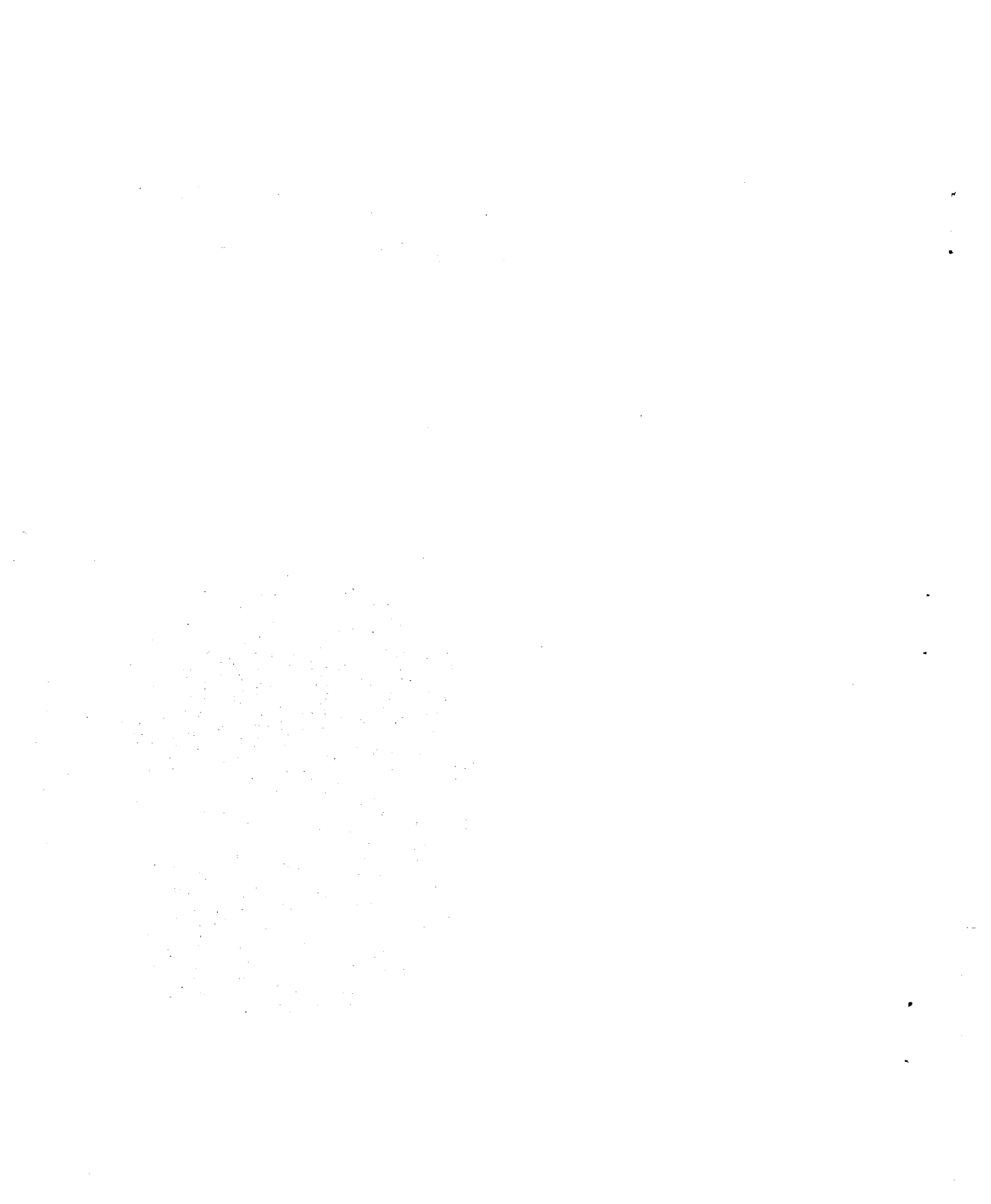


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**AUSTRALIAN SYSTEMATIC BOTANY SOCIETY  
NEWSLETTER NUMBER 29 (1981)**





# AUSTRALIAN SYSTEMATIC BOTANY SOCIETY

## NEWSLETTER

Newsletter No. 29

November, 1981

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The Newsletter is the official publication of  
the Australian Systematic Botany Society.

### A.S.B.S. COUNCIL

- President : Dr Trevor Clifford, Department of Botany,  
St Lucia, Queensland, 4067.
- Vice-President : Dr Bryan Barlow, Herbarium Australiense, C.S.I.R.O.,  
P.O. Box 1600, Canberra City, A.C.T. 2601.
- Secretary : Ms Judy West, Herbarium Australiense, C.S.I.R.O.,  
P.O. Box 1600, Canberra City, A.C.T. 2601.
- Treasurer : Mr Barry Conn, Department of Botany, University of  
Adelaide, Box 498, G.P.O., Adelaide, S.A. 5001.
- Councillors : Mr Laurie Haegi, National Herbarium of N.S.W.,  
Royal Botanic Gardens, Sydney, N.S.W. 2000.
- Mr Rod Henderson, Queensland Herbarium, Meiers Rd,  
Indooroopilly, Queensland, 4068.

### CONVENERS OF LOCAL CHAPTERS.

- ADELAIDE : Mr David Symon
- ALICE SPRINGS : Mr John Maconochie
- BRISBANE : Mr Laurie Jessup
- CANBERRA : Dr Helen Hewsen
- DARWIN : Dr Clyde Dunlop
- HOBART : Dr Tony Orchard
- MELBOURNE : Dr Dianne Simmons
- PERTH : Dr Kingsley Dixon
- ROCKHAMPTON :
- SYDNEY : Dr Jocelyn Powell
- TOWNSVILLE : Dr Betsy Jackes

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Affiliated Society : Papua New Guinea Botanical Society.

INFORMATION FOR CONTRIBUTORS

The Newsletter is produced four times each year and deadlines for copy are the last day of February, May, August and November.

Please send contributions, preferably typed in duplicate and double-spaced, to the Editor, at the address below. Items from any source and of interest to members are acceptable. All items incorporated in the Newsletter will be duly acknowledged.

Please note: Next deadline for articles is 28 February, 1982

Editor  
Barry Conn  
Department of Botany  
University of Adelaide  
Box 498, G.P.O.  
Adelaide, S.A. 5001.

SUBSCRIPTIONS

Subscriptions for 1981 were due on the 1st January. Both Australian and overseas members:

Aust. \$8.00 if paid by 31st March  
Aust. \$10.00 thereafter.

Barry Conn  
Treasurer.

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This issue of the Newsletter was meant to include a number of articles on recent advances in Inflorescence Morphology. However, the present Industrial trouble in Melbourne has delayed the arrival of two articles from overseas. These articles will be published in an extra issue of the Newsletter, probably in January, 1982.

Please note: Dr Gordon Guymer (Queensland Herbarium, Meiers Road, Indooroopilly, Queensland, 4068) will be the editor of the Newsletter for issue number 31 and subsequent issues.

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CHAPTER NEWS

ADELAIDE

The following talks were presented during 1981:

- March : "A year at Royal Botanic Gardens, Kew"  
Munir Ahmad Abid,  
A liaison officer's fond memories, trials and tribulations.
- April : "Botany of a copper mine"  
John Womersley  
Large-scale copper mining on Bougainville Island (Papua New Guinea), its effects on the environment and how these specialized problems are being approached, provided an interesting talk well rounded off with slides.
- May : "A review of the genus *Nicotiana* (Solanaceae)"  
Phillipa Horton  
As a taxonomic revision of the genus had just been published by the speaker, a review with speculations on relations and evolutionary trends formed an interesting addition.
- June : "Vegetation dynamics and patterns in a Miocene coal basin"  
Dave Blackburn  
An interesting interpretative reconstruction of the Miocene vegetation in the LaTrobe Valley, Gippsland (Victoria)
- July : "The Herbarium in botanical research."  
Introduced by Barry Conn.  
Various aspects discussed by John Douglas, Andrew Johnson, and Peter Kloot. The discussion was summarized by David Symon. (A brief summary is provided later in this Newsletter).
- September : "Arid Zone Mosses of South Australia - a morphological perspective"  
Graham Bell  
(A brief summary is provided later in this Newsletter).

October : "Taxonomy of *Prostanthera* sect. *Klanderia*"

Barry Conn.

Various numerical techniques were presented, in particular the contouring techniques of Surface Trend Analysis and Differential Systematics. A review of the geographic variation of *Prostanthera aspalathoides* was presented for both morphological and volatile oil (terpenoids) characters.

David Symon was elected as the new Convener for 1982.

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Hellmut Tölken.

#### ALICE SPRINGS

As many members will be aware, the Senior Botanist for the Northern Territory, John Maconochie, has taken up a twelve month consultancy in the Sultanate of Oman, working with a rangelands group. Early reports indicate that, while it is very hot (!) John looks forward to a demanding and stimulating stay. His family will join him towards the end of the year.

Clive Dunlop (Darwin) is acting in John's position during his absence.

Unfortunately, John's absence further depletes staff levels at NT. Bruce Thomson, newly recruited to the Herbarium, holds the fort, ably assisted by technical staff Tom Henshall and Dorothy McKey. Work demands do mean, of course, that little more than curatorial work can be achieved.

I was fortunate enough to be able to accompany one of the International Botanical Congress post-congress tours from Alice Springs to Darwin. It was one of the most interesting and stimulating field trips I've undertaken. Forging rivers, herds of buffalo and barramundi, flocks of crows and even the occasional plant made for an exciting trip. Not to mention some delegates determined efforts to out-drink the locals!

Early reports indicate the Flora of Central Australia being extremely well-received, with copies now extremely difficult to obtain. One local bookshop sold 15 copies on the first day — all to tourists buying off the street.

Andrew Mitchell.

BRISBANE

Les Pedley presented a talk on the classification of *Acacia* prior to his delivering a paper on this topic to the International Group for the Study of Mimosoideae at the XIII International Botanical Congress, Sydney.

Laurie Jessup.

CANBERRA

The local Chapter of the Australian Systematic Botany Society managed to coincide its October monthly meeting with the CHAH meeting in Canberra.

We organized a buffet dinner for members and guests. This allowed us plenty of opportunity to converse and munch. From my observations both were done with enthusiasm.

A few words of wisdom and caution were offered by William Hartley in his after dinner speech. William is a former employee of C.S.I.R.O., Plant Industry, Canberra. He was one of the founding fathers of Herbarium Australiense. He has also done scientific and botanic liaison work for Australia in both the United States of America and England. In Canberra we regard him as a sort of elder statesman of the botanical world. For those of you who have not had the opportunity of meeting him you are almost certainly aware of his work with Economic Plant Names and Rare and Endangered Plants.

In his own words he 'garruled' at us with some reminiscences of his contribution to botany in Australia. He ended with some rather sobering predictions about what the future may hold for science, botany and taxonomy in particular.

Helen Hewson

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PERSONAL NEWS  
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NEW APPOINTMENTS:

Dr Terry MacFarlane has recently join the staff of the Perth Herbarium, Western Australia.

Dr Julianne Venning will soon be taking up a position with the Department for Environment, South Australia.

PERTH                    The following seminars were held during 1981.

February	:	" <u>Documenting the Naturalized Flora of Western Australia.</u> " Gillian Perry.
May	:	" <u>Biology of South African Proteaceae</u> " Byron Lamont.
June	:	" <u>Biology and Taxonomy of the Centrolepidaceae</u> " Greg Keighery.
July	:	" <u>The Gazetted Rare Plants of Western Australia</u> " Steve Hopper.
September	:	" <u>Rhizanthella gardneri: the underground Orchid</u> " Kingsley Dixon.
November	:	" <u>Biology of Eucalyptus Conference</u> " Held at Kings Park

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BIOLOGY OF EUCALYPTUS CONFERENCE : PROGRAMME.

9.00 - 10.00.	Selected Species of Eucalyptus used in Rehabilitation of Northern Forest: -
I.J. Colquhoun, R.W. Ridge, D.T. Bell, W.A. Loneragan.	(i) Patterns of Water Utilization.
W.A. Loneragan, R.W. Ridge, D.T. Bell, and J. Kuo.	(ii) Anatomical Features Related Water Utilization.
D.T. Bell and R.W. Ridge and W.A. Loneragan	(iii) Growth and Anatomical Characteristics Affected by Water Deficit.
10.00 - 10.30.	
B. Lamont.	Understorey Suppression by <i>Eucalyptus wandoo</i> .
10.30 - 11.00	MORNING TEA.



11.00 - 11.30	I. Bennett	Propagation of <i>Eucalyptus</i> using Tissue Culture.
11.30 - 12.00	J. McComb	Application of Tissue Culture to Eucalypt Improvement.
12.00 - 12.30	D. Saunders	The Condition of an area of Salmon Gum woodland providing nest sites for cockatoos.
12.30 - 1.30		LUNCH.
1.20 - 2.00	I. Abbott and O.W. Loneragan	Growth rate of Jarrah.
2.00 - 2.30	B. Dell	Root Systems of Eucalypts.
2.30 - 3.00	G.J. Keighery	Breeding Systems of Eucalypts.
3.00 - 4.00		AFTERNOON TEA      POSTER VIEWING.

POSTERS:

N.D. Burrows	Fire Scar Formation in Jarrah.
C.J. Robinson	The Relationship between <i>Eucalyptus forrestiana</i> , its subspecies <i>Forrestiana</i> and <i>dolichorhyncha</i> and <i>Eucalyptus stoatei</i> .

This mini-conference was very successful with attendance varying from 50-56 during the day. This is the third annual Australian Systematic Botany Society mini-conference, the first two being "Phytogeography of Western Australian Plants" in 1979 followed by "Biology of Banksia" in 1980. With the aid of the University of Western Australia, Kings Park Board and the Department of Fisheries and Wildlife, Abstracts, morning and afternoon teas and venues have been provided.

A large and varied group of Botanists, Foresters and Zoologists have had the opportunity to discuss projects and common interests, which is a major function of our Society.

During September a new Committee was elected:

Convener : Kingsley Dixon, Botany Department, Univ. of W.A.  
 Committee members : Barbara Rye, Steve Hopper, Greg Keighery.

Thanks to the 1980/81 committee for the past year's programme of events. The year was completed with the annual "Silly Season Christmas Barbecue".

Chris Robinson  
Greg Keighery

THE HERBARIUM IN BOTANICAL RESEARCH.

The following is a summary of a discussion held at the July meeting of the Adelaide Chapter of the Australian Systematic Botany Society.

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The role of herbaria is investigated by comparing the activities of each Australian herbarium and these were also compared with some of the larger overseas herbaria. The number of staff, their duties, and the amount of time spent on such aspects as herbarium curation, direct contact with the public, field work, and research, vary considerably between the various Australian herbaria. Therefore, the Australian herbaria appear to have developed in quite different directions. The reasons for such differences are many, but in most cases, Tradition seems to have been very important. Contrary to this, it is with interest that we observe the changes taking place at Herbarium Australiense which does not appear to be so constrained by the past.

It is particularly difficult, and extremely foolhardy, to compare the productivity of each herbarium. However, when the number of staff are compared with the number of publications, measured in pages (over the last five years), they do not appear to be very closely correlated. If anything, dare I suggest, they are negatively so! Therefore, if we want to remain employed, it would not be wise for us to equate productivity with publications. Obviously, publications are not a true indicator of productivity because a large number of staff are involved in "Services / Enquiries" - type positions.

It is of interest to note that there are no significant University-based herbaria in Australia, similar to, for example, Arnold Arboretum and Gray Herbarium (Cambridge, U.S.A.), University of California (Berkeley, U.S.A.) or Leiden (Netherlands), and so on.

With some very notable exceptions, Australian herbaria do not usually follow modern (developmental / experimental) approaches to taxonomy. These are largely carried out by University based taxonomists, many of whom are post-graduate students. Therefore, when such taxonomists are employed in non-University herbaria, they either see the errors of their ways (!) or non-University herbaria do not see such activities as part of their duties.

Some of the advantages, and techniques, used in remote sensing were discussed at length. The usefulness to the Herbarium appeared to be limited. However, application of the information provided by such techniques has obvious uses for ecologically orientated herbaria.

Assessments for Environmental impact studies and the subsequent preparation of Environmental impact statements requires rapid data retrieval. At present, the data storage systems currently used in herbaria cannot provide this.

A number of disciplines require identification of plant material. As would be expected, the herbaria are able to provide such information very efficiently.

An interesting point was raised during the talk concerning the lodging of voucher specimens. Plant physiologists and plant cytologists all too frequently do not lodge voucher material in herbaria. Two case histories were present in which the identity of the particular plant species used in the studies were questioned. However, as there were no herbarium vouchers, it was impossible to verify the identity of the plants used.

More questions than conclusions, arose from this discussion. However, the general feeling (at least, my interpretation of it) appeared to be that herbaria have a tendency to isolate themselves from a number of modern techniques and from those institutions which use them. The reasons for this tendency are, of course, extremely complex. More liaison with other groups appears to be necessary and beneficial to all concerned.

Barry Conn.  
Adelaide.

EUCALIST - A EUCALYPTUS DATA BANK.

In the Australian Systematic Botany Society Newsletter 14 (March 1978) 3-6, I outlined some methods in compiling this data bank based on *Eucalyptus* specimens in herbaria.

The project has now reached a stage where much of the data is available on computer. All specimens from FRI, NSW, BRI, K and BM have been included, plus about half of MEL, and smaller percentages of CANB, CBG, AD, PERTH, HO and NT. It is hoped that if a grant from the Australian Biological Resources Study (ABRS) is renewed then the data processing will be completed in about a year.

Meanwhile, the data bank is fully functional, and printouts of information based on label information can be offered free to researchers. I am willing to accept all requests:

Mr G.M. Chippendale,  
CSIRO, Division of Forest Research  
P.O. Box 4008,  
Canberra, A.C.T. 2600.

XIII INTERNATIONAL BOTANICAL CONGRESSCONGRATULATIONS.

The members of the Adelaide Chapter of the Australian Systematic Botany Society would like to congratulate the many botanists who provided the excellent organisation of the XIII International Botanical Congress.

All who attended enjoyed the Congress, found the many contacts stimulating and were impressed by the attention to detail in the planning. The amount of time and effort spent on the organisation of the various aspects of the Congress must have been considerable, but we are sure that Sydney and the Congress (including the field excursions) received a "Gold Star" from the many overseas and Australian Botanists.

Adelaide Chapter.

As a botanist who gained the benefits of attending the International Botanical Congress in Sydney, without the work of organizing 3,000 botanists into the right places at the right time, may I congratulate all of those who did the work.

I gained greatly from the numerous contacts made; and thought that the congress (and tours) reflected admirably on Australian Botany, and especially on the numerous voluntary workers who did such a time consuming and professional job organizing it.

Greg Keighery.

MOSES AND THEIR RELATIONSHIP TO AN ARID ENVIRONMENT

Graham Bell

Department of Botany, The University of Adelaide, S.A.

The study of groups of "lower" plants is often criticised for being "esoteric" or "difficult to justify economically". Whilst in some cases the attitude of certain workers with groups such as Musci may support such a view, since they consider their work to be an end in itself, this need not be the case. In fact, one feels obliged to suggest that such should never be the case, since any scientific person should constantly be striving to maintain as broad an overview of his chosen research field as is possible. If therefore, one is chiefly involved with cryptogamic botany, or equally if one is primarily involved with the study of any other plant group, I maintain that it is of considerable value to consider periodically the similarities and differences between major plant groups and the light which may be shed upon one's own interest by such a comparative approach.

When asked to present a talk to the Adelaide Chapter about my research into morphological aspects of arid-zone Australian mosses, I sought to follow such "generalist" principles as I have outlined above. I shall endeavour to adopt this approach in summarising my results here. The study involved an investigation of a small region within the Southern boundary of the South Australian arid zone to determine which species were present, their ecological conditions and preferences, and the morphological characteristics which assist their survival of a severely desiccating environment.

Despite the pre-conceived notions many people have about the distribution of mosses, they are quite frequent in arid regions and, as will be seen, of considerable ecological (hence, ultimately economic) importance. The region of study centred on Middleback Station, near Whyalla, South Australia, the predominant vegetation type being *Atriplex / Maireana* shrubland with scattered *Acacia papyrocarpa* (Western Myall) trees. Fifteen to twenty species of mosses, representing 6 or 7 orders, were collected during wet and dry seasons from various sites. Two distinct groups were discernible. Analogous to the angiosperm situation, mosses have developed differing survival strategies in arid environments. Hence, ephemeral and perennial species are found in such habitats and in the Middleback region, these are predominantly represented by the families Funariaceae and Pottiaceae, respectively. The ecological importance of lichen crusts in the arid regions of Australia has been recognised (Rogers, 1972), but the presence of mosses in these crusts is often of considerable

importance in maintaining their structure. Indeed, in some situations, the moss element of these crusts is perhaps of greater influence than the lichen element in binding the upper few centimetres of soil. This is due to the presence of an inter-twining network of rhizoids which penetrate deeper into the soil than do structures associated with lichens. Here it is primarily the perennial species which are significant, although some "pseudo-ephemeral" species such as *Gigosperrum repens* are known to maintain subterranean portions of their gametophyte, even when the main gametophyte has produced sporophytes and degenerated. As is the tendency with angiosperms, ephemeral moss species tend towards reduction in vegetative structures to allow greater energy to be utilised in rapid and prolific production of sexual structures. Perennial species tend towards development of alternative vegetative forms of reproduction, some species producing sexual structures only on rare occasions. The ecological significance of the maintenance of lichen / bryophyte crusts in the Australian arid region has too often been realised only after the effects of over-stocking have become evident. Where the soil crust has been destroyed, soil movement is soon facilitated during the dry season, when ephemeral angiosperms have completed their growth cycle. It is the cryptogamic crust which maintains mounds around the bases of perennial shrubs and prevents their removal by erosion.

A study of the plant structure of mosses adapted to an arid existence shows many morphological trends, from comparisons between perennial and ephemeral species, and from similarities within perennial species. A number of these reflect analogous morphological adaptations in angiosperms. To summarise, it is apparent that perennial mosses in the arid regions have morphological adaptations strongly directed towards an enhancement of efficiency of water uptake, (Bell, in press). The presumed "logic" of this strategem is that it is advantageous, where water supply is both limited and irregular, to make the most efficient use of whatever moisture is available. In such circumstances, even forms of precipitation such as dews become significant. An excellent discussion of such topics is presented by Proctor (1979). It is interesting to note that one of the most consistent arid adaptations in Australian mosses is roughening of the leaf surface by means of papillae (a consistent feature in Pottiaceae) or other means. The roughening of leaf surfaces has also been observed to be associated with aridity of habitat in Liliaceae and some other angiosperms (Cutler, pers. comm.).

It soon becomes obvious, when one attempts to compare plant groups and their survival strategies, that there is considerably more cohesion within apparently diverse plant forms than might be imagined *a priori*. Hence, I would again seek to stress that a broader approach to botany can produce quite surprising information at times, with valuable findings of relevance to other fields sometimes coming from the most unexpected sources.



## DATE CHANGE

ECOLOGICAL SOCIETY OF AUSTRALIA INC.

BIENNIAL SYMPOSIUM

# MOUNTAIN ECOLOGY IN THE AUSTRALIAN REGION

SATURDAY 8 - SUNDAY 9 MAY 1982

AUSTRALIAN ACADEMY OF SCIENCE - CANBERRA

(NEW DATE TO AVOID CONFLICT WITH ANZAAS)

The theme for this symposium will be directed towards ecological aspects of past and present upland environments, together with resource aspects such as inventory, conservation and management. Papers which are given at the symposium will be published in volume 12 of the Proceedings of the Ecological Society of Australia. An excursion to highlight field examples relevant to the symposium will be held in the Snowy Mountains from 10 - 11 May.

Authors who have suggestions for either papers or posters should send abstracts no longer than 300 words to:

Dr Trevor Booth  
CSIRO DIV. OF LAND USE RESEARCH  
P.O. BOX 1666  
CANBERRA CITY  
A.C.T. 2601

before December 31st 1981. Registration forms and further details will be available in January 1982.



## EXPERIMENTAL PLANTATIONS AT BUNDALEER AND MURRAY BRIDGE, SOUTH AUSTRALIA

C. D. Boomsma

6 Celtic Avenue, Clovelly Park, South Australia.

*Abstract*

*Eucalyptus* species native to South Australia have been established at Bundaleer and Murray Bridge (48 and 73 species, respectively). Besides making a contribution to an otherwise bare landscape, material is provided of species which occur in remote areas or are restricted in occurrence. When a number of provenances are present, growth comparisons can be made.

During studies of forest and woodland communities in South Australia during the preparation of a bulletin for the Woods and Forests Department, it became evident that the identification of some species and detailing their growth characteristics would be facilitated by having ready access to live material from several provenances. Later it became evident that there were other advantages such as:

1. The provision of fresh material for herbarium collections.
2. Assistance in the comparison of growth rates of different species and different provenances of the same species.
3. Assistance in the comparison of growth forms of different species and different provenances of the same species.
4. Assistance in comparative studies of flowering and seed production.
5. It provides a refuge for rare and poorly known native tree and shrub species.
6. Comparative studies with interstate species.

The actual establishment of plantations began in 1978 by the Woods and Forests Department on an area of land which was made available by then Monarto Development Commission.

From the census table of survivals of *Eucalyptus* spp. native to South Australia, it can be seen that there is a good representation of most of the little known species, except for *Eucalyptus gongylocarpa*. Perhaps the frost sensitivity of seedlings is the most likely explanation for its failure to survive there.

Some observations made to date provide a basis for assessing the values inherent in these plantations, especially in respect to the identification of unfamiliar species. In considering the first recorded occurrence of *E. albens* in South Australia by Miquel (1856) as "northwards from Clair-Village towards Mt Remarkable", the confirmation was delayed until 1974 when a substantial population just south of Melrose was located by G. Brown recorded by Boomsma (1974). An unfortunate side-effect from the long period of unrewarded search led Pryor and Johnson (1971) to regard it as a 'phantom' species in South Australia.

In the case of *E. burracoppinensis*, its occurrence in South Australia is represented by a single capsule collected in 1891 from the Birksgate Range in the far North West by the Elder Expedition. Despite several searches in recent years, it has not been rediscovered, even though it occurs in patches of low open woodland further west in the Leinster region (at the same latitude) of Western Australia.

With the related *E. kingsmillii*, substantial collections have been made recently from the Serpentine Lakes area in the far West thus confirming the single, collection first made for South Australia by R. Major in 1966 and recorded by Boomsma (1972). Its fragmentary condition led to it being originally identified as *E. pachyphylla*.

The plantations will assist in the study of groups of related species. Examples include the groups *Dumosae*, *Oleosae* and *Subexsertae*.

In the latter case, despite readily recognisable differences in seedling characters such as leaf shape, at maturity convergence of the adult foliage, buds and fruits is apparent. This together with the fact that constituent species do not overlap in their distributions, but are confined largely to rocky ranges spaced apart in the arid zone, could suggest a past single parent species with a wide but uninterrupted distribution which later became interrupted and fragmented.

As is to be expected, variation of species often results from restricted reproduction following isolation of the breeding stock. It has proceeded variously in four taxa of section *Exsertaria* series *Tereticornes* (Pryor and Johnson) which occur in arid ranges of Central Australia. Included in the plantings are *E. flindersii* from the North Flinders Ranges, S.A.; *E. gillii* from the McDonnell Ranges, N.T.; *E. incurva* from Mt Lindsay, Birksgate Range, (Mt. Lindsay) S.A.; and *E. morrisii* from the Barrier Ranges, N.S.W.

Other groups in South Australia in which species identification and delimitation has posed problems include the series *Dumosae* and *Oleosae*. Several plantings have been made of prominent South Australian species in each group which should assist in the reduction of some of the problems.

Growth rate comparisons assist in the choice of individual provenances to meet specific objectives. Already, a particularly fast growing tree form of *E. conglobata* has grown more or less 6 m in 6 years compared with the usual expectation of more or less 3 m. In contrast, *E. sparsa* has grown less than 0.5 m in the same period.

Comparisons of growth forms can be revealing and are well adapted for recording photographically. They vary from an erect, conical tree form to a dwarfed shrub of *E. peeneri* less than 1 m high. In the case of *E. yalatensis* from Yalata, three of four plants show the typical prostrate habit while the fourth is erect. Accompanying foliage colours vary from bluish-green of the prostrate form to pale green of the erect form.

As little is published on the flowering behaviour of South Australian *Eucalyptus* spp., it is hoped that at least the season and regularity of flowering could be recorded from these plantings. It appears, for example, that the southern form of *E. socialis* flowers regularly in summer, whilst the closely related *E. yumbarrana*, which is native to northern arid areas, flowers in winter to spring. As even less is known about seed production from species of the arid areas, it is hoped that these plantings will facilitate appropriate observations to improve our knowledge.

There was no attempt to establish representatives of all *Eucalyptus* spp. native to South Australia.

Species excluded from the plantings include those native to cold wet areas such as *E. baxteri*, *E. cosmophylla*, *E. goniocalyx*, *E. macrorhyncha*, *E. nitida*, *E. obliqua*, *E. ovata*, *E. pauciflora*, *E. remota*, *E. rubida* and *E. viminalis*. Also excluded were several species that were clearly well described and delimited from related species such as *E. behriana*, *E. calycogona*, *E. cladocalyx*, *E. diversifolia*, *E. fasciculosa*, *E. gillii* and *E. pimpiniana*.

An attempt was made with varying success to establish *Eucalyptus* species from remote regions of South Australia. Examples include *E. burracoppinensis*, *E. calcareana*, *E. camaldulensis* var. *obtusata*, *E. concinna*, *E. dichromophloia* subsp. *oligocarpa*, *E. eremicola*, *E. ewartiana*, *E. flindersii*, *E. gamophylla*, *E. gongylocarpa*, *E. incurva*, *E. kingsmillii*, *E. lansdowneana* subsp. *lansdowneana*, *E. mannensis*, *E. microtheca*, *E. oxymitra*, *E. peeneri*, *E. pimpiniana*, *E. pyriformis* subsp. *youngiana*, *E. sparsa*, *E. terminalis*, *E. trivalvis*, *E. websterana*, *E. yalatensis* and *E. yumbarrana*.

*Eucalyptus* spp. of interstate origin have also been established. Examples include *E. argillacea*, *E. brevifolia*, *E. decurva*, *E. endesmioides*, *E. forrestiana*, *E. fraseri*, *E. gillii*, *E. jucunda*, *E. jutsonii*, *E. leptopoda*, *E. loxophleba*, *E. morrisii*, *E. pachyphylla*, *E. papuana*, *E. pileata*, *E. sessilis*, *E. transcontinentalis*, *E. uncinata*.

Plantings of a limited number of other genera besides *Eucalyptus* include *Acacia*, *Callitris*, *Cassia*, *Casuarina*, *Hakea* and *Melaleuca*.

Both the 1980 and 1981 plantations have been excluded from this account pending the survival census which is made at three years of age.

#### References

- BOOMSMA, C.D. 1972. Native Trees of South Australia. 1st ed. Bull. 19, Woods & Forests Department, S.A.
- BOOMSMA, C.D. 1974. Contributions to the genus *Eucalyptus* from South Australia. South Australian Nat. 48(4): 52-57.
- PRYOR, L.D. & L.W.S. JOHNSON, 1971. A Classification of the *Eucalypts*. Australian Natl. Univ. Canberra.
- MIQUEL, F.A.S. 1856. Ned. Kruidk. Arch. vol. 4.

CENSUS OF SURVIVALS, DECEMBER 1980  
SOUTH AUSTRALIAN EUCALYPTUS SPECIES AND SUBSPECIES IN  
PLANTATIONS AT MURRAY BRIDGE AND BUNDALEER PLANTED IN 1975-1978

	<u>Planted</u>	<u>Survived</u>		<u>Planted</u>	<u>Survived</u>
<i>Eucalyptus</i>			<i>diversifolia</i>		
<i>albens</i>	178	165	<i>dumosa</i>	27	23
<i>anceps</i>	85	45	<i>eremicola</i>	26	19
<i>barteri</i>			<i>ewartiana</i>	17	9
<i>behriana</i>			<i>fasciculosa</i>		
<i>brachycalyx</i>	33	21	<i>flindersii</i>	56	47
<i>burracoppinensis</i>			<i>flocktoniae</i>	4	4
<i>calcareana</i>	146	95	<i>foecunda</i>	6	5
<i>calycogona</i>			<i>gamophylla</i>	20	5
<i>camaldulensis</i>			<i>gillii</i>		
<i>camaldulensis</i>	10	5	<i>gongylocarpa</i>	8	0
<i>obtusa</i>	151	141	<i>gonicalyx</i>		
<i>cladocalyx</i>			<i>gracilis</i>	2	2
<i>cneorifolia</i>			<i>incrassata</i>		
<i>concinna</i>	38	32	<i>angulosa</i>	34	22
<i>conglobata</i>	43	32	<i>incrassata</i>	26	15
<i>cosmophylla</i>			<i>incurva</i>	40	12
<i>cyanophylla</i>			<i>intertexta</i>	26	23
<i>cyanophylla</i>	29	16	<i>kingsmillii</i>	12	8
aff. S.E.	16	16	<i>lansdowneana</i>		
<i>dichromophloia</i>			<i>albopurpurea</i>		
<i>oligocarpa</i>	26	9	<i>lansdowneana</i>	4	4

continued .....

	<u>Planted</u>	<u>Survived</u>		<u>Planted</u>	<u>Survived</u>
<i>largiflorens</i>	13	7	<i>porosa</i>	2	2
<i>leucoxydon</i>			<i>pyriformis</i>		
<i>leucoxydon</i>	77	60	<i>youngiana</i>	10	5
<i>megalocarpa</i>	188	156	<i>remota</i>		
<i>petiolaris</i>	89	59	<i>rubida</i>		
<i>pruinosa</i>	146	137	<i>rugosa</i>	46	34
<i>macrorrhyncha</i>			<i>socialis</i>	80	47
<i>mannensis</i>			<i>sparsa</i>	18	15
<i>microcarpa</i>			<i>striaticalyx</i>	91	47
<i>microtheca</i>	139	111	<i>terminalis</i>	21	7
<i>nitida</i>			<i>trivalvis</i>	3	3
<i>obliqua</i>			<i>viminalis</i>		
<i>megacarpa</i>			<i>cygnetensis</i>		
<i>obliqua</i>			<i>viminalis</i>		
<i>odorata</i>	19	13	<i>viridis</i>	18	18
<i>oleosa</i>	8	7	<i>websterana</i>	30	12
<i>ovata</i>			<i>yalatensis</i>	60	49
<i>oxymitra</i>	10	4	<i>yumbarrana</i>		
<i>pauciflora</i>			<i>yumbarrana</i>	100	82
<i>peeneri</i>	10	8	<i>striata</i>	503	335
<i>pimpiniana</i>			TOTAL:	<u>2744</u>	<u>1993</u>

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REPORT ON THE FLORA OF AUSTRALIA.BUREAU OF FLORA AND FAUNA.

The Bureau of Flora and Fauna is now located at Fyshwick, A.C.T., in office and laboratory accommodation. Occupancy is temporary but may become long-term from 1982. The laboratory space is very good for flora writing and editing.

The present staff of the Bureau is as follows:

Acting Director : Alison McCusker

Flora Section

Acting Assistant Director : Alex George  
 Flora Writer : Helen Hewson  
 Bibliographer : Arthur Chapman.

Fauna Section

Assistant Director : Barry Richardson  
 Editor : Dan Walton.

Biotaxonomic Information Section

Assistant Director : Roger Hnatiuk  
 Acting Data-base Manager : John Busby  
 Word Processor Operators : Wendy Riley,  
 Geetha Sriprakash

Administrative Staff

Acting Senior Executive Officer : Jim Norman  
 Principal Research Officer : Richard Longmore  
 Clerk : Allen Forster  
 Clerical Assistant : Lindsay Dunbar  
 Steno-secretary : Moraig Godfrey

The Flora Section has three vacant positions which cannot be filled under present staff ceilings - flora writer, assistant to the editor, and technical officer. While this situation persists, progress with the Flora of Australia is less than anticipated. Volume 1 was published as planned, however, at the XIII International Botanical Congress in Sydney. The date of publication was 22 August 1981. Volume 29 was delivered to the publisher on 30 November and will appear early in 1982. Three-quarters of the manuscript for Volume 8 is completed and the remainder should be ready for editing by the end of February.

The programme for publishing the Flora is as follows (principal groups only are listed; for a full list of contents, see endpapers of Volume 1):

1981	1	Introduction (published 22 Aug. 1981)
1982	29	Solanaceae
	8	Droseraceae, Violales, Capparales
	22	Rhizophoraceae, Santalales, Celastrales
1983	4	Aizoaceae, Chenopodiaceae
	25	Sapindaceae, Anacardiaceae
	46	Iridaceae, Xanthorrhoeaceae, Dioscoreaceae
1984	45	Typhales, Bromeliales, Zingiberales, Liliales p.p
	3	Moraceae, Fagaceae, Casuarinaceae
	18	Haloragaceae, Thymelaeaceae, Combretaceae
1985	19	Myrtaceae 1/3 ( <u>Eucalyptus</u> )
	33	Myoporaceae, Acanthaceae, Lentibulariaceae
	35	Goodeniaceae
1986	5	Amaranthaceae, Portulacaceae, Caryophyllaceae
	44	Poaceae 1/2
	30	Convolvulaceae, Menyanthaceae, Boraginaceae, Verbenaceae
1987	12	Caesalpiniaceae, Mimosaceae (other than <u>Acacia</u> )
	11	<u>Acacia</u>
	48	Pteridophyta, Gymnospermae
1988	21	Myrtaceae 2/3
	16	Proteaceae 1/2
	17	Proteaceae 2/2



1989	47	Orchidaceae
	9	Epacridaceae, Ericaceae
	13	Fabaceae 1/3
1990	20	Myrtaceae 3/3
	26	Rutaceae, Zygophyllaceae
	43	Poaceae 2/2

1991 onwards in possible order of publication:

32	Plantaginaceae, Scrophulariaceae
39	Najadales, Arecales, Pandanales
41	Cyperaceae 1/2
14	Fabaceae 2/3
7	Malvales
23	Euphorbiaceae
37	Asteraceae 1/2
6	Dilleniaceae, Theales
34	Campanulaceae, Stylidiaceae
10	Ebenales, Primulales, Rosales
27	Geraniales, Apiales
15	Fabaceae 3/3
2	Magnoliales, Laurales, Nymphaeales, Ranunculales
40	Xyridaceae, Eriocaulaceae, Restionaceae
28	Gentianales
42	Cyperaceae 2/2
36	Rubiaceae, Dipsacales
38	Asteraceae 2/2
24	Rhamnales, Linales, Polygalales
31	Lamiaceae

The Lower Groups are still to be allocated to Volumes but will be brought into the publication programme as soon as possible.

Planning for later volumes of the Flora is proceeding as quickly as possible, although priority has been given to the production of Volumes 1 and 29. All details of the format have now been settled, and samples are available to supplement the Guide to Authors prepared earlier.

Arrangements have been made for the preparation of most of the families in the early volumes, as well as some groups in later volumes. These are, as follows, arranged under Volumes in proposed order of publication, together with the deadline for completion of manuscript. The contributor's institution or that being used as a base is given. BFF is Bureau of Flora and Fauna. 'C' denotes manuscript completed.

Families not listed for the Volume (see front endpapers of Fl. Australia 1) have not yet been allocated to authors. Some will be prepared at the BFF.

Vol. 1	published		
Vol. 29	Solanaceae	R.W. Purdie (CANB), D.E. Symon (ADW), and L. Haegi (NSW).	C
Vol. 8	Lecythidaceae	R.J. Henderson (BRI)	C
	Nepenthaceae	T. Stanley (BRI)	C
	Droseraceae	N.G. Marchant (PERTH) and A.S. George (BFF)	

Flacourtiaceae	L. Jessup, L. Pedley (BRI)	C
Bixaceae	BFF 31 Jan. 1982	
Cistaceae	BFF 31 Jan. 1982	
Violaceae	L. Adams (CANB) and A.S. George (BFF) 28 Feb. 1982	
Tamaricaceae	BFF 31 Jan. 1982	
Frankeniaceae	B. Barnsley (US)	C
Passifloraceae	D. Satterthwait (BRI) 30 Nov. 1981	
Cucurbitaceae	I. Telford (CBG) 30 Nov. 1981	
Datisceae	T. Stanley (BRI)	C
Salicaceae	A. Rodd (NSW) 31 Dec. 1981	
Capparaceae	H. Hewson (BFF) 31 Dec. 1982	
Brassicaceae	H. Hewson (BFF)	C
Moringaceae	T. Stanley (BRI)	C
Resedaceae	D.E. Symon (ADW)	C
Gyrostemonaceae	A.S. George (BFF) 31 Dec. 1981	
Bataceae	J. Ross (MEL).	C
Vol. 22 Rhizophoraceae	A. McCusker (BFF) 31 May 1982	
Olacaceae	A.S. George (BFF) 31 May 1982	
Opiliaceae	P. Hiepko (B) 31 May 1982	
Loranthaceae	B.A. Barlow (CANB) 30 Jun. 1982	
Viscaceae	B.A. Barlow (CANB) 30 Jun. 1982	
Rafflesiaceae	B. Dell (Murdoch Uni.) 31 Jan. 1982	
Celastraceae	L. Jessup (BRI) 1 Apr. 1982	
Hippocrateaceae	L. Jessup (BRI) 31 May 1982	
Stackhousiaceae	W. Barker (AD) 30 Apr. 1982	
Aquifoliaceae	L. Pedley (BRI) 31 May 1982	
Icacinaceae	G. Guymer (BRI) 31 May 1982	
Corynocarpaceae	G. Guymer (BRI) 31 May 1982	

- Vol. 4 Nyctaginaceae R.D. Meikle (K) 30 Jun. 1982  
 Aizoaceae J. Venning (AD) 31 Mar. 1982  
 Chenopodiaceae P.G. Wilson (PERTH) 30 Sept. 1982
- Vol. 25 Sapindaceae J. West (CANB), S. Reynolds (BRI) 31  
 Dec. 1982
- Vol. 46 Iridaceae J. Jessup, supervisor 30 Jun. 1983
- Vol. 45 Sparganiaceae H.I. Aston (MEL) 31 Dec. 1983  
 Pontederiaceae H.I. Aston (MEL) 31 Dec. 1983  
 Haemodoraceae (Anigozanthos, Conostylis,  
Macropidia) S.D. Hopper (W.A.  
 Wildlife Research Centre) 1983  
 Liliaceae (Borya) D.M. Churchill (MEL) 31 Dec. 1983
- Vol. 19 Myrtaceae (1) - Eucalyptus G.M. Chippendale (FRI) 31  
 Dec. 1984
- Vol. 33 Myoporaceae R.J. Chinnock (AD) 1984  
 Acanthaceae R.M. Barker (AD) 28 Feb. 1983  
 Lentibulariaceae P. Taylor (K) 31 Dec. 1982
- Vol. 5 Amaranthaceae (except Ptilotus) A. Kanis (CANB) 30 Jun.  
 1985  
 Portulacaceae J. West (CANB) 30 Jun. 1985  
 Caryophyllaceae J. West (CANB) 30 Jun. 1985
- Vol. 44 Poaceae (Panicoideae, Chloridoideae) M. Lazarides  
 (CANB), P. Michael  
 (Univ. of Sydney), B. Simon (BRI),  
 D. Symon (ADW), J. Tothill (CSIRO,  
 Brisbane). 31 Dec. 1985

- Vol. 11 Acacia A.B. Court (CBG), B.R. Maslin  
(PERTH), L. Pedley (BRI), J.H.  
Ross (MEL), M.D. Tindale (NSW) 30  
Jun. 1986
- Vol. 12 Mimosaceae (other than Acacia) A. Kanis (CANB) 30 Jun.  
1986
- Caesalpiiniaceae J.H. Ross (MEL) - all genera except  
Cassia 30 Jun. 1986

### Workshops

As part of the planning process, the Bureau holds workshops for larger groups where a number of workers are involved and co-ordination is necessary. Three workshops were held in 1981, on Acacia, Poaceae and Myrtaceae. At the first two, detailed classification and a writing program were resolved. The Myrtaceae workshop was a preliminary discussion at which the classification to be followed within the family was determined as well as the order of publication of volumes and priorities for research. Planning of Flora treatments for the family is still to be organised, except for Eucalyptus which is already under way.

Three further workshops will be held in the first half of 1982, on Orchidaceae, Proteaceae and Asteraceae. Planning for the lower groups will also begin in 1982.

### Illustrations

The Flora will be well illustrated with line drawings, prepared either by the contributors or by artists. Artists who wish to be considered for illustrating the Flora are asked to contact the Executive Editor.

### Colour slides

A selection of species will be illustrated by colour photographs in each volume of the Flora. Offers of 35 mm slides will be welcomed by the Executive Editor. The photographer in each case will be acknowledged in the caption.

### Typesetting

Manuscripts are entered into a Digital Equipment WT/78 word processor, printed out and edited to the final form. Typesetting is then carried out using COMTEXT, the typesetting package on CSIRONET, and the COMP 80. COMTEXT commands, condensed where possible into synonyms, are entered into the text, the file transmitted to CSIRONET via a 1200 bit per second Telecom datel line, and the text typeset on bromides. Final bromides, complete with running headings and pagination, are submitted to the Australian Government Publishing Service as camera-ready copy.

### Sales of Volume 1

Sales of Volume 1 stood at almost 3,000 by the end of November.

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A.S. George  
Acting Assistant Director,  
Flora.

DAUCUS IN AUSTRALIA

(Request for material).

Apart from the carrot (*Daucus carota* L.), which has escaped from cultivation or was introduced with pasture seeds and has become naturalized in some parts of South Australia, Tasmania, Victoria and New South Wales, there is reported a native species of *Daucus* from Australia. In the current literature it is named *D. glochidiatus* (Labill.) Fisch., Mey. & Avé-Lall., Index Sem. Hort. Petrop. 9, Suppl. : 11 (post 25 Jan. 1844) (based on *Scandix glochidiata* Labill., Nov. Holl. Pl. 1: 75, t. 102 (Sep. 1805), described from Tasmania: "Habitat in capite Van-Dieman"). *D. brachiatus* Sieb. ex DC., Prodr. 4: 214 (Sep. 1830) describes from Australia: "Novâ-Hollandiâ. - Sieb! exs. nov. holl. n. 115", is usually regarded as a taxonomic synonym of *D. glochidiatus*.

There is such a great diversity in the development of the ridges, indumentum and spines of the mericarps which is constant in the individual populations that I am inclined to regard these features as of greater taxonomic significance than did Thellung when he described several forms he had observed in material introduced (presumably from Australia with wool) in to Europe and gave them infraspecific ranks. It is surprising that there appears no reference to the extraordinary variability in *Daucus glochidiatus* in the Australian floristic literature, and that there is no mention of the taxa distinguished by Thellung although their fruits were well illustrated in his treatment of *Daucus* in Hegi's Illustrated Flora von Mitteleuropa. These taxa are:

*Daucus glochidiatus*

- var. (vel ssp.) *leptacanthus* Thell., Feddes Repert. 23: 159, 157 fig. 2a (25 Oct. 1926) (= *D. brachiatus* Sieb. ex DC.); Thellung in Hegi, III. Fl. Mitteleuropa 5(2): 1504 fig. 2574a (Oct. 1926);
- subvar. *platyacanthus* Thell., Feddes Repert. 23: 158, 157 fig. 2b (25 Oct. 1926); Thellung in Hegi, l.c. fig. 2574b (Oct. 1926);
- var. (vel ssp.) *pachyacanthus* Thell., Feddes Repert. 23: 159, 157 fig. 2c (25 Oct. 1926); Thellung in Hegi, l.c. fig. 2574c (Oct. 1926);
- subvar. *thellungii* Wolff ex Thell., Feddes Repert. 23: 159, 157 fig. 2d (25 Oct. 1926); Thellung in Hegi, l.c. fig. 2574d (Oct. 1926).

I had noticed this variation in *Daucus glochidiatus* many years ago in my own collections, but recently Mr D.I. Morris sent me a specimen (grown at Launceston Laboratories of the Tasmanian Department of Agriculture which was found in a sample of feed wheat imported from mainland Australia : CANB 205833) with fruit characteristics quite outside the range of variation described by Thellung. This specimen caused me to write this note.

In order to assess the diversity and constancy of fruit characters and their correlation with other features, and to establish the distribution of the distinguishable taxa, many more collections of *Daucus* are desired. Usually such common plants are neglected when collecting in the belief that they are well known and widespread. I am now attempting to accumulate a larger collection of *Daucus glochidiatus* s. lat. in Canberra (Herbarium Australiense) for ultimate taxonomic study (if not by myself, then by someone else), and should be grateful for duplicates of any sample in an attempt of a preliminary survey. Ripe fruits (not heat-dried!) would also be welcome for growing specimens under comparable conditions and counting of chromosomes.

Hansjoerg Eichler

Herbarium Australiense,  
Canberra.

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NEW PUBLICATION

BEAUGLEHOLE, A.C. 1981. "The Distribution and Conservation of Vascular Plants in East Gippsland, Victoria". Available from Portland Field Naturalists Club, P.O. Box 470, Portland, Victoria 3305 for \$6 a copy including postage.

This is a publication of 124 pages which includes an up-to-date checklist of the vascular flora of about 1730 species, showing the distribution of each species within the area and including many new records. The conservation status of each species is indicated and detailed distribution data are given for 545 of the rarer species. The 180 native species absent from biological reserves are listed. The location of areas is given in which new reserves would significantly increase the number of plant species which are adequately conserved. A detailed, coloured map showing minor grid squares and the location of various types of Public Land is included.

Similar publications on the Mallee, Corangamite-Otway and Alpine areas are available from the same address for the same price.



NEW PUBLICATIONS

COSTERMANS, L.R., 1981. Native Trees and Shrubs of South-eastern Australia. Rigby. Adelaide.

A review of this excellent book, which covers Victoria, and parts of New South Wales and South Australia, is being prepared for a future issue of the Newsletter.

JACOBS, S.W.L. & J. PICKARD, 1981. Plants of New South Wales - A census of the Cycads, Conifers and Angiosperms. Government Printer, [Sydney, New South Wales].

This well presented check list, based on specimens in N.S.W., shows the distribution of all native and introduced plants within the five accepted floristic regions of the State and Lord Howe Island. More than 6000 seed plants are enumerated; synonyms, unaccounted previous records, hybrids and many undescribed taxa are listed.

GEESINK, R., LEEUWENBERG, A.J.M., RIDSDALE, C.E. & J.F. VELDKAMP, 1981. Thonner's analytical key to the families of flowering plants. Leiden Botanical Series, Vol. 5. PUDOC (Wageningen) and Leiden Univ. Press (The Hague).

This excellent key to families of flowering plants is a translation and greatly revised edition of F. Thonner, 1917, Anleitung zum Bestimmen der Familien der Blütenpflanzen, 2nd ed., Friedländer, Berlin.

A review of this book is being prepared for a future issue of the Newsletter.

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USE OF TYPE-PHOTOGRAPHS TO INCREASE AVAILABILITY OF TYPES  
OF AUTHENTIC SPECIMENS. \*

W.E. Grime and V.L. Beatty ,

Department of Botany, Field Museum of Natural History, Chicago,  
 Illinois 60605, U.S.A.

The Field Museum Type Photograph Collection of over 57,000 negatives of nomenclatural type and authentic specimens was begun in 1929. Since some European herbaria were destroyed during World War II, these negatives provide the only record of certain types. Since 1979 we have been actively adding negatives to the collection using an MP-4 Polaroid camera which produces a photographic negative as well as a positive print. For many uses, photographs are as satisfactory as fragile specimens. A number of institutions prefer type photographs to specimens for exchange purposes.

From the beginning, Field Museum Type Photograph Negatives have been numbered consecutively and recorded in accession books. Over the years retrieval had presented problems when requests for copies of specific types were received.

In 1980 a computer program was written to facilitate retrieval and storage using a UNIX time sharing system. This new program allows us to fill requests for specific specimens or for any combination of the following items : NEGATIVE NUMBER, FAMILY, GENUS, SPECIES, AUTHOR, VARIANT, AUTHOR OF VARIANT, COUNTRY, COLLECTOR, COLLECTION NUMBER, COLLECTION DATE, TYPE, and LOCATION OF TYPE. When photographs are sent out, a copy of the computer printout is sent with the photographs. This is especially useful when the label data on the photo are difficult to read.

We find that using type photographs is one way to decrease wear and tear on the type collections while increasing their availability. We feel that herbaria should communicate with each other on more effective methods for the use, maintenance, and protection of specimens.

If you would like to help organize a cooperative group of collection managers or desire more information on our type photograph or computer program, please write to us at the following address:

Field Museum of Natural History, Roosevelt Road at Lake Shore Drive,  
 Chicago, Illinois, 60605, U.S.A.

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\* This is an abridged version of a handout distributed at the Poster Sessions of the XIII International Botanical Congress, Sydney, 1981.

# MOSSES AND LIVERWORTS

## A FIVE-DAY BRYOPHYTE IDENTIFICATION COURSE

24 - 28 MAY 1982

### Description:

The course will include several local field trips to the Dandenong Ranges, followed by laboratory sessions on keying out both mosses and liverworts. Participants will be encouraged to bring their own specimens.

If requested, lectures will be given on bryophyte morphology, taxonomy, photography, ecology, individual taxonomic groups, etc. (see overleaf).

### Participants:

The course will be directed particularly towards those amateur naturalists, lecturing staff and students who already have some knowledge of and interest in bryophytes, but have had difficulties in identification. Those with no previous knowledge will be welcome if space permits, but the total will have to be restricted to 20 people.

### Venue:

MONASH UNIVERSITY (details will be sent to participants by about 10 May).

### Fee:

\$70.00. The fee includes travel to the Dandenongs, morning and afternoon teas. Accommodation and meals are not included. Participants will be made temporary members of the Monash Staff Club, where excellent meals may be purchased at very reasonable prices.

### Further Information:

#### About Registration:

The Centre for Continuing Education,  
Monash University, Clayton, 3168  
Telephone: 541 0811, ext. 3717/8,  
After hours: 541 3718

#### About the Course:

Dr. G.A.M. Scott, Course Director,  
Department of Botany, Monash University,  
Telephone: 541 0811, ext. 3811.

### Accommodation:

Available at all times of the year at Normanby House, which is a conference centre adjacent to the main Monash University Campus. The rooms which can be booked, are single bed-studies with washbasins. The rate for room and breakfast is \$16.50 per night. A booking may be requested by completing the details on the registration form for the course.

See overleaf →

## REGISTRATION FORM

## MOSESSES AND LIVERWORTS

24-28 MAY, 1982

.....  
 Surname Preferred First Name Status (Lecturer, Student, Naturalist, etc.)

.....  
 Organisation

.....  
 Address for mail

Postcode

Telephone

REGISTRATION FEE: \$70.00

ACCOMMODATION, at Normanby House: ..... nights @ \$16.50 \$ .....

Please make cheque payable to MONASH UNIVERSITY, and mail with this form to:

'REGISTRATIONS', C.C.E., MONASH UNIVERSITY, CLAYTON, 3168.

REQUEST FOR ACCOMMODATION AT NORMANBY HOUSE:

Arrival date ..... Departure date ..... Number of nights .....

Office Use Only

3.124.356.160 \$ .....

3.124.911.175.211 \$ .....

\*\*\*\*\*  
 COURSE CONTENT

I would like the following subjects to be covered in the program for the course:

(please tick)

BRYOPHYTE MORPHOLOGY

ECOLOGY

TAXONOMY

PHOTOGRAPHY

INDIVIDUAL TAXONOMIC GROUPS

OTHER:.....  
 (please comment)

.....  
 I have/have not had previous experience of identifying bryophytes.



Mr L.G. Adams  
Herbarium Australiense  
C.S.I.R.O.  
P.O. Box 1600  
CANBERRA CITY  
A.C.T. 2601