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Society*



Newsletter

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ASBS Inc. Business

The minutes of the Annual General Meeting held in Sydney in September in association with the Flora Malesiana conference have had to be held over until the next issue of the newsletter. A late mistake was found in the accounts, which has to be rectified before the financial report can be accepted by members.

You will notice that the new Council is listed inside the front cover of this newsletter. I would like to express Council's appreciation for the service of those previous members who did not or could not seek re-election: Kristina Lemson Treasurer Elizabeth Brown and Secretary Robyn Barker.

The Society and legal issues

The *Australian Systematic Botany Society Inc.* was identified in the Public Notices section of the "Canberra Times" (5th October 2001) as under threat of relinquishing its incorporated status. The Registrar-General of the Australian Capital Territory stated that he "will cancel the incorporation of the associations listed in the schedule for the reason/s stated below in accordance with S. 93(1) of the *Associations Incorporation Act 1991*, unless I receive notice showing cause why the incorporation of the association should not be cancelled". The reason was that we are deemed not to have furnished an annual return (copy of the audited financial statement) over the last three years.

Last year, the Public Officer and Council were aware that the Society had not been satisfying all of the legal requirements of incorporation for some time and had understood that steps had been taken to address previous concerns. The Council believes that returns were made for 1997 and 1998, together with payment of the necessary late fees which were incurred because of the lateness of our Annual General Meetings each year. However, despite contact with the Registrar-General's Office over the last year on procedure matters, we were surprised to learn this month that the Office has no record of an amended 1997 annual financial statement or the 1998, 1999 and 2000 annual statements. Apart from the 2000 annual statement, the previous and current councils were unaware of any outstanding difficulties with the lodging of these statements. As indicated at the Society's 2001 Annual General Meeting (12 September 2001, Sydney), Council has raised issues with the

auditors concerning the 2000 annual statement. These discussions are expected to be finalised soon. Once these issues have been resolved, an extraordinary general meeting will be called to vote on a motion to accept the Society's annual financial statement for 2000.

Participants in the last two Annual General Meetings will be aware that Council has been seeking to ensure that successive councils are aware of the legal responsibilities which relate to the incorporation of the Society under the Act. It is in the final stages of redrafting the *Name, Object and Rules of the Australian Systematic Botany Society Inc.* (our 'Constitution') so that it more clearly describes the important requirements of the *Associations Incorporation Act 1991* (A.C.T.) and so provides a better framework in which the Society operates.

The following reports and documents have been sent to the Register-General's Office:

1. "Financial Report for Year ending 31 December 1997" (signed by Auditors 15 July 1998)
2. Cheque No. 51 (Chequebutt record) "Refund for Lodgement Fees - Annual Return - Change of Committee" to Andrew Lyne (Public Officer) - \$60.00 (1 April 1997)
3. Cheque No. 90 (Cheque butt record) "Filing of Annual Financial Statement" to Andrew Lyne (Public Officer) - \$24.00 (20 April 1998)
4. "A.C.T. Registrar-General's Office Official Receipt" (10 December 1998)
5. "Statement by Members of the Committee and Summary of Annual Return" (8 October 1998)
6. "Change/s to Committee of Association" (11 January 1999)
7. "Audited Financial Statements for the year ended 30 June 1999" [incorrect title, should be "31 December 1998" as cited on page 2 of this report] (signed by Auditor 18 November 1999; signed by President and Treasurer 18 November 1999)
8. "Annual Statement of Particulars by Association" (9 December 1999)
9. "Audited Financial Statements for the year ended 31 December 1999" (signed by Auditor 4 July 2000; signed by President and Treasurer 7 June 2000)
10. "Annual Statement of Particulars by Association" (9 June 2000)

11. "Name, Object and Rules of the Australian Systematic Botany Society Inc." May 1998
12. "Alteration of Objects, Purposes or Rules" (June 1998)
13. "President's Report" (Australian Systematic Botany Society Inc. Newsletter 95: 1 & 2 (June 1998)
14. "Proposed Alterations to the Constitution - Ballot Paper" (March 1998)
15. "Changes to the Constitution" (Australian Systematic Botany Society Inc. Newsletter 95: 3 (June 1998)

Barry Conn
President
15 October 2001

ABRS Report

Launch of *Acacia*/Wattle

On the 31 August the Commonwealth Minister for the Environment, Senator Robert Hill, and the WA Minister for Agriculture, Fisheries and Forestry, the Hon. Kim Chance, jointly launched the package of *Acacia* products: *Flora of Australia* vols. 11A and 11B, and the interactive CD-ROM key, *WATTLE*. We were fortunate in that the sun almost shone, after a week of rain (the launch was outside, in the Senate grounds at Parliament House, Canberra), and three of the authors, Bruce Maslin, Philip Kodela and Arthur Court, were among the guests.

Ian Cresswell, Kim Chance, Bruce Maslin and Robert Hill at the launch of the *Flora of Australia Acacia* volumes and the *WATTLE* CD-ROM key.

The launch was noteworthy on at least two counts. The *Acacia* project represents the largest plant group (in time, numbers of taxa, and cost) of any yet completed by ABRS and collaborators. Despite this, the quality of the work is right up there with the best yet delivered under the *Flora* project, and all involved can be justly proud of their efforts. Bruce (and others) are already working on an encore! Secondly, the launch of the *WATTLE* CD represents the start of what we hope will be an extensive series of interactive keys right across the biodiversity spectrum. It is badged as the first part of the *ABRS Identification Series*, and further parts in this series are well advanced, with keys on foraminifera, spiders, polychaete worms and *Hakea* almost ready for release. Several others are in preparation.



Twenty years of *Flora of Australia*

In the nick of time we were reminded by Alex George that 22 August 2001 represented the 20th anniversary of the publication of the first part of the *Flora of Australia*, at the International Botanical Congress in Sydney in 1981. Alex organised a lunch in Perth, and in Canberra ABRs staff and friends gathered for an extended afternoon tea, to mark the occasion. In 20 years Australian botanists (and some of their overseas colleagues) have completed and published 26 volumes of this landmark series. Many more volumes are in various stages of completion.

In that time, *Flora of Australia* has come to be recognised as one of the best of its kind in the world, and has been widely imitated (but, we like to think, not surpassed!). It is also notable for the speed at which it has appeared. The published parts comprise 10,301 pages of fine print, describing 117 families, 781 genera and 7580 species. They represent contributions by 206 authors, and 223 illustrators and photographers. Throughout, by an admirable cooperative effort between editors and authors, the accuracy and quality of production has remained at the highest level, ensuring that the work is recognised as a benchmark for taxonomic statements on our flora.

In the past twenty years the *Flora* has evolved, as all organic things do. The basic original model, devised by Alex George and a number of Editorial Committees, has stood the test of time. However, gradually small additions have been made. The level of illustration has increased, and with improved technology, has improved in quality. Indeed, the *Flora* has proven to be a useful showcase and training ground for botanical art in this country, and the volumes published to date represent a 'Who's Who?' of contemporary Australian botanical artists. The textual content has also changed imperceptibly over the years, with descriptions becoming slightly longer (but only slightly – authors please note!), and more extensive notes have been added under individual species, on such subjects as variability, taxonomy, ecology and relationships. In addition, particularly in the case of larger families and genera, we have invited authors to provide review essays on key topics, and these, plus the notes, have been welcomed by users.

The launch of the *ABRS Identification Series* (above), and its predecessor, the *Families of Flowering Plants of Australia*, should also be seen, *inter alia*, as part of the evolution of the *Flora* series, as is the ABIF-Flora initiative, to make the series available on the Internet.

The challenge now is to complete the series in a reasonable time. At first glance this might seem a daunting task, with resources for taxonomy shrinking across the country (and the world) and the workforce aging (I prefer 'greying'), despite wide recognition of the importance of taxonomy in underpinning conservation and ecologically sustainable development. However, it is my personal view that the crisis may have bottomed, and that things will improve slowly from now on. So far as the *Flora* is concerned, much unpublished work is in-house already, and the tempo of publication is being maintained. If we can sustain the cooperation that has carried us this far, I am optimistic that the *Flora* can be completed in all its green and gold glory, in the nick of time, before the last printing press is shut down and the last taxonomist retires! Please reserve another metre of shelf space on your bookcases.

Recent publication

Flora of Australia vol. 58A, *Lichens* 3

This, the 26th volume of *Flora of Australia*, was published on 21 August 2001. It includes descriptions of some of the more robust and luxuriant species of cool-temperate south-eastern Australia (Lobariaceae and Sphaerophoraceae), as well as ecologically-important soil-inhabiting groups in semi-arid and arid regions (Peltulaceae, *Endocarpon* and *Placidium*). Also in this volume are the first *Flora* treatments of crustose lichens, including the mainly saxicolous Verrucariaceae, and the Trichotheliaceae, a family that is most diverse on the bark and leaves of trees and shrubs in tropical rainforest. In all, the volume describes 9 families, 24 genera and 256 species and infra-specific taxa. It is the work of 14 authors, illustrators and photographers.

The books will be sold for A\$85 (hardcovers) and A\$70 (softcovers). Freight is extra. See the CSIRO Publishing website at <www.publish.csiro.au> for details.

Coming soon

Verticordia. Turner of Hearts, by Elizabeth George, to be jointly published by University of Western Australia Press and ABRs, is scheduled for publication in Spring 2001. It will be distributed by UWA Press. Watch their website at <<http://www.uwapress.uwa.edu.au/>> for details.

Flora of the South West. Bunbury-Augusta-Denmark by Judy Wheeler, Neville Marchant & Margaret Lewington, to be jointly published for the Western Herbarium by ABRs and University of Western Australia Press, is expected to be available in late Spring. The 2-volume set will be

distributed by UWA Press. Watch their website at <<http://www.uwapress.uwa.edu.au/>> for details.

Nature's Investigator. The Diary of Robert Brown in Australia 1801–1805, by D.T. Moore, T.G. Vallance & E.W. Groves, to be published by ABRs, will go to press in September. It is expected to be available for a launch at the Flinders/Brown Bicentenary conference in Albany, WA, in December. Price yet to be set.

Book award

The book *Australian Rushes. Biology, Identification and Conservation of Restionaceae and Allied Families* by Kathy A.

Meney & John S. Pate, jointly published by University of Western Australia Press and ABRs, was recently awarded the 2001 Henry Allan Gleason Award of the New York Botanical Garden. The award is made annually for an outstanding publication in the fields of taxonomy, plant ecology or plant geography. The book is still available from UWA Press: see their website at <<http://www.uwapress.uwa.edu.au/>>.

Tony Orchard
ABRS Vascular Flora
& Algae Subprograms.

ABRS Research Grants 2002/03

New information on web

The ABRs 2002/03 grant applications forms and guidelines for applicants are available electronically via the ABRs World Wide Web site. The address for the ABRs website is <http://www.ea.gov.au/biodiversity/abrs/>.

For Year 2002/03, all applications and supporting documentation are to be submitted electronically to ABRs. Submit electronic applications via email to Liz.visher@ea.gov.au. Following electronic submission, one hardcopy of the application with relevant signatures should be sent to ABRs.

Research priorities 2002/03

Note: applications are encouraged for work on large, problematic groups.

Algae & Protista

Interactive key to Cyanophyta/Cyanobacteria
Dinoflagellates
Diatoms
Bangiophyceae (Flora treatment)
Preparation of regional algal floras (especially tropical)
Free-living protozoa
Radiolarian protozoa
Parasitic and Endobiont protozoa

Lichens

Teloschistaceae
Thelotremataceae

Vascular plants

Campanulaceae-Campanuloideae
Stylidiaceae
Interactive key to Australian genera of Orchidaceae

Animal Groups

Cnidaria (except hard corals)
Platyhelminthes (marine species identification tools)
Nematoda (free living or entomophilic, and particularly Aphelenchoididae)
Crustacea (lower groups)
Annelida (leeches)
Araneae
Coleoptera
Diptera

Fungi

Rhytismatales
Cercosporoid fungi
Anamorphic Trichocomaceae
Ustilaginales
Myxomycota
Plant pathogenic fungi

Bryophytes

Dicranaceae
Ditrichaceae
Fissidentaceae
Pterobryaceae
Ricciaceae
Metzgeriaceae
Aytoniaceae

Species Bank

Fungi
Gall Insects
Seaweeds
Land/Freshwater Molluscs
Crabs, Prawns and Marine Crayfish
Earthworms
Flies

ABLO Report

Rod Seppelt completed his term as Australian Botanical Liaison Officer at Kew at the end of August. He has been replaced by Neville Marchant for 6 months with Peter Bostock to fill the position for the subsequent 6 months. Before he finished, Rod submitted his final report to the Newsletter.

So, this is England, where nothing is normal.

Well, that is what the Coach Driver said as we boarded the bus on leaving Cambridge after what turned out to be another fruitless search for a type specimen.

Unfortunately, I have drawn a few blanks during the year. The lack of relevant sheets raises a number of issues: Are the specimens located, in fact, somewhere else? Have the specimens been lost? Are they "lost" somewhere in the herbarium? Is there sufficient information provided to actually track down the specimen?

The number of requests I have received during the year was down on previous years. Looking at records, there has been a decline in requests every year recently. Carrick Chambers, on a visit to examine *Blechnum* during the year, said to me that he had no doubt the answer was the lack of funding for taxonomic research. This is a view I share, but I also hold the view that there is more to taxonomy than molecules and I wonder where the next generation of classically trained taxonomists will come from - hardly from the current trends in teaching systematics.

For me, this year has been particularly rewarding. Of the approximately 4000 names of mosses reported from Australia, I have managed to obtain the original citations, descriptions, illustrations (where present), or the references where nomenclatural changes have been made, for all but about 60. I have noted many citation errors in *Index Muscorum*, but considering the enormity of the task when compiling this publication, the errors are hardly surprising. Unfortunately, these errors were perpetuated in Streiman and Curnow's *Catalogue of the Mosses of Australia*, together with the introduction of many more new errors. However, we are now in a position to correct virtually all of these. Most of the descriptions and citations are already entered

into the computer. The illustrations remain to be scanned from transparencies. When this is completed the entire data set will be made available via a web site. Having open access to the magnificent libraries here at Kew and also at the British Museum (Natural History) has been fantastic.

While on the subject of the invaluable resources of the library, what Librarian would not be proud of a budget allocation of 40,000 pounds (around \$110,000), just for book purchases!

Following the Science Review of Kew during the year, a number of changes are being instigated in the operation of the Herbarium. There will be some re-allocation of responsibilities, and priorities for research. I cannot say that these are altogether happy times for staff. The new building is being given priority allocation, but with finding a site, obtaining the necessary planning permission, architectural drawings, let alone construction work, nothing is expected to be completed until about 2007. In the meantime, the library remains at near bursting point, nearly half a million herbarium sheets will be stored at Wakehurst Place, and the tasks of identifying, mounting, databasing, and filing additional collections continues.

So, where has this last year gone? Twelve months have passed altogether too quickly. It has been wonderful to be here in Kew for a year, to experience the strength of seasonality. The rain, grey skies and short days of winter are just a tad oppressive. But, the onset of Spring, with the return to green, the colour of the spring bulbs and annuals, is quite something. The Gardens Staff put a lot of effort into maintaining a changing display and no matter how many times one goes into the Gardens, there is always something different.

Although, as a cryptogamic botanist, I have not had as much direct contact with Kew Herbarium Staff, the staff here has been particularly helpful throughout my stay. Their depth of knowledge and profound understanding of the sections they curate makes searching for material relatively easy. Library, admin and support staff have been equally helpful.

As for my views on the position of ABLO, some I have already made known in regular

reports from this office. Changes need to be made to improve the selection process. I, and some previous ABLO's, have expressed the view that a two year option in the appointment should be available. The position could be opened up to provide support along the lines of a post-graduate fellowship, coupling investigative research with the role of ABLO. Perhaps a staff exchange program could be considered where staff from Kew exchange with a staff member from an Australasian herbarium (swapping houses as well for the year).

My biggest disappointment has been the absence of liaison with the Liaison Officer. Granted, there have been changes in the structure of ABRs. However, there needs to be a designated Officer to liaise with the appointed ABLO to ensure that all information is provided and arrangements (including Visas) are facilitated. Regular contact with the incumbent ABLO during the year would also improve matters considerably. This year, apart from notification that I may be asked to stay a further six months, and subsequently that this would not be necessary, is the only communication I have had from Canberra. At the time of leaving office here, I have not even been told officially that Neville Marchant is replacing me! I learnt of that in an early morning phone call from Neville.

Over the years returning ABLO's have made many recommendations about improvements to the role of ABLO. It seems, however, that little notice is taken of the suggestions. Of considerable concern to the incumbent ABLO in recent years has been the collapse of the Australian dollar against the pound. The cost of living and accommodation in London is three times that in Australia. With the diminishing effectiveness of the ABRs budget, support for the office of ABLO all comes down to prioritising allocations. Herbaria need to be given the resources to cover for staff absences (unless a staff exchange was in operation). Support for the office of ABLO also needs to be reassessed before it becomes impossible to finance a year of frugal living and minimal travel in, or from, London.

In closing, may I take this opportunity of wishing Neville Marchant the very best for his six month stay at Kew.

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Eichler Research Fund Report

Recipients are required to present a report on their work to the Newsletter.

Chloroplast DNA variation in *Eucalyptus* series *Subulatae*

Dean Nicolle

The Flinders University of South Australia

Eucalyptus series *Subulatae* has a wide distribution across southern Australia and is a common component of the mallee-shrublands, with greatest morphological diversity in the wheat/sheep agricultural and goldfields areas of South Australia and Western Australia. The taxonomy of the series has traditionally been considered complex and the group is poorly known relative to many other eucalypt groups. Sixteen taxa (14 species and 2 subspecies) were included in the series by Chippendale (1988), 24 taxa (20 species and 4 subspecies) by Brooker and Kleinig (1990; 1994), while Johnson and Hill (1999) included 41 taxa (29 species and 11 subspecies) in the series, including 16 newly

described taxa. In a review of the series by Johnson and Hill (1999), intergradation or hybridisation was noted for most taxa. Many taxa within the series are poorly known in terms of their distribution, phylogenetic relationships and conservation status, particularly within variable species and species complexes.

The distinctiveness of presently recognised taxa are being considered in the light of results based on morphological and molecular data. Morphological data has been obtained from both adult and seedling recorded characters from 520 individuals across the series distribution. Adult characters, including field recorded characters

such as habit and bark characteristics and leaf, branchlet, bud, inflorescence and fruit characters are being used, combined with seedling characteristics obtained from glasshouse grown plants. In addition to the morphological data; Chloroplast DNA data, allozymes and ITS sequence data are also being examined. The aims of the study are to

- a) delimit and assess the distinctiveness of taxa within the series;
- b) investigate phylogenetic relationships and the evolutionary history of the series;
- c) to assist in establishing conservation priorities for the taxa.

In 1999 I was awarded funding from the Hansjorg Eichler Scientific Research Fund of \$1000 to conduct a study of variation in the chloroplast (cpDNA) within the series. The cpDNA survey was undertaken in collaboration with Dr. Margaret Byrne of the Western Australian Herbarium, Department of Conservation and Land Management, Perth, where excellent facilities and expertise allowed the laboratory work to be carried out efficiently and economically. The funds enabled travel to, and assisted with accommodation in, Perth, enabling me to learn and carry out the laboratory work.

A total of 206 individuals from 120 populations, representing the taxonomic diversity and geographical range of the series, were included in the cpDNA study, including eight variously related putative outgroup taxa. Restriction fragment length polymorphism (RFLP) analysis of the chloroplast genome was undertaken, using six probes each with six restriction enzymes (i.e. 36 probe/enzyme combinations). A total of 128 polymorphic restriction sites were found, of which 61 were potentially informative. Variation at these restriction sites represented 88 haplotypes.

Studies assessing variation in cpDNA in other eucalypt groups have generally indicated patterns of variation associated with distribution rather than variation paralleling taxonomic affinities. As the chloroplast genome is maternally inherited and slow evolving, and as there is mounting evidence that the eucalypts exhibit considerable relatively recent and current speciation, it is possible that much of the cpDNA variation in the eucalypts may predate the lower-level taxonomy seen today. In such cases, the cpDNA variation could be a useful indicator of older biogeographical and evolutionally patterns.

Preliminary analyses of cp DNA variation in *E. ser. Subulatae* indicate a complex pattern with

some weak taxonomic patterns combined with strong geographical patterns of identical or closely related haplotypes that cross species, subspecies and series taxonomic boundaries. While patterns of geographically sorted haplotypes crossing taxonomic boundaries have been well documented in other eucalypt groups, the results here are somewhat surprising considering the continent-wide geographical extent and taxonomic boundaries being crossed. Of the eight putative outgroup taxa included, only two have unique haplotypes (*E. cladocalyx* and *E. brachycalyx*), while six (*E. angustissima*, *E. balladoniensis*, *E. brockwayi*, *E. cooperiana*, *E. falcata* and *E. indurata*) shared haplotypes with taxa of *E. ser. Subulatae* on a geographical basis. The size of haplotype geo-regions appears to be largest in the east, with smaller haplotype geo-regions in the west, particularly in the transitional rainfall belt of W.A., perhaps indicating the more recent speciation associated with expansion/contraction (of taxon distribution) events in that area.

Several processes have been hypothesised previously as a means by which cpDNA haplotypes are restricted to geographic areas yet readily cross widely accepted taxonomic boundaries, including hybridisation and lineage sorting. The likely contributions of these processes to the underlying pattern in this study are currently being investigated. Both processes involve genetic isolation of haplotype regions from one another in the past, as refugia for example, in areas of otherwise inhospitable landscapes. Widespread and massive hybridisation across series boundaries would be needed to give a pattern as seen in this study and it seems an unlikely candidate to explain the cpDNA variation in this case. Large scale lineage sorting among recently diverged taxa or an as yet unidentified process may be more likely to underlie these results.

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Articles

The Biological Detection of Jack-the-Ripper

David Morrison

Institute of Banksia Studies

This after-dinner speech was presented at the Fourth International Legume Conference, before 70 uninvited guests, in Canberra on Wednesday July 4 2001. All page numbers refer to the reprint (1998) by Prometheus Books, New York, of (1874) The Descent of Man; and Selection in Relation to Sex. Crowell, New York.

The last time I gave an after-dinner speech was in 1990, at the time when I first met Jim Grimes [who introduced this talk]. It might be worth considering why I haven't been asked in the decade since then. Those of you who were there may recall that the day afterwards large numbers of people were rather ill. I got it worst, so I presume that it was proximity to the talk itself that caused the problem. Those of you near the front may therefore wish to move a bit further back.

What I'm going to talk to you about today are some of the problems of being a biologist, and where this may lead you in your view of the world. I think being a biologist tends to give a particular slant to the way we see things and think about them, and I thought it might be interesting to explore this in some detail tonight.

Now, being a biologist is bad enough, but I'm a botanist and that may be worse. Very few people actually want to become botanists — they usually drift into it from somewhere else. I remember that one of my lecturers, Peter Valder, when sitting in at the university's enrolment day, said that only once did one of the new students come up to him and say: "I want to be a botanist." Peter looked at him for a moment, and then said: "Have you considered therapy?" This just about sums it up. Even Charles Darwin drifted into botany from geology via zoology. I came in from physics via zoology.

Being an evolutionary biologist is, unfortunately, not much better, especially when you are a botanist. I was sitting in a pub once with Norman Platnick, and when he realized that I was a botanist he looked me straight in the eye and said: "I really pity botanists. They have to use

characters that a zoologist wouldn't spit on!" This tells you something about the personal habits of zoologists, I guess.

Field work in biology is no better, either. You spend a few days out in the field, and then you come home for the weekend. And your family suggests going for a hike. All you want to do is sit inside and vegetate in front of the television — you've just been out there in the cold and the wet, with the flies and the mosquitoes. I figure it's like being a gynaecologist. You know, this poor guy has just come home from a hard day's work at the clinic, and his wife is standing there provocatively in the doorway, wearing a slinky black negligee, and all he's thinking is: "If I've got to look at *another one* ..." This is what it's like.

Dealing with your friends is not much easier. A couple come up to and tell you that the woman is pregnant again, and that this one "wasn't planned". And you're thinking that there are certain biological procedures that you need to go through in order to get pregnant, and that it is impossible to perform these "accidentally". Even worse, when they do have kids you're sitting there counting the toes and checking the eye colour. What are you supposed to do when you find blue-eyed parents with a brown-eyed child? Take the woman aside and say: "Look, there's no way you can be the *mother* of this child ..."?

You will notice that sex has crept into the talk here, and this is clearly a big issue for biologists, for purely professional reasons. Biologists sometimes take this sex matter too far, though. Take this business about oral contraception — the idea that a woman should take a pill in order to prevent herself from getting pregnant. Only a biologist could come with such a ridiculous idea. Women have known about oral contraception for centuries — when a man asks you to go to bed with him, you say: "No." Perfect oral contraception.

Now, this long-winded introduction has actually been leading up to something. I was reading this book about Jack-the Ripper. Most of you should

be familiar with this piece of history: in the late 19th century, five ladies-of-ill-repute were killed in the East End of London in an apparently indiscriminate or irrational manner, involving rather unpleasant mutilations of their abdomens. This caused quite a stir at the time, mainly because no-one was ever blamed for these outrages, and it has continued to fascinate people ever since.

Richard Whittington-Egan commented about Jack-the-Ripper that:

More ink has been spilt on him than blood flowed in all his murders; millions upon millions of words which, if placed end to end, would stretch from here to ... nowhere. Nowhere, because, when all has been written, the evidence accumulated and assayed, the theories counted and discounted, the arguments for this or that suspect waxed hot and waned cold, we have always ended up precisely where we started — in a grey limbo of unknowing."

Well, when you look at this topic from the perspective of a biologist the answer is obvious — it is clearly a case of sexual selection. And who was responsible for the development of the theory of sexual selection? Charles Darwin, of course. So, here we have the Morrison Theory of the murders, first developed over 10 years ago, but never revealed until now: Charles Darwin was Jack-the-Ripper.

Let's start by making sure that everyone understands what I mean by sexual selection. According to Darwin, organisms have both primary sexual characters, which are directly involved in the act of reproduction, and secondary sexual characters, which are not directly involved in reproduction but which are instead involved in the preliminary activities, such as the pairing of the mates. Natural selection acts on the primary characters, but any evolutionary changes in the secondary characters are the result of sexual selection.

For example, we might consider the presence of beards in men, which Darwin considers to be a secondary sexual character:

As far as the extreme intricacy of the subject permits us to judge, it appears that our male ape-like progenitors acquired their beards as an ornament to charm or excite the opposite sex, and transmitted them only to their male offspring. [p. 627]

You can just imagine it, can't you? You've seen the photographs. There were all of those mid-Victorian English men with their large handlebar moustaches, their big bushy sideburns, or their long flowing Rasputin beards, believing that this

was really going to pull in the chicks. Perhaps it did. However, personally I've never had any women swooning at my feet just because I have a beard. Or at least those that were swooning never mentioned anything about the beard at the time.

Now you and I know that this business with the beards is a load of nonsense, or the evolutionary biologists do, at any rate. Those of you who've read Willi Hennig's works know all about ancestral or plesiomorphic characters and derived or apomorphic characters. The character state in the ancestor is the plesiomorphic condition, and the modified character state inherited by the descendants is the apomorphic condition. So, if our ancestors were hairy ape-like creatures, then clearly the beard is the plesiomorphy and the lack of it is the apomorphy. Therefore, what we need to explain is why the women *don't* have beards rather than why the men *do* have them. The explanation is not hard to see, of course. I don't know about the rest of you guys, but I prefer women without beards. As a preliminary to any reproductive activity, it is definitely an advantage if the woman does not have a beard. Let's face it, mothers tell their daughters that the way to a man's heart is through his stomach, not by having a beard.

Why Darwin chose to see it the other way around is equally obvious. You've all seen pictures of him in his old age — with the receding hairline, the perpetual scowl on his face, and the large grey plesiomorphic condition hanging off his chin. I don't know how attractive a long grey beard is to women, but he clearly thought that it was worth a try.

This also leads us to the consideration of the fact that it is clearly the women who have the advanced character state while the men have the primitive state. This idea can't have been particularly appealing to a mid-Victorian male. It's enough to give you an inferiority complex. This, of course, explains why so many men these days shave their beards off every morning. They can't stand these women being more evolutionarily advanced than they are. In this case I think that we might consider it an "artificial apomorphy".

The women have responded to this challenge of course, in true competitive spirit. They are not going to have these mere males catching up with their evolutionary head-start. So, they've moved on to the next stage of artificial apomorphies, using unnatural adornments such as makeup and jewellery. If you don't have the right secondary sexual characters yourself, then you can go and buy some and pretend that you were born with them.

Well ladies, if you can do this then so can the men. You've all seen them — not only do we have all these men running around exposing their naked chins, they now also sport jewellery that only a few years ago they wouldn't have been seen dead in. And it must work, or they wouldn't be doing it. Charles Darwin had this to say about the use of adornments by "primitive" peoples:

Hardly any part of the body, which can be unnaturally modified, has escaped. The amount of suffering thus caused must have been extreme, for many of the operations require several years for their completion, so that the idea of their necessity must be imperative. [p. 597]

Little did he realize what was to come in Western society, as well.

Anyway, we seem to have strayed off the topic a bit here. Let's return to a consideration of Darwin as Jack-the-Ripper. We are scientists, so obviously we need some evidence before we can accept this theory. At first sight this may seem a bit difficult, because we are dealing with a historically unique set of events and we weren't there to observe them. However, as an evolutionary biologist this is precisely the sort of situation that I am used to dealing with, and so it is actually no problem at all. We have to search for contemporary evidence concerning these past events. The most likely place to find such evidence is in the written works left to us by Charles Darwin. So, the obvious thing to do is to read through these books, and look for any inadvertent expressions that might be interpretable as evidence.

I started by looking through *The Descent of Man*. The title is enough to make you think that there must be a companion volume called "The Ascent of Woman", but this is not so. Actually, only one-third of the book is about "The Descent of Man", the rest of it is covered by the subtitle, which is *Selection in Relation to Sex*. So, this looks like it might be a likely place for investigation.

Then I looked through *The Expression of the Emotions in Man and Animals*. It's precisely what the title says it is — there is not much in there about the expression of the emotions in woman. Perhaps Darwin thought that there were already enough books dealing with that topic — if you've read any of the novels by the Bronte sisters then you will know what I mean. Jane Austen and Thomas Hardy also provide quite extensive surveys of the field. Perhaps Darwin just realized that he could never do justice to the topic in only one volume.

So, we will confine ourselves to the first book, and look at some selected quotations. It seems that Darwin was a typical Victorian. He is responsible for our iconography of evolution being a branching tree, where all of the branches are equal, but he can't stop himself from referring to everything as either "lower" or "higher", whether it be species, races or cultures. Not unexpectedly, the highest thing on the planet turns out to be a 19th century white English male of the non-labouring classes. Everything else is quite definitely lower.

The book is thus full of interesting opinions from this perspective. Are there any Irish people here? Any Scots? Well this is for the rest of you. I don't know if I need to point out to you that Charles Darwin was English, a race who are well known for their appreciation of the finer points of the Scots and the Irish, and for their kindly treatment of them:

The careless, squalid, unambitious Irishman multiplies like rabbits; the frugal, fore-seeing, self-respecting, ambitious Scot, stern in his morality, spiritual in his faith, sagacious and disciplined in his intelligence, passes his best years in struggle and celibacy, marries late, and leaves few behind him. Given a land originally peopled by a thousand Saxons and a thousand Celts — and in a dozen generations five-sixths of the population would be Celts, but five-sixths of the property, of the power, of the intellect, would belong to the one-sixth of the Saxons that remained. In the eternal 'struggle for existence,' it would be the inferior and *less* favoured race that had prevailed — and prevailed by virtue not of its good qualities but of its faults. [p. 143]

Am I in the right book? You people may have been expecting this to be bad, but I'm sure you weren't expecting it to be *this* bad. I don't know if this book sold well in Scotland, but I can assure you that it did not make it onto the best-seller list in Ireland.

Well, we also have a few Americans here, and some Australians, so let's see how you lot get on:

The belief that there exists in man some close relation between the size of the brain and the development of the intellectual faculties is supported by the comparison of the skulls of savage and civilized races, of ancient and modern people, and by the analogy of the whole vertebrate series. Dr J. Barnard Davis has proved, by many careful measurements, that the mean internal capacity of the skull in Europeans is 92.3 cubic inches; in Americans 87.5, in Asiatics 87.1; and in Australians only 81.9 cubic inches. [p. 55]

That "only" hurts. He's going to pay for that. This man is supposed to be an icon of biology!

No wonder physicists look down on biologists — you don't read things like this in a physics textbook.

So, having now clearly established Mr Darwin as an eminently reasonable man, whose data are reliable and his opinions to be respected, at least in the eyes of non-Irish non-Scottish Europeans, let's see how the women fare. As you may have guessed, the answer is: "not well". Apparently they are to be blamed for just about everything — and I mean *everything*. For example:

With savages, for instance the Australians, the women are the constant cause of war both between members of the same tribe and between distinct tribes. So no doubt it was in ancient times; [p. 581]

He's really got it in for these Australians, hasn't he? He's really pushing his luck! Anyway, he continues, speaking of the native population of the Sandwich Islands:

We see here that in the interval of forty years, between 1832 and 1872, the population has decreased no less than sixty-eight per cent! This has been attributed to the profligacy of the women ... [p. 194]

"Profligacy" is mentioned many times in this book as an explanation for events. In all cases bar one it is applied to women, and the one exception refers to men of the labouring classes — Mr Darwin was not a member of the labouring classes nor was he a woman. The word "profligacy" is obviously an important one, so let's see what the dictionary has to say about it:

profligate, adj., abandoned to vice: dissolute: prodigal, rashly extravagant. [p. 1072 (1972) *Chambers Twentieth Century Dictionary*]

So, I think that we're on the right track here — this is not a great ladies man (in spite of the beard). Let's face it, anyone who can blame the rash extravagance of the women for the decreasing population size, rather than large numbers of invading European men carrying guns, has really got a screw loose somewhere. Ideal Jack-the-Ripper material, at any rate.

So, let's proceed to the meat of the evidence, where Mr Darwin compares the secondary sexual characters of men and women:

Man differs from woman in size, bodily strength, hairiness, etc., as well as in mind, in the same manner as do the sexes of many mammals. [pp. 8-9] With mankind the differences between the sexes are greater than in most Quadrumana [i.e. apes], but not so great as in some ... Man on average is considerably taller, heavier, and stronger than woman, with squarer shoulders and more

plainly-pronounced muscles. Owing to the relation that exists between muscular development and the projection of the brows, the superciliary ridge is generally more marked in man than in woman. His body, and especially his face, is more hairy, and his voice has a different and more powerful tone. In certain races the women are said to differ slightly in tint from the men. ... European women are perhaps the brighter colored of the two sexes, as may be seen when both have been equally exposed. [p. 576]

I'm sorry guys, but if you see a brightly coloured woman then you should probably take her straight down to the clinic, and get the hormone problem sorted out. Either that or suggest that she might consider going a bit easier on the makeup case. Anyway, Darwin has an interest in exposing the skin of women, for purely scientific purposes of course, and this is of importance for our case.

We go on:

Man is more courageous, pugnacious and energetic than woman, and has a more inventive genius. [I love this bit.] His brain is absolutely larger, but whether or not it is proportionately to his larger body, has not, I believe, been fully ascertained. In woman the face is rounder; the jaws and the base of the skull smaller; the outlines of the body rounder, in parts more prominent; and her pelvis is broader than in man; but this character may perhaps be considered rather as a primary than a secondary sexual character. She comes to maturity at an earlier age than man. [pp. 576-7]

Note that he tactfully refrains from mentioning whether she then goes downhill faster as well (but it's there, between the lines). He also hasn't mentioned freezing cold hands and feet in bed, or continuous complaints about whether the toilet seat should be up or down. Perhaps these are primary sexual characters, as well.

Anyway, he doesn't muck around with the mental abilities of women:

The chief distinction in the intellectual powers of the two sexes is shown by man's attaining to a higher eminence, in whatever he takes up, than can woman — whether requiring deep thought, reason or imagination, or merely the use of the senses and hands. If two lists were made of the most eminent men and women in poetry, painting, sculpture, music (inclusive both of composition and performance), history, science, and philosophy, with half-a-dozen names under each subject, the two lists would not bear comparison. We may also infer ... that if men are capable of a decided pre-eminence over women in many subjects, the average mental power in man must be above that of woman. [p. 584]

The faulty logic in that argument should be obvious to everyone — cause and effect may have been slightly distorted there. However, at this stage, every woman in the room is now not only prepared to believe that Charles Darwin was Jack-the-Ripper but actively wants him to have been. Is this man really the best we could come with as the supreme icon in biological science?

It gets better, of course:

As before remarked of bodily strength, although men do not now fight for their wives, and this form of selection has passed away, yet during manhood they generally undergo a severe struggle in order to maintain themselves and their families; and this will tend to keep up or even increase their mental powers, and, as a consequence, the present inequality between the sexes. [p. 586]

Well, Charles, you may have been wrong there. These days the men fight *with* their wives instead, thus tending to keep the sexes equal.

Anyway, that's enough evidence to establish Charles Darwin as the prime candidate. Next, we now need to consider the specific motive. This is, in fact, rather easy to locate. Consider this comment about pairs of mating organisms:

The advantage thus gained by the more vigorous pairs in rearing a larger number of offspring has apparently sufficed to render sexual selection efficient. But a large numerical preponderance of males over females will be still more efficient; whether the preponderance is only occasional and local, or permanent; whether it occurs at birth, or afterwards from the greater destruction of the females; or whether it indirectly follows from the practice of polygamy. [p. 229]

Well, there you have it. For sexual selection to be efficient there needs to be more males than females, so that there is intense male competition. Furthermore, there are only three possible ways of making this happen. Darwin spends a lot of time pointing out that humans are born about 50:50 males to females, so that one is out. Polygamy in Victorian England was not politically correct; and so that left him with only one option. The logic is irrefutable. And, as he notes, even local imbalances in relative numbers can be effective, so (fortunately for the women) there was no necessity for him to embark on a nationwide campaign.

The next question is: which females to remove? This passage gives us a clue:

With birds there has sometimes been a complete transposition of the ordinary characters proper to each sex; the females having become more eager in courtship, the males remaining comparatively passive, but apparently selecting the more attractive females, as we may infer from the results. [p. 233]

Now this is actually very prophetic. No better description of a singles bar has ever been written. I was in Broken Hill, out in the sticks north-west of here, for a couple of days back in the late 70s. There, the males parked their panel vans nose to tail along the main street, and lounged around in small groups in between. The women were cruising up and down the street in their hotted-up cars, calling ribald remarks out of the windows. I'd never seen anything like it, but Charles Darwin would clearly have understood. Clearly, the females without the "proper" characters are the ones that should go, and the ladies-of-the-night were the improper ones in Victorian England.

So, there you have it, the complete Morrison Theory of Jack-the-Ripper. This theory is perfect in all ways except one. The only problem is that the murders occurred in 1888 and Charles Darwin died in 1882. However, speaking as an evolutionary biologist, this is no obstacle to the proper development of the theory, because I have been professionally trained to produce specious ad hoc explanations to deal with inconvenient data. I will indicate my proposed line of defence by saying that Charles Darwin is *reported* to have died in 1882 ...

I don't want to take as long to finish this speech as I did to get it started. So, I'll wind it up by making the same observation that Woody Allen used to make at the end of his standup comedy routines back in the 60s. I wish I had some kind of affirmative message to leave you with, but I don't. Would you take two negative messages instead?

My first negative message is: Please don't shoot me, I'm only the messenger; I am *not* responsible for Charles Darwin's uniquely Victorian opinions.

The second message is: If you want to make it in science, then don't waste your time making fun of scientists who are more famous than you are.

Thank you. Goodnight.

News

A Temporary Move for DNA 'Thousands lost' as big stink shuts firm

Botanists who have visited the Northern Territory Herbarium (DNA) in Palmerston would be well aware of the smell of naphthalene in the air. With a recent and most welcome agreement to have the building totally refurbished we have relocated to a building in Winnellie while this work is carried out. In taking the specimens with us we also took the naphthalene, leading to complaints from neighbours and, under the title "*Thousands lost' as big stink shuts firm*" a report in the *Northern Territory News* of 21 August.

In the article the owner of a finance company is reported as saying that she and her three employees were "suffering symptoms she said were associated with exposure to paradichlorobenzene, a key component of mothballs" and that these "included breathing difficulties, nausea, migraines and vomiting". It was stated that her firm had "virtually ceased trading as a result of the smell" and that "the business had lost \$88,000 in the 17 days since the mothballs were placed there". I will not comment on the accuracy of this article other than to say we use naphthalene, not the aforementioned chemical. We and the "mothballs" are also staying put. It is anticipated that we will return to the Palmerston premises in about February.

Mailing address, exchange and loans

Although we have physically relocated our postal and e-mail addresses and fax and telephone numbers have not changed.

For anyone wishing to deliver goods directly to us I can tell you that we are physically located at 20 Catterthun Street, Winnellie. There is no visible street number for our building and no appropriate sign visible from the street. The street is short but as an aid to couriers it would be useful to record on address slips that we are located behind the Commonwealth Bank.

Although I have supplied both physical and postal addresses we would prefer not to receive duplicate specimens or loans until we are reunited with our premises in Palmerston. More importantly I stress that we no longer have ready access to specimens. As such we do ask that loan requests be kept to a minimum and preferably delayed until next year.

With Clyde Dunlop's retirement some of you may be wondering whom to write to about loans and other herbarium matters. The answer is Greg Leach, who is moving his office from Wildlife Research, Berrimah to the herbarium.

Philip Short
22 Aug. 2001

Changed visitor access to the National Herbarium of Victoria (MEL)

About twenty years ago a small population of the Grey-headed Flying Fox (*Pteropus poliocephalus*) took up residence in the Fern Gully in the Royal Botanic Gardens. Initially the animals departed each winter and returned in spring, but within a few years a population was in residence throughout the year. Over the years the size of the population increased and the flying foxes spread from the Fern Gully to occupy other parts of the Gardens. For the last few years the Gardens has been home to up to 8,000 flying foxes where they have caused considerable damage to many plants and killed others.

Early this year the population reached 20,000 individuals. A population of this size posed a serious threat to the continued existence of parts of the Gardens as we know them and Gardens' management decided to implement a management program to deal with the situation. This plan of action was opposed by certain members of the community who threatened reprisals unless the program was halted. Actions by some of the protestors left no doubt that their threats were real and as a result of further threats, amongst others to the Herbarium, new security arrangements were put in place.

The most obvious consequence of these arrangements is that access to the Herbarium

building for staff and visitors has changed. The front entrance to the Herbarium building which opens on to the north-east intersection of Birdwood Avenue and Dallas Brooks Drive is no longer in use. Access to the building is now through the rear entrance that opens into the Gardens. You are still most welcome to visit the Herbarium. However, prior to doing so, please either contact the Collections Manager or another member of staff and advise them of your intentions to visit and come to some firm

arrangement about the date and time of your arrival, or, alternatively, on arrival call in to the Visitor Centre on the Observatory Site (opposite the Shrine of Remembrance) who will contact a member of staff. On arrival at the rear door of the Herbarium building, you will be admitted from within. We are sorry for the inconvenience that these arrangements may cause but please bear with us.

Jim Ross
2 Oct 2001

Australia's Virtual Herbarium: bringing a vision to reality

The prospect of bringing herbarium data and plant taxonomic knowledge into a new phase of high accessibility through digitisation and linking remote datasets has been a vision of an increasing number of botanists around the globe.

The development of Australia's Virtual Herbarium has been a relatively low profile affair. I suspect this has been a product of its limited resourcing and the unprecedented nature of its goal of pooling widely distributed data. Perhaps also there was a feeling that progress towards the common goal of a distributed Australian flora information system could easily



go astray, as it relied so much on the continued good-will of the AVH partners. Pronouncements of the closeness of achieving the vision were limited strategically to conferences and forums involving key players. And so it was with all the more satisfaction that the Australian herbaria and their band of IT troopers witnessed the publicity in the news

media of important components of this vision in the last few months.

The announcement June 14 of the funding of the completion of capture of herbarium specimen data capture in Australian Government herbaria through an injection of nearly \$10 million over 5 years from Commonwealth, State-matching and private sources was made by Senator Robert Hill in the vaults of the State Herbarium of South Australia. It was reported nationally on two television channels, on regional and national



radio, and in the local *Advertiser* newspaper. An article in the *Image and Data Manager* web-news site was followed up by a "Green Revolution" cover story in their September/October magazine, complete with flattering pin-ups of Barry Conn (pictured).

A full-colour Australia's Virtual Herbarium brochure, published in September by Council of

Heads of Australian Herbaria, is available from herbaria and ABRS.

In the near future it is anticipated that the Australia's Virtual Herbarium mirror sites, embedded within partner web-sites, will be launched.

W.R.(Bill) Barker
State Herbarium of South Australia

Reviews

Another milestone in the advancing taxonomy of *Grevillea* *Flora of Australia* Vol. 17A: Proteaceae 2, *Grevillea*.

Published 14 April 2000, 544 pages and colour illustrations; erratum p. 363 included with copy received. Available from CSIRO Publishing in hardcover (AUS\$89.95) or softcover (AUS\$69.95) from PO Box 1139, Collingwood Vic 3066, email at sales@publish.csiro.au, or www.publish.csiro.au

If any large genus of Australia's flowering plants could have been thought near to reaching closeness to completion of our understanding of its species, *Grevillea* would have been it. Yet, despite being the third comprehensive revision of the genus in seven years, here is another work that confirms that the taxonomic knowledge of Australia's flowering plants is far from complete. Amongst the 452 taxa described (357 species) are 43 new taxa published in the Appendix to the volume. Several of these only came to light in 1998 during an expedition to parts of the poorly botanised Kimberley region. And several complexes are listed in the introduction as needing further revision. In the first volume of the *Flora of Australia* written almost entirely by a single author, Bob Makinson of the Australian National Herbarium, Canberra, continues here his huge input into the taxonomy of *Grevillea*, the more remarkable in view of his administrative commitments and it being the third largest flowering plant genus in Australia. The work includes new taxa recognised by Makinson, and others separately or collaboratively by *Grevillea* enthusiasts Bill Molyneux and V. Stajsc and knowledgeable regional botanists Mark Barrett and Greg Keighery.

This work, however, is the author's own concept. His view follows on from those in two earlier works: the broad species concept of Don McGillivray to whom Makinson rendered considerable assistance at the National

Herbarium of New South Wales (McGillivray & Makinson 1993), and the narrower species concepts of Peter Olde and Neil Marriot (1994-5). Many races previously recognised informally have been described as subspecies.

The volume completes the treatment of the Proteaceae in three volumes the largest family so far completed in the *Flora*. It is particularly welcome in Australian plant systematics as it is a family with a high profile in the historical biogeography and biological and ecological study of the region and in horticulture. The volume is appropriately dedicated to two icons in Proteaceae systematics, Barbara Briggs and the late Lawrie Johnson, the more appropriate as their home-base of the National Herbarium of New South Wales is where Bob Makinson and his mentor Don McGillivray began this long journey in modern *Grevillea* systematics.

The possibly unavoidable reconstitution of generic limits involving the merging of two widely known genera *Hakea* and *Grevillea* (see Barker, Barker & Haegi 2000) is supported, though little further evidence for this is given.

It would be surprising if such a large work were free from errors; it will have involved examination of so many specimens over many years and much reworking to meet new formats and to introduce the 10% new taxa, not to mention changes in circumscription. Comparison with the reviewer's state South Australia and its *Flora* treatment (Barker 1986) and Census (Barker 1993), for example, shows many taxonomic changes, but also a few errors and omissions. South-eastern region collections of *G. halmaturinum*, otherwise resurrected as two subspecies restricted to Kangaroo Island and Eyre Peninsula, respectively, are not dealt with; *G. pterosperma* is not mapped in the NW region of the state where it occurs in the Mann Ranges

and Great Victoria Desert; *G. albiflora* was recorded from the NW region of the state; and hybrids between the garden escape *G. rosmarinifolia* and native *G. lavandulacea* are not mentioned whereas other instances of hybridisation, including those of the former with *G. lanigera* are. The South Australian hybrids are important to highlight as examples of the threat of introgression from garden relatives into natural populations.

The Erratum slip instruction to transpose a couplet 27 under the alternative lead 26: left doubt in my mind prompting me to check against the relevant descriptions. A useful policy would be to print the resultant few lines of text, which would have readily fitted on the slip provided.

In such a large group reliance on a single key to all species can be problematic. To assist, keys to the species in each state, including species that might feasibly be included as they occur just over a border, are provided. And rather than maintaining outdated infrageneric taxonomy, large groups have been broken up by recognising informal groups, 33 in all; keys are provided for each informal group. The few taxa that I have keyed out do so readily in the various keys.

What are the changes since this reviewer wrote of the first volume of the *Flora Proteaceae* series (Barker 1996)? The welcome innovation then of introductory reviews has continued. Specialised morphological terms are now defined and there is a useful discussion on biogeography as it relates to soils, vegetation and climate. The *Flora* retains its feel of being packed with detail, though with the advantage of the forerunner revisions, it is clear that much descriptive information is omitted in compacting descriptions to conform with the series standards. Notes of differences between confusable species and of variants continue. The call for production of electronic identification tools is being realised, with ABRS itself sponsoring in part such tools, including one on the Proteaceae.

In conclusion, this is not a reworking of two prior revisions, but a further step forward. Future work on *Grevillea*, however, is heralded in the form of a cladistic study of the tribe and the treatment of species complexes.

Can the enthusiast, let alone the general reader, afford three revisions of just one genus within a decade, totalling several hundred dollars? Here is an example of the desirability of electronic publication, which would surely answer many

issues of cost of compilation, publication and purchase. The descriptions in this work are considerably shorter than the prior two revisions (with many characters of the previous works omitted and so no matching full descriptions for this work's new species and subspecies). Presumably, reducing the descriptions to meet publishing standards constrained by cost of hard-copy publication is for authors and editors alike a frustrating use of valuable time. The massive duplication of effort in these three revisions and the additional effort caused by meeting different editorial criteria could have been better put to producing an upgradable electronic treatise combining the best points of all of them.

In the 12 months since this review was first drafted, the Sydney and Canberra herbaria and ABRS have produced electronic prototype versions of publications, ABRS (pers.comm.) now having digitised unpublished versions of all three Proteaceae volumes. The extent to which Australian plant taxonomic works go electronic remains to be seen, but dwindling human and financial resources and the realisation that readership may greatly increase through ease and reduced cost of access may hasten the move. And with the move will be increasing pressure to allow flexibility in format to reduce time and resource-hungry endeavours.

Whatever the future brings, this volume of the flora by Bob Makinson provides a valuable authoritative synthesis of *Grevillea* and a substantial base for further advances in knowledge of this key genus in the Australian flora.

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W.R. Barker
State Herbarium of South Australia

Obituaries

Richard E. Schultes: authority on medicinal and hallucinogenic plants of the Amazon

(Adapted from the *New York Times* Obituaries, Friday, 13th April, 2001)

Richard Evans Schultes, scientist and Harvard University educator who was considered the authority on hallucinogenic and medicinal plants of the Amazon, died in Boston in April this year. He was 86.

Dr. Schultes was considered by many to be the father of ethnobotany. Over decades of research, mainly in Colombia's Amazon region, he documented the use of more than 2,000 medicinal plants among Indians of a dozen tribes, many of whom had never seen a white man before.

He hiked and paddled through Amazonia for months at a time, collecting more than 24,000 plant specimens. More than 120 species bear his name, as does a 2.2 million-acre tract of protected rain forest in Colombia, Sector Schultes, which the Colombian government set aside in 1986.

Dr. Schultes was a pioneering conservationist who raised the alarm in the 1960's that the rain forests and their native cultures were in danger of disappearing under the onslaught of modern industry and agriculture. He reminded his Harvard students that more than 90 tribes had become extinct in Brazil alone over the first three-quarters of the 20th century.

One of his students, Mark J. Plotkin wrote:

He believed ours would be the last generation fortunate enough to be able to live and work among these tribes as he had, to experience their traditional way of life firsthand, and to record their vast ethnobotanical knowledge before the plant species - or the people who used them - succumbed to the march of progress.
Tales of a Shaman's Apprentice (Viking, 1993)

Dr. Schultes's research into plants that produced hallucinogens like peyote and ayahuasca made some of his books cult favorites among youthful drug experimenters in the 1960's. However, while he may have contributed to the psychedelic era with his ethnobotanical discoveries, to him these were the sacred plants of Indians that should be studied for their medicinal value.

Dr. Schultes taught more by personal example than by the use of forceful intellect. His lecture room resembled an ethnographic museum, with huge maps of Amazonia, native dance costumes, demon masks, opium pipes, dried specimens of medicinal and hallucinogenic plants, and a blowgun for poison-tipped darts, whose use he sometimes gingerly demonstrated in class.

His former student, Dr Plotkin, recalled a lecture in which the professor showed slides of masked dancers in the Amazon under the influence of a hallucinogenic potion. Referring to himself, Dr. Schultes told the class: "The one on the left has a Harvard degree. Next slide please."

Richard Evans Schultes was born on Jan.12, 1915, in Boston, where his father was a plumber and his mother was a homemaker. Confined to his room for months with a stomach ailment when he was about 5 years old, he listened to excerpts read to him by his parents from *Notes of a Botanist on the Amazon and the Andes*, a travel diary kept by the 19th century British naturalist Richard Spruce. The impression left by these passages was so strong that he decided to follow in Spruce's footsteps.

Receiving a full scholarship to Harvard, Schultes wrote an undergraduate paper on the mind-altering properties of peyote. This was based on research he undertook with Kiowa Indians in Oklahoma who ingested the hallucinogen in ceremonies to commune with their ancestors. For his doctoral thesis, also at Harvard, he chose the plants used by the Indians of Oaxaca, a southern state of Mexico. In his research there, he came across a species of *Ipomoea* whose seeds contained a natural form of LSD.

In 1941, Dr. Schultes travelled to the Colombian Amazon, an area Spruce had studied, and where he would do most of his field research. At first, Schultes concentrated on plants that produced curare. This substance, used by Indians as a fast-dissipating poison to hunt prey, also proved to be vital as a muscle-relaxant during major surgery in hospitals. He identified more than 70 plant species from which the Indians extracted curare.

Whilst deep in the Colombian rain forest, news of Pearl Harbor reached him more than a week after the Japanese attack. He immediately made his way back to Bogota, the Colombian capital, and visited the United States Embassy to enlist in the armed forces. But the United States government decided his World War II services would be much more valuable as a botanist doing research on natural rubber, particularly since the Japanese occupied the Malayan plantations that accounted for much of the world's rubber supplies.

Dr. Schultes soon became the leading expert in the field, collecting and studying more than 3,500 specimens of *Hevea*.

Throughout the 1940's and until the early 1950's, Dr. Schultes lived almost continuously in the South American rain forests, with only brief visits to the United States. On his journeys through the tropics, he travelled lightly. He navigated scores of tributaries of the Amazon River, using an aluminium canoe that he could handle himself, though he usually hired Indians as paddlers and guides. His supplies included a single change of clothing, a camera and film, a hammock and blanket and a machete and secateurs for plant collecting. For food, he carried only cans of instant coffee and Boston baked beans, preferring to rely on food offered by his Indian hosts. This included the ground manioc roots that were their staple, fish, wild game, insect grubs, fruit and chicha, a drink made from fruits chewed and fermented by spittle.

His medicine kit consisted of vitamins, antibiotics and morphine - in case he broke a limb and had to be transported for days before he could receive proper treatment.

To collect and preserve plant specimens, he devised a method some field researchers still use today. He soaked his plants in formaldehyde diluted with water and then pressed them between newspaper sheets. On a good day in the forest he would collect 20 or 30 specimens that he thought merited further attention, but along a riverbank, where foraging was easier, he sometimes managed 80 or 90 a day.

Usually Schultes would consult local Indian shamans about the properties of these species. A number of these plants now carry his name, including *Pouroma schultesii*, the bark of which is reduced to ashes and used to treat ulcers, *Piper schultesii*, the stem of which is brewed as a tea to relieve tubercular coughs, and *Hiraea schultesii*, whose leaves are soaked and the solution used to cure conjunctivitis.

Schultes asserted that contrary to popular conceptions, Indian shamans were eager to share their medical secrets with outsiders. But "time is running out," he warned in a 1994 article in the journal *The Sciences*, asserting, "The Indians' botanical knowledge is disappearing even faster than the plants themselves."

In 1953, Dr. Schultes moved back to the United States as a professor and botanical researcher and curator at Harvard. For 18 years, beginning in 1962, he edited the scientific journal *Economic Botany*, and over much of the same period, he served as an active member of the editorial boards of *Horticulture*, *Social Pharmacology*, the *Journal of Latin American Folklore* and other publications. He retired from Harvard in 1985.

He published 10 books and more than 450 scientific articles. Among numerous awards, he received the 1992 gold medal of the Linnean Society of London.

Letters

Fanny de Mole's Wild Flowers of South Australia

This was the first book of its kind in South Australia. It consists of four introductory pages, twenty lithographed hand coloured plates, twenty pages of text and an index which may be at the beginning or end or missing altogether. All but three of the plants illustrated came from the upper Burnside area of Adelaide, in the vicinity of the de Mole home.

I have reason to believe that Fanny de Mole may have been involved with an early collection of plants held by the State Herbarium of South Australia. Until now the origin and collector (F.E.D. 1861) of these specimens has been unknown.

Examining copies of the book, which is both rare and expensive, has shown that every copy is different. This variation is quite apart from the marked differences in the colouring of the plates.

I am trying to assemble more information on this book to understand just what happened during its production. If any readers know of a copy and would be prepared to answer a questionnaire on it, I would be glad to hear from them. The facsimile by Queensberry Hill Press in 1981 is available to me.

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Volunteer work in Costa Rica

In my previous role as secretary of ASBS some interesting mail came across the desk, amongst all the glossies from the convention centres in each state. I thought that the letter below might be of interest to some of our members, particularly those with interest in the plants of third world countries (RMBarker, ed.)

Dear Whom it May Concern,

My name is Larissa Brown and I am a first year Forestry and Science student at the University of Melbourne.

I am writing to appeal for your support and sponsorship in promoting Youth Challenge Australia (YCA) – an organisation dedicated to achieving youth development through community development.

Youth Challenge Australia is a non-profit, non-governmental, charitable organisation, which sends young Australians on three month long overseas community development projects in Costa Rica, Guyana, and Vanuatu. The strength of YCA lies in its ability to recognize the raw talent and potential of young volunteers, and harnessing these to complete important community building and environmental projects in remote communities and under-resourced areas in these countries.

YCA is a unique program, because it offers much more than simply a chance for young Australians to work overseas. It enables our volunteers to live with, and subsequently be a part of, a community within Vanuatu, Costa Rica and Guyana. The YCA volunteers return home enriched with these experiences, motivated and ready to build-upon these newly acquired skills. Many communities in Australia also directly benefit from the work of our volunteers who, upon their return, are required to undertake 100 hours of community service - to transform their personal experiences into positive civic and social action in their home communities.

I am fortunate enough to be a participant leaving for Costa Rica in December.

To make this awe-inspiring trip a reality, Youth Challenge Australia relies upon individuals, businesses and groups within the community to support the participants. As part of the program, I must fundraise \$5700 to support the Youth Challenge program. This fundraising total covers the cost of the program during the entire three-month period - an important total, as Youth Challenge Australia is almost 100% volunteer-run. Challengers are also obligated to acquire essential field project related skills such as First Aid, Spanish, learning about the diverse culture of Costa Rica and local and global development issues.

If you have any questions at all, please do not hesitate to contact me. I would be more than willing to answer any questions that you may have regarding this program. Alternatively,

general information can be accessed from the website at www.uts.edu.au/oth/yca

I would appreciate greatly the chance to speak to you about this exciting program, and explore the possibilities that you may become involved and provide invaluable assistance. Perhaps a suitable time may be arranged in the near future to speak further about this program. After we have returned from Costa Rica we would also love to conduct a presentation for your department at one of your meetings regarding our trip.

I look forward to hearing from you soon,

Yours sincerely,

Larissa Brown
15/4 Davidson St
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larissachan@hotmail.com
4 September 2001

Requests

Rubus: a note for curators, mounters and volunteers

A good collection of *Rubus* should contain a portion of floricanes (leaves usually with 3 leaflets) and a portion of primocanes (leaves usually with 5 leaflets). This sometimes needs two mounting sheets.

In going through many collections recently I have come across two undesirable practices:

- The primocane is separated from the floricanes and then used as a duplicate
- The flowering material is mounted and the primocanes are left as surplus unmounted material.

In some cases two floricanes are mounted on one sheet and the two primocanes are left as surpluses instead of being made into two complete specimens as intended.

Rubus may be one of the few genera needing this level of care, but attention to detail certainly enhances the collections.

David Symon
State Herbarium of South Australia

Coming conferences

A stimulating collection of workshops and meetings had been organised for November 2001, at the Royal Botanic Gardens, Sydney, and the Australian Museum. This Biodiversity Knowledge Management Forum was to concentrate on the building blocks for the 'Catalogue of Life': taxonomic databases for species and specimens, their data standards, interoperability, and availability electronically.

The programme has been changed at the last minute owing to the horrific overseas events of September 11th. The Catalogue of Life workshop and Species 2000 meetings have been postponed, tentatively to early March 2002, in the week before the GBIF (Global Biodiversity Information Facility) meeting in Canberra. However, support has been strong for continuation of the other parts of the BioForum in November.

For details check out the website at <http://plantnet.rbgsyd.gov.au/bioforum/>.

There will be two main public workshops or conferences:

- A regional workshop replacing the Catalogue of Life workshop, tentatively entitled 'Bioinformatics and the Global Taxonomic Initiative' – 8 November 2001
- Biodiversity Information Networking: Sharing the Knowledge (the TDWG 2001 conference) - 9-11 November 2001

Associated meetings of a range of international projects will be held:

- **International Organization for Plant Information (IOPI)**: Global Plant Checklist Committee on 11-12 November; Species Plantarum Project Committee on 13-15 November; IOPI Council meeting and IOPI annual general meeting on 12 November
- **CODATA /TDWG Working Group on Biological Collection Data Access** on 5-6 November

There will also be several Australian biodiversity committee meetings:

- **Council of Heads of Australian Fauna Collections** on 7 November
- **Australian Herbarium Information Systems Committee (HISCOM)** on 11-12 November
- **On-line Zoological Collections of Australian Museums**, the zoological equivalent of HISCOM on 11-12 November

This suite of meetings will bring together a wide variety of biologists, computer scientists and biodiversity projects from around the world - we look forward to seeing you here!

Check the website for further details and registration forms. Note that the committee meetings are generally open only to members and, in some cases, to invited observers. Contact the convener of a committee if you would be interested to attend as an invited observer.

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Chair IOPI Global Plant Checklist Committee
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Flowers: Diversity, Development and Evolution

July 5-7, 2002

Institute of Systematic Botany, The University of Zurich, Zurich, Switzerland

Conference overview

An international conference entitled "Flowers: diversity, development and evolution" will be held at the Institute of Systematic Botany, University of Zurich, Zurich, Switzerland, 5-7 July 2002. The conference will focus on the structure of flowers, placing them in context with their evolutionary origin, function, development and genetic control.

Invited speakers

Key researchers have been invited to speak, and we are very pleased to have positive responses from Spencer Barrett, Peter Crane, Pamela Diggle, James Doyle, Peter Endress, Claudia Erbar, William Friedman, Else Marie Friis, Pat Herendeen, Larry Hufford, Joachim Kadereit, Peter Leins, Susanne Renner, Louis Ronse DeCraene, Paula Rudall, Doug Soltis, Pam Soltis, Dennis Stevenson and Shirley Tucker.

Contributed papers and posters

There will also be sessions for contributed papers and posters during the conference.

Registration

Persons wishing to receive the second circular, which will include the Registration Form, should complete the Expression of Interest form available at our website:

www.systbot.unizh.ch/flowers

Completed forms should be sent to Ms. C. Burlet either by email (burlet@systbot.unizh.ch), electronically via the website, by regular post (Institute of Systematic Botany, University of Zurich, Zollikerstrasse 107, CH-8008, Zurich, Switzerland) or by fax (00 41 1 634 8403).

We estimate the Registration Fee to be CHF80 (approx. USD46, Euro53) for regular participants and CHF40 (approx. USD23, Euro27) for students. Registration will include the conference program, proceedings and addresses, plus morning and afternoon teas.

Housing & events

A list of recommended accommodation is available at our website. Participants are advised to book early, as July is peak tourist season in Zurich, and often the less expensive hotels are limited.

A conference dinner will be held on Saturday 6th July. Participants wishing to attend this dinner will be required to pay an additional CHF70 (approx. USD 41, Euro46).

Following the conference, an alpine field excursion has been planned for 8-9 July, 2002. Information regarding this excursion, including the location and costs, will be detailed in the second circular.

Sixth International Congress of Systematic and Evolutionary Biology

September 2002

Patras, Greece

The Sixth International Congress of Systematic and Evolutionary Biology, to be held in Patras, Greece, in September 2002.

I am sure this will become a memorable event for all biologists interested in systematic and evolutionary aspects of their science. So I encourage you to place the dates on your agenda and to pre-register with a view to attend.

Do not hesitate to look up the ICSEB VI Web site (<http://www.icseb-vi.biology.upatras.gr/>), which is in constant development.

The Scientific Programme is now in the making, hopefully to be fleshed out by the end of this year. If you have brilliant ideas of your own to contribute, contact Dr. Mary Mickevich (Mickevich.Mary@NMNH.SI.EDU), chair of the Programme Committee.

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Conference Reports

Fourth International Legume Conference

The Fourth International Legume Conference was held July 2-6 on the campus of Australian National University in Canberra. There were over 100 participants from all over the world. It was very useful time for legume workers to get together and to discuss work on legume phylogeny and other topics. Martin Wojciechowski, University of California-Berkeley, presented an overview of recent advances in systematics of the legume family in the convening session.

Papers were presented in nine symposia ranging in topics from Systematics to Utilization, Symbiosis, Phytochemistry, Developmental and Structural Biology, and Legume/Animal Interactions. Additionally, one morning session was devoted to electronic identification tools and legume information on the internet. Professor Adrienne Clark gave a provocative public lecture on the "Risks and benefits from GM crops."

After much discussion a framework has been laid out to publish most of the papers in two

proceedings that will follow in the *Advances in Legume Systematics* series. CSIRO Publishing, under a special issue of *Australian Systematic Botany* and the *Advances* series, will publish a special issue on *Acacia*. This volume, edited by Mike Crisp, will combine *Acacia* research, not only systematics, but other papers from Utilization and Plant/Legume Interaction symposia into a single volume. The Kew Botanic Garden Press will publish higher level systematic papers from all other plant groups in a single volume.

On behalf of the organizing committee, I would like to thank all people involved that helped make the Fourth International Legume Conference the success that it was.

Joe Miller
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Federation of Australian Scientific & Technological Societies (FASTS)

ASBS at Science Meets Parliament 2001

The third annual Science Meets Parliament event was held in Canberra on 21-22 August, organized by the Federation of Australian Scientific & Technological Societies (FASTS).

The FASTS contingent was made up of about 150 scientists nominated by their professional societies (or in a few cases sectoral bodies). On the parliamentary side, about 200 Members of Parliament put their hands up to meet FASTS representatives. A FASTS view of the overall event is presented elsewhere in this issue; the following is an ASBS view.

ASBS was represented by Brendan Lepschi (our new Secretary, and currently Acting Curator, CANB) and Bob Makinson (Councillor, and Coordinator of Centre for Plant Conservation, RBG Sydney). Lyn Craven and Andrew Young (both CPBR/CANB) also attended in a CSIRO capacity.

FASTS had developed a "Four Big Issues" document to be the common message for all teams meeting with MPs, before their sectoral issues were presented. This common policy covers:

- Innovation and Commercialization (essentially policy measures to encourage private-sector investment in science and R&D);
- Non-tertiary Science Education (schools, industry, community);
- Tertiary Education (especially increase in operating grants and removal of HECS disincentives to the study of science);
- Initiatives within Government (including possible local version of the US Congressional fellows program; scientific internships within parliamentary process or on staff of MP's).

The need for HECS relief struck a particular chord with FASTS representatives, and the existence and size of the differentials in HECS payments between science and non-science students seemed to take most politicians by surprise.

FASTS' central concerns still tend to be on the physical and medical sciences, with biology mainly featuring in relation to agriculture and biotechnology. To some degree this is a simple result of economic visibility of some disciplines, and perhaps also reflects the numerical preponderance of societies in those areas. Nevertheless, it was odd to find in the FASTS handbook for the event a list of "Players in [Commonwealth] Science & Technology Policy" that failed to mention either Environment Australia or AFFA.

As with previous events, Day One was spent in FASTS briefings on current issues, the political process, and helpful hints for lobbying MPs. Toss Gascoigne and Peter Cullen from FASTS gave excellent practical guidance for gaining access to parliamentarians. Journalist Margo Kingston (Sydney Morning Herald On-line) chaired an informative panel discussion on science policy and education priorities, featuring Senator Grant Chapman (Lib., SA), Martyn Evans MHR (ALP, SA) and Senator Natasha Stott Despoja (Dem, SA).

A session on "Communicating with Parliamentarians" had been organized, featuring Robbie Swann from the Eros Foundation (porn industry). In theory this may have been a good idea, given the degree of expertise in political lobbying built up by the Eros Foundation over many years. In practice, however, Swann's chosen message was not particularly appropriate and only some very adroit chairmanship by Toss Gascoigne salvaged the session and allowed a move into a much more useful discussion with Ministerial Chiefs of Staff Kieran Schneemann and Sean Battern.

A lunchtime Telstra Address by ARC Chairman Peter Wills was, frankly, less than inspiring. The standard messages - partnership with industry, the new economy, innovation - were presented, but with no real sense of what these mean for working scientists and particularly those in basic research. One got the feeling that the recent corporatisation of the ARC has affected more than the structure.

Day Two included appointments with MPs. The luck of the draw limited us to two MPs this time. Your ASBS reps met with:

- Sen. Michael Forshaw (ALP, NSW; assistant shadow spokesperson on Agriculture; interests in salinity, water, and biodiversity);
- Annette Ellis (ALP, member for Canberra; interests in biodiversity and science in the community).

One of us (BM) also met with the Parliamentary Library Science team (Rod Panter and Bill McCormack).

The matching of delegates to MPs is a multi-factorial juggling act by FASTS staff, handled very well to ensure some matching of interest areas and geography. It is probably the best system possible for the purpose, although it does mean that FASTS teams (of two or three) and their target MPs are not finalised until a day or two before the event. This severely limits time for background research on MPs, and the optimising of the aides-memoir to be given to them. FASTS had this year to contend with 34 delegates who specifically requested a meeting with Senator Stott Despoja; 32 of them had to be content with other MPs.

We wrote and handed to our MPs briefing material relating to the Biodiversity Inventory (specifically the *Flora/Fungi of Australia* series) and Australia's Virtual Herbarium project. In both cases our message was that while monetary allocations had already been made for these projects, we needed watchdogs in Parliament to champion them. The other societies represented on our teams of course had their own agendas, plus the common FASTS "Four Big Issues" - not leaving much time in a half-hour interview.

All in all, the event is very worthwhile in three respects: for development of lobbying and networking skills for the scientists attending; for the national media interest, and for some generalised but real effect on at least some of the politicians. The suggestion in this year's debrief session that a similar exercise should be conducted also at State level is a good one, especially for those of societies, like ASBS, with large proportions of members in State institutions or with State-related funding or work-outcomes.

Bravo FASTS!

Bob Makinson (RBG Sydney)
Brendan Lepschi (CPBR Canberra)

FASTS' media releases

Policies for the next election: forget tax – science holds the future

Australia's scientists today (Wednesday) called for a greater national investment in science, research and higher education.

Professor Peter Cullen, President of the Federation of Australian Scientific and Technological Societies (FASTS), released FASTS' policies for the next election.

He said the most important things for Australians were jobs and the quality of their environment.

"Science and technology can deliver both, but only if Australia builds up its investment in these areas," he said.

"Getting back on track will require a significant national investment, to breath life into our universities, and lift Australian spending on science and research to the average figure for OECD countries.

"That's a big decision for the electorate, but there comes a point when people get sick of poor services, never-ending queues on phone lines and

limited public services. People are prepared to forgo tax cuts if it means quality outcomes.

"At the moment, we live in a pot-holed society."

Professor Cullen said Australian politicians spent too much time arguing about tax, and not enough debating issues which will make a real difference.

He called for decisive action to address the chronically low number of scientists working in industry. FASTS is proposing a program to encourage industry to employ more young scientists with post-graduate qualifications.

"It's good enough for Singapore, and it has brought new high-technology industries to that country," he said.

"It would help bring our industries up to speed with the possibilities of new technologies, and would be a powerful selling point in attracting new research-intensive industry to Australia."

He said Australians did not enjoy the perception that they lived in a country that was becoming

increasingly irrelevant to the twenty-first century, except for its sporting achievements.

"We might smile on the outside when they describe the Australian dollar as 'the Pacific peso', but inside it hurts," he said.

"It hurts even more because of the implication it carries, that important people in the world perceive see Australia as a country fading away after a great start."

21 August 2001

Report on universities welcomed

FASTS welcomed the report "Universities in Crisis" by the Senate Employment, Workplace Relations, Small Business and Education References Committee.

The report paints a grim picture of the university sector, a position that has been reached after a decade of inaction and under-investment by successive governments.

Professor Peter Cullen, President of the Federation of Australian Scientific and Technological Societies (FASTS), said that Australia needed a constructive debate on the role and future of our 39 universities.

"It will involve clear thinking and hard decisions," he said. "We need to balance the sometimes conflicting factors of our size, our small population and our role in the region.

"What resources we should bring to bear on this sector as an advanced nation with a mid-sized economy?"

"This is a debate we have to have - the sector cannot be left to wallow indecisively any longer.

"Research and higher education may have been swept from the front pages by the dramatic events both in Australia and overseas of the past month, but these issues are long-term and we ignore them at our peril."

Professor Cullen said it would take time to digest the 471 pages and 39 recommendations of the Report, but at first glance, the report highlighted many of the issues of concern to the sector.

"One thing is clear: Australia needs to increase its national investment in research and higher education.

"We can argue what the level of that investment should be, and the appropriate balance between government, private and industry sources."

Professor Cullen said the science community welcomed a number of the recommendations, including proposals to double the number of research fellowships, to increase in the level of Block Grants, and to make the office of Chief Scientist a full-time position.

"Now we would like to see a wider canvassing of views, to maximise support from all sections of the community," he said.

27 September 2001

Minchin vs. Evans: science policy debate is on

Senator Nick Minchin, Minister for Industry, Science and Resources, will debate science policy with Martyn Evans MP, ALP spokesperson for Science and Resources.

The debate will be in Adelaide, at 11 am on Monday 29 October. It is to be held at the Radisson Playford Hotel.

The debate is to be hosted by the Federation of Australian Scientific and Technological Societies (FASTS), and co-sponsored by national organisations interested in science policy.

Professor Peter Cullen, President of FASTS, said the Australian public wanted to know what plans the parties had for science.

"Both major parties are proposing new policies and significant investment to address science and research issues," he said. "The Government began the process with its \$2.9 billion announcement Backing Australia's Ability last January.

"The ALP brought out a discussion paper in Knowledge Nation, and has promised to trump the Government's plans."

He said the science community is pleased with the growing interest political parties have shown in science and technology policy.

"Investment in science can show huge national benefits," he said. "It's a long-term investment which pays off in jobs and a better environment, and critical to the success of a modern economy.

"We would like to hear more about the plans of the major parties."

Professor Cullen said the Minister and Shadow Minister would face questioning from a panel of journalists.

The meeting is open to the public.

Media are invited to attend the debate. It begins at 11 am at Adelaide's Radisson Playford Hotel, 120 North Terrace.

Following short initial statements and responses, the Minister and Shadow Minister will be asked questions by a panel of journalists.

Register your interest by sending an email to: John.Rice@flinders.edu.au, with the subject line "science policy debate"

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INCITES

National industry strategy to exploit biodiversity

October 2001 (Summary)

A new Parliamentary report resulting from an inquiry into development of high technology industries in regional areas has called for a national strategy to develop 'new biobased industries' with the aim of exploiting Australia's biodiversity.

The House of Representatives report *BioPropective: Discoveries Changing the Future* calls for an injection of funds into particular areas of research to facilitate the industries, such as taxonomy and bioinformatics.

According to the report the proposed strategy should be developed by Biotechnology Australia, in keeping with its 'active interest in biotechnology issues, including bioprocessing, bioprospecting and related technologies'.

It suggests that a group be established that would involve Australian governments and research and industry organisations, and 'facilitate Australia's bioprospecting competitiveness and effectiveness in the international bioscience market'.

The committee envisages that the strategy would address a number of issues, such as: the selection of market niches in which Australia could have a competitive advantage; funding for the core technologies, infrastructure and skills needed to service those niches; a collaborative approach to R&D that helps to assemble critical mass, and link different elements in bioproduct development; and, a bioindustry development strategy, with financial support a necessary adjunct in the face of rapid overseas technology growth and competing international investments.

It would also emphasise the development of IP from Australia's mega diverse biota and promote

its commercial use for long term national and international impact. A vital element of the strategy should be the provision of a one stop shop for information about financial support for bioprospecting and the early stages of commercialising biodiscoveries.

The committee believes that, for maximum effectiveness, the strategy for these new industries will need to be fully integrated with those addressing other national issues.

It notes that CSIRO pointed out to the committee that governments were in a position to accelerate bioindustrial development by the broader agenda they set. For instance, the Commonwealth government, in the national interest, might set targets aimed at stimulating the move away from petroleum-based feedstocks and their replacement by renewable raw materials.

The report prepared by the Standing Committee on Primary Industries and Regional Services, can be found in pdf form at:
<http://www.aph.gov.au/house/committee/primind/bioinq/report/report.pdf>

The recommendations from the inquiry are reprinted below:

Recommendation 1

The committee recommends that the Commonwealth government:- increase funding for baseline studies of the Australian biota;- target additional funds for collecting activities in bioactive hot spots;- fund a larger volume of taxonomic work than at present and ensure sufficient young taxonomists are being trained to undertake this work;- provide more funding to maintain and expand existing collections so that

they provide a comprehensive coverage of Australia's biota, including microorganisms; and - ensure that commercial users contribute in kind or financially, through benefit sharing arrangements, to growing and maintaining collections and databases.

Recommendation 2

The committee recommends that the Commonwealth government provide additional funding for digitising and networking information about all of Australia's biological resources.

Recommendation 3

The committee recommends that the Commonwealth government, in consultation with state and territory governments, industry and the research community:- develop a national strategy for bioinformatics; and- assist in funding its implementation so that the necessary infrastructure and skills are available to provide efficient access to information about Australia's biota.

Recommendation 4

The committee recommends that Biotechnology Australia and the Attorney-General's Department, in conjunction with the state and territory governments, ensure that information about the ownership of biological resources is compiled, and made publicly available as a single, easily accessible source.

Recommendation 5

The committee recommends that the Attorney-General ask the Australian Law Reform Commission:- to inquire into the impact on the use of native biota of the different property rights regimes across Australia; and- to recommend on a nationally consistent regime that would facilitate this use, with due consideration of the wider ramifications of any changes.

Recommendation 6

The committee recommends that Environment Australia, in consultation with state and territory agencies:- develop an electronic gateway to information about access arrangements in all jurisdictions; and- take a lead in coordinating the development of a simplified, streamlined system of applying for permits.

Recommendation 7

The committee recommends that the regulations governing access and benefit sharing under section 301 of the Environment Protection and Biodiversity Conservation Act 1999 be subject to review after 12 months to ensure that they are not impeding the development of opportunities arising from bioprospecting.

Recommendation 8

The committee recommends that, when finalising the regulations under section 301 of the Environment Protection and Biodiversity Conservation Act 1999, the Commonwealth government:- ensure that the regulations do not create new property rights;- obtain a detailed regulatory impact statement; and- examine fully the implications of the regulations for Australia's access to overseas plant genetic material.

Recommendation 9

The committee recommends that Environment Australia and the Department of Agriculture, Fisheries and Forestry - Australia give a high priority to:- finalising the regulations on access to biological resources and the sharing of benefits from them, under section 301 of the Environment Protection and Biodiversity Conservation Act 1999; and- working with state and territory governments to establish nationally consistent arrangements.

Recommendation 10

The committee recommends that, when granting access to biological resources, the Commonwealth government:- ensure access for non commercial activities; and- with commercial activities, ensure a balance between open competitive access and restricting access by granting exclusive use. Exclusivity should be restricted by permit conditions such as duration, area or species collected, and uses to be explored.

Recommendation 11

The committee recommends that, when finalising benefit-sharing arrangements, the Commonwealth government ensure that commercial activity is not discouraged by the benefits bioprospectors are required to provide.

When negotiating non-monetary benefits, emphasis should be placed on providing support for regional development and the lodging of information and specimens in publicly accessible databases and collections (see recommendation 1).

Recommendation 12

The committee recommends that the Environment Protection and Biodiversity Conservation Act 1999 be amended to extend export controls to all elements of Australia's non-human, native biota, with particular reference to microorganisms.

Recommendation 13

The committee recommends that the Commonwealth government ensure that the major publicly funded research organisations are sufficiently well funded to purchase the

equipment needed to meet present and future demands.

Recommendation 14

The committee recommends that the Commonwealth government facilitate the establishment of a national biotechnology transfer centre that should include scaling up facilities for bioprocessing.

Recommendation 15

The committee recommends that the Commonwealth government:- audit the availability of skills needed in the biotechnology sector, including those required to develop bioindustries;- ensure that relevant training is available; and- promote uptake of training opportunities.

Recommendation 16

The committee recommends that the Commonwealth government:- continue to provide extensive information about biotechnology in its public awareness program; and- ensure that the contribution of bioprospecting and biodiscovery to economic development is covered in this program, including the benefits that bioindustries offer to the environment, medicine and agriculture.

Regional activity

Recommendation 17

The committee recommends that Biotechnology Australia make information about grant programs available on its web site in a clear and easily accessible form, and provide a link to the GrantsLINK web site.

Recommendation 18

The committee recommends that the Rural Industries Research and Development Corporation:- aggregate funds into a specific program for researching and promoting the development of industries based on bioprospecting Australia's native biota and bioprocessing using introduced plants; and - implement this program in the context of all the

components of business development involved in establishing a new industry.

Environmental impacts

Recommendation 19

The committee recommends that Environment Australia give a high priority to continuing its work with state and territory governments to develop a nationally consistent approach to establishing conservation areas that comprehensively cover all species and ecosystems.

A national strategy for the development of new biobased industries

Recommendation 20

The committee recommends that:- a national strategy be developed to promote bioprospecting, bioprocessing and the establishment of industries based on these activities; and,- Biotechnology Australia sponsor the development and implementation of the strategy. The strategy should:- indicate how bioprospecting will be used over the next two decades to contribute to existing industries and develop new ones;- provide information about the government support available for bioproduct development, especially for the earlier stages in the bioproduct chain;- promote collaboration and networking; and- address biobased industry development in regional Australia.

Recommendation 21

The committee recommends that Biotechnology Australia be sufficiently funded to develop and implement the strategy.

Recommendation 22

The committee recommends that Department of Agriculture, Fisheries and Forestry - Australia:- give a higher profile to promoting the development and establishment of industries based on bioprospecting and bioprocessing; and- work closely with AusIndustry to promote opportunities for developing industries from bioprospecting and bioprocessing.

Funding sources



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CALL FOR PROPOSALS

NATIONAL SCIENCE WEEK 2002 PROJECT GRANTS



Commonwealth funding is available on a competitive basis from the National Innovation Awareness Strategy (NIAS) for projects *which raise awareness of the importance of science to Australia's future*. Projects are to be held during National Science Week 2002 from 17-25 August or as part of an associated Science Week event.

The aim of National Science Week is to focus public attention on the central role which science, technology and innovation play in Australia's economic and social well-being. The ultimate vision is a nation whose citizens are well-informed about and comfortable in debating science issues, and whose young people are giving due consideration to further education in the sciences beyond the compulsory years of schooling. National Science Week also celebrates the achievements of Australians working within these fields.

Total funding of approximately \$300,000 is available nationally to support the grants. The maximum amount available per project is \$30,000.

Individuals or groups wishing to submit an application seeking financial support for a Science Week project should request a copy of the Guidelines and Application Form from the contacts listed below.

Applications must meet the selection criteria stated in the Guidelines and must be submitted on the National Science Week 2002 Grant Application Form. Applications for school based projects *must* involve participation by several schools and *must* include some form of public participation. This funding will only be available for activities conducted within Australia.

It is expected that successful projects will be announced in March 2002.

The closing date for receipt of completed applications is **CLOSE OF BUSINESS THURSDAY 6 DECEMBER 2001**.

Contact for information, Guidelines and Application Forms:
Tel: 02 6213 6455; Fax: 02 6213 6747
Email: nias@isr.gov.au
Website: www.isr.gov.au/science/stap

A.S.B.S. Publications

History of Systematic Botany in Australia

Edited by P.S. Short. A4, case bound, 326pp. A.S.B.S., 1990. \$10; plus \$10 p. & p.

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 horticulturists, 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 concepts; 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*.

Ecology of the Southern Conifers

Edited by Neal Enright and Robert Hill.

ASBS members: \$60 plus \$12 p&p non-members \$79.95.

Proceedings of a symposium at the ASBS conference in Hobart in 1993. Twenty-eight scholars from across the hemisphere examine the history and ecology of the southern conifers, and emphasise their importance in understanding the evolution and ecological dynamics of southern vegetation.

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.

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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.

Special arrangement: To obtain this discounted price, post a photocopy of this page with remittance to: Peacock Publications, 38 Sydenham Road, Norwood, SA 5069, Australia.

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These listings are published in each issue. Please inform us of any changes

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

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 apply for membership by filling in a "Membership Application" form and forwarding it, with the appropriate subscription, to the treasurer. Subscriptions become due on January 1 each year.

A.S.B.S. annual membership is \$40 (Aust); full-time students \$20. Please make cheques out to A.S.B.S. Inc., and remit to the treasurer. All changes of address should be sent directly to the treasurer as well.

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 the editor at the address given below. They should preferably be submitted as: (1) a MS-DOS file in the form of a text file (.txt extension), (2) an MS-Word 97 or earlier version file, (3) a Rich-text-format or .rtf file. Send on an MS-DOS disk or as an email message or attachment. Handwritten, typescripts by letter or fax are acceptable, though sending in the non-preferred format may cause delay in publication. Contact the editors on images, whose inclusion may depend on space being available.

The deadline for contributions is the last day of February, May, August and November. All items incorporated in the Newsletter will be duly acknowledged.

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