

AUSTRALASIAN BRYOLOGICAL NEWSLETTER

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EDITORIAL

This issue of the newsletter is one of the largest I have had the pleasure to edit. This is the result of much bryological activity and I thank many of you for your assistance in providing the various contributions. The most noted of these was the Australasian workshop in Brisbane - fine weather, good company and interesting bryophytes made for an enjoyable week - and during discussions at this meeting several important issues were resolved. First of these was the continuation of the newsletter by seeking financial contributions from recipients when the need arises. Our last effort in this regard was such that I should not need to request this support for at least another twelve months. Secondly, it was agreed that we commence an email register of Australasian bryologists. Many of you have already provided your electronic address and if you wish to be added to this list then please email me at the address below. I anticipate including this register in the next issue (June 1997) of the newsletter which can then be periodically updated. I should draw your attention to the change in my postal address and phone numbers (given below), however my email remains unaltered. Finally I would like to express my thanks to many of you who have given me various kinds of support throughout the past twelve months. This has enabled me to continue my role as editor of our biannual newsletter with a minimum of effort. I trust you all have had an enjoyable Christmas break and that 1997 will continue to be successful in whatever your venture may be.....Paddy Dalton

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FOURTH AUSTRALASIAN BRYOPHYTE WORKSHOP, BRISBANE, 1-6 JULY 1996

Report on the proceedings of the Workshop.

The IVth Australasian Bryophyte Workshop was organized by Dr. Dana Bergstrom from the Botany Department of the University of Queensland. This was to be my first bryophyte workshop and it was with great excitement and anticipation that I arrived in Brisbane from Townsville, in tropical north Queensland. Betsy Jackes from James Cook University Botany Department had participated in the previous bryophyte workshop at Kuranda and told me that the bryologists were just like a family (in the nicest possible way!)...I was looking forward to meeting everyone!

Day 1 - Meeting and greeting old friends...making new ones.

A cool Brisbane dawn welcomed us as we assembled to board the buses to Lamington National Park, the first of our field trips. South out of Brisbane, we travelled through farming country and remnant forests of

hoop pines (*Araucaria cunninghamii*). Delicious pastries from the Canungra bakery fuelled our journey and we finally arrived at O'Reilly's Mountain Resort, at the Green Mountains area of Lamington National Park. Finally there, we assembled as a group and introductions were made. Old hands at these workshops became re-acquainted; news was exchanged; new faces were welcomed.

The first of many delights was the rainforest canopy walk - a suspended walkway with ladder access to larger trees. It was a wonderful opportunity for close inspection of those epiphytes that are always just out of reach, and afforded a bird's eye view of the forest floor. So much easier than climbing a rope - I'll add 'canopy walkway' to my next grant application! We continued along the Border Track, with the option of the easier gradient of the Pensioner Track for part of the route. The track wound its way through cool subtropical rainforest (termed complex notophyll vine forest, and similar in physiognomy to the rainforests of Mt. Spec, north of Townsville) - south east towards Bithongabel. I walked with George Scott, Paddy Dalton, Ray Tangney, and Elizabeth Brown, among others - and I'm sorry, we were a little late for lunch! There were so many distractions - interesting epiphytes on tree trunks, fallen logs with thick bryophyte cover, epilithic species, discussions on bryophyte names and relationships - as well as birds, fungi etc. Ray was particularly pleased to find patches of *Camptochaete leichhardtii*, a species he had only previously known from herbarium specimens.

After about 6 km (and many specimens tucked away in newspaper packets), we arrived at the picnic spot. Ancient gnarled Antarctic beech trees (*Nothofagus moorei*) were a dramatic backdrop to our lunch. Rolls, salad, cheese and cold meats, followed by fruit and cake more than satisfied our appetites, and the return trip to the buses was (fortunately) downhill!

Accommodation that night was at Cedar Lake Country Club.

Day 2 - more exploring.

We returned to O'Reilly's and had the choice of visiting Blue Pool (a 9.8 km walk) or assisting in a bryophyte survey of a forest plot under study by Roger Kitching, Professor of Ecology at Griffith University. Prof. Kitching and his team are studying insect biodiversity in various sites throughout Queensland with the assistance of Earth Watch volunteers (who pay for the experience!). I opted for the survey and assisted (in a very minor way) while others identified. Another picnic lunch, this time by the roadside beneath a formidable *Dendrocnide excelsa*! These trees are close relatives of the smaller (and fiercer) tropical stinging tree *Dendrocnide moroides*. In the afternoon, Dr. Mike Olsen, also of Griffith, offered to take the more intrepid workshop participants down a short-cut to Blue Pool. Mike knows the area well...in fact, so well that he took us straight down the side of the hill, for 20 minutes, through a steep drier area of forest to Blue Pool. It was worth the trip - West Canungra Creek cascades through a series of pools lined with rainforest. We were not brave enough to swim and the shadow of the large eel lurking in the depths stopped anyone dipping a toe into the water! The return walk of nearly 5km was much harder than our precipitous descent as it was, by then, late in the afternoon and we had to hurry. Still, we managed to admire the red cedars (*Toona australis*), and collect a few specimens on the way. I was delighted to find a fertile *Megaceros* on an earth bank by the track, and *Mesochaete*.

Days 3 and 4 - microscopes and seminars

Back in Brisbane - Wednesday and Thursday were spent at the ecophysiology laboratory in the Botany Department, at the University of Queensland. It was particularly good to have the use of microscopes and reference books, and expert assistance was always close by. As a relative novice I was very appreciative of the help and advice so generously given by all. The highlights of these two days were undoubtedly the

seminars. Abstracts are included in this newsletter but I know everyone enjoyed the variety of topics - from reproduction in *Dicranoloma* species; taxonomy of *Fissidens*, *Camptochaete*, and the Anthocerotales; bryophyte ecology; and Dana's stimulating discussion on the future of bryophyte research. Heino Lepp's photography was inspiring.

Day 5 - off to Fraser Island.

This time we set off before the crack of dawn and drove through dark city streets to the highway. The sun rose on a rather cloudy day as we headed north for the ferry to Fraser Island. The sea crossing was calm and it was with a sense of adventure that we drove along the wide beaches of the island. High tides demanded that we follow the track away from the shore through low woodland of *Banksia*, *Acacia* and *Melaleuca*, many of which were in flower. Such a contrast to the rainforest of Lamington National Park! However, Fraser Island has a diversity of vegetation types, and tall forests ring the perched freshwater lakes in the central part of the island. Our picnic lunch by the white sandy beaches of Lake Mackenzie was augmented by a collection of particularly delicious cakes, thanks to Judith and Heino. The walk to our afternoon rendezvous was interesting. Bryophytes were not particularly diverse or profuse in the sandy, well-drained environment but the tall *Syncarpia* trees frequently had good epiphytic growth. Accommodation that night was in the new Wilderness Lodge extension of Kingfisher Lodge.

Next day - an exciting visit to a piccabeen forest (*Archontophoenix cunninghamiana*) - an extraordinary area of palms transected by creeks with white sandy floors. The wet habitat sustained an enormous variety of bryophytes and we behaved rather like children in a toy shop - exclaiming over new finds and rushing to see what each other had discovered! Chris Cargill was delighted to find another hornwort on the trunk of a piccabeen palm, and Elizabeth Brown made a good collection of liverworts. It was also interesting to find *Tmesipteris* (Psilophyta) growing on palm roots. We even found a *Fissidens* for Jessica Beever!

After a drive back along the beaches we returned to Brisbane...and time to say farewell. I had had a rewarding week. I learnt a great deal, met some wonderful people - and yes, Betsy was right - I do feel like I belong to a very special family. Thank you to everyone who made the week such a success - to Dana and her students, particularly "Mr. Logistics" Craig Tweedie; and to all the workshop participants.

And the best bit? I asked what people thought and all those who had been to the previous workshop at Kuranda (where it had rained and rained), unanimously said 'the weather'! Well organized Dana!

Andi Cairns, James Cook University, Townsville, North Queensland.

Abstract of Seminars presented at Workshop

Bryophytes of the Wallum Environment

J. Windolf

Coolum Beach, Queensland

A descriptive analysis of the bryophytes occurring within the Wallum environment, together with notes on their hosts/substrata, microenvironment and the occurrence in the adjacent bryophyte community. It is obvious from the small number of species (6 mosses, 5 liverworts) recorded that the bryophyte flora plays only a limited role in the overall structure of the Wallum. The most interesting taxa present in the community is the moss, *Sphagnum australe*. Although of limited extent, it appears to be well established and native to this environment. Its discovery in the Coolum/Peregian area is the first record of this species for Queensland and thus it's most northerly occurrence in Australia.

The reproductive biology of *Dicranoloma billardierei* and *Dicranoloma menziesii*

Josephine Milne

Deakin University, Rusden Campus, Melbourne, Australia

The sexual reproduction of *Dicranoloma billardierei* and *Dicranoloma menziesii* was investigated by sampling gametangia and sporophytes over a two year period at Cement Creek, Victoria. Both were assigned a maturity index value following Longton and Greene 1967. Each species also was investigated for the presence of asexual propagules.

In both species, although archegonia were initiated after the antheridia, development was rapid. It took five to six months for antheridia to reach maturity, whereas archegonia were mature within two to three months in both *D. billardierei* and *D. menziesii*. An overlap in sporophyte generations occurred in *D. billardierei*, and the duration of the sporophyte maturation cycle was eighteen months to two years. In contrast, in *D. menziesii*, the sporophyte maturation cycle was completed within twelve months. Asexual reproduction through regeneration from leaf fragments occurs in *D. billardierei* and *D. menziesii*, unlike *D. dicarpum* where gemmae are produced.

The Taxonomy of the Australian Anthocerotales

Chris Cargill

Dept Ecology & Evolutionary Biology, Monash University, Victoria

My current revision of the Australian Anthocerotales has been wrongly assumed to be a small task, instead it has become something neither small nor necessarily with an end in sight! This has been due to two factors: (1) the extreme variety of habitat locations and (2) the plants unpredictability.

The Anthocerotales has attracted a lot of interest overseas with recent revisions in North America by Schuster, South East Asia and Japan by Hasegawa, Papua New Guinea by Piippo, Latin America by Hassel de Menendez and in New Zealand by Ella Campbell. Africa and Australia are the only two continents which have not published recent revisions. With these revisions have come revisions of the classifications of the hornworts, three based on cladistics, Hassel de Menendez (1988), Hyvonen and Piippo (1993) and Hasegawa (1994) and one based on traditional methods, by Schuster (1992). Of these the last three are basically in agreement while Hassel de Menendez' is quite radically different. My own interpretation is basically Hasegawa's 1994 version with a few modifications.

In terms of species numbers, 32 species had been described for Australia, I have reduced most to synonymy with *Phaeoceros carolinianus* or *Anthoceros punctatus*. I have also found three new species giving Australia a revised total of between 13-15 species. Brief descriptions were given of all genera and sub-genera found in Australia.

Are these *Fissidens* found in Australia?

Jessica E. Beever

Auckland, New Zealand

In Australia there are over 60 species in the genus *Fissidens*, while in New Zealand there are fewer than half that number. Even so, a number of *Fissidens* found in New Zealand have not yet been recorded in Australia, and I see no good reason why they should not be here.

Fissidens hylogenes Dix. This species, in Subgenus Aneuron, is easily distinguished from other non-nerved species in Australasia by the lack of a border on the leaf. The leaf margin is crenulate with projecting cell corners.

Fissidens linearis Brid. var. *angustifolius* (Dix.) I.G. Stone. This variety is so far known only from New Zealand. It differs from var. *linearis* in the much narrower leaves. Intermediate forms are found.

Fissidens sp. undescribed. This species, also apparently endemic to New Zealand, has been incorrectly known as *Fissidens anisophyllus* Dix. Formal description is in press (Beever, J. Bryology). The main distinctive features of this taxon are the open

vaginant laminae and the leaf lamina border, which is always present and always confined to the vaginant laminae.

Fissidens taxifolius Hedw. This species is very common in the northern North Island and around the Nelson area in the north of the South island. The first published record of this moss in New Zealand was by Ilma Stone based on a specimen David Catcheside collected in the Auckland Domain (Stone, 1990). The species is predominantly Northern Hemisphere in its distribution and I believe it is introduced in New Zealand (see Beever & Stone 1992). It can readily be distinguished from *F. oblongifolius*, with which it has been confused in New Zealand, by the percurrent to excurrent nerve - in *F. oblongifolius* the nerve clearly fails several cells before the leaf apex.

Except for *Fissidens hylogenes*, these taxa are reasonably common in New Zealand. One might expect they could turn up in Australia, especially in coastal NSW or in Tasmania, where climatic conditions are similar to those of their sites in New Zealand.

The following seminar topics were also presented at the workshop

A Revision of the genus *Camptochaete*

Ray Tangney

Botany Dept, Otago University, Dunedin, New Zealand

Cryptogamic Crusts in eastern Queensland

Ian Hodgins

Botany Dept, University of Queensland

Where are we at with epiphytic studies?

Dana Bergstrom

Botany Dept, University of Queensland

Bryophytic diversity in a marginal subtropical rainforest

Tore Pedersen

Botany Dept, University of Queensland

12TH JOHN CHILD WORKSHOP, WAITAPU, NORTH ISLAND, NEW ZEALAND. 21-26 NOVEMBER 1996

Participants: Auckland: Jessica Beever, John Braggins, Rick Kooperberg, Joshua Salter, Matt Von Konrat. Sydney: Elizabeth Brown. Wellington: Patrick Brownsey, Rodney Lewington, Barbara Polly, Darea Sherratt, Paula Warren. Hamilton: Bruce Burnes. Canberra: Judith Curnow, Heino Lepp. Lincoln: Allan Fife, Sue Gibb, David Glenny, Markus Setzepfand, Rebecca Wagstaff. Dannevirke: Jean Findlay, John Findlay. Te Puke: Lindsay Gibbons. Rotorua: Elizabeth Madgwick. Canterbury: Geoff Spearpoint. Dunedin: John Steel.

The participants varied from professional bryologists to absolute beginners and even one who has returned to bryophytes after first looking at them 40 years ago in Britain.

The camp site was well chosen - it had excellent lab space and good living quarters. Dinners were extravagantly lavish being catered for from Rotorua. The foray location was also well-sited from another point of view - that of tourist! It allowed a visit for those of us who had not seen thermal areas before. During the workshop some went swimming in Kerosine Creek and for those who are wondering what the experience was like, Allan likened it to being sandblasted while in a hot tub. And he calls it bliss!

Jessica has inherited the album of workshop photographs that was started by Jean Paton. This album provided amusement between specimens in the lab each evening. Photographs from this workshop will be

added and Jessica would be glad to receive more photographs of previous workshops.

Daily Localities: The first day we visited two different tawa forests with slightly different understory mixes. Day two provided contrasting habitats. Starting with frost flats and tussock land with low mixed shrubs. Then two mixed podocarp forests, the second with a waterfall providing the only hard rock collecting site. The third day we visited the exposed Rainbow Mountain summit and a low thermal area where any coldness was removed by the steaming holes. Paula's dire warnings and careful placement of tapes and a bright pink jacket ensured that nobody plummeted to a steamy death. The day finished with a non-collecting stop at a Douglas fir/redwood plantation to view *Buxbaumia novae-zelandiae*. On the final day we visited two kahikatea forests both with flowing streams.

Taxonomic Highlights: A highlight was seeing *Buxbaumia novae-zelandiae* - just three colonies within 50 metres showing eleven sporophytes. Sensibly, the request came that we not collect this taxon this workshop. While it is not rare and has been seen in a number of localities around New Zealand, it is never in large numbers and certainly not in quantities suitable for so many collectors. John Braggins collected a *Blechnum colensoi* leaf with mixed mosses on it. Among them was fertile *Fissidens leptocladus* which surprised Jessica who had not previously known or read of any foliicolous *Fissidens*. Another highlight for Jessica was seeing *Fissidens hylogenes*. It is only the second time she has collected it, though she has seen many herbarium specimens. *Racomitrium pruinosum* was of interest with its extensive hoary carpets and with Allan waxing lyrical about the difference between *R. pruinosum* and *R. lanuginosum*. For Judith a highlight was to see living *Monoclea forsteri* - complete with sporophytes and antheridiophores. At a few localities Barbara was kept busy collecting epiphyllous lichens, while Matt found more than enough *Frullania* specimens to keep him up very late each evening looking at the oil bodies and other features, providing him with more work for his thesis.

Patrick distributed an initial list of mosses for the areas visited. This was added to during the workshop. Full lists of bryophytes, lichens and fungi collected during the workshop are being compiled for Paula Warren of the Department of Conservation.

Talks: Heino Lepp and John Braggins showed a selection of slides. Heino - a sample of the types of bryophyte shots we use with the internship students at ANBG each January/February. John - a selection of bryophytes from the last workshop. Allan discussed the dispersal of bryophytes and the papers of van Zanten and Schuster - contrasting the arguments for pre-Gondwanan dispersal and aerial dispersal after Gondwanan splits. Jessica and Bruce gave a preliminary talk on their work on recolonisation after thermal disturbance.

Next Workshop: We and all at the workshop extend a strong thankyou to Paula Warren for permit organizing, liasoning with Department of Conservation and general planning which ensured all fieldwork ran very smoothly. Paula even turned on the weather! We had good weather throughout with only the odd bit of light rain during the daytime and one overnight downpour to freshen everything. Thanks to Patrick, Barbara, Rod and Jessica for general administration, organisation, logistics and pre-foray reconnoitring along with Paula.

I (Judith) particularly want to thank the Friends of the Australian National Botanic Gardens who enabled me to attend the workshop by providing my airfare and other support through their annual Staff Bursary.

The 13th John Child Bryophyte Workshop will be in the South Island. Organizers are David Glenny and Geoff Spearpoint. They already have ideas for localities but warn not to expect a continuance of the last few years trend toward gourmet dinners.

Judith Curnow and Heino Lepp, Canberra, Australia.

BRITISH BRYOLOGICAL SOCIETY CENTENARY SYMPOSIUM - A REPORT

In August I was given the opportunity to attend the British Bryological Society Centenary Symposium in Glasgow. Although rather a brief visit to Scotland (all of nine days), it was a worthwhile experience. It was great to have the company of Alison and Kevin Downing from Macquarie University, NSW, and of the 90 or so participants, we were the only representatives from the southern hemisphere.

The theme of the symposium was 'Innovations in Bryology' and presentations were diverse and included work on molecular phylogenetics, cell biology, molecular biology and physiology, ecology and pollution. Two presentations which I found particularly interesting were 'Bryophytes and the Tyrolean Iceman' by J. Dickson, and 'The Life and Work of P.W. Richards' by J. Duckett. As a PhD student, my research has encompassed reproduction and population dynamics, so it was a great opportunity to listen to presentations by J. Duckett on Protonemal morphogenesis, R. Longton on Population biology, and L. Soderstrom on Modelling the dynamics of population biology. The poster session which was held on the second day of the symposium provided an insight into the diverse fields of research bryologists are pursuing.

Other highlights during the course of the symposium were the guided tour of the Glasgow Botanical Gardens where *Hypopterygium atrotheca* grows in abundance in the rainforest section of the Kibble Palace, and the Civic Reception in the City Chambers of Glasgow.

Attending the Symposium was an extremely valuable experience. It gave me the opportunity to meet fellow bryologists at an international scale and it reinforced my interest in bryophytes. Furthermore it highlighted how much scope there is in Australia for research in bryology.

Josephine Milne, Deakin University, Rusden Campus, Victoria.

BRYOPHYTE RECORDS

An Alpine Moss in a Lowland habitat - even after one hundred years

Rhacocarpus purpurascens is a widespread species which is predominantly found in the southern hemisphere landmasses and many of the associated islands (Frahm 1996). In Tasmania I have found the species growing in montane regions (usually at and above the treeline), where it often forms extensive mats over wet rock or on the ground amongst the alpine shrubbery. Furthermore I have never encountered fertile material in these Tasmanian field observations. Therefore I was recently surprised to come across large mats of the species growing almost at sea-level on wet rock along the northwestern side of Cataract Gorge, Launceston. I was not expecting to find what I considered an alpine moss growing at such a lowland habitat. Moreover, my collection (August 1996) revealed a highly fertile population with prolific capsule development (fruiting material).

Of course I should not have been surprised since it is well documented in the literature that *R. purpurascens* grows at sea-level in Fiordland, New Zealand (Beever *et al* 1992). As well there are other alpine taxa that have been reported in exceptional habitats. For example, Scott (1988) records the occurrence of the obligate alpine moss, *Andreaea*, in a deep shaded canyon near sea-level on King Island. So what I thought to be an interesting observation turns out to be nothing extraordinary. But what about the fruiting condition of my lowland collection of *R. purpurascens*? The description for the species in recognized taxonomic accounts give details of the reproductive structures which indicates that I may not be looking at montane populations at the appropriate time of the year to observe fruiting material. Consequently I decided to examine collections of

Tasmanian material which are held at the Tasmanian Herbarium (HO). I examined 44 collections, which date from 1888 through to 1992, and the altitude of these ranged from c100m to 1500m above sea-level. The question of correlation of latitude with altitude may need to be addressed, since collections lodged at HO by Rod Seppelt from Macquarie Island were at 280m and Vitt (1979) records the species at lower elevations on moist, unshaded rock outcrops on both Campbell and the Auckland Islands. Some of the Tasmanian collections (20%) possessed excellent fruiting material, but only from elevations which were below 810m above sea-level. There is some suggestion in this data that *R. purpurascens* in Tasmania may not be fertile at high elevations, however a proper phenological study is required to substantiate this inference.

What is coincidental is that amongst the HO collections I examined, was that made by W. A. Weymouth on 25 April 1892, from the northside of Cataract Gorge, and the sample possessed fruiting material (HO 82064). I am not aware of any other collection from this site and it is quite conceivable that I unknowingly collected from the same area containing the population of *R. purpurascens* over 100 years after Weymouth.

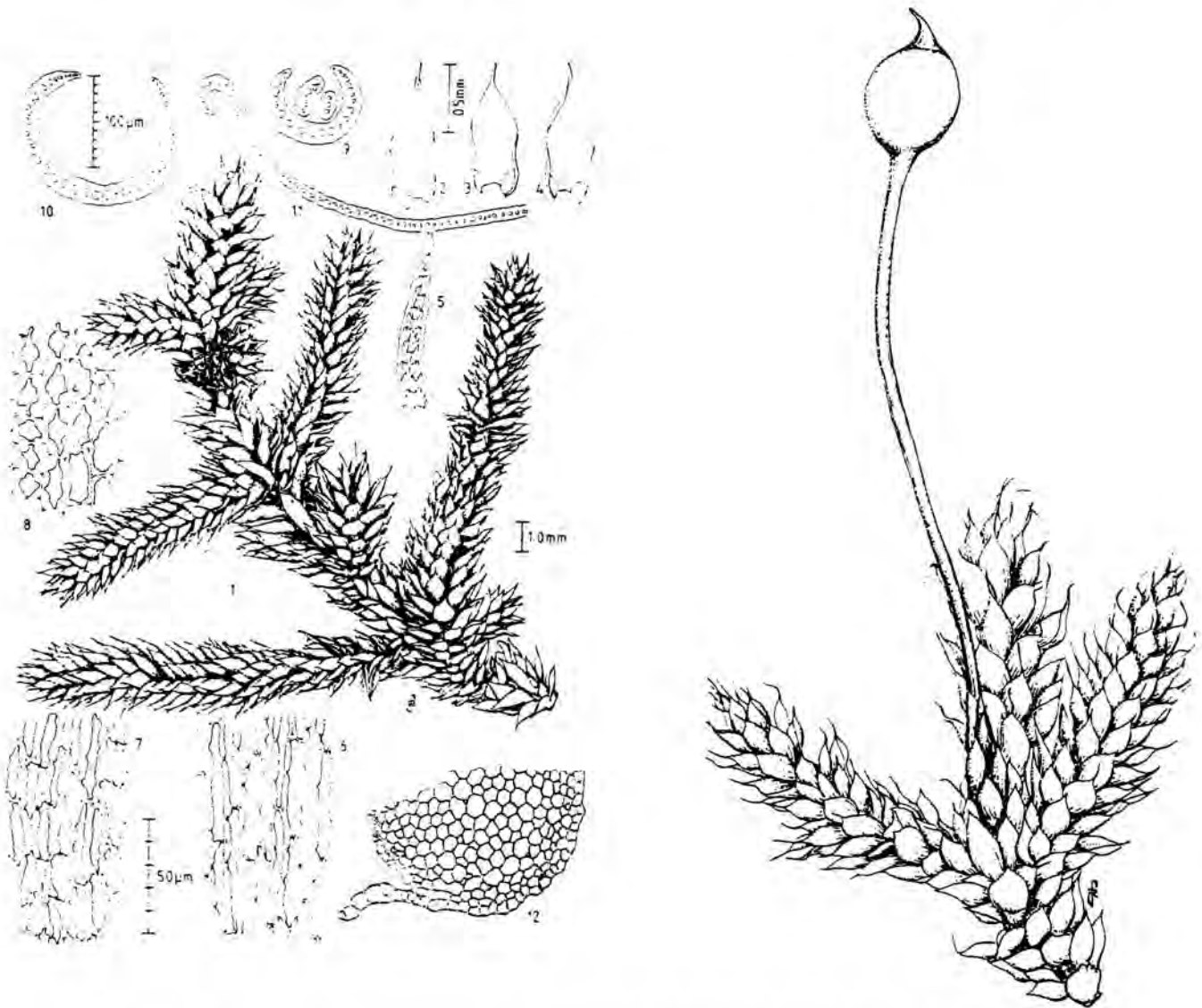


Fig. 1. *Rhacocarpus purpurascens*, fruiting shoot from Cataract Gorge, Launceston.
 [This drawing has been kindly prepared by Rod Seppelt, The Antarctic Division, Hobart, Tasmania.]

This collecting exercise, at least for me, raises some interesting and probably debatable points. First the value of being able to access good herbarium collections. There are those who put forward the argument that such collections are wasteful and extravagant in today's taxonomic world. Second the idea that bryophytes have well defined vegetational boundaries. It may not always be appropriate to label mosses and hepatics as alpine, rainforest or whatever, when provided the microhabitat is suitable the vegetation type may have no bearing on its occurrence.

References:

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Paddy Dalton, Plant Science Dept, University of Tasmania.

***Schistochila pellucida*, a rare liverwort from the Rotorua volcanic plateau area.**

When I thought about what endemics I should look for on the Rotorua bryophyte foray, the rarest and least well-known bryophyte in the Rotorua area appeared to be *Schistochila pellucida*. The species was named by Schuster and Engel (1985) who recognized that it differed from *Schistochila kirkiiana*, basing their description and habitat notes on two collections by K.W. Allison from the 1950s from the Minginui - Murupara area. None of Allison's collections were precisely located ('Kaingaroa Plain East of Taupo', and 'Murupara near Wairaopukao'), but the habitat notes stated that it was found on 'vertical rock in deep shade' (Allison H615, CHR) and 'shaded rocks in gullies' (Allison H520, CHR). A problem in locating the species is that most of the Rotorua volcanic plateau has been planted in *Pinus radiata* forest since the 1920s (Allison was a forester with the Forest Service when these plantings were being made) and there might be fewer sites with rock cliffs and well-shaded moist places (all species of *Schistochila* were noticeably scarce in the areas we visited). The rock in this area is ignimbrite, a hard rhyolitic tuff that covers most of the region but is overlain in most places by an unconsolidated pumice soil derived from eruptions since the ignimbrite layer was deposited.

I asked one of the organizers of the foray, Paula Warren, where such ignimbrite cliffs under forest might be and she suggested the gorge on the Whirinaki River called Te Whaiti Nui A Toa Canyon. This is a narrow gorge approximately 10m wide, 15m deep and 70m long where the river has cut through ignimbrite leaving vertical walls. We searched the upper end of the gorge without any success but at the lower exit of the gorge *Schistochila pellucida* turned out to be abundant on the rock walls about 2-4m above the normal river level (just out of reach of regular flooding) under quite a dense kamahi (*Weinmannia racemosa*) forest canopy. Accompanying species were: *Blechnum chambersii*, *Plagiochila fruticella*, *Jungermannia inundata*, *Megaceros flagellaris*, *Riccardia marginata*, *Thuidium furfurosum*, *Triandrophyllum subtrifidum* var. *trifidum*, *Marchantia foliacea*, *Hypnodendron arcuatum*, *Monoclea forsteri*, *Acrophyllum dentatum*, and *Fissidens asplenioides*. This site suggests that the species may be confined to river-side ignimbrite cliffs. The full distribution of the species is still unknown and it must still be counted as one of our rarest liverwort

species.

The species has a similar habitat to another rare *Schistochila* species, *S. nitidissima* of North Auckland which is confined to stones in streams. In Schuster and Engel's opinion, a rock wall habitat is primitive in Schistochilaceae, and both of these species are in two small and putatively primitive subgenera of *Schistochila*, subgenera *Amphischistochila* (*Schistochila pellucida*) and *Austroschistochila* (*Schistochila nitidissima*).

Schuster and Engel described the species from Allison's dried specimens so could not describe the oil bodies. A description of these follows: oil bodies absent (in many cells of the ventral wing of the leaf) or present and 1-6-(12) per cell, spherical, colourless, finely granular, 4-8micron in diameter. (D. Glenny 6598, CHR).

Reference:

Schuster, R.M. and Engel, J.J. 1985. Austral Hepaticae V(2). Temperate and subantarctic Schistochilaceae of Australasia. *Journ. Hattori Bot. Lab.* **58**: 255-539.

David Glenny, Landcare Research, Lincoln, New Zealand.

Obituary

John Trevillian Linzey, New Zealand bryologist, 1916-1996

John Linzey, who died recently in Auckland at the age of 79, was one of that large band of bryologists 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 KW Allison, who had taken over the mantle of GOK 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 I 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. 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 KW 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 of 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. incrassicapsulia* 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, behave 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 where he and his wife Edith joined the Auckland Botanical Society. Moving north enabled him 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 *Tayloria* specimens 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 KW 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 different...Here 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 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 could hope to emulate, details of locality, including altitude, and with his eye for ecological detail, 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 massed with it - in association with *Gymnostomum calcareum* and *Tridontium*

tasmanicum....Now what to look for if not in fruit (1) Is the habitat wet or at least damp nearly all of the year? (2) Look for bud gemmae but they are not common. (3) Look for the young shoots growing from the base of old stems and isolate one. Mount some leaves and note that there are no border cells and that the nerve will fail below the apex. Now mount some old leaves from the base [underlined 6 times] of old stem and see the nerve projecting in a blunt point, one or perhaps two rows of border cells at midleaf...This is probably why Sainsbury says 'sometimes a border of 1-3 cells'. I'm somewhat rushed this week so won't comment further." (One wonders what a detailed account would have comprised!) 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 investigated rhizoidal tubers in *Bryum*, structures which had not previously been critically studied in New Zealand, and they proved to be very useful for species identification here as they had in Europe (Crundwell & Nyholm 1964), particularly within the *Bryum chrysonuron* complex. His unpublished information (now lodged in Auckland Museum library) formed the basis of my own descriptions in Beever, Allison & Child (1992). He borrowed Australian specimens of *Bryum chrysonuron* from Jim Willis at the National Herbarium, Victoria, and showed they could be ascribed to *Bryum sauteri* B.S.G. and *Bryum microerythrocarpum* C.Muell. & Kindb. 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 decision has not had to be made).

John Linzey also helped John K. Bartlett, who was an extraordinarily productive collector of mosses from 1975 until his death in 1985. The large number of moss specimens in the Bartlett herbarium in AK identified in John Linzey's distinctively elegant handwriting attests to this.

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 KW 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 Michael, from John Linzey's word-processor. He moved with the times. The bryological community extends its sympathy to his family in the loss of their father, grandfather, and great-grandfather.

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 KW Allison, George Scott and Jessica Beever.

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.

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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. and J. Child. 1992. The Mosses of New Zealand, 2nd edition, Dunedin. 214pp.

Crundwell, A.C. and E. Nyholm. 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.

Acknowledgements:

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

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

NEWS AND NOTES

Bryological News from Macquarie University. This has been a very successful year for bryology at Macquarie, beginning with a short course in identification of lower plants including algae, mosses, liverworts and ferns. Student numbers were set at a maximum of 25 students, but the demand was such that eventually 45 students were enrolled. Four of us, Patricia Selkirk, Emma Pharo, Helen Keenan and Alison Downing were involved in teaching and we finished up with four laboratories full of enthusiastic (and noisy) students. We have been delighted with the number of students who have pursued interests in algal and bryological studies.

Emma Pharo is to be congratulated on the completion of her Ph.D. thesis, "Bryophyte and Lichen Diversity: Its Description and Conservation". we were delighted to hear that she has been offered a post-doc with Dale Vitt in Edmonton where she will examine the effect of clearfelling on bryophyte and lichen diversity in Canadian boreal forests. In addition to her own studies, Emma found time to lecture on bryophytes and lichens at Wollongong University and her paper "Bryophyte and lichen diversity: a comparative study" (with Andy Beattie), will appear in the Australian Journal of Ecology next year.

After spending last summer studying herbarium techniques in Canberra Botanic Gardens. Prue Wilkie decided she was fascinated with cryptogams, and has subsequently completed a very successful honours year supervised by Patricia Selkirk comparing a silver *Bryum* from Antarctica with *Bryum argenteum* and *Bryum subrotundifolium* from Australia, using morphological and DNA techniques. Prue is returning to Canberra for more herbarium studies over the summer and next year will work with Helen Ramsay on the taxonomy of *Bryum* at the National Herbarium.

Patricia Selkirk is leaving us once again to spend December in Antarctica where she has been working on the genetic variation of mosses from Southern Victoria Land in order to reconstruct their colonisation history in Antarctica. This is a continuation of work with colleagues from the University of Waikato in New Zealand and from Australian National University in Canberra. The study has been very productive and in January. Patricia will present some of this work at the Southern Connection Congress Number 2 in Valdivia, Chile, before travelling further south to search for populations of the species which she has been studying in Antarctica.

David Eldridge has been continuing his work on microbiological soil crusts in areas of arid and semi-arid Australia. Recently he attracted the attention of the press in a big way with his studies of soil crust lichens and mosses on calcrete-dominant soils at Maralinga, site of atomic testing in South Australia in the early 1950s. His lecture on soil crusts in the course "Australian and World Vegetation" created a great deal of interest amongst students.

A conference on Australian karst systems was held at Naracoorte caves, South Australia, in February this year, and Ron Oldfield, Kevin and I enjoyed the local hospitality. Ron and I both presented talks on our work on bryophytes on marble at Wombeyan Caves. We enjoyed the associated field trips to numerous limestone locations in the vicinity of Naracoorte and Mount Gambier, and are looking forward to a student-free summer to write up our collections.

This year we enjoyed visits from Rod Seppelt (Tasmania) and Michael Proctor (England). Michael arrived in time to join a team organised by Elizabeth Brown and Robert Coveny from the National Herbarium in Sydney, searching for a rare species of liverwort supposedly growing at Wentworth Falls in the Blue Mountains. Rod had no such luck, and we pinned him down in the laboratory identifying mosses.

Chris Cargill, who has been working in the Department of Ecology and Evolutionary Biology, Monash University where she has studied *Fossombronia* and more recently the Anthocerotales, is leaving to go to the U.S.A. Chris has accepted the offer to study for a PhD working with Ray Stotler, at the Southern Illinois University at Carbondale.

Allan Fife will be visiting South America in January. He will be attending the second Southern Connection Conference at Valdivia, Chile. Allan intends to make the most of his time away and hopes to manage some moss collecting in the Andes and will visit Argentina to spend some time working with Celina Matteri in Buenos Aires.

Rod Seppelt will be joining a group in Christchurch to fly to Antarctica in early January. They plan to continue their eco-physiological studies of mosses and lichens as well as undertake further vegetation surveys. Rod is due to return to the Antarctic Division in Hobart in mid-February.

BOOK REVIEW

S.J. Jarman and B.A. Fuhrer

Mosses and liverworts of rainforest in Tasmania and south-eastern Australia. x+134 pages.

CSIRO Publications, Victoria, Australia 1995. [ISBN 0-643-05685-8] \$24.95 (paper)

Most people are unaware of the complexity of the natural environment surrounding them. They see trees, shrubs, grass, birds, cuddly animals, a few bugs, and precious little else. The smaller plants, such as bryophytes and fungi, together with the multitude of insects and smaller animals - each with their fascination and beauty - remain totally cryptic. Any educational aid which may increase awareness of the "hidden" world about deserves the widest possible recognition.

This small handbook is the second in a series of three such volumes aimed at increasing awareness of the often overlooked beauty of the cool temperate rainforests of south-eastern Australia. The first volume (Fuhrer & Robinson 1992) dealt with fungi and the third volume will cover lichens. The centrepiece of each volume is Bruce Fuhrer's excellent photography. They serve, albeit in separate volumes, to introduce the public to a new world entirely.

Field or laboratory guidebooks available to assist identification of the Australian non-vascular flora are indeed, few. Fungi, perhaps because of their often bright colours which stand out against an otherwise drab or uniform background, have received greater popular attention. Bryophytes, on the other hand, present quite a challenge to the professional, let alone an interested amateur. Colours, habit, unique features that are often very small, and a considerable similarity in form between different taxa, exacerbate the difficulties in educating the public to these plants. This guidebook is indeed most timely.

The book includes four short introductory chapters to bryophytes, the general composition of the Tasmanian flora, bryophytes in the Tasmanian rainforest and how to recognise bryophytes from other cryptogams like filmy ferns, club mosses and lichens. A section on how to differentiate mosses from liverworts is also included. These introductory sections are capably and wisely written for the rank amateur.

The greatest part of the book is divided into three sections devoted to colour illustrations and short notes on

habit, habitat and distinguishing features of 120 species of mosses (50 species in 29 families), thallose liverworts (13 species in 6 families) and leafy liverworts (57 species in 16 families). A number of these species are not restricted to wetter forests, so the book will have a wider application. A list of all the species recorded in recent surveys of the Tasmanian rainforests is included, together with a short glossary of specific terms used in the text, and a bibliography of some pertinent literature. The illustrations provide a good ready reckoner to the common species and it should be possible to put a reasonably accurate name on most of the species by matching a specimen to a photograph.

On the basis of the illustrations alone, it would be difficult to separate some taxa. Examples of potential difficulties are: distinguishing *Papillaria flavo-limbata* from *Weymouthia mollis*, *Riccardia watsiana* from *Hymenophyton flabellatum*, *Podomitrium phyllanthus* from *Symphyogyna podophylla*, and to identify a good number of the leafy hepatics. However, notes about key distinguishing features for each species should help in clarifying difficulties. Considering the morphological and taxonomic complexities of the leafy hepatics it is not surprising there are pitfalls to identification. These are very trivial criticisms, however, considering the overall use of the book.

The book is a first for Australian bryology and both Jean Jarman, as author, and Bruce Fuhrer, as photographer, richly deserve commendation for their effort. The book is pitched at the interested naturalist but will also be of use to the more experienced. It is very cheaply priced for a richly colour illustrated publication. I can unreservedly recommend it to anyone. The third volume in the series, on lichens of the rainforests, will be eagerly awaited.

Reference:

Fuhrer, B., & Robinson, R. 1992. Rainforest fungi of Tasmania and South-eastern Australia. CSIRO, Australia and Forestry Commission, Tasmania.

Rodney D. Seppelt, Australian Antarctic Division, Channel Highway, Kingston, Tasmania

Forthcoming Workshops

The 13th John Child Bryophyte Workshop:

The 1997 workshop will be held from 27th November to 2nd December in North Westland or Takaka (west of Nelson) in the south island of New Zealand. Confirmation of the dates and further details on the locality, cost and accommodation facilities will be available from the convenors of the workshop.

Convenors: David Glenny and Geoff Spearpoint, C/- Landcare Research, Lincoln, Christchurch, New Zealand.

The Vth Australasian Bryophyte Workshop:

The Australian Bryological Group will conduct a workshop in July 1998. This workshop will involve several days of field investigations, which will be centred in the Grampian region, western Victoria.

Further details will be available in the next newsletter.

Convenor: Dr. George A.M. Scott, C/- Botany Department, University of Melbourne, Victoria.

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I was fortunate this year to receive a grant from the Vice Chancellor to enable me to study in the UK. My brief was to visit herbaria, botanic gardens and national parks, but I was able to include a significant amount of bryological work. I have never previously had the opportunity to visit the UK and being able to visit places such as Kew, the Natural History Museum and Wisley Gardens, which was very exciting for someone with a background in both horticulture and botany. I had previously corresponded with Len Ellis, at the Natural History Museum in London, and he had given me considerable help with identification of bryophytes and lichens from Cyprus collected by Julia Burnet, a post graduate student from this School. I enjoyed having the opportunity to meet him in person. I found the size of the bryophyte collections at the Museum quite daunting, but it was exciting to find many early Australian collections.

I visited the herbaria of the Department of Plant Sciences at Oxford specifically to see the collections (of flowering plants) made by William Dampier at Shark Bay in Western Australia in 1699, seventy one years before Banks set foot in Botany Bay. I was very surprised to find that Oxford has very extensive collections of bryophytes including many from Australia. Numerous collections from Fremantle in Western Australia and from Tasmania probably reflect the route taken by shipping between England and Australia in the early 1800s. I am most grateful to Serena Marner who co-ordinated my visit, and the curators Alison Strugnell and Stephen Harris.

In Scotland, I was able to attend the Centenary Symposium of the British Bryological Society in Glasgow. This was a wonderful opportunity to meet and hear British and European bryologists, and renew friendships with some of our North American colleagues. We were delighted to be able to meet up with Pina Milne who presented some of her work on *Dicranoloma*. During the conference, Jim Dickson, from the Hopkirk Laboratory of the University of Glasgow, organised some wonderful bryological outings for visitors, including one to collect *Hypopterygium atrotheca*, endemic to the Kibble Palace glasshouse in Glasgow Botanic Gardens, and another to collect *Cryptothallus mirabilis*, a saprophytic liverwort which grows under dense banks of *Sphagnum* in birch bogs on the outskirts of Glasgow. We enjoyed "afternoon tea" at a whisky distillery!

Following the Glasgow meeting, I participated in the field meeting of the British Bryological Society at Glencoe in the western highlands of Scotland. This meeting was particularly successful for me, as it gave me an opportunity to meet many of the field bryologists from the Society who were not present at the Glasgow conference and it was also a great opportunity to visit, in the company of local botanists, environments, such as bogs, fens, deciduous woodlands and coniferous forests, which are all quite new to me. The Western Highlands of Scotland have an extremely high rainfall and there is an extraordinary diversity of rare and unusual mosses and liverworts in that area. Gordon Rothero expertly organised expeditions to a wide range of sites, including many montane/alpine areas and also a number of extremely wet, coastal habitats. I was able to collect representative species from each area visited, avoiding the rare species, and concentrating on genera which do not occur in Australia.

This year has been particularly productive in terms of bryological studies, beginning with the noisy chaos of the short course in identification of lower plants. During the year, we have been most grateful for bryological assistance from Helen Ramsay, Elizabeth Brown and Robert Coveny in Sydney, from Heinar Streimann and Judith Curnow in Canberra, Graham Bell in Adelaide, Rod Seppelt in Hobart, Ilma Stone and Arthur Thies in Melbourne, John Spence in Arizona and Hans Kruijer in Holland.

Alison Downing, School of Biological Sciences, Macquarie University, NSW.

Chris Cargill, who has been working in the Department of Ecology and Evolutionary Biology, Monash University where she has studied *Fossombronia* and more recently the Anthocerotales, is leaving to go to the U.S.A. Chris has accepted the offer to study for a PhD working with Ray Stotler, at the Southern Illinois University at Carbondale.

Allan Fife will be visiting South America in January. He will be attending the second Southern Connection Conference at Valdivia, Chile. Allan intends to make the most of his time away and hopes to manage some moss collecting in the Andes and will visit Argentina to spend some time working with Celina Matteri in Buenos Aires.

Rod Seppelt will be joining a group in Christchurch to fly to Antarctica in early January. They plan to continue their eco-physiological studies of mosses and lichens as well as undertake further vegetation surveys. Rod is due to return to the Antarctic Division in Hobart in mid-February.

BOOK REVIEW

S.J. Jarman and B.A. Fuhrer

Mosses and liverworts of rainforest in Tasmania and south-eastern Australia. x+134 pages.
CSIRO Publications, Victoria, Australia 1995. [ISBN 0-643-05685-8] \$24.95 (paper)

Most people are unaware of the complexity of the natural environment surrounding them. They see trees, shrubs, grass, birds, cuddly animals, a few bugs, and precious little else. The smaller plants, such as bryophytes and fungi, together with the multitude of insects and smaller animals - each with their fascination and beauty - remain totally cryptic. Any educational aid which may increase awareness of the "hidden" world about deserves the widest possible recognition.

This small handbook is the second in a series of three such volumes aimed at increasing awareness of the often overlooked beauty of the cool temperate rainforests of south-eastern Australia. The first volume (Fuhrer & Robinson 1992) dealt with fungi and the third volume will cover lichens. The centrepiece of each volume is Bruce Fuhrer's excellent photography. They serve, albeit in separate volumes, to introduce the public to a new world entirely.

Field or laboratory guidebooks available to assist identification of the Australian non-vascular flora are indeed, few. Fungi, perhaps because of their often bright colours which stand out against an otherwise drab or uniform background, have received greater popular attention. Bryophytes, on the other hand, present quite a challenge to the professional, let alone an interested amateur. Colours, habit, unique features that are often very small, and a considerable similarity in form between different taxa, exacerbate the difficulties in educating the public to these plants. This guidebook is indeed most timely.

The book includes four short introductory chapters to bryophytes, the general composition of the Tasmanian flora, bryophytes in the Tasmanian rainforest and how to recognise bryophytes from other cryptogams like filmy ferns, club mosses and lichens. A section on how to differentiate mosses from liverworts is also included. These introductory sections are capably and wisely written for the rank amateur.

The greatest part of the book is divided into three sections devoted to colour illustrations and short notes on

habit, habitat and distinguishing features of 120 species of mosses (50 species in 29 families), thallose liverworts (13 species in 6 families) and leafy liverworts (57 species in 16 families). A number of these species are not restricted to wetter forests, so the book will have a wider application. A list of all the species recorded in recent surveys of the Tasmanian rainforests is included, together with a short glossary of specific terms used in the text, and a bibliography of some pertinent literature. The illustrations provide a good ready reckoner to the common species and it should be possible to put a reasonably accurate name on most of the species by matching a specimen to a photograph.

On the basis of the illustrations alone, it would be difficult to separate some taxa. Examples of potential difficulties are: distinguishing *Papillaria flavo-limbata* from *Weymouthia mollis*, *Riccardia watsiana* from *Hymenophyton flabellatum*, *Podomitrium phyllanthus* from *Symphyogyna podophylla*, and to identify a good number of the leafy hepatics. However, notes about key distinguishing features for each species should help in clarifying difficulties. Considering the morphological and taxonomic complexities of the leafy hepatics it is not surprising there are pitfalls to identification. These are very trivial criticisms, however, considering the overall use of the book.

The book is a first for Australian bryology and both Jean Jarman, as author, and Bruce Fuhrer, as photographer, richly deserve commendation for their effort. The book is pitched at the interested naturalist but will also be of use to the more experienced. It is very cheaply priced for a richly colour illustrated publication. I can unreservedly recommend it to anyone. The third volume in the series, on lichens of the rainforests, will be eagerly awaited.

Reference:

Fuhrer, B., & Robinson, R. 1992. Rainforest fungi of Tasmania and South-eastern Australia. CSIRO, Australia and Forestry Commission, Tasmania.

Rodney D. Seppelt, Australian Antarctic Division, Channel Highway, Kingston, Tasmania

Forthcoming Workshops

The 13th John Child Bryophyte Workshop:

The 1997 workshop will be held from 27th November to 2nd December in North Westland or Takaka (west of Nelson) in the south island of New Zealand. Confirmation of the dates and further details on the locality, cost and accommodation facilities will be available from the convenors of the workshop.

Convenors: David Glenny and Geoff Spearpoint, C/- Landcare Research, Lincoln, Christchurch, New Zealand.

The Vth Australasian Bryophyte Workshop:

The Australian Bryological Group will conduct a workshop in July 1998. This workshop will involve several days of field investigations, which will be centred in the Grampian region, western Victoria.

Further details will be available in the next newsletter.

Convenor: Dr. George A.M. Scott, C/- Botany Department, University of Melbourne, Victoria.
