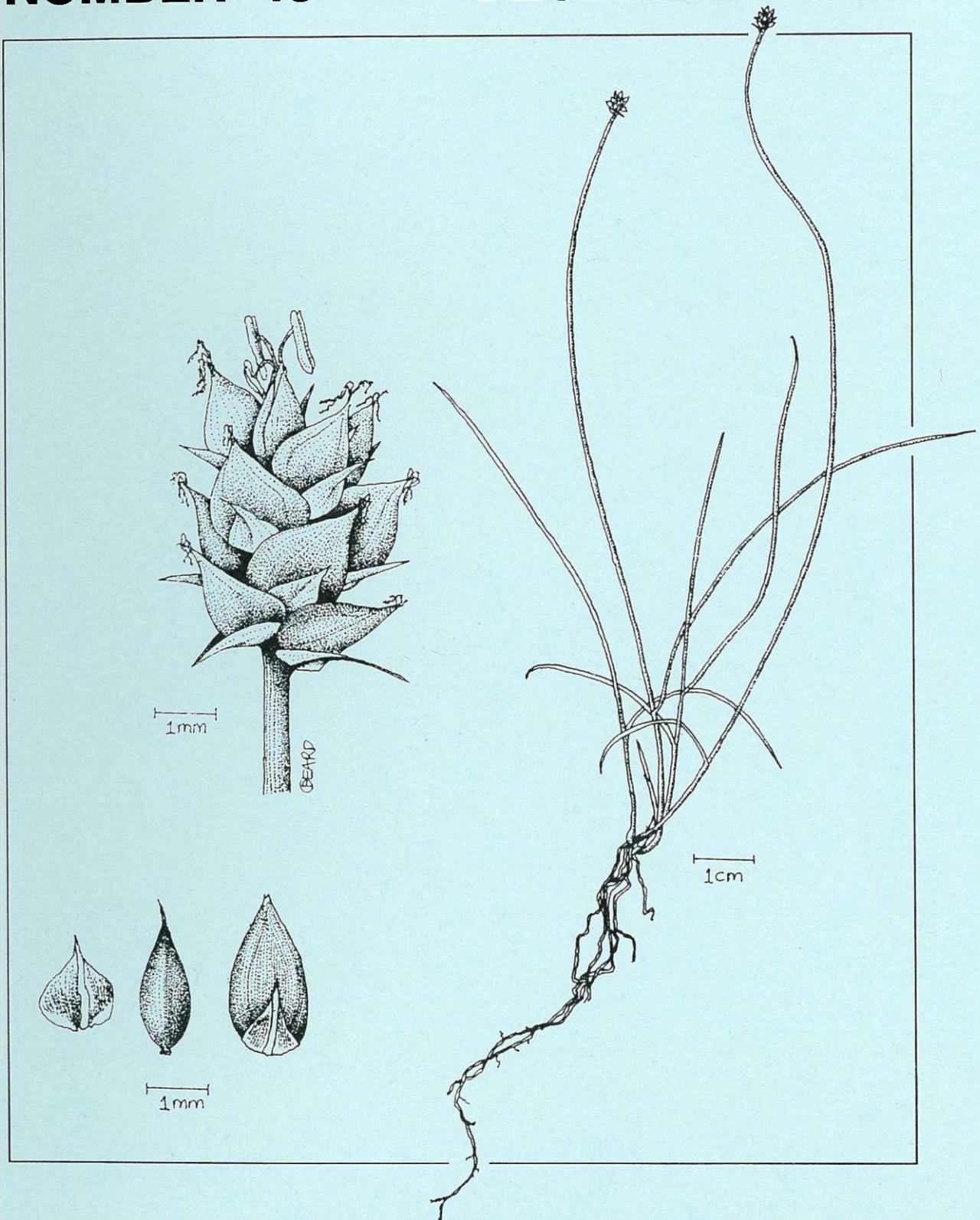


NEW ZEALAND BOTANICAL SOCIETY
NEWSLETTER

NUMBER 46

DECEMBER 1996



NEW ZEALAND BOTANICAL SOCIETY
N E W S L E T T E R
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New Zealand Botanical Society

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Subscriptions

The 1996 ordinary and institutional subs are \$16 (reduced to \$12 if paid by the due date on the subscription invoice). The 1996 student sub, available to full-time students, is \$8 (reduced to \$6 if paid by the due date on the subscription invoice).

Back issues of the *Newsletter* are available at \$2.50 each - from Number 1 (August 1985) to Number 45 (September 1996). Since 1986 the *Newsletter* has appeared quarterly in March, June, September and December.

New subscriptions are always welcome and these, together with back issue orders, should be sent to the Secretary/Treasurer (address above).

Subscriptions are due by 28 February of each year for that calendar year. Existing subscribers are sent an invoice with the December *Newsletter* for the next year's subscription which offers a reduction if this is paid by the due date. If you are in arrears with your subscription a reminder notice comes attached to each issue of the *Newsletter*.

Deadline for next issue

The deadline for the March 1997 issue (Number 47) is 28 February 1997.

Please forward contributions to: Bruce & Beverley Clarkson, Editors
NZ Botanical Society Newsletter
7 Lynwood Place
HAMILTON

Contributions may be provided on an IBM compatible floppy disc (in Word Perfect 5.1) or by e-mail (ClarksonB@Landcare.CRI.NZ).

Cover Illustration

Carex capillacea, a cultivated plant drawn 1 December by **Catherine Beard**: originally from a terrace above Awapatu River, Moawhango Ecological Region, March 1996 (see article in New Zealand Botanical Society newsletter 45: 7-9). Culms on this plant in March were 30-40 mm long, but elongated in cultivation. Plants with culms 150 mm or more do occur in the wild, as for example, at Lake Daniells near Springs Junction. Although Carex capillacea is recorded quite widely overseas in various parts of Asia and Australia, it is quite local, though perhaps also overlooked, in New Zealand. Apart from the recent North Island find, the Landcare Research herbarium (CHR) indicates a South Island distribution as follows: Nelson/Marlborough (approx. 8 sites), Canterbury (3), Otago (1), Southland (1). Its recorded habitats are mainly moist turf or swards at the edge of montane lakes, tarns, pools and kettles, but also in bog and in damp grassland and tussockland subject to periodic flooding, and usually in the open.

Peter Johnson, Manaaki Whenua - Landcare Research, Private Bag 1930, Dunedin; **Colin Ogle**, Department of Conservation, Private Bag 3016, Wanganui; **Kerry Ford**, Manaaki Whenua - Landcare Research, P O Box 69, Lincoln

NEWS

New Zealand Botanical Society News

■ From the Secretary

It is with regret that I announce an increase in subscription rates. Since the first issue of the New Zealand Botanical Society *Newsletter* in August 1985, subscription rates have been \$10.00 ordinary and \$5.00 students. More recently subscriptions were raised but the opportunity for a discount to the original \$10.00 and \$5.00 was introduced to encourage prompt payment. Unfortunately, due to the rise in printing costs and a gradual increase in the size of *Newsletters* being printed over the years, it is now necessary to raise the base subscription rates, although prompt payment will still earn a discount. Therefore, for the 1997 year, subscriptions have been set at \$16.00 ordinary/institutional (reducible to \$12.00 on prompt payment), and \$8.00 student (reducible to \$6.00 on prompt payment).

Members, please note that the new address for the New Zealand Botanical Society is:

New Zealand Botanical Society
C/- Canterbury Museum
Rolleston Avenue
CHRISTCHURCH 8001.

Please address all enquiries and subscriptions to this address. *Newsletter* Editors for 1997 are again Bruce and Beverley Clarkson and articles and other contributions should be sent directly to them at their address on page 2.

Anthony Wright, Secretary/Treasurer, New Zealand Botanical Society, C/- Canterbury Museum, Rolleston Avenue, Christchurch 8001

Regional Botanical Society News

■ Auckland Botanical Society

September Evening Meeting

Lance Vervoort, Biosecurity Officer with the Auckland Regional Council, spoke on the Auckland Regional Plant Pest Management Strategy. He outlined the system used to set priorities in classifying pest species, the way decisions are made on whether, or how, to control the pests, and the implications of the Biosecurity Act.

September Field Trip

Umupaia/Duders Regional Park on the Tamaki Strait in South Auckland is a headland that is mostly under pasture. The areas of bush have a canopy of almost pure tawa and taraire, with some tawaroa in the coastal patches. A few kauri and matai are present. There is a wetland merging into salt-marsh, where the saltmarsh ribbonwood was in flower.

October Evening Meeting - The Lucy Cranwell Lecture

Professor John Flenley, Massey University, entitled his lecture "Easter Island: Its Botanical History". Easter Island is the most isolated self-sufficient land mass in the world. The flora, which is composed of very few species, was depleted by the Islanders' obsession with statue construction. An extinct palm was used to move the statues. An endemic *Sophora* was saved from extinction when 5 seeds removed from the island by Thor Heyerdahl germinated, and a tree was discovered in a German botanic garden. Thor Heyerdahl's theory that one plant species was brought to the island by man, was disproved when Professor Flenley's palaeobotanical research discovered pollen that was 35,000 years old.

October Field Trip

A wonderfully knowledgeable guide lead the party through bush reserved by the Taitua Trust on the Awhitu Peninsula, South Auckland. A horse-shoe valley running from the ridge top to a wetland at the bottom contained a diversity of species, including king fern (*Marattia salicina*) and lots of *Corybas macranthus* in flower.

November Evening Meeting

It is becoming a tradition that the November meeting is reserved for student presentations.

Astrid Dijkgraaf, a PhD student, described her work on flowering and fruiting phenology in two areas of bush: one trapped for possum and rodents (Wenderholm Regional Park), and one not trapped. Fruiting, and to a lesser extent, flowering times were found to be sequential so that there are always some flowers and fruit around. Possum exclusion cages showed that all the flowers and fruit of kohekohe are eaten by possums. Insect and weta numbers are larger in trapped bush.

The second presentation, by Rachael Bell, M.Sc. student, tied in nicely with the first, as her topic was the role of the pigeon in seed dispersal at Wenderholm. Feeding behaviour and post-feeding behaviour, the range of the birds, the relationships between seed size and the rate of passage through the gut, and the effect of this passage on germination success were all noted. Several large-fruited trees which grow predominantly in the north, are reliant on the kereru for dispersal.

November Field Trip

Kaitarakihi Park, Cornwallis, near the Manukau Heads, contains an area of gumland scrub which was burnt in 1983. Three permanent transects have been monitored by Auckland Botanical Society members to record the re-establishment of both vascular plants and bryophytes since the fire. A scratchy day was "enjoyed" by all: some of us hugging the manuka, and trying not to hug the two species of prickly hakea as we counted the plants in the transects, and the others wielding a variety of weapons to attack the hakea bushes which were growing outside the transects. One of the most noticeable changes over the years has been the dwindling numbers of kumarahou plants. It was a pleasure to be in the company of local, Dan Hatch, who did not argue with the suggestion made over lunchtime sandwiches that he had been studying native orchids since the Cretaceous.

Forthcoming activities

25-27 January 1997: Rangitoto Station, Otorohanga

15 February 1997: Ihumatoa fossil forest, Mangere/Kohuora swamp, Papatoetoe

5 March 1997: AGM. "ARC Parks", Anne Grace

15 March 1997: Okahukura sand island, Kaipara Harbour

Maureen Young, 36 Alnwick Street, Warkworth

■ **Nelson Botanical Society**

September field trip report - Dovedale remnants

Nearly 30 participants descended on a small patch of podocarp forest in Sunday Creek. The QEII covenant is only a few hectares in area but it is quite rich in species. Emergent kahikatea, rimu, miro and matai occur over black and silver beech. As usual in such places, the small leaved shrubs took some sorting out. Unusual forms of *Pseudopanax anomalus* and pokaka as well as hinau x pokaka hybrid seedlings caused special difficulties. Along the fenceline the mistletoe *Ileostylus micranthus* was present on black matipo (*Pittosporum tenuifolium*) and showing tiny flowers. The find of the day though (thanks to Les Moran) was *Botrychium bifforme* hidden away in a dense shrub layer under mahoe. Other interesting plants were the flowering spider orchids, *Corybas trilobus*. After lunch we travelled to the North Branch of the Graham for a walk from the ford where there were interesting contrasts between shrublands and the beech forest remnants. For those unfamiliar with lawyers three were present. In at least one place the dark leaf colour and rumpled surface of *R. schmidelioides* contrasted with the grass-green V shape of *R. cissooides*, offering an opportunity to examine the differences. Other plants of interest were large-leaved forms of *Olearia avicenniifolia* and the odd *Brachyglottis hectori*.

October field trip report - Pelorus Bridge

The path headed out through tall columns of the dense podocarp forest on the terrace. It was not far before the sweet-scented flowers of *Alseuosmia pusilla* were found. Nearby its look-alike, pepperwood (*Pseudowintera colorata*) was present. Also at hand horopito (*P. axillaris*) was also in flower. Along the track debate ensued on differentiating the various podocarps. The best tip of the day being the use of the pale underside of bark flakes to differentiate matai from miro with its dark under bark colour. An odd ribbonwood (*Plagianthus regius*) caused considerable interest and guessing.

As the track left the terrace, the forest changed to hard beech with a new suite of species. *Diplazium australe* shoots were seen just above the ground, and orchids were more common especially *Pterostylis banksii* and *P. graminea*. In several places, lifting the leaves of the epiphytic orchid *Drymoanthus adversus*

revealed spikes of tiny flowers. The descent through beech forest provided further interest in more orchids, this time late flowering *Corybas oblongus*. Along the final stretch of river track a large flowered *Libertia* cf. *grandiflora* provided much interest.

Labour weekend camp report - Mistletoe Bay 25-28 October

For once there was a fine clear day to ascend Mt Stokes so it was the target of the first day trip. On the lower part of the track several ferns were added to the list including kidney fern and *Trichomanes venosum*. Of special interest though was *Blechnum nigrum*, a fern of wetter areas that is not often seen on field trips. Once more *Alseuosmia pusilla* provided a challenge to spot plants not in flower and even see those in flower.

On one ridge spot *Pittosporum rigidum*, in a particularly densely entangled form, provided quite a puzzle to identify. Here too possible hybrids between *Coprosma colensoi* and *Coprosma foetidissima* added to the confusion of leaf shapes normally found in that species. Spring had scarcely arrived on the summit and plants such as *Bulbinella hookeri* were just beginning to poke shoots above the ground. The highly variable leaves of *Ranunculus verticillatus* caused much confusion, often only relieved by finding plants in flower. The most unusual form though, was reserved for that of *Celmisia rutlandii*, a species confined to this area. Its large broad, grass-green leaves being quite distinct. Near the summit plants of *Coprosma ciliata* and exposed forms of *Coprosma pseudocuneata* provided lots of interest. A rest spot near the bush edge on the return allowed discovery of *Coprosma* "decipiens" entangled amongst the rocks. On the return journey, exposed stems of *Cyathea colensoi* seen sprawling for up to a metre exposed by the track prompted a sort out between *Cyathea smithii* and *C. colensoi*. Matched pieces showed how the dull hairy upper frond surface of *C. colensoi* contrasted with the shiny *C. smithii*. On Sunday the first stop was the head of the Kenepuru Sound to see many plants of *Ileostylus micranthus* on *Coprosma propinqua*, salt-marsh ribbonwood (*Plagianthus divaricatus*), and *Olearia solandri*. The tiny flowers provided special interest. A little further along the road, trees hung with huge cascades of the native passionfruit (*Passiflora tetraptera*) and jasmine (*Parsonsia heterophylla*) prompted a stop that yielded other plants of interest. On the forest floor *Lastreopsis microsora* formed a dense carpet and, where nettle (*Urtica ferox*) could be avoided, a path was made to the river bank to see a large mature milk tree *Streblus heterophyllus*. At St Omer a walk began with study of flowers of wineberry and mahoe. Then a track led to a good selection of clay orchids and views of the bays. Species included *Pterostylis graminea*, *P. banksii* and *Orthoceras novae-zelandiae*.

On Monday the Peninsula Walk in the Bay beckoned. As expected, the seral forest was rich in orchids. Species included *Caladenia catenata*, *Corybas obliqua*, *Chiloglottis cornuta* and three species of *Thelymitra*: *T. longifolia*, *T. decora* and *T. pauciflora*. Of special interest though were *Pterostylis alobula* and *P. trullifolia*, the latter with its deeply rugose leaves not usually found round Nelson. In the bush patch at the tip of the peninsula filmy ferns were occasionally prolific and included *Hymenophyllum scabrum*, *H. villosum* and *H. cupressiforme*. The find of the day though was *Corybas cheesemanii*, with huge fat fruiting stalks.

October field trip report - Lookout Peak -Tennyson Inlet

A huge turnout of over 30 for a great day. The upward route was through southern rata and hard beech with the rocks frequently clothed in filmy ferns, *Hymenophyllum demissum* at first, and *Hymenophyllum dilatatum* and kidney fern later on the higher slopes. The transition from lowland to upland forest was dominated by *Astelia solandri* and cascades of perching orchids, especially *Dendrobium cunninghamii*. Amongst the ground orchids *Pterostylis banksii*, *Corybas trilobus* and *Corybas acuminatus* had completed flowering but *P. graminea* and *Acianthus viridis* were in full flower, and *Chiloglottis cornuta* was just making its appearance above the ground.

Along the ridge several plants of *Peraxilla colensoi* were noted on silver beech, some only a few cm above the ground. Other plants of interest were *Pimelea longifolia* in bud and dense tangles of *Pittosporum rigidum*. Sharp eyes also spotted a small plant of the uncommon shiny-leaved *Pseudopanax edgerleyi*.

At the summit we were treated to views of Tennyson Inlet and the Opouri valley the latter with the snow covered Seaward Kaikoura Ranges in the distance. A short distance to the south a rocky outcrop opening provided *Chionochoa cheesemanii*, *Celmisia hieraciifolia* and *Hebe rigidula* with a suitable habitat. The return journey provided opportunity to share discoveries such as the mistletoe and the uncommon tiny fern *Hymenophyllum lyallii*, conveniently marked by different groups on the upward journey.

Graeme Jane, 136 Cleveland Terrace, Nelson

Research News

■ News on the FRST programme “Biosystematics of New Zealand plants” and the biosystematists of Manaaki Whenua - Landcare Research

The FRST programme “Biosystematics of New Zealand plants”

New Zealand has a unique and diverse native flora and an ever-increasing introduced flora. The high level of endemism, the large number of rare and declining species, and the continued influx of new plants makes documenting the flora an essential and ongoing task. A six year programme (July 1996 - July 2002) funded by the Foundation for Research, Science and Technology will increase knowledge and understanding of the diversity of New Zealand's flora. To carry out the programme, Landcare Research's plant systematists will apply both conventional and new techniques like molecular biology to New Zealand plants. We will assess, classify, and describe newly discovered species and genera, define evolutionary relationships as a basis for more predictive classifications, and use our findings to achieve more informative and stable classifications. Research by this team and others will concentrate on the many large genera like the gentians, woollyheads, and cresses that need to be extensively revised to take account of new knowledge and better understanding of their relationships. The Flora Series that began in 1961 with the publication of Volume 1 (by Allan) will be completed when the volume on grasses is published in approximately two years. Within the 6 year funding period the first New Zealand Moss Flora will be drafted and the Flora of New Zealand Lichens will be revised. An atlas on New Zealand seeds will be published in four years. Research in recent years has provided an inventory of the naturalised vascular flora, bringing benefits from correct identification of weeds and poisonous plants. New introductions will continue to be identified and publicised and a quarterly weed identification newsletter will be produced.

The objectives of the plant biosystematics programme

The 6 year programme includes the following six objectives:

Objective 1 Familial and generic circumscriptions

We want to clarify familial and generic boundaries by phylogenetic analysis in order to produce a more stable and predictive classification of the New Zealand flora, by:

- assessing generic boundaries of *Parahebe* and *Chionohebe* (Scrophulariaceae) by phylogenetic analysis and synthesis of morphology and DNA sequences;
- applying cladistic analyses of morphological and anatomical characters to the evolution and generic-level taxonomy of *Carmichaelia*, *Chordospartium*, *Corallospartium*, and *Notospartium* (New Zealand's largest group of legumes);
- assessing generic boundaries of the New Zealand Inuleae (Compositae);
- assessing familial relationships of *Donatia* (Donatiaceae), *Phyllachne*, *Oreostylidium*, and *Forstera* (Stylidiaceae);
- assessing generic boundaries of the endemic genus *Hoheria* (Malvaceae) and its relationships to other members in the austral *Plagianthus* alliance.

Objective 2 Monographic revisions of indigenous genera

We will revise genera which contain a large number of species and lack a critical modern taxonomic treatment, to assist ecological and conservation studies, by:

- revising the genera *Cardamine*, *Neopaxia*, *Gentiana*, and *Craspedia*;
- re-establishing expertise in monocotyledons and completing revisions of the genera *Astelia* and *Luzula*.

Objective 3 Tag names, minor revisions and introductions

We want to resolve isolated taxonomic and nomenclatural problems in otherwise well-understood genera. In particular we want to assess informally named entities, to assist conservation of rare and threatened species, and document naturalised species, plants of importance to biosecurity and primary industries, by:

- completing a checklist on current systematic research in New Zealand;
- formally describing valid tag name taxa, and resolving other nomenclatural problems;
- monitoring plant naturalisations and publishing checklists reporting newly naturalised plants.

Objective 4 Flora of New Zealand, Mosses

We will complete a draft of “Flora of New Zealand: Mosses”.

Objective 5 Grass Flora and Seed Atlas

We will complete research for and publication of “Flora of New Zealand: Grasses”. An atlas on New

Zealand seeds "Seeds of New Zealand Dicotyledons and Gymnosperms" will be published.

Objective 6 Supplement to Lichen Flora

We will revise the Flora of New Zealand Lichens.

The botanists involved in the programme

Landcare Research is the main centre of plant biosystematic studies in New Zealand. Landcare's plant biosystematics group has had quite a turnover in staff in the last decade. None of the botanists who wrote Flora IV eight years ago works at Landcare any longer. However, Landcare now has a new and enthusiastic group of plant systematists. We consider it important to let the botanical community know who is involved in the biosystematics programme and what interests they have. (The researchers have different percentages of their time allocated to the plant biosystematics programme.)

Ilse Breitwieser, Programme Leader of "Biosystematics of New Zealand plants"

My major research interest is the family Compositae. I am working in collaboration with Josephine Ward (University of Canterbury) and others on an analysis of the generic relationships and the revision of the New Zealand Inuleae (Compositae). This includes phenetic and cladistic analysis of morphological, anatomical, chemical, and molecular data. Recently I have started a revision of the genus *Craspedia* in New Zealand. (I would be grateful for any information on *Craspedia*!)

Bruce Clarkson

My project is to describe and name some of the unnamed northern *Hebe* species in the series *Occlusae*. I also have an interest in unnamed northern species in *Melicytus* and *Coprosma*, as well as wild hybrids of *Celmisia* X *Olearia*.

Murray Dawson

As a cytotaxonomist, I am interested in chromosomes and their use in resolving the taxonomy of New Zealand native plants. I am currently investigating the chromosomes of the Epacridaceae (the southern hemisphere heath family) and am studying the taxonomy of the *Leucopogon fraseri* complex with Peter Heenan.

Kerry Ford

I am the Curator of Vascular Plants at the Landcare Herbarium, and most of my work is associated with the running of the herbarium and the plant identification service. My research interests are in *Carex*, and I am currently working on several possibly unnamed species from North West Nelson.

Allan Fife

I am currently involved in writing a new moss Flora of New Zealand, and am aiming for manuscript completion in 2002. I am being aided in this task by Sue Gibb (editor), Rebecca Wagstaff (illustrator), and a handful of contributors. I have recently published a checklist of the NZ mosses. I am currently working on the Hypnaceae and am soon to begin revision of NZ Bryaceae. I am interested in bryophyte evolution, and how relationships are reflected in the distribution of mosses, particularly in the temperate Southern Hemisphere

David Galloway

My major research project is preparing a supplement to the Flora of New Zealand Lichens, incorporating the rapid taxonomic changes of the past 10-15 years. Monographic work on *Pseudocyphellaria* is nearing completion with writing up of the Australian species with Jack Elix (Canberra) and Gintaras Kantvilas (Hobart). Monographs of *Sticta* in New Zealand and Australia were recently completed and work proceeds on palaeotropical species. Apart from revisionary work in various New Zealand lichen groups, work has started on surveys of lichens of Central Otago and of the Dunedin area.

Sue Gibb

I am assisting Elizabeth Edgar and Henry Connor with the New Zealand Grass Flora, and I am editing the Grass and Moss Floras. I am currently assisting Elizabeth Edgar with a revision of *Koeleria*.

David Glenn

My major research project is a revision of the New Zealand gentians. As part of this I am using DNA sequences to study the relationships of NZ, Australian, and South American gentians. I am also collaborating on DNA studies of the New Zealand Inuleae. One of my smaller research projects are the species in *Kirkianella*. I am also interested in the bryophyte and lichen floras and have prepared an up to date checklist of the New Zealand liverwort flora.

Peter Heenan

My major research project, which is nearing completion, is a revision of *Carmichaelia*, *Chordospartium*, *Corallospartium*, and *Notospartium*. I am currently investigating the phylogenetic relationships of this group, and of *Clianthus puniceus* and *Swainsona*. I am beginning a revision of *Cardamine* in New Zealand. My other taxonomic interests are rather broad and include species of the *Leucopogon fraseri* complex, *Myrsine*, New Zealand *Hypericum*, *Neopaxia*, *Phormium*, and *Sophora*. I am especially interested in the taxonomy of threatened plants and "tag name" plants and am currently working on several such species in *Carex*, *Ischnocarpus*, and *Mazus*.

Peter Johnson

I am interested in the systematics of grasses, sedges, and rushes, and the flowering plants of wetland habitats and Otago/Southland. I am also currently interested in lichens, especially the systematics of aquatic pyrenolichens.

Julie Shand

I am assisting Colin Webb with the Seed Atlas. The Atlas aims to describe and illustrate the seeds of all indigenous dicotyledons and gymnosperms.

Steve Wagstaff

My current research involves molecular systematic studies to develop hypotheses of plant evolution. In collaboration with Phil Garnock-Jones, Victoria University of Wellington, I have used DNA sequences to study the evolution of the *Hebe* complex. I am also working with DNA sequences in developing phylogenies for *Phyllocladus*. With the new programme, I have started DNA studies on *Swainsona*, New Zealand Compositae, *Parahebe* and *Chionohebe*, and *Corynocarpus*.

Colin Webb, Manager of PGSF, is involved in the programme with his work on the Seed Atlas. Elizabeth Edgar and Henry Connor, both research associates, are working on the Grass Flora.

Other Research Associates at Landcare with interests aligned to the FRST programme are:

Jessica Beever: Biosystematics and ecology of bryophytes - revision of *Fissidens*.

Eric Godley: Biosystematics (*Fuchsia*, *Sophora*); botanical history - "A Companion to the Native Seed Plants and Higher Spore Plants of New Zealand".

Bill Sykes: Systematics of cultivated, naturalised, indigenous and Pacific plants - "Flora of the Cook Islands".

Hugh Wilson: Plant systematics and ecology - "The Botany of Banks Peninsula".

Brian Molloy: Systematics of NZ Podocarpaceae, and orchids - "Orchid Catalogue".

Future plans of Landcare's biosystematics group

The long-term aim of the programme is the production of a Flora of New Zealand's plants that is up-to-date, authoritative, and comprehensive. The Flora will provide an inventory of the flora, with descriptions and illustrations that enable accurate identifications. However, technical floras, while indispensable, do not meet all the practical needs of scientific users, let alone enthusiasts. The intention, therefore, after completion of the current Flora of New Zealand series, is to produce a single comprehensively illustrated Excursion Flora that will include all vascular plants growing wild in New Zealand. It will not be as detailed as a technical flora, but will focus on the main task of permitting reliable identification of plant specimens by non-experts. Computer-based interactive keys and a customised thesaurus will be developed as an adjunct. Current research is aimed at providing knowledge essential for the Excursion Flora and collaboration between Crown Research Institutes, Universities, Museums and DoC will be focused on this goal. We will ask for input from the botanical community about the content and design of the Excursion Flora. You are most welcome to send us your ideas now. We will apply for funding for this Flora project in 5 years time. However, at this stage, we want to coordinate a national programme to describe new species and to revise genera.

Desiderata

To assist us in identifying gaps and priorities for taxonomic research on the New Zealand flora, we would appreciate information on any kind of systematic research being undertaken in New Zealand over the next 6 years. Could you please send the following information on your systematic studies to Peter Heenan:

your name and address, genus or species, kind of research, completion date - **Deadline: 31 March 1997.** We will assemble the information and publish a checklist on the taxonomic status of all New Zealand genera and who is doing which research in the June 1997 issue of this newsletter. We regard it as very important for the botanical community to know who is doing what in New Zealand.

Ilse Breitwieser and Peter Heenan, Manaaki Whenua - Landcare Research, P O Box 69, Lincoln

NOTES AND REPORTS

Plant records

■ *Brachyglottis sciadophila* in the Eastern Wairarapa

A second North Island population of the endemic lianoid daisy, *Brachyglottis sciadophila*, was recorded during a Department of Conservation Protected Natural Areas Programme survey of the Eastern Wairarapa Ecological District. The site is approximately 12.5 kilometres east-south-east of Masterton, and was discovered on 21 May 1996. The mostly prostrate plants, between one and two metres across, occur in the Waipapa Stream catchment, around the edges of a small clearing and amongst a five-hectare block of cutover kahikatea-matai-titoki-houhere forest. The site was revisited on 16 October 1996 and over 100 plants were counted. Evidence of flowering and seeding were also apparent.

Brachyglottis sciadophila has a local status nationally (Cameron *et al.* 1995), having previously only been recorded for the North Island from the Paengaroa Scenic Reserve in the Rangitikei Ecological District (Ogle and Barkla 1995). It also occurs locally in the eastern South Island, from Nelson to Dunedin (Allan 1961).

A number of other nationally threatened or local species also have similar distributions, occurring in the eastern South Island and extending (usually extremely locally) into the eastern North Island, and occurring at Paengaroa Scenic Reserve, to the west of the Ruahine Range. These include *Olearia hectorii*, *Pittosporum obcordatum*, and *Coprosma wallii* (Ogle and Barkla, 1995).

This new record for *Brachyglottis sciadophila* provides evidence to support the suggestion of Ogle and Barkla (1995) that the other disjunct species at Paengaroa Scenic Reserve (*Melicytus flexuosus*, *Korthalsella clavata* and *Coprosma obconica*) may, with diligent searching, also be discovered in the eastern North Island.

Acknowledgements

The field survey and later follow up work were organised by John Sawyer, Wellington Conservancy, Department of Conservation.

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■ A new site for *Pittosporum obcordatum* near Masterton, Wairarapa Plains

The ecology and distribution of *Pittosporum obcordatum* has been reviewed and significantly updated by Clarkson & Clarkson (1994). They recorded the species as still extant from 12 sites scattered from Kaitaia to Fiordland, and made brief mention of another location discovered by Peter Wardle and Miles Giller near McLeans Falls in the Catlins (see also Wardle 1994). Since then, an additional Catlins site in the Tautuku River Valley has been reported by Simpson (1995). One of the North Island sites, mentioned by Clarkson & Clarkson (1994), near the Tauweru River (Tauwhero in Clarkson & Clarkson 1994) occurs in the Wairarapa foothills. The Wairarapa falls within the land district administered by the Wellington Conservancy of the Department of Conservation. Since 1993, as part of their regional and nationally threatened plants conservation programme, the Wellington Conservancy has been discussing the management of this site with the landowner. Conservancy staff have also been searching for new *Pittosporum obcordatum*

localities, as well as other local or threatened vascular plant species, which frequent the same type of habitat e.g., *Coprosma* sp. unnamed (*C. sp.* (v) of Eagle 1982; AK 215700), *Coprosma obconica*, *Coprosma wallii* and *Olearia hectorii* (see Clarkson & Clarkson 1994). During recent (October 1996) field work in the Wairarapa, we discovered a hitherto unknown location for *Pittosporum obcordatum*. A single 4 m tall tree (AK 229788), was found growing in a seriously depleted alluvial forest remnant on the edge of an old river terrace, immediately above the active Ruamahanga River flood plain adjacent the Martinborough - Masterton Road, 4.07 km N.N.E. of the original Tauweru River *P. obcordatum* locality. The tree was found during a survey for *Coprosma wallii* which had been recorded from this location by A. P. Druce in 1966 (CHR 15897, 158895). During our visit no *C. wallii* was located, however later in the same month, one of us (AR) relocated two trees of this species in a forest remnant c. 1 km north of the *Pittosporum* site. Unfortunately, despite considerable searching, less success was had with the *Pittosporum* and no further *P. obcordatum* individuals were found in the vicinity of the new tree or in similar forest remnants nearby. A similar situation was reported from the Tukituki River near Hastings by (Clarkson & Clarkson 1994).

The single tree is in good health, despite the lower trunk's use as a fence post, complete with number 8 wire and nails! At the time of our discovery (17 October 1996) the tree was in full flower, and appeared to be fully male, having no seed capsules present. The tree survived presumably because of its location at the margin of an old river terrace, the back of which has long since been cleared and farmed. Oddly, the species was not found on the adjacent lower river terrace, an apparently more suitable site, as it is subject to regular flooding and remains waterlogged for longer periods of time than is the case for the upper river terrace. However, as the lower terrace in the immediate vicinity of the *P. obcordatum* tree, has also been cleared of much of the original indigenous vegetation, it is quite likely that *P. obcordatum* once grew there as well.

Forty-one of the 82 taxa recorded by Clarkson & Clarkson (1994) as associated with *Pittosporum obcordatum* grew at this site. Aside from *P. obcordatum*, other interesting species within the remnant included several *Coprosma virescens* (a regionally uncommon species), *Ileostylus micranthus* (frequent, parasitic on *Coprosma crassifolia*, *C. virescens*, *C. rigida*, and until recently, a *Muehlenbeckia australis*, which still supported the dead haustoria and branches of this mistletoe), and *Korthalsella lindsayi* (abundant, parasitic on *Coprosma crassifolia*, *C. rigida*, *C. virescens*, *Muehlenbeckia australis*, and *Myrsine divaricata*).

Prior to this discovery, and as noted above, *Pittosporum obcordatum* was known in the Wairarapa from only the single site originally discovered by A. P. Druce in 1966 (CHR 617), within the Tauweru River catchment. This population consists of 9 adult trees and more than 300 seedlings/saplings (cf. Clarkson & Clarkson 1994), and is located within a remnant kahikatea (*Dacrycarpus dacrydioides*)/matai (*Prumnopitys taxifolia*) forest planted with redwood (*Sequoia sempervirens*) trees. Our discovery of a new site in a similar forest remnant strengthens the view expressed by Clarkson & Clarkson (1994) that *P. obcordatum* would have been a sparse, predominantly easterly distributed species of lowland, drought prone alluvial forest. It also confirms our long held belief that this species must occur elsewhere in the Wairarapa region.

The search is now on in the Wairarapa for more *Pittosporum obcordatum*.

Acknowledgments

We would like to thank Colin Ogle and David Towns for their comments on an earlier draft of this article. Bruce Clarkson advised us on the various spellings used for the Tauweru River.

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■ **Second *Rhynchospora* species identified in New Zealand**

In March 1995 Elizabeth Miller collected a naturalised *Rhynchospora* sp. (Cyperaceae) in New Zealand from the Kaimai Ranges (Miller 1996). It was identified as *R. capitellata* from North America.

Nine months later in December 1995, one of us (AEE), collected a different naturalised *Rhynchospora* sp. at Waikumete Cemetery (AK 229440), west Auckland. In January 1996 AEE recollected it (AK 229441, dups to CHR, NZFRI). This was later identified, with the help of North American specimens at AK herbarium and Gleason's North American flora (Gleason 1974), as another North American species, *R. globularis* (Chapm.) Small (Fig. 1). The sedge was locally common on moist grassy paths between the graves.

Waikumete Cemetery has a large naturalised flora of over 325 species, several of these species are the first wild records for New Zealand (Cameron & Esler in prep.).



AK 229440

AUCKLAND INSTITUTE & MUSEUM HERBARIUM
AUCKLAND, NEW ZEALAND

CYPERACEAE
Rhynchospora globularis (Chapm.) Small

Loc. New Zealand, North Island, Auckland Ecological Region, Tamaki Ecological District, Glen Eden, Waikumete Cemetery
Map R11 575761 Alt.
Lat. 36 54 S Long. 174 39 E
Coll. A E Esler Date 19 December 1995
Det. E K Cameron Date 18 October 1996
Notes Plentiful on moist grassy paths, first wild record for NZ ?

Fig. 1. Herbarium specimen of *Rhynchospora globularis* from Waikumete Cemetery (AK 229440).

The source of the *Rhynchospora* spp. in New Zealand is a mystery. Neither species would be likely to be introduced as an ornamental plant. Perhaps the seed (nuts) with their attached bristles (with small retrorse barbs) have attached to people's clothing overseas and have been accidentally introduced to New Zealand by this means.

Of the c. 17 species (c. five endemic) in Australia (Wilson 1993: 327), we were only able to track down nine of them in Australian regional floras. As neither of the New Zealand naturalised species appears to grow in Australia (we must wait for the sedges to be covered in the new "Flora of Australia" series for confirmation), they have been presumably introduced accidentally from North America.

The genus *Rhynchospora* contains more than 200 species in the tropics and subtropics, especially the Americas (Wilson 1993: 327). We wonder which *Rhynchospora* sp. will appear next in New Zealand? Travellers please check your socks for attached sedge nuts before returning to New Zealand!

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■ Earliest seedling date for a wild fig in New Zealand

Rhys Gardner (1983) was the first person to point out the true identity of the naturalising figs in Cornwall Park, Auckland, as Port Jackson figs (*Ficus rubiginosa*). Gardner & Early (1996) recorded ". . . the 1960s or early 1970s . . ." as the time when the pollinator specific to Port Jackson fig, somehow reached New Zealand.

After a rather alarmist newspaper article on the naturalisation of figs in Auckland was published (*NZ Herald* 25 September 1996: A13), EKC was contacted by Colin Cameron of Northcote, Auckland who informed him that EAC, his son, had collected a Port Jackson fig seedling in the 1960s and potted it up thinking it was a hibiscus. He had retained the fig as a pot plant.

The cultivated plant was indeed Port Jackson fig (voucher: AK 229401), approximately 1.8m tall x 1.5m wide, base approximately 110cm x 80cm. It had fruited in the past and was in a pot 50cm across. EAC had collected the seedling in the gutter outside 28 Queen Street, Northcote, while attending primary school. Which means it was collected in 1966 or earlier. This appears to be the earliest confirmed date for a naturalised fig in New Zealand.

The potted fig has recently been planted out at a farm in Clevedon.

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Research Reports

■ The dioecious nature of *Dysoxylum spectabile* (kohekohe)

The genus *Dysoxylum* consists of some 75 species with mostly tropical distribution and one species *D. spectabile* (kohekohe) native to New Zealand. A recent examination of floral structure in this native species, along with a study of flower morphology in the genus, reveals that all individuals may be placed into two

classes. One group is exclusively female with flowers lacking pollen and the other is male, with flowers producing pollen and seldom, if ever, producing fruit.

A detailed examination of the floral structure and pollination biology of this genus (including the New Zealand taxon) is currently in progress. It is apparent from the information already available that nearly 50% of the individuals in a population are exclusively female and the remainder, either exclusively or predominantly male, the rare occurrence of fruit set in otherwise male flowers is also the subject of this study.

Despite several investigations being exclusively devoted to this plant, its dioecious nature appears not to have been previously recognised. *Dysoxylum spectabile* has also been the subject of many taxonomic treatments and features in most texts on New Zealand trees and flowering plants. In several cases (e.g., Kirk 1892, Salmon 1986, 1991) it is illustrated in sufficient detail to recognise the sex of the flowers. As there are ecological studies currently in progress on foraging and pollination which include *Dysoxylum*, and as details concerning pollination biology would have a major impact on data assessment and experimental conclusions, it is important that this information is made available as soon as possible.

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■ New names, combinations or comments from the journals (4)

"A revision of the dioecious genus *Griselinia* (Griselinaceae) including a new species from the coastal Atacama Desert of northern Chile" by M.O. Dillon & M. Munoz-Schick: *Brittonia* 45(1): 261-274 (1993). Their treatment recognises five S. American and the two New Zealand species; family and generic relationships are discussed.

"*Wilsonia backhousei* (Convolvulaceae) in New Zealand" by G.T. Jane & W.R. Sykes: *N.Z. Bot. Soc. newsletter* 42: 4-6 (1995). The authors regard the recent discovered population of the Australian *W. backhousei* in Tasman Bay as an addition to the New Zealand indigenous flora.

"*Nertera villosa* B.H. Macmill. et Mason (Rubiaceae), a new species from New Zealand" by B.H. Macmillan: *N.Z.j.bot.* 33: 435-438 (1995). *N. villosa* is split from *N. dichondrifolia* on several characters including dense spreading leaf hairs vs curved hairs of *N. dichondrifolia*. The southern limit now for *N. dichondrifolia* s.str. is given as just south of 38°S and the northern limit of *N. villosa* is given as 37°S. P.J. de Lange and G.M. Crowcroft have recently collected *N. villosa* in Waipoua Forest, 35°40'S (AK 228427) and also on Chatham Island (AK 228197).

"A taxonomic revision of *Carmichaelia* (Fabaceae - Galegeae) in New Zealand (part 1)" by P.B. Heenan: *N.Z.j.bot.* 33: 455-475 (1995). Heenan (part 1) recognises nine species placing emphasis on floral characters. A new species, *C. vexillata* Heenan is segregated from *C. monroi*.

"*Lophomyrtus aotearoana* E.C. Nelson: a new Latin name for the New Zealand native myrtle, ramarama" by E.C. Nelson: *N.Z.j.bot.* 33: 557-559 (1995). This paper was followed by P.J. Garnock-Jones & L.A. Craven: *N.Z.j.bot.* 34: 279-280 (1996) which showed the correct name for ramarama was indeed *L. bullata* Burret, sinking *L. aotearoana* into synonymy.

With the reinstatement of *Caladenia alpina* for S.E. Australia and Tasmania by D.L. Jones: *Muelleria* 9: 41-50 (1996), *Caladenia lyallii* is once again considered endemic to New Zealand.

"Resolution of the *Prasophyllum alpinum* R.Br. (Orchidaceae) complex in mainland south-eastern Australia, Tasmania and New Zealand" by D.L. Jones: *Muelleria* 9: 51-62 (1996). Four species are recognised, *P. alpinum* s.str. is now considered to be endemic to Tasmania, and *P. colensoi* survives as the name for the New Zealand endemic taxon.

"Two new species of *Corybas* (Orchidaceae) from New Zealand, and taxonomic notes on *C. rivularis* and

C. orbiculatus" by B.P.J. Molloy & J.B. Irwin: *N.Z.j.bot.* 34: 1-10 (1996). *Corybas iridescens* Irwin & Molloy and *C. papa* Irwin & Molloy are split from the *C. rivularis* complex and are described and illustrated from western-central North Island.

"*Uncinia obtusifolia* (Cyperaceae), a new species of hooked sedge in New Zealand" by P.B. Heenan: *N.Z.j.bot.* 34: 11-15 (1996). Heenan separates his new species from *U. nervosa* by narrower leaves, culms, spikes, and utricles, longer utricles, shorter glumes, more distant florets, and a narrower and longer nut. *U. obtusifolia* is found from central North Island to Stewart Island, and *U. nervosa* s.str. is now restricted to the northern South Island.

"*Puccinellia* Parl. (Gramineae: Poeae) in New Zealand" by E. Edgar: *N.Z.j.bot.* 34: 17-32 (1996). Edgar recognises four indigenous species: *P. stricta* shared with Australia, *P. raroflorens* Edgar sp. nov. from Central Otago and Stewart Island, *P. macquariensis*, and *P. walkeri* (previously known as *P. novae-zelandiae*). Subantarctic *P. antipoda* and *P. chathamica* are treated as subspecies (new combinations) within *P. walkeri*. Three naturalised species are recognised: *P. distans*, *P. rupestris* and *P. fasciculata* (the New Zealand native *P. scott-thomsonii* is synonymised).

"*Mazus arenarius* (Scrophulariaceae), a new, small-flowered, and rare species segregated from *M. radicans*" by P.B. Heenan, C.J. Webb & P.N. Johnson: *N.Z.j.bot.* 34: 33-40 (1996). *Mazus arenarius* is described from southern New Zealand: previously included in *M. radicans* but distinguished by its colour, short peduncle, smaller flowers, corolla lobe shape, fruit apex and usually smaller seed.

"*Epilobium petraeum* (Onagraceae), a new species of alpine willow-herb from New Zealand" by P.B. Heenan: *N.Z.j.bot.* 34: 41-45 (1996). It is described from mountainous regions of central and north-eastern South Island; previously included in *E. crassum* but distinguished by its habit, red stems, leaf arrangement and glossiness, and seed morphology.

"*Abrotanella rostrata* (Asteraceae, Senecioneae) - a new species for New Zealand" by U. Swenson: *N.Z.j.bot.* 34: 47-50 (1996). It is described from the southern South Island and was previously included in *A. spathulata* from the Auckland and Campbell Islands. A new key to the 10 New Zealand *Abrotanella* species is included.

"*Hebe tairawhiti* (Scrophulariaceae): a new shrub species from New Zealand" by B.D. Clarkson & P.J. Garnock-Jones: *N.Z.j.bot.* 34: 51-56 (1996). It is described from East Coast region of the North Island; a large shrub or small tree and is considered threatened.

"Nomenclatural validation of *Coprosma pseudocuneata* (Rubiaceae)" by P.J. Garnock-Jones & R. Elder: *N.Z.j.bot.* 34: 139-140 (1996). *C. pseudocuneata* W.R.B. Oliv. ex Garn.-Jones & Elder is validly published for the first time.

"Checklist of pooid grasses naturalised in New Zealand. 4. Tribe Poeae" by E. Edgar & E.S. Gibb: *N.Z.j.bot.* 34: 147-152 (1996). Thirty three Poeae taxa, excluding *Festuca*, are reported as naturalised in New Zealand in the following genera: *Briza* (4 taxa), *Catapodium* (1), *Cynosurus* (2), *Dactylis* (1), *Lolium* (5), *Poa* (12), *Puccinellia* (3), *Sesleria* (2) and *Vulpia* (3).

"Checklist of bamboos (Poaceae) naturalised in New Zealand" by W.R. Sykes: *N.Z.j.bot.* 34: 153-156 (1996). Seventeen taxa in tribe Bambuseae are reported as naturalised in New Zealand in the following genera: *Bambusa* (2), *Chimonobambusa* (1), *Himalayacalamus* (1), *Phyllostachys* (4), *Pleioblastus* (5), *Pseudosasa* (1), *Sasa* (1), *Sasaella* (1), and *Semiarundinaria* (1).

"A taxonomic revision of *Carmichaelia* (Fabaceae - Galegeae) in New Zealand (part 2)" by P.B. Heenan: *N.Z.j.bot.* 34: 157-177 (1996). Heenan (part 2) recognises only eight species: *C. australis* is the earliest name for the widespread broom previously segregated into numerous species, including *C. aligera*, *C. cunninghamii*, *C. flagelliformis*, *C. ovata* and *C. robusta*.

"Reinstatement of the genus *Androstoma* Hook.f. (Epacridaceae)" by C.M. Weiller: *N.Z.j.bot.* 34: 179-185 (1996). *Androstoma* is reinstated for a single New Zealand endemic species *A. empetrifolia* Hook.f., later placed in *Cyathodes*. See Clarkson (this issue) for comments on Weiller's distribution map.

"*Hebe bishopiana* (Scrophulariaceae) - an endemic species of the Waitakere Ranges, west Auckland, New Zealand" by P.J. de Lange: *N.Z.j.bot.* 34: 187-194. This taxon was first described as a hybrid of *Veronica* by Petrie and inadvertently transferred to *Hebe* by Hatch, making the legal combination *H. bishopiana*

(Petrie) Hatch in the *Auckland Botanical Society Newsletter* 21 (1966).

"A new species name in *Phyllocladus* (Phyllocladaceae) from New Zealand" by B.P.J. Molloy: *N.Z.j.bot.* 34: 287-297 (1996). A new name *P. toatoa* Molloy, is created for the species formerly treated under *P. glaucus*, a misapplied name.

"Identification and distribution of the Marlborough pink brooms, *Notospartium carmichaeliae* and *N. glabrescens* (Fabaceae - Galegeae), in New Zealand" by P.B. Heenan: *N.Z.j.bot.* 34: 299-307 (1996). Three species of *Notospartium* are accepted, the above two and *N. torulosum*.

"*Austrostipa*, a new genus, and new names for Australasian species formerly included in *Stipa* (Gramineae)" by S.W.L. Jacobs & J. Everett: *Telopea* 6(4): 579-595 (1996). The new combinations in *Austrostipa* include the 11 naturalised Australian species (including two subspecies) of *Stipa* in New Zealand and also for the native Australasian *Stipa stipoides*; the endemic New Zealand *Stipa petriei* is transferred to *Achnatherum*; and *Stipa neesiana*, naturalised in New Zealand from S. America, is transferred back to *Nassella*.

"Generic limits in the *Rytidosperma* (Oanthonieae, Poaceae) complex" by H.P. Linder and G.A. Verboom: *Telopea* 6(4): 597-627. Two new genera are described: *Joycea* (three spp. Australian endemic) and *Thonandia* (five spp. Australasia). Different or new combinations by Linder & Verboom compared with recent New Zealand grass checklists:

	<u>Recent New Zealand checklist taxa</u>	<u>Linder & Verboom taxa</u>
1.	New Zealand natives <i>Rytidosperma biannulare</i> <i>R. clavatum</i> <i>R. gracile</i> <i>R. merum</i> <i>R. nigricans</i> <i>R. unarede</i> <i>Pyrrhanthera exigua</i>	<i>Notodanthonia biannularis</i> <i>N. clavata</i> <i>Thonandia gracilis</i> <i>Notodanthonia mera</i> <i>Thonandia nigricans</i> <i>T. unarede</i> <i>Rytidosperma exiguum</i>
2.	Naturalised species 9 Australian <i>Rytidosperma</i> spp.	<i>Notodanthonia</i> spp.

I note two of the combinations the authors state as **comb. nov.** (*Rytidosperma australe* and *R. pumilum*) have already been made by Connor & Edgar in *N.Z.j.bot.* 25: 166 (1987). Regarding the splitting of *Rytidosperma* s.lat. the authors note "On the balance of the evidence, we recognise four segregate genera, but are aware that there is an almost equally strong case for recognising a single, large genus *Rytidosperma*. The choice of which names to use is up to you.

"*Microtis arenaria* and *M. rara* in New Zealand" by I. St George: *N.Z. native orchid group journal* (58): 16-18 (1996). These two Australian orchid additions to New Zealand's indigenous flora are also included in "Field guide to the New Zealand orchids" by I. St George, B. Irwin & D. Hatch (1996).

"Biogeography, taxonomy and evolution in the Pacific genus *Coprosma* (Rubiaceae)" by M.J. Heads: *Candollea* 51(2): 381-405 (1996). Heads recognises 128 *Coprosma* species from S. China and Malesia, through the Pacific to South and central America and Tristan da Cunha. *Nertera* is sunk into *Coprosma* as "there is no sharp break between" the two genera and Heads makes the necessary 10 new combinations in *Coprosma*. *Coprosma cunninghamii* and *C. ciliata* are pre-occupied and new names are supplied: *C. philipsonii* and *C. patrickii*, respectively. *Leptostigma* (6 spp.) is also sunk into *Coprosma* (this section includes *Nertera setulosa* of New Zealand).

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Herbarium Report

■ Auckland Institute and Museum Herbarium (AK) Report for 1 July 1995 to 30 June 1996

Caring for the collections

The highlight of the year was a special function in February to celebrate the 100,000th record added to the herbarium database, making it the largest of its kind in New Zealand. Since 1989 all new herbarium

accessions have been added to the database. Contract staff have assisted by databasing the pre-1989 specimens, funded mainly by grants from the Lottery Grants Board. To date all New Zealand native specimens except most of the algae and half the dicotyledons have been databased. 46% of the herbarium is now databased (104110 specimens) and a recent lottery grant is assisting the dicot backlog being completed. Steve McCraith, Jane MacKay and Shelley Mulhern carried out this backlog databasing work. Planning for the new Botany Department area which will occupy part of the old Bird Hall is well in hand. The new space will be completed before the end of the year and Botany should move in early in 1997.

An outbreak of drugstore beetles in several areas of the herbarium, resulted in the whole Botany Department having to be fumigated in September.

Most of the Auckland University herbarium (AKU) is still temporarily stored within the Museum herbarium, waiting for a new room to be built on campus to rehouse their collection. 21,099 University specimens (almost all the vascular plants) have been databased on the AKILLES system, funded by the University, while it is in the Museum's care.

Fieldwork/Research

During a one day field trip on the large private Kaikoura Island on the west side of Great Barrier Island, Ewen Cameron documented some of its flora for the first time. Ewen Cameron, Doug Rogan and Anthony Wright participated in a five-day Auckland Botanical Society field trip to the North Cape area. Anthony Wright and Ewen Cameron documented for the first time the flora of Moturemu Island (off North Cape) and the North Cape vascular plant species list was revised, with reference to the 623 North Cape herbarium sheets located in AK. Most of these earlier records would have been unattainable before databasing the collection.

An Auckland Botanical Society trip to Goat Island, Leigh, was organised by Ewen Cameron and Douglas Rogan, who returned later to the island to further document the islands flora. The herbarium holds earlier collections from the island by B.S. Parris and A.E. Esler.

General

Over a thousand exotic cultivated specimens were collected from the Auckland University and Auckland Botanic Gardens, greatly boosting the herbarium holdings in cultivated plants. The last 286 workstation remaining on the departments network was finally upgraded with a Pentium, which greatly reduced computer search times.

The AKILLES taxon file compiled at AK, numbering 19500 plant names with standardised author abbreviations, was given to the Grounds Department of the Auckland University. The large file greatly assisted their new computer system, *BGBase*, being set up to keep track of all cultivated specimens in the University grounds.

Jessica Beever kindly identified all new mosses collected during the year.

Enquiries: 137 personal; 149 written; and 465 telephone (= 2.9 per working day).

Publications relating to the herbarium:

Goulding, J.H. 1996: Cheeseman, Thomas Frederick 1845-1923, botanist, museum director, teacher. In: *The Dictionary of New Zealand Biography*, vol. III, 1901-1920. C. Orange (general ed.) pp 95-96. Auckland University Press with Bridget Williams Books and the Department of Internal Affairs.

Acquisitions & donated specimens

Two important private herbaria were donated: William L. Townson (2 boxes) by his grand-daughter and Margaret E. Sexton (several boxes) by her brother. Ross Ferguson of Hort Research donated a beautiful set of pressed and pickled kiwifruit (*Actinidia* spp.); Graeme Taylor collected higher and lower plants for AK while on the Antipodes Islands. Jessica Beever donated many moss specimens; and once again Peter de Lange has made the biggest contribution of recent specimens from the length and breadth of New Zealand. Other specimens were received from: Jessica Beever, Paul Champion, Alistair Jamieson, Rhys Gardner, Max Goodey, Gillian Crowcroft, Lisa Forester, Dan Hatch, Bruce Hayward, Janis Komsars, Steve McCraith, Clinton McCullough, Ian McFadden, Wendy Patterson, Alan Tennyson, Dick Veitch, Anthony Wright and Maureen Young.

Staff

Juliet Herrick resigned as department technician in September 1995. We were very sorry to lose her and the specialised knowledge and enthusiasm she had developed for algae. Doug Rogan, who was a contract

technician at that time, was appointed as her replacement in October 1995.

Curator	Ewen K. Cameron
Honorary Botanist	Lucy M. Cranwell
Honorary Research Associates	Rhys O. Gardner, Jeanne Goulding
Technician	Juliet Herrick (until September 1995), Doug Rogan (from October 1995)
Technicians (contract)	Clinton McCullough, Steve McCraith, Jane McKay, Shelley Mulhern, Douglas Rogan (until 30 September 1995)

Volunteers

Botany volunteers contributed 1163 hours. All new specimens (5038) were mounted and packeted by Chris Ashton (since March), Joan Dow, Kay Haslett, Vic May and Meryl Wright. Wendy Patterson proofed many thousands of new AKILLES labels, Stella Jayaratnam filed specimens for 3 months and Rhys Gardner assisted with many difficult plant identifications.

Visitors

J.E. Braggins, P. Ming, G. Schmida-Adam, J. Weihong from University of Auckland; P.J. de Lange, M. Heads, C.C. Ogle, L. Winch from Department of Conservation; A.R. Jamieson, T. Stein from Auckland Regional Council; C. Beard, M. Merrett from Waikato University; K. Fukunaga, H. Fukuoka, T. Matsumura from Japan; C. Chambers, NSW; P. Champion, NIWA; C.E. Ecroyd, NZFRI; D. Fuller, SUVA; B.S. Parris, Fern Research Foundation; Y. Tang, University of Tasmania; K.S. Walter, E; A. Watkins, OTA. Private visitors: K. Boyer, G. Davidson, F. Eadie, A.E. Esler, P. & G. Gardner, G. Painter, J. Piddock, J. Smith-Dodsworth, J. Spenser, and G. M. Taylor. Ten special interest groups visited the herbarium, varying 5-21 in numbers.

Statistics

New accessions		(1994-1995)
30 June 1996	227,988	
30 June 1995	<u>222,950</u>	
	5,038	(3,892)
Records on AKILLES electronic database		
30 June 1996	104,110	
30 June 1995	<u>93,136</u>	
	10,974	(15,237)
Exchange specimens		
Inwards:	217 specimens from 4 institutions	(443 from 5)
Outwards:	310 specimens to 6 institutions	(221 to 8)
Loans of specimens		
Inwards:	31[1826 specimens] from 20 institutions	(35[984] from 21)
Outwards:	67[1496 specimens] to 23 institutions	(76[1183] to 14)
Total number of specimens out on loan = 4500 (148 loans)		(5323).

Ewen K. Cameron, Curator of Botany, Auckland Museum, Private Bag 92018, Auckland

Comment

■ The distribution of *Androstoma (Cyathodes) empetrifolia* in the North Island

It was with great interest that I read the recent paper by C.M. Weiller in the New Zealand Journal of Botany Volume 34 on the reinstatement of the genus *Androstoma* Hook.f. *Androstoma (Cyathodes) empetrifolia* is a plant which has always fascinated me because, in the parts of the North Island where I do most of my botanising, it has a sporadic distribution. Which brings me to the distribution map, page 182, presented by Weiller. Obviously it is based only on the specimens examined; in this instance specimens from AK, CHR, WELT, K, BM and NSW. The distribution map prompted me to think about the places I have seen (and sometimes collected) *A. empetrifolia*. Yes, Mt Pirongia is shown and a Kaimai Range specimen is

listed as examined but does not appear on the map. And what about that gap on the the western side of the North Island from Kawhia Harbour to Cape Egmont; could it be a real disjunction?

I have found *A. empetrifolia* in two localities within this gap. First, on the Herangi Range where it occurs as a component of cushion bog and on adjacent rocky pinnacles midway along the main range (Clarkson 1982, Clarkson 1983). A specimen is lodged in NZFRI. Second, on the Pouakai Range in Egmont National Park. For many years Tony Druce listed the Buchanan (1869) record of *A. empetrifolia* (as *C. empetrifolia*) as a doubtful record in his Egmont National Park vascular species checklist because there was no voucher specimen. In 1984 I came across a few plants in poorly drained *Chionochloa rubra* tussockland near the tarns on the crest of the Pouakai Range. A specimen is lodged in WAIK. Like many of the species of the Pouakai peaks (cf. *Carex hectori*, *Podocarpus nivalis*, and *Hebe subsimilis*), it has a very restricted distribution, a feature first noted by Tony Druce in his 1976 Egmont botanical studies paper, and does not occur on the adjoining more recent volcano Mt Taranaki (Egmont). As Weiller states, *A. empetrifolia* is mostly found in wetter areas of montane and subalpine regions. In the North Island, however, it descends to the lowland zone as a component of bog vegetation, in frost flat vegetation, on hydrothermally altered soils, or other impoverished soils, including places where vegetation has been burned repeatedly. The distribution of *A. empetrifolia* is probably sporadic on the western side of the North Island because of the lack of suitable habitat; mostly the scarcity of high ground, but on Mt Taranaki a possible consequence of the recent eruptions.

Having conducted this distributional analysis relying on memory, I then consulted Catherine Beard, Herbarium Keeper at WAIK, who at the press of a button was able to print out some 17 records of *A. empetrifolia*. Amongst these was another, more recent, collection from the Herangi Range, and a few others which filled in the distribution for the central North Island.

Finally, I discussed the northernmost records of *Androstoma* with Ewen Cameron, Herbarium Keeper at AK. He was unable to confirm any records from the Northland region or the Auckland record shown on Weiller's distribution map. He suspects that the only Northland specimen cited (three records are indicated on the map) is more likely from Maraeroa, near Pureora in the central North Island and not Maraeroa Northland. The Kirk record for Auckland is not urban Auckland as shown (E. Cameron, pers. comm. 1996). This being the case, the northern limit for *A. empetrifolia* is Mount Moehau in the Coromandel (E. Cameron, pers. comm.).

Which brings me to the reasons for this brief note. First, perhaps it would be useful to specify on published distribution maps what data limitations apply to them. And, second, minor (regional) herbaria sometimes contain important distributional records. I look forward to the day when all of New Zealand's herbaria have integrated software systems which enable efficient production of high quality (data) national distribution maps.

Acknowledgements

Catherine Beard is thanked for supplying WAIK records of *Androstoma* from the AKILLES database and Ewen Cameron for trying to verify the northernmost records of *Androstoma*.

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■ *Muehlenbeckia astonii* - highway plantings

Having attempted unsuccessfully to get *Muehlenbeckia astonii* planted on traffic islands in the early 1960s, I was interested to read that the species was now being planted in the early 1990s.

In his review of a conference¹, Peter Heenan (*New Zealand Botanical Society newsletter* No. 34, 1993, pp. 21-22) mentioned "..... the *ex situ* conservation of *Muehlenbeckia astonii* using urban traffic islands to conserve the genetic diversity of the species from the Wellington region."

Over thirty years ago I tried to persuade highway engineers in Canterbury to plant *M. astonii* in highway precincts, but for a different reason. This was as an alternative to using a potentially weedy introduced shrub as a crash barrier on traffic islands and median strips, and to reduce cross-lane headlight glare.

At the time, I had been asked to comment on a proposal to plant the Asiatic *Rosa multiflora* in highway situations, as the species had proved useful in California and elsewhere in the United States.

I recommended against widespread planting of *Rosa multiflora* because of the long arching or intertwined, recurved prickles, bird-dispersed seeds, and its potential to escape from cultivation and become a serious pastoral weed here.

The growth characteristics of *M. astonii* were shown to local roading engineers at the time as the late Mr B.L. Nicholls and I had made an amenity planting at Botany Division D.S.I.R., Lincoln (B.D. Accession No. 2670, Waipara River, N. Canterbury, 18 May 1960).

Interest in traffic island and median strip plantings seemed to decline until the mid-1980s when it became topical following a series of land cross-over accidents on main highways.

On 14 July 1986 I wrote to the Chief Highway Engineer, National Roads Board, again suggesting the planting of resilient natural barriers, including *M. astonii*, *M. complexa* and divaricate species of *Coprosma*.

The Commissioner of Works acknowledged my interest on 30 July 1986. He indicated that vegetation barriers were now considered unsuitable, as "Unfortunately our New Zealand median strips are particularly narrow, almost exclusively less than six metres wide, and often down to two metres." In consequence he continues ". . . our options have been restricted to the more solid form of barrier which do not deflect appreciably under impact. Thus wire rope on chain mesh barriers have been excluded."

Of vegetation barrier plantings, the Commissioner of Works noted - ". . . problems could be caused to drainage systems or other underground services which are frequently buried in the median. Any repairs to these services would result in an absence of a barrier until full regrowth occurred."

A.J. Healy, 98 Rattray Street, Riccarton, Christchurch 4

■ Do you deposit voucher specimens in an herbarium? If not, why not?

The following true examples from New Zealand illustrate the importance of depositing voucher specimens:

1. A post graduate plant physiologist working on an aquatic plant only realised the plant's true identity at the final writing up stage. If this had gone undetected, a good voucher specimen would have been the only way this research could have been validated in the future.
2. An *Oxalis* taxon studied for an MSc thesis was later found to represent two species in New Zealand. The voucher specimen confirms which taxon was studied.
3. A cytologist working from a supposedly pure seed batch found that it contained two species, and in the absence of a voucher specimen was unable to identify the named one.
4. A DNA analysis for an MSc, sampled a population that actually consisted of 5 species existing seasonally. No vouchers were retained so it is unclear as to what was being studied.
5. Identifications of some plants from photographs is not possible! Microscopic examination is required.
6. Chemists analysing plants could not understand their results. They had no vouchers. Further studies revealed five taxa were involved, two new to science.

All researchers need to be absolutely certain that identification of plant material studied is correct. Incorrect identification will almost certainly invalidate the research. For this reason it is essential for voucher specimens to be prepared and deposited in a public herbarium (see Rogan 1996; Notes for collecting specimens for herbaria). Preparation of specimens will often be done by the herbarium staff if you tell them exactly what the voucher is for.

¹People, plants and conservation into the 21st century. Proceedings of a conference held in Wellington, 19-22 March 1992.

Voucher specimens are deposited to authenticate a range of studies, not necessarily just taxonomy. These studies can include cytology, chemistry, pathogens and ecology and those involved with economic botany and horticulture. Seed studies should be supported by a voucher specimen of the original parent(s). A voucher specimen directs any future researcher to the original source. The specimen represents the reality, later allowing others possibly interested to verify the identification of the material of the original researcher. It allows work from the specimen instead of from the interpretation of it. It also allows another researcher to use this specimen for other investigations; a value added bonus.

Once a specimen is deposited in the herbarium, as a place of safe keeping, a special number is added to give a simple precise reference to the specimen - useful for quoting in scientific publications. Many journals require a specimen to be identified in this way before the research will be published, and for monographs, or taxonomic revisions, information about the location of the range of specimens studied is absolutely vital.

The 14th Annual Meeting of New Zealand National Herbarium Network held recently, expressed concern that many researchers in New Zealand do not prepare voucher specimens, or if they do, do not place them in a registered herbarium.

In case you were not aware the following New Zealand internationally registered herbaria exist:

AK	Auckland Museum, Ewen Cameron; Ph. 0-9-309 0443
AKU	Auckland University, John Braggins; Ph. 0-9-373 7999
CANU	University of Canterbury, Josephine Ward; Ph. 0-3-364 2742
CHR	Manaaki Whenua - Landcare Research, Lincoln, Murray Parsons; Ph. 0-3-325 6700
LINC	Lincoln University, Phillipa Horn; Ph. 0-3-325 2811
MPN	Massey University, Heather Outred; Ph. 0-6-356 9099
NZFRI	NZFRI, Rotorua, Chris Ecroyd; Ph. 0-7-347 5609
OTA	University of Otago, Ray Tangney; Ph. 0-3-479 1100
PDD	Manaaki Whenua - Landcare Research, Mt Albert, Eric McKenzie; Ph. 0-3-325 6700
WAIK	Waikato University, Catherine Beard; Ph. 0-7-838 4372
WELT	Museum of New Zealand Te Papa Tongarewa, Fiona Pitt; Ph. 0-4-385 9609
WELTU	Victoria University of Wellington, Barry Sneddon; Ph. 0-4-472 1000

Acknowledgements

We would like to thank Ewen Cameron, Doug Rogan and Murray Parsons for their comments and suggestions on this article.

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Lynda Dixon and Heather Outred, Department of Plant Biology and Biotechnology, Massey University, Private Bag 11222, Palmerston North

■ Notes for collecting specimens for herbaria

The many taxonomic changes over time mean that it is often difficult, sometimes impossible, to know exactly which taxon is referred to by earlier published records. Herbarium specimens therefore provide the best proof that a plant grows or once grew in a particular area. For research, herbarium voucher specimens provide proof of the identification of the plant studied (see Dixon & Outred 1996). Good herbarium specimens are also the primary tool of taxonomists. It is therefore very important that any collection be as complete (i.e. good notes and specimen) as possible. When collecting specimens remember that it is illegal to collect without the landowner's permission and to be careful not to over-collect, especially if the plant could be an uncommon species.

Norton *et al.*, 1994, set out the following guidelines for collecting rare taxa:

- Where possible, use photographs to record uncommon plant taxa, rather than collecting specimens, at least as a preliminary record.
- If collecting is necessary, do not collect whole plants unless there are more than 20 plants present, or do not remove more than 5% of any one plant.
- Do not collect flowers or fruits, if only one or a few flowers or fruits are present.
- Do not collect material for duplicates from uncommon taxa, unless this can be done from cultivated plants, without jeopardising *in situ* preservation.
- Use seeds or cuttings for cultivation, rather than removing whole plants.

For non-threatened taxa, try to get as many diagnostic features as possible when taking a specimen, e.g. leaves, flowers, fruit, bark, etc. If the plant shows different leaf forms try to collect a specimen which shows this. If the plant is an annual then the entire plant should be collected (roots and all). Ideally the specimen should be pressed as soon as possible to minimise wilting and colour loss. This can be done by simply putting it in-between the pages of a book and applying pressure. For more detail about pressing plant specimens see Davis (1961) and Forman & Bridson (1992). For harder-to-press specimens such as succulents it pays to freeze the specimen for 24 hours first to kill the plant, then press it when thawed (for more detailed notes on pressing succulents see Woods (1994)). Ideally, a vascular plant specimen should fit neatly onto a standard herbarium sheet (420 mm x 265 mm), which is roughly the size of a suburban newspaper page. Try not to collect little scraps of things.

Collections of mosses, liverworts and lichens should be fertile (as for higher plants) and can simply be placed into a paper packet and left to air-dry. Collections of algae are best collected into alcohol in the field so that they can be mounted properly later in the herbarium.

When collecting try to note as much about the surrounding area as possible, e.g. open or dense bush/scrub/vegetation; dominant and associated species; substrate type; moist or dry environment; etc. Also make notes about the specimen itself which will not be seen from the pressed specimen, e.g. abundance, height, diameter - measured at breast height (dbh), flower and fruit colour and size, leaf texture, dimensions of leaves (if very large and won't fit entirely on herbarium sheet e.g. tree ferns), growth habit (e.g. divaricating, erect, spreading, weeping, climbing, etc), and any other aspects of the plant that are noteworthy. Features such as colour (of leaves, stem, flowers, fruit, etc.) are vital to record when the plant is still fresh as more often than not these parts either lose or change their colour during the drying process and then are lost forever.

Another important data item is the location. Preferably this should be a written description with a six-figure map reference (from the NZMS 260 series maps) and the altitude. It is often a good idea to use your car odometer if collecting on the roadside to later calculate the exact collection site from the closest side road on a 260 map, e.g. "...Jones Road, on roadside 500 m north of Smith Road intersection", or "... track margin 300 m southeast of Bloke Trig". If very accurate descriptions of the location are provided then it is quite easy to work out the altitude from a map. A useful tool, if available, is a hand-held Global Positioning Satellite recorder (GPS). This can tell you to the nearest metre where you are and most models enable you to store each location in its memory. Ideally someone else should be able to return exactly to your locality by the map reference or the description provided. Giving both allows a cross-check on the data.

Any collection should also include the name of the collector along with the exact date it was collected. If it is a cultivated or planted specimen then this should be noted also.

The least important part of collecting a specimen is its identity. If good notes are made and a decent specimen is taken then it can always be identified at a later date. If a plant is new or unusual to you then the chances are that it could be a new or interesting record - so collect a (decent) specimen. It is much easier for a botanist to work out the identity from a specimen than from a verbal description.

A good thing to remember is "It is a great deal better to collect a little material well than to press a large amount of scrappy, poorly annotated specimens" (Davis 1961).

Things to note when collecting a specimen for the herbarium

- Location - use NZMS 260 map series if possible to give 6-figure grid reference, altitude and give a detailed description
- Aspects of the specimen which will be lost or will change with pressing - note any colours, textures, scents, flower orientation, etc.
- Abundance (abundant, common, occasional, local, scarce)
- Habitat - note surrounding vegetation, soil type, aspect, sun/shade, and other environmental factors
- Collector's name
- Collecting date
- Cultivated or wild? - especially important for adventive plants.

An example of a good herbarium label:-

Name	<i>Trilepidia adamsii</i> (Cheeseman) Tieghem		
Loc.	New Zealand, North Island, Auckland Ecological Region, Tamaki Ecological District, Mount Eden cone, on roadside c.250 metres northeast of summit.		
Grid Ref.	R11 677790	Alt.	150 m asl.
Coll.	V R E Lucky	Date	10 October 1996
Det.	V R E Lucky	Date	10 October 1996
Notes	Several large clumps hanging down (parasitising) 15 m tall kauri tree; in open, damp bush dominated by taraire and <i>Coprosma robusta</i> . Flowers 20 mm long, red - fading to pink, hanging, opening at tips, strong sweet scent; leaves dark olive-green.		

Acknowledgements

I would like to thank Ewen Cameron and Rhys Gardner for their comments and suggestions on this paper.

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BIOGRAPHY/BIBLIOGRAPHY

■ A tribute to John Trevillian Linzey 1916-1996

John Linzey, who died recently in Auckland at the age of 79, was one of that large band of fine New Zealand botanists who may be called amateur because they are not paid to botanise. He was by profession a chemist, and for much of his career a specialist in clay chemistry. What better background to bring a bit of lateral thinking into moss ecology? In 1963, K.W. Allison, who had taken over the mantle of G.O.K. Sainsbury as New Zealand's foremost (and almost only) moss identifier, wrote from his home in Dunedin to Mrs Iris Barr in Auckland "Thank-you for your letter and valued collection of bryophytes. I know you will not mind the delay in answering as I had some critical mosses from a local enthusiast, a Mr Linzey, who is starting on mosses, but being a trained chemist of mature years, he has the scientific approach and surprises me at the relevant details he spots in the specimens. He has already picked up several species in the Dunedin District not previously spotted by Wm. Martin or myself!"

After leaving school John Linzey was apprenticed to a printer in Christchurch. When he was about seven he had received an inheritance of 100 pounds from friends of his grandfather, to be paid with interest when he turned 21. He writes in his reminiscences "When I was about 20, I thought of all the things I would be able to use my inheritance for. I was still working as an apprentice printer and felt that my mind was deteriorating through lack of challenge. I decided that I would spend the money on some form of education". He began with night classes at the Technical College, taking Chemistry, Physics, Maths, English and French for University Matriculation, but his studies were badly interrupted by compulsory overtime at the printing works. To his great surprise he passed, with excellent marks "except for French where I had scraped through by one single point!" Then, in the face of intense opposition from his widowed mother, he decided to give up his job in the printing trade and enrol as a full time science student at the University of Canterbury. "I was fully aware that my future livelihood as a scientist would have to be earned as a chemist, so the thorough study of this subject was a priority. Perhaps because I was older than the average student, perhaps because I had not had the advantage of a good secondary education or was it merely that I had spent years working with people that never had the opportunity to think and reason

carefully, that I wanted more from those years at university than the average person. I looked on those years of study as a luxury that would never be repeated. I saw that there was much more to the world of science than the narrow field to which the 'brighter' students confined themselves. I was fascinated by the natural world around me". So, to the consternation of his Chemistry professor, he also studied Geology, Botany and Zoology. Despite all the criticism he had "at the hands of the 'pure' scientists" he felt he was a more balanced human being. He knew that he was "far from being a 'bright' student and would never 'set the Thames on fire' from any of the work I would achieve, but I also knew that for the rest of my life I would be able to associate with a group of thinkers who loved this country and who wanted to keep on advancing our understanding of its own special attributes." He came under the influence of Professor Edward Percival in the Zoology Department, and was proud to have met "people like Arnold Wall, G.M. Thompson and the legendary Leonard Cockayne" (the latter, when he, John Linzey, was a child). The fortuitous obtaining of a holiday job in the Christchurch Gas Works, as stand-in for a friend whose father worked there, gave him a good start in his professional career as an industrial chemist, but under Professor Percival's influence he made a study of the hydrography of the estuary of the Avon and Heathcote Rivers (Linzey, 1944), and produced two taxonomic papers on barnacles (Linzey 1942a; Linzey 1942b).

His university studies were interrupted by the Second World War, but he got no further than Ngaruawahia Camp in the 3rd Field Company of New Zealand Engineers, with the rank of sapper. He was invalided out of the army with respiratory illness, which plagued him all his life. He records the Medical Board officer in charge, "using only one hand, picked me up by the collar of my uniform, held me on high like a small animal, and said that I was much too small to be of any use. "Sappers, despite their name are no longer required to be as small as burrowing moles and digging tunnels is no longer their main function in the Army now". He was able to return to Canterbury University and complete the final unit for his degree while working as an analyst at a brass foundry fulfilling contracts for the Armed Forces, and developing alternative smoke screens as part of the "Advisory Committee to the Armed Forces on Munitions" - a more congenial use of his skills than as an engineer trying to drain the floodwaters at Ngaruawahia Camp.

Lectures from Charles Foweraker in Botany 1 had led him to take a systematic interest in the local flora. "It didn't take long to become familiar with the trees, shrubs and larger herbaceous plants. However, these did not offer the opportunity to stop immediately I lost my breath". Thus he subsequently turned to the mosses. (I can confidently record, not the only bryologist to use the small plants as excuse for a puff-stop!). In May 1963 he went to see George Scott, then teaching in the Botany Department of the University of Otago. George remembers "he came to see me about the patterning of mosses in tussock grassland on Flagstaff Hill, and in particular the way the bryophytes changed depending on distance from the centre of each tussock. I gave him statistical advice (which I later realised he had no need of, in fact the boot was on the other foot) and put him in touch with Allison on some taxonomic points - that was their first contact. At this stage K.W. Allison was living in retirement in Dunedin, quite close to John Linzey's own home. John had acquired a copy of Sainsbury's 'Handbook of New Zealand Mosses' but "the subject was difficult. The illustrations in the flora were few and far between. The keys were mostly confined to the species within a genus but it was difficult for a beginner to even decide which family the plant belonged to, let alone its genus. However, I persisted for a few months, and so as to appear not impossibly ignorant, identified a number a specimens positively, and then wrote to Allison with my problems". He received a warm and courteous reply, and thus began a long exchange of letters and specimens. Allison did not give all his secrets away, however, including the locality of the rare *Grimmia inaequalis* (syn. *G. incrassicapsulis* B.G. Bell) known only from nearby Mt Watkin. "The old fox wouldn't tell me exactly where it was although he had given me a small specimen to whet my appetite. When after a couple of years I still hadn't found it, he rubbed salt in the wound by asking me to get some of the plant in fruit as he had a request for material from a museum overseas". Success came at last, and the moss proved to be reasonably abundant, but well camouflaged.

George Scott recalls "Until January 1966, when he went to Auckland, he bombarded me with ideas and problems - he seemed to work 48 hours out of each weekend and always gave me lists, notes on new records and often specimens. John had a very keen eye for detail... which led him to a particular love of *Bryum*, which he enjoyed because of the smallness of the taxonomic characters used, and because of the consequent challenge. He learned extraordinarily quickly and soon mastered the local flora. He had a very thorough scientific background, especially in chemistry of course, and this gave him an original approach to bryological problems, such as the multi-laminated nature of rhizoid walls and the biological functioning of moss cells which, he found, behaved like solids instead of liquids, the reason being that most of the volume is solid (wall). I think he loved grappling with something completely new but having conquered it far enough to satisfy him, he needed to move on. He was a coloniser rather than a consolidator"

In 1966 John Linzey moved to Auckland, to work as a chemist at Crown Lynn Potteries. He and his wife Edith joined the Auckland Botanical Society. "It was a very non-threatening group of very ordinary citizens who enjoyed natural history and went out on 'outings' led by some competent botanist. His first outing was led by Marguerite Crookes, who considerably embarrassed him by taking as firm his tentative identification of *Cotula dioica*, which unknown to him had been reported from the site in 1870 and not been seen since. "She was determined that I should have greatness thrust upon me. So I was regarded as something of an authority from then on. Unfortunately I knew nothing of the ordinary plants growing in the bush". He was asked by her to look out for *Botrychium australe*, which he knew from the South Island. When he subsequently discovered it on an exposed track over Mt Zion in the Waitakere Ranges, he was considerably frustrated by her refusal to believe it, in such an unlikely habitat, even with a voucher. A couple of years later he finally had the satisfaction of showing it in the field, to her and Arthur Mead, 'Honorary Ranger' in the Regional Park. Arthur Mead immediately wanted the track to be moved, with great urgency, in order to protect the site!

Moving north enabled John to begin collecting mosses in a new part of the country, and he quickly became familiar with the Auckland flora. He contributed an article on the mosses of the Waitakere Ranges, with an annotated checklist of 171 species, to Arthur Mead's 'Native Flora of the Waitakere Range Auckland' (Mead 1969). This was of immeasurable help to me starting to learn the mosses in this region, and even the indefatigable John Bartlett found only 212 species in the Waitakere Ranges (Bartlett 1985).

I first made contact with John Linzey in December 1981, when I wrote to him hoping he might be able to help me in my early struggles with identification of mosses. Just as he had when writing the first time to Allison, I sweated hard and long over that first communication. I was having difficulty with purple forms of *Tayloria* I had collected on Little Barrier, having studied Sainsbury's account of the genus and looked at his specimens in WELT, as well as others in AK. The reply thrilled me: "I have had a look at your three collections and would agree that they are all *Tayloria calophylla*." I was right! Several factors had caused me to doubt: an incorrectly determined specimen (by K.W. Allison) in AK, and Sainsbury's comment that purple forms of *T. calophylla* 'are probably rare'. The beginner naively does not expect to find incorrectly determined specimens in public herbaria, especially not when the identifier is one of the 'grand old men', nor to collect the 'rare forms'. John Linzey also commented "Evidently Sainsbury was not very conversant with *T. calophylla* as he says... 'not at all common'." Another eye-opener for me! Sainsbury's description was inadequate! The letter continued "Anyway the other two species are quite differentHere are three specimens which may be helpful. Please keep them." I had found a wonderful mentor.

The correspondence continued apace, always on my part an attempt to analyse as fully as I could exactly what the problem was (and hence often solve it just with the discipline of preparing it for someone else's criticism), and on his part long, detailed hand-written replies, with incisive ecological notes, what characters to look for, and exactly where to look, and always accompanying specimens to prove the points. The labels were models that any professional botanist could hope to emulate, details of locality, including altitude, and with his eye for ecological detail always useful habitat notes. For *Bryum erythrocarpoides*, for example, he told me the species "grows in that very wet situation, seepage from rock face in open, and in and around Auckland harbours the wet faces above the sea are massed with it - in association with *Gymnostomum calcareum* and *Tridontium tasmanicum*. By October 1983 we had progressed from "Dear Mrs Beever" to "Dear Jessica". Eventually we met, and I would enjoy a cup of tea with him and Edith at their Dominion Road home before we discussed my puzzles. He was no longer actively bryologising himself, but seemed still to have the knowledge at his fingertips. One day when giving me more specimens he said "You'd better take the lot", and we filled my Mini with shoe boxes. The precious cargo was taken to the Mt Albert Research Centre, where it still forms the back-bone of my working herbarium.

John Linzey made a detailed study of the genus *Bryum*, a 'critical' genus indeed, and often found without capsules which makes identification even harder. He investigated their rhizoidal tubers, a newly recognised character which had been shown to be very useful in Europe (Crundwell & Nyholm 1964), and so they proved to be in New Zealand. In Europe a complex of species known as the *Bryum erythrocarpum* complex were easily differentiated by the form of their tubers. John Linzey showed that *Bryum chrysoneuron* C. Muell. in New Zealand, was a similar complex, with many of the same component species that were found in Europe. He also studied Australian *Bryum chrysoneuron* specimens, borrowed from Jim Willis at the National Herbarium, Victoria, and thus established the presence of *Bryum sauteri* B.S.G. and *Bryum micro-erythrocarpum* C.M. & Kinb. in Australia. In New Zealand he found a species with a hitherto unknown form of tuber, about which he corresponded with Alan Crundwell, who interestingly referred to it informally as *Bryum "linzeyi"* while John Linzey called it *Bryum "ACC"* (for Alan Crundwell). (I subsequently decided it was a tuberous form of the already described *Bryum erythrocarpoides* C. Muell. & Hampe, so a name has not had to be chosen).

John Linzey also helped John K. Bartlett, an extraordinarily productive collector of mosses in the years 1975 - 1985. The large number of moss specimens in the Bartlett herbarium in AK identified in John Linzey's distinctively elegant handwriting attests to this. He did describe to me once how John Bartlett would arrive on the doorstep, almost knock Edith over in his rush to be inside, and present him with a great mass of mixed vegetation, still complete with worms.

In addition to his Waitakeres 'Mosses' as far as I know John Linzey wrote only one other bryological publication, an account of the mosses in a bush block near Waipipi, following an Auckland Botanical Society trip (Linzey 1967). He passed on to K.W. Allison anything of special interest (over 250 specimens now in CHR) and the results of this are presented in Allison's paper of 1971 dealing with mosses discovered in New Zealand since the production of Sainsbury's Handbook in 1955. This lists 19 mosses, plus 5 to genus only, and of these the following are noted as having been collected by J.T. Linzey: *Trichodon cylindricus* (Hedw.) Schimp. [syn. *Ditrichum cylindricum* (Hedw.) Grout], *Ephemerum serratum* (Hedw.) Hampe, *E. whiteleggei* Broth. & Geheeb. [now known to be *Eccremidium minutum* (Mitt.) I.G. Stone & G. Scott], *Phascum cuspidatum* Schreb. and *Pterygoneuron cavifolium* (Ehrh.) Jur. [syn. *P. ovatum* (Hedw.) Dix.]. From herbarium records John Linzey would also appear to have been the collector of the *Tortula* sp. in this paper, now known to be *Tortula mucronifolia* Schwaegr. He produced a number of short unpublished manuscripts on various bryological topics, copies of which he gave to George Scott and/or myself. These are now placed in the library of the Auckland Institute and Museum (see list below).

Sadly Edith died suddenly in 1987, and John Linzey moved to a home unit near their former home. I continued to visit him there, and was very pleased in 1992 to give him a copy of my revision of Allison and Child's 'The Mosses of New Zealand' in the preface of which I acknowledge "my gratitude to John Linzey, who has helped me with many puzzles, and has been a very valuable source of bryological information, since I first took up the study of mosses".

Although he always wrote to me in elegant long-hand with a fountain pen, it is interesting to note that his reminiscences quoted in this article were taken for me, by his son Dr Michael Linzey, from John Linzey's word-processor. He moved with the times. The New Zealand botanical community extends its sympathy to his family in the loss of their father, grandfather, and great-grandfather.

Appendix

Natural history publications of J.T. Linzey:

Linzey, J. T. 1942a: The Balanomorph barnacles of the Kermadec Islands. Transactions of the Royal Society of New Zealand 71: 279 - 281.

Linzey, J. T. 1942b: The body appendages of *Balanus decorus*. Transactions of the Royal Society of New Zealand 72: 1-5.

Linzey, J. T. 1944: A short study of the hydrography of the estuary of the Avon and Heathcote rivers, near Christchurch. Transactions of the Royal Society of New Zealand 73: 365-376.

Linzey, J. T. 1967: Moss in bush block near Waipipi. Auckland Botanical Society newsletter 24: 7-8.

Linzey, J. T. 1969: Pink and white centaury. Auckland Botanical Society newsletter 26: 2.

Linzey, J. T. 1969: Mosses, in, Mead, A.D. 'Native Flora of the Waitakere Range Auckland'. Impex Press, Auckland (revised and reprinted 1972).

Unpublished bryological manuscripts:

These are now lodged in the library of the Auckland Institute and Museum, together with correspondence between John Linzey and K.W. Allison, George Scott and Jessica Beaver.

Preliminary notes on moss rhizoids 4pp.

New Zealand species of the genus *Pleuridium*. 2pp.

Moss Flora of Dunedin Botanical Sub-District: additions to list of Wm. Martin (1952) Trans. Roy. Soc. 79:436-451. 5pp.

Bryum chrysonuron C.M. in New Zealand. 6pp.

Notes on *Bryum chrysonuron* specimens loaned by J.H. Willis from National Herbarium, Victoria. 3pp.

Coastal Mosses - East Coast of Otago centered round Dunedin. 5pp.

Acknowledgements

I am grateful to Michael Linzey, George Scott, and staff at AK and CHR for assistance with the preparation of this article.

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Allison, K.W. 1971: Mosses discovered in New Zealand since the production of Sainsbury's "A Handbook of the New Zealand mosses" in 1955. New Zealand Journal of Botany 9: 672-673.

Bartlett, J.K. 1985: Mosses of the Waitakere Range Auckland. Auckland Botanical Society Bulletin 15: 1-27.

Beever, J.E.; Allison, K.W.; Child, J. 1992: *The Mosses of New Zealand*, 2nd edition, Dunedin. 214pp.

Crundwell, A.C.; Nyholm, E. 1964: The European species of the *Bryum erythrocarpum* complex. Transactions of the British Bryological Society 4: 597-637.

Sainsbury, G.O.K 1955: A handbook of the New Zealand mosses. Royal Society of New Zealand bulletin 5. 490pp.

Jessica E. Beever, c/- Manaaki Whenua - Landcare Research, Private Bag 92170, Auckland

■ Biographical Notes (24): William McKay MB, FRCS (Edin.) (1875-1946)

William McKay of Greymouth, surgeon and general practitioner, was born on 4 December, 1875, at the small quartz-mining town of Black's Point, lying in the hills some 3 km to the east of Reefton (1). His birth certificate (1875) gives his parents as Euphemia and Andrew McKay with his father's occupation as "miner", while his death certificate (1946) gives his parents as Euphemia and Andrew Alexander McKay, with his father as "stone mason".

William's father is listed as a resident of Black's Point up to the electoral roll of 24 October, 1881, but is not listed on 18 June, 1885, the next roll for the Inangahua electorate. Thus, William could have attended Black's Point School for a few years. Later, however, he went to Greymouth Public School, and in 1887, was an early winner of the Watkins Medal (2,3). He then attended the Grey District High School where he won a University of New Zealand Junior Scholarship in 1892, taking Latin, English, French, Mathematics and History - Geography (2).

In 1893 William passed the Preliminary Examination of Medical Students and registered at the Otago University where he kept one year's terms (2). This enabled him to continue studies at the University of Edinburgh where he graduated Bachelor of Medicine and Bachelor of Surgery in 1898 and Fellow of the Royal College of Surgeons in 1901 (4). In Greymouth, on 19 September, 1901, he applied for registration as a medical practitioner and was registered on 10 October, 1901 (4,5), thus beginning his long professional association with that town. At the outbreak of the 1914-1918 war he was in England and served in France in the Medical Corps (3).

Dr McKay's important contribution to public affairs was outlined in the Christchurch "Press": "He was for many years a prominent member and official of the Grey District Acclimatisation Society, and was closely associated with a number of sporting bodies. With the late Dr J.W. McBrearty he promoted the Seddon Shield Rugby competition. He was an inaugural member and chairman of the Municipal Baths Committee, an alpinist, a former President of the Star Rugby Football Club, a foundation member of the Greymouth Golf Club, the Greymouth Men's Club, and a prominent committee man. For many years he was president of the Greymouth branch of the Canterbury Automobile Association, vice-president of the Greymouth Trotting Club, and a member of the Arthur's Pass National Park Committee. In his youth he was a prominent rugby player. The possessor of a remarkably fine memory and a great knowledge of many subjects, particularly botany and bird life, Dr McKay was a remarkable conversationalist" (3).

McKay was first listed as a member of the Philosophical Institute of Canterbury in 1924 (TNZI 55). About 1929 he sold his practice to Dr W.A. Bird whose son, Dr W.H. Bird of Christchurch remembers "Dr McKay's lovely garden in Kilgour Road and his wicked home-brewed ginger beer" (6).

In 1932 Cockayne, Simpson & Thomson in their account of some New Zealand indigenous-induced weeds etc. (7) gave information from McKay about indigenous species invading the Greymouth bowling green and about the vegetation of gold-mining tailings at Dilmantown and Greenstone.

At some time before 1931 McKay sent material of the Asiatic Knotweed, *Polygonum cuspidatum* (now *Reynoutria japonica*) to Dr H.H. Allan who grew it at the Plant Research Station, Palmerston North (CHR 6020) and published the first record for New Zealand in 1935. He wrote: "my attention to its potential danger was drawn by Dr W. MacKay [sic] of Greymouth, where it encroaches on footpaths, and has so strongly established itself that eradication is proving difficult" (8).

Also in 1935 Allan described *Forstera mackayi* from "summit of Sewell Peak, Paparoa Mountains, W. MacKay! [sic]. Type in herb. Plant Research Station, No. 8961". The type, now in CHR, is undated. Allan added: "I have pleasure in associating this new and handsome species with the name of one who has done much to advance our knowledge of the botany of the north-west of South Island" (9). Note that Allan regularly mis-spells McKay's name, except, of course, when it is modified to MacKay in the specific epithet.

About 1936 the Arthur's Pass National Park Board conceived the idea of establishing a rock garden for the cultivations of alpine plants indigenous to the Park, many of which would not otherwise be easily seen.

McKay, who was on the Grounds Committee, has described the garden as it was in 1938, as well as the four large rockery plots put down on the railway station (10). Mr M.J. Barnett, of the Department of Parks & Reserves, Christchurch, helped considerably with this project and was one of McKay's fellow members of the Royal New Zealand Institute of Horticulture (as was H.H. Allan). McKay was a member until at least the 17th Annual Conference in Wellington on 1 February, 1940, to which he sent his apologies (11).

Dr William McKay died on 22 August, 1946, and was buried in the Greymouth Cemetery (12). Described as one of the town's "best known and respected citizens", he was unmarried (3,12). Under his will a valuable collection of rare books, pamphlets, etc., to be known as the "Dr William McKay Collection" was bequeathed to Canterbury University College (13). It consisted of some 60 items relating to the West Coast and the following dealing with the natural history of New Zealand: *Characteres Generum Plantarum* etc. J.R. & G. Forster, 1776; *Florulae Insularum Australium Prodrromus* G. Forster, 1786; *Descriptiones Animalium* etc. J.R. Forster, ed. H. Lichtenstein, 1844; *Essai d'une Flora de la Nouvelle Zélande (Atlas)* A. Richard, 1832; *Choix de Plantes de la Nouvelle Zélande* E. Raoul, 1846; *Flora Antarctica* (2 vols), *Flora Novae Zelandiae* (2 vols), *Flora Tasmaniae* (2 vols), J.D. Hooker, 1844-1860; *Voyage au Pôle Sud et dans l'Océanie-Botanique* B. Hombron & H. Jacquinot, 1853; *Handbook of the New Zealand Flora* J.D. Hooker, 1867; *Contributions to New Zealand Botany* L. Lindsay, 1868; *Essai sur la Faune de la Nouvelle Zélande* H. Jouan, 1869; *Out in the Open* T.H. Potts, 1882; *Flightless birds of New Zealand* R. Henry, 1901; *Lichens* (British Antarctic Expedition) O.V. Darbishire, 1910; *Hymenophyllaceae* (2 pamphlets) J.E. Holloway; *Podocarp Rain Forests of Westland* C.E. Foweraker. The collection is kept in a secure stack room attached to the Macmillan Brown Library of the University of Canterbury, with items available for perusal on request (but not for borrowing) (14).

William McKay should not be confused with the geologist Alexander McKay (1842-1917) to whom *Raoulia m'kayi* (later *Gnaphalium mackayi*) was dedicated by Buchanan (*TNZI* 14, 1882).

Acknowledgements

I am indebted to Ms Bronwyn Matthews, Information Services Librarian, Macmillan Brown Library, University of Canterbury, for information about the "Dr William McKay Collection".

References

(1) Birth Certificate; (2) The New Zealand University Calendar 1893-94, 1894-95; (3) Anon.: Dr W. McKay *The Press* 23 August 1946. (4) Register of Medical Practitioners *The New Zealand Gazette* 23 January, 1925; (5) *Ibid* 19 September, 1901; (6) Dr W.H. Bird, pers. comm.; (7) *Linnaean Society's Journal - Botany* 49; (8) H.H. Allan: Notes on recently observed exotic weeds. *NZJAg* 50, 1935; (9) H.H. Allan: Notes on New Zealand Floristic Botany, including Descriptions of New Species, etc. (No. 6) *TRSNZ* 65, 1935; (10) Wm. McKay: The alpine rock garden at Arthur's Pass. *The City Beautiful* 14, 1938; (11) *JRNZIH* 9, 1940; (12) Death Certificate; (13) Anon.: Obituary, Dr William McKay, Greymouth. *JRNZIH* 16, 1946; (14) Information Services, Macmillan Brown Library in litt.

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PUBLICATIONS

■ Journals received

New Zealand Native Orchid Group Journal 61

(December 1996; ISSN 1170-4543). Edited by Ian St George. 23 pp.

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Cover - *Corybas acuminatus* - drawing by Catherine Beard

2. Pollination in *Thelymitra*. Two species of *Orthoceras*?

3. Emily Cheeseman's watercolours. Talking to flowers.

4. Code of ethical conduct.

4. Bob Goodger on two forms of *Corybas oblongus*. Ella Campbell on *Danhatchia australis*. *Thelymitra cyanea* near Waikaremoana. *Obit.* Malcolm Campbell, Noeleen Clements.

6. Cultivation vs conservation. Bob Bates on items in *J60*. *Les belles inconnues*. Sue and Robbie Graham on orchids by a river. David Jones on *Caladenia lyallii*, *Prasophyllum colensoi* et al.

10. Bruce Irwin's ?*Corybas trilobus* x *C. iridescens* hybrid. David Lang - the intrepid orchid explorer. *Microtis arenaria* from the Adelaide hills.

12. New book!

13. Iwitahi 97.

14. Collin Elwin Woolcock (1914-1989): *Gastrodia sesamoides* and *Orthoceras strictum*.
15. *Pterostylis pyramidalis*: drawing by Michael Morcombe from his Australia's wildflowers.
16. HB Matthews's "*Corybas aestivalis*" - is it different from *Corybas oblongus*?
17. His "*Prasophyllum patentifolium*" - is it different from *Prasophyllum colensoi*?
18. William Colenso's *Prasophyllum pauciflorum* - is it different from *P. colensoi*?
19. Two historic places for NZ orchidology - the Rainbow falls at Kerikeri and Lake Tongonge.
22. Rica Erickson's illustration of *Monadenia bracteata*. Endangered orchids of South Australia. Native orchid growers network in Victoria. Adopt-an-endangered-species programme in SA.
23. Forms and freaks of *Calochilus robertsonii* in SA.

Editors

Canterbury Botanical Society Journal 30 - 1996: An index to Journals 1-29.
(ISSN 0110 5892) Colin J. Webb and Paul Pearson. 77pp.

Journal 30 has just been published, October, 1996. This journal will be very useful as it is a complete index to journals 1-29, i.e., from 1968 to 1995. Articles are indexed by author, title, locality, genus, species list, keys, distribution map and illustrations, plus cross references. Copies are available free to financial members of the Canterbury Botanical Society - individuals, \$15; family/couples, \$20; and students, \$10. Members of other botanical societies in New Zealand can obtain a copy at the discounted price of \$6 per copy. Please send cheques payable to "Canterbury Botanical Society", at P O Box 8212, Christchurch, and please state the name of your society. The price to non-members and libraries is \$10 per copy.

Ron Close, Canterbury Botanical Society, P O Box 8212, Christchurch

FORTHCOMING CONFERENCES/MEETINGS

■ The 11th New Zealand Fungal Foray

Camp Wainui, Wainuiomata, Wellington (evening of Monday 5 May to morning of Friday 9 May 1997)

Camp Wainui is in the Rimutaka Ranges and on the southern edge of Wainuiomata, approximately 20 km by road, from central Wellington. The range has a typical gully ridge system of forest types with *Nothofagus truncata* on the drier ridges and broadleaf podocarp forest in the damper gullies. The mosaic of forest types should provide good collecting although as usual we are at the mercy of the weather. A very limited number of microscopes and driers etc will be available.

The cost of accommodation will be about \$10 per night, plus the additional cost for food. In what I think can be called a long standing tradition meals will be prepared by Lawrie Taylor. A limited number of grants towards the daily cost and/ or transport to the foray are available for students. More information is available from Geoff Ridley.

Geoff Ridley, NZ Forest Research Institute, Private Bag 3020, Rotorua, New Zealand;
tel: +64-7-347 5899; fax: +64-7-347 5333; e-mail: ridleyg@fri.cri.nz

Registration for the 11th New Zealand Fungal Foray, Wainuiomata, 5-9 May 1997

Name			
Address			
Tel		Fax	E-mail
Number attending		Deposit (\$30/person) enclosed:	
<i>(Please make cheques payable to "Foray Account")</i>			
I require assistance with transport from Wellington city: yes / no			

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