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ON THE JOINT AND SEPARATE WORK OF THE AUTHORS OF BENTHAM
AND HOOKER'S 'GENERA PLANTARUM'

by G. Bentham, F.R.S.

Since the completion of our 'Genera Plantarum' we have been asked to distinguish which are the parts which we severally took in it, and to publish a list of the Orders which each of us had worked up. We wish, however, that the whole may be considered as the joint production of both of us. It is indeed the only joint work in which I have ever been engaged. I very early saw the diminished responsibility and other inconveniences of partnership botany, and during my long working-time always refused entering into any such without the special conditions offered on the present occasion. It is true that in some catalogues I appear as joint author of botanical papers or work, but always by some error. Some of Oersted's papers on the botany of Central America have been quoted, and perhaps entitled, as by Bentham and Oersted when they are really Oersted's though he incorporated in them the determinations and descriptions of his specimens with which I had supplied him. Apart from these descriptions, the papers are in Danish, a language with which I was once familiar as to reading, but in which I never wrote. Then, again, the 'Flora Australiensis' is sometimes quoted as the joint work of Bentham and Mueller, when it is entirely and exclusively mine, with the assistance indeed, but not the "co-operation", of Baron v. Mueller, this assistance being of precisely the same description as that which I derived from the herbarium and detailed MS. descriptions of Robert Brown, from the herbarium and notes of A. Cunningham, from the rich herbaria of Kew, from the 'Flora Tasmanica' and other published works of the Hookers, as well as from the numerous instructive notes of the Hookers, of Planchon, and others who had worked in the herbarium. In the case of Baron v. Mueller, however, the extreme liberality with which he gave up in my favour his own projects for a general Flora of Australia, and the great value for my purposes of the very numerous specimens of each species which he had collected into the Melbourne herbarium, the whole of which he unreservedly lent to me, seemed to me to demand a special recognition in the titlepage of the 'Flora', which has thus been misconstrued into an indication of co-operation. A joint work was impossible where consultation was prevented by the great distance which separated us; to procure an answer to the simplest question required four or five months. The descriptions in the 'Flora' are drawn up from the actual examination of specimens, generally checked by a comparison with the MS. notes and printed works above referred to, amongst which Baron v. Mueller's 'Fragmenta', regularly transmitted to me as printed, bear a prominent part. Nothing in my work is merely copied, except in a very few cases where the material at my disposal was insufficient and where I have specially referred to my authority. The method and classification are entirely mine, though of course derived from general and other published botanical works.

The case of the 'Genera Plantarum' was very different. Some six- or seven-and-twenty years ago, when my botanical workshop had become firmly established in the Kew Herbarium and my intercourse with Sir Joseph (then Dr.) Hooker, always very intimate, had become more constant, we both of us felt the inconvenience of the want of a Genera Plantarum founded on actual observation to replace the already antiquated ones of Endlicher and Meissner, both of which, especially the latter, had been in a great measure mere compilations, and each of us had formed the project of endeavouring to supply the deficiency; but it appeared almost too vast an undertaking to be carried out by a single

hand; and Hooker proposed as the best chance of seeing the work brought to a successful issue, that we should join our forces. Notwithstanding my normal aversion to partnership botany, I saw that here there was nothing to fear from collision, and but little from any permanent separation. I had always found that I could perfectly coincide with Hooker in his views in scientific botany, or at any rate readily defer to them on consideration. I saw that there were many natural orders in which I should, alone, severely miss his great experience in the study of living tropical and southern extratropical vegetation and his facilities for availing himself of the treasures of the Kew plant-houses and museum, whilst there were other orders, especially those which comprise very numerous small genera, the almost mechanical details of which would require more persevering and uninterrupted work in the herbarium and library than Hooker's official and other duties would always allow him to carry on. I therefore readily agreed to his proposal; and after much deliberation and consultation with botanical friends in whose judgement we had great confidence, we matured our plans, to which we have adhered during the quarter of a century which the elaboration of our 'Genera Plantarum' has required.

We necessarily divided the orders between us for their working up in detail; but we always consulted together when any doubt or difficulty occurred; and the ordinal characters, general observations, and subdivisions and generic arrangements prepared by each of us were almost invariably submitted to the other in manuscript for study and comment before being finally revised for press. When the printing commenced, the first proofs were carefully read through by both of us, as well as by our friend the Rev. M.J. Berkeley, who kindly undertook to go over them chiefly for their latinity, in which we both of us felt deficient. These proofs were again gone through by the one of us who had specially worked up the order, in order to check the references, to which process we paid special attention. The revises were read by one, and very frequently by both of us, before finally releasing them for press.

With regard to the repartition of the Orders, those of the first volume, the Polypetalae, were pretty equally divided between us. Whilst I took the first few orders, Hooker worked up the Cruciferae, Capparideae, and Resedaceae; and I followed him with the remainder of the Thalamiflorae, whilst he elaborated the whole of the long series of Disciflorae with the exception of the Lineae, Humiriaceae, Geraniaceae, and Olacineae, which had fallen to my lot. In the Calyciflorae I naturally took up the Leguminosae, with which I was already very familiar, and Hooker all the remaining orders except the Myrtaceae, Umbelliferae, and Araliaceae.

The first part of the second volume was chiefly taken up by the two important orders Rubiaceae and Compositae. Hooker devoted a great deal of time to the former (and their close allies the Caprifoliaceae) requiring much scientific study, whilst I endeavoured to reduce to some order the intricate, almost endless details of the innumerable closely allied and often scarcely distinct genera of Compositae. The second part of the volume comprised the great mass of Gamopetalous orders, which I began with the Campanulaceae and their immediate allies, followed by Hooker with the Vacciniaceae, Ericaceae, Epacrideae, and their allies, the Myrsineae, Primulaceae, and a portion of the Sapotaceae, when the pressure of official and other avocations with occasional absences prevented him for a time from a continuous detailed elaboration of genera, and the remaining Gamopetalous orders all devolved upon me.

In the third volume Hooker resumed active work. The first part, Monochlamydeae, began with the series of curvembryous orders elaborated by him, from Nyctagineae to Batideae. He also prepared the Nepenthaceae, Cytinaceae, and Balanophoreae as a resume of the important monographs he had previously published. I worked out the remaining orders, amongst which the Euphorbiaceae

and Urticeae took up the most time. Hooker was to have done the Gymnospermeae, of which he had so much practical knowledge in a living state; but unfortunately he was at that time again much engaged in other duties, and I was obliged to satisfy myself with consultations on points which appeared to me to be doubtful; and two or three errors have crept in which were overlooked in the correction of the proofs, but adverted to in the Addenda et Corrigenda. The second part of the third volume, the Monocotyledons, appeared at first so formidable an undertaking, that in the uncertainty of being enabled to carry it through to the end, we determined to commence with the most difficult orders. Hooker attacked the Palms, for which I felt totally incompetent; and notwithstanding the great facilities derived from his previous knowledge and close study of the copious materials supplied by the museums and living collections of Kew, he found that they required much more time than he had at first calculated upon, besides a great deal of foreign correspondence with Wendland, Beccari, and others who had more or less worked at the order. I in the mean time devoted more than a twelvemonth's constant and uninterrupted labour to the Orchideae, and at least as much to the Gramineae. We then divided between us the remaining Monocotyledonous orders, in which our work was often materially assisted, but never superseded, by previous monographs. Hooker prepared the Nudiflorous orders (Aroideae and allies) and the Apocarpae (Alismaceae, Naiadaceae, and allies), the others falling to my share.

We hope that it will be distinctly understood that throughout the work, where there is no special indication to the contrary, our characters have been drawn up from the actual examination of specimens; and for some further details as to the plan of the work, we would refer to my Report read in Section Biology of the meeting of the British Association at Belfast in 1874.

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Reproduced from *The Journal of the Linnean Society (London) Botany* 20: 304-308 (1883/84) as a contribution to commemorating the century of the death of George Bentham in 1884.

'Genera Plantarum' was published between 1862 and 1883 and 'Flora Australiensis' between 1863 and 1878. See F. Stafleu and R. Cowan. *Taxonomic Literature* Ed. 2, 1 for relevant comment and other references.

R.J. Henderson

Council of Heads of Australian Herbaria

The Twelfth Annual Meeting of CHAH was held in Perth on 3-4 October, 1984. Members present were: Dr B.A. Barlow (CANB), Dr B.G. Briggs (NSW), Mr M.I.H. Brooker (FRI), Mr A.B. Court (CBG), Mr C.R. Dunlop (DNA), Dr J.W. Green (PERTH, Chairman), Dr J.P. Jessop (AD), Dr R.W. Johnson (BRI), Dr A.E. Orchard (HO) and Dr J.H. Ross (MEL).

In addition Mr A.E. Wright (AK, Auckland, New Zealand) and Mr J.L. Bannister (CAMD representative, Western Australian Museum) attended as observers.

Some of the topics referred to in the report of the last meeting (Newsletter 37) were discussed further under Business Arising. Of particular note was the matter of a training course for taxonomic botanists which, as a result of Dr Johnson's representations, now appears to be under serious consideration by the University of Queensland.

Reports were received regarding CONCOM (working group on endangered flora, Hobart, March 1984, attended by Dr Orchard), Flora of Australia (progress reported by Editorial Committee Chairman, Dr Briggs), CAMD (Darwin, July 1984, attended by Dr Green), A.B.L.O. (statistics related to Dr Jacobs' term of office, reported by Dr Briggs), and Index of Taxonomic Literature of Australia (reported by convener, Dr Johnson).

Among new items discussed were:

1. Changing role of herbaria in modern science and society

Following a general discussion on aspects of herbarium work suited to public relations and the move of certain herbaria towards specialisation in research the meeting favoured herbaria adopting a somewhat higher public profile and felt that desirable publicity need not necessarily bring about undue service demands by the public.

2. Impact of biological control on native flora

It was apparent that not all herbaria were involving themselves to the same extent in biological control testing programmes. It was agreed that all states should try to emulate the example of Queensland Herbarium which was closely involved in its State testing programme.

3. Repositories for ecological voucher specimens

Council attempted to find a solution to the problem of the tenure of ecological voucher specimens but with little success. Failing the establishment of a central repository for this purpose, there seemed little that could be done since few herbaria have the space to store vouchers other than well documented specimens suitable also for taxonomic purposes.

4. Loss and damage of specimens in transit

Following the tragic loss of specimens in April 1984 when a truck returning borrowed specimens from Perth to Melbourne, Adelaide and Hobart was destroyed on the Eyre Highway members discussed various procedures designed to minimise any future loss in similar circumstances. Most herbaria are now splitting consignments in such a way that an accident could not result in the total loss of a particular taxon, the holdings of a single herbarium, a rare species or a type collection.

5. Duplication in revisions and flora treatments

Council discussed a range of economic, scientific and ethical factors involved in duplication of published data. Dr Barlow agreed to arrange a meeting involving representatives of house journals to try to determine a common policy.

6. Next meeting of CHAH and the new Executive

The Thirteenth Annual Meeting of CHAH will be held in Adelaide.

The incoming Executive is: Dr J.P. Jessop (Chairman), Dr B.G. Briggs and Dr J.W. Green (retiring Chairman).

J.W. Green
Chairman, CHAH

ABRS Report

The Minister for Home Affairs and Environment, Barry Cohen, has announced the awarding of 66 grants for 1985, totalling \$863,984. The Participatory Program part of the ABRS budget was increased by 8% over the amount in 1984. Grants were awarded in all States and the A.C.T. with the disbursement of funds as follows:

	<u>Total</u>	<u>Flora</u>
New South Wales	123,056	(88,406)
Victoria	202,362	(69,923)
Queensland	92,936	(35,626)
South Australia	95,961	(34,150)
Western Australia	184,517	(129,058)
Tasmania	15,000	(nil)
Australian Capital Territory (including CSIRO in States)	144,902	(71,762)
Overseas	5,250	(5,000)
		<u>\$434,175</u>

A brief summary of the flora-related grants is given below. The grants ensure a continued support for taxonomists working to produce the Flora of Australia such that the goal of at least 2 volumes per year should be attainable.

Roger Hnatiuk

ABRS GRANTS 1985

FLORA PROGRAM

Investigator	Institution	Project Title	\$
Barker, R.M.	Botanic Gardens of Adelaide	Flora treatments, Acanthaceae and Bignoniaceae	5,600
Barlow, B.A.	Australian National Herbarium	Revision of <i>Melaleuca</i>	22,000
Bell, G.H.	Botanic Gardens of Adelaide	Revisonal study of Pottiaceae (Bryophyta)	10,750
Bennett, E.M.	Western Australian Herbarium	Revision and flora writing <i>Conospermum</i>	15,800
Chew, W.L.		Flora treatment of Urticaceae	10,500
Chinnock, R.J.	Botanic Gardens of Adelaide	Revision of <i>Myoporum</i>	12,900
Clarkson, J.R.	Queensland Herbarium	Flora/Vegetation Survey, Cape York	22,626

Investigator	Institution	Project Title	\$
Crisp, M.D.	Australian National Botanic Gardens	Taxonomy and Flora treatments <i>Brachysema</i> and <i>Daviesia</i>	21,432
Eichler, Hj.	Australian National Herbarium	Revisions Ranunculaceae, Zygophyllaceae and Apiaceae	2,500
Foreman, D.B.	National Herbarium of Victoria	Revisions of <i>Isopogon</i> and <i>Petrophile</i>	9,800
Green, P.S.		Floras of Lord Howe and Norfolk Islands	5,000
Hill, K.D.	National Herbarium of N.S.W.	Flora treatment of Gymnospermae	12,900
Hopkins, A.J.M.	Fisheries and Wildlife W.A.	ABIS data base, Proteaceae in W.A.	6,400
Hopper, S.D.	Fisheries and Wildlife W.A.	National Banksia Atlas	46,060
Jones, D.L.		Flora treatments of various orchid genera	13,000
Lamont, B.B.	Western Australian Institute Tech.	Revision of <i>Hakea falcata</i> s. lat.	2,900
Maslin, B.R.	Western Australian Herbarium	Taxonomy of <i>Acacia</i> , sect. Phyllodineae	23,948
Maslin, B.R.	Western Australian Herbarium	ABIS data base of <i>Acacia</i> at PERTH	12,300
Powell, J.M.	National Herbarium of N.S.W.	ABIS data base of <i>Leucopogon</i> Styphelieae	13,100
Powell, J.M.	National Herbarium of N.S.W.	Revision of <i>Leucopogon</i>	25,956
Ramsay, H.P.	University of New South Wales	Revision of Sematophyllaceae (Bryophyta)	2,550
Randell, B.R.		Revision of Cassiinae	4,900
Ross, J.H.	National Herbarium of Victoria	Revision of <i>Bossiaea</i> and <i>Hovea</i>	19,900
Rye, B.L.	Western Australian Herbarium	Revision & flora writing, Thymelaeaceae	6,950
Scott, G.A.M.	Monash University	Revision of <i>Fossombronia</i> and related liverworts	25,923
Short, P.S.	National Herbarium of Victoria	Biosystematic studies in Gnaphaliinae	10,000
Stone, I.G.	University of Melbourne	Revision of Australian tropical moss genera	4,300
Telford, I.R.H.	Australian National Botanic Gardens	Floras of Cocos, Ashmore, Cartier and Coral Sea Islands	15,000
Thompson, J.	National Herbarium of N.S.W.	Flora treatment of Onagraceae	11,000
Tindale, M.D.	National Herbarium of N.S.W.	Taxonomic studies <i>Acacia</i> spp.	10,400
Trudgen, M.E.	Western Australian Herbarium	Revision and flora treatment of <i>Baeckea</i> s. lat.	14,700

Investigator	Institution	Project Title	\$
Watson, L.	Australian National University	Flora writing. eu-panicoid grasses	9,000
West, J.G.	Australian National Herbarium	Taxonomic studies Caryophyllaceae	1,630

Report from the Bureau of Flora and Fauna

There are two items about which we would appreciate receiving comments. The first comes from the Editorial Committee of the Flora, who have asked us to seek your advice regarding the citation of selected specimens in the Flora. We have received a number of comments about the citations. The comments range from strong questioning of the need and purpose of citations to requests for citations to be representative of all States of occurrence, where practicable, and for more specimens to be cited. Would you please write to me, within one week of receiving this Newsletter, answering the following:

- (a) Do you see specimen citations in the Flora as valuable?
- (b) What are your reasons for your answer to (a)?
- (c) What changes, if any, would you like to see in the citations?
- (d) Do you think the function of citations in the Flora could be achieved either as well or better in some other way?

The second item on which I seek your comment, is the form in which we present distributional information. We have received comments about the non-inclusion of State boundaries, the kind of cross referencing of maps and text, and the variation in "shading-in" of distributions on the maps. If you have comments on these matters, please contact me as soon as possible.

(Replies to: Roger Hnatiuk Assistant Director (Flora), Bureau of Flora and Fauna, G.P.O. Box 1383, CANBERRA. A.C.T. 2601)

And finally, but certainly not least, Volume 4 of the Flora was published on 12 November, 1984. All 15 contributors and referees deserve warm congratulations on their achievements as seen in this, the fifth volume to appear.

Roger Hnatiuk
Assistant Director,
Flora

BIOCLIM: BIOCLIMATE ANALYSIS AND PREDICTION SYSTEM

BIOCLIM has been developed by the Bureau of Flora and Fauna, in collaboration with Henry Nix of the CSIRO Division of Water and Land Resources, and is currently available to all scientists via the CSIRO computing network CSIRONET.

This System evaluates geographical point distribution data pertaining to individual entities, e.g. individual taxa or aggregations of taxa such as faunal assemblages or plant communities, and produces entity-specific climate signatures, called profiles. These profiles can be used to predict geographical regions where the climate is apparently suitable for that entity.

The basic input data to BIOCLIM consist of three geographical co-ordinates, i.e. latitude, longitude and elevation, for each locality at which the entity has been recorded.

Climate data are derived from continent-wide surfaces of monthly mean minimum and maximum temperatures and regional surfaces for monthly precipitation. The surfaces are used to obtain estimates of climate values as functions of latitude, longitude and elevation, for any point in Australia (with the exception of offshore islands). These climate values are used to derive other values characterising annual, seasonal and extreme components of the climatic environment, which are used, in turn, to derive the entity's climate profile.

The climate profile is used to assess various geographical regions in terms of climatic similarity to that experienced by the entity. This procedure involves the selection of a number of points for which the climate is known, or can be derived from latitudes, longitudes and elevations, and assessing these point-based climates against the entity's climate profile. The data set available in the present version of BIOCLIM comprises 2 795 points on a 0.5-degree grid of Australia. Where the climate matches the profile, the location possesses a potentially suitable climate for the entity.

In its present form, BIOCLIM can be used for a large variety of projects, e.g. to predict the likely distribution of a species, to evaluate the adequacy of collections, to examine relationships between species and regional climates, to suggest parameters for ecophysiological studies, to explore hypotheses of relationships between species based on similarity of climate profiles, and to compare distributions of higher-order groups in a taxonomic hierarchy.

The environmental parameters available in the current version, derived from monthly mean minimum and maximum temperature and precipitation are, of course, only a small subset of those which could be utilised, e.g. water balance, solar radiation, soils, geomorphology, slope, aspect and vegetation. The extent to which resources are provided for future developments depends largely on responses of the scientific community to the existing System and demand for enhancements. Comments on the present system, both favourable and otherwise, to the Director, Bureau of Flora and Fauna, would be welcome.

Copies of the User's Manual are available from the Director, Bureau of Flora and Fauna, Department of Home Affairs and the Environment, G.P.O. Box 1383, Canberra, A.C.T. 2601.

John R. Busby
Bureau of Flora and Fauna

Chapter News

ADELAIDE CHAPTER

Mr Bruce Copley. Few botanists who have had cause to examine numbers of specimens of South Australian plants would not have encountered collections by Bruce Copley. A close associate of the State Herbarium of South Australia for many years, Bruce Copley died, following a long illness, on Friday, 19 October, 1984.

Bruce farmed near the township of Bute, on northern Yorke Peninsula, where his most intensive collecting was done. His own brief account of his introduction to field botany and some of the highlights of his collecting career is to be found in Newsletter No. 26 (p. 25). One of South Australia's most knowledgeable plant collectors, Bruce contributed more than 5 000 specimens to the State Herbarium, where his collecting books are kept. Among these specimens are many on which extensions of range or new records have been based and some have been chosen as types. A cheerful and helpful colleague to many, Bruce will be sadly missed and our sympathy is extended to his family in their loss.

Seminar Programme. A lunchtime seminar was arranged for the 10 September to coincide with the centenary of the death of George Bentham. After a short address by Laurie Haegi outlining Bentham's life and remarkable botanical achievements, with particular reference to the 'Flora Australiensis', Dr Barbara Thiers spoke on 'Preliminary thoughts on the Australian liverworts of family Lejeuneaceae'. Barbara was about to return to the New York Botanic Garden after several months in Australia as the first visiting Research Fellow of the Botanic Gardens of Adelaide. She intends to publish the results of her herbarium studies and field work in the form of an account of the Australian Lejeuneaceae.

'Seagrasses: Angiosperms flourishing in the marine environment' is the title of a talk given by Enid Robertson of the Botany Department, University of Adelaide, on 20 September. Enid's work in this field had recently culminated in the publication of a substantial treatment on seagrasses in the first volume of the Benthic Marine Flora of Southern Australia by H.B.S. Womersley. A small group of members took the opportunity of learning more about this fascinating subject by taking part in a field excursion on 13 October. Several species of seagrasses ranging from the diminutive *Lepilaena* (marine species of which occur only in southern Australia) to the robust *Posidonia* were observed: all of them flourishing and some even flowering.

At a lunchtime seminar on 19 October, Dr David Bates, Professor of Botany and Director, L.H. Bailey Hortorium, Cornell University, Ithaca, New York, took time from his hectic schedule of field work to speak on 'Chromosomes and Evolution in the Malvaceae'. On 31 October, David Cooke, who is nearing completion of his part (the bulk) of the treatment of Compositae for the revised edition of Black's Flora of South Australia, presented 'A guided tour of the Iridaceae'. The programme for the year will conclude with a family barbecue and a look at the lighter side of taxonomic botany with some illustrated short talks by members on 28 November.

Laurie Haegi
Convener

CANBERRA CHAPTER

Earlier this year we held a joint meeting with CSIRO, Division of Entomology, at which the speaker was Dr Warren Stoutamire (University of Akron, U.S.A.). Dr Stoutamire is a world authority on orchid pollination. He had spent some time in S.W. Western Australia studying some of the pseudo-copulatory species endemic in that region. A resume of his talk was published in Swans 13(3): 8-9 (1983).

In July Dr James Rodman (National Science Foundation, Washington, U.S.A.) spoke on 'Sea-Rocket Sagas: *Cakile* around the world' - the problem of *Cakile* (Brassicaceae) in Australia and elsewhere. It seems that *Cakile maritima* is gradually replacing *Cakile edentula* in Australia - the opposite is happening on the shores of North America where the latter is native.

On 10 September (the centenary of the death of George Bentham) we held our Tribute to George Bentham (1800-1884). Alex George presented a well-researched talk on the life and publications of Bentham. George Chippendale then gave a much more personal story of Bentham. We had readings from Bentham's diary and from his will. The talk was illustrated with slides depicting some of the memorabilia at Kew. Alex also reported how he was responsible for organising the placement of a plaque on Bentham's house in Wilton Place, Knightsbridge, and for the erection of a headstone on Bentham's grave - a matter that had been overlooked by the executors of his Estate. The evening was rounded off with supper around a display of some relevant books and plant specimens. *Benthamina alyxifolia* and *Olax benthamiana* (both recently covered in Flora of Australia Vol. 22) and an original copy of Bentham's first botanical publication: Catalogue des Plantes Indigenes des Pyrenees et du Bas Languedoc ... etc., 1826, were among the items on display.

Helen Hewson
Convener

MELBOURNE CHAPTER

To commemorate the death of George Bentham on 10 September, 1884, Dr R. (Bob) Belcher, Eastern Michigan University, Ypsilanti, Michigan, spoke on 'Stalking the Wild Senecio, or How not to do Taxonomy'.

Bob presented some highlights from over 32 years' involvement with *Senecio*, as well as recent studies into taxonomic characters drawn from the fine structure of capitula.

For our October meeting, Stephen Forbes, National Herbarium of Victoria, spoke on 'Notes on Botany of the Kimberley, Western Australia'.

Barry Conn

PERTH CHAPTER

The Perth Chapter met regularly in 1984. Meetings held or planned since the last report were as follows:-

- 16 May Mating system and gene-flow in *Eucalyptus regnans*: Dr Yvonne Fripp (Latrobe University).
- 20 June The evolution of self pollination in North American granite outcrop sandworts (*Arenaria*): Dr Robert Wyatt (University of Georgia).
- 18 July Reproductive biology of the Proteaceae: Dr Byron Lamont and Dr Brian Collins (W.A. Institute of Technology).
- 22 August Vegetation and flora of the Bungle Bungles: Kevin Keneally (W.A. Herbarium).
- 19 September Subalpine meadow communities of the Olympic Mountains, Washington, U.S.A.: Dr Bill Loneragan (University of W.A.).
- 5 October An informal gathering on the lawn at the W.A. Herbarium for members to meet the Heads of Herbaria attending the CHAH meeting.
- 17 October *Leptomeria* still confused: post Flora of Australia taxonomic studies: Annette Wilson (University of W.A.).
- 21 November Cyanogenesis in Australian species of *Acacia*: Bruce Maslin (W.A. Herbarium).
- 19 December A Christmas barbecue for members and their families.

T.D. Macfarlane
Convener

Book Reviews

Flora of Australia Volume 22, Rhizophorales to Celastrales: A.S. George (ed.), pp. x + 239, 56 figures, 257 maps. Canberra: Australian Government Publishing Service, 1984. Price \$21.00 soft cover (Cat. No. 83 1573 X). \$25.00 case-bound (Cat. No. 83 1063 8) + postage (610 and 720 grams respectively). Available from bookshops or AGPS Mail Order Sales, G.P.O. Box 84, Canberra A.C.T. 2601.

As mentioned in the June Newsletter, Volume 22 of the Flora of Australia was published on 17 May, 1984. It comprises Rhizophorales (Rhizophoraceae), Cornales (Alangiaceae), Santalales (Olacaceae, Opiliaceae, Santalaceae, Loranthaceae, Viscaceae, Balanophoraceae), Rafflesiales (Rafflesiaceae) and Celastrales (Celastraceae, Hippocrateaceae, Stackhousiaceae, Aquifoliaceae, Icacinaceae, Cardiopteridaceae, Corynocarpaceae, Dichapetalaceae). These are the infill in the Cronquist system between the major families Myrtaceae and Euphorbiaceae. Apart from Rafflesiales (tentatively linked to Santalales) these orders are supposed to be independent derivatives of Rosales. They make a tally of 67 genera (19 endemic) and 230 species (176 endemic).

The mangroves in Rhizophoraceae, treated by Alison McCusker, are all widespread in the tropics at least along the Indo-Pacific divide. The Alangiaceae, written by Helen Hewson, are represented only by *Alangium villosum* in rain-forest. The Santalales make up nearly two-thirds of the

species in the volume and are divided between Bryan Barlow for the mistletoes and Alex George and Helen Hewson for the remainder except for Opiliaceae by Paul Hiepko. The systematics and biology of Australian mistletoes have made great strides in recent decades and the Flora provides a very convenient and authoritative reference. The Loranthaceae have no less than 70 species in Australia, including some notable relics, as well as secondary radiation of genera centred in tropical Asia, developing some remarkable degrees of host specificity and mimicry. The Santalaceae are almost all root-parasites with high levels of generic and specific endemism in Australia. This is a difficult family and despite considerable work by Stauffer a quarter of a century ago, I suspect much work in central office to bring this account together. *Balanophora* (Balanophoraceae by Helen Hewson) and *Pilostyles* (Rafflesiaceae by Bernard Dell), both nicely illustrated in colour, are among the most curious and enigmatic of all angiosperms.

By contrast the Celastraceae and Hippocrateaceae (by Laurence Jessup), as I know them, tend to have genera difficult to recognise and species difficult to distinguish. The author is reticent about variation, but as 32 of the 38 species are endemic, rather restricted in distribution, and from the illustrations apparently often quite bizarre, the common problems are perhaps somewhat alleviated. The Stackhousiaceae are predominantly Australian and William Barker has had an interest in the family for some years to bring to the Flora account. The last families, Aquifoliaceae by Les Pedley, Icacinaceae and Corynocarpaceae by Gordon Guymer and Cardiopteridaceae and Dichapetalaceae by Helen Hewson have only a dozen species between them and are mostly Asian with a small austral element in Icacinaceae.

Altogether I am sure this will prove to be a very useful volume of the Flora. Over the years I have been party to a good many discussions on the project at the notoriously protracted teabreaks at Kew, and I am really pleased to see the work forging ahead. An enormous amount of deliberation and administrative effort has gone into the production and design, for which I have great admiration. The curtailment of descriptive text is severe, but I am sure this is right for a regional Flora, given the provision for other variables to be taken in under categories immediately above and below generic rank, and the generous allowance for illustrations and distribution maps. It is a fairly bold step to exclude bibliography other than protologues, misapplication of names and general references under the family or genus, but a justifiable economy. It has already been suggested that running heads should include the genus number and I see no reason for not including this facility. If that is the only criticism I can make the editors should sleep easily (when not desperately preparing the next volume) and the people of Australia can be rightly proud of their new Flora.

Roger Polhill

Index herbariorum, part I: The herbaria of the world. 7th edn: Holmgren, Patricia K., Keuken, Wil, and Schofield, Eileen K. vii, 452 pp. (Regnum vegetabile, vol. 106). Utrecht/Antwerp: Bohn, Scheltema & Holkema; The Hague/Boston, Mass.: Junk, 1981 (1st edn., 1952, Utrecht; other editions, 1954, 1956, 1959, 1964, 1974). Price: U.S. \$58.00; for regular IAPT personal members, U.S. \$46.50 on application to the publishers.

Reference books are often taken for granted by their users; glamour may be seen to lie elsewhere. Yet in a world becoming ever more information-conscious, the reference work is a most important "interface" between that profession and the outside world. Humble though they might seem, a lot is expected of them: and no less is this true of Part I of Index Herbariorum,

the International Bureau for Plant Taxonomy and Nomenclature's guide to the world's herbaria.

If the number of editions be accepted as indicative of a book's relative prosperity, then *Herbaria*, as it will here be called, remains No. 1 among all the Bureau's monographs, published in their series *Regnum Vegetabile*. The continuing heavy demand for the work - the 1974 edition was out of print by 1978 - was in particular noted by the Bureau's Secretary, Dr Frans Stafleu, in a review of then-current progress in botanical bibliography at the Leningrad Congress in 1975.

That discussion came a year after publication of the 1974 edition, the sixth. Its 397 pages represented a considerable gain over the 251 of its 1964 predecessor and was correspondingly rather more expensive, the cost doubtless augmented further by the use, for the first time, of cloth binding. The latest edition follows essentially the format of those before it, and as in 1974 is cloth bound. Here, however, smaller type has been used and the size of margins reduced so that, while the latest page increment (55) is less than in 1974 (146), the substantive increase likely is just as great, reflecting continuing establishment of new herbaria as well as improved coverage of others (noteworthy here is the greatly improved coverage of herbaria in the People's Republic of China). Paper thickness has also been reduced, resulting in the new edition being, thankfully, no bulkier than its predecessor. The reduction in page margins and font sizes also gives a more "professional" look than before.

Also in evidence is the use of computer-driven "cold" type-setting, now all but standard. Fortunately there are here very few flaws of the kind which too often mar books so produced. Thankfully, too, we have also been spared production from camera-ready typescript. The only reservation I have is that the top margins are too cramped.

Entries include addresses, telephone numbers (new for this edition), status of operation, date of foundation, number of specimens, details of collections (including those of historical or other special significance, continuing thus a tradition stretching back to Lasegue's *Musee* (1845)), research specialisation(s), loans and exchanges policy, staff (including dates of birth, also new for this edition), associated botanical garden(s) (if any), and serial publications (if any) along with standard abbreviations.

With the changes noted, the above information classes have featured in *Herbaria* since its advent; presumably, this coverage pattern has been deemed satisfactory by users. In the opinion of this reviewer, however, certain technical and editorial improvements would further enhance the work; at present its image is too much one of mere data collection and compilation. Other wants are an awareness of the importance of historical principles and the employment of sophisticated information handling techniques. These themes will set the tone for the remainder of this review.

Extensive use of *Herbaria* has revealed problems with a number of entries FOR WHICH judicious editing would have provided enlightenment. Some of them, such as MARSST, are ambiguous; its foundation date is given as 1964 yet many older collections are listed. Did it absorb a former institutional herbarium? Cases of persistence of long-standing historical errors also exist; examples include herbaria at L'vov (LW, LWD, LWS) and Kharkov (CW) for which some more modern information is available in published form. There are also, perhaps inevitably, omissions of known herbaria; among them are those at Bulolo (P.N.G. Forestry College), Coff's Harbour (N.S.W. Forestry Commission), and in Singapore (National University of Singapore). The sometimes spotty returns from herbaria in "developing" countries support concern, publicly expressed elsewhere, about the fate of some. Doubtful entries might well be placed in an Appendix.

Also regrettable is the appearance still of many entries without current information, some since 1964. Such have, presumably for space reasons, now been truncated, making continued reference to the 1974 *Herbaria* necessary for certain information classes. I venture to suggest here that lack of current data may not necessarily represent unwillingness to answer questionnaires, but rather it is that the forms may not have reached those responsible; address changes and associated forwarding policies of postal administrations are among possible reasons. Closer attention to questionnaire mailing methods seems merited.

Three other technical points relating to the main text may be mentioned. The first relates to imperfections in cross-referencing; an example is POONA wherein the user is referred to PUNE, with mention there of AMH, the Ajrekar Mycological Herbarium. True; but in Pune (now the official spelling) there is also BSI, the important, long-established Western Circle Herbarium of the Botanical Survey of India - which actually appears under CALCUTTA (itself wrong: the BSI Central National Herbarium is properly in the discrete municipality of HOWRAH, across the Hooghly). The second concerns the maximum number of letters in herbarium codes. Here, for the first time, codes of more than five letters (such as the previously-quoted MARSST) have been used; I view this as highly undesirable. The third concerns consistency in the introduction of publications on individual herbaria as part of their entries. For some, such as MPU, such material is already listed, very likely having been part of the institution's own return. For others, like MANCH, because a new return was lacking, the entry is given as "information 1974" in spite of a more recent separate publication on that herbarium similar to that for MPU.

The separate indices include a list of important collections, a geographical (country) index, a lexicon of abbreviations of herbaria, and a staff index. The geographical index is especially welcome, having been omitted from the 1974 edition (and published elsewhere). In the list of important collections, however, omissions were noted, notably of names associated with pollen, fossil plants, and fungi, all nominally covered in *Herbaria*. At least with regard to fossil plants, this reflects unevenness of coverage in the main text.¹

All books need introductions, but that presented here is too brief by far, and even an obstacle. There are surely those curious about the background of such a work but who may lack the time or facilities to seek out its history. The concept of this (and related works) was first argued by H.M. Hall, one of the founders of "biosystematics", and A.B. Rendle in 1930 at the Cambridge Congress, and effectively put in train by J. Lanjouw at Utrecht after 1935. All this had arisen from a felt need to have a successor to the index in A. de Candolle's *Phytographie*, by then fifty years old, and Dorfler's index-publications, defunct since the Great War.² The introduction is also the place for a statement of editorial policy, here scarcely mentioned.

The present *Herbaria*, like its predecessors, acknowledges an increasing range of collaborators and sources; compilation is now beyond the powers of one person. Again, however, a lack of consistency can be detected, although some is unavoidable. Some regional sources seem overlooked, such as *Index herbariorum austro-africanorum* by H.R. Tölken (1971). Coverage policy in

1 In 1981 a detailed guide to palaeontological collections was produced by the British Museum (Natural History).

2 One immediate fruit of the 1930 Congress was the *International* address book of botanists, edited by L. Diels, E.D. Merrill and T.F. Chipp (1931, London).

Herbaria relating to the existence of British Herbaria by D.H. Kent (now (1984) in a new edition as British and Irish Herbaria) and the herbarium list in Plant collectors in West Africa by F.N. Hepper and Fiona (not Fioria!) Neate, though stated on page 355, should have also been noted in the introduction, for these works - especially the former - have been influential.

On account of the existence of regional directories, especially British Herbaria, and for other reasons, the present work as in 1974 exudes a certain North American flavour, perhaps justified by the absence of a good comparable regional directory. The considerable increase in 1974 of North American entries owed much to the production shortly before of Systematic botany resources in America, I: Survey and preliminary ranking, or at least its raw data, compiled at NY under the auspices of the American Society of Plant Taxonomists (ASPT). Many of the listed North American herbaria, now as in 1974, are quite small. It is my opinion that ASPT could, and should, underwrite a separate North American directory comparable to British and Irish Herbaria, which is sponsored by the Botanical Society of the British Isles (BSBI). This would free Herbaria to orient its space towards regions where complete coverage is essential. To that end, a call is made for greater efforts by national and/or regional societies or other organisations, such as APSC, ASBS, BSPNG, and SYSTANZ, to assist in improving coverage.

These various comments regarding editing represent also a belief that Herbaria should not just be a compilation, but a handbook, and that its editors (and collaborators) should take a greater lead in "filling in" the inevitable gaps arising from returns of doubtless widely varying quality. More assistance from professionals with special knowledge should continue to be sought along with organisational contributions.

Two other areas for improvement may further be noted. The first of these relates to the arrangement of entries in the main part of the work. It is felt that with the increasing size of Herbaria and the increasing amount of regional and other "net-working" between herbaria themselves, the present "town" order be replaced with one more strictly geographical. A "town" listing can then be supplied in index form as a replacement for the present geographical index.

The second concerns the definitive introduction of some form of computer-based data management system. Not only is this becoming standard for this kind of work, but it would also permit of the re-introduction of sophisticated analyses of the information like those essayed (separately) by Shetler (1968, 1969). What could be excused on the basis of cost/benefits ratios prevailing in the late 1960s or early 1970s is no longer true. The inclusion of statistical and analytical information in a "general part" in Herbaria would likely be of great interest and assistance to students, teachers, writers, and decision-makers as well as the professionals themselves. Add-on microfiches could be included with hard copy for the presentation of bulky supplementary information. It would be nice to know at least how many herbaria are treated in Herbaria - nowhere is this stated!

Finally, price: that of the present edition is too high. As in 1974, it has become effectively beyond the reach of many, if not most, individuals and, to a large extent, institutions in LDC's. There is not even a soft-cover edition as an option. At £9.00, the new British and Irish Herbaria, though somewhat shorter, is much cheaper. Surely there is some room for improvement.

All in all, the seventh edition of Herbaria is, like so many Regnum Vegetabile productions, a fine and, generally speaking, attractive work. It is, however, in need of some new ideas and techniques. New standards are needed as plant systematics becomes an ever more internationally collaborative

enterprise; the approaches of three or more decades ago are no longer enough. Of particular importance is that the increasing cost-effectiveness and relative sophistication of computerised information-handling and production methodology be recognised. The "interface" which the work presents to the non-professional world should continue to be rethought with, notably, increasing ease of use and comprehension.

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D.G. Frodin

INCORPORATION OF THE SOCIETY

Given the size of the A.S.B.S. and its financial situation, Council suggests that the Society should be an incorporated body. At present the Society is not incorporated and this may give rise to several problems including:

- (i) An unincorporated Association/Society cannot contract or hold property in its own right but must do so by trustees.
- (ii) An unincorporated Association cannot make simple and effective arrangements to dispose of property when the Association ceases to exist.
- (iii) Gifts strictly cannot be made to an unincorporated Association (as such), but must be made to individuals to hold on behalf of the Association.
- (iv) All members of an unincorporated Association may become liable if the Association were negligent in undertaking some of its functions and responsibilities, including financial ones.

For associations which operate nationally such as ours it is possible to incorporate in one State or Territory only. As long as a Public Officer resident in that State or Territory is appointed, the regulations of that incorporation will apply in the other States as well.

Council suggests that A.S.B.S. becomes incorporated in the A.C.T. under the Associations Incorporation Ordinance 1953. There are various reasons for this choice including the fact that the above Ordinance does not require the Society to hold Annual General Meetings whereas the other States do. You'll be aware that A.S.B.S. presently has a more flexible (and advantageous) system of holding General Meetings no more than two years apart. Incorporation in the A.C.T. is also cheaper - the initial costs of incorporation and registration in the A.C.T. amount to \$30, compared with e.g. \$60 in Victoria, \$33 in Queensland; for lodgement of annually audited accounts: A.C.T. \$2, Victoria \$20, Queensland \$11; for alteration of constitution or rules: A.C.T. \$2, Victoria \$15, Queensland \$5.50.

The advantages of being an incorporated body include:

- (i) The Society has corporate status and may acquire, hold and dispose of real and personal property and shall be capable of suing and being sued in its corporate name.
- (ii) Incorporation ensures limited liability for both Council and ordinary members.
- (iii) An incorporated association has power to invest any of its funds and to borrow money and to hold land or property.

This proposal obviously affects all members of the Society and so it will be discussed further at the General Meeting in Thredbo on 12 February. We will have to decide whether the Society is to be incorporated, and if so whether we want it to be incorporated in the A.C.T. If we decide to go ahead with incorporation then there will be some relatively minor amendments to the constitution required. For instance, the appointment of a Public Officer will have to be included.

If you have any queries or comments about Council's suggestion that the Society become incorporated and you are not able to attend February's General Meeting then please write or phone me (or any other Council member) to discuss the matter.

J.G. West
Secretary

EFFECTIVE PUBLICATION

Following the 1981 Botanical Congress in Sydney, a Committee was set up to examine problems in the International Code of Botanical Nomenclature, Articles 29-31 relating to Effective Publication, Taxon 29(4) and 30(1) presented items considered in August 1981 at Sydney. The special Committee has begun considering the problems.

I am the Australian member of the Committee and would greatly appreciate it if people with views about 'Effective Publication' would let me know their views so that I can transmit them to the Committee Chairman.

One major issue at this stage is to precisely define what constitutes publication under the Code, especially in view of the radically and rapidly changing nature of the readily available methods of publishing material.

Please have your comments to me by the end of January.

R.J. Hnatiuk,
Bureau of Flora & Fauna,
G.P.O. Box 1383,
CANBERRA. A.C.T. 2601

SYNOPTIC KEYS

In my revision of *Solanum* in Australia I included synoptic keys as well as the conventional dichotomous keys. There has been no comment to me on their usefulness. I would be grateful if anyone who has tried them would let me know if they worked and if such keys are useful and worth including in accounts of large genera.

D. Symon
Waite Institute,
Glen Osmond, S.A.

REQUESTS FOR MATERIAL

Seeds of *Cakile*. Dr J. Rodman is doing chemotaxonomic research on *Cakile* and requires seed. He needs 10 or more dry fruits from each plant, preferably with a voucher and data. Send to Dr J. Rodman, National Science Foundation, Washington, DC 20550, U.S.A.

Seeds of *Lepidium*. Dr K. Meyer is doing chemotaxonomic research on *Lepidium* and requires seed. He requires mature seed from plants growing at natural sites, preferably with a voucher and data. Send to Dr K. Meyer, Fabereich Biologie/Chemie, Universitat Osnabruck, Postfach 4469, D-4500 Osnabruck, West Germany.

ASBS Council Elections

1985-86 TERM

An election is necessary to fill the two (2) Councillor positions on ASBS Council. For further details and the Ballot Paper, refer to the enclosed loose leaf page in this issue of the Newsletter.

THIRD INTERNATIONAL CONGRESS OF SYSTEMATIC AND EVOLUTIONARY BIOLOGY, 1985

The Congress will be held on 4-10 July, 1985 at the University of Sussex, near Brighton, England.

The following Congress Symposia are being organised: Symbiosis in Evolution, Conservation of Tropical Ecosystems, Biogeographic Evolution of the Malay Archipelago, Adaptational Aspects of Physiological Processes, Co-evolution in Ecosystems and the Red Queen Hypothesis, Angiosperm Origins and the Biological Consequences, The Measurement of Rates of Evolution, Molecular Biology and Evolutionary Theory, Co-Evolution and Systematics, Molecules vs. Morphology in Phylogeny: Conflict or Compromise?, Random and Directed Events in Evolution, Biochemical Innovation in Microbial Communities.

There will also be Special Interest Symposia on other topics, as well as sessions for contributed papers, films and poster papers.

For further information write to: Professor Barry Cox, ICSEB Congress Office, 130 Queen's Road, Brighton, Sussex ON1 3WE, U.K.

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The Society

The Australian Systematic Botany 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. The deadline for contributions is the last day of February, May, August and November.

Notes

- (1) The deadline for the next Newsletter is 28th February.
- (2) ASBS Annual Membership is \$13 (Aust.) if paid by 31st March, \$15 thereafter. Students (full-time) \$10. Please remit to the Treasurer.
- (3) Advertising space is available for products or services of interest to ASBS members. Current rates are \$30 per full page, \$15 per half page. Contact the Newsletter Editor for further information.

Mailing List

All address changes should be sent to the Treasurer or the Editor.

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