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EDITORIAL

It seems to me that systematics is at a crossroads. During most of this century, taxonomy has been on the decline from its pre-eminent position in the biology of the previous two centuries. This has been true for the public perception of the importance of systematics within biology (since it now has to compete with genetics, physiology and ecology for attention), and is also true for its role in undergraduate teaching at universities (where it has deteriorated to being little more than a plant identification subject). This decline has been global in scale, although it has been particularly prevalent in Great Britain and the United States of America. Australia has clearly tended to follow the same line, although the trend is more recent.

It therefore seems to be important that systematics actively attempts to regain its place as the discipline that unites all of the other areas of biology. This central role stems from the fact that systematics makes use of the data provided by all of the other biological disciplines, as well as from the fact that it provides the phylogenetic framework within which these data are interpreted.

In order for this to happen, two things must change:– the public perception of taxonomy; and the undergraduate teaching of it. The public perception can only change by active persuasion on the part of taxonomists. This applies particularly to raising the public profile of the discipline, as well as to emphasizing its valuable role in modern society. The undergraduate teaching can only change by presenting systematics as a modern scientific study of intrinsic and practical interest in its own right, rather than as merely an aid to identification.

One of the more obvious attacks on the first of these problems has been the current interest in biodiversity. In the past few years, the focus of conservation groups has changed from the conservation of individual species (usually those considered to be rare and endangered) to larger issues, notably the species composition of whole communities (usually under the term biodiversity).

Many taxonomists have jumped on this bandwagon, quite rightly pointing out that no estimate of biodiversity is possible without sound taxonomic data. Almost everyone reconizes this fact, and systematists therefore have a golden opportunity to promote their own cause. If we can convince the sociological, economic, and political decision-makers that we and our work are of some immediate practical significance (in addition to our long-term usefulness), then we can at least stop the slide, if not reverse the trend entirely.

There have been a couple of recent publications discussing the details of these issues that are worth drawing to your attention. The first is in the February 1992 issue (Volume 23:1) of the *Bulletin of the British Ecological Society*. The paper by P.J. Edwards and D.W.H. Walton (pp. 17–26) is entitled "The state of taxonomy: an ecologist's view", this being the scene-setting paper at the *Taxonomy and Ecology* meeting in December 1991. This paper discusses the importance of taxonomy to ecology, and highlights the current extremely serious plight of taxonomic teaching in Britain. It considers the causes of this situation, presents evidence to support these claims, and then predicts an even more depressing future. It ends with a warning to all professional scientific societies concerning the need to monitor their own health, if they are not to end up in the same situation.

The second, more compendious and more local discussion of the issues is in the March 1992 issue (Volume 5:1) of the *Australian Biologist* (from the Australian Institute of Biology). This volume contains the proceedings of the symposium in November 1991 on *Australia's Biota and the National Interest — The Role of Biological Collections.* There are eleven papers, five workshop summaries, plus the foreword and opening address.

From the professional point of view, the most relevant papers are "Australia's biological collections and those who use them" (B.J. Richardson and A.M. McKenzie, pp. 19–30), "Professional training and recruitment in systematics" (P.Y. Ladiges, pp. 76–79), and "The funding base for Australia's biological collections" (J.A. Armstrong, pp. 80-88); while "Ecology and conservation: the role of biological collections" (D.G. Green, pp. 48–56) and "Collections and conservation: a case study" (A.I. Keto, pp. 57–67) push the current relevance. However, everyone should read the entire issue.

The recent Fenner Conference on the *National Biodiversity Strategy*, is another example of the current diversity-related activity. It is probably significant to note that it was the Ecological Society of Australia that was invited by the Australian Academy of Science to hold this conference. As in Britain, we may be faced with the very real possibility that it is largely the ecologists who do the most to promote the cause of systematics, rather than the taxonomists themselves.

David Morrison

ARTICLES

Memories of J.M. Black

Compiled by W.R. Barker
State Herbarium of South Australia
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Introduction

The 27 November 1991 meeting of the Adelaide Chapter of ASBS (held in the State Herbarium in the Botanic Gardens of Adelaide) was dedicated to the South Australian botanist John McConnell Black, who died 40 years ago. It was attended by three grand-daughters of J.M. Black:- Mrs Helen Poole, who was daughter of Gladstone farmer George McConnell Black; Mrs Shirley Clissold, the daughter of mining engineer Arnold Barham Black at Broken Hill; and Ms Marjorie Andrew, the daughter from the marriage of Clara Denford Black and one who shared J.M. Black's passion for botany, Horace Walpole Andrew.

Enid Robertson introduced the night's proceedings with her memories of "J.M.B." and her views of him as a plant taxonomist. Enid is one of the few systematic botanists active today who worked with J.M. Black. Black was "one of those few people who stand out in one's lifetime". She knew him from 1947 to his death in 1951, consulting him on difficult determinations in her position of Weeds Adviser to the Department of Agriculture and Systematic Botanist at the Waite Agricultural Research Institute, taken up when Constance Eardley went on sabbatical.

Enid's talk is not reproduced here. It is similar to the one she presented to the dinner on 21 July 1978 marking the publication of the third edition of Part 1 of Black's *Flora of South Australia.* This talk was published in the *Newsletter* in 1978 (see below).

To fête Black's systematic contribution we have reproduced an edited version of the obituary by his colleague Constance M. Eardley in the forerunner to our *Newsletter, Australasian Herbarium News*, which may be not readily accessible to some readers. It is probably the most wide-ranging of all of the botanical obituaries cited below, and it comes from one who knew Black for much of his botanical life and admired him greatly.

Long closely associated with her grandfather, Marjorie Andrew gave the main presentation of the evening. It is reproduced here in full. Marjorie and Shirley Clissold have been involved for many years in editing the writings of J.M. Black, resulting in the publication of the *Memoirs of John McConnell Black* in 1971 and then in two volumes covering the first eight of his diaries, with one more volume to come.

The Diaries of J.M. Black appear not to have been widely publicised. Copies are available through the Botanic Gardens of Adelaide. They are a detailed insight into Black's view of life in the family and the community. The third part, covering almost all of his botanical life, is currently being worked up as the final part of the *Diaries.*

In October 1991 I made contact with Dr Roger Foster Black, grandson through his medico father Eustace Couper Black, and for many years a plant ecologist in Western Australia. He shares the admiration of his cousins for their grandfather, remembering an early 1950 job during the long vacation during his science degree at the University of Sydney. He helped J.M.B. dissect specimens for the revised second edition of the *Flora of South Australia.* This was rendered difficult by the excessive power of the microscope. He described the shaky hands which plunged the needle into the composite flower at just the right instance — the result of many years' practice.

During the evening Shirley Clissold and Helen Poole told of their regular though infrequent visits to Brougham Place from the country. J.M.B. read to them from his high-armed wing chair. They confirmed many of Marjorie's childhood memories. As children all thought him to be very poor, Shirley telling the tale of asking her grandmother for a stamp for a letter home. Sent to the study to ask her grandfather, she watched him remove one from his neat desk drawer, hand her the stamp, and then, to her confusion, request the penny in return. All agreed that they were oblivious of J.M.B.'s botanical fame until adulthood, when they learnt it not from their modest grandfather but from others.

Black's interests ranged widely. Among the many photographs, annotated and illustrated books and diaries, newspaper clippings and other memorabilia circulated at the meeting, was a little gem of a

notebook containing Black's notes on the North American Indian. He had meticulously transposed in pen and ink maps and even portraits showing different styles of dress, together with the beginnings of a dictionary to the language! What would he have achieved with access to a library photostat machine? From presumably similar humble beginnings arose his botanical pursuits. These, however, flourished to the benefit of many.

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Constance M. Eardley

[Lecturer, Department of Botany, University of Adelaide. From Eardley (1952b), as corrected in her hand in her copy of *Australasian Herb. News* in the library of the State Herbarium of South Australia.]

The passing of John McConnell Black will be deeply regretted by botanists through the length and breadth of Australia, and by many more in other parts of the world. His work dealt with the systematic botany of the native and naturalized flora of South Australia; and his handbook *The Flora of South Australia* is the current standard work, not only for that state but for large adjacent tracts of all of the five other mainland states.

J.M. Black, as he was affectionately called, lived and worked effectively until the great age of 96. He died quite suddenly at his home in North Adelaide on sunday 2 December 1951, having spent a long afternoon working at the second edition of his *Flora* the day before. He was one of those few who escape the major diseases of old age, and his mental and physical powers happily remained equal to the considerable labours of authorship. He retained the capacity, so rare in the aged, to work for long continuous sessions; and though the speed of his work diminished somewhat during the last years, its quality was maintained.

The picture seen by visitors to his study at this time was that of a very thin old man of medium stature, now reduced by age, with a fine domed head and very alert eyes, who moved about freely enough even when taking down his herbarium boxes from the top shelves of the cabinet. Having politely declined his visitor's offer, he would cautiously climb a small firmly–built set of steps, and descend with the required box.

Black was an amateur botanist, and self-trained in his own field. He had ability, intellectual tastes, and a passion for study. Thus, in the 49 years of life that remained to him after his retirement from journalism in 1922 a new man developed — Black, the botanist — to the infinite enrichment of Austra-

lian science. He was independent and happy at home, in his own study with his own herbarium, and always worked as a distinguished amateur, like George Bentham before him.

The herbarium of South Australian plants that he himself amassed, by his own efforts and those of some of his family, especially his son Dr E.C. Black, and of very active botanical friends, was no mean achievement for a private individual who spent most of his life in a city. The flora of South Australia comprises about 3,000 species, and most are represented in his herbarium by several specimens giving a range of forms and localities.

Also easily accessible to him in Adelaide were:– the University of Adelaide Herbarium founded by Prof. Ralph Tate; the collection built up by Dr Richard Schomburgk, director of the Adelaide Botanic Gardens during the last quarter of the 19th century (these two collections were amalgamated at the University about 1939); the important private collection of orchids belonging to Dr R.S. Rogers, who wrote the section on this family in the first edition of Black's *Flora*, which was presented to the University on Roger's death in 1942; and the large private collection belonging to Dr J.B. Cleland. Black was, of course, in close correspondence with the other Australian herbaria, with the herbarium of the Royal Botanic Gardens at Kew, and with others in various parts of the world, though he seldom visited these distant herbaria beyond Adelaide.

His valuable working herbarium was offered, with characteristic modesty, as a future bequest to the University of Adelaide some years ago; and since his death it has joined the other important collections that are becoming centralized in the Department of Botany there.

He had a genius for recording the observations of his active mind, whether botanical descriptions and drawings or the other events of his daily life, in a series of diaries. The botanical notes, products of a continuous interest, were added to all the herbarium sheets as he dissected the plants; and they are richly supplied with sketches. They also found their way into the margins of the books he used the most, which are annotated, interleaved and illustrated very copiously.

His own botanical drawings are beautifully clear, and are to be found in his published works; though when, in later years, money was made available from Australian commonwealth and state funds various artists were employed to assist, and the illustrations became more numerous. In the style of his *Flora*, Black was probably much influenced by that useful French work of the Abbé H. Coste *Flore de la France*, which he also consulted continually for information upon the naturalized Mediterranean plants so common in southern Australia.

He worked with the simplest equipment, and probably never used the helpful binocular dissecting microscopes that are so valuable for small flowers. His chief tools were two or three low-power magnifying lenses (some of the three-legged type), an ordinary compound monocular microscope, measuring scales, and dissecting needles; a pot of paste was always near, and the appropriate label was at once pasted securely around the stem of new specimens. Nor was his own botanical library very extensive.

His only assistants were his family, friends and colleagues; and yet he coped with the routine of pressing, poisoning and mounting all of his specimens, writing his books and scientific papers, and conducting the wide botanical correspondence that his work involved. He was a prompt and meticulous correspondent to the end of his days, and letters in his handwriting were familiar to most Australian systematic botanists.

His first important botanical work was a small book *The Naturalised Flora of South Australia*, illustrated and published by the author in 1909 in Adelaide. He contributed a long series of 45 papers on "Additions to the flora of South Australia" to the *Transactions of the Royal Society of South Australia*, beginning with volume 33 in 1909 (his first contribution to that society), and ending with No. 45 in volume 73 in 1949. There was one later paper, a joint one in 1950. He had been elected a fellow of the society in 1907, and later served on the council and then as president in 1933–34. He was also chairman of its Field Naturalists' Section.

There were, in addition, other papers, some of them joint publications. There were papers reporting on collections of plants made by scientific expeditions to distant parts of south and central Australia; papers on particular groups of plants; and papers on seven aboriginal languages in 1917 and 1920. These last–mentioned showed but one facet of his great interest in and knowledge of languages and phonetics. He was among the first to use the International Phonetic Script to define the sounds of aboriginal speech; and he also knew Latin, French, German, Italian, Spanish, and Arabic.

His second and more important work was the *Flora of South Australia*, published by the state government as one of a series of authoritative Handbooks of the Flora and Fauna of South Australia, and issued by the then British Science Guild (South Australian Branch). It appeared as four suc-

cessive volumes in 1922–29 from the press of the Government Printer, Adelaide (cf. *Australian Herbarium News* 2: 10, 1948). He embarked on this rather formidable work at the age of 66.

This book replaced Tate's small *Handbook of the Flora of Extra-Tropical South Australia*, Adelaide, 1890. It ran to 746 pages, and had much fuller descriptions of 2,430 species with more detailed locality and other notes than the earlier work. It was more expensive that Tate's little book had been, but the government enabled students to procure it at quite a low price. It was a tremendous success with students, naturalists, agriculturalists and scientific workers of South Australia, and was almost as useful in the other Australian states, many of which had not a good recent flora of their own in print.

He continued to publish his "Additions" annually; and in less than 20 years the earlier volumes of the *Flora* were out of print. To the generation of botanists who had enjoyed the advantage of its use this was not to be suffered without protest. The book was a standard university text in a botanical department distinguished for its ecological research, and in which Mr Black had been appointed Honorary Lecturer in Systematic Botany in 1927. Representations were therefore made to have a second edition published with the same government help.

However, the original author could scarcely be expected to undertake it at the age of 84; but, after discussing various alternatives, he was actually persuaded to take up the task again. Apparently, he felt too vigorous to sit by and watch someone else try to follow in his footsteps. For a dozen years more he worked steadily at the *Flora*; it carried him safely through the personal tragedies of the death of his wife and then that of his daughter. He was subsequently fortunate to have as companion and housekeeper Miss M. Raymont, who became very sympathetic to his task, drawing his illustrations and helping him read proofs. Prof. J.B. Cleland was also a staunch proof–reader.

The new *Part 1* appeared in print in May 1943, *Part 2* in 1949, and *Part 3* was well on the way at the time of the author's death, the manuscript of 22 out of the 33 families in that volume being complete (ending with Plumbaginaceae), and many notes and drawings having been prepared for subsequent families. Also included were some current additions to the earlier volume of the second edition.

The book is a student's flora rather than a taxonomist's; citation of synonyms is therefore quite brief, his attitude to polymorphic species was cautious, and he did not publish new species lightly. He was rather critical of the work of O.E. Schulz (see Engler's *Pflanzenreich*, 1924) in subdividing the Australian genus *Blennodia* (Brassicaceae); and though he at first favoured Paul Aellen's inclusion of the Australian *Dysphania* in *Chenopodium*, these curious little plants are restored to their distinct genus in his second edition. Black's pre-occupation was always with the plants of South Australia and occasionally central Australia, and not with monographs of groups. However, he did not lack the urge to bring order into various pieces of botanical chaos, as witness his "A revision of the Australian Salicornieae" (*Trans. Roy. Soc. S. Aust.* **43**: 355, 1919) and "The flowering and fruiting of *Pectinella antarctica*" (*loc. cit.* **37**: 1, 1913), a marine flowering plant.

In 1936, the year of the centenary of South Australia, the Royal Society of South Australia arranged a series of addresses on the history of various branches of science in the state, and J.M. Black delivered that entitled "One hundred years of systematic botany in South Australia". His interest in the International Code of Botanical Nomenclature was intelligent and careful but not dominant. He attended the Fifth International Botanical Congress in Cambridge in 1930, and represented the University of Adelaide, the Royal Society of South Australia, and the Royal Botanic Gardens Melbourne on that occasion.

It was also in this year that he was made an associate *honoris causa* of the Linnean Society of London, a select group that also includes another South Australian, the entomologist Mr H. Womersley. Black's work was also acknowledged by several awards from his scientific colleagues in Australia. These included:– the Sir Joseph Verco Medal (Royal Society of South Australia, 1930); the appropriate Ferdinand von Mueller Medal (Australian and New Zealand Association for the Advancement of Science, 1932); the Australian Natural History Medallion (Field Naturalists' Club of Victoria, 1944); and the Clarke Memorial Medal (Royal Society of New South Wales, 1946). His books were basic to many a local problem of primary industry, and his help and advice on plants and weeds were always willingly given when requested by government departments or professional botanists; and it was therefore appropriate that these services to the state were recognized by the award of an M.B.E. in 1942.

Having made this brief summary of his botanical work, it only remains to add some personal impressions. He did not travel much, except for rare big tours to the countries of South America,

Great Britain and Europe in 1903 and 1930; but his tastes would probably have led him to Europe more often if his home had not been so distant. As for the rich herbaria overseas, he continually corresponded with them and visited some, but scarcely worked in them. His major collecting trips were made in the years before his Flora appeared:– he went by rail to the south-east, Eyre Peninsula, Ooldea, and Marree.

J.M. Black was modest and friendly, and with his quick well-stocked mind he was a delightful companion, apart from botanical interests. Visitors to his study were not permitted to feel that they were interrupting his work, although the signs of it filled the room. Other botanists were perfectly welcome to consult his herbarium, even if it necessitated mailing large parcels to them. He appreciated their work, and when appropriate he invited them to collaborate in parts of his *Flora*.

For half a century J.M. Black has been a botanical institution in Australia, regarded with the greatest respect and affection by his colleagues. Though we have now lost him, the gift of his work will remain a strength to us far beyond all his days.

Marjorie Andrew

John McConnell Black in his long life was a banker, farmer, journalist, and botanist, and the author of the *Flora of South Australia*. He was also a much loved father and grandfather.

No doubt some of you will have read his *Memoirs* published in 1971, and Volumes I and II of the *Diaries*, which describe his life up to 1910.

In this talk I will briefly describe his family background and education, and their influence on his life. Secondly, I will give my impressions of him, when I lived at 82 Brougham Place from 1928 to his death on 2 December 1951. I will finish with extracts from Diaries 9-10, which refer to the writing of the first edition of the *Flora of South Australia*.

J.M.B. was born on 28 April 1855 at Wigtown, Scotland. He was the third child of George Couper Black and Ellen Foster Barham. His father, and grandfather John Black, were agents for the British Linen Bank and procurator fiscal (public prosecutor of a district in Scotland) of Wigtown. Family tradition has it that George was a

Marjorie Andrew (left), Clara Andrew née Black (centre), and J.M. Black (right). Taken in the back garden of the house at Brougham Place, November 1942. The small original is pasted in Black's diaries. (This photo from a copy in the possession of Marjorie Andrew).

brilliant lawyer even when inebriated, which may account for J.M.B.'s brains as well as abstemious habits. The bank house where young John was born is a two storey grey stone building opposite the church where his father and grandfather lie buried. If his father had not died when John was eight, and the position as agent etc. taken up by his uncle Ebenezer, John may have stayed in Scotland as a bank agent and lawyer.

His mother, a talented artist and an intellectual, was the daughter of Dr Thomas Foster Barham of Devon, whose forbears had been sugar planters in the West Indies. A Dr Henry Barham wrote on botanical matters in his *Hortus Americanus* of 1794. Dr Thomas Foster Barham qualified as an M.B. at Cambridge, and practiced in Penzance and Exeter. He was an enthusiastic Hellenist, and wrote a Greek Grammar and published *Philadelphia or the Claims of Humanity*.

John received his early education at Wigtown Grammar School and at the Edinburgh Academy, where he was not happy. Being small, he was bullied by the bigger boys and called a cad as he lived in a flat.

After six years as a widow, his mother decided to leave the cold of Scotland and live nearer her own family. So they moved to Bristol; and John went as a boarder to the Church of England College School at Taunton, founded by Bishop Fox in Queen Elizabeth's time, where he spent three very happy years. The headmaster was the Rev. William Tuckwell, a very popular and progressive master. I quote from his obituary: "In 1864, Rev. William Tuckwell went to Taunton and with the help of Lord Taunton, like himself inspired with the new spirit for skilled teaching of science, raised the school to a high level". I remember my grandfather speaking of meeting the Rev. Tuckwell's daughter at the British Association for the Advancement of Science Congress in Adelaide in 1914.

After leaving Taunton, he studied German in Bristol and near Leipzig, and in 1872 went to the Commercial School in Dresden. There were students from all over Europe at the school, and his sympathy for Germans must have stemmed from his happy time there. I once asked my grandfather why he did not go to Oxford or Cambridge; he said his mother could not afford it, and in the 1870s it was considered that a German business education was best for a commercial career.

On his return to Bristol, he worked as a clerk there, and then obtained a position in the British Linen Bank in Edinburgh. Here he joined a small clique who read Darwin's *Descent of Man* and *Origin of Species*, Paine's *Age of Reason*, D.R. Strauss' *The Old Faith and the New*, and enjoyed "the national discussion for and against the doctrine of evolution". London, and a position in the Oriental Bank in 1875, was the next move.

In 1877, Mrs Black was advised to live in a warmer climate; and J.M.B. was very restless, wanting to seek his fortune overseas. The family chose South Australia; and Mrs Black, John, his brother Alfred Barham Black, and sister Matilda left for Adelaide. His sister Susan (Helen Lenoir was her stage name) had just started work as secretary to Richard D'Oyly Carte. Helen was a brilliant woman, gaining distinctions at London University before women were given degrees. She was the business brains behind the D'Oyly Carte Opera Co. She married D'Oyly Carte in 1888, and only visited her mother once.

J.M.B. became one of the pioneer farmers of Baroota, north of Port Pirie, from 1878 to 1884. His farm was above Goyder's Line, and though he worked hard it was a financial disaster. His wife Alice Jane Denford, whom he married in 1879, persuaded him to leave. He began work as a journalist on the *Register* and then on the *Advertiser*. After the death of his mother in 1902, he resigned from the *Advertiser* and went overseas, travelling to South America, where he had dreams of farming in Argentina. He received no encouragement from Alice or his children; and on his return to Adelaide he began working on the *Naturalised Flora of South Australia*. With three sons to educate as a farmer, doctor and mining engineer, he continued working as a *Hansard* and Royal Commission reporter; and he edited both *Fauldings Journal* and the *Journal of Agriculture* for some time.

In Diary 8 entry 11/9/1900, he mentions taking up botany. My mother told me that he became interested in a botany book that she brought home from the Advanced School for Girls. She left there in 1898, so she was no doubt correct. J.M.B.'s education at Taunton, his forebears, the new ideas of the 1870s, the scrub at Baroota, and the botany book would all have played their part in making him take up botany.

His other great interest was languages. He wanted to publish a book on Australian English, but could not get a publisher. He added Spanish and Arabic to the Greek, Latin, French, German and Italian that he learnt in England. He noted the dialect of the Baroota tribe as a young farmer; and on botanical excursions to Murat Bay and a visit to the Point Macleay Mission Station in 1892 he studied the languages of the local tribes. These vocabularies were published in the *Transactions of*

the Royal Society of South Australia in 1917. His languages would have helped him in his correspondence with botanists in Germany and France, and in nomenclature.

After the death of my father Horace Walpole Andrew, who had been a botanical assistant at the Department of Agriculture before taking up a fruit block at Berri, my mother and I went to live with my grandparents in 1928. J.M.B. was 73, and was just completing the first edition of the *Flora of South Australia.* He was a small dark man with a bald head, and twinkling eyes behind his glasses. The photo taken in 1927* was a very good likeness, and he seemed to stay the same for the next 23 years. He patiently played ball with me in the Palmer Place gardens and helped with homework.

Although frail in appearance, he was always mentally and physically active. He was still climbing ladders to clean gutters at 92, when my uncle Dr Eustace Couper Black forbade such activity. He was amusing and tolerant, and could control me with gentle sarcasm. He was impatient with my efforts to speak French. None of his children or grandchildren had his gift for languages. Grandchildren were usually reprimanded in French, and the dog was spoken to in Spanish.

He liked young people, and he had his favourites amongst my friends, especially the prettier girls. My grandmother and mother certainly looked after his comfort; and after their deaths in 1936 and 1943, respectively, his housekeeper Miss Raymont and I continued to do so. We assisted with proofreading, and I did some of the indexing for the revision of the *Flora.*

Early in the 1930s, J.M.B. was persuaded to have breakfast in bed, where he read the paper thoroughly. He was usually up by 10 a.m. He worked in the garden in the morning, "bullocking" as he called it, bitumenizing paths, doing repairs, gardening, and attending to the six fowls and the compost heap. Afternoons were spent botanizing in the study. He lunched once a week with John Sincock, an old *Advertiser* friend, 17 years his junior. His son Eustace came to lunch on Fridays.

J.M.B. was a small eater, and he always delayed coming to meals. These habits resulted in two family stories. "Take half back Alice" is now the family reply when any of us is served a big meal. The other remark: "In Spain we never dined before nine" was quickly answered by my mother with: "That was why they had a revolution". J.M.B. and Alice were in Spain during the last days of King Alfonso in 1930.

E.H. Ising often came to dinner. I can remember my grandfather saying that a good botanist was lost when Ising became interested in religion. Professor Cleland and Miss Eardley were constant visitors, but I did not see them much as I was at school or work during the day. Two visitors I remember well included Mr Walter Cain of Port Augusta, the maker of the beautiful marquetry box that is displayed in the State Herbarium. He was totally deaf, and I am sure that he never knew who was who at the dinner table. The other visitor was a very charming young botanist, Professor Selling from Stockholm University, who dined at Brougham Place in 1949. He was the first young botanist I had ever met, and he made quite an impression.

J.M.B.'s study looked out on Palmer Place Gardens. His botanical library, part of which is now in the possession of his grandson Dr Roger Foster Black, an agronomist now living in Perth, was on the southern side of the room, with a set of wooden steps nearby. His herbarium was in a large wooden cabinet, and the overflow was in cardboard boxes on top. He worked at a large wooden table with a microscope and small magnifying glass. All notes etc. were written on small scraps of paper, and then attached to botanical specimens. Two sets of watercolours painted by his mother of the Baroota farm hung over the mantlepiece. Victorian prints and photos of old friends adorned the walls.

J.M.B. did not go on botanical excursions in my day; and my mother lamented the fact that botany was not so healthy for him now that he was stuck in his study. I accompanied him on visits to Captain White at the Reedbeds and to Mr Bailey at the Gardens and to the Wild Flower Show of the Field Naturalists, and I heard him give an illustrated talk on his 1930 overseas trip. However, as a schoolgirl I was not very interested in these elderly botanical enthusiasts.

After the death of his wife Alice in 1936, J.M.B. seemed to lose all desire to travel or go on holidays. He seemed content to be at home with his work and books and family. I felt very sorry for Farvie, as I always called him, as he grew older and his friends and contemporaries died. He had his urinary problems and failing eyesight, but he still continued to work on the revision of the *Flora.*

Soon after Noel Lothian's appointment as director of the Adelaide Botanic Gardens, I remember Farvie telling me how this energetic young man was trying to get his support for the building of a herbarium in the Gardens. I gathered that at 95 he did not want to get involved. His own herbarium

* Displayed as the frontispiece of the latest (fourth) edition of the *Flora of South Australia.*

was left to the University of Adelaide, and as you all know it is now in this Herbarium.

Right up until a few weeks before his death, he went into town to do business, although he was usually accompanied by his son Eustace or daughter–in–law Julia for the last year. Eustace also took him to Royal Society meetings, if it was not too cold. I was away in Alice Springs for his 90th birthday in 1945, but there was a big celebration at Eustace's for his 85th, which Professor Cleland and three of J.M.B.'s great–grandchildren attended. In 1949, Sir Edward Salisbury, director of the Royal Botanic Gardens Kew, visited him for afternoon tea. Miss Eardley took him to meet Professor van Steenis, a distinguished botanist from the Netherlands, at the Botanic Gardens in August 1950. A newspaper photo in the *Diaries* is the last one taken of him.*

In October 1951 he wrote in his diary of sulphuring vines and putting bordecide on the peach trees. About three weeks before his death he developed a cold or even a mild case of pneumonia, but he recovered enough to work on the last page of *Part 3* of the revision of his *Flora* on the day before he died at home.

Extracts from the Diaries, covering the years 1912-1930

After the publication of *The Naturalised Flora* there is little mention of botany until 22 May 1912, when J.M.B. read a paper on "Additions to the flora of South Australia", which was "a bit of a swan song" before the appointment of the first Professor of Botany, T.G.B. Osborn, at £800 a year. J.M.B. had filled a niche as the state's systematic botanist following Prof. Tate's death in 1901.**

On 23/10/1912 he wrote: "I have been free to botanise since the beginning of September, nice collection from Tarcoola and Gawler Ranges by J.W. Mellor and Captain White, but Sincock wants me to go again for a week or two". He also mentions being "paid £50 from the Government for my 3 years' work in identifying plants for the Agriculture Dept".

In 1914, after the death of his sister Helen and the £5,000 legacy, he moved to Brougham Place. In 1914 he was offered work on the Government Hansard, for which he had fought for 20 years, but at 59 he refused permanent work.

The Great War began just as the British Association for the Advancement of Science was meeting in Adelaide. Their guest was R.P. Gregory, a lecturer in botany at Cambridge University, young and quite a sport. "Cares nothing about systematic botany, being like Professor Osborn devoted to physiology and anatomical work".

In October 1914: "Visited Captain White's with a lot of Field Nats and others to see the birds and botanical specimens brought back from the Musgrave and Everard Ranges"; and the following year he was working on Captain White's collection and the "Additions to the flora of South Australia No. 8".

At the time of the Gallipoli landing he and Alice were both in the sand on Le Fevres Peninsula. He reflected on the quiet there compared to overseas. He was concerned about the treatment of the Germans in South Australia. He also reflected on the sermons at Christ Church and prayers for the success of the Allies. "Seemed rather queer making God a partisan in this country."

In October 1915 he and Alice went on a trip up the Murray River, travelling on *S.S. Marion* up to Renmark, returning by Paringa, and staying two days at Karoonda. "Went by train to Mindyarra, first station from Karoonda on Waikerie line and walked back 6.25 miles or say 5.25 miles because we took a short cut through the scrub. How quiet and silent the great trans Murray scrub is — as though there were no horrible war going on in Europe."

He also went to his son George's farm at Gladstone. "Botanised at Melrose on Campbells' Creek in the pinery and around the town but never came on Pultenaea graveolens, which Eustace found at Mt Remarkable."

"Captain White brought in a good collection from Moolooloo."

In November 1915 he went on the *S.S. Wandana* and by train via Cummins and Minnipa to Murat Bay (Ceduna). "Slept in a rail carriage at Minnipa, which is in midst of dense scrub and has no hotel. Stayed a week at Murat, where there is a hotel. A big encampment of black who talk Wirrung. Bathed in Great Bight. Made a good collection."

He comments that, because of increased taxation, he will not be able to afford to go on any more excursions.

In June 1916 he read the 9th paper of the "Additions to the flora of South Australia", and was preparing a paper on the native languages Wirrung, Narringeri and Baroota.

Rodney Cockburn collected plants for him

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* A reproduction of the relevant diary pages is included over the page.

** A reproduction of these diary pages is also included over the page.

drawing the last of the [illegible] botanical figures under the last grant of £50 by the Prime Min's Dept - Julia visiting Melbourne for a fortnight to help Jack in furnishing the house he has bought there. Marjorie getting £9 a week in the Bush Bank now. Eus studying German at home & under a lecturer @ the Univ[illegible]y. He is [illegible]ing

recruits for the Army & assisting Dr Tostevin in his eye work. Good rains & bitterly cold. Reading 2 Conan Doyle books - "Doings of Raffles Haw" and "Rodney Stone".

14 Therm. 159.

3rd Aug 1951 - Still very cold & wet - thermom @ 12°C 2 days ago. Got another batch of copy & figs. for Part 3 into the Govt. Printer's hands.

23 Sept. = 6th Complem. day Jan 159.

1 Tiser → Aug. 3 '51.

Four Hurt In City Crash

Four people were injured when the car in which they were travelling knocked over a safety zone standard yesterday at the corner of King William and Grenfell streets, city.

Marie Leaney, 20, typist, of King William street, city, and Marjorie Andrews, 32, machinist, of Brougham place, North Adelaide, were admitted to the Royal Adelaide Hospital with concussion and lacerations.

The driver, Michael Kavooris, 27, timekeeper, of Gray street, city, and Wilfrd Grow, 30, clerk, of Balhannah, were treated for abrasions.

Marjorie was returning from a dance & supper given by Seppelt & Co. in the wine-making dim & the collision with the standard took place about 4 a.m.

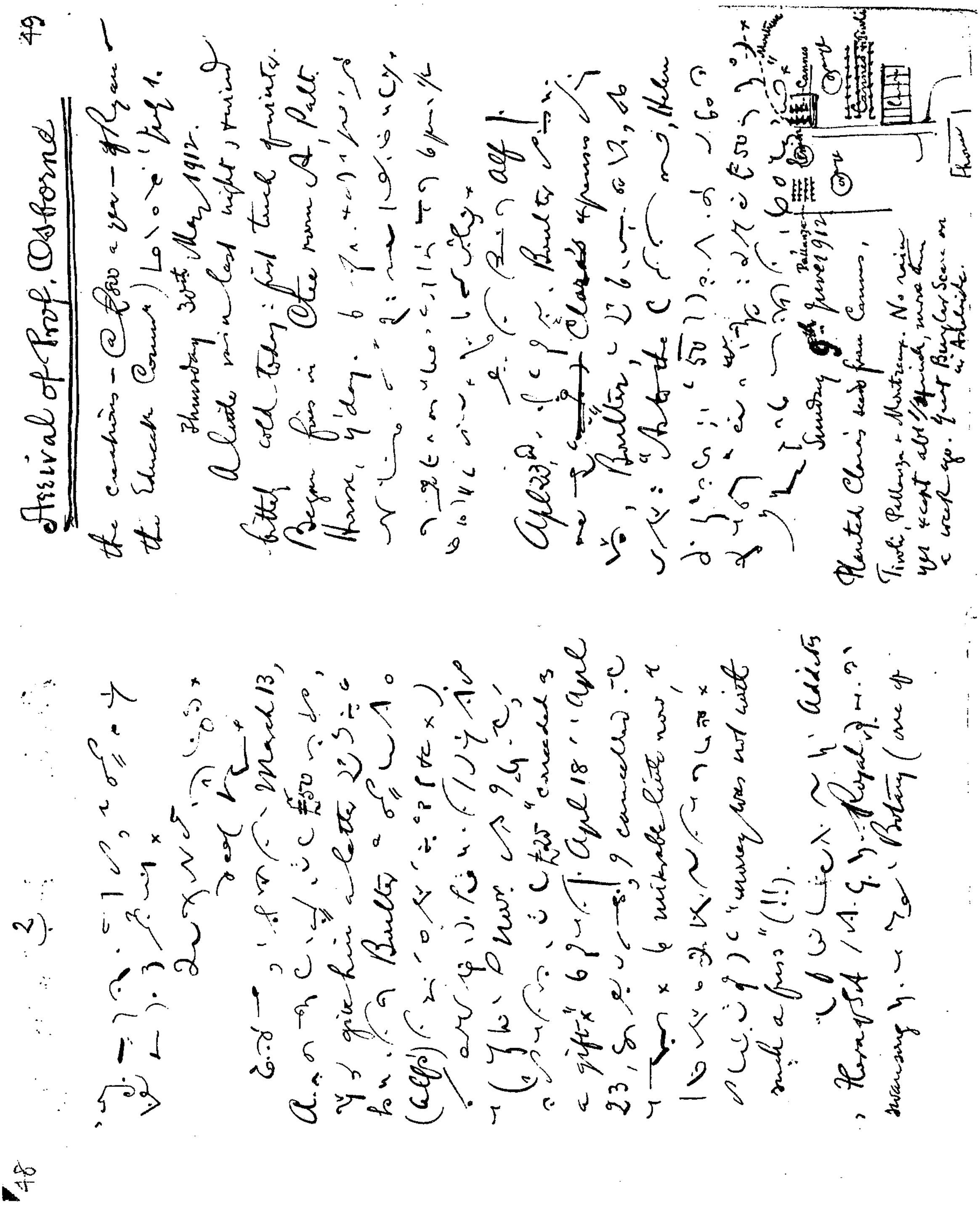
Monday, 24th Sept. 1951 - 1 Vendim. 160.

Entering spring but still cold & wintry; 15°C & a little below this fig. in house.

Several lamented deaths: Dr. (Sir Arthur) Cudmore in March (who did me such grand service in prostatic trouble 4 years ago); Mrs Daisy Bates; Dr. Angas Johnston (of the Roy. Soc. & poor lonely Dorrit Black, killed by a taxi-driver who ran into her car a week ago (no inquest yet). Eus attended the memorial service for her at the Unitarian Church, Wakefield St. after which she was cremated. It has been a great shock to [illegible] who knew her. She & Clara went to Fr[illegible]ned England abt 1911 with her uncle Alfred's pri-

Dr. J. M. Black (centre), nestor of Australian botanists, and a leader in critical taxonomy (who is preparing the 2nd edition of his Flora of South Australia) at Adelaide meeting (from left to right) Mr. J. E. Lothian, Director of the Adelaide Botanic Gardens; Prof. J. G. Wood, and Dr. C. G. G. J. van Steenis (Aug. 1950).

From Malesiana Bulletin, Nov. 1950.


48
49
Arrival of Prof. Osborne
Thursday 30th May 1912.
Sunday 9th June 1912
Planted Clara's seeds from Cannes,
Tivoli, Pallanza & Montreux. No rain yet except abt 1/4 inch, more than a week ago. Great Burglar Scare on in Adelaide.
Cannes
Pallanza
Montreux
Tivoli

while on a Railways Standing Committee about Innamincka and Birdsville.

In December 1917 he made a big collection on a trip helped by two officers, Fowler and Allcock, of the Agriculture Department at Mt Gambier. He visited Keith, Bordertown, Mt Gambier, Glencoe, Beachport, and Millicent.

During 1918 he was judge of the School exhibits at the Show, heard Mr Bailey speak on trees at the Botanic Gardens, and read the 14th paper of the "Additions to the flora of South Australia".

Soon after the peace, "Dr W.A. Cannon of Tucson, Arizona, where there is a desert laboratory connected with the Dept of Botanical Research Carnegie Institute, dined with us [on 18/11/1918]. He is studying the root system of plants in our dry country and has visited Oodnadatta and Ooldea." At the end of November, J.M.B. had finished Cannon's specimens.

On 23/6/1919 he was revising the Salicornieae – *Arthrocnemum*, and was still helping with the Legislative Council.

In November 1919 he visited the Point Pearce Mission Station, where he collected plants and pumped the natives and half castes for linguistic lore. He visited Maitland and Moonta by train, and stopped at Port Wakefield, where he worked the marshes and then caught a goods train to Balaklava in time for dinner and a beer.

By now, you can see how J.M.B. and Alice botanized the hard way, travelling by train, staying at out-of-the-way places, then walking or cycling into the bush from the various train stations.

In February 1920 he received a letter from J.H. Maiden telling him that the revision of the Australian Salicornieae was "an admirable piece of work". J.M.B. wrote: "That was very gratifying, coming from such an authority". J.M.B. was a most modest man, and although he received various medals and decorations I do not think it was until I heard Miss Raymont, his housekeeper, on the phone saying that she was helping the famous botanist J.M. Black did I realize that he was so well known.

"On 8/7/1920 at the Royal Society E. Ashby moved and I seconded a motion in favour of admitting of scientific papers to Australia on the same funding irrespective of country of origin, or the language in which they are printed. Motion favourably received and carried with addendum that it be presented to Prime Minister through Advisory Council of the Commonwealth Institute of Science and Industry."

In October 1920, J.M.B. and Alice visited Tarcoola and Ooldea and met Daisy Bates.

On 18/4/1921 he says: "Professor Wood Jones and J.B. Cleland representing the British Science Guild have obtained a promise from the government to publish a series of handbooks on scientific subjects. I have agreed to write the Flora of South Australia."

On 5/12/1921 he says: "I am putting every spare minute into the Flora."

On 8/5/1922: "Dr Rogers has supplied a copy of the Orchidaceae so that every thing up to the end of the monocotyledons has gone into the Government Printer's hands."

On 10/7/1923: "I have got about 112 pages into the hands of the printers for Part II of the Flora and am at work on the Acacias trying to bring it up to 150 pages before the end of July."

On 11/8/1923: "I have got the Acacias into the printers' hands and am now on the Cassias." He was also doing some Hansard reporting.

In June 1924: *Part II* of the *Flora* was revised and finished.

On 29/8/1924 his paper on Australian botanical nomenclature was given at the Australasian Association for the Advancement of Science in Adelaide; and in March 1927 he was appointed to the international committee of nomenclature. *Part III* of the *Flora* was finished at the end of 1926. He was made an honorary lecturer at the University of Adelaide in 1927.

On 30/4/1929 he writes: "It is some months since I have made any notes partly because my old note book was full and chiefly because I was so busy finishing the Flora of S.A. I hoped to do so before the end of 1928, but it is only 2 or 3 days since I handed in the very last copy to the Government Printer and that was the index which Bailey, Director of the Botanic Gardens, has kindly drawn up. Quite a big piece of work and the only help I have had except the map of South Australia drawn by Arnold and the list of authors and abbreviations which Eustace prepared."

A newspaper cutting dated 22/1/1930 records: "appointed by the Council of the University to represent the University at the 5th International Botanical Conference to be held in August at Cambridge." He also represented the Royal Society of S.A. and the Melbourne Royal Botanic Gardens. He took part in the discussion on nomenclature, and voiced his opinion against the principle of having chosen specific names conserved in the International Code of Botanical Nomenclature. He was also made an associate of the Linnean Society of London in this year.

He and Alice also spent some time in Spain,

where J.M.B. enjoyed himself greatly speaking Spanish like a native. However, my grandmother had rather a lonely time, as there were few British tourists there in 1930. I well remember the excitement of their return and the presents we grandchildren received.

J.M. Black's family as plant collectors

In conclusion, I will give a brief summary, as I believe that their names are on many of the specimens in the State Herbarium of South Australia.

His daughter Clara and her husband Horace Andrew moved to the fruit block at Berri, and collected there from 1920-1926, and Horace spent some time at Oodnadatta after their marriage.

On his return from the First War, Eustace Couper Black was in medical practice at Spalding until 1927, when he came to live at Tranmere; and in the 1940s he became medical officer of the S.A. Railways. He was a member of many anthropological expeditions, going with Dr Madigan to the Granites near Tennant Creek in the early 1930s, and with Professors Campbell and Cleland to Alice Springs and the Nullarbor, Flinders Ranges, etc. He knew every canoe tree along the Murray River in South Australia.

George McConnell Black farmed at Gladstone from 1905 to his retirement in the 1950s.

Arnold Barham Black was underground manager of the South Mine at Broken Hill, and worked on the South Mine from 1911 to his retirement in the early 1950s. As a member of the Field Naturalists in Broken Hill with Mr Morris, he helped in some of the first tree plantings there.

Illustration on page 10. Two pages from J.M. Black's diaries. These pages form his last entry, recording his meeting with visiting Dutch botanist C.G.G.J. van Steenis, his concerns for Marjorie, the deaths of Daisy Bates and artist Dorrit Black, and his activities with his revision of the *Flora of South Australia.* (With permission of Marjorie Andrew).

Illustration on page 11. Two pages from J.M. Black's diaries, much of these in shorthand, and indicating his "swansong" publication pending the appointment of T.G.B. Osborn as professor of botany. (With permission of Marjorie Andrew).

Robert Mudie (1777-1842) and Australian botany, or The saga of the Black Bean

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Introduction

The black bean or Moreton Bay chestnut, *Castanospermum australe* (Fabaceae), was described from material collected by Allan Cunningham and sent to Britain. But, just as with some aspects of the dispersal of Cunningham's collections (see e.g. Mabberley, 1978), it turns out that disentangling what happened has by no means been straightforward. In this case this is because of the involvement of one of the shadowier figures associated with the early documentation of Australian botany, Robert Mudie (1777–1842), a Scottish journalist.

Robert Mudie

As Johnson (1962) has shown, Mudie had access to some of Cunningham's manuscripts when he published *Eucalyptus mannifera* in 1834, though he did not specifically attribute the description to Cunningham, even though it corresponds to the extant manuscripts at Kew, if "slightly embroidered".

Mudie was no doubt used to "embroidery" as he was a highly prolific synthesizer and popularizer, with an enormous output of books. Besides the 49 or so titles set out in the *Dictionary of National Biography* (**39**: 263-4), or wrongly listed there, the following are in the British Library:– *Attic Fragments* (1825), *Catechism of the First Elements of Perspective* (1831), *First Lines of Natural Philosophy* (1838), *Man as a Moral and Accountable Being* (1840), and *A Catechism of Intellectual Philosophy* (?1840). He is also attributed with a spoof on the *Literary Gazette*, *The*

Literary Jordan and Gazette of Belles Letters, Arts, Sciences etc. (?1825); and, with Henry Ince, he issued in penny parts *The Wonders of the World in Outline* (1840, 1842, 1855), the *Literary Gazette* noting: "A cheap collection of curious matter, which is very amusing and very instructive". He wrote novels as well, but his forte was natural history, and he wrote many books on that of Great Britain but also other countries including India. Much of it was little short of plagiarism and some was "cut and paste", as in the case of *Gleanings of Nature* (1838), where the plates were taken from the *Florist's Magazine* (1835-6).

Beyond the eucalypt noted above, it is extraordinary that, despite Mudie's breadth of interest, his only other real contribution to taxonomic botany should also have involved Australian plants, again drawing on Cunningham's manuscripts. Several of his books are anonymous, but from later writings it is clear that he was the author of *The Picture of Australia* (Whittaker, Treacher & Co., London, 1829; reviewed in *Westminster Review* 23: 166-186, January 1830), which I examined during the course of the writing of a life of Robert Brown (Mabberley, 1985). I found it to contain previously-overlooked but validily published names, one of which relates to work on the Meliaceae for the *Flora of Australia* (Mabberley, in press):-

Cedrela australis Mudie, Pict. Australia: 147 (1829), *nomen superfluum pro C. toona* Roxb. ex Rottler & Willd. = *Toona ciliata* M. Roemer, the red cedar.

This has certain (trivial) nomenclatural consequences discussed by Mabberley (in press).

There are copies of the book at NSW, the Bodleian Library in Oxford, and the Royal Commonwealth Society in London. The Preface is dated September 1829, and p. 367 contains supplementary material drawn from a Cunningham letter of 28 April 1829, received on 6 September that year. However, the part of the book dealing with red cedar covers timbers (p. 143): "The [wood] specimens came from Mr Cunningham by the Lady Blackwood, Captain Dibbs, that left Sydney in February 1829, and were received by the botanical gentlemen in the employment of his Majesty, to whom we are indebted for being able to communicate this as well as other new and valuable information respecting Australia" (p. vii) and "I have been fortunate enough to receive from those upon whose ability and veracity I can implicitly depend, a considerable number of new facts". On p. 149, he provides the only other validly published new name in the book — *Castanospermum australe*, which is usually attributed to W.J. Hooker (1830).

The black bean

From the Cunningham letters (at K) to Charles Telfair, superintendent of the Botanic Garden in Mauritius, we learn (ff. 214-6) that on 16 Sept. 1828, Cunningham sent to Telfair from Moreton Bay seeds of an "Omphalobium", here called "the chestnut":- "Omphalobium australe Native Chestnut". On 10 January 1829 (ff. 218-9), he reports that he has now seen the flower of the "chestnut" and ascertained that it represented a new genus, which he proposed to call *Castanospermum*.

"Castanospermum australe" is the first plant in the list of "Specimens collected at, and in the vicinity of Morton-bay in the winter of 1828 (July to October) by A C — Collector" (Kew Colls 6: f. 100, 134* at K) with a Latin description and notes in English:- "N.B. The *seeds* when roasted are eaten by the natives, and being in that state by no means a bad substitute for the English Chestnut (*Castanea vesca*) have acquired that name at the Penal Settlement on the abovement [i.e. Brisbane] R.". A transcription of this appears on the Cunningham sheets of *C. australe* preserved at BM.

Cunningham sent living plants of it and "*Limonia australis*" (= *Microcitrus australis* (Planchon) Swingle; Rutaceae) to William Townsend Aiton at Kew, where John Smith, Aiton's foreman, was renowned for his skill with growing Australian as well as Cape plants. The plants were sent on the *George Canning* on 12 March 1829 (f. 107);

CASTANOSPERMUM AUSTRALE

Figure 1. The black bean. Reproduced from *Vegetable Substances*.

woods (f. 163) of both were sent and, in 1830 (f. 165), further live plants.

In the drawings collection at Kew there are watercolour sketches of seedling and young plants of *C. australe* "raised in 1829 from seed coll. Morton Bay by Mr C." annotated in the same hand as the BM specimens. Mudie must have been in touch with either Aiton or Smith or both. At that time herbarium materials sent to Kew went to the British Museum, which explains why the drawing and the herbarium sheets have become separated.

Cunningham told Telfair in his second letter that he had also sent a description to Hooker, at that time Professor of Botany at Glasgow. Hooker also received seeds and other material from Charles Fraser, who sent him many specimens of Australian plants. On these Hooker based his description. However, as Mudie published before Hooker, type material should be selected from the BM specimens and not from Hooker's herbarium, which is, of course, now at Kew (c.f. Yakovlev in *Byull. Mosk. Obs. Prir.* 74(1): 116, 1969), though it might be reasonable to consider the K sheets as isolectotypes.

Vegetable Substances

However, this is not the end of the story, because Mudie published some of the Cunningham information, including that on the black bean, elsewhere — in the first of a series of books, *Vegetable Substances*, of which the second was *Vegetable Substances Used for the Food of Man* by E. Lankester (1832) and the third was *Vegetable Substances: Materials of Manufactures* (1833). The first, though anonymous, has been attributed to Mudie by the *Dictionary of National Biography*, and is listed as published in 1828. It is called *A Description and History of Vegetable Substances Used in the Arts and Domestic Economy. Timber Trees: Fruits*, Knight etc., London.

The earliest edition I can find in Britain is 1829 (pp. 422; copy at BM), a second one of 1830 being somewhat reset. On p. 420 of the 1829 edition, Mudie writes: "The fruits which have been yet discovered in Australia are neither remarkable nor numerous. Mr Cunningham, who accompanied Captain King in his survey of the coast of that immense region, has, however, just sent home some curious specimens of fruit, which are thus described to us". There follow short descriptions of:– *Limonia australis* (? validly published here) in fruit; *Lissanthe sapida* R. Br. (Epacridaceae); and, complete with an illustration of a flowering shoot, fruit and leaf (see Fig.), *Castanospermum australe*.

Mudie's *Picture of Australia* appeared in September 1829, according to *Bent's Monthly Literary Advertiser* 1829 (p. 67 announcing it as a work "now first published" on 10 September (!), and p. 80 listing it as a September publication). However, I have been unable to pinpoint the publication date of *Vegetable Substances* accurately. Hooker's own account (*Bot. Misc.* **1**: 242) did not appear until April–July 1830, and his use of Cunningham's binomial must be considered as a later heterotypic homonym. Mudie definitely cites Cunningham (c.f. his treatment of *Eucalyptus mannifera*), and until more accurate dating for *Vegetable Substances* is brought forward, I would therefore propose the following citation:–

Castanosperum australe A. Cunn. ex Mudie, Pict. Australia: 149 (Sept. 1829) & Veg. Subs.: 421 cum tab. (1829). Type (lectotype selected here): Queensland. Moreton Bay, 1828, *Cunningham* (BM; ?iso K, OXF).

In view of the rapid dissemination of the "new facts" to the British reading public, it is perhaps strange that this information has not been more widely known in scientific circles. It is perhaps safe to conclude, along with Barker & Barker (1989; see also Mabberley 1991), that scientific snobbery is to blame. Mudie died in penury, and his widow petitioned Hooker for help, whether successfully or not is unknown.

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COMMENTARY

The Casuarinaceae: Allocasuarina is unsupported

Introduction

In referring to casuarinas, Barlow (1983) claimed that the "generic segregation is based on a synthesis of information from morphology, anatomy, cytology, biogeography and the fossil record which has been made by L.A.S. Johnson....". In the following discussion I shall examine whether this synthesis of information does, in fact, support Johnson's *Allocasuarina*, or whether there is sufficient contradictory evidence to cast doubt on the utility of this classification. Unless otherwise specified, only the Cryptostomae will be considered.

Assessment of the synthesis

Morphology

Diels and Pritzel (1905) used internode number along the branchlets for their first sub-division of casuarinas. Indeed, having seen the specimens of *Casuarina pinaster*, I feel that most botanists would be impressed by its peculiar morphology. In fact, Bruce Fuhrer (pers. comm., 1988) of Monash University once mentioned to me that when he first saw a plant of this species in the field he was unable to recognize it as a casuarina. Blackall's (1954) key is very similar to the system of Diels and Pritzel. Likewise, one of Bennett's (1982) keys firstly separates *C. pinaster* and its three affiliated species. Although a key is not a classification, I see this concurrence as no coincidence.

After the first division, Diels and Pritzel used samara colour for their further sub-division. On the other hand, Johnson (1988) emphasized samara colour at the beginning of his key, without explaining why he considered samara colour to be so important.

I believe that once an authority has published a taxonomic work, any dissenter should first point out the weakness of that work before presenting a new scheme. Johnson has so far failed to convincingly refute the previous morphological classifications of casuarinas, and I am not convinced that his classical taxonomy is superior to that of, for example, Diels and Pritzel.

There are also a number of inaccuracies in the account of Johnson (1988). In his key to the family, he described *Casuarina s. str.* as having "bracteoles of infructescences thin and without any dorsal protuberances...." However, *C. cunninghamiana* has a dorsal ridge (Boland *et al.*, 1984) and *C. glauca* also has a conspicuous ridge (Hwang, 1982). Furthermore, Johnson noted that samaras of *Allocasuarina* are shining. In fact, only samaras of the *C. distyla* group are shining.

Anatomy

Williams and Metcalf (1985) treated the generic name "*Allocasuarina*" as a synonym of *Casuarina*, thereby implying that their anatomical study does not support it. Eugenia Flores, a specialist in casuarina anatomy (Flores 1977, 1978, 1980; Flores and Moseley, 1982, 1990), also regards *Allocasuarina* as very artificial (pers. comm., 1989); and Maynard Moseley (see Moseley 1948, 1973) has noted that Johnson seems to group taxa that do not seem to be anatomically close (pers. comm., 1991). Dilcher *et al.* (1990) found that *C. torulosa*, the type species of *Allocasuarina*, has characters intermediate between *Gymnostoma* and the Cryptostomae.

Cytology

Barlow (1959, 1983) divided the Cryptostomae in a way that corresponds to Johnson's (1988) system. Nevertheless, no reasons were given for setting the division between n=9 and n=10 in a haploid range that goes from 9 to 14, nor was the importance of the differences in chromosome size explained in detail. Furthermore, Barlow's cytological grouping is largely based on Johnson's morphologically–based scheme, rather than the other way around (Bryan Barlow, pers. comm., 1989).

Biogeography

Both Good (1974) and Takhtajan (1986) divide Australia into three major floristic regions:– (1) north and east Australia, (2) southwest Australia, and (3) central Australia. Good also divides Australia into three major climatic provinces corresponding to these floristic regions. I believe that this floristic and climatic zonation should be reflected in a good classification unless reasons to the contrary are given. So far, I do not see any solid reason why casuarinas should be an exception. A biogeography–based theory about casuarina's evolutionary history does not agree with the separation of

Allocasuarina (Hwang, 1991c).

Fossil record

In the fossil record of casuarinas, no trace of evidence indicating a separation of *Allocasuarina* can be found. I have shown (Hwang, 1991a,b) that Johnson's attempt to assign *Allocasuarina* to a Miocene megafossil from New Zealand is without success. In any event, it is unjustified to claim that a taxonomist can better identify specimens by examining photographs than can those who have the actual fossils at hand. Johnson's (1991) explanation does not make sense to me, as the bracteoles of some species of *Casuarina s. str.* do have a dorsal ridge (see above).

Palynology

In a previous review (Hwang, 1990) I have shown that palynologists have not detected features trustworthy enough for an unequivocal classification of casuarinas. Kershaw (1970) indicates the impossibility of distinguishing *Gymnostoma* from *Casuarina*, and also points out that two species of *Allocasuarina* (*C. inophloia* and *C. helmsii*) are palynologically closer to *Casuarina s. str.* than they are to *Allocasuarina.*

Ecology

Referring to forest ecology, Ladd (1989) noted that "whether making the distinction between *Allocasuarina* and *Casuarina* is necessary or useful is open to debate." He (pers. comm., 1989) further added: "In many ways having Johnson's view published in the *Flora* series is a problem, because it will now become entrenched in the system and dissenters will have to produce strong arguments to differ from what will become the accepted view."

There is another inaccuracy in Johnson (1988). He claimed that the samaras of *Casuarina s. str.* are short-lived. However, Turnbull and Martensz (1982) have shown that the germination rate of *C. glauca* only drops from 62 to 48% after 14 years of storage. This certainly cannot be characterized as short-lived.

Seedling morphology

Seedling morphology supports Diels and Pritzel's (1905) system but not that of Johnson (Hwang, 1989). Leonard (1957) proposed that the partition of any genus should be supported by the existence of a particular seedling type for each new genus. Johnson's (1982) partition of *Casuarina s. lat.* does not meet this criterion. Another of Leonard's proposals was that the existence of more than one seedling type within a genus is an indication of heterogeneity that must be examined. This heterogeneity also applies to *Allocasuarina.*

Seedling allozymes

Results of a study of seedling allozymes do not support the recognition of *Allocasuarina* (Hwang, 1989). The results of both seedling morphology and allozymes show that *C. torulosa*, the type species of *Allocasuarina*, is closer to *Casuarina s. str.* than it is to *Allocasuarina.*

Summary

So, neither the synthesis of information nor any single element in this synthesis unequivocally upholds Johnson's segregation of *Allocasuarina.* This segregation is quite simply unsupported, irrespective of whether its current retention is long-lived or short-lived.

Where is the support?

Johnson (1991) suggests that this *Newsletter* is not the place for either of us to substantiate our conclusions. However, as far as I can see, he has not so far substantiated his conclusions in any of his formal research publications to date, in spite of the fact that it is now 32 years since Barlow (1959) first noted that the genus is currently under revision

In the introduction to the proceedings of an international workshop, Anon. (1983) wrote: "Classification and nomenclature of species in Casuarinaceae constitute a major problem to all research workers. ... The appropriate authorities are urged to give the highest priority to the publication of a taxonomic revision of the family." As noted above, a formal taxonomic revision is still lacking. However, while there might be some confusion about the nomenclature of some (new) species, I emphasize that I do not see the need for any premature division of the Cryptostomae.

Nearly all botanists with whom I have talked disagree with the separation of *Allocasuarina*, but only a few are enthusiastic enough to express their views. It is all right to be conservative when everything is in a good order, but we cannot afford complacency when something goes very wrong.

Williams and Metcalf (1985) were brave enough to cite *Allocasuarina* as a synonym of *Casuarina*, and Beadle *et al.* (1982) have retained *Casuarina* in the broad sense, but some people are not so sure. I suppose taxonomic controversies cannot be settled by a poll, but it will be helpful to Australian taxonomy if some of our casuarinophiles speak up.

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Authorship of the Compositae of Plantae Muellerianae

Last year I wrote the following article and sent it to Hansjörg Eichler for comment. I suggested that, should he disagree, he may wish to write a critique of the article, and that we publish both in the *ASBS Newsletter*. I think we both believe that the *Newsletter* can, perhaps should be, used as a venue for amicable, not formal, debate of nomenclatural issues. After arriving at Kew I also showed my article to Dick Brummitt. He jotted down his "off-the-cuff" comments and, on request, readily agreed that they too could be published here.

Plantae Muellerianae. Beitrag zur Flora Südaustraliens, aus den Sammlungen des Dr Ferd. Müller consists of eight separate parts in volume 25 of *Linnaea*, nine parts in volume 26, and 14 parts in volume 28. Many different botanists contributed accounts. In this note, I deal specifically with the authorship of the Compositae (*Linnaea* **25**: 450-530); but before doing so it is worth noting that the introduction to *Plantae Muellerianae*, written by Otto Sonder and dated Hamburg, March 1853, reads:

"During several years residence in Adelaide Dr Müller has used every free hour to explore the botany of the immediate and more distant surroundings of this town. In addition he has also undertaken repeated larger exploring trips to the remote coastal regions and to the interior. By this means, as well as through the contributions of several friends, particularly Dr Behr and Mr C. Stuart, he has accumulated a very rich collection of plants. Some of the new plants are already known to the readers of *Linnaea* through the preceding 'Diagnoses et descript. plant. nov. quas det. et inv. F. Müller, Dr.' [*Linnaea* **25**: 367-445]. But the following enumeration of the whole collection will show that the remaining plants also contain much that is rare and new.

Dr Müller changed his previous place of residence for Melbourne about six months ago, where he continues his botanical researches. After the keen enthusiasm he has shown so far one is justified in expecting great gains for science from his future endeavours" [*Linnaea* **25**: 449-450 (April 1853)].

The above introduction may suggest that Mueller was to have no input into the published treatment of the Compositae apart from contributing specimens. This possibility is supported by the fact that at the commencement of the family's treatment Sonder is stated to be the author. Further, Mueller is only clearly acknowledged to be the author of one of the many parts of *Plantae Muellerianae*:– he and Sonder are stated as being responsible for the determinations of the "Polypodiaceae et reliquae Filices cum Lycopodiaceis et Salviniaceis" [*Linnaea* **25**: 716-721]. As a result, when the authorship of a name in the treatment of the Compositae is stated in *Plantae Muellerianae* to be "Muell. et Sond." or "Sond. et Muell." it is not unusual for the authority to be cited in modern treatments as (using the more commonly accepted abbreviations) "F. Muell. & Sonder ex Sonder" or "Sonder & F. Muell. ex Sonder" respectively. There are many examples of this practice; e.g. all of the treatments listed in the following:–
Trichanthodium skirrophorum Sonder & F. Muell. ex Sonder; Short, Muelleria 7: 218 (1990). — *Gnephosis skirrophora* (Sonder & F. Muell. ex Sonder) Benth.; Eichler, Suppl. Fl. S. Aust. 326 (1965); J.H. Willis, Handb. Pl. Vict. 2: 731 (1973); Grieve & Blackall, W. Aust. Wildflowers 817 (1975); Short in Jessop, Fl. Central Aust. 390 (1981); Jacobs & Pickard, Pl. New South Wales 78 (1981); Cunningham et al., Pl. Western New South Wales 711 (1981); Short in Jessop & Toelken, Fl. S. Aust. 3: 1521 (1986); Munir, J. Adelaide Bot. Gard. 12: 108 (1989).

There is seemingly no extant correspondence between Mueller and Sonder (Doris Sinkora, pers. comm.), at least none that gives an insight into the correct authorship of the names. A few type specimens at MEL do, however, contain handwritten descriptions of the taxa; e.g. the lectotype of *T. skirrophorum* (MEL 542193), and syntype specimens of *Eriochlamys behrii* (MEL 542223) and *Panaetia athrixioides* (=*Asteridia athrixioides*) (MEL 222210). The hand in each of the aforementioned is Sonder's. Such evidence also supports the contention, which is implied by the use of "ex" (ICBN, Art. 46.3, 50A.2), that Mueller and Sonder agreed to a name for a species but Sonder was responsible for its description. Because there

is no obligation to include the name(s) of the person(s) who supplied the name of a taxon, only that of the author(s) who validly published the name (Art. 46.3), it is also permissible to cite the names as, for example, *Trichanthodium skirrophorum* Sonder. This is the procedure adopted by Hnatiuk (1990).

However, I now believe that I, and other authors, have been incorrect in using the appellation "Sonder & F. Muell. ex Sonder". I first realized this likelihood when I noted that Paul Wilson (1987) used "*Myriocephalus stuartii* (F. Muell. & Sonder) Benth." (= *Polycalymma stuartii* F. Muell. & Sonder), not "*Myriocephalus stuartii* (F. Muell. & Sonder ex Sonder) Benth." More recently, Nicholas Lander, as evidenced from determinavit labels on specimens of *Olearia* in MEL, has also concluded that we have been incorrect in solely accrediting Sonder with the authorship. That this is the case is, in fact, readily apparent in the original publication and is often supported by annotations on syntype material.

Examination of the treatment of the Compositae of *Plantae Muellerianae* shows that the use by modern authors of an appellation such as "Sonder & F. Muell. ex Sonder" is inconsistent with the method of citation used throughout the paper. Thus, it is evident from examples such as "*Eurybiopsis brachyphylla* F. Mll. msc." (p. 455), "*Cassinia paniculata* Behr et Muell. msc." (p. 496) and "*Waitzia decolor* F. Muell. in sched." (p. 501) that Sonder and Mueller were clearly distinguishing between names that are definitely manuscript names and those that must be considered to have been jointly published.

Examination of labels accompanying syntype material sometimes indicates just who may have coined a particular name published by Sonder and Mueller. For example, the lectotype sheet of *Trichanthodium skirrophorum* has "*Trichanthodium skirrophorum* Ferd Mll" in Mueller's hand whereas the syntype specimen of *Panaetia athrixioides* (MEL 222210) has "*Panaetia athrixioides* Sond." in Sonder's hand and another manuscript name, rejected for publication, in Mueller's hand. It is also apparent from labels accompanying syntype specimens that Mueller seemingly coined the names *Brachyscome goniocarpa* and *B. melanocarpa*, and that Sonder chose the name *Eriochlamys behrii* in preference to a name suggested by Mueller.

The fact that in several cases syntype specimens are accompanied by descriptions in Sonder's hand in no way lessens the argument that the names should be deemed to have been jointly published. There is no way of knowing what descriptions Mueller may have supplied. Perhaps the work load of the two authors is reflected in the published order of their names; i.e. "F. Muell. & Sond." or "Sond. & F. Muell.".

Although Sonder is often regarded as the author of the Compositae of *Plantae Muellerianae*, it is therefore apparent that Mueller should be regarded as a joint author of some names and new combinations published therein. The names currently accepted in check-lists and floras, with what I now believe to be the correct author citation, are:–

Asteridea athrixioides (Sonder & F. Muell.) Kroner
Brachyscome goniocarpa Sonder & F. Muell.
Brachyscome melanocarpa Sonder & F. Muell.
Calotis scabiosifolia Sonder & F. Muell.
Eriochlamys Sonder & F. Muell.
Eriochlamys behrii Sonder & F. Muell.
Helichrysum obtusifolium F. Muell. & Sonder
Helipterum stuartianum Sonder & F. Muell.
Ixiochlamys F. Muell. & Sonder
Ixiochlamys cuneifolia (R. Br.) F. Muell. & Sonder
Ixiolaena tomentosa Sonder & F. Muell.
Olearia tubuliflora (Sonder & F. Muell.) Benth.
Polycalymma F. Muell. & Sonder
Polycalymma stuartii F. Muell. & Sonder
Trichanthodium Sonder & F. Muell.
Trichanthodium skirrophorum Sonder & F. Muell.

The above citations are in a simplified form in that only "the name of the author who supplied the description" is retained. As Sonder may be considered to be the principal author or contributor to *Plantae Muellerianae*, and particularly as he is stated to be the author of the Compositae, a more complete citation of a name would be, for example: *Trichanthodium skirrophorum* Sonder & F. Muell. in Sonder, Linnaea 25: 490 (1953) (Art. 46.2).

It has been noted that labels accompanying syntype specimens may indicate which of the authors, Mueller or Sonder, coined the name that was published. If this is considered to be an adequate guide, then we could quite legitimately insert their name before that of the validating authors (Art. 46.3). Thus, the previous example could be given as: *Trichanthodium skirrophorum* F. Muell. ex Sonder & F. Muell. in Sonder, Linnaea 25: 490 (1853). There are advantages to be had from providing such a full citation (Barker & Barker, 1990), but in the case of the species of *Plantae Muellerianae* listed above I see no gain in following such a procedure. Given the erroneous citations in recent works it is more likely to add to the confusion.

Finally, it is worth noting that Sonder was

author of other parts of *Plantae Muellerianae*, and that in some of these treatments new names are again attributed to Mueller. I have noted that they, too, are frequently cited as "F. Muell. ex Sonder" and I suggest that the authorship of such names may need to be re-assessed.

Acknowledgements

Mrs Doris Sinkora provided the translation of the introduction to *Plantae Muellerianae*.

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Philip Short
ABLO 1991-92

Comments

One thing that I think the "in or ex" Special Committee has agreed on is that only the evidence of the printed page is to be taken into account. It would be hopeless to try to ascertain now whether Mueller actually wrote descriptions, or collaborated in writing descriptions with Sonder, and this approach should be not attempted. What matters is what was actually said in *Linnaea*.

Before the 1987 Berlin Congress, Nigel Taylor and I put up a proposal to add to Art. 46 the sentence: "In cases involving joint authors where the authorship of the publication is not identical with that ascribed to the new names included, if at least one author is common to both, the ascription given should be accepted without an 'ex' citation" (*Taxon* **35**: 840 (1986)). This would apply in the above cases, since Sonder is included in both authorship of the paper and authorship of the name. Unfortunately our proposal was merely referred to the "in or ex" Committee, which, as far as I know at the moment, has not come up with any recommendation. If the committee fails to recommend it, I shall do so myself (or with Nigel again). It would give a definite ruling in cases like this.

I have been surprised that people do give author citations in the form "A & B ex A" (or conversely "A ex A & B", which would also be covered by the wording of our proposal). But you are right — such practice is quite widespread. I have found it repeatedly in *Index Nominum Genericorum* in cases like "Torrey & A. Gray ex A. Gray". But I believe that I have recently persuaded Gea Zijlstra, the compiler at Utrecht, to reverse this policy. It seems to add nothing useful, is cumbersome to cite, and is contrary to the apparent wishes of the authors concerned and to common sense. Why do some people insist on making simple things complicated?

Dick Brummitt
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I wish to draw attention to the fact that recommendations Rec. 46D and Rec. 46E of the *Sydney Code* have been transformed into rules Art. 46.2 and Art. 46.3 of the *Berlin Code*. In the past, the use of "in" or "ex" in the citation of authors after names of taxa, when more than one person's name was involved, was guided by recommendations that reflected established practice. Now that the *Berlin Code* is in force (since the end of August 1987), it has become mandatory to link such person's names by "in" or "ex" where appropriate, whereas in the past one was not obliged to do so. When the citation is simplified, the name(s) of the person(s) preceding "in" or the one(s) following "ex" is (are) to be retained. The present wording of Arts. 46.2 and 46.3 now demands (in many instances) historical research into unpublished sources, and this cannot have been intended by the *Code*. Such research, e.g. consulting manuscripts, correspondence and handwriting on labels, interesting as it may be, is time-consuming, and the results usually remain inconclusive. Conjecture should be excluded when a decision must be made about whether authors' names should be linked by "in" or "ex". A unanimous decision cannot now be expected, and it is to be regretted that the former recommendations have been too hastily transformed into rules, instead of waiting until the effects of the proposed rules have been assessed.

Unless an author A states explicitly in print in the paper (book or flora-volume) in which new names of taxa are published that certain names of

taxa, their descriptions or diagnosis (or reference thereto) were supplied for publication in A's paper by another (non-publishing) person B, the citation should, in my opinion, be "B ex A". One can argue that there remains doubt whether B did accept the name (a requirement for valid publication), and one does not even know whether B was happy with the resulting publication by A. Examples of the correct use of "in" are:– *Tribulus hystrix* R. Br. in Sturt; *Acacia beckleri* Tind. in H. Eichler.

As to F. Mueller and O. Sonder, nobody will doubt that Mueller had a very great input. There is no statement published by Sonder in the paper discussed to the effect that, in instances in which Sonder attributed a name of a taxon to Mueller, Mueller & Sonder, or Sonder & Mueller, the name and descriptions or diagnosis (or reference to a description or diagnosis) were supplied by Mueller, Mueller & Sonder or Sonder & Mueller, respectively. Therefore, I regard Sonder as the validating author of these names; i.e. in full citation I regard the use of "ex" as correct to link the names of the person(s) to whom the names of the taxa were ascribed with Sonder who, in this instance, is the sole publishing author.

I sympathize with the simplification proposed by Taylor & Brummitt to the Berlin Congress, which unfortunately did not get the hearing it deserved. It was referred to the Special Committee on "in" and "ex", and I hope that a proposal will be forthcoming for, and accepted by, the Tokyo Congress (1993), that will amend Art. 46.2 in a way that ensures that only evidence provided in the original publication of new names of taxa allows one to conclude that author B published the name in A's paper. This should clarify the at present unnecessarily complicated issue.

When I prepared the *Supplement to J. M. Black's Flora of South Australia 2nd edn* (1965), for which I had seen almost all of the original publications of names of the South Australian flora (with very few exceptions), I had prepared the manuscript with full references to these publications. Unfortunately, this was not acceptable to the then Handbooks Committee, under whose auspices the *Supplement* was published, and I had to delete the full references. However, I did not abridge the often rather clumsy author-citation with "ex", because I thought that it would help in understanding many of the incomplete or wrong author-citations in J. M. Black's *Flora*. In retrospect, I regret that I did not adopt the abridged form by deleting "ex" and the preceding persons' names. I should have followed consistently the model of F. Hermann (1956), *Flora of Nord- und Mitteleuropa*, by quoting simply the validating author's name, and adding the year of publication between parentheses.

To me, the author-citations after names of taxa mean abridged references to the original publication, and this view is supported by Art. 46.1. It is not, as some people want to imply, a matter of doing justice or giving credit to observations or other contributions of persons other than the validating author(s). In case of doubt, I prefer the use of "ex" to that of "in", because it facilitates tracing the original publication. [This may have been the reason for the late Dr S. T. Blake to write: "*Sarcozona praecox* S.T. Blake ex H. Eichler", instead of using the now obligatory citation "S. T. Blake in H. Eichler". It must be noted that there was no rule in Blake's time, and the wording of the recommendations was not better than that of the new rules.]

With regard to tracing the change from recommendations to rules at Berlin, the following references will help:–

(1) *Sydney Code* (in force from August 1981 to August 1987, published 1983): Recs. 46D and 46E;

(2) Taylor, N.P. & Brummitt, R.K. (1986) Proposals on 'in' and 'ex' citations. *Taxon* **35**: 839-841 (there are also references to, and discussion of, relevant proposals by Yeo).

(3) Greuter, W. & McNeill, J. (1987) Synopsis of proposals on botanical nomenclature, Berlin 1987. *Taxon* **36**: 174-281, cf pp. 226-230.

(4) *Berlin Code* (in force since August 1987, published 1988).

(5) Greuter, W., McNeill, J. & Nicholson, D. (1989) Report on botanical nomenclature — Berlin 1987. *Englera* **9**: cf. pp. 101-106.

Hansjörg Eichler
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A rich man interested in breeding horses commissioned three experts, a vet, an engineer, and a theoretical physicist, to find out their best properties. After a few years they reported their results. The vet had concluded from a genetical study that brown horses were fastest, while the engineer had found that thin legs were optimum for racing. The theoretical physicist did not give up his quest at the end of the period, but merely asked for more time to study the question, claiming that the case of the spherical horse was proving very interesting.

Aaron Katchalsky

A.S.B.S. Inc. BUSINESS

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Councillors	Dr Jeremy Bruhl Australian National University
	Dr Timothy Entwhistle National Herbarium of Victoria

The full minutes of the meeting will appear in the next issue of the *Newsletter*.

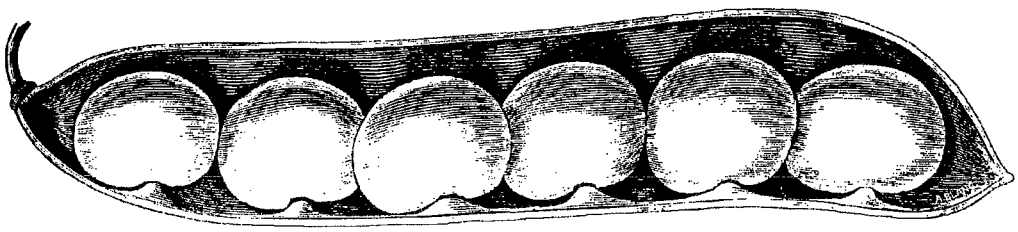
WARNING
Subscriptions for 1992

Subscriptions for 1992 were due on 1st January 1992. Those members who have not yet paid for 1992 are now unfinancial. Unfinancial members are reminded that they will cease to receive the *Newsletter* after this issue. Instead, they will receive an empty *Newsletter* envelope, followed by no further communications until they become financial again.

Your financial status can be determined from the last line of the address label on the envelope containing this issue of the *Newsletter*. The date indicates the year for which your subscription is paid up.

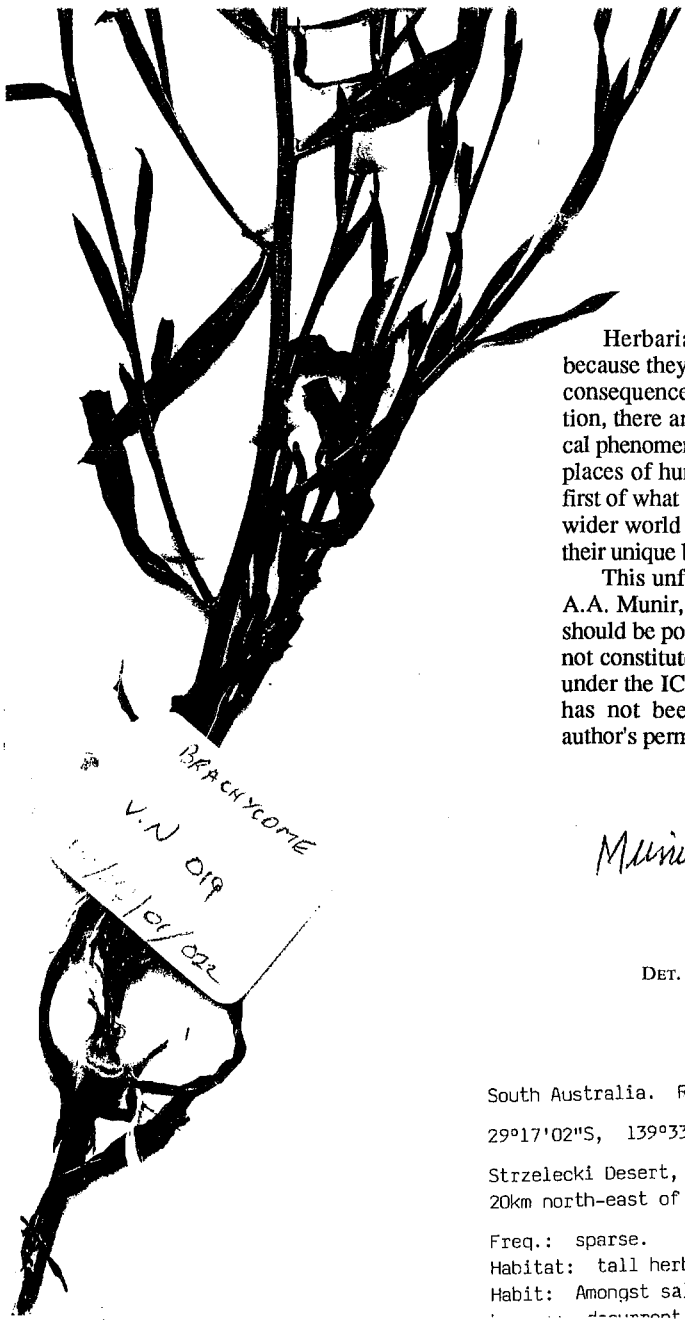
The symbol that follows the date indicates your membership status, from which you can determine the subscription due:- O = ordinary member; I = institution; S = student; G = gratis. This information is the current entry for you in our database, so please check it carefully and inform the Treasurer if it is incorrect in any way.

The current subscription rate is $22.00 for ordinary members, and $12.00 for full-time students. Payment must be made in Australian dollars. Cheques should be made out to "ASBS Inc". Please remit to the Treasurer at the address on the inside of the back cover.



A taste of things to come

DETERMINAVIT SLIPS



Herbaria are interesting places, not least because they are populated by human beings. As a consequence of this (perhaps unfortunate) situation, there are a number of interesting psychological phenomena that can be observed in or near these places of human occupation. This is therefore the first of what will hopefully be a series, in which the wider world is introduced to these inhabitants and their unique behaviour.

This unfortunate *faux pas* was perpetrated by A.A. Munir, who curates the Asteraceae at AD. It should be pointed out that its appearance here does not constitute formal publication of the new name under the ICBN, that Bill Barker assures us that it has not been faked, and that he obtained the author's permission before he submitted it.

Minuria integerrima (DC.) Benth.

DET. Munir, A.A. 9.1.91

South Australia. Region 2: Lake Eyre

29°17'02"S, 139°33'23"E Alt. 1m.

Strzelecki Desert, Murnpeowie Station.
20km north-east of Meteor Bore. Quadrat LB 21.

Freq.: sparse.
Habitat: tall herbaceous shrub 1m.
Habit: Amongst saltbush (old man) creek edge.
[illegible] decurrent linear to 3 ovate, alternate fine

REPORTS

Australian Biological Resources Study

All ABRS staff have now moved to the building at the Australian National Botanic Gardens formerly occupied by the Environmental Resources Information Network, who have themselves moved to the new head office of the Australian National Parks and Wildlife Service in Belconnen. After more than two years in separate buildings, the Flora and Fauna sections of ABRS are once again co-located, making liaison more efficient and restoring some of the sense of unity that previously prevailed. Phone numbers are unaltered.

Our postal address also remains the same:–
Flora of Australia,
Australian Biological Resources Study,
Australian National Parks & Wildlife Service,
G.P.O. Box 636,
Canberra. A.C.T. 2601.

Our fax number is (06) 250 9448.

Our annual newsletter, *Biologue*, was mailed recently. If you are a regular recipient (i.e. on the ABRS Participatory Program Register), please advise us if your address is different from that on the label.

There has been one change to the list of Flora Grants published in the last *Newsletter*. By mutual agreement, two new taxonomic groups have been allocated to Dr Caroline Gross under her grant for 1992, following notification from Mr Bob Anderson that he is still working on the genus *Correa* (Rutaceae) and wishes to contribute it to the *Flora of Australia*. Dr Gross will now revise the genera *Macadamia* (Proteaceae) for Vol. 17 and *Sesbania* (Fabaceae) for Vol. 13.

A REMINDER that applications for grants in 1993 close on 10 April, and that an application must be submitted if a renewal is sought. The Preferred Objectives for new projects were given in *ASBS Newsletter* No. 69 and *Biologue* No. 12, and were also recently advertised in the national press.

Alex George
Flora of Australia

Co-ordinating research on molecular evolution of plants

The course that evolution has taken in the plant kingdom is poorly understood, especially concerning the origins of the angiosperms and gymnosperms, their relationship to each other, and the way that the (approximately) 400 families of angiosperms are related. With the advent of the techniques of gene sequencing, and especially of the polymerase chain reaction, it has become clear that solutions to these problems may be possible. However, the overall task is very great, and it is best tackled by co-ordinating (to some extent) the activities of interested research groups, so that results can easily be compared and so as to avoid wasteful duplication of effort.

Recognizing this, Prof. A. Antonov of Moscow University invited the leaders of seven other research groups to join him in a submission to UNESCO seeking funds to hold an initial meeting. Five of those invited agreed:- Prof. H. Saedler, of the Max-Planck Institute for Molecular Plant Genetics, Cologne, Germany; Prof. W.-H. Li, of the University of Texas, Houston, U.S.A.; Prof. V. Ratner, of the Institute of Cytology and Genetics, Novosibirsk, Russia; Prof. W.-Y. Liu, of the Institute of Biochemistry, Shanghai, China; and myself.

UNESCO granted $US6,000, of which $US2,500 could be used for the meeting. Recognizing that my own expenses alone would consume most of this, I successfully applied to DITAC for $A3,000, thus freeing the remainder. In the event, bureaucratic and other difficulties prevented the attendance of Professors Liu and Ratner. UNESCO appointed Prof. Saedler to run the meeting, and he took the very useful initiative of inviting Prof. W. Martin, of Braunschweig University, Germany.

The five of us assembled at the Max-Planck

Institute, Cologne, on monday 13 January. The morning was spent in informal discussion, and in the afternoon there was a symposium, with four of us giving 45-minute presentations of our research work. All day tuesday and part of wednesday morning were spent in amicable and fruitful discussions.

The decisions that we reached are:-

1. The problems of plant evolution, especially the resolution of the branching patterns within the angiosperm tree, are unlikely to be solved with sequences of only one molecule; two molecules may well produce incongruities; and, so, at least three molecules should be studied. The three recommended are:-

rbcL – a chloroplast gene determining the large subunit of rubisco;

18srRNA – the small subunit of nuclear ribosomal RNA;

atpE – ATPase gene E, a rapidly-evolving chloroplast gene. While we all agreed that the third gene should ideally be a nuclear one specifying a protein, we also agreed that the risks of confusion due to duplicate or pseudo genes were far too great to be acceptable.

2. Our considerations should be concerned only with land plants, and not with algae or fungi.

3. While it was recognized that individual researchers would follow their own interests in determining which taxa to study, it was considered desirable that 30 species (6 gymnosperms, 9 monocotyledons, 15 dicotyledons) should be the subjects of an initial investigation, mostly by the participants. These species had been chosen by Prof. Antonov in consultation with Prof. A. Cronquist, of the New York Botanical Garden. The evolutionary tree derived from these species should be a useful reference point for other studies.

4. It was decided to start a newsletter, to be coordinated by Prof. W. Martin, using $US2,000 of the UNESCO grant that had been ear-marked for "scientific dissemination". The newsletter will be distributed as widely as possible, probably with a subscription rate of $US15 per annum. Prof. Bill Martin can be contacted by fax on 49-531-3915765 or Email as martin@venus.gbf-braunschweig.dbp.de.

The newsletter will have three main purposes. Firstly, it will encourage researchers to inform others of their activities, and so reduce the probability of replicated work. Secondly, the newsletter will publish sequences with a clear understanding that they could not be used without the permission of the author; with permission, they might be quoted either by reference to the newsletter or as a "personal communication". Of course, the newsletter author might alternatively be offered co-authorship of a normal formal paper. It is hoped that this will help to break the serious publication back-log that is known to exist at the moment. Thirdly, the newsletter will serve as an informal forum for the exchange of ideas relevant to the molecular evolution of plants.

5. It was decided that our group of seven (the original group of six plus Prof. W. Martin) should be expanded to include four more members:- one a morphologist (Dr M. Donoghue, University of Arizona, USA), and three the leaders of active sequencing groups (Dr E. Zimmer, Smithsonian Institution, USA; Dr R. Olmstead, University of Colorado, USA; Dr M. Bennett, Royal Botanic Gardens Kew, England). Funds will be sought, initially from UNESCO, for follow-up meetings of the expanded group in 1993 (probably again in Germany) and 1994 (probably in the USA).

Peter Martin
Botany Department
University of Adelaide

Herbarium ceiling as plant press

With its new wing opened in 1991, Adelaide botanists could boast of the most spacious and best-housed herbarium in Australia.

However, on thursday 12 March 1992, the roof of this new wing collapsed due to structural faults. The collapsing roof pushed the ceiling down onto the compactus units, which cannot now be moved.

The wing includes all of the monocots, some of the higher families, and the collection of artwork. Emergency services have covered the roof with tarpaulins, and the contents appear to be safe for the moment.

Obviously, the roof and ceiling will have to be re-built. Wrangling over who is responsible is yet to be resolved; and whether the state government has enough dollar notes left to paper the roof is yet to be seen. Pressed light fittings can now be added to the usual exchange material.

Complanatus
State Herbarium of South Australia

Australian Botanical Liaison Officer

Following my last report, Greg Leach queried the lack of the "obligatory weather report", and was also critical of the squash results! So, I'll start with the weather.

The *Times* (I normally prefer another paper!) on Saturday 1 February noted that London had recorded its lowest January rainfall (less than 10 mm) for 154 years, and that "parts of southern Britain face the worst drought for more than a century". Since then it has rained a bit, but clearly if the sun had any kick in it then Kew Green would have been a dust bowl last month. Instead, unless it's white with frost, it remains as its name suggests it should. It has been a mild winter, although I can attest from first-hand experience that "mild" is not an adjective to describe the assorted flu and cold bugs that infest this part of the world.

My squash is improving, but the ABLO arch-rival, Brian Matthew, is still winning overall. Brian has recently been awarded the Royal Horticultural Society's top honour, the Victoria Medal. This is held by only 64 people world-wide at any one time, this being the number of years that Queen Victoria reigned. Unfortunately, to be awarded it a previous recipient has to have died.

Of other awards, I should perhaps mention that Susyn Andrews has been presented with the Holly Society of America's highest-ranking Wolf Fenton award for her work; and Phillip Cribb informs me that Mr G. Herman Slade (of Manly, N.S.W.), well known to orchid enthusiasts and scientists in Australia, was awarded the Gold Veitch Memorial Medal at the Royal Horticultural Society on 18 February for his contribution to horticulture in Australia and the south-west Pacific.

Other Kew news includes the creation of a new post, Deputy Director of Science, to which Dr Charles Stirton has been appointed. For those of you who remember eating Weston's wagon wheels at school, the Weston family has recently donated £1,000,000 to Kew. The money is to be used for funding research in Brazil, specifically in the economic botany programme within Projecto Nordeste. The latter is a collaborative effort between Kew and Brazilian botanists to examine the diversity and economic uses of plants in the semi-arid north-east region of Brazil.

My own work, for what is all too soon the first half of my tenure, has been mainly concerned with historical matters. I have been compiling a number of letters from 19th and 20th century botanists detailing their various experiences when on collecting trips. A draft manuscript has been completed, and attempts are now being made to find a publisher; so a book may or may not eventuate.

In the meantime, and hopefully for much of the next six months, I am getting on with my work on the Asteraceae. Most of this will be confined to determining Kew and BM collections, and photographing and making notes on type specimens. I may also finalize my revisions of *Gnephosis* and *Calocephalus*. They have been sitting at the "almost complete" stage for a few years now, generic limits not having yet been resolved. I'm very tempted to publish, albeit that modifications may be required following proposed cladistic analyses and chloroplast DNA work with various colleagues.

As of 2 March 1992 there is a change in the fax numbers relating to Kew:-

	Current number	New Number
Administration	9481197	3325197
Herbarium	3320920	3325278

There will be a year's grace, as British Telecom will divert all faxes arriving on the present numbers for 12 months.

Philip Short
Kew

PERSONAL NEWS

Terry Macfarlane, formerly of the Western Australian Herbarium (a Research Centre of the Dept of Conservation & Land Management), has transferred to another Research Centre as follows:-

Dept of Conservation & Land Management
Manjimup Research Centre
Brain St
Manjimup. W.A. 6258
Phone 097-711988 Fax 097-712855

At the new location he will continue with his current research projects, and he remains closely linked to the W.A. Herbarium.

REVIEWS

Advances in Legume Biology

Edited by C. H. Stirton and J. L. Zarucchi. Monographs in Systematic Botany from the Missouri Botanical Garden No. 29. 1989. 842 pp. ISSN 0161-1542. [US$65.00, plus $3.00 for one book, and $0.75 per additional book, for mailing. Send cheque payable to "Missouri Botanical Garden" to Department Eleven, Missouri Botanical Garden, PO Box 299, St Louis, MO 63166-0299, USA.].

In 1978, and again in 1986, botanists of every kind from all over the world gathered at Kew to share knowledge about the legume family. Why focus a multidisciplinary meeting on a particular family? The sheer size of the legume family underlies some of the reasons. Only the composites and orchids have more species. Other large families, such as the Solanaceae, Asteraceae, Lamiaceae and Poaceae have been, or soon will be, the focus of similar large, inter-disciplinary meetings.

Adherents of Cronquist's system, used for the *Flora of Australia*, would contend that the legumes comprise three families:– the Caesalpiniaceae (cassias and allies), Mimosaceae (acacias and allies) and Fabaceae *sensu stricto* (peas, beans and allies). However, serious doubt was cast on the presumed monophyly of Caesalpiniaceae when it was suggested that both the other two groups had probably evolved independently from them (Polhill & Raven, 1981). More recent studies, especially the unpublished cladistic analyses of Jenny Chappill, have supported this view. The pea-flowered group may not be monophyletic either, although the mimosoids almost certainly are. On the other hand, the legumes as a whole are well-supported as a natural lineage. Thus, there are good grounds for treating the whole group as a single family with perhaps three subfamilies, but these would be circumscribed somewhat differently (Chappill, unpublished data).

Given the very large number of species of legumes, it is not surprising that they are very diverse in form, habitat and distribution, being found throughout the world, except in marine and polar habitats. This disparity (*sensu* Gould, 1989) within the family presents scope for comparative studies of differing forms and their associated functions in related taxa. Other reasons for the high level of interest in the legumes are their economic importance, because they provide staple foods (peas and beans), timber, pharmaceuticals, and especially, a source of nitrogen through the well-known symbiosis with *Rhizobium*. Thus, systematists, ecologists, physiologists, biochemists and molecular biologists are all interested in legumes.

The first international legume conference provided a much-needed review of the classification of the family down to the level of the 650 genera, a *tour de force* edited by Polhill and Raven (1981) and published in two parts. The first part included full taxonomic treatment (keys, descriptions and illustrations) of the three subfamilies and their collective 42 tribes, as well as keys to all genera. The second part contained reviews of the lines of evidence:- morphological, chemical and biosystematic. These were the days before the advent of molecular evidence. A companion volume from the same meeting contained papers on applied aspects of legume research (Summerfield & Bunting, 1980).

A second international legume conference was held at the Missouri Botanical Garden in 1986, and its main result was the volume presently under review. The conveners (Raven, Polhill, Stirton and Zarucchi) shifted the emphasis from systematics, which had been thoroughly reviewed at the previous meeting, to legume biology. By "biology", they meant "structure and function", a comparative approach that explores questions about the origins, evolution, adaptations and functional constraints of plant structures.

Comparative biology requires a phylogenetic framework, and so systematics could not be ignored; moreover, there had been significant advances in legume systematics since the 1978 meeting, notably the development of molecular sources of evidence and the cladistic approach to classification. Therefore, a number of papers were commissioned and published in a separate volume (Stirton, 1987), but these were not presented at the conference. This was a pity, because it became evident at the meeting that many participants were not well informed about the recent developments in methods, and many of the papers treated phylogeny naïvely.

Advances in Legume Biology has something for everybody; for example, structural botany, population biology, developmental studies, ecology, phytochemistry, comparative biology, and databasing. The structure and function of organ systems are covered on a descending scale from plant architecture through inflorescences and floral ontogeny

to pollen, progressively moving through each of the "biological modules" of the generalized plant. Papers which are mainly descriptive cover the architecture of legume plants (Oldeman); inflorescences, analysed by Weberling according to the "paracladial" model of Troll (this paper suffers from the outdated, vague "evolutionary tendencies" approach to phylogeny); and additions by Guinet and Ferguson to an already huge set of data on pollen structure. An exciting body of new evidence on floral ontogeny, which has phylogenetic implications at the subfamily level, is presented by Tucker. She and her co-workers are progressing at such a rate that they have published papers outdating their work in the present volume before the latter appeared. Hopefully, the delay between the next legume conference (see below) and publication of its proceedings will be shorter.

Some papers address the interactions of legume species (or particular organ systems) with other organisms. A large section (7 papers) is devoted to reproductive biology, particularly stigma, style and pollen interactions, with papers by Owens, Stirton, Knox and others.

In one of these, Schrire presents a "new" multidisciplinary approach to pollination biology, founded upon the notion of phylogenetic constraint (also known as "burden"), which leads to the evolution of complex structures of closely interacting parts that can only be studied as a whole. He argues against the use of single characters traditionally used in systematics and in favour of simultaneously considering whole character complexes, as well as their adaptive significance. In other words, he suggests that one cannot understand a structure (taxonomically) unless one understands its function. This is a hoary old argument that lacks any explicit method. At last, it is being abandoned by comparative biologists in favour of analysing pattern before trying to interpret process. It is now recognized that one should use the characters to reconstruct phylogeny before trying to interpret their evolution and function, thus avoiding circularity in making hypotheses about evolutionary process (Coddington, 1988; Donoghue, 1989; Wanntorp *et al.*, 1990; Harvey & Purvis, 1991). To be fair, Schrire has moved on since writing this paper, and he now uses cladograms as a basis for exploring structure-function hypotheses (Schrire, 1990).

However, the "structure-function first" approach pervades the whole of *Advances in Legume Biology*. Nonetheless, some authors make commendable if naïve efforts to place their evidence in a phylogenetic framework, especially Sprent *et al.* in their excellent treatment of root nodules from woody legumes. These structures, much more diverse than previously thought, are providing significant new evidence on the higher-level phylogeny of the legumes. Several papers (including this one) cover the important field of nitrogen economy, and the inter-reactions between legumes, their rhizobia, mycorrhizae and other organisms (see the review by Schenck).

Only one paper in the entire work has phylogeny as its main theme: that by Small on the "evolution of genera" in legumes. Unfortunately, the less said about this naïve attempt to analyse the process of "generification", the better. A far better reference on this subject is our own society's symposium on plant genera, published in *Newsletter* No. 53 in 1987.

Continuing with the theme of interactions are some papers focusing on legumes and animals; for example, ants (McKey), aphids (Simmonds *et al.*) and bruchid beetles (Johnson, and Birch *et al.*). Studies in life-history and population biology include one on *Trifolium repens* by Sackville-Hamilton, another on Texas lupins by Schaal, and a third on a tropical tree (*Ateleia herbert-smithii*) by Janzen.

The volume concludes with a paper by Bisby on his International Legume Database and Information Service (ILDIS). This ambitious project, which aims to store and retrieve information relating to taxonomy, distribution and uses of all 18,000 legume species in the world, was ahead of its time when established. Bisby is now applying the experience he has gained from ILDIS to assist in setting up IOPI, a database of all the world's flora (George, 1991).

This book has a soft cover and will require gentle treatment, given its bulk (it weighs more than 2 kg). The printing is of good quality on glossy paper, and the half-tone plates are adequate. When one considers the amount of material packed into this volume (35 papers totalling more than 800 pages), it represents excellent value for money — and the price has steadily dropped from an original US$100, due to strong publication support.

For those whose appetites for peas and beans have not been dulled by this feast, there is another banquet to come: the third international legume conference will be held at Kew in July 1992. The emphasis will shift back to systematics, this time giving full rein to phylogenetics and molecular biology in two sessions that will cover all major groups in the family. There will also be sessions on structural botany, nitrogen economy, genetics of crop legumes, and palaeobotany. So many legume

fossils have surfaced in recent years that a separate volume will be devoted to the subject.

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Mike Crisp
Division of Botany and Zoology
Australian National University

An Introduction to Plant Taxonomy. Second edition.

By C. Jeffrey. Cambridge University Press, Cambridge. 1982. x+154 pp. ISBN 0-521-28775-8. $37.50.

Plant Taxonomy and Biosystematics. Second edition.

By Clive A. Stace. Edward Arnold, London. 1989. viii+264 pp. ISBN 0-7131-2955-7. $39.95

During most of this century, taxonomy has been on the decline from its pre-eminent position in the biology of the previous two centuries. This has been true both for the public perception of its importance within biology (since it now has to compete with genetics, physiology and ecology for attention) and also for its role in undergraduate teaching in universities (where it has deteriorated to being little more than a plant identification subject). This decline is global in scale, although it has been particularly prevalent in Great Britain and the United States of America; and Australia has clearly tended to follow the same line.

In many ways, the decline can be considered to have slowed in recent decades, because of the injection of new ideas (such as phenetics and cladistics) and new techniques (such as in multivariate analysis, cytogenetics, and reproductive biology). In fact, there is even the possibility that it may be possible to stop the decline completely, given the recent enthusiasm for the study of molecular genetics and the current craze for the conservation of biodiversity.

Unfortunately, just when things were looking better, institutional belt-tightening in the northern hemisphere has been going on at an unprecedented rate, and taxonomists have joined the dole queue *en masse*. Four factors are often proferred as being involved in the current situation:– an increased rate of attrition among taxonomists caused by retirement without recruitment; lack of systematic teaching at undergraduate level and reduced opportunities at postgraduate level; research funding methods and priorities that disadvantage taxonomy; and the perception that taxonomy is only justifiable if it involves molecular systematics. Australia has not yet reached the same parlous state, but history should tell us that it cannot be far away.

It therefore seems to be important that systematics regains its place as the discipline that unites all of the other areas of biology. This central role stems from the fact that systematics makes use of data provided by all of the other biological disciplines, as well as providing the phylogenetic framework within which these data are interpreted. Indeed, as an undergraduate student one of the first things that impressed me about plant taxonomists was the sheer breadth of their knowledge compared to other botanists, as well as their understanding of plant relationships. Systematics thus has the potential to greatly improve its current position, provided active measures are taken to achieve this.

In order to regain this lost position, two things must therefore change:– the public perception of taxonomy; and the undergraduate teaching of it. The public perception can only change by active persuasion on the part of taxonomists. This applies particularly to raising the public profile of the disci-

pline and in emphasizing its valuable role in modern society, but it also applies to changing the perception of systematics within schools. The undergraduate teaching can only change by presenting systematics as a modern scientific study of intrinsic and practical interest in its own right, rather than as merely an aid to identification.

The traditional perception of taxonomy is of a subjective and intuitive study, characterized most elegantly by the comment that "a good taxonomy is what a good taxonomist thinks it is". Unfortunately, this image does not go down well in the modern technological age, and physicists and chemists are by-and-large correct when they dismiss this sentiment as being characteristic of an art rather than of a science. Systematics must be perceived as a science that can hold its own in the current information era, rather than as an old-fashioned stamp-collecting exercise; and this perception must be presented to both the general public as well as to university undergraduates in all areas of biology.

With this background in mind, I thought that it might be a useful exercise to look at the current crop of books aimed at giving an understanding of plant taxonomy to the rest of the world, to see how they meet this challenge. The first two books are reviewed here, and the others will be covered in later issues of the *Newsletter*.

The book by Charles Jeffrey is the most basic of the books, being intended as a simple introduction to the subject for non-scientists (teachers, horticulturalists, and naturalists), other biologists, and students up to the level of first-year undergraduates. This aim is the book's greatest asset and also its greatest weakness. The book assumes nothing more than the most general knowledge of botany, and it is therefore eminently readable by the general public; but in attempting to distill the essence of taxonomy it's the science that gets short shrift. Consequently, taxonomy comes across as a somewhat boring and unexciting exercise to just those people who should be encouraged to think otherwise.

This de-emphasis on science is in spite of the fact that Jeffrey invokes the "scientific method" as a point in favour of using "natural classifications" for "scientific purposes". I'm not sure what "method" he is referring to, but since he comments wryly that "it is still hypotheses that phylogenies remain", he is clearly not enamoured of the hypothetico-deductive methods used extensively by scientists in other disciplines. This old-fashioned view of science is a strong bias in the book. Unfortunately, Jeffrey also specifically excludes "the investigation of the evolutionary bases of our knowledge of the plant world" from his view of taxonomy, even suggesting that this area has been "over-emphasized" in other books. He prefers, instead, to concentrate on the "classical core of plant taxonomy". Anyone reading this book will thus quickly conjure up the traditional image of taxonomists poring conscientiously over their stamp albums.

The book is a revised edition of one first published in 1968, and is organized into 8 chapters, plus 3 appendices. The publication quality is high, with very few errors; and there is a useful balance of original illustrations and tables. The index is good, given the intended audience; and the writing style is commendably simple. Most concepts are explained as plainly as possible, with straightforward examples, most of which involve British plants or at least objects familiar to the British public.

The first chapter is Introducing Classification, a brief (5 pages) but somewhat misleading (because it is exclusively classical) overview of why taxonomy exists. Chapter 2 covers the Fundamentals of Classification, this being a good and commendably brief (7 pages) account of why classification is possible in the biological world. The Process of Classification (chapter 3) is a somewhat longer (24 pages) but rather simplistic coverage of how a taxonomist works and what data they are looking for, concentrating very much on the usefulness of barriers to breeding — if only it really was this simple in practice!

Chapter 4 should be the heart of this book, as it covers The Taxonomic Hierarchy and its Meaning. This is a fairly detailed (27 pages) but somewhat misleading (because overly simplistic) discussion of natural and artificial classifications, and how they relate to our actual classifications. Unfortunately, Jeffrey defines natural classifications as those that group together "objects that are most alike in most ways", and thus concludes that phenetic and cladistic groupings (for example) should be perfectly congruent — this is almost never true in practice, and is unlikely in theory either. Given his definition, it is almost impossible that a natural classification could ever exist in reality. Other simplifications include ignoring the difficulties of finding defining characters for natural groups due to the inevitable exceptions, and drawing straight lines on graphs that "in no way imply linear relationships". He also concludes that groupings above the level of the species are not objective, but are a matter of "informed and considered opinion of

experienced and competent taxonomists", which claim should make any scientist cringe, while at the same time noting that there are "some principles which must be followed", none of which is of any practical value.

Chapter 5 is a good coverage of The Scientific Naming of Plants, as would be expected form the author of *Biological Nomenclature* (1977). However, the 40 pages are far too detailed for an introductory text, even covering the minutiae of cultivated plants. The Practical Naming of Plants (chapter 6) is a good coverage of the various means of identifying plants, although its 14 pages only cover dichotomous keys and comparison with herbarium specimens, and the families that the readers are suggested to learn to recognize are all very British. Chapter 7, Systems of Classification, is a brief (9 pages) and therefore limited account of the history of classification, the only modern systems presented being those of Bentham & Hooker, Engler, and Takhtajan. The final chapter, Taxonomy our Contemporary, is a poor (4 pages) attempt to make taxonomy sound useful in the modern world.

The first appendix is a good discussion of the types of morphological data that have proven to be of use in taxonomy, and it contains a useful introduction to the more practical aspects of the work. Appendix B is a list of recommended books for further reading and reference, but it is heavily weighted towards European audiences. The final appendix is an outline of a classification of plants, with some attempt to equate the groups with more traditional common names.

All in all, this is a somewhat flawed attempt to introduce taxonomy to a wider audience. Its concentration on classical taxonomy, and its oversimplification of taxonomic practice, leave the reader with a rather old-fashioned view of modern systematics. Science and taxonomy shall never be mixed in this view. The book could be markedly improved by reducing chapter 5 and using the space gained to increase the scientific content of chapter 4. This would move the emphasis from the minutiae of naming (as it is in the present book) to the science of classification (as it needs to be in a successful exposition).

The book by Clive Stace is intended to be an introductory text for university biology undergraduates, although its introductory nature would make it readable by other scientists and by serious amateurs. The stated aim is to present systematics as an exciting contemporary science; and there is the conscious perception that most of the people to whom taxonomy is taught will in fact not become taxonomists, so that what they therefore need is an understanding of the aims, principles and methods rather than just an exposition of the boring facts. However, the book definitely assumes a knowledge of first-year undergraduate biology or the equivalent.

The book is a revised edition of one first published in 1980, which was very well received, being reprinted in 1984 and 1985. It is organized into 10 chapters in 3 sections (The Basis of Taxonomy; Sources of Taxonomic Information; Taxonomy in Practice), plus an appendix. The publication quality is high, with very few errors; and there is a useful collection of reproduced and original illustrations The index is fairly comprehensive, including the generic names cited; and the writing style is also straightforward. The order of the chapters is more logical than that of the book by Jeffrey, and the examples are more wide-ranging (even eucalypts get a mention) although Europe predominates.

The first chapter covers The Scope of Taxonomy, a fairly brief (12 pages) account of classifications and their various roles. Unfortunately, this doesn't really make any clear statement of what taxonomy is (the definition of "classification" is unusable), or how it qualifies as a science. Chapter 2 describes The Development of Plant Taxonomy, a lengthy (47 pages) exposition of the various phases through which systematics has passed. This chapter also describes the techniques for data collection and analysis used in each phase; and so phenetics and cladistics are described and evaluated in this section, which makes them appear as historical curiosities rather than as modern developments. This arrangement resulted in a number of critical comments on the first edition of the book, and this new edition has not alleviated the problem to any great extent.

The next five chapters cover the types of data used by taxonomists. Chapter 3 is a good coverage of Structural Information (17 pages), including morphology and anatomy, while chapter 4 covers Chemical Information (23 pages). Protein and DNA sequencing are included here, but are not as clearly explained as are secondary metabolites, and they are given very little coverage considering their current trendiness. Chromosomal Information is discussed in far too much detail in chapter 5 (20 pages), including incidentals of number, structure and behaviour. Chapter 6 covers Information from Breeding Systems (27 pages), also in unnecessary detail in places; while Chapter 7 is a generally good discussion of Information from Plant Geography and Ecology (22 pages).

Chapter 8 concerns The Process of Classification, a comparatively brief (14 pages) account of the practical aspects of taxonomic characters and the taxonomic hierarchy, which still comes across as a bit of an art. Chapter 9, Ways and Means (23 pages), is a fairly traditional coverage of the tools of the trade (botanic gardens, herbaria, libraries, nomenclature), which are often not covered in equivalent texts; and chapter 10, Taxonomy in the Service of Man (9 pages), is an attempt to explain the usefulness of taxonomy in the modern world, concluding with a plea for more monographic treatments rather than floras (including an outline of the plan that officially emerged as the recent Species Plantarum Project). The appendix is a very brief outline classification of the plant kingdom.

This is, ultimately, a pretty good attempt to provide a readable introduction to plant systematics, but its idiosyncrasies need to be taken into account when recommending the book to other readers. Firstly, there are definite biases in the coverage of the various topics. This is presumably a product of Stace's own interests, so that topics of personal interest, such as cytogenetics and chemotaxonomy, get a larger slice of the cake at the expense of more recent techniques. The discussions of recent developments read as though they are insertions into the second edition, rather than being integral parts of the original plan for the text. This unfortunate arrangement contradicts the stated aim of presenting taxonomy as a contemporary methodology.

Secondly, Stace has his own personal viewpoints, which necessarily colour the conclusions that he reaches. These viewpoints are fairly traditional, with modern methods often being viewed as interesting (although valuable) curiosities that are unlikely to replace the more traditional techniques. The fact that phenetics, cladistics and vicariance biogeography are all explicit attempts to move taxonomy into the modern world of scientific hypothesis–evaluation is not mentioned at all, and the usefulness of computers (both in analysis as well as in identification and databasing) is grossly under-estimated.

Thirdly, the more recent techniques of analysis (notably cladistics) are consistently misrepresented in the text. For example, cladistics is described as a monothetic rather than polythetic analysis (and is criticized as such), which is only true if there is but one synapomorphy per branch on the cladogram; vicariance biogeography and panbiogeography are treated as equivalent techniques of analysis (which would have made Leon Croizat's blood boil); and vicariance biogeography is presented as treating dispersal as unlikely (rather than as merely untestable).

Finally, while most terms are explained clearly when they are first used, there is a persistent use of unexplained terminology, which is very disconcerting. Stace also has a tendency to spend a large proportion of each page defining categories and terms, which can be somewhat overwhelming, and I do not always agree with his definitions and terminology.

So, in spite of the author's claims to the contrary, this book is not really concerned with taxonomy as a modern science, but is more a reflection of the author's own research interests. The aim of being an introduction to taxonomy as a part of contemporary science could be better achieved by reducing the amount of detail in chapters 5 & 6, and then using the space gained to present more balanced treatments of recent techniques such as DNA sequencing, cladistics, and vicariance biogeography. With only a relatively small amount of rewriting, these contemporary methods could easily be represented as explicit attempts by taxonomists to revolutionize their practices, and thus show the world that we are no longer just stamp-collectors.

David Morrison
Department of Applied Biology
University of Technology, Sydney

Field Guide to the Native Plants of Sydney.

By Les Robinson. Kangaroo Press, Kenthurst. 1991. 448 pp. ISBN 0-86417-192-7. $29.95.

About five years ago, when I began work at the Royal Botanic Gardens Sydney as Identifications Botanist, I discovered (to the barely concealed amusement of my informant) that I was also the "Visitors Officer". This job is definitely only for those who thrive on the unexpected; visitors follow a corollary of Murphy's Law, and therefore invariably arrive unannounced and at the most inconvenient time.

One of the most persistent and tenacious of these visitors turned out to be named Les Robinson, he being a person who also possessed the facility of immaculate timing — the size of my backlog of identifications was no barrier to his sudden appearance, demanding attention and precious time. The product of his many years of labour — this *Field Guide to the Native Plants of*

Sydney — was definitely worth every minute of his (and my) time.

To produce a guide to over 1370 species, with line drawings, seemed an awesome task for one person. After all, wasn't the *Flora of New South Wales* (about 6000 species) occupying a considerable portion of the time of all the herbarium's scientific staff including, two full time workers? To add insult to injury, Les was not even a trained botanist, having studied law at Sydney University before becoming a cartoonist!

The guide, of course, does not purport to be a flora, yet it is jam-packed with information:- scientific names, authorities, common names, a brief description of the plant's most recognizable features, line drawings of important features, relative abundance in the area, range in New South Wales outside the Sydney district, habitat preference, flowering times, translation and derivation of scientific names, mention of confusable species, and notes which may include a short taxonomic discussion, aboriginal use, rare and threatened status, as well as pronunciation of names — whew!

The guide begins with a discussion of the scope of the book, how to use it, a description of habitats, the rare and threatened plants code, what author citations mean, and aboriginal names for plants. A key is provided to the major grouping used in the book — climbers, mistletoes, rainforest species, coastal and estuarine species, aquatics seagrasses, ferns etc. Those groups not falling into the above categories can be keyed out using the key to plant families, and some weeds found in Sydney bushland are also included. I have tried the key for a number of plants, and it works.

The family descriptions include a discussion of the world-wide distribution, Australian representation, biology, aboriginal use, and pollination; and they often include line drawings illustrating parts of the flower or inflorescence.

Information provided is of high quality — Les has made good use of herbarium advice, and his nomenclature is up to date. The descriptions average between 50 and 70 words, and they are not intended to be botanically exhaustive, the emphasis being placed on a few obvious or unique features of the plant. The line drawings are excellent and complement the text well.

As a result, the book strikes a happy balance between readability for the amateur and scientific accuracy, with that elusive quality of catching the "hang" of most of the subject without complexity.

It is a genuine field guide, fitting neatly into a day pack and leaving plenty of room for lunch, a water bottle, and a waterproof jacket. At home you can open it up at any page and browse at leisure.

The book is well worth the money.

Barbara Wiecek
National Herbarium of New South Wales
Royal Botanic Gardens Sydney

Solanaceae III. Taxonomy, Chemistry, Evolution.

Edited by J.G. Hawkes, R.N. Lester, M. Nee and N. Estrada-R. Royal Botanic Gardens Kew, for the Linnean Society of London. 1991. 483 pp. $70.

A botanical feature of the last 20 years has been the number of specialist conferences dealing with a single family of plants. Perhaps the first of these was the one in Reading in 1970 on the Apiaceae. The umbellifers, legumes, nightshades, grasses, and composites have all had their devotees. Some enthusiasts have organised more than one conference, and others are known to be planned. Most of these conferences have provided substantial volumes of proceedings, and these are mines of information on the current knowledge of the various families.

This volume records the proceedings of the Third Solanaceae Conference, held in Bogota, Columbia, in 1988.

Some 35 papers are printed, covering virtually all aspects of the Solanaceae. The volume has a soft cover, the printing is clean, though the typeface is a trifle small for aging eyes, and there is an adequate index to the volume.

It is invidious to pick out special papers, but the account of *Withania* by Hepper is the only recent one available, as is the account of the small genus *Schultesiana* by Bernardello & Hunziker, which looks as if it may have some ornamental value. Nee turns again to *Solanum* section *Acanthophora*, a group of species of interest for their alkaloids. Roddick deals with the uses of the Solanaceae in medicine and drug therapy, and many more.

The local boys are represented by three papers. Haegi clothes the Anthocercidae, Haegi & Symon firmly put *Datura* to rest as a New World genus, and Symon has some Gondwanan speculation on the distribution of the family.

This book is an essential reference for all of those people who wander through the nightshady fields for roots, tubers and fruits, or the murky

world of hallucinogens and other exciting alkaloids.

David Symon

The Story of the Flinders Ranges Mammals.

By Dorothy Tunbridge. Kangaroo Press, Kenthurst. 1991. $19.95.

It may not be usual for a book on Australian animals to get a mention in the *ASBS Newsletter*. However, some of you may have heard Dorothy Tunbridge's effective and moving talk on the ABC's *Ockham's Razor* programme in early December 1991.

Tunbridge is a linguist-ethnographer, and in 1984 she was working at the Nepabunna aboriginal school in the Flinders Ranges, to develop an orthography of the Adnyamathanka people's language. There, she came across the word for a skin cloak, but none of the locals knew what it was, though a few could still sing a song about it.

This intrigued Tunbridge, who soon collected about two dozen words for local mammals — more than the number of known animals in the area. Continuing curiosity about these relic names gradually unravelled an extraordinary story of the ecological devastation and extinction of a whole suite of small mammals once found in the Flinders Ranges.

The aboriginal names have now, in most cases, been connected with likely animals. The species have been confirmed in many cases by early records or by sub-fossil deposits, but not in all cases.

The principal losses were early and dramatic, and were probably exacerbated by the excessive stock numbers of the early pastoralists and a series of severe droughts in the 1860s and 1890s. While some of the extinctions surely precede white settlement (e.g. the Thylacine), Tunbridge assembles much evidence to support the presence of most species until the white invasion.

Botanists are well aware of the ecological damage caused by sheep. cattle, rabbits, and goats, but rarely has the tale been told so effectively of their appalling effect on native animals and on the aboriginals who depended on them.

David Symon

Recent Publications

Evolution and Extinction.
Edited by W.G. Chaloner and A. Hallam. Cambridge University Press, Cambridge. 1991. 150 pp. ISBN 0-521-406-46-3. $45.

Tropical Lichens: Their Systematics, Conservation and Ecology.
Edited by D.J. Galloway. Clarendon Press, Oxford, The Systematics Association Special Volume No. 43. 1991. 224 pp. ISBN 0-19-857720-6. $150.

Phylogeny, Ecology and Behaviour.
By Daniel R. Brooks and Deborah A. Mc Lennan. University of Chicago Press, Chicago. 1991. ISBN 0-226-075752-9. $30.

Studies on Amanita (Amanitaceae) from Andean Columbia.
By Rodham E. Tulloss, Clark L. Ovrebo and Roy E. Halling. New York Botanical Garden, New York. 1992. 46 pp. ISBN 0-89327-371-6. $25.

Manual of Vascular Plants of Northeastern United States and Adjacent Canada. Second Edition.
By Henry A. Gleason and Arthur Cronquist. New York Botanical Garden, New York. 1991. lxxv+910+xxii pp. ISBN 0-89327-365-1. $95.

This second edition has been completely revised by Cronquist. The taxa have been rearranged according to his phylogenetic system, and the nomenclature has been updated. The general keys have also been revised, new synoptic keys have been added, and the glossary has been expanded.

Sensitivae Censitae: A Description of the Genus Mimosa Linnaeus (Mimosaceae) in the New World.
By Rupert C. Barneby. New York Botanical Garden, New York. 1991. 835 pp. ISBN 0-89327-366-X. $170.

Beach Plants of South Eastern Australia.
By Roger Carolin and Peter Clarke. Sainty Associates, P.O. Box 1219, Potts Point, NSW 2011. 1991. 119 pp. ISBN 0-646-05147-4. $18.95.

This is a guide to the flora of the strandline and fore-dunes, from Frazer Island to Wilsons Promontory. About 180 ferns and flowering plants, are described, many with a colour picture.

NOTICES

Australia's biota and the national interest: The role of biological collections

This symposium, held in Canberra on 11–12 November 1991, was sponsored by the Australian Academy of Science and the Australian Institute of Biology. The recommendations produced at the end of the symposium are as follows:–

This conference asserts that:

Australia's biological collections are an essential part of the scientific resources of the nation, and should be recognized and supported accordingly

the effectiveness of the collections depends upon their continued development, maintenance, research, and interpretation

maintenance of Australia's biodiversity demands the effective use of the expert knowledge of Australia's taxonomists and systematists

The conference notes that the collections and their users currently face several threats:

inadequate facilities for permanent storage in some collections, and lack of funds for support of the basic infrastructure and maintenance needed by other collections

inability to provide the infrastructure to support new technical developments, such as the long-term storage of genetic material

massive backlogs in the important task of databasing the collections

in most cases, an absence of statutory protection

rapidly diminishing expertise in taxonomy and systematics in the universities, who are charged with the training of new experts. The number of experts in systematics has declined from 193 in 1974 to 64 in 1991. There has been a concomitant decline in the formal training of both undergraduates and postgraduates

Accordingly, the conference:

acknowledges and acclaims the contribution of the Australian Biological Resources Study (ABRS) and the Environment Resource Information Network (ERIN) to the study, curation, and databasing of Australia's biological collections, and recommends that this support should continue and expand

welcomes the proposal to establish a Facilities Grants Scheme for the maintenance, curation, and infrastructure of biological collections

notes that the cost of restoring the infrastructures may be in the vicinity of $100 million over ten years

mandates a working party to investigate the conditions of existing collections and to develop draft sets of minimum technical standards for their housing and conservation, to be referred to meetings of the Council of Heads of Australian Herbaria (CHAH), the Council of Australian Museum Directors (CAMD), and the Council of Heads of Australian Entomological Collections (CHAEC)

recommends that the Department of Employment, Education, and Training should allocate targeted funding for appointments of systematists in tertiary institutions, so as to restore and increase training in systematics at undergraduate and postgraduate level in each state and territory in Australia

recommends that postgraduate programmes take greater advantage of taxonomic expertise and collections in herbaria, museums, and other agencies

recommends that granting bodies give priority to funding postgraduate research in systematics

recommends that vocational training courses in systematics and biodiversity at the graduate diploma level be set up

The conference recommends that:

a formal Network be established to facilitate planning, and ensure the future of the biological collections

the Networtk should also include living and microbiological collections

the Network should be a co-ordinating Council for biological collections, to advise the minister responsible for the Australian Biodiversity Initiative

the activities of ABRS, ERIN, and the facilities grants scheme for biological collections should be closely co-ordinated in an administrative structure that reports to the Council

at some future date the Council could also encompass the further function of funding research into processes, assemblages, and changes in biodiversity

Cycad 93
The Third International Conference on Cycad Biology

Cycad 93 is the third in the series of international conferences on cycad biology, the previous two being in 1987 in Beaulieu-sur-Mer, France, and the second in 1990 in Townsville, Australia. The aim of these conferences is to bring together academics, researchers, growers and hobbyists for the interchange of information to the benefit of all people with an interest in cycad plants.

Cycad 93 is to held in Pretoria, South Africa's administrative capital, on 5–9 July 1993. The conference, with the theme "Conservation through Cultivation", is hosted by the Cycad Society of South Africa. The proceedings will take place on the campus of the University of Pretoria, a major South African university with an important collection of over 100 mature specimens in attractively landscaped surroundings. The conference proceedings will be published in a special volume.

Two major field trips offer participants an unrivalled opportunity to see some of the most important cycad habitats in the country.

The three-day pre-conference northern tour visits Modjadji Nature Reserve, Kruger National Park, and the Lowveld National Botanic Gardens. The five-day post-conference eastern tour visits Howick Falls, Durban's Old Fort and Botanic Gardens, Krantzkloof Nature Reserve, Oribi Gorge and Tsolo, Van Stadens' Nature Reserve, and Uitenhage Nature Reserve.

The organizing committee includes:-

Nat Grobbelaar (chairman)
Cynthia Giddy (tours programme)
Roy Osborne (finance and publicity)
Piet Vorster (conference programme)

The final announcement, with a request for payment of fees and a call for abstracts, will be mailed towards the end of 1992.

For further information, and to be placed on the mailing list, contact:-

Ken Hill
National Herbarium of N.S.W.
Royal Botanic Gardens
Mrs Macquaries Road
Sydney. NSW. 2000.
Tel (02) 2318160
Fax (02) 2514403

Ken Hill
National Herbarium of New South Wales

Australian Flora Foundation grants

The Australian Flora Foundation has announced its grants for 1992, totalling $9501, for research projects into native flora.

Janet Gorst, of the University of Tasmania, proposes to use tissue culture as an alternative method for the propagation of restricted species of *Persoonia*, as they are difficult to propagate from seed.

K.V. Sharman, of Redlands Research Station, is planning to collect seeds fo Australian native daisies (in particular, some endangered members of the tribe Inuleae) to investigate their germination requirements.

Mark Tester, of the University of Adelaide, will study the mycorrhizal link between saltbush (*Atriplex vesicaria*) and the grass *Stipa nitida* in relation to phosphorus nutrition and the growth of both species.

Carolyn Ireland, of the University of Adelaide, will study the flowering, seed production, seed dispersal and establishment of seedlings of the western myall (*Acacia papyrocarpa*) when rabbits, goats and kangaroos are prevented from eating them.

Malcolm Reed
President AFF

Request for material

Paul Fryxell (Texas A & M university, and the US Department of Agriculture) and I are initiating a study of the molecular evolution of the Malvaceae using chloroplast DNA data. We are seeking assistance in obtaining material for this study.

The type of material we are interested in obtaining is seeds. Of course, fresh seeds are preferred, but seeds from herbarium specimens 1-3 years old may also still be viable. Any member of the family would be appreciated (except *Abelmoschus*, *Hibiscus*, and *Gossypium*, because special permission is required for these genera).

I will supply USDA mailing labels with instructions on the back to anyone who is willing and able to help us with this project. Please contact:-

J. La Duke
Department of Biology
Box 8238, University Station
Grand Forks, North Dakota 58202

U.S.A.
Tel 1-701-7772621
BITNET: UD047817@NDSUVM1

John La Duke
University of North Dakota

Request for material

At the moment, I am analyzing the origin of the allotetraploid *Microseris scapigera* (Asteraceae) of Australia and New Zealand from North American diploid ancestors. For this study, I need living achenes of this species. Could anyone who can help please contact:-

Prof. K. Bachmann
Hugo de Vries Laboratorium
Universiteit van Amsterdam
Kruislaan 318
NL-1098 Sm Amsterdam
Netherlands.
Tel 31-20-5257817
Fax 31-20-525-7715

Konrad Bachmann
University of Amsterdam

Back issues of Taxon

I have a run of *Taxon* volumes 21 to 40 (1972-1991) available. Each volume is complete in four issues except for a missing issue of volume 25 (5/6). Volumes 28 to 39 (and possibly 40) are each accompanied by a separate "Index to scientific names cited in Taxon" for the relevant volume. There is also a copy of the "Index to volumes 21 to 30; authors and subjects" compiled by R.M. Lowden (1986).

I would like to sell this run and associated indexes, either complete or in parts, and donate the net proceeds to the ASBS Research Fund. Would any interested person or institute please advise me in writing of what they are interested in and what price they are prepared to offer. Postage would be an additional charge.

As a guideline to the maximum prices expected, please note that:- 1) the IAPT recently (August 1991) offered a special member's discount on back issues of $US5.00 per issue, or $US20.00 per volume including the annual index; and 2) the annual personal membership rate to IAPT, which includes subscription for one volume of *Taxon*, is currently $US40.00.

All offers between zero and infinity will be considered. Please contact:-

H. Aston
National Herbarium of Victoria
Birdwood Avenue
South Yarra. Vic. 3141.

Helen Aston
National Herbarium of Victoria

Southern Connection Newsletter

The *Southern Connection Newsletter* was founded as the result of a meeting at the Bishop Museum, Honolulu, in May 1991.The newsletter arose from the recognition that tracking down fellow researchers with complementary problems is not simple, and that closer research links are needed.

The newsletter aims to act as a vehicle for open communication between life scientists whose research interest includes biota that occur in the southern hemisphere. The first issue (January 1992) is available free from:-

R.S. Hill
Department of Plant Science
University of Tasmania
GPO Box 252C
Hobart. Tas. 7001.

Bob Hill
University of Tasmania

Plant taxonomists online

There is a correction to the email address for the "Plant Taxonomists Online" directory discussed in the last issue of the Newsletter. To be listed in the directory, you should send your name, postal address, fax number, and phone number to "JMYGATT@bootes.unm.edu". If you have any problems getting through, then contact Jeremy Bruhl at "bruhl@rsbs0.anu.edu.au".

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY

History of Systematic Botany in Australasia

Edited by P.S. Short. A4, case bound, 326pp. A.S.B.S., 1990.
Members $40; non-members $50. Postage $8.

For all those people interested in the 1988 A.S.B.S. symposium in Melbourne, here are the proceedings. It is a very nicely presented volume, containing 36 papers on: the botanical exploration of our region; the role of horticulturalists, collectors and artists in the early documentation of the flora; the renowned (Mueller, Cunningham), and those whose contribution is sometimes overlooked (Buchanan, Wilhelmi).

Systematic Status of Large Flowering Plant Genera

A.S.B.S. Newsletter Number 53, edited by Helen Hewson. 1987. $5 + $1.10 postage.

This Newsletter issue includes the reports from the February 1986 Boden Conference on the "Systematic Status of Large Flowering Plant Genera". The reports cover: the genus concept; the role of cladistics in generic delimitation; geographic range and the genus concept; the value of chemical characters, pollination syndromes, and breeding systems as generic determinants; and generic concepts in the Asteraceae, Chenopodiaceae, Epacridaceae, *Cassia*, *Acacia*, and *Eucalyptus*.

Flora and Fauna of Alpine Australasia: Ages and Origins

Edited by B.A. Barlow. A.S.B.S. & C.S.I.R.O., 1986. $21 + $5 postage.

The alpine environments of Australia, New Guinea, and New Zealand differ from each other in terms of topography, genesis, climate, and biota. They also contrast strongly with alpine habitats in the northern hemisphere. Palaeoclimatology, palaeobotany, biogeography, ecology, and plant and animal systematics have been used here to give an understanding of the biohistorical relationships of these isolated islands of alpine terrain in the southern hemisphere.

Evolution of the Flora and Fauna of Arid Australia

Edited by W.R. Barker & P.J.M. Greenslade. A.S.B.S. & A.N.Z.A.A.S., 1982. $20 + $5 postage.

This collection of more than 40 papers will interest all people concerned with Australia's dry inland, or the evolutionary history of its flora and fauna. It is of value to those studying both arid lands and evolution in general. Six sections cover: ecological and historical background; ecological and reproductive adaptations in plants; vertebrate animals; invertebrate animals; individual plant groups; and concluding remarks.

Australian Systematic Botany Society Newsletter

Back issues of the *Newsletter* are available from Number 27 (May 1981) onwards, excluding Numbers 29 and 31. Here is the chance to complete your set. Cover prices are $3.50 (Numbers 27-59, excluding Number 53) and $5.00 (Number 53, and 60 onwards). Postage $1.10 per issue.

Also available are sweaters ($25), t-shirts ($15), mugs ($8 each, or $42 for a six-pack), and scarfs ($20).

Send orders and remittances (payable to "ASBS Inc.") to:

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NEDLANDS. W.A. 6009.
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National Herbarium of New South Wales
Royal Botanic Gardens
Mrs Macquaries Road
SYDNEY. N.S.W. 2000.
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International dialling sequence from outside Australia:-
add the Australian country code 61 and omit the leading zero of the area code.

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Fax: (06) 2465249	Fax: (06) 2509599	Fax: (03) 6552350	Fax: (02) 2514403
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Fax: (089) 323849	Fax: (06) 2818312	Fax: (09) 3670515	Fax: (070) 913245

This list will be kept up to date, and will be published in each issue.
Please inform David Bedford (NSW) of any changes or additions.

The Society

The Australian Systematic Botany Society is an incorporated 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. Membership entitles the member to attend general meetings 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 January 1 each year.

The Newsletter

The *Newsletter* appears quarterly, 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 published pages in length) will be considered.

Contributions should be sent to one of the editors at the address given below. They should preferably be submitted as an unformatted word-processor or ASCII file on an MS-DOS or Macintosh diskette accompanied by a printed copy, or as two typed copies with double-spacing.

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

All items incorporated in the *Newsletter* will be duly acknowledged. Authors alone are responsible for the views expressed, and statements made by the authors do not necessarily represent the views of the Australian Systematic Botany Society Inc. *Newsletter* items should not be reproduced without the permission of the author of the material.

Notes

ASBS annual membership is $22 (Aust); full-time students $12. Please make cheques out to ASBS Inc., and remit to the treasurer. All changes of address should be sent directly to the treasurer, as well.

Advertising space is available for products or services of interest to ASBS members. Current rate is $100 per full page, $50 per half-page or less. Contact one of the *Newsletter* editors for further information.

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