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## A FIELD TRIP TO STUDY AND PHOTOGRAPH CENTRAL AUSTRALIAN BLOODWOODS

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I am currently involved, together with Ian Brooker, in producing a three volume field guide to the genus Eucalyptus. At present volume 2, Field Guide to Eucalypts - South-western Australia, is in preparation and is to be published in 1987. As a result of the publication Eucalyptus 1 - New or little-known species of the Corymbosae by D J Carr and S G M Carr, I have recently completed a field trip to study and photograph their newly described species from Central Australia - some of them occur in north-western South Australia and therefore need to be covered for volume 2 of the field guide.

To try to have some useful comparisons at a glance to use in the field I summarized some of the data from the text (see Table 1). I have compared E. symonii, E. australis, E. connerensis, E. centralis, E. opaca and E. orientalis in one group, E. eremaea, E. fordeana and E. nelsonii in another and E. lenziana and E. chippendalei separately. The overlap in measurements of the various features in each of the two groups proved this exercise to be fruitless. Supporting evidence from phytoglyph characters may have helped.

As a generalization I found the Carrs' treatment did not provide diagnostic characters which worked in the field. Either there was too much overlap (as noted above) or the characters required laboratory conditions to detect. This, coupled with errors, inconsistencies and lack of uniform presentation, forced me to attempt to confirm their observations by ordinary botanical criteria (based on prior experience) in the field. I was forced to conclude that there are too many names for the taxa existing in Central Australia. Like Les Pedley (ASBS Newsletter 44 - September 1985), I have doubts about the usefulness of phytoglyphs in identifying species. Statements such as "It (E. connerensis) is also distinct from E. symonii, E. eremaeae and E. australis in quantitative and qualitative phytoglyphic characters", without some visual proof of these characters, are of little use to the herbarium worker and even less to the field worker.

The E. eremaea "group"

I visited the Heavitree Gap region near Alice Springs which is the type area (Jacobs 168, Alice Springs) for E. polycarpa var. oligocarpa. For many years people interested in Eucalyptus taxonomy have recognized that this taxon had little in common with E. polycarpa and was worthy of specific status. Carr and Carr have now recognized this variety as E. eremaea but somewhat unfortunately have chosen a specimen from west of Ayers Rock as the type. In addition they have described two other species (E. nelsonii and E. fordeana) from the Heavitree Gap locality. By all ordinary botanical criteria I found only one species growing on the slopes above Heavitree Gap. The paragraph on page 59 which purports to describe the difference between E. nelsonii and E. fordeana did not help. Moreover, the glandular vs non-glandular stamen filaments character did not help

distinguish E. eremaea from E. nelsonii and E. fordeana. The character seems not to be as "species-constant" as claimed on page 16. I predict that no collector will be able to separate these three species in the field.

Eucalyptus eremaea, E. nelsonii and E. fordeana all occur on the slopes above the surrounding plain. There is another bloodwood species, recognizably different, which occurs on the plain and will be referred to herein as the "plains bloodwood".

My conclusion from visiting Heavitree Gap (and other regions) is that E. polycarpa var. oligocarpa is ~~not~~ the same as E. eremaea, and that E. nelsonii and E. fordeana are synonymous with it.

Eucalyptus centralis, E. orientalis and E. opaca

Trephina Gorge and the surrounding region was the next area of interest. Trephina Gorge is the type area for E. centralis. The type area for E. orientalis is nearby, and the Carrs stated (page 70) that these two species are also "accompanied" by E. opaca in the vicinity of Trephina Gorge. Once again, by all ordinary botanical criteria, there is only one bloodwood species in this region and it appears no different from the "plains bloodwood" mentioned previously. At this stage I am not at all certain that the "style in pit" character is species specific (see page 33 - E. terminalis cf. E. pyrophora). The Carrs stated that E. opaca and E. orientalis do not have the style in pit feature while E. centralis does. I note that, of the Central Australian species, E. centralis is the only one claimed to have the style in pit, yet the Carrs do not emphasize it in any way - it is not included in the Latin diagnosis.

Eucalyptus chippendalei and E. opaca

South from Alice Springs along the Stuart Highway to the NT/SA border there are numerous patches of bloodwoods which all appear to be the "plains bloodwood". Heading west towards Ayers Rock and The Olgas there appear to be only two species - the "plains bloodwood" plus a sandhill species, E. chippendalei, which is quite distinctive and easily recognizable, though the claim that the fruits are often strongly ribbed (page 33) is a gross exaggeration. I found occasional specimens with only slightly ribbed fruits. From the Ayers Rock/Olgas region the Carrs have described E. opaca. Despite an extensive search I could only recognize the "plains bloodwood" and occasional E. chippendalei.

Eucalyptus connerensis and E. australis

Mount Conner, to the east of Ayers Rock near Curtin Springs, is the type of geological feature that excites botanical collectors - it is a superb mesa or "flat-top" rising abruptly from the surrounding plain. The mountain is the type locality for E. connerensis and is also cited (page 43) as a locality for E. australis. I was disappointed to find only one bloodwood species on the mountain and it appears to be inseparable from the "plains bloodwood". Eucalyptus oxymitra plus several species of genera other than Eucalyptus are common both to the mountain top and the surrounding plain.

*Eucalyptus symonii*

Mulga Park Station south of Curtin Springs is cited as the type area for *E. symonii*. I was unable to find any bloodwood in this region that could be separated in any way from the "plains bloodwood".

*Eucalyptus lenziana*

On two previous field trips in 1986 I observed and collected the species which the Carrs have named *E. lenziana*. Like *E. chippendalei*, this taxon had long been recognized - in fact, for some time prior to the Carrs publication it had a manuscript name given by other taxonomists.

In summary, of the 11 new species described for Central Australia, I believe only 4 are valid. I believe *E. eremaea*, *E. chippendalei* and *E. lenziana* are distinctive, recognizable species. *Eucalyptus nelsonii* and *E. fordeana* appear to me to be synonymous with *E. eremaea*, while the other 6 species - *E. symonii*, *E. australis*, *E. connerensis*, *E. opaca*, *E. centralis* and *E. orientalis* I am unable to separate from the "plains bloodwood" - I believe the 6 are synonymous.

TABLE 1. Summary of selected data for Central Australian Eucalypts (\* mean obviously incorrect)

Species	Style in pit	Ad.leaves(cm)	Petioles(cm)	Buds(cm)	Fruits(cm)	Fruit Orifice(cm)	Habitat
<i>symonii</i>	no	9-15(12)x 1-2.6(1.7)	1.2-2.2(1.4)	-	1.6-2.3(1.9)x 0.8-1.9(1.5)	0.8-1.1 (1.0)	deep sands & gravels of slopes & occasional rocky ridges
<i>australis</i>	no	9-13(10.6)x 1.1-2(1.5)	1.1-2.3(1.4)	-	1.9-2.4(2.1)x 1.6-2.1(1.9)	1-1.3	upper slopes of hills
<i>connerensis</i>	no	7-12(9.6)x 0.8-2(1.1)	c.1.3	-	-	wide	-
<i>centralis</i>	yes	14-16.8(12.8*) x 1.2-2.6(1.9)	very long	0.9 x 0.6	1.5-2.27(1.8)x 1.2-1.7(1.4)	0.6-1.1 (0.9)	loamy or sandy flats, alluvial plains, hummock grassland
<i>opaca</i>	no	9-18.6(13.5)x 1.4-2.6(1.8)	1.3-2.1(1.6)	1cm long	1.8-2.4(1.95)x 1.2-1.9(1.5)	0.9-1.16 (1.0)	sandy plains, loamy or sandy soils along creeks, flood plains, red sands
<i>orientalis</i>	no	10.4-19(15.5)x 1.7-2.5(2.1)	1.1-2(1.5)	0.9-1.5(1.13)x 0.5-0.9(0.73)	1.9-2.7(2.2)x 1.3-1.65(1.5)	0.9-1.1	deep soil, seasonally abundant water
<i>eremaea</i>	no	5.5-11(-)x 0.6-1.2+(-)	0.6-1.5	-	1.3-1.75(1.5)x 1-1.75(1.4)	0.7-0.95 (0.8)	scree slopes, rocky ridges (mallee), deep sands or watercourses(tree)
<i>fordeana</i>	no	4-10(8)x 0.5-1.6(0.9)	1.0	0.6 long	1-1.6(1.3)x 1-1.2(1.15)	0.5-0.84 (0.7)	upper slopes of hills or mountains
<i>nelsonii</i>	no	5-12(9.5)x 0.9-2.5(2.1)	0.8-2(1.4)	-	1.2-1.6(1.5)x 1-1.5(1.2)	0.7-0.85	mountainous regions
<i>lenziana</i>	no	7.4-14.7(10.7) x 0.8-1.8(1.2)	0.7-1.8(1.3)	-	1.4-2.9(1.9)x 1.5-2.5(1.8)	0.9-1.8	sandplains, upper slopes of mountain(cited spec.)
<i>chippendalei</i>	no	5.5-10.2(8.8)x 0.9-1.4(1.1)	1.2-1.4	-	1.9-2.6(2.2)x 1.4-2.47(1.9)	0.9-1.5 (1.07)	sandhills

It has long been recognized that the bloodwoodgroup posed a number of problems and I looked forward to some clarification of that situation but I am unable to reconcile what I see in the field with much of the Carrs' book. Submission to the usual system of refereeing would surely have resulted in a more useful and accurate reference book.

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#### PREPARATION OF A FIRST LISTING OF THE PLANTS COLLECTED IN AUSTRALIA BY ROBERT BROWN (1773-1858) DURING THE FLINDERS VOYAGE OF 1801-1805

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#### INTRODUCTION

Robert Brown's Prodromus (1810) was incomplete, and as Lindley (1844) pointed out, Brown never produced a complete catalogue of his Australian plants. It fell to Brown's nominee Joseph Bennett (1801-1876) to prepare a register of Brown's plants extant in the 1870s and this has survived unpublished in the library of the Botany Department, British Museum (Natural History), London. This little known manuscript-document forms the foundation of the work described in this note.

#### PUBLICATION OF BROWN'S DIARY

The geology of the Flinders voyage was studied by Vallance and Moore (1982). In this work and in the supplement by Cooper (1955) and in Maberley's (1985) biography of Brown, parts of the diary kept on the Investigator voyage are referred to.

As a result of the transcription and forthcoming publication of Brown's diary by Vallance *et al.* it became clear that a listing of the original labels of the Bennett/Brown plants was necessary. In the diary text Brown used plant names valid in 1801-5; his own MS names; and Banks/Solander MS names. In order to understand these two later categories the diary editors were compelled to check the Bennett/Brown plants (some 3000 of them) in order to find an up to date name to annotate the diary entries. This task is now complete and a card index of original label entries with a reasonably up-to-date plant name is in existence. The surviving plants include lichens, bryophytes, pteridophytes, various gymnosperms and the largest group of all, the angiosperms.

Hopefully this work will be published in the Proceedings of the Linnean Society of New South Wales in due course. Some of the card entries (some 20%) are now on a disk but the delay in submission is due to the vastness of the word processing task before us and the fact that neither of us can work full time at it. The card index is taxonomically arranged but it is hoped that the list will be indexed for collecting localities.

#### THE PRODRONUS CONNECTION

Where the plants were cited in the Prodromus (Brown 1810) these have been recorded in our index, as most of the original labels were later annotated by Brown after the Prodromus was published. Specimens designated as types are recorded, as are also those that were painted by Ferdinand Bauer (1760-1826) now in the Botany Library, British Museum (Natural History).

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- Vallance, T.G., Groves, E.W. and Moore, D.T. (Editors). In preparation. Natures Investigator: The diary of Robert Brown in Australia 1801-5. To be published by the British Museum (Natural History) and Wakefield Press: Adelaide.

## PAPERS PRESENTED AT THE ESA/ASBS 1986 CONFERENCE

## THE ECOLOGY OF AUSTRALIA'S WET TROPICS

A number of papers presented at this conference, including all plenary papers, will be published as a special issue of Proc. Ecol. Soc. Aust.. In this and subsequent issues of ASBS Newsletter are published some additional contributions to the Conference, either in full or as abstracts. Some of these contributions have already been published, or will not be published elsewhere. They are included here to inform members of the work presented to the Conference which falls within the ambit of the ASBS component of the program.

Patterns of differentiation in tropical species of Melaleuca L.  
(Myrtaceae)

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[This paper is in press in Proc. Ecol. Soc. Aust.; the abstract is reproduced here for the information of ASBS members.]

Melaleuca is a Gondwanan genus which has apparently originated in seasonally drowned habitats at the margins of tropical rainforests. The M. leucadendra species complex appears to represent the ancestral state among extant taxa. The evolution of scleromorphy was an early development associated with the radiation of the genus into edaphically nutrient-deficient, temperate and semi-arid habitats. Late Tertiary and Quaternary climatic cycles have resulted in extensive ecogeographic differentiation both in northern and southern Australia. A number of examples of east-west differentiation in tropical Australia/Papuasias is presented, illustrating the limited significance of present-day coastlines in explaining geographic distribution patterns.

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Evolution in the Anacardiaceae and the affinities  
of the Australian genera

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Anacardiaceae is a worldwide family of about 70 genera and 650 species which are concentrated mostly in the tropics. Well-known fruits of the family include the mango, the pistachio and the cashew. There are 7 genera with 10 species native to Australia; two of these genera are endemic,

whilst the remaining species belong to genera that have Asian and/or near-Pacific distributions.

The currently accepted subfamily taxonomy of Engler (1883) recognizes 5 tribes largely on the basis of carpel number, ovule attachment and degree of leaf dissection. The Australian species are assigned to three of these tribes; in addition, the endemic genus Blepharocarya, which has sometimes been placed in its own family (Airy Shaw 1965), actually seems to fall between two of the tribes, having apparently intermediate characters. This was one of the observations that prompted my current study which has suggested that at least three of these tribes are artificial. Recent work on pericarp structure and floral anatomy, coupled with a re-analysis of previous data on the attachment of the ovule to the placenta, has lead me to propose a division of the family into two subfamilies, Anacardioideae and Spondiadioideae, both of which are represented in Australia. These two taxa differ principally in the structure of their pericarp.

In a broad survey of fruits across the family it has been possible, in all cases, to recognize a medial region in the pericarp which is characterized by the presence of resin canals that are closely associated with vascular tissue; this region has been interpreted as the mesocarp. On either side of this medial region lie the endocarp and the exocarp; neither has resin canals nor vascular tissue. The fruits of the Anacardioideae have a discretely layered endocarp that is usually composed of three layers of sclereids. The fruits of the Spondiadioideae have a thick endocarp that is composed of irregularly oriented sclereids.

There are two genera occurring in Australia which belong to the Spondiadioideae: Buchanania and Pleiogynium. Both of these have an endocarp which is typical of the subfamily. The morphology of the gynoecium in Pleiogynium suggests that it is most closely allied to an African affinity-group; like the members of this group, Pleiogynium has clearly defined and separate styles. It differs in having two whorls of carpels compared to a single whorl in the African genera.

The other member of this subfamily, Buchanania, is perhaps the most isolated genus in the family. Although its pericarp anatomy and stylar morphology indicate that it is part of the Spondiadioideae, the presence of a basally attached funicle suggests that it is very different from all the other genera of this subfamily, which have apically attached funicles. The evolution of the funicle in this genus parallels trends in the other subfamily where there is quite a range of intermediates between the apically and basally attached funicles. No such intermediates are known in the Spondiadioideae.

Most of our genera, including Blepharocarya, belong to the larger subfamily, Anacardioideae. There is one southeast Asian species of Rhus that reaches Australia: Rhus taitensis. This species belongs to a section of the genus, Melanocarpeae, which includes only Asian species. It is unlikely that it has any very close affinity with the north American species assigned to Rhus. The apparently worldwide distribution of this genus would seem to be an artefact caused by its poor taxonomy. Interestingly, the African, Asian and American species tend to fall in different sections of the genus; perhaps all of these warrant recognition at the generic level.

The small genera Euroschinus and Rhodosphaera both have a fruit anatomy that is very similar to that of Rhus. Like Rhus these genera also have tricarpellary, pseudomonomerous gynoecia. In Rhodosphaera, however, the three styles are much less fused than in Rhus, more closely resembling those in African genera such as Ozoroa. Certainly, Rhodosphaera would appear to have no close affinities with any Asian genera.

The stylar morphology of Euroschinus is very similar to that of Rhus, but differs in having an apically attached funicle. With no obvious Asian relatives, the closest affinities of Euroschinus remain obscure.

These three genera form part of a large Rhus-related affinity-group that includes genera in Asia, Africa, Europe and the Americas. All members of this affinity-group have pseudomonomerous ovaries derived from three carpels, three apical styles showing varying degrees of fusion, and an endocarp composed of three layers of palisade-like sclereids.

Semecarpus, which includes an Australian species, also has definite affinities with the Rhus affinity-group as indicated by the presence of a pseudomonomerous, tricarpeillary gynoecium. Its pericarp anatomy, however, shows considerable reduction by comparison with the other members of the group; the outer two palisade-like layers of sclereids are very small and frequently un lignified. This difference suggests that this Asian-Pacific genus has only distant affinities with the Rhus group.

The three-layered endocarp of the endemic genus Blepharocarya clearly indicates that it belongs in subfamily Anacardioidae. Its unicarpeillary ovar and lateral style suggest a relationship with an affinity-group that includes Mangifera. Anatomical studies suggest that the lateral style of Mangifera is not, however, homologous with that in Blepharocarya; in Mangifera it is on the ventral side of the ovary whilst in Blepharocarya it is on the dorsal side. It would seem, then, that Blepharocarya has no close affinities with Mangifera; its distant affinities may lie with another group of the Anacardioidae with dorsally-situated lateral styles, such as that including Loxopterygium from South America.

The biogeography of the Australian Anacardiaceae seems to conform to three patterns, the first being those species which are the southernmost members of essentially Asian genera, such as Buchanania and Semecarpus. The occurrence of Rhus taitensis would also appear to be an example of this type of distribution with, in this case, the Asian taxon being the section Melanocarpeae. These three taxa occur throughout Asia as far as India, and out into the Pacific as far as Tonga.

The second type of pattern is made up of species which are members of two genera that have a Pacific distribution similar to those taxa above, but whose occurrence in Asia is much more restricted. Pleiogynium extends as far as the Philippines and Borneo, whilst Euroschinus only reaches New Guinea and New Britain.

The third pattern is made up of those species which are members of endemic Australian genera such as Blepharocarya and Rhodosphaera.

The first of these patterns is typical of Barlow's (1986) intrusive Malesian rainforest element, while the last two patterns represent his autochthonous element.

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The phytography of Solanum (Solanaceae) in New Guinea

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[This is an abstract of a contribution to the Symposium. It is based on a paper published in Blumea 31: 319-328 (1986).

Analysis of the species of Solanum in New Guinea reveals several distinct patterns of relationships. (1) Sect. Solanum (Black Nightshades) is now cosmopolitan, including Australia. Solanum opacum however does not extend to Asia or the Pacific. (2) Sect. Asiomelanesia, badly in need of revision, has its centre of diversity in Asia; two species extend to New Guinea but not to Australia. (3) Sect. Cypellocalyx, with about 17 species, has its centre of diversity in New Guinea; 2-3 species extend to Asia and 1 to Australia. (4) Sect. Archaeosolanum (Kangaroo Apple) is an Australasian section centred in SE Australia; two species (one endemic) occur in New Guinea, but neither has extended to Asia. (5) Sect. Lasiocarpa, a small section of 12 species centred in northern South America, has 2-3 species in the Pacific, New Guinea and Southeast Asia; one of these has been recorded from the tip of Cape York. (6) The red-fruited Ferocissimum group, with 10 species in subtropical eastern Australia, 17 species in New Guinea and 5 in New Caledonia, is probably an old southern group. (7) Sect. Dunaliana, a small section of perhaps 12 species, has 7 in New Guinea and 2 in Australia as well as a few in the Pacific. (8) Sect. Micrantha, a small section of 15 species from tropical America with 2-4 species in Southeast Asia, is a problem group. (9) Sect. Torva is a weedy American section of 50 species with 2 endemic in New Guinea and none native in Australia (?possibly early introductions). Two large groups well-developed in Australia, the numerous yellow-fruited species from our arid areas, and sect. Melongena with its 17 dioecious and monoecious species in NW Australia, are totally absent. The New Guinean links with Asia are not strong; links with the Pacific are tenuous except for New Caledonia; links with Central America are intriguing.

## PUBLICATIONS

## RECENT PUBLICATIONS OF INTEREST

Russell Braddon. Thomas Baines and the North Australian Expedition. Collins & Royal Geographical Society, Sydney. \$65.00 (Baines was the artist on A. Gregory's Expedition 1855-56).

Gordon Cheers. Carnivorous Plants Carnivor & Insectivor Plants, Diamond Creek. \$7.95.

G Higgins, L Cronin & J McDonald. Presenting Australia's National Parks. Child & Henry, Brisbane. \$39.95.

D N Heans (Ed.) Australia - A Geography Vol.1. The Natural Environment. Sydney University Press, Sydney. \$55.00.

Suzanne J.Price. The Urban Woodland. Lothian Books, Melbourne. \$24.95. (Low-maintenance gardening for Australian conditions.)

Gai Stern. Australian Weeds : A source of Natural Food and Medicine. Harper & Row, Artarmon. \$29.95.

Edward Stokes. To The Inland Sea: Charles Sturt's Expedition 1844-45. Hutchinson, Melbourne. \$39.95.

Jim Snyder & Keith Shackleton. Ship in the Wilderness. Dent Australia, Melbourne. \$49.95 (Experiences of MS "Lindblad Explorer").

Helen Vellacott. Some Recollections of a Happy Life. Marianne North in Australia and New Zealand. Edward Arnold (Australia), Caulfield East. \$24.95 (Marianne North was a botanical artist and writer).

Bryan A Barlow (Ed.). Flora and Fauna of Alpine Australasia: Ages and Origins. CSIRO/Brill/ASBS. \$21.00 (if purchased through the Society). Orders may be sent to Bryan Barlow, Australian National Herbarium, GPO Box 1600, Canberra, ACT 2601. If the book is required by return post, please make cheques payable to Australian Systematic Botany Society and add \$4.00 for postage. Postage charges may be avoided if members are willing to wait until a convenient courier visits.

#### BOOK REVIEWS

Ferns and allied plants of Victoria, Tasmania and South Australia: Duncan, Betty D & Isaac, Golda (1986). Melbourne University Press 1986. 258 pp. Price \$25.00.

The current resurgence of interest in Australian ferns has lead to a number of books appearing on this subject in recent years and this book, I believe, is a valuable addition as it combines the obvious talents and enthusiasm of the two authors for their subject with the superb photography of Bruce Fuhrer. In addition the tastefully designed watercolour paintings by Celia Rosser on the jacket cover and a contributed chapter by C.J. Coudey and R.L. Hill on propagation and cultivation makes this book a "must" for anyone interested in ferns.

The first chapter introduces the ferns, treating life cycle, sporophyte structure, taxonomy, classification and distributional data. Chapter two covers identification and both tabular and illustrated dichotomous keys are presented. Both keys are easy to use and appear to work well.

In the illustrated key the ferns and allies are divided into "water" and "land plants, terms which I feel would better have been avoided. The water plants cover the genera Azolla, Isoetes, Pilularia and Marsilea while the land plants are divided into four groups, the first three of which cover the fern allies and the fern family Ophioglossaceae with the fourth covering the remaining fern genera. The first three groups are treated

somewhat inconsistently. Group 1 (Lycopods) is treated at a generic level while Groups 2 and 3 are at the family level. In each case a description of the Group is given and all genera are illustrated. Group 4 is covered by an illustrated dichotomous key covering 12 pages and one wonders whether the large photographs supplementing this key are really necessary considering the well illustrated species treatments in latter chapters. The key itself is very easy to use by anyone, even with only a basic knowledge.

The foldout tabular key is, however, a bit misleading as it is not stated exactly what is included. The key in fact covers the fern genera found in Group 4, although Thelypteris and Apteropteris are omitted.

Chapters 3 to 21 cover the families of ferns and allies. In each chapter the family is introduced, followed by a key to the genera, a short description of each genus and detailed descriptions of the species. The descriptions are concise and relatively consistent throughout the book. For each species the current botanical name and at least one common name are provided but within Hymenophyllaceae and Athyriaceae, alternative botanical names are also given as these names have commonly been used by other authors. Diagnostic field characters and notes on each species are also provided. The text is supplemented by photographs by Bruce Fuhrer and analytical drawings by the authors. A distribution map for Victoria is provided for most species and although the reasons for this are explained I think it is unfortunate that the maps did not cover the whole area treated.

The final chapter by Chris Goudey and R.L. Hill deals in some depth with the propagation and cultivation of ferns.

A bibliography, glossary and list of authors of the plant names are at the end of the book.

The photography is of the consistently high standard we have come to expect from Bruce Fuhrer. There are eight composite colour plates and numerous black and white photographs. A few of the black and white photographs are somewhat milky but this is most likely due to variations in printing. The colour closeups are very sharp with individual sporangia quite discernable in Plates 1 and 2. Even the photosynthetic spores of Todea can be clearly seen in Plate 1:3. It is unfortunate that the water colour paintings by Celia Rosser found on the jacket cover are not reproduced within the book as jacket covers are so easily damaged or lost.

Overall, the book is well laid out with the photographs, illustrations, maps and text well integrated. The authors are completely up to-date with nomenclature and have been in contact with authorities on problem groups. Controversial topics such as the classification of tree-ferns are treated in some depth.

There are relatively few errors or inconsistencies in the book, however, I have noted:

Plate 3:6 is Ophioglossum coriaceum not O. polyphyllum.

Fig. 17.13A would appear to be upside down.

The authors are inconsistent in their use of author names. They provide a list of authors of plant names but have omitted Kurata, Gray, Williams and E. St John. The names of authors of genera are all written out in full even though many have standard abbreviated forms indicated in the list eg. L., R.Br., Bernh. Some author names appear in different ways eg. A.Br. on P. 54 but A. Braun on p. 47, 48, 50, 219 224. Although it is indicated in the list that the names of Brackenridge and Wakefield have contracted forms they appear in full where they occur in the book.

Nevertheless the few errors and inconsistencies do not in any way detract from the high quality of this book.

Bob Chinnock

[There has been a reprint which is now retailing at \$35. The cover-painting has been reproduced as a blank card. These are available from B D Duncan, 45 Yongala St., Balwyn, 3103. 65c each plus 36c postage; \$3.50 per pack of six plus \$1 postage for up to 3 packs.]

A Threatened Species Conservation Strategy For Australia Edited by M Kennedy & R Burton, Ecofund Australia, 68 pp. 1986. \$7.95.

This book is an overview of the problem of plant and animal species threatened with extinction in Australia and of the action which the authors urge governments and environmentalist groups to take. In essence, it is political rather than scientific. Central to its argument is the concept of the species (but not of any infraspecific taxa) as an objective entity which exists quite independently of the subjective views of taxonomists and has, moreover, a right to exist. A species is seen as a value in itself and not merely as a unit of genetic diversity or as an element in an ecosystem. This is strangely reminiscent of the pre-Darwinian view of rigidly defined species each with its appointed place in Creation, and the editors quote with approval the opinion of M E Soule that the processes of speciation have virtually ceased to operate.

Lists are given of Australian vertebrates, invertebrates and vascular plants considered to be threatened, and a brave attempt is made to assign a priority rating, from 0 to 60, to each species. This rating is the product of scores for the status of the species on the IUCN categories of Extinct/Endangered/Vulnerable/Rare/Indeterminate/Insufficiently known, and for the authors' taxonomic rating which weights the species in inverse proportion to the number of extant close relatives. This is intended as a measure of the genetic individuality of the species. Anomalies arise because only Australian species are considered: thus, Nepenthes mirabilis is assigned the highest taxonomic rating as the sole species in its family although it is the local outlier of a large Asian genus.

The distributions of the 125 animals and 20 plants with the highest priority ratings are used to rank regions of the continent in order of priority, with the tropical north-east having the greatest concentration of high-priority species.

The plant list is taken from Leigh, Briggs & Hartley's 1981 list with some additions and deletions from subsequent taxonomic work but no re-evaluations of status. The length of this list (c.2200 taxa) and the proportion of unnamed, poorly known and undercollected species emphasize the need for more taxonomic and ecological research before policies become too rigidly formed.

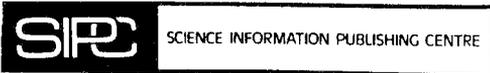
The book ends with proposals for legislation, on the statist assumption that desirable change can be brought about only by increased government power and intervention. One laudable feature is the proposal that the Crown, and thus all government bodies, should be bound by this legislation which would provide wide powers to control any activity affecting species declared to be endangered.

In places the text has been carelessly written; e.g., the species lists are claimed to "depict" or "describe" so many species, all Cruciferae are listed under Capparidaceae, and we are asked to believe that  $0 \times 2 = 12$ .

SUBSCRIPTIONS FOR NZ JOURNALS OF SCIENTIFIC RESEARCH

New Zealand Journal of Agricultural Research	Price per volume	\$120.00
New Zealand Journal of Botany	less 40%	48.00
New Zealand Journal of Experimental Agriculture		72.00
New Zealand Journal of Geology & Geophysics		22.00
New Zealand Journal of Marine & Freshwater Res.	postage & packing	22.00
New Zealand Journal of Zoology		<u>NZ\$94.00</u>

In 1985 reduced subscriptions to the above journals were offered to members of your society. 1987 subscriptions for the above journals are now due. If any of your members are subscribers please arrange to collect remittance and forward to this office no later than 1 March 1987.



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

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**SOCIETY BUSINESS****NEW CONSTITUTION**

The new Constitution and Rules of the Society are now in effect (as of 1st December 1986) following a unanimous vote for their adoption by 77 members participating in the ballot. Many thanks to those members who took the trouble to exercise their vote. Incorporation of the Society can now proceed according to timetable.

L. Haegi  
 Returning Officer & Secretary

**INCORPORATION**

Notice of the Society's intention to apply for incorporation appeared in Public Notices, Canberra Times, 14 Oct. 1986.

The Society is now incorporated and is titled The Australian Systematic Botany Society Incorporated.

Council has appointed Mike Crisp as Public Officer.

M. Crisp

## CHAPTER REPORTS

## CANBERRA CHAPTER

At the Chapter's General Meeting on 21 October the incumbent committee was re-elected for a second term, i.e. Convenor, Alex George; Secretary, Ian Telford; and Committee Member, George Chippendale.

## Recent Meetings

22 April. Dr Hansjoerg Eichler reminisced on the "Prehistory of the Flora of Australia" project. In particular he spoke on the state of Australian plant taxonomy at the time of his arrival in this country in 1955, and events leading to the ANZAAS meeting of 1959.

12 September. Mrs Joyce Stewart, Sainsbury Orchid Fellow, Royal Botanic Gardens, Kew, spoke on "Orchid research at Kew".

21 October. General Meeting, followed by two short talks on recent research - Mr Lyn Craven (CANB), "Studies in Calytrix (Myrtaceae)" and Mr Ian Telford (CBG), "Sicyos (Cucurbitaceae) in Hawaii".

18 November. Dr Beth Gibbs Russell, Botanical Research Institute, Pretoria, spoke on "Practical applications of PRECIS: a computer system for plant specimens and taxa".

A George

## PAPUA NEW GUINEA BOTANICAL SOCIETY

Over twenty botanically and ecologically minded people attended the thirteenth meeting of the PNG Botanical Society, an affiliated society of ASBS, held at the Goroka Sports Institute over the long weekend of 7-8 June.

In addition to a guided field tour of Gahavisuka Provincial Park, conducted by Rev. Norman Cruttwell, the following papers were presented:

Arentz, F: Forest pathology in PNG - an overview.

Earnshaw, M J, Gunn, T C & Croft, J R: Field temperature measurements and water relations of montane Cyathea species in Papua New Guinea.

Harries, H: The origin, evolution and domestication of the Coconut.

- Hopkins, H C F: Bat pollination and evolution in the pantropical genus Parkia (Leguminosae - Mimosoideae).
- Howcroft, N H S: The Fagaceous forests of New Guinea: ecology and distribution.
- Lambley, P W: Introduction to the PNG Lichens.
- Osborne, P L: Effects of the Waigani swamp on waste water quality and vice-versa.
- Osborne, P L: Plant collecting efforts in PNG: an analysis of the fresh-water flora.
- Polunin, N V C: Response of a benthic algal community on an inshore coral reef to rainfall periods: influences of ambient light and nutrients.
- Polunin, N V C: Processing of nitrogen and phosphorus by an herbivorous fish: clues to modes of nutrient cycling in coral reefs.
- Saulei, S: Recovery of lowland rainforest after clear-fell logging in the Gogol Valley.

Due to the costs of travelling in PNG, and the scattered distribution of the botanical community, "Botsoc." meets once a year at a locality agreed to at the previous meeting. The meetings have evolved into an annual event to give resident botanists a chance to renew acquaintances, and discuss mutual problems and interests. It has become an especially important vehicle for the new generation of Papua New Guinean botanists and plant ecologists. "Botsoc." started over 11 years ago, following active impetus from Bill Barker and has continued without a break, making it the oldest extant scientific association in the country. A history of the society has been published:

- Leach, G (1985). A history of meetings of the PNG Botanical Society: 1975-1982. Science in New Guinea 10: 200-204; idem (1986) 11: 51; P Osborne (1986) idem 12: 112-113.

The next meeting of the Society will be held over the 1987 June Queen's Birthday weekend at the University of Papua New Guinea Research Station at Motopure Island. Accommodation will be available on the Island. Australasian botanists visiting PNG at that time will be most welcome to attend. The "volunteer" coordinator for 1987 is Helen Hopkins, Biology Department, P.O.Box 320, University of Papua New Guinea, National Capital District.

Plant taxonomists ecologists etc. visiting PNG then, and at other times, are encouraged to include seminar materials in their luggage.

There are active botanical communities in both Port Moresby and Lae who would greatly appreciate outside stimulus, and seminar venues can be arranged at short notice. Botanically minded groups in remoter centres such as Kimbe and Goroka also appreciate hearing of overseas botanical activity.

J Croft

## CHAH REPORT

### COUNCIL OF HEADS OF AUSTRALIAN HERBARIA

#### REPORT OF THE FOURTEENTH ANNUAL MEETING OF THE COUNCIL HELD IN SYDNEY ON 1-2 OCTOBER 1986

The Heads of the major Government herbaria met in Sydney, together with observers from New Zealand (Murray Parsons from CHR) and from Council of Australian Museums Directors (Des Griffin from the Australian Museum, Sydney). Roger Hnatiuk (Bureau of Flora and Fauna) also attended part of the meeting. The chairman was Barbara Briggs. The following were some of the subjects discussed.

1. The taxonomic course organized for CHAH by the Queensland Herbarium and University of Queensland. It was agreed that this had been successful and that similar courses should be held in other centres at intervals of about 3 years. The possibility was raised of also running specialist training workshops on particular subjects relevant to taxonomists, such as on nomenclature.
2. The role of herbaria in giving advice relevant to proposed biological control projects. Council members were concerned that an inadequate range of test plants might be used in pre-release testing of control agents. CHAH is seeking to ensure fuller consultation between the relevant authorities and herbaria.
3. Safety of herbarium specimens in transit. The herbaria represented at CHAH had each monitored damage to consignments received from other Australian institutions during the past 12 months. The results showed that differences in the initial packing of parcels had a greater effect on safety than did the means of transport. Double-thickness boxes were much less frequently damaged than single-thickness boxes. Most vulnerable were very small batches packed between cardboards, rather than in boxes. Air transport actually gave slightly worse statistics than surface transport, but this was probably because many of the parcels sent by air were small and relatively poorly protected by their packing.
4. Whether specimens donated to herbaria by private collectors could reap any income tax benefits for donors. The Taxation Incentives For The Arts Scheme that applies to museums and galleries was considered to be relevant to donations to herbaria. It was concluded that certain cases might conform with the requirements of the Scheme but that it was not a matter on which CHAH as a committee could take any action.

5. The need for an up-to-date list of current taxonomic work on the Australian flora.
6. The ABIS data base strategy co-ordinated by the Bureau of Flora and Fauna, and herbarium data bases. Support was expressed for easier interchangeability of label data between different institutions and researchers.
7. A nomination was made for the 1988-89 Australian Botanical Liaison Officer (yet to be announced). Concern was expressed about the adequacy of financial support for Liaison officers.
8. Photographs of Type specimens. The inclusion of references to photographs of Type specimens and the location of such photographs were seen as desirable inclusions in the Australian Plant Name Index. We were informed that such information is welcomed by the Bureau for inclusion in the Index.

The meeting agreed that it is most desirable that botanists ensure that photographs of Type specimens are not retained in personal photographic collections but are placed in institutional collections. It is also preferable that photographs be included in the herbarium with the specimen collections and be sent on loan with specimens of the relevant group.

Photographs of types, with their location stated, should be cited in revisions.

9. The extent to which the Index to Taxonomic Literature in Australia is serving its intended purposes and is being sufficiently actively maintained. It was decided to continue the scheme for a further twelve months and to assess it after that period.
10. Discussion of reports from member herbaria revealed a number of problems in the adequacy of accommodation and of staffing. On the other hand, the new building planned for the Tasmanian herbarium was most welcome news.
11. The incoming Chairman is Mr Clyde Dunlop (from 1st January).

B G Briggs  
Chairman CHAH

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## ABRS REPORT

The Minister for Arts, Heritage and Environment, Mr Barry Cohen, has announced the grants for 1987 under the Participatory Program of the Australian Biological Resources Study. Flora - related grants amount to \$346,203 from a total \$741,000. In 1986, the total grant funds were \$930,000, making the 1987 total a fall of 27% in real terms.

### Australian Capital Territory

#### Australian National University

Elix, J.A.	A taxonomic revision of the lichen genus <u>Leptogium</u> in Australia	\$10 500
Elix, J.A.	A taxonomic revision of the lichen genus <u>Pseudoparmelia</u> in Australia	\$24 623
Australian National Herbarium		
Barlow, B.A.	A taxonomic revision of the genus <u>Melaleuca</u> L.	\$27 896
Eichler, Hj.	Taxonomic revisions in Ranunculaceae, Zygophyllaceae and Apiaceae in Australia	\$6 700

### New South Wales

#### Royal Botanic Gardens & National Herbarium of New South Wales

Powell, J.M.	Taxonomic revision of the genus <u>Leucopogon</u> (Epacridaceae)	\$28 565
Thompson, J.	Revisionary studies of <u>Swainsona</u>	\$24 500
University of New South Wales		
Ramsay, H.P.	Taxonomic revision of the Sematophyllaceae (Bryopsida) in Australia	\$8 435

### Victoria

#### National Herbarium of Victoria and Royal Botanic Gardens

Conn, B.J.	Taxonomic revisions and reviews of the Lamiaceae in Australia	\$13 445
Short, P.S.	Biosystematic studies in Australian Gnaphaliinae (Compositae: Inuleae)	\$12 000

### Queensland

#### Queensland Herbarium

Reynolds, S.T.	Revision of the tribe Aeschynomeneae (Fabaceae) in Australia	\$10 871
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Simon, B.K.	Manuscript preparation for the <u>Flora of Australia</u> for the tribe <u>Andropogoneae</u> (Poaceae) with the exception of the genera <u>Iseilema</u> and <u>Sorghum</u>	\$23 120
University of Queensland Rogers, R.W.	Taxonomic revision of the Lichen genus <u>Usnea</u> in Australia	\$13 677
<u>Unattached</u>		
Jones, Mr D.L.	Orchid genera for the <u>Flora of Australia</u>	\$13 500
<u>South Australia</u>		
State Herbarium of South Australia		
Barker, R.M.	Revision of <u>Sida</u> and <u>Abutilon</u> (Malvaceae) in Australia	\$9 921
Bell, G.H.	Revisional study of Pottiaceae (Musci: Bryophyta) in Australia	\$10 650
Haegi, L.	Treatment of <u>Hakea</u> (Proteaceae) for <u>Flora of Australia</u>	\$26 310
University of Adelaide Randell, B.R.	Revision of the Cassiinae in Australia	\$3 553
<u>Western Australia</u>		
Western Australian Herbarium		
McFarlane, T.D.	Taxonomic revision of <u>Pultenaea</u> in Western Australia and consideration of generic limits (Fabaceae: Mirbelieae)	\$13 076
Maslin, B.R.	The elucidation of new and poorly known species of <u>Acacia</u> with special reference to sect. <u>Phyllodineae</u>	\$22 476
Maslin, B.R.	<u>Flora</u> account of <u>Acacia</u> sect. <u>Plurinerves</u>	\$21 000
<u>Unattached</u>		
Trudgen, M.E.	Revisionary studies: <u>Baeckea</u> complex	\$7 135
<u>Overseas</u>		
Herbarium, Royal Botanic Gardens Kew, England		
Forman, L.L.	Check List and <u>Flora</u> accounts, Christmas I. (Indian Ocean)	\$14 250

## REQUEST

As part of my studies of the Convolvulaceae of Australia I have become interested in the taxonomic importance of morphological characters of the cotyledons, particularly at the generic level. I have been able to study the cotyledons of species of most genera occurring in Australia. To complete the study I require seed of Cressa cretica and any species of Wilsonia. The latter should be found close to the capital cities of most of the southern states. If anyone is able to obtain seed of species of either of these genera I would be most grateful.

Bob Johnson, Queensland Herbarium, Brisbane

## The Society

The Society is an association of over 300 people with professional or amateur interest in Botany. The aim of the Society is to promote the study of plant systematics.

## Membership

Membership is open to all those interested in plant systematics and entitles the member to attend general and chapter meetings and to receive the Newsletter. Any person may become a member by forwarding the annual subscription to the Treasurer. Subscriptions become due on the 1st January.

## The Newsletter

The Newsletter appears quarterly and keeps members informed of Society events and news, and provides a vehicle for debate and discussion. In addition original articles, notes and letters (not exceeding ten pages in length) will be published. Contributions should be sent to the Editor at the address given below, preferably typed in duplicate and double-spaced. All items incorporated in the Newsletter will be duly acknowledged. Authors are alone responsible for the views expressed.

## Notes

- The deadline for contributions is the last day of February, May, August and November.
- ASBS Annual Membership is \$16 (Aust.) if paid by 31st March, \$20 thereafter. Students (full-time) \$12. Please remit to the Treasurer.
- Advertising space is available for products or services of interest to ASBS members. Current rate is \$30 per full page. Contact the Newsletter Editor for further information.
- All address changes should be sent to the Treasurer or the Editor.

## Editor et al.

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Illustrator: Christine Payne

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