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EDITORIAL

This issue of the newsletter will I hope be noted for two highlights. Firstly, there has been a heartening response to the call for contributions, and it has been a pleasing experience to put together an array of articles from contributors on both sides of the Tasman who represent diverse bryological interests. I thank those who have taken the time and effort to support the newsletter in this capacity. Having set the precedent I now look forward to other contributions for the next issue. Secondly, you should receive this newsletter on the eve of the IVth Australasian Bryophyte Workshop. It promises to be another interesting gathering in the subtropics of Queensland. At this stage there are 25 participants which include several from New Zealand. The next (December) issue of the newsletter will contain a special report on this workshop. It will present a review on the field trips and a summary from the two days of seminars that take place, which I hope you will look forward to receiving.....Paddy Dalton

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News From The Cryptogamic Herbarium, Centre for Plant Biodiversity Research (CANB)

Another interesting and busy year has passed and the normal, on-going field work and routine curation continued. Last financial year about 14,000 collections were incorporated and, with no shortage of work, time went very fast and it seems like just last week that I wrote the previous report.

Herbarium:

All the bryophyte collections are upstairs now and what seemed to be a spacious area soon filled. After two attempts at levelling the herbarium floor where the compactor tracks are, it still is wavy and some of the cabinets are leaning like drunken sailors. The incorporation of the CANB (CSIRO) collections continued, but has slowed because of the donation of a very large lichen collection which the volunteers are repacking now ready for incorporation into our collection. The volunteers have a spacious, well-appointed area next to the collections that Judith Curnow planned. They enjoy working at the Gardens as they can look out of the windows at the colour and gently swaying trees in these peaceful surroundings. During the middle of the year Jen Johnston joined the crypto crew - on ABRS funding - assisting with the revision of the Hookeriaceae. This started slowly because of disruptions due to moving the collections and the renovations.

Field Work:

This was concentrated near the end of 1995, which proved to be rather exhausting. The highlight was a trip to Cape York during October and November which was partly funded by an ABRS grant for the revision of

the Hookeriaceae. The region was not isolated as I was led to believe, with service stations and conveniences at about every 80 km, which did not make you feel isolated and away from it all. The Kimberley region, which I visited in 1988 and 1991 was much more isolated and one needed more planning to cover all contingencies. Of course the scenery was also much more spectacular with the various hues of red, the vegetation on the Cape was mostly *Eucalyptus* woodland which went through subtle and interesting changes depending on soil, topography and geology. Iron Range was the first concentrated collecting area. The forests were monsoon, very similar to those I have collected in south-east of Port Moresby towards Rigo. During the visit a high proportion of the trees were deciduous. The variety of bryophytes in this forest was extremely poor. They were even absent in several areas. The areas with the greatest variety were some on the edge of the forest and woodland. A good selection of Calymperaceae was encountered (*Mitthyridium repens*, *Calymperes erosum*, *C. palisotii* spp. *moluccense* etc.), often in large colonies as apparently did Len Brass during the 1948 Archbold Cape York Expedition (Bartram 1952). It was the best area I have found for those mosses. *Leucobryum* was also found in large colonies at several sites. The other predominant species could possibly be in Sematophyllaceae or Hypnaceae. Even permanent and seasonal stream-sides did not have much variety. I suspect that many stream sides lacked a good bryoflora because of the raging, seasonal flows which scoured the creek sides. Beside many seasonal streams in the woodland *Octoblepharum albidum* was common on *Dillenia* trunks and branches, as were some Calymperaceae (mostly *Calymperes palisotii* spp. *moluccense* and *Syrhropodon armatus*) also formed large colonies on rocks on the drier western side of the Tozer Range. Liverworts were not common, with the best colonies on mango trees planted by miners before the war near Gordon Creek. No typical trailing rainforest mosses or liverworts were found and my impression was that the bryophytes found were those of more arid or strongly seasonal areas. Further south the McIlwraith Range, or at least the lower slopes, had more variety and gave the feeling that the forest was trying its hardest to be rainforest. According to the National Parks ranger the summit of the main range is rich in trailing cryptogams. I visited two sites, with the one near the old Leo Creek Mine being the moister site. Len Brass collected at the mine site. This area certainly had a better variety of bryophytes than the Iron Range, but still *Leucobryum* and Calymperaceae (*Calymperes palisotii* spp. *moluccense* and *Mitthyridium repens*) were common. The other site was Llinkelly Creek valley, which was closer to Coen and slightly higher, and the vegetation was dominated by *Tristaniopsis* and *Melaleuca*. Again *Leucobryum* was common as were reasonably large colonies of *Fissidens* and small colonies of *Callicostella papillata* were also found. In both areas, in the drier semi-exposed woodlands, *Trachyphyllum inflexum* was extremely common on rocks and tree bases. Access to both areas was by very rough bush tracks, especially for the latter area where it was extremely hard to see where the road went. Access to this last area was through private property. Between Lakeland Downs and Coen there were not many suitable bryophyte areas. The best I found was on the climb to the Great Dividing Range (Bamboo Range) just north of Musgrave. There are numerous large granite outcrops which afforded shaded moister situations for mosses, especially for *Fissidens*. Termite nests at one site were covered with *Fissidens*. The Rossville area south of Cooktown was another excellent bryophyte site; because of the more non-seasonal rainfall luxuriant forests have developed. The highlight was the climb to the summit of Mt. Finnigan, which proved to be best and most interesting bryophyte area that I have visited in Australia. The type of *Calypstrocheate (Eriopus) brassii* came from there and it was recollected. Apparently it forms small colonies and is not common. I was taken there by Lewis Roberts, who also took Dr. Thor-Bjorn Engelmark (S) there several years ago, seeking

Dicranoloma species that L.J. Brass had found in 1948. Lewis has a property at the base of the Range and knows the area very well. He was able to lead me to the more interesting cryptogam areas. His main interest was orchids and he seemed to climb the mountain regularly to check on the flowering of these plants. I had a hard time keeping up with him as he dashed bare-footed through the forest like an emu. He took me to several recently fallen trees and rock faces which proved to be very rich and interesting. Near the summit was a healthy area dominated by *Leucopogon*, which had good colonies of *Macromitrium* on their branches. The area was dotted with large rock outcrops and amongst these also were reasonably sized liverwort colonies. An abandoned drug garden proved to be a good site for a large, handsome *Bryum* which formed extensive, prolifically fertile colonies. We reached the summit just after lunch, after having started at first light so as to miss the worst of the heat and humidity. On the summit a cool gale was blowing and through the billowing clouds we caught glimpses of the coast and the interior. The return was down a drier ridge and creek, and was not as interesting as the ascent. The large tracts of rainforest in this region were more extensive than I had imagined. I was also taken by Charles Roberts to the top of Mt. Misery, so named by miners because of the lack of minerals and difficult access. It was surrounded by rainforest. Here, and near the base at the East Normanby River (North Branch), there were good selections of bryophytes. Areas along the Bloomfield River road and beside the Bloomfield River also proved interesting.

On returning, Mt. Haig (between Mareeba and Atherton) and areas near Mareeba were sampled. The former was good because it was a high, moist area, about 1100m, which supported a spectacular range of bryophytes. Near Townsville the Mt. Elliot area was sampled. Due to the long dry seasons the variety was not great, but surprisingly *Callicostella papillata* was found beside a small stream. However, the Calymperaceae and *Trachyphyllum* were common. The Hervey Range road towards Greenvale proved to have little variety amongst the isolated granite outcrops. The Paluma Range was investigated in greater detail and interesting bryophytes were found in the rainforest and its fringes, including *Distichophyllum microcarpum*. Here I had the enjoyable company of Betsy Jackes and Andi Cairns. Andi, a student at the James Cook University in Townsville, is interested in bryophytes and I was able to spend some time with her in the laboratory identifying our finds. I am looking forward to identifying the collections. I could not recognise many of the collections and they may prove to be interesting.

Soon after returning from north Queensland, the bags were packed to a trip to New Zealand to attend a lichen workshop. I was also able to acquaint myself further with New Zealand mosses near Wellington (North Island) and Nelson (South Island). Several days were also spent with Allan Fife and Bryony Macmillan at the Herbarium in Christchurch (CHR).

Reference: Bartram, E.B. 1952. Queensland mosses collected by L.J. Brass. *Farlowia* 4(1): 235-247.

Heinar Streimann, Cryptogamic Herbarium, Canberra, Australia.

A New Approach to Cryptogamic Education

A few years ago Bob Makinson, herbarium curator, started a summer "student intern" program at the herbarium of the botanic gardens in Canberra and the program's scope has expanded with the creation of the Centre for Plant Biodiversity Research. The program runs over January/February and is aimed at students who have completed at least two years tertiary study. They work in the herbarium or related areas (though without any pay!) and in return get a series of instructional sessions on various topics. From the outset there has been a cryptogamic component (in this case meaning bryophytes, lichens and fungi) and to give an idea of what usually happens the following is a brief description of the 1996 cryptogamic component.

Initially the students received some very basic reading material (which explained some of the structures they were likely to see in cryptogams) as well as a simple guide on how to (generally) distinguish liverworts, mosses, hornworts, lichens and fungi from each other. A week after this there were two cryptogam days. On the first day Judith Curnow and Heino Lepp gave an illustrated talk to reinforce some of the points in the notes and then the students had several hours of "hands-on" work, the aim of which was to gain the ability to determine, in the field, whether a particular specimen was fungus, lichen, liverwort, moss or hornwort. To this end the students had to sort a mass of un-named specimens into the broad cryptogamic groups. As emphasis is on field ability then the approach is on the use of naked eye or hand lens. Afterwards we go through any mistakes (and each year there have been few), point out the limitations of our simple guide to the groups and once again note some of the structures to be found (e.g seta, capsule, peristome, gemma cup, rhizoids, etc.). It appears that many tertiary students get little exposure to cryptogams. So in the limited time of the summer program we aim to go no further than getting to an ability to distinguish the groups.

The second day began with a walk into Black Mountain reserve, a dry sclerophyll area immediately behind the botanic gardens, with Judith, Heino and Helen Hewson on hand to provide cryptogamic pointers. The students now looked at a good variety of species in the field, put into practice the knowledge so far gained from reading material and the previous "hands-on" day and also saw that you don't need to go into a dripping, green gully to find bryophytes. The reserve also provided practice with collecting specimens from a variety of substrates. As the day was dry it provided the perfect opportunity to illustrate the rapid water uptake and greening of "dead" bryophytes - a definite eye-opener for some of the students. We finished in an artificially damp gully back in the botanic gardens that kindly provides a display of fertile hornwort every January/February. Some days later the students had three more talks (Heino on fungi, Jack Elix on lichens and David Eldridge about his work on the ecological roles of soil bryophytes/lichens in the arid areas of western NSW). Each student was also given a cryptogamic crossword (devised by Judith and Heino) to reinforce basic cryptogamic knowledge. In order to complete the crossword a student needs no more than the reading material they were given - so the puzzle also acts as a form of revision. A fortnight after handing out the crossword we hand out the solution.

The whole program has been popular, with all places filled each year, and we have been gratified to get favourable student comments about each year's cryptogam component.

Heino Lepp & Judith Curnow, Canberra, Australia.

RESEARCH NEWS

Mosses and Liverworts on Wee Jasper Limestones

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

Robert Coveny, Royal Botanic Gardens, Sydney

Limestone outcrops seem to attract not only speleologists, but geologists, zoologists, climatologists and botanists. Such is their attraction that frequently, those who work on limestones are affectionately referred to as "carbonate junkies". The mosses and liverworts which occur on limestones in eastern Australia are such an interesting and unusual assemblage that limestone outcrops are excellent "bait" for bryologists.

We collected mosses and liverworts at Wee Jasper in the course of two most enjoyable field trips. The first of these was a palaeontology field trip with John Talent and Ruth Mawson from Macquarie University in

January 1990 and the second a bryoforay organised by Heinar Streimann and Judith Curnow from the Herbarium of Canberra Botanic Gardens in September, 1991. Collections were made at a number of locations on Taemas Limestone in the vicinity of the Wee Jasper Caves (35°07'S, 148°40'E) and from Cavan Limestone near Taemas (35°01'S, 148°51'E). All our sites were on Devonian limestones in the broad, open valleys of the Goodradigbee and Murrumbidgee Rivers. Cavan Limestone which occurs near Taemas, is 86% calcium carbonate (Carne and Jones 1919). Nearby at Wee Jasper, the Taemas Limestone forms part of an extensive belt of sediments consisting of massive and thinly bedded limestone and interbedded calcareous shale, tuff, sandstone, grit and quartzite which extends southeasterly for 27 km along the valley of the Goodradigbee River. The limestone, 89% calcium carbonate (Carne and Jones 1919) forms prominent cliffs and ridges but is sometimes concealed by alluvium (Lishmund et al. 1986). There are many caves in the vicinity of Wee Jasper but many tend to be shallow, muddy and very moist. In the Wee Jasper-Taemas area, eucalypts, with the exception of isolated specimens of *Eucalyptus albens*, are not common on limestone substrates but are present as woodland or open woodland, where graziers have permitted, on non-calcareous substrates on the rounded hills between the two valleys. At Wee Jasper a distinctive shrubby vegetation of *Brachychiton populneus* and *Bursaria spinosa* grows through outcrops of massive limestone. As sheep and cattle are present throughout the limestone areas, the natural vegetation is restricted to outcrops of massive limestone which makes access difficult for large animals. Areas of open soil were well trampled and mostly vegetated with exotic grasses and herbs. Crevices in rock and inaccessible rock faces provided sanctuary for many species which otherwise may have been destroyed by hooves of grazing animals.

Between us we collected 45 species of moss and 17 species of liverworts. Massive, outcropping limestone boulders, comparable with many at Jenolan Caves, particularly in the vicinity of the Carey's Caves at Wee Jasper, provide an abundance of differing habitats. Many species, such as *Pseudoleskeopsis imbricata*, *Grimmia pulvinata*, *Ptychomitrium australe* and *Orthotrichum cupulatum* var. *cupulatum*, grew directly on rock. We found many species in small pockets of soil in rock crevices including *Gigaspermum repens*, *Didymodon torquatus*, *Desmatodon convolutus* and numerous *Bryum* species. *Tetrapterum cylindricarpum* was particularly striking and unusual moss pointed out to us by Graham Bell.

The assemblage of bryophytes collected from limestones and calcareous soils at Wee Jasper limestones was similar to that of other limestone sites in south-eastern Australia. Acrocarpous mosses dominated the bryoflora, particularly species of Pottiaceae, closely followed by Bryaceae. Pleurocarpous mosses were less common. Thallose liverworts from the Marchantiales dominated the liverwort flora, and included *Asterella drummondii*, *Lunularia cruciata*, *Reboulia hemisphaerica*, *Targionia lorbeeriana* and a number of species of *Riccia*. Leafy liverworts were less common with 5 species, two of them, *Frullania probosciphora* and *F. rostrata* were epiphytes. We collected a number of ephemeral species, such as *Acaulon integrifolium*, *Pleuridium nervosum*, *Eccremidium pulchellum* and *Riccia* spp., which were present on patches of bare ground. Their presence on calcareous soils may be the result of constant disturbance of bare ground by the hard hooves of sheep and cattle. Stock may also influence the distribution of some introduced and cosmopolitan species, such as *Trichostomum brachydontium*, *Bryum argenteum*, *Aloina aloides* var. *ambigua* and *Lunularia cruciata*. We did not expect to find *Breutelia affinis* on limestone at Wee Jasper as it does not appear to be common on other eastern Australian limestone sites. It may be that *B. affinis*, and also possibly *Chiloscyphus minor* and *Chiloscyphus semiteres*, grow on a non-calcareous alluvium which occurs along creeks rather than on calcareous soils.

We would like to thank Heinar Streimann, Judith Curnow, Ruth Mawson and John Talent for including us on two particularly interesting and productive field trips.

References:

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- Lishmund, S.R., Dawood, A.D. and Langley, W.V. 1986. The Limestone Deposits of New South Wales. Mineral Resources No. 25, 2nd Edition. Geological Survey of New South Wales. New South Wales Department of Mineral Resources. 373pp

Mosses

Bartramiaceae

Breutelia affinis

Bryaceae

Bryum argenteum

Bryum billardieri

Bryum campylothecium

Bryum chrysonuron

Bryum dichotomum

Bryum pachytheca

Bryum torquescens

Ditrichaceae

Eccremidium pulchellum

Pleuridium nervosum

Encalyptaceae

Encalypta vulgaris

Fabroniaceae

Fabronia australis

Fissidentaceae

Fissidens leptocladus

Fissidens megalotus (*F. vittatus*)

Fissidens taylorii

Funariaceae

Entosthodon apophysata

Entosthodon muehlenbergii

Goniomitrium enerve

Gigaspermaceae

Gigaspermum repens

Grimmiaceae

Grimmia laevigata

Grimmia pulvinata var. *africana*

Schistidium apocarpum

Hypnaceae

Hypnum cupressiforme var. *lacunosum*

Hypopterygiaceae

Hypopterygium rotulatum

Leskeaceae

Pseudoleskeopsis imbricata

Neckeraceae

Leptodon smithii

Orthotrichaceae

Amphidium cyathicarpum

Orthotrichum cupulatum var. *cupulatum*

Pottiaceae

Acaulon integrifolium

Aloina aloides var. *ambigua*

Barbula calycina

Barbula crinita

Barbula hornschiuchiana

Desmatodon convolutus

Didymodon torquatus

Gymnostomum aeruginosum

Tetrapterum cylindricum

Tortula antarctica

Tortula pagorum

Tortula papillosa

Trichostomum brachydonthum

Triquetrella papillata

Weissia controversa

Ptychomitriaceae

Ptychomitrium australe

Racopilaceae

Racopilum cuspidigerum

Thuidiaceae

Anomodon tasmanicus

Thuidium laeviusculum

Thuidium sparsum

Liverworts & Hornworts

Anthocerotaceae

Anthoceros laevis

Aytoniaceae

Asterella drummondii

Plagiochasma rupestre

Reboulia hemisphaerica

Codoniaceae

Fossombronia alata

Frullaniaceae

Frullania probosciphora

Frullania rostrata

Geocalyceae

Lophocolea bidentata

Chiloscyphus minor

Chiloscyphus semiteres

Marchantiaceae

Lunularia cruciata

Ricciaceae

Riccia bifurca

Riccia crozalsii

Riccia crystallina

Riccia lamellosa

Riccia limbata

Targioniaceae

Targionia lorbeeriana

Additions to the bryophyte flora of the Antipodes Islands

David Glenny & Allan Fife, Landcare Research, Lincoln, New Zealand

Graeme Taylor, Department of Conservation, Wellington, New Zealand

Graeme Taylor spent 28 days on Antipodes Island (c. 49°42'S, 178°47'E) between 30 October and 26 November 1995, collecting 71 packets of bryophytes and lichens. Alan Tennyson also collected bryophytes on a day visit to Bollons Island on 30 October. Among the collections are 11 new liverwort records and 5 new moss records. The new records are:

Liverworts:

<i>Cephaloziella</i> sp	AK227334
<i>Chiloscyphus chlorophyllus</i>	AK227320 & 227339
<i>Clasmatocolea vermicularis</i>	AK227317
<i>Drepanolejeunea aucklandia</i>	AK227308
<i>Frullania rostrata</i>	AK227310
<i>Gackstroemia alpina</i>	AK227273
<i>Marchantia foliacea</i>	AK227272
<i>Megaceros</i> sp.	AK227337(sterile specimen)
<i>Pseudocephalozia paludicola</i>	AK227424
<i>Riccardia</i> sp.	AK227275
<i>Telaranea plumulosa</i>	AK227343

Mosses:

<i>Bryum pachytheca</i>	AK227286
<i>Campylopus</i> cf. <i>bicolor</i>	AK227334
<i>Campylopus purpureocaulis</i>	AK227271
<i>Hypnodendron marginatum</i>	AK227341
<i>Orthodontium lineare</i>	AK227325

Especially notable in the collection is the specimen of *Telaranea plumulosa* (Fig.1), a South American species which was reported from New Zealand by Fulford 1963. Her report is based on a J.D. Hooker collection labelled only "New Zealand" which is held at NY. Hooker did not visit the Antipodes Islands. The collection reported here was from a stream flowing into Stack Bay, on the stream bank. From the collections, it appears that *Campylopus introflexus*, *Lepidozia glaucophylla*, *Tylimanthus surculosus*, *Lepidolaena hodgsoniae*, *Jamesoniella colorata* and *Jamesoniella monodon* are the common taxa on the Islands. It appears from the number of additions to the list and the number of species on Godley's list that were not collected, that there are still a good number of species yet to be collected there. All specimens are in the Auckland Museum herbarium (AK).

Complete list of bryophytes from Antipodes Island (from Godley 1989 with additions)

[© = collected on this 1995 trip]

Liverworts and hornworts:

- Adelanthus oclusus* (Hook.f. & Taylor) Carrington ©
- Anastrophyllum schismoides* (mont.) Steph. ©
- Cephaloziella* sp ©
- Chandonanthus squarrosus* (Hook.) Mitt. ©
- Chiloscyphus australis* Taylor
- Chiloscyphus okaritanus* (Steph.) J.J. Engel & R.M. Schust. ©
- Chiloscyphus chlorophyllus* (Hook.f. & Taylor) Mitt. © (including *Heteroscyphus bidentatus*)
- Chiloscyphus minor* (Nees) J.J. Engel & R.M. Schust.

- Chiloscyphus novae-zeelandiae* (Lehm. & Lindenb.) J.J. Engel & R.M. Schust. ©
Chiloscyphus semiteres (Lehm.) Lehm. & Lindenb.
Clasmatocolea vermicularis (Lehm.) Grolle
Drepanolejeunea aucklandia Steph. ©
Frullania falciloba Taylor ex Lehm.
Frullania rostrata (Hook.f. & Taylor) Hook.f. & Taylor
Frullania scandens Mont.
Gackstroemia alpina R.M. Schust. © [1]
Hepatostolonophora paucistipula (Rodw.) J.J. Engel
Heteroscyphus erraticus (W. Martin & E.A. Hodgs.) J.J. Engel & R.M. Schust.
Heteroscyphus furcistipulus (E.A. Hodgs.) J.J. Engel & R.M. Schust.
Heteroscyphus physanthus (Hook.f. & Taylor) Schiffn.
Jamesoniella colorata (Lehm.) Schiffn. ©
Jamesoniella monodon (Hook.f. & Taylor) N. Kitag. ©
Lejeunea primordialis (Hook.f. & Taylor) Taylor ©
Lepidolaena clavigera (Hook.f.) Dum. ex Trevis
Lepidolaena hodgsoniae Grolle ©
Lepidolaena reticulata (Hook.f. & Taylor) Trevis. ©
Lepidolaena taylori (Gottsche) Trevis. ©
Lepidozia glaucophylla (Hook.f. & Taylor) Taylor ©
Marchantia berteroaana Lehm. & Lindenb. ©
Marchantia foliacea Mitt. ©
Megaceros sp. ©
Metzgeria decipiens (C. Massal.) Schiffn. & Gottsche
Metzgeria disciformis A. Evans
Pallavicinia xiphoides (Hook.f. & Taylor) Trevis.
Plagiochila deltoidea Lindenb.
Plagiochila radiculosa Mitt.
Plagiochila sinclairii Mitt.
Plagiochila strombifolia Taylor
Porella elegantula (Mont.) E.A. Hodgs.
Pseudocephalozia paludicola Schust. ©
Riccardia sp. ©
Telaranea corticola (Steph.) E.A. Hodgs.
Telaranea plumulosa (Lehm. & Lindenb.) Fulford ©
Telaranea patentissima (Hook.f. & Taylor) E.A. Hodgs. ©
Tylimanthus surculosus (Nees) Hamlin ©
Tylimanthus tenellus (Taylor) Mitt. ©
- [1] *Gackstroemia* material cited in Godley as *G. weindorferi* keys to *G. alpina* using Schuster (1985).

Mosses

- Breutelia pendula* (SM.) Mitt. ©
Bryum argenteum Hedw.
Bryum blandum Hook.f. & Wils. ©
Bryum pachytheca C. Muell. ©
Campylopus cf. bicolor (C. Muell.) Wils. ©
Campylopus clavatus (R. Br.) Hook.f. & Wils.
Campylopus introflexus (Hedw.) Brid. ©
Campylopus purpleocaulis Dus. ©
Ceratodon purpureus (Hedw.) Brid. ©
Dicranum robustum Hook.f. & Wils. ©
Hypnodendron marginatum (Hook.f. & Wils.) Lindb. ex Jaeg. ©
Lembophyllum divulgum (Hook.f. & Wils.) Par.
Leptostomum inclinans R.Br. ©
Muelleriella crassifolia (Hook.f. & Wils.) Dus.
Orthodontium lineare Schwaegr. ©
Pohlia wahlenbergii (Web. & Mohr) Andr.
Polytrichadelphus magellanicus (Hedw.) Mitt. ©
Polytrichum juniperinum Hedw. ©
Ptychomnion aciculare (Brid.) Mitt. ©
Racomitrium crispulum (Hook.f. & Wils.) Hook.f. & Wils. ©
Rhynchostegium tenuifolium (Hedw.) Reichdt. ©
Sphagnum australe Mitt. ©
Sphagnum falcatulum Besch. ©
Tayloria purpurascens (Hook.f. & Wils.) Broth.
Warnstorfia fluitans (Hedw.) Loeske ©
Willia calobolax (C.Muell.) Lightowlers

Acknowledgements:

Alan Tennyson for assistance with field collections. Fiona Pitt (WELT) for information on Hooker's itinerary.

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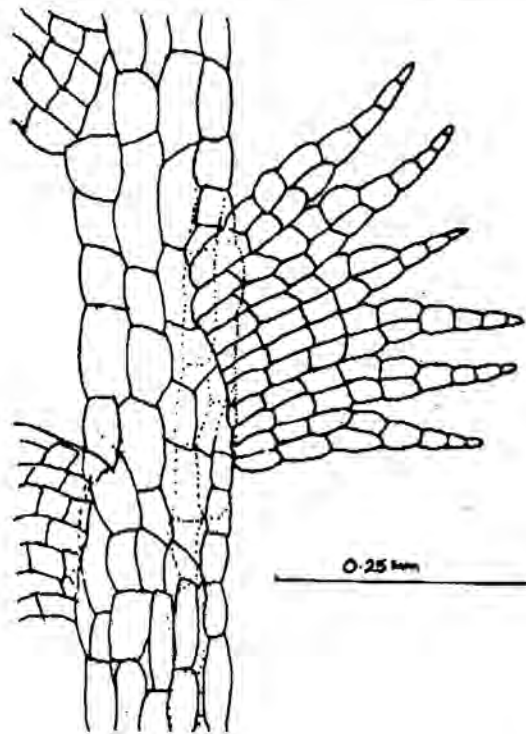


Figure 1. Lateral leaf of *Telaranea plumulosa* (from AK227343)

New or Interesting Moss Records for Australia

Heinar Streimann, Cryptogamic Herbarium, Centre for Plant Biodiversity Research, Canberra

All collections are at CANB with duplicates distributed to major herbaria when available. The collectors have been abbreviated as: JAC = J.A. Curnow, HS = H. Streimann, DV = D. Verdon and RJF is Rod Fensham. Recognized abbreviations are used for geographical features, while S.F. = State Forest, Fl. Res. = Flora Reserve, For. Res. = Forest Reserve, N.P. = National Park, Nat. Res. = Nature Reserve.

Andreaea mutabilis Hook.f. & Wils.

Western Australia: Track to Toolbrunup Peak, Stirling Ra., Stirling N.P., 40 km SW of Borden, 880m. on moist semi-shaded rock face in steeply sloping valley of large boulders with healthy vegetation, HS 54520, Sep. 1994.

First report of this genus west of the Grampian Ra. (western Victoria).

Cratoneuropsis relaxa (Hook.f. & Wils.) Fleisch.

Queensland: all Carnarvon N.P., Aug. 1993; Violet Creek, 93 km NNW of Injune, 540m, on constantly wet rock in wet sclerophyll forest surrounded by escarpment with *Casuarina* on creek sides, HS 52065; 'Hellhole Gorge', Koolaroo creek, 93km NNW of Injune, 540m, forming extensive colonies on wet rock face, on shaded small waterfall, on rotting log in creek in wet sclerophyll forest surrounded by escarpment with *Casuarina* dominated creek sides, HS 52116
New State record. Previously reported from NSW, ACT, VIC, TAS & SA.

Erpodium beccarii C. Muell.

Queensland: Lake Elphinstone, 54 km NNE of Moranbah, 420m, growing on vertical face of sandstone in monsoon forest on sandstone, RJF 46, Jan. 1993.
First Australian report of this previously East African species. Could possibly be more common.

Herpetineuron toccae (Sull. & Lesq.) Card.

New South Wales: Toonumbar Forest Way, Toonumbar S.F., above Eden Ck, 26 km NW of Kyogle, 450m, on *Argyrodendron* trunk in lowland forest, HS 7013, Oct. 1978.

The only previous report (Brotherus & Watts 1918: 563) was from the Ravenshoe area of north Queensland, where I also have collected this species twice and also once at Atherton. It appears to be uncommon, and does not form extensive colonies.

Leucomium strumosum (Hornsch.) Mitt.

Queensland: Woopen Ck, 18 km WNW of Innisfail, 70m, on shaded rock in disturbed forest surrounding creek, HS 45649, Dec. 1990.

First Australian report of this widespread species. Previously known from the Americas, Africa, Sri Lanka, India, Thailand, Malaysia, Indonesia, Philippines, Papua New Guinea, New Caledonia, Samoa, Society Islands.

Allen (1987) mentioned a previously unreported collection of *Leucomium aneurodictyon* (C. Muell.) Jaeg. (= *L. strumosum*) from Australia without any data. However he provisionally excluded this species from the Australian flora, even though predicting that it may occur in Queensland. Previously *Leucomium hillianum* (Hamp.) Jaeg. was also reported from Australia, but Allen (1987:676) placed that species into *Vesicularia*.

Macromitrium brevicaule (Besch.) Broth.

Queensland: Ross Ck, Yeppoon, 2m, on treelet (*Excoecaria agallocha* and *Bruguiera*) stems beside creek surrounded by mangroves (*Avicennia*, *Excoecaria*, *Rhizophora*, *Bruguiera* and *Aegiceras*), HS 52387, 52388, Aug. 1993; Mt. Archer Environmental Park, 8km NE of Rockhampton, 580m, on semi-shaded treelet stem in dry sclerophyll forest on moderately steep slopes with *Casuarina*, HS & T> Hallingback 52344, Aug. 1993.

Previous northern limit was Gympie (Vitt & Ramsay 1985: 382)

Meiothecium jagorii (C. Muell.) Broth.

Queensland: Woopen Ck Rd, 18 km WNW of Innisfail, 70m, on *Syzygium* stem in regrowth shrubs amongst tall grasses, HS 45640, Dec. 1990.

New to Australia. A widespread species, occurring from Sri Lanka to the Philippines and Oceania.

Mesochaete undulata Lindb.

Queensland: 'Hellhole Gorge', Koolaroo Ck, Carnarvon N.P., 93 km NNW of Injune, 540m, on moist shaded boulder in wet sclerophyll forest surrounded by escarpment with *Casuarina* dominated creek sides, HS 52098, Aug. 1993; Dawes Ra., Kroombit S.F. (316), 53 km E of Biloela, 800m, on shaded creek bank in rainforest on gentle slope, HS 52480, Aug. 1993.
Previously known from north Queensland, and it is reasonably common in southern Queensland and New South Wales.

Stereophyllum radiculosum (Hook.) Mitt.

Queensland: 'Undarra', 27 & 48 km ESE of Mount Surprise, on basalt rocks in monsoon forest on collapsed basalt lava tubes and in volcanic crater, RJF 50, 58, Jan. 1993; 'Ronella Park', 85 km WSW of Ingham, 500m, base of tree trunks in semi-

evergreen vine thicket on basalt flow, RJF 13, Jun. 1992; Great Basalt Wall (Toomba Lava Flow), 68 km WNW of Charters Towers, 360m, RJF 10, Jun. 1992; Wilson Beach, 17 km SE of Proserpine, 3m, on a shaded rock in poor lowland forest on rocky headland, HS 37589, Jun. 1986; Gorge Creek, Redcliffe Tableland, 49 km W of Eungella, 270 m, RJF 41, Jan. 1993.

This species is very common in pockets of monsoon thickets, and often forming extensive colonies on boulders and on tree trunks near ground level. Enroth (1991: 643) reported the first Australian specimen based on a collection by C. Wild from Helidon which was reported as *S. daemeli* Fleisch. and *Euglossophyllum daemeli* C. Muell. both *nom. nud.* The species occurs in tropical and South Africa, India, Mexico and South America.

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Jim Willis' Bryological Contributions

James H. Willis died on the 10 November 1995 after a short illness in his 86th year. In addition to his significant contributions to Australian botany, Jim had a keen interest in bryophytes. In appreciation of his bryological contributions the following reflection is presented by George Scott.

In a particularly active period about the turn of the century extending to the end of World War I, Brotherus in Helsinki dominated the study of Australian mosses, often in collaboration with local collectors of whom Watts (NSW) and Rodway (TAS) were most notable. The bryological drought which then ensued was scarcely interrupted, except by occasional contributions from Dixon, Alan Burges and later Sainsbury and Bartram, until Jim Willis began publishing the results of his investigations. In a dozen papers, mainly in the *Victorian Naturalist* from 1950 to 1958, Willis initiated a resurgence of bryology in Victoria, if not in Australia. His papers are listed in "Mosses of Southern Australia" (Scott & Stone, 1976) and the references need not be repeated here.

In the early 1950s, about the same time as Sainsbury was carrying out his scholarly re-assessment of the mosses in Rodway's herbarium in Hobart, Willis began to cast his net more widely than that, beginning with studies of individual species of particular interest - *Tayloria tasmanica* and *T. gunnii* from Tasmania, *Fissidens hunteri* from Victoria. Quickly this theme was expanded, in collaboration with Trevor Clifford and with the taxonomic support of Sainsbury and Bartram, into "The genera of Victorian Mosses and new records of species from the State", evidently a precursory treatment towards a State-wide flora. To the same end - and in the same vein - belong two MS checklists, of Victorian mosses and Victorian liverworts, never

published, and a series of half a dozen "Systematic Notes on Victorian Mosses" which provided records (especially of specimens in MEL), critical notes and sometimes illustrations of new or otherwise interesting species.

In the course of his studies Willis also encountered species and problems of interest from other parts of Australia, particularly WA and NT, and these are similarly treated in the *Victorian Naturalist*. At this time he was largely responsible for what little knowledge of the Northern Territory moss flora there was.

Jim Willis' contributions to bryology were typical of the man: meticulous investigation of systematic problems (and meticulously labeled specimens) in order to provide a basis for future work. That he never built on this foundation himself was probably mainly because his two volume handbook of the Victorian vascular plants must have taken up all his available time, and - always generous - he was quite content for others to profit by his industry. Not all his new moss species have survived subsequent research, but that is the ironic fate of all taxonomists - the more stimulating their influence, the more likely they are to be superseded. He never considered himself a bryologist and never, as far as I know, published anything on liverworts, but he always had a love of the plants themselves and, as a self-appraised non-bryologist, left a legacy of high-quality work that any ostensible bryologist would be proud to lay claim to.

George A.M. Scott, Melbourne, Victoria.

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