Wairau, Spenser. Widespread, common and often abundant.
Corybas " trilobus darkie": Not properly resolved. Likes seepages in beech forest. Seems to be common. NW Nelson, Nelson, Wairau, Spenser.
Corybas "Whiskers": NW Nelson, Nelson, Richmond. Very abundant along streamsides.
Corybas cheesemanii: Add Richmond
Corybas macranthus: Add Kaikoura.
Corybas oblongus: Add Kaikoura (Sawcut Gorge).
Corybas orbiculatus: Add Richmond, Kaikoura.
Danhatchia australis: Add Sounds (Okiwi Bay)
Gastrodia "long column": NW Nelson, Nelson, Richmond, Wairau.
Gastrodia cunninghamii: Add Kaikoura (Sawcut Gorge).
Pterostylis aff obtusa: NW Nelson
Pterostylis areolata: Add Kaikoura, Spenser.
Pterostylis australis: Add Wairau.
Pterostylis cardiostigma: Add NW Nelson, Nelson.
Pterostylis irsoniana: Add Richmond, Wairau.
Pterostylis tanypoda: Add NW Nelson - apparently a calcicole.
Pterostylis tristis: Add Molesworth, Spenser - dryland species.
Pterostylis irwinii: Add NW Nelson, Wairau. Common on Takaka Hill over a wide area. Also stumbled on in the Branch, Wairau.
Spiranthes sinensis: Add NW Nelson. Found by Simon Walls in Managarkau Swamp.
Thelymitra intermedia: NW Nelson, Nelson, Richmond, Spenser.

Hybrids

Corybas macranthus x *orbicularis.* Range of forms seen in Waima River above the Sawcut Gorge junction.
Pterostylis australis x *P. oliveri* Cobb. Clearly sterile.
P. montana complex. Seems a wide range of forms suggesting hybridism. Possibly a *P. "non-montana"* involved which has narrow leaves, long labellum, oblong stigma. Forms noted at many sites in all Nelson areas.

2. Flowering times extensions

Adenochilus gracilis: Add January
Caladenia atradenia Add January
Caladenia chlorostyla: Add October and November
Corybas "Takaka Hill *rivularis*" September-October
Corybas "darkie *trilobus*": November-December
Corybas acuminatus: Add September
Corybas macranthus: Add January
Corybas macranthus x orbicularis October
Corybas oblongus: Add December
Cyrtostylis reniformis: Add July, August.
Genoplesium nudum: Add January, February (and March?)
Genoplesium pumilum: Add March
Pterostylis aff alveata: February-May
Pterostylis alobula: Add May
Pterostylis areolata Add December
Pterostylis australis: Add January
Pterostylis australis x *oliveri*: Add November.
Pterostylis banksii Add December.
Pterostylis graminea: Add September
Pterostylis irwinii: Add November.
Pterostylis montana: Add October, November
Pterostylis oliveri: Add November.

Pterostylis montana and *P.* "non-montana"

by Graeme Jane and Gael Donaghy, Takaka.

During the last spring and early summer we have been puzzled by *P. montana*. Our puzzlement began with a range of forms each at separate sites (perhaps more "affs") and increased in intensity when a range of forms was found at one site in the upper Wairau. Then the considerable diversity of forms of *P.* aff. *montana* present at the "Crash Palace" site at Pokaka in early December with the NZNOG group further stimulated discussion. This culminated in the addition of even more unusual forms at Turoa at the end of the trip.

Not long after, at Christmas time, we visited the Boyle (Lewis Pass) and again saw a huge range of forms in a relatively small area. Debate then raged between us (G-G) about what was the true *P. montana*. So there in the bush we decided to list the key features of what we thought was *P. montana* and what we, for want of a better name, called *P.* "non-montana". This is tabled below. In addition we listed some of the features of what we regarded as intermediates. This left for us two problems: what were the key features of what we regarded as the *P. montana* "complex" and how did this differ from *P. graminea?*

The key features of a *P. montana* and P. "non-montana" we decided were:

- a twisted labellum
- flat lateral sepals
- a more or less flat plate formed below the fusion of the sepals
- a general boxy shape to the flower with a straight, usually short horizontal section of the dorsal sepal.

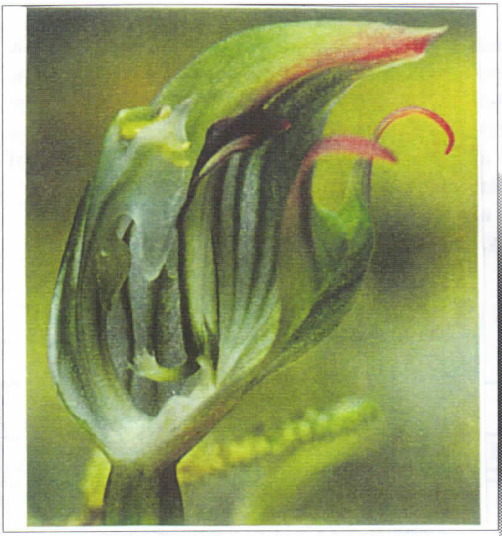
In comparison *P. graminea* has a long, curved dorsal sepal and cupped, often twisted lateral sepals and quite bulbous base to the lateral sepals.

The tricky bit though is that P. "non-montana" may not be a single entity. *P. montana* could possibly be hybridising with several other species. On the other hand the range of variation seen suggests introgressive hybridisation (crossing and back

crossing) between *P. montana* and only one other "species". In some localities the range of variation is quite limited and a single "species" appears to be present yet in others the range of variation is quite large and a hybrid "swarm" appears to be present. This means that at each *P. "montana"* site a range of plants needs to examined carefully, especially in their inner details (stigma, labellum tail) to determine its exact status. Clearly work is yet to be done to determine the range of expression of *P. montana* characters and to determine the nature of various forms.

Table: Inferred character sets

Character	*P. montana*	Intermediates	*P.* "non-montana"
General	flat rosette and bud	erect bud	erect bud
Leaves	broadest near base quite broad often bronze	linear or broad sometimes bronze	even sized narrow-linear green or striped
Lateral sepals, fused part	a flat plate base of sepals scarcely bulbous hairy	cupped	? cupped base of sepals bulbous hairy
Lateral sepals - free part	shorter than dorsal curled fowards flat	taller than dorsal erect, straight occ. cupped at tip	taller than dorsal erect flat
Dorsal sepal	short, $\pm$ = petals		longer than petals petals "tucked"
Labellum tip	twisted hardly extended beyond sepals scarcely curved down-wards	usually twisted short occ with long tip	often twisted ?extending well out-side the gape, strongly curved downwards
Labellum tail	clearly boxed, at *c.* 90^0	highly variable	curved through 180^0
Stigma	raised ovate	heart-shaped obovate or compound scu-tiform sts deformed	moderately raised oblong-scutiform



The Boyle river dissected flower shows a pretty standard *P. montana*, which had quite broad leaves, very raised, heart-shaped stigma and a flattish rosette stage

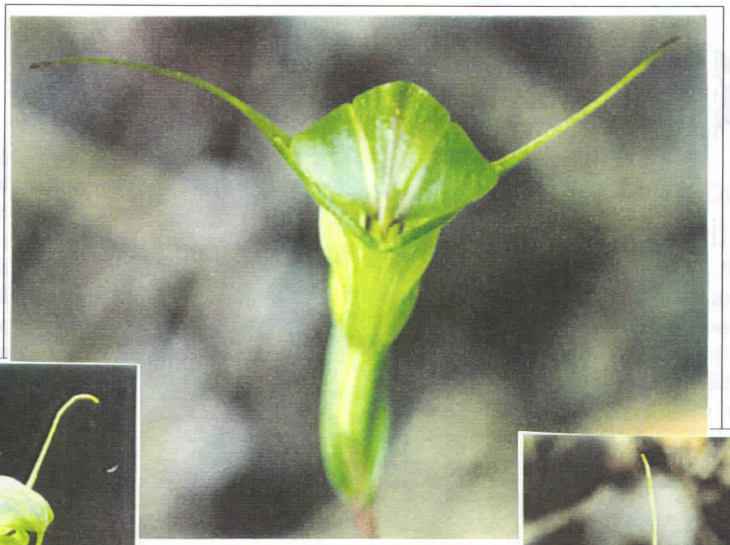
An extreme variation from Ruapehu

Pterostylis aff. *montana* variations

photographs by Gael Donaghy

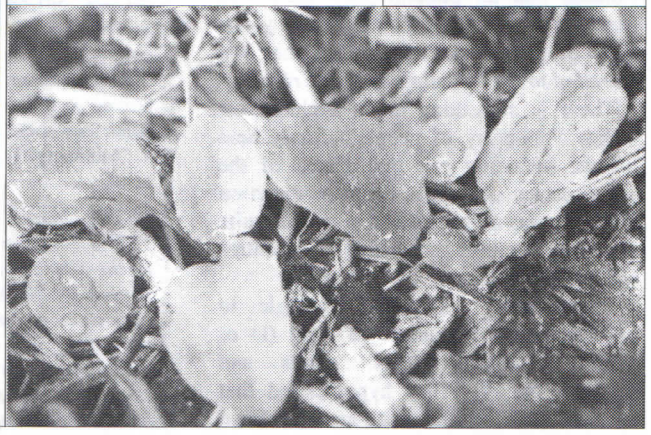
The Dip Flat and Six Mile Creek versions have narrow long leaves, flat lateral sepals, with oblong, moderately raised stigma, pointed at both top and bottom. The young stages are very pointed and upright, not a flattish rosette.

"*Platanthera* in North America is an actively evolving genus characterised by a rather high degree of intraspecific (within species) variability, by the lack of complete interspecific (between species) genetic barriers, and by the gradual fixation and establishment of hybridogenic forms.... Hybridisation, the mixing of preexisting gene pools, of course, is a much faster means towards the achievement of (forming and consolidating new species) than mutation and subsequent selection of advantageous features, involving de-novo creation of improvements." (WJ Schrenk, 1978).
This statement could as easily be made of the Pterostylis montana complex in NZ — Ed.



Pterostylis* aff. *obtusa

1999 photographs
by Gael Donaghy



The column: Eric Scanlen

Should *Spiranthes* spiral to the left or to the right?

It all started when Robbie Graham put a magnificent slide of *Spiranthes novae-zelandiae** on screen at the Pokaka Conference, Dec. '98. The Column had to put his oar in and comment, "Why does it have a right hand thread?" Robbie was visibly moved by the comment and insisted the slide was the right way 'round and even checked it out after the show. The Column's best 3-D pair, just as definitely has a left hand thread, like Chevy wheel nuts on the left side or haven't you run into that bit of engineering genius? The impasse was left to simmer until Allan Ducker had his video running on three monitors the following evening, on some edited clips of past orchid glories. Then he did it — put on three *Spiranthes novae-zelandiae* from Horopito in one frame. It caught the Column's eye at once because, although he had personally plaited grass leaves between their stems to hold them in a plane (18 February 1995), Bob Talbot, Allan and the Column had all photographed them and gazed upon the results for nearly four years, none of them had ever noticed that ***two spiralled to the left and one to the right.***

There is something about orchids that makes a mockery of people's firmly held beliefs, including one that plants of the same species all twist in the same direction [1]. Here was a tight cluster of tubers, quite probably all clones, producing an incontrovertible exception.

Hegstrom & Kondepudi struggle to explain the predominance of right (D or dextro) spiralling DNA, plants and seashells etc [1]. They hypothesised that the first life cell formed with mostly L (levo or left) amino acids, the building blocks of proteins, and evolutionary pressure produced the exclusive L proteins existing naturally today. Interestingly, people are thus highly sensitive to the handedness or chirality of molecules so the artificially produced thalidomide which contained both L and D versions, cured morning sickness with one and produced birth defects with

* The NZ *Spiranthes* taxa are torn among three specific names and some yet to come. The Column has here chosen JD Hooker's *S. novae-zelandiae* on the evidence presented by Dr. Brian Molloy in these pages (*Newsletters* 21 & 22). Brian proved that the NZ taxa were self pollinating hence different from the common Australian, then *S. sinensis* which is pollinated by a small native bee. (It has recently been corrected to *S. australis* [4]). Brian presented the evidence but drew no conclusion, leaving it for the reader to decide which of the many previous names was most appropriate. Many still use *S. sinensis* following [6]. The issue is not simple because self pollinated taxa are reported from Australia [2, 5, 7] still lumped with the now *S. australis*. Also, Lucy Moore's description and Bruce Irwin's excellent drawings were done from cultivated Australian plants. Brian also detailed differences in *S.* "Motutangi" and *S.* "Southern NZ" (the Column's tags) and promised drawings by Bruce who wasn't able to see the differences in the state the specimens arrived so this work faltered at a crucial stage. Brian has some plants in cultivation (but not *S.* "Motutangi") and Bruce still wields a mighty pencil .....

(NOSSA Journal April '99 states, "... Ames in 1908 decided our Aussie plants were identical to the Chinese Spiranthes sinensis based on [Brown's] Neottia sinensis and gradually Australian botanists accepted this. Recently there has been the tendency to accept our Australian plants as different [in fact there are clearly other species of Spiranthes in Australia] and Spiranthes australis has been reinstated."

Spiranthes novae-zelandiae spiralling R & L, growing side by side at Horopito

the other — and "Today the pharmaceutical industry pays careful attention to the separation of enantiomers [L and D molecules]". They mentioned *Bacillus subtilis* whose colonies normally spiral to the right but uniquely switch to the left when temperature rises but sadly there was neither mention of *Spiranthes* nor of course, why it has chiral duality (save those two for Scrabble!)

Back copies of the Journal are a fertile source of information and p4 of Nº 23, when it was still a *Newsletter* (Sept. 1987), records from PG Reece of South Australia, a pure white *Spiranthes* [*sinensis*] displayed both clockwise and counter-clockwise spirals.

The taxonomists do not normally dabble in irrelevancies so do not mention the orchid's chirality in any of the Column's texts but David Jones has some controversial specimens in a plate on p. 425 [2]. A spent one on the left has a LH thread, one on the right has a RH thread and one in the middle starts with an easy RH thread, switches gently to a LH thread then switches back to a tight right hander at the top. Whatever next?

Northeastern United States has a yellow and nine white species/varieties of *Spiranthes* plus two natural hybrids [3]. They too spiral to left or right at random with several species showing both directions in single photo's; so it wasn't reversed photo's. One had flowers in vertical groups of 3 or 4 each with small twists between groups (*S. lacera*), others had a moderate twist (i.e. *S. vernalis*) and yet others had tight spirals (i. e. the yellow *S. ochroleuca*). We can conclude that the genus *Spiranthes* is ambidextrous (achiral) with multiple degrees of twist; but why?

The Column's humble hypothesis says that *Spiranthes* has economised on stem length and, like the Government's health budget, there is not enough to do the job. The fat little ovaries haven't the space to fit in vertically as they are wont to do. So, the first one to swell beyond the space available, wedges the next one off to whichever side it goes easier. Once the stem has started a twist, it would of course continue in the same direction. See? simple when you think about it.

"Aha!" you say, "if that is so, why did David Jones' twist right, then left and then tight right? Answer that."

If you have access to [2] note that the Aussie *Spiranthes australis* twist can be ever so gentle because the stem is almost long enough to accommodate all the flowers in a vertical column so it wouldn't take much to switch handedness [4]. At the first and gentler change, two alternate flowers are shrivelled so the stem

didn't need to twist for five flowers in a vertical row. Then the next ones were virtually starting again and left was the easier direction. So far this exception helps to prove the hypothesis but the Column hesitates to speculate about the abrupt change at the top of the stem; your guess is as good as his. Microscopic observation of a sectioned stem would be interesting, to see if the fibres were indeed twisted in sympathy with the flowers.

References

1. Hegstrom, RA. & Kondepudi, DK. *The Handedness of the Universe,* Scientific American Jan. '90
2. Jones, D L. *Native Orchids of Australia.* Reed Books Pty. Ltd. 1988
3. Brown, P M & Folsom, S. *Wild Orchids of the Northeastern US,* Cornell University Press 1997.
4. Jones, DL. *Aust. Orch. Research.* Vol. 3, 1998
5. Bishop, Tony. *Field guide to the Orchids of NSW and Victoria,* UNSW Press 1996
6. Moore, LB & Edgar, E. *Flora of New Zealand,* Vol. II. Govt. Printer 1970
7. Backhouse, G & Jeanes, J. *The Orchids of Yictoria.* The Miegunyah Press, 1995

Wharekawa sequel...

Have you visited Geoff Stacey's Wharekawa Orchid Garden (J69 p21) yet? If you had recently, you would still be hard pressed to see the curious phenomena that Geoff picks up with continual observation of NZ orchids right by his door. Take for instance the turning orchids.

A *Caladenia* aff. *carnea* obligingly produced a single flower facing away from the light. No sooner had it opened than it twisted 180° clockwise, stem, leaf and all, to face the morning sun. Just what you would expect? Possibly, but remember that *Pterostylis* species turned the clear back of the galea to the light, not to frustrate photographers, but to warm up the space for pollinators, or so we are told. But, one *P. banksii* turned 180° one day then got its wires crossed and turned another 180° the following day to finish up facing the light and it stayed that way. Poor twisted thing was probably on full lock! This had Geoff bamboozled but made him all the more determined to sort out this twisting business. A *Caladenia atradenia* with two buds next came under scrutiny. Bud Nº 1 opened to the light and didn't turn a whisker. Bud Nº 2 at the top, now opened facing the dark of course, just as flower Nº 1 started to wilt. The top flower now turned to the light, 180° anticlockwise just to be different — but left the leaf unmoved. So one Caladenia twists anticlockwise above the leaf and another twists clockwise below. Geoff was so impressed, he almost got out his notebook and pencil but there, calling for attention, was a *Thelymitra longifolia* with a typical wide healthy leaf, about 250mm long, flopped on the ground as the first flower decided to open actually facing, you've guessed it, up into the dark. So this reluctant flowerer turned its flower and its relatively huge leaf around 90° to the sun. Why would a self-pollinating flower bother to screw that heavy leaf over lumpy ground just to face the mmorning sun? All the buds set seed (without any more opening) so one can rest assured that it is a *Thelymitra longifolia* sensu stricto. Perhaps the poor thing has some lingering instincts to get insect pollinated if at all possible or why else would the flowers ever bother to open? Just think, would a second opening flower twist the flower and leaf back again or come full circle? You can bet your life, Geoff will be looking out for these world shaking answers amongst many others in succeeding seasons.

He was on his knees at the break of day, near the end of August, not in some mystical religious rite, but observing a host of those "tawny little flies" (J69 p23) messing

bout with another of his treasured colonies of *CCyrtostylis oblonga*. Not having an insect net with him, he grabbed at a fly in mid air, caught it and entombed it in an egg-cup. John Early, entomologist at Auckland Museum, was good enough to identify it as *Sylvicola neozelandicus,* a member of the primitive Anisopodidae family of fungus gnats and crane flies. Geoff saw nary a trace of pollinia on any of the flies but several seed capsules swelled and produced seed in due course, so perhaps the shy flies did their pollinating when they weren't being watched. A stereo pair showing this insect will appear in the next *Journal.*

Just to the south of Geoff's place is the Auckland Regional Council's Whaharau Regional Park where Geoff spotted red garden ants in October, running up and down some *Microtis unifolia*. Some of the ants had pollinia attached like horns to their heads. Geoff said they seemed pretty unhappy, being unable to dislodge the unwanted protuberances but eventually went about their business with the pollinia attached, in classical pollinator behaviour. Is there anyone out there with a video camera and close up lens who would like to lie in wait in the leaf mould at dawn for this pollination ritual? Give Geoff a call on 025 2763419 and he will be only too pleased to assist.

Earina autumnalis flowers all year round! You may well say buncombe or even bah, humbug but there is photographic evidence, not of cascades of blooms but a single flower on a new flower spike on 24 August 1998. Geoff has found that a new spike puts up a flower or two at whatever time of year it sees fit. That spike then refuses to flower in the next February/ March but waits until the following season before producing a full spike. Then as you all undoubtedly knew (and kept secret from the Column), the same spike flowers every season for about five years so do not cut off your unsightly dead flower spikes or you will get no flowers next year.

Geoff introduced the Column, on 6 December, to the latest survivor rescued from a pine logging area; a dainty *Gastrodia* aff. *sesamoides* with several miniature flowers. The tuber was planted in December 1996 and was flowering for the first time two years later. His *Winika cunninghamii* were a picture with numerous clean blooms. A good year for *Winika* and not too bad for other species which are responding to Geoff's TLC and recovering well from the earlier slug onslaught.

Matakawau

'Tricia Aspin rang from Matakawau in a voice edged with excitement. It was 2 December and well she might be excited. She and Stella Christoffersen had found robust *Gastrodia* aff. *sesamoides* in native bush at Barry and Anne Lee's place, Awhitu, as you can read in 'Tricia's article in this issue. The Column just had to see this most unusual phenomenon but would they still be in flower after the Pokaka Conference and Iwitahi?

They certainly were, on a sweltering 17 Dec. when 'Tricia and Stella took time off from haymaking and farming chores to show the Column and Stella's two youngsters Elizabeth and Russell, some of the NZ orchids on the Awhitu Peninsular. We first checked the *G.* aff. *sesamoides* in the 13 year old *Pinus radiata* plantation abutting a fine native forest stand, all in the Matakawau Reserve. The Column's camera gear was soon out recording the best of some fine colonies.

Next stop, Barry Lee's spread of regenerating native forest, some 5 km further north. Kanuka (*Kunzea ericoides*) is thriving in this old sand-hill country, being up to 1m through and 25m tall. Mature forest species that the kanuka have nurtured, are now steadily taking over with some active

assistance by Barry and Anne in the kauri planting department. They have side cut tracks through the hilly bush to ease the treks of naturalists and in doing so, have provided ideal habitat for at least nineteen orchid species thriving in the subsoil and the enhanced light of the track sides. The youngsters had not been on an orchid hunt before but quickly cottoned on and became the field party's best eyes.

Corybas oblongus was loaded with seed on 80mm peduncles. Nice to see it not eaten off! *C. cheesemanii* had 200mm peduncles, too tall to be much use for dispersing seed because most had fallen over. *C. macranthus* too had seed on fewer and shorter peduncles and *C. trilobus* was present with quite variable leaf forms from colony to colony. *Pterostylis cardiostigma* though, was prevalent, quite contrary to its usual rarity in the north. *P.* banksii was lush in places and *P. agathicola* held sway around the kauri (*Agathis australis*). Then came the big moment.

In a shadier hollow stood several magnificent specimens of *Gastrodia* aff. *sesamoides,* some standing over 1m tall and all at the peak of flowering. One specimen, now recorded on film, had 19 flowers all open. Another had three vertical columns of flowers from top to bottom, the columns being neatly 120° apart. Nice to see robust plants miles from the nearest pines.

Thelymitra longifolia had some lingering last blooms open in the heat. One baby-pink specimen got blown wider open; no, not with gelignite, just a little warm breath! (Fig. 1). Elizabeth volunteered for button pushing duties on reversed-lens close-ups and ran foul of a fail-unsafe locking screw on the cable release but we got some nice stereo pairs, thank you Elizabeth. For once we can be sure this is *T. longifolia* s.s. because the pollinia were in a heap of crumbs on the stigma and all lower seed capsules were swelling nicely — indicating self pollination. Some *T. longifolia* had one or no capsules swelling hence can be taken as a form of the insect pollinated *T.* aff. *longifolia.* A diminutive *T. pauciflora* had one last flower partly open and *T. tholiformis* was unmistakable in some of Tricia's photo' collection. Only moderate annual rainfall in these low hills, may account for epiphytic orchids being uncommon but the healthy colony of *Earina mucronata* on nikau (*Rhopalostylus sapida*) did get checked out. Lunch in the *Beilschmiedia tarairi* preceded a determined search for *Danhatchia australis* but with no luck this time.

A cup of coffee with Tricia and Wayne capped an excellent field trip in a GLOS* where the prevalence of *Gastrodia* aff. *sesamoides* and *Pterostylis cardiostigma* was a high point only surpassed by the brimming enthusiasm for native orchids apparent in 'Tricia and Stella.

For the Oops column. The Column finds that the things with white hairs NOGJ69:29, are arms rising from the stigma on *Pterostylis tasmanica.* The lateral petals are seamlessly welded to the margins of the dorsal sepal just to confuse photographers. He tends his profound apologies for misleading any dedicated readers. No thanks to those who chuckled up their sleeves and said nought but many thanks to George Fuller for his overflowing endorsement in J69:26, of the 3-D photo's.

**Great little orchid spot(s)*

Delicate pink *Thelymitra longifolia* late flowering at Matakawau

Notes, comments, questions, letters

Bruce Irwin's cover illustration shows a *Spiranthes* taxon discovered by Doug McCrae some years ago in a swamp at Motutangi in Northland. The swamp has been drained and the original colony wiped out. Is this our first endemic orchid extinction? see Brian Molloy on *Spiranthes* (J21 & 22).

I have heard the Type locality for ***Pterostylis cernua*** (a roadside near Arthur's Pass) has been wiped out by road widening. Those who have seen it there are confident there will be other populations nearby, but so far nobody has, to my knowledge, found it. Is this our second endemic orchid extinction?

Spiranthes sinensis is thought to be self-pollinating in the Solomon Islands (Lewis & Cribb, 1991), Samoa (Cribb & Whistler 1996), and Vanuatu (Lewis & Cribb 1989). In Japan *S. sinensis* is called NEJIBANA which means (!) twisted flower.

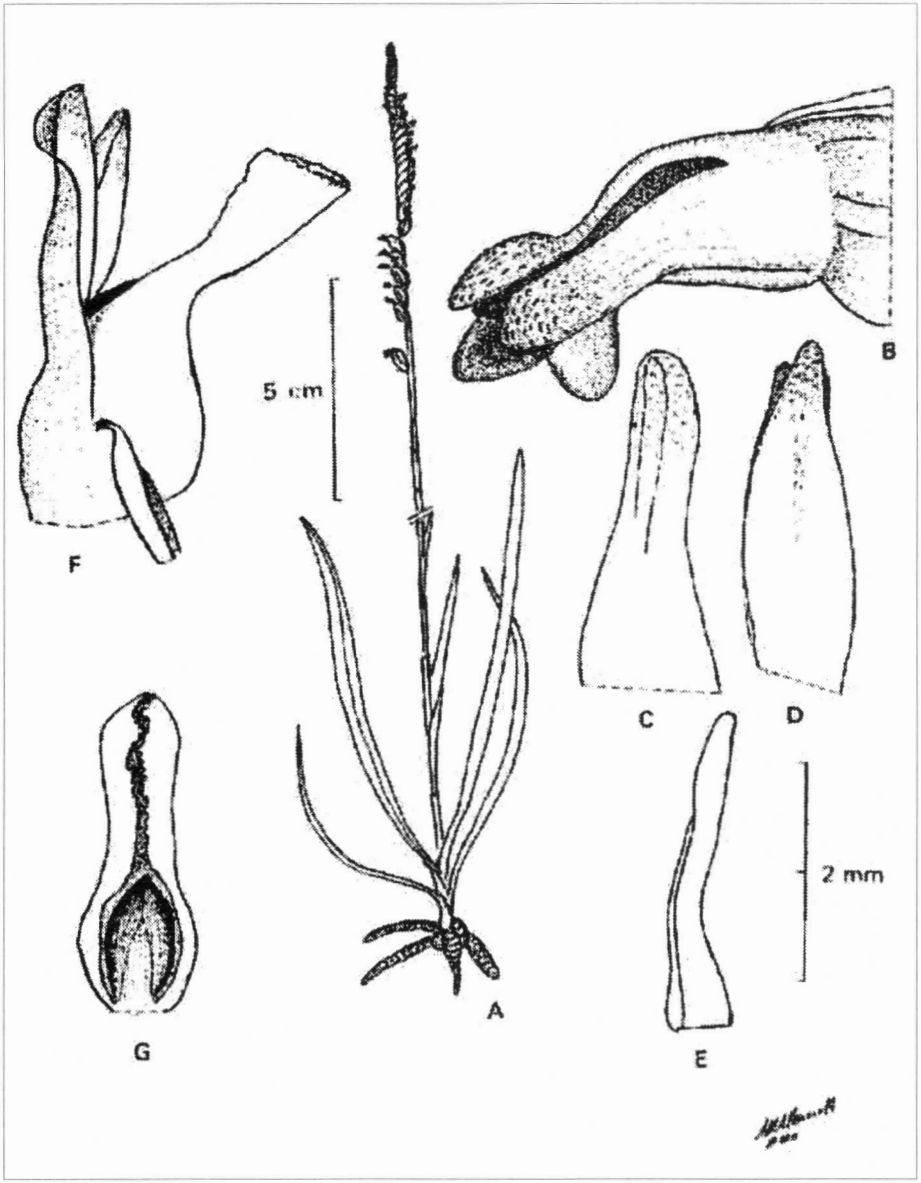
Del Prete C and Mazzola P (Endemism and speciation in the **orchids of the Mediterranean Islands**. *Ecologia Mediterr.* 1995; 21[1/2]: 119-134) have investigated the orchids of the Mediterranean islands in order to explain the relationships between insularity, speciation and endemism. They found that insularity was of little importance in the differentiation of Orchidaceae. Indeed the Mediterranaen isles or archipelagos appear not to have a large number of endemic species, with the exception of Cyprus and to some extent of Crete. Sicily, Sardinia, Corsica and the Balearics have very few "good species" of orchids and their surrounding little islands often have none. Orchidaceae are more abundant in the islands of the eastern Mediterranean where microspeciation appears more relevant. Many species (or microspecies), mostly in *Ophrys* and *Serapias*, have recently been described from these countries, and this confirms the hypothesis that those genera had their origin in the eastern countries of the Mediterranean and colonized Western territories from there. *Hmmm, not so for NZ. I suppose insularity is responsible for more differentiation when the distances between islands, and between the mainland and the islands, are greater (as they are in the Pacific) — Ed.*

I had a look at the ***Prasophyllum* aff. *patens* at Tangiwai** on 6 March. They were all in dried-off brown fruit, but each capsule had a hole eaten into it and the inside hollowed out. Nearby *Microtis* were at a similar stage but with all fruit intact. I found a weavil on flowers here some years ago and wondered if the *Prasophyllum* fruit was as tasty as its flower was fragrant, and if this fatal flaw explained its scarcity.

I found a lovely big fruiting clump of ***Winika cunninghamii*** in the northern end of the Haurangi State Forest Park, Aorangi range, ecological region 37. The *Winika* is a new record for that region.

Gael Donaghy wrote (14 April), "We have just returned from a trip to Mason's Bay, on the west of **Stewart Island,** where the *Winika cunninghamii* has had an amazing flowering - an area going south to Doughboy had many trees festooned with plants, all with many large capsules. *Earina autumnalis* still in full flower. Found *B. pygmeaum*, and it too was covered in capsules. *Drymoanthus flavus* was found on one Hall's totara - about 20-30 plants. *Wairea stenopetala* had recently flowered on Rocky Mountain in the Freshwater."

From the internet: *Spiranthes sinensis* drawn by NHS Howcroft from a live specimen from Mt Kaindi, Wau, Morobe Province, Papua New Guinea. Downloaded from http://www.bandisch.com/PNGorchid/Spiranthes_sinensis.html



Historical reprint

Extracts from the GM Thomson diaries

George Malcolm Thomson 1848-1933, schoolteacher, naturalist, parliamentarian, came to NZ when he was 20 and lived all his life in Dunedin. The Hocken Library has his diaries.

1879: 22 October— Johnstone brought up specimens from the rocks at Sawyer's Bay, of *Sarcochilus adversus*. This singular little orchid, though remarkably inconspicuous, is quite incapable of self-fertilisation. The flowers are produced in few-flowered racemes not exceeding an inch in length. They are much more regular than the majority of orchids, greenish in colour, with a few purple markings and not exceeding 1/10th of an inch in diameter. They are also produced more or less under the leaves.

On the other hand they are slightly fragrant, and secrete a considerable quantity of honey at the base of the column and the fleshy, ridged labellum. The pollinia are united into two almost globular masses attached by a caudicle to a broad, flat disk , when removed from the anther the disk contracts and causes the pollinia to be depressed to a nearly horizontal position. This depression is almost identical with occurring in *Orchis mascula* as described by Darwin, but there is a slightly different action in this that the two masses of pollinia separate slightly at the same time. The whole operation does not occupy more than 10 seconds. From the great depth of the stigmatic cavity, it seems utterly impossible that self-fertilisation could take place.

1879:—*Corysanthes*, the species found on stones in Nichols Creek—now fast disappearing—may be either *C. rivularis* or *C. macrantha*. Like so many other plants they probably run into one another.

1884: 17 November—W. Bird brought to school a small specimen of *Chiloglottis* gathered in some moss on a tree trunk at Forbury. It differs considerably in small details from the description of *C. cornuta* in the Hooker *Handbook*—The leaves are broadly oblong (almost elliptical) in form, and sub-acute. The flower is almost sessile; upper sepal nearly as broad at base as above and barely acute, certainly not acuminate. The lateral sepals are ovate-lanceolate. The lip has almost no claw, is sub-acute at its apex while its inner surface does not answer in my opinion to Hooker's description. The whole inner face is covered with purple calli arranged obscurely into three masses, of which the central portion is broad, while the lateral reach further down towards the base of the lip.

1898: 26 May—Put up a collection of dried orchids for Dr. Rud. Schlechter of the Royal Botanical Museum, Berlin. It contained specimens of the following species:-

Bolbophyllum pygmaeum
Caladenia minor
— Lyallii
Chiloglottis Traversii
— cornuta
Corysanthes macrantha
— rivularis
Dendrobium Cunninghamii
Earina autumnalis
— mucronata
Gastrodia Cunninghamii
Lyperanthus antarcticus
Microtis porrifolia
Orthoceras Solandri
Prasophyllum Colensoi
Pterostylis Banksii
— graminea
— trullifolia
Sarcochilus adversus
Thelymitra longifolia
— pulchella

1903: 10 July—Powell told me today that he got large bunches of *Earina autumnalis* in beautiful flower last month; they were growing out in the open....

References to orchids are scattered through Thomson's notes in his natural history diaries at the Hocken Library (his family still has his unpublished political diaries). The notes form the basis for his famous papers on orchid pollination published in the Transactions, and for a regular newspaper column he contributed to the Otago Witness (these are collected in a scrapbook of clippings in the Hector Library in Wellington). There are some items of interest: 1. The "Sarcochilus adversus" he refers to is Drymoanthus flavus. 2. He mentions the similarity between "Corysanthes rivularis" and "Corysanthes macrantha", demonstrating that he was unaware that what we now know as Corybas acuminatus was elsewhere being mistakenly called C. rivularis; in fact the plant now growing in the Nichols Creek area is probably identical to Corybas iridescens, one of the C. rivularis group. 3. He describes variations in Chiloglottis cornuta, noting especially the labellar calli; David Jones suggests Chiloglottis cornuta may contain several taxa, foreshadowing a future split. 4. Of the plants he sent to Rudolph Schlechter, Caladenia minor is probably Caladenia aff. carnea, common about Dunedin (I have never seen what we now recognise as Caladenia minor there); Chiloglottis Traversii = Aporostylis bifolia; he must have got his Bulbophyllum, Orthoceras and Pterostylis trullifolia from further north: certainly they do not grow near Dunedin nowadays. 5. I too have found Earina autumnalis flowering in shade as late as July near Dunedin. I am indebted to Dan Hatch for transcribing photocopies of pages from Thomson's diaries—Ed.

Australian notes

by David McConachie, Palmerston North

1. For those of you who saw the spray damage at Kaitoke in 1997 the following note in Dec.'98 *Journal* of the Native Orchid Society of South Australia. Inc. will sound familiar and I am sure other members have had similar experiences.

Sad news regarding duck orchids at Kuitpo. Anon.

South Australian Forestry workers have recently slashed populations of Duck orchids *Caleana major* and *Paracaleana minor* in a Native Forest Reserve at Kuitpo despite years of attempted liaison by NOSSA. Both species are exceedingly endangered in the Adelaide Hills. This follows the destruction of the largest population of *P. minor* by horse riders two years ago in the same area.

2. In the Mar.'99 issue New Zealand orchids are discussed in a Trip report.

Simpson field trip report
by Kerry and Bob Bates

Why go all the way to SIMPSON in high Summer! After all it's a tiny dot on even the best maps and not even in South Australia! [it's in Victoria -- DMcC.] For us it was worth it just to get away from Adelaide's endless heat and dry. And five different orchids most of us had never seen at the very first stop! To say nothing of catching up with old friends the chance of a second honeymoon and all that green scenery. ... Our first roadside stop at a sand burrow pit was amazing. We stepped out of the cars and almost straight onto the very curious *Genoplesium pumilum*, a very colourful, freely opening form with short dense spikes of ghostly yellow and red (See *Orchids of Victoria* plate 202) and there were dozens of them. This colony at Simpson is the closest to SA that this species occurs, in fact it is much better known in New Zealand! Ten metres away an even stranger *Genoplesium, G. morrissii* var. *contortum,* deep maroon flowers on spikes 30cm high. Another 'newy' to us South Australians and again the closest location to SA. It was quite eerie looking at these species new to us in the light mist. There were normal *G. morrissii* present too and these made good comparison. This species comes right up to the South Australian border but we have never seen it on a NOSSA excursion before. But that's not all! There were even more *Genoplesium* never seen before in South Australia: the beautiful red *G. archerii.* (The South Australian plants previously identified as this species have all been re-identified as *G. ciliatum*). Also there were seedpods of *G. nudiscapum.* How many places can there be where five different *Genoplesium* occur together!

Even weirder than the *Genoplesium* were the large, fleshy *Orthoceras*, quite unlike any we had seen before, these had short flower bracts and rounder labellums; a quick comparison with photos of *O. novaezelandiae* showed them to be much closer to that supposedly New Zealand endemic!! Could this be a case of migration from New Zealand to Australia? After all this site is on a sandy ridge very close to one of the most southerly points of Mainland Australia and the vegetation is similar to New Zealand's Manuka scrub. Maybe it's not surprising that both of the New Zealand *Genoplesium* also grow here. Another species in full flower at this site was *Cryptostylis subulata* (which also grows in New Zealand!)....

3. Finally, for those members who were at Iwitahi last Christmas and saw the *Gastrodia* forest opposite the old reserve the following article from Mar.'99 ANOS Victoria Group *Bulletin* will be of particular interest.

In search of the potato orchid
by Rex Johnson

I was intrigued by the name Potato Orchid. How could such a nice flower get such a name? The genus name is *Gastrodia*, but could that be because the potato is a gastronomic delight for some people? No, the common name is because of the potato-like tubers. History has it that the aborigines used to harvest the tubers and eat them.

People had told me where they had seen *Gastrodia* plants from open forest to wet areas. The manager of the lavender farm in north-east Tasmania said he had seen a few flowering spikes growing up through the lavender: but the thought of searching 130 acres of lavender in the hope of seeing just two or three spikes was far too daunting.

In December last year, while checking the spring in my little rainforest, I noticed four or five spikes of the Hyacinth Orchid (*Dipodium roseum*) coming up. It is relatively common to see this species flowering in our area after Christmas, but I kept an eye on them and, as their height passed one metre I realised that they were *Gastrodia* species. On searching my orchid books, I found that two species occur in Tasmania; and mine were *G. procera*.

The genus *Gastrodia* has about 20 species spread from India through Malaysia down to Australia and New Zealand. Only eight species are endemic in Australia and only two of these are in Tasmania. Although they are not colony forming, three or four plants can often be found growing in close proximity to each other and are quite common in many areas. Like *Dipodium roseum,* this orchid is a saprophyte.

Gastrodia sesamoides

This is the smaller of own two Tasmanian species. It grows to about 400mm tall and has one to ten flowers. *Gastrodia sesamoides* grows in open forest and seems to prefer drier soils with little competition from other plants on the forest floor. A peculiarity of the growth is that the extremity of the flowering stem is arched, the tip pointing down and looking somewhat like the curved end of a shepherd's crook. The stem straightens as the buds open.

Gastrodia procera

This species has only recently been separated from *Gastrodia sesamoides*. The difference being that the spike growth is much taller (up to 1400mm) and the top of the spike remains straight both before and after flowering. This species also has many more flowers (up to 75). *Gastrodia procera* flowers are about 20mm long (15mm of which is tubular and 5mm flared at the end), bell shaped and 8mm in diameter. The flowers are very similar to those of *G. sesamoides*, but a little larger. When fully open, the flowers are semi-pendulous and down facing.

In both species the flowers are a light brown on the outside and bell shaped. They are bell shaped because the petals and sepals are fused for about three-quarters of their length, only separating near the extremities where they part and flare to expose a whitish inner surface and a yellow tipped labellum.

Another common name for the flowers of both species is Cinnamon Bells (a much nicer name, don't you think?) as they have a cinnamon-like perfume on warm days. With so many flowers on the spike, it is a shame that all the flowers are not open and in good condition at the same time. The lower flowers wither (maybe because they get pollinated) before the top ones open.

Gastrodia sesamoides and *Gastrodia procera* grow in a wide range of areas in Tasmania and flower from December to February.

The Australasian Native Orchid Society

ANOS New Zealand

Doyle Allison-Cooper (3 Atlanta Court, Katikati) is editor of *Adversus,* the newsletter of the Australasian Native Orchid Society of New Zealand; he wrote (in response to our enquiry), "ANOS NZ is an incorporated society formed about four years ago to promote interest in, and promote the growing of Australian native orchids in New Zealand. We have had speakers on visits here from Australia and they have helped considerably in the growing and breeding of Australian orchids. In our membership we have at least three orchid breeders and at least one of these breeds, or has bred, some *Pterostylis*.

"An interest in New Zealand native orchids has developed. Some of us have tried to import tubers of Australian terrestrials, and finished up with about a third of the original order after MAF had them grown in quarantine. At present there are about six members who have one or two NZ native orchids under cultivation. The book which you co-edited with Doug McCrae has helped three of us very much.

"ANOS NZ has about 70 financial members, and the Society meets on the third Sunday of each month at one of three venues – Warkworth, Takapuna, Howick. The average attendance is about 30-40; members come from Taranaki, Hastings, Napier, Whangarei, with most from Auckland.

"*Adversus* is the Society's Newsletter, of which I have been elected as editor after an absence of two years. It contains a résumé of the last meeting, birthdays, wedding anniversaries, raffle results and items of interest and help in growing Australian and New Zealand native orchids. It is usually both sides of two A4 pages, although occasionally it is both sides of one sheet.

"The subscription is $10 a calendar year and the AGM is held in November. The Treasurer is Mrs J Sharp, 40 Victoria St, Warkworth.

"The Society has an annual show at Eden Gardens in Auckland in September – 3rd weekend – and a mini-show at Point Wells, Warkworth, in August."

Fourth Australasian Native Orchid Society Conference and Show

Melbourne 5-8 October 2000

Please study the enclosed brochure, note that the registration fee is reduced if paid early, and get excited about the conference coffee mug. If you are likely to be interested in attending this event please contact the editor now: if enough are interested we may be able to negotiate group rates for flights and accommodation, but we would have to have an idea of numbers now.

The New Zealand Native Orchid Group — membership list 1999

Life members
Dorothy Cooper, 3/5 Waimea Rd, Waikanae, Wellington; ED Hatch, 25 Tane Rd, Laingholm, Auckland; J.Bruce Irwin, 192 Bellevue Rd, Otumoetai, Tauranga; Dr Brian Molloy, 20 Darvel St, Riccarton, Christchurch.

Workers
Editor: Ian St George, 22 Orchard St, Wadestown, Wellington;
ANOS liaison: David McConachie, 15 Battersea Place, Palmerston North;
Conservation: Peter de Lange, Dept of Conservation, PO Box 68908 Newton, Auckland.

Members
Auckland: MA Gardner, 2-550 Glenfield Rd, Glenfield. Mrs Marjorie Newhook, 24 Landscape Rd, Mt Eden. Alva W. Gosling, 14 Reisling Place, Western Heights, Henderson. Josie Driessen, 28 Edwin Mitchelson Drive, Waimauku RD1. Ron Whitten, 5 Thorley St, Mt Eden. Brian K Otto, Suite 6 - 110 Remuera Rd. Noel Townsley, 6 Woolley Ave, New Lynn. Sandra Jones, 14 Park Rd, Titirangi. Mrs PH Morton, 120 Aberdeen Rd, Castor Bay. Allan Ducker, 75 Wharf Rd, Te Atatatu Peninsula. Annette & John Scott, 145 Manuka Rd, Glenfield. Brent McGuire, 3-129 Wallace Rd, Papatoetoe. Chris Hubbert, PO Box 3451. Dr Ross E. Beever, Landcare Research, PB 92170. Graeme Hambly, 112 Viponds Rd, Stanmore Bay. Graham Marshall, 106 St George's Rd, Avondale. Mr E Cameron, Botany Dept Auckland Museum, Private Bag 92018. Mrs PM Bell-Booth, 15 The Glebe, Howick. Mrs Sandra Moore, 4 Monterey St, Glendowie. Mrs Sue Bergersen, 21 Amriens Rd, Waitakere RD. Paul Left, 1Rhodes Ave, Mt Albert. Pauline Lawes, 31 Glen Var Rd, Torbay ECB – North Shore. Peter de Lange, Department of Conservation, POBox 68908 Newton. Sue and John La Roche, 35 Geraldine Place, Kohimarama. **Australia**: Ruth Rudkin, 18 Lyle Ave, Lindfield. Warren Simpson, RMB 8510 - Hill End, VIC 3825. **Awanui**: Mrs BV Hoggard, RD 1. **Balclutha**: MC Miller, 4 Cherry Lane. **Banks Peninsula:** Dr Eric Godley, Box 16, Pigeon Bay. **Cambridge**: Mrs Betty Seddon, 11 Grey St. Tim Oliver, RD 2. **Christchurch**: Maurice Sinclair, Hoon Hay Valley. Rodney Boon, 57 Townshend Cres. Jennifer Manning, 258a Mt Pleasant Rd. Mrs KE Blackwell, 1 Taupata St. Matthew Walker, 2-329 Worcester St. Dean Pendrigh, 22 Allstone Pl. Angela Abernethy, Plant and Microbial Sciences, University of Canterbury. K Gwatkin, 256 Westminster St. Richard Walker, 65 Innes Rd. RJ Pender, 2 RD Ellesmere Rd. **Dargaville**: AWD Donaldson, 4 Mali St. **Dunedin**: Treasurer, Dunedin Naturalists' F.C., PO Box 6184. **Eltham**: Clive Perry, 234 Bridge St. Margaret Menzies, No 19 R.D. **Fielding**: Barbara Schreiber, 3 Macmillan Place. **Foxton**: Mrs LP Chrystall, 489 Highway One, RD 11. Susan Hansard, Box 176. **Gisborne**: Mrs Nancy Adye, 30 Adair St. **Greymouth**: Paul Lambert, 45 Lydia St. **Hamilton**: Bev. Woolley, 8 Beverley Cres.. Bruce & Bev. Clarkson, 7 Lynwood Pl. Catherine Beard, 22 Emerald Place. Fraser Broom, 49 Flynn Rd. Ian Reid, 629 Grey St. Jean Coe, 20 Birdwood Rd, Horotiu RD 8. Merilyn Merrett, 9 Howden Rd. Mr M Gibbs, 27 Balfour Cres. W.H. Fransen, 6 Wedgewood Place. **Hastings**: Mr David and Mrs Sally Hansen, Poukawa, RD 11. **Invercargill**: Mrs I Lankshear, 292 Racecourse Rd. **Kaiaua**: Mr G. Stacey, PDC Private Bag 2. **Kaitaia**: Ian Rutherford, PO Box 623. **Kawerau**: Wilbur Wright, 12 Symes Cres. Yvonne Moulden, 11 Syme Cres. **Levin**: Ian Cooksley, Manakau North Rd, RD 31

Manakau. **Linden**: John SD Gregory, 329 Main Rd. **Lower Hutt**: KF Ross, 13 Hinau St. **Marton**: LJ Gibbs, 21 Milne St. **Matata**: John Groom, PO Box 1. **Napier**: David & Beverley Lowe, 12 Alexander Ave, Onekawa. PC Shapcott, 35 Titoki Cres. WF Liddy, 8 Thurley Place, Bayview. **Nelson**: Cathy Jones, c/- Dept of Conservation, Private Bag 5. G&D Adams, 2/7 Rawhiti St, Tahunanui. Mr Shannel Courtney, Dept of Conservation, Private Bag 5. Mrs JM Jenks, RD 2, Upper Moutere. **New Plymouth**: Bob Talbot, 16 Jade Place, Bell Block. Ernie Corbett, 10 Protea Place, Bell Block. John Dodunski, 22 Hartland Place. Miss Ina McLellan, 6 Aubrey St. Mr G Fuller, 6 Torbay St. Mrs Val Smith, 80 Mill Rd. Roger Watkins, 413 Devon Street East, Strandon. **Oamaru**: Julie and Gary Speer, 11 Ure St. Mrs Barbara McGann, 4a Rother St. **Owhango**: Ross Bishop, Community Box No 50. **Oxford**: Mrs B Pickering, Coopers Creek. Thom Pendrigh, 230 High St. **Palmerston North:** Barbara Elliott, 36 Ronberg St. Dame Ella Campbell, 26 Frederick St.. David McConachie, 15 Battersea Place. Don Isles, 33 Swansea St. Elaine Glasgow, 14 Dorset Cres. Lynette Fischer, 11 Karamea Cres. Secretary Manawatu Orchid Society, PO Box 5223. Yvette Cottam and Bruce Sinclair, 329 Kahuterawa Road, RD4. **Papakura**: Eric Scanlen, 4 Sunny Park Ave. **Papamoa**: Mrs Wilma Fitzgibbons, 105 Dickson Rd. **Pukekohe**: Merle McNamara, 141 Edinburgh St. **Raglan**: Val Hollard, PO Box 22. **Rangiora**: IL Stephenson, 14 Regent Ave. **Rotorua**: Chris Ecroyd, 33 Raniera Place. Mr MC West, 3 Millar Rd, Lake Okareka. Mr WB Shaw and Sarah Beadel, Okere Rd, RD 4. **Scotland**: Ian Martin, 14 Angle Park Cres, Kirriemuir - Angus DD8 4TJ. **Stewart Island**: Margaret Hopkins, PO Box 86, Halfmoon Bay. **Takaka**: Gael Donaghy, Three Oaks, RD1. **Taumarunui**: E. Anne Fraser, RD 4. Mrs CL Aston, 29 Golf Rd. **Taupo**: Ken and Jean Scott, 80 Taharepa Rd. Mr DS Mitchell, Eland North, Palmer Hill Road - RD 1. Mr Trevor Nicholls, 33 Hinekura Ave. Mrs DE Abraham, 14 Nisbet Tce, Kinloch RD 1. Sue and Robbie Graham, 141 SH1, Waitahanui. **Tauranga**: Mrs Pauline Mayhill, 177 Maple Close, Welcome Bay. Beryl and Bob Goodger, 9 Somerset Grove. Lorna Grey, 9 Bristol Ave, Otumoetai. WJ Forrest, 33 Upland St, Otumoetai. **Timaru**: Mrs DJ Barron, Hadlow Rd, RD 4. **Turangi**: Cate Ryan, Dept of Conservation, Private Bag. Dept of Conservation, Te Papa Atawhai, Private Bag. **Urenui**: Mr GE Penniall, 55 Hickman Rd, RD 45. **Waihi**: Mrs JP Green, 37 Consols St. **Wairoa**: Geoff Foreman, 6 Rimu Drive. Margaret & David Fraser, 48 Black St. Sue Clough, 45 Mitchell Rd. **Waitara**: Heather Crofskey, 34 King St. **Waiuku**: Patricia Aspin, Hatton Rd, RD 4. Stella Christoffersen, 34 Cooper Rd, RD4. **Wanganui**: Michael Pratt, Waikupa Rd, RD 12. Mr and Mrs Robert L. Macnab, PO Box 36. Mr Colin Ogle, 4 Brassey Rd. Mrs YJ Cave, Seafield, No.4 RD. Peter S. Grant, No. 3 Line, RD 12. Ross Macdonald, 12 Bens Place. **Warkworth**: Maureen Young, 36 Alnwick St. **Wellington**: IM St George, 22 Orchard St, Wadestown. ND Neilson, 60 Horokiwi Rd West, Newlands. Mr Philip Tomlinson, 14 Putnam St, Northland. Tony Robinson, 61 Moana Rd. Gordon Purdie, 19 Thatcher Cres, Crofton Downs. Anne Southern, 31Haunui Rd, Pukerua Bay. Annette Fairweather, 50 Ponsonby Rd, Karori. Barbara M Ledger, 15 Bellbird Cres, Waikanae. Cesar Zapata, PO Box 11-969. Gordon Sylvester, 22 Pencarrow Cres, Wainuiomata. Pat Enright, 19 Gaya Grove, Ngaio. RW Hornabrook, 27 Orchard St, Wadestown. Suzan Dopson, Biodiversity Recovery Unit, Dept of Conservation: PO Box 10-420. **Whangarei**: Albert Blumhardt, 15 Tainui St, Onerahi. Anne Puttnam, PO Box 194. Beryl Young, PO Box 94. Dept of Conservation, Te Papa Atawhai, PO Box 842. Hazel and Bob Major, 8/1 Bayswater Place, Onerahi. Neville Hewinson, Kara Orchids - Pearson Rd, Kara.