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ASBS INC BUSINESS

Hansjörg Eichler Scientific Research Fund Applications

Applications to the Hansjörg Eichler Scientific Research Fund will close on August 31st 2000.

Applications are welcomed from all current financial members of the Australian Systematic Botany Society. The project must contribute to Australian systematic botany, must be carried out within Australia and the applicant must be attached to an Australian research institute.

The maximum grant awarded will be \$1000. Large capital items will not be considered.

Students, recent graduates and postgraduates will be given preference. Applications will be assessed on the quality of the applicant and the proposed project. The project must be clearly defined in scope and preferably result in a publication.

The Grant Application Form is available from the ASBS Web site:
<http://155.187.10.12/asbs/eichler/eichler.html>
from where it can be saved as an electronic file, or from the Secretary of ASBS. Further information on the Awards is also available on the Web page.

ABRS REPORT

Restructure of ABRs

The restructuring of ABRs is still not completed, but some changes have already taken place, principally that the ABRs Editorial Committee has been disbanded and some of its responsibilities incorporated into the work of the Advisory Committee. The Advisory Committee will meet in early August, and will consider the final restructuring proposal, as well as this year's grant applications.

Publications

Floodplain Flora of the Northern Territory. This book is now available from ABRs for \$66, including postage and GST.

Mites of Rainforest. This colourful poster introduces 19 mites found in the rainforest of Lamington National Park. There are SEM photographs of each mite, surrounding a painting by Janet Hauser of a branch and its epiphytes. The poster is free, and available from the Community Information Unit of Environment Australia, GPO Box 787, Canberra, ACT, 2601, or email ciu@ea.gov.au, or phone (freecall) 1800 065 823.

Tony Orchard
Executive Editor, Flora

ABLO REPORT

Kew Gardens

Spring was mild this year and May was the wettest since records began at Kew. Chapungu, an African sculpture exhibition of stone sculptures from Zimbabwe, opened in May at Kew. Over 60 large scale works are scattered around the northern part of the garden and explore the relationship between the community, the human spirit and the natural world.

The Wellcome Trust Millennium building at Wakehurst Place, which will house the Millennium Seed Bank (MSB) is expected to be complete by late August. Phase 1 of the MSB Project, *The UK Flora Programme*, now has 93% of the native higher plant vascular flora stored at Wakehurst Place including 229 species found in the UK Vascular Plant Red Data Book.

Staff

Dr Bernard Verdcourt received the Linnean medal in May in recognition of his contributions in the Kew Herbarium over the last 35 years, but particularly in the field of African botany. At Kew he has worked mainly on the *Flora of Tropical East Africa* and to date has written over 60 family accounts. He has recorded more than 1000 publications and not everyone knows that he has published as many papers on molluscs and insects as he has on plants.

Dr Juliet Wege, who recently completed her doctorate at The University of Western Australia, has been awarded an Anglo-Australian Postdoctoral Research Fellowship. She will be based at Kew for a year where she will continue with her research on the systematic relationships in Stylidiaceae. In addition to working in the Herbarium, Juliet will be conducting anatomical research in the Jodrell Laboratory. Having secured a flat located near the Herbarium and between two pubs, Juliet is looking forward to the year ahead.

Lectures and visits

Three lectures were given this last quarter. On April 8th I presented the Hampshire Memorial lecture entitled *Diversity in colour and form of the Aizoaceae* to the British Cactus & Succulent Society Annual General Council Meeting. A talk on *Growing Aizoaceae (Mesembs) in Adelaide* was

given at the Harrow Branch of the British Cactus & Succulent Society on April 14th. On May 10th I presented a botany seminar at the Natural History Museum entitled *Diversity, Breeding Systems, Dispersal and some Ethnobotanical aspects of the Myoporaceae*.

I attended the IOS Conference held at the University of Zurich from March 18-26th and took the opportunity to examine the Myoporaceae collections held there.

A week was spent at Leiden (L) in early June working through Myoporaceae collections, but especially *Myoporum*. This was quite rewarding in finding a number of duplicate types and the holotype of one species not previously located. Although the monograph is complete these additions can still be added.

ABLO permanent computer work-station

Over recent years most ABLO's have brought their own PC to Kew and prior to that it was necessary to share a computer work-station in one of the wings. In the last couple of years the ABLO has been permitted to have their PC's connected into the Kew network. Problems can be encountered when initially configuring different PCs to the network and this can result in a considerable amount of Systems Support staff time in rectifying problems.

Now that the ABLO office is based in a room it seemed sensible that a permanent computer work-station be set up. Following discussions with line manager, Dr Alan Paton, a request was made by him for monies from Kew to purchase a computer for the ABLO's use. This application was successful and a computer has now been ordered. It is hoped that it will be installed before the incoming ABLO, Rod Seppelt, arrives in late August.

Visitors

Recent visitors to the Herbarium, Jodrell laboratories or the Library included Mark Clements (CANB), Neville Marchant (PERTH), Terry MacFarlane (CALM, W.A.) and Steven Hopper (KPBG). Alistair Hay (NSW) spent three weeks at Kew working with Peter Boyce and J. Bogner (Munich) on *Flora Malesiana* Aroids of the tribe Schismatoglottideae.

British Museum of Natural History

Recent acquisitions at in the Library include Volume 3 of the Banksias by Rosser & George and a photographic copy of another HMS Challenger sketchbook, made by one of the crew. This contains three items on Australia and two on New Zealand.

A loan will be made to the Art Gallery of South Australia for their "The Encounter" exhibition, 15 February-21 April 2002, which will probably include some of the Ferdinand Bauer watercolours. Discussions are also underway with a number of

other Australian institutions about loans either in connection with the Flinders Voyage anniversary or the centenary of Federation celebrations.

Bob Chinmook

ARTICLES

The Evolutionary History of Mazda Motor Cars

David Morrison
Institute of Banksia Studies

Depending on which way you look at it, it is either a depressing observation or an interesting psychological phenomenon that motor cars are often treated in the modern world as living things. Precisely what type of living thing they are is not clear. Once again depending on which way you look at it, they are either the object of a love affair or some form of antichrist. Interestingly, this often seems to depend on whether it is a wintery morning and they are having difficulty waking from their diurnal slumber; and thus does the observer enter into the observation, as they do also in quantum mechanics.

Either way, if this circumstance is to be taken seriously, then to a biologist it implies that motor cars must have an evolutionary history, including both phyletic and speciation. Furthermore, if motor cars have an evolutionary history, then an evolutionary biologist can attempt to reconstruct it and interpret it in the light of their specialist knowledge. Speaking as an evolutionary biologist of some infamy, it is my intention here to do precisely this with respect to a selection of the products from the Mazda Motor Corporation.

I did not choose these organisms arbitrarily. I chose them as being "typical" representatives of the phenomena that I wish to discuss. In this sense, they show most of the features of biological evolution in a clear and unambiguous manner. All other cars

show the same features, but it is not always as obvious, and so it is much harder to make a convincing case. Actually, I chose them because my dad used to own one, and what I am about to say became blatantly obvious even to someone as unobservant as I am.

The previous paragraph does not appear in formal scientific publications. It is replaced by the expression "representative sample of the *Mazdaceae*" or even "random sample", which are more terse for the writer but require more careful interpretation by the reader.

I have chosen four models for consideration, designated by Mazda using numbers, which shows a distinct lack of sympathy by that company with the general thesis outlined here. They are:
(1) 929 – 4-door sedan, 4-cylinder engine;
(2) 626 – 4-door sedan, 4-cylinder engine;
(3) 323 – 5-door hatchback, 4-cylinder engine;
(4) 121 – 5-door hatchback, 4-cylinder engine.
These specifications describe the most common form of these organisms during the past two decades. Minor morphological variants have been ignored as representing intra-specific variation that is irrelevant to the current thesis.

For each of these species I collected information on three continuous quantitative morphological

characteristics, all of which measure body size.

They are:

- (1) overall body length (cm);
- (2) overall body width (cm);
- (3) wheelbase (cm).

To help highlight the dynamic nature of evolution, measures of these variables were assembled for every year from the origin of these species up to and including 1998. The data were obtained from Carpoint (2000).

The data are shown in the three accompanying line graphs (Figs 1–3), which for the purposes of this dissertation represent the relevant evolutionary histories.

The first thing to note is that three of the species originate simultaneously in 1978. To the uninitiated this might look like good evidence for spontaneous generation. However, there were a number of pre-existing *Mazdaceae* species that became extinct at precisely the same time. So, instead, this is good

evidence for the strict cladistic viewpoint that during speciation the ancestral species becomes extinct upon the origin of two daughter species, even if one of these daughter species is otherwise identical to the parent species. Once again, a strict interpretation of cladism triumphs. (Triumph is, of course, a completely different family of motor car, whose evolutionary history might also be worthy of closer analysis.)

That all three species have a contemporaneous origin is clearly an example of some macroevolutionary event. I have been unable to discover any contemporary circumstance that could be an hypothetical cause of such an event, either inside or outside of the Mazda car company. However, it is a testable hypothesis that such a circumstance exists; and it would therefore be profitable for sociologists to investigate further this fertile field of endeavour.

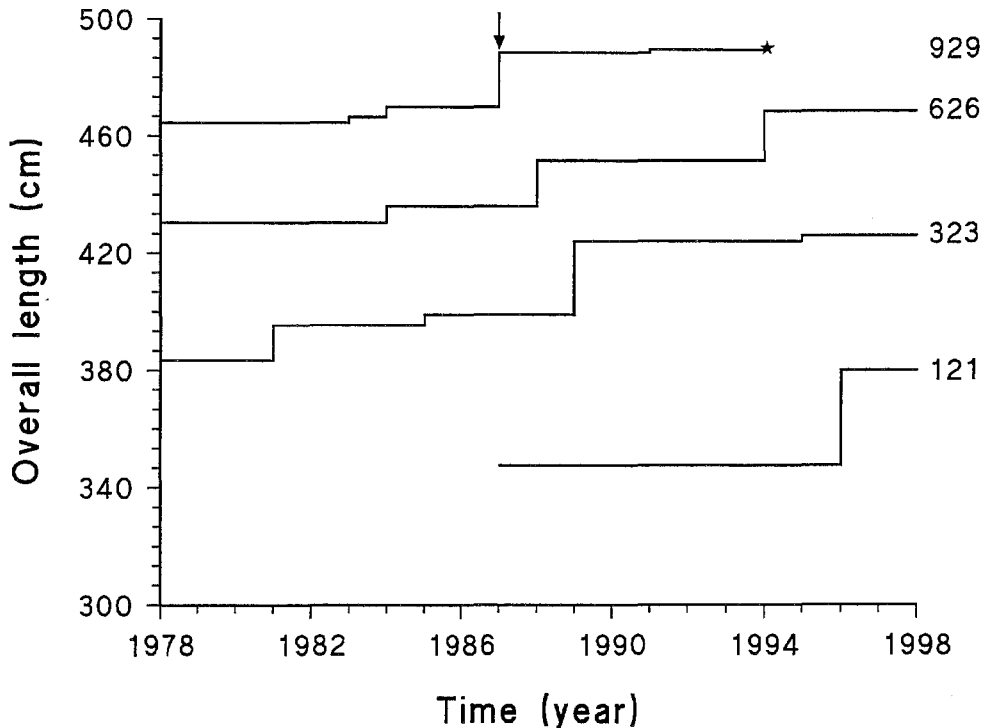


Figure 1. Overall body length of the models of Mazda motor cars. The arrow indicates the acquisition of a 6-cylinder engine, while the asterisk denotes an extinction.

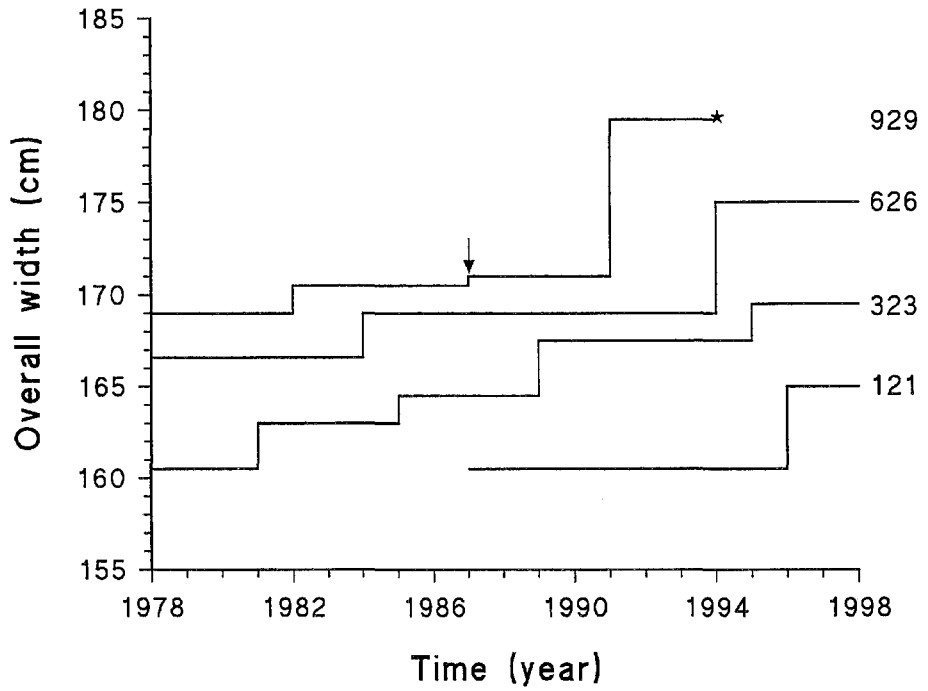


Figure 2. Overall body width of the models of Mazda motor cars. Symbols as in Fig. 1.

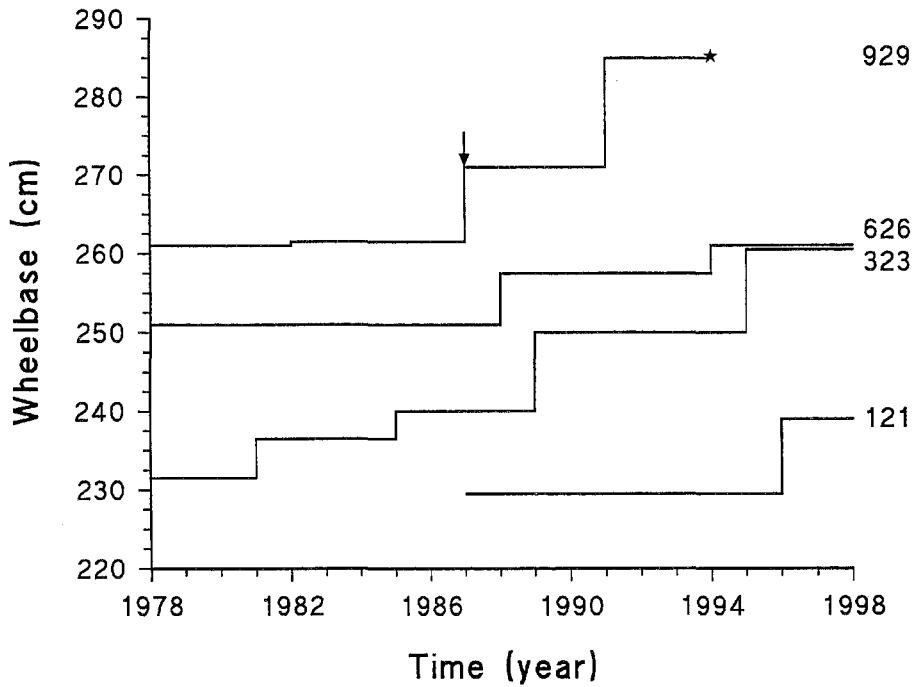


Figure 3. Wheelbase length (length between wheel centres) of the models of Mazda motor cars. Symbols as in Fig. 1.

The next thing to notice is the consistent, though punctuated, size increase through time in all three of these models. This, for those of you who are unacquainted with evolutionary generalizations, is an example of Cope's Rule of phyletic size increase. This rule states that within evolutionary lineages there is a general tendency for body size to increase. Quite why this should be so is not clear. However, Gould (1980) provides the following summary of various published speculations: "Some have cited general advantages of larger bodies – greater foraging range, higher reproductive output, greater intelligence associated with larger brains. Others claim that founders of long lineages tend to be small, and that increasing size is more a drift away from diminutive stature than a positive achievement of greater bulk."

Given that these potential explanations are probably not directly testable, we can resort instead to pleasing postulations. That larger cars might have a greater foraging range is a reasonable suggestion, at least when considering the intent of car designers, but strictly speaking this depends mostly on the size of the petrol tank. That larger cars might be involved in greater reproductive activity also does not necessarily follow, although they certainly give you more room for it. They are, however, very useful for transporting the products of prior reproductive activity. I doubt that larger cars are associated with either larger brains or greater intelligence. I drive a relatively small car.

Interestingly, Gould (1980) reports a case of phyletic size decrease among manufactured goods, in his case a chocolate bar, and notes that "phyletic size decrease surrounds us in products of human manufacture." In fact, he states as the sole assumption for his analysis of economic inflation that: "If organic lineages obey Cope's rule and increase in size, then manufactured lineages have an equally strong propensity for decreasing in size." Obviously, the data presented here refute this premise. Once again, an ardent non-cladist is soundly confuted.

As a corollary to the temporal phyletic size increase in the lineages, various of the car species replace each other in size through time. That is, the 626 from 1994 onwards is as long as the 929 was prior to 1983, and the 323 from 1995 onwards is as long as the 626 was prior to 1984 (Fig. 1). A similar trend can be seen in the wheelbase attribute (Fig. 3), which might in practice be partially dependent on length. In width, however, the replacement is even more marked, as the 626 catches the previous 929 in

1984 and the 323 catches the previous 626 in 1989 (Fig. 2). Quite why there should be a greater increase in girth than in length is not clear, as width is no more associated with foraging, reproduction or intelligence than is length (although given my own girth:length ratio perhaps I should argue for the latter, at least).

It seems to me likely, given these size replacements, that these species might also replace each other in the niches to which they are adapted. This is thus an ecological prediction that can be derived from our evolutionary data. This hypothesis could be tested by examining the sociological make-up of the people who purchased individuals of these species during the relevant period. My explicit prediction is that there will be a change in this make-up that coincides with the phyletic size increase.

The next thing to notice is the speciation event resulting in the origin of the 121 model in 1987. It is not evident which species is the ancestor of this new model, at least not without some more phylogenetic information. The quantitative data presented here do not provide any explicit synapomorphies, and so the branching sequence is not readily explicable. However, the body-size characteristics indicate that the 121 replaced the 323, in the same manner as the 323 replaced the 626 and the 626 replaced the 929. Thus, the 121 presumably occupies the same niche as did the 323 prior to that time. An unoccupied niche will not long remain unfilled, as any ecologist will tell you.

This temporal replacement sequence, of course, eventually makes the 929 redundant, and it duly became extinct in 1994. As the dinosaurs are reputed to have discovered many eons before, getting too large does not necessarily confer any evolutionary advantages. Size *per se* is not the ultimate goal of evolution; and it would be wise for all species to remember this simple fact, lest they too go the way of the brontosaurus.

Allied to the general increase in size of the 929 was its acquisition of a 6-cylinder engine in 1987. This quantum leap might have been part of a stratagem designed to take the species into a new adaptive zone, particularly as it was followed shortly afterwards by the largest single increase in wheelbase size for any of the species. Perhaps it was going for the ultimate goal of an 8-cylinder engine? If so, then the sorry failure of this scheme should be a lesson to us all: don't get too big for your boots.

The final thing to consider is the apparent convergence of the 323 and 626 in their wheelbase size, subsequent to 1995. This seems to be a result of a failure by the 626 to increase its wheelbase, at least in comparison to the increases by the other three species. This suggests the existence of some form of evolutionary constraint. Exactly what this constraint might be is not immediately obvious. Indeed, the 929 only managed to overcome this constraint at the same time as it acquired the 6-cylinder engine, and so these features might not be independent. Given the subsequent extinction of the 929, perhaps it is wise of the 626 not to attempt this jump too soon.

So, what have we learned from this in-depth consideration of the family Mazdaceae? There is, indeed, considerable evidence in favour of treating motor cars as living things. They apparently have

an evolutionary history that shows all of the essential features that evolutionary biologists have come to know and love. Loving your science is, thus, no different from loving your car.

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<http://www.carpoint.com.au/MarketPlace/UsedCarSpecsHome.asp>
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[Reprinted in Gould, S.J. (1983) *Hen's Teeth and Horse's Toes*, pp. 313–319. Penguin, Harmondsworth.]

Winter Solstice Dinner

Someone had suggested that they wanted a dinner, so I organised one for the Friday immediately after the Winter Solstice. I chose a Malaysian restaurant, as you do in the chiefly Italian suburb of Leichhardt, for its food and value for money. The owner promised me she would make sure we would have a varied and filling banquet and she was right. At the end of the meal, everyone had full stomachs and they presented us with 10 takeaway boxes of the food we hadn't eaten.

I had my usual Sydney University contingent in Murray Henwood and Jenny Hart as well as a healthy sized group from the Herbarium. It was nice to drag Tim Entwisle from his heavy schedule at work and see him out of a tie. David Morrison, one of my staunch supporters was also there. I think he comes to these dos to remind himself what his PhD student looks like and to harangue me about being the worst student he's ever had – he's right of course. With our second Librarian Miguel Garcia and Barbara Wiecek's partner Rex in fine voice, we were guaranteed a lively and entertaining evening.

Some of the highlights included the bottle of wine I brought. It promised so much and delivered so little – it had the bouquet that, as one member of the table remarked, "resembled chicken manure" or it reminded Barbara of "town dump after rain". I'm thinking of buying a case and giving it out at Christmas time. The owner and chef personally made our desserts before our eyes – toffee coated fried apple and banana. Being a cold night, it took dexterity to get the fruit coated before the toffee solidified. And finally most of us trooped off down to Berkelouw's, one of Sydney's premier fine book shops, which has recently opened a branch in Leichhardt and was offering a preGST sale. I'm never entering a bookshop with a librarian again – they make you spend money.

Peter Jobson

A further note on *Hemisteptia* (Asteraceae)

A.R. Bean

The synonymy I previously gave for *Hemisteptia lyrata* (Bean 1999) was incorrect. My most serious error was my failure to view the original publication of *Cirsium lyratum*, and relying on an incorrect secondary reference. *Cirsium lyratum* Bunge was in fact validly published in "An Enumeration of Northern Chinese Plants" (Bunge 1833), with a quite detailed Latin description. Also, *Aplotaxis carthamoides* is not an illegitimate name, but rather a new name based on the type of *Serratula carthamoides* Roxb. (Greuter et al. 1994, Art. 58.3).

A revised synonymy for the species within the genus is presented below:

Hemisteptia Bunge ex Fisch. & C.A.Mey., *Ind. Sem. Hort. Petrop.* 2: 38 (1835)
Type: *H. lyrata* (Bunge) Fisch. & C.A.Mey.
[*Hemisteptia* Bunge, *Dorpater Jahrb. Litt.* 1: 221 (1833), *nom. nud.*]

Hemisteptia lyrata (Bunge) Fisch. & C.A.Mey., *Ind. Sem. Hort. Petrop.* 2: 38 (1835)

Cirsium lyratum Bunge, *Enum. Pl. Chin. Bor.* 2: 110 (1833); *Aplotaxis bungei* DC., *Prodr.* 6: 539 (1838), *nom. illeg.*; *Saussurea lyrata* (Bunge) Franch., *Mem. Soc. Sci. Nat. Cherbourg* 24: 229 (1884). Type: 'in montosis et pratensibus prope Lun-züan-ssy, Tanschan', China, 1830-31, A.A.Bunge (?LE, *n.v.*).

Serratula carthamoides Roxb., *Hort. Bengal.* 60 (1814), *nom. nud.*; *Fl. Ind. ed.* 2, 3: 407 (1832), *nom. illeg.*, non Poiret (1804); *Aplotaxis carthamoides* DC., *Prodr.* 6: 540 (1838), *nom. nov.*; *Saussurea carthamoides* (DC.) Benth., *Fl. Hong Kong* 168

(1861); *Hemisteptia carthamoides* (DC.) Kuntze, *Rev. Gen. Pl.* 1: 344 (1891). Type: cultivated at Calcutta Botanic Garden, ex Nepal (?G, *n.v.*).

Aplotaxis multicaulis DC., *Prodr.* 6: 540 (1838). Type: Nepal, 1821, N.Wallich (K, Wallich herb. n. 2897, photo seen).

[*Saussurea affinis* Spreng. ex DC., *Prodr.* 6: 540 (1838), *nom. nud.*]

Aplotaxis australasica F.Muell., *Fragm.* 1: 36 (1858), as '*Haplotaxis*'. Type: Dawson and Burnett Rivers, Queensland, 1856, F.Mueller (holo: K).

Acknowledgements

I am grateful to Dick Brummitt (K) and Rod Henderson (BRI) for pointing out the errors in my previous note.

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The PhyloCode

Robyn Barker pointed out the development of the PhyloCode to me and expressed the view that this should be a matter of importance to ASBS members. I agree with this assessment. The following few pages contains various pieces of information on this development. This is an issue that is worth opening for feedback from members. Two views are expressed below, apparently at the extremes of the argument. I hope some members will feel the desire to rise to this challenge and send in their views. Recent publications on this issue include:

Cantino, P.D., H.N. Bryant, K. De Queiroz, M.J. Donoghue, T. Eriksson, D.M. Hillis & M.S. Lee. (1999). Species Names in Phylogenetic Nomenclature. *Syst. Biol.* 48: 790-807.
Pleijel, F. (1999). Phylogenetic Taxonomy, a Farewell to Species, and a Revision of Heteropodarke (Hesionidae, Polychaeta, Annelida). *Syst. Biol.* 48: 755-789.

Bob Hill

The following is an abstract for the coming Botany 2000 meeting in Oregon in August.

CANTINO, PHILIP D. AND MICHAEL J. DONOGHUE Objectives and progress of the PhyloCode project.

The PhyloCode, a code of phylogenetic nomenclature, has been in development since 1997. A preliminary draft will soon be available on the Internet (<http://www.ohio.edu/phylocode/>), probably by the time of this meeting. It is hoped that many members of the systematics community will examine and comment on it. Changes will undoubtedly be made in response to public input before the code goes into operation several years from now. Phylogenetic nomenclature is designed to name the parts of the tree of life by explicit reference to phylogeny. The PhyloCode will facilitate the naming of clades and promote clear communication about phylogeny. The need for a more efficient

system for naming clades has recently become critical because of the dramatic and escalating improvement in our knowledge of phylogeny. The PhyloCode will make it possible to name clades as they are discovered, without changing the names of other clades. It will also allow those who favor monophyletic taxonomy to name the clades they wish to name without being required to name groups they do not accept. The PhyloCode is designed for concurrent use with the ICBN, ICZN, etc. The first edition of the PhyloCode will govern only the naming of clades, but the intent is to add rules governing species names in the future.

The web site mentioned in this abstract contains quite a bit of information about the PhyloCode. For the benefit of those without access to the web, here is the preamble to the web page:

The PhyloCode is a formal set of rules governing phylogenetic nomenclature. It is designed to name the parts of the tree of life by explicit reference to phylogeny. The PhyloCode will go into operation in a few years, but the exact date has not yet been determined. It is designed so that it may be used concurrently with the existing codes based on Linnaean nomenclature (ICBN, ICZN, etc.). We anticipate that many people whose research concerns phylogeny will find phylogenetic nomenclature advantageous.

workshop participants, together with a few other people who subsequently joined the project, have served as an advisory body (see the PhyloCode preface for a list of the people involved).

The current draft of the PhyloCode represents several years of work but is still provisional. Some rules will undoubtedly change before the code is finalized, and more examples will be added for clarification. In spite of these shortcomings, the time has come to solicit comments and ideas from a broader spectrum of systematists. We hope that many members of the scientific community will examine the draft PhyloCode and send suggestions for improvement. Although the code has initially

The PhyloCode grew out of a workshop at Harvard University in August 1998, where basic decisions were made about its scope and content. Many of the

been developed by a small group of people, it is intended for the benefit of all biologists who name clades or use clade names. The more people who help to perfect it, the better it will function.

This draft of the PhyloCode governs only the naming of clades. Rules governing species names will be added to a later version, but it is not clear at this time whether this will be done before or after the rules for clade names are implemented. Some parts of the current draft may be modified as a result of future decisions regarding the naming of species. Because the code does not currently cover species names, the examples in the present draft use Linnaean binomials when species names are cited in the phylogenetic definitions of clade names. This is a temporary situation and should not be interpreted as implying acceptance of Linnaean binomial nomenclature.

There remains substantial disagreement within the advisory group on the form that species names

should take in phylogenetic nomenclature, and involvement of the community of biologists in this important decision is essential. A variety of forms that species names might take under phylogenetic nomenclature are detailed and discussed in a paper in *Systematic Biology* (48: 790-807. 1999). We hope that many people will read this paper and send their thoughts about how the PhyloCode should deal with species names to the e-mail address provided below.

Please send your comments on any aspect of the PhyloCode to phylocode@www.ohiou.edu.

If you would like to join an internet discussion group focusing on phylogenetic nomenclature, send a message to listserv@ohiou.edu. The message should read: "subscribe PhyloCode" (without the quotation marks). Do not include anything else in the message. In a short time, you should receive an automatic reply explaining how to send messages to the discussion group.

An interesting perspective on the whole issue can be found at:
<http://ucjeps.berkeley.edu/DeepGreen/SJMercury.html>
The text from this site is reproduced in full here:

A ROSE is a rose -- but it may not belong to the family Rosaceae forever.

In a highly controversial plan that could shake biology to its core, a few maverick biologists are proposing to abandon the traditional way of naming and ranking every living thing on Earth, a system invented 250 years ago by the Swedish botanist Carolus Linnaeus and a staple of textbooks to this day.

It was a good system for its time, critics say, invaluable for describing how one organism arose from another and how creatures as big as whales, as tiny as germs and as self-important as people are related.

Kingdom, phylum, class, order, family, genus and species -- the traditional hierarchy has been memorized by generations of students with the help of phrases such as King Philip Came Only For Gold and Silver.

But now, critics argue, the system is swamped by the sheer volume of information pouring in from genetic studies, which are rearranging the branches and twigs of the tree of life at a dizzying rate.

They say there are simply not enough ranks in the traditional system to encompass this growth spurt. In place of Linnaeus' creation, they want a family tree without ranks, as free-form and flowing as evolution itself.

"I think it's the greatest thing since sliced bread," said Michael Donoghue, director of the Harvard University herbaria and a proponent of the new scheme. "It's the beginning wave of something that's probably going to happen -- and people aren't going to like it."

Which appears, at this point, to be an understatement.

"It's moronic!" said William Burger, curator of botany for the Field Museum in Chicago, expressing the sentiment of a great many of his colleagues at the recent International Botanical Congress in St. Louis.

"When you've got a system that's worked for 200 years," he said, "who the hell cares about the phylogeny of these plants?"

Phylogeny?

It's a fancy word for evolutionary relationships, and it's the heart and soul of biological classification.

When Linnaeus began his ambitious work of classifying everything in the animal, vegetable and mineral kingdoms in the 1700s, Charles Darwin's theory of evolution was still a century away, and each type of living thing was thought to have been separately created.

Linnaeus divided the animal and plant kingdoms into classes, and then again into genera and species, based on the superficial characteristics of organisms -- say, whether the reproductive organs of a flower were out in the open or hidden.

As more species were discovered, scientists were forced to add more categories to the Linnaean hierarchy, and they changed it to reflect what they knew about evolutionary relationships.

So, for instance, in the current version the human lineage goes this way:

Single-celled creatures called eucaryotes gave rise to metazoans, the multicelled animals. Metazoans begat chordates, which have rods of cartilage supporting the nerves that run along their backs. And they in turn spawned animals with backbones, four-legged animals, mammals, primates, hominids, early humans and us.

In the language of classification, we belong to the Eukarya, the Metazoa, the phylum Chordata, subphylum Vertebrata, superclass Tetrapoda, class Mammalia, order Primates, family Hominidae, genus *Homo* and species *Homo sapiens*.

But as the tree of life gets more complicated, researchers continue to discover new and interesting groupings that they want to formally name so they can communicate more easily among themselves.

Convention invention

They invent new categories -- things such as tribes, cohorts and phalanxes, not to mention supertribes, subcohorts and infraphalanxes -- and wedge them in among the traditional ones.

In theory this can expand the system indefinitely. But in practice it becomes awkward and confusing.

The beauty of the new, rankless nomenclature is that "you don't have to spend time memorizing whether an infracohort is higher than a subcohort," said Kathleen Kron, a botanist at Wake Forest University. "You can concentrate on evolution and biology and the whole reason we got into this in the first place."

One of the leading proponents of the new system, known as phylogenetic nomenclature, is Brent Mishler, director of the herbaria at the University of California-Berkeley.

He points out that the family tree for the 300,000 species of green plants alone, if printed out on a very wide roll of computer paper, would be nearly one and a half miles long. On that tree are hundreds of thousands of branching points, each one giving rise to a group of plants that scientists might like to name.

But under today's rules, you can't give a group a formal name without assigning it a rank, too.

And the thought of trying to squeeze all those ranks into the Linnaean system makes Mishler shake his head.

"There's just no way," he said. "You get rid of the ranks. If you're an educated biologist, you just need to know how these (groups) nest inside each other" -- and that information is widely available in databases that contain diagrams of groups branching off from other groups, like the branches and twigs of a tree.

Under the new system, researchers would be free to name any branch of the tree of life without regard to rank.

But they wouldn't rename existing groups -- "far from it," said Kevin de Queiroz, curator of the national collection of reptiles and amphibians at the Smithsonian Institution. "We're probably using all the same names and giving them different definitions. So we would still be Mammalia. We just wouldn't care if it was a class or a superclass or a giga-superclass."

Mishler goes further than most in overhauling the new system, arguing that even the category of species should be abolished. Instead, each organism would go by a single name -- *sapiens*, in our case. If more than one creature bore the same moniker -- as in the many species labeled *alba* (meaning white), *vulgaris* (common) or *californicus* (from California) - you simply append the name of the next group up

the line, like a schoolteacher distinguishing two Jennifers by attaching their last initials.

Others would keep the idea of species, either with their current names or with slight changes, so humans might become *Homo/sapiens* or *Homo-sapiens*, reminiscent of the hyphenated names some people take after marriage.

Which is appropriate, because the whole idea makes a lot of people crazy and has some talking in terms of divorce, so deep is the split between advocates of the old system and the proposed new one.

"It looks great when all you see is a theoretical concept on the board," said Barbara Ertter, collections manager at the UC-Berkeley herbaria. "But I rejected it on the grounds that it's going to screw up a system that is working."

Dick Brummitt, a botanist at the Royal Botanic Gardens in Kew, England, adds that if some researchers want to use the new system, "it's not for me to stop them. But if they think other people are going to stop using traditional names, they're mistaken. The great majority are totally against what these people are trying to do."

Opponents fear that a new system would lead to chaos: With two separate types of names floating around, they say, biologists would have difficulty searching through past studies for things that are relevant to their work. Herbaria, those repositories of plant specimens, might have to relabel their collections at great expense.

Given these potential drawbacks, many scientists feel themselves uncomfortably straddling the fence. They can see the logic of the new way of thinking. But they fear that without some sort of ranking it will be much more difficult to communicate, in words, the relationships between the organisms they're studying.

"In practical work, as opposed to theoretical work, one has to come to grips with what has already been done and put it into some kind of framework," said Malcolm McKenna of the American Museum of Natural History in New York, who recently co-authored a book classifying all the mammals. "I find myself trying to accommodate both worlds."

Mixed emotions

David Maddison, a specialist in the evolution of beetles at the University of Arizona and one of the creators of the Tree of Life Web page, admits, "I haven't decided personally what I'm gonna do the next time I get around to doing some classifications."

Proponents of the new nomenclature are now engaged in writing rules, which will be known as the PhyloCode. It will take them a few years yet.

They acknowledge that they may never win over the senior scientists who sit on the committees that determine the rules of nomenclature for various fields of biology. But they are convinced that the next generation of leaders, who grew up with computers and are comfortable with the idea that a diagram can supersede words, will take to the new method and make it their own.

And if the new code does not succeed -- well, that would be nothing less than the survival of the fittest at work.

"We're almost counting on the older generation of people to be resistant. That's the way it works," said de Queiroz of the Smithsonian. "That's not necessarily a bad thing. It keeps crazy ideas from spreading too quickly."

It's a sort of natural selection, he said. If people find the new system is handier than the old, "it will succeed and replace the other one. If it doesn't, it won't. That's how we prefer it to be."

What Business do Governments have with Museums?

(This interview was given on Ockham's Razor. The full text is available at <http://www.abc.net.au/rn/science/ockham/stories/s138717.htm>)

The guest was Des Griffin, Professor of Management Studies at Newcastle University in New South Wales and before that Director of the Australian Museum in Sydney. A few quotes from Professor Griffin are given below and may strike some of you as relevant in your own institutions.)

"Governments play a big role in museums and mostly they have tended to develop rules and practices which are equivalent to trying to live in those organisations. This has been costly and it hasn't worked. Sometimes rules are developed just so certain people can exercise power. In several places in Australia right now, the executives and boards of museums are being sidelined, so that through more direct control, government bureaucrats can make the museums supposedly more accountable. The debilitating effects of downsizing and restructuring over the past 15 years are ignored by this push for control."

"Rather than increased government command and control, what makes museums more effective is developing clear shared values amongst staff, values which will contribute to the achievement of objectives which are understood and agreed on, and which will result in the people in the organisation having a sense of ownership and a feeling of being in charge of their own future. That is leadership."

"In recent years, new structures and practices have been brought into organisations without understanding what works and what doesn't, and without comparing the performance of other similar organisation in similar circumstances. Structure has been focused on when in fact it is relatively unimportant. Encouraging innovation and

creativity however does require a variety of structures rather than the monolithic states where avoiding 'wasteful duplication and needless overlap' is the main focus."

"All the rhetoric about government reform being more businesslike, about accountability, performance indicators, regular reporting and transparency, performance pay and fixed term contracts for senior managers has not paid off."

"Most museums in Australia, Canada and the United Kingdom are closely associated with governments. Most museums in the USA are independent of governments The most effective museums are independent, or largely so, of government. "

"A high level of independence seems to make a positive difference even to larger museums associated with government in any country. Why is this? I think it is because government seeks to ensure compliance and focuses on the 'how' rather than the 'what'; it tries to have its component organisations behave in a certain way. Clarifying precisely what is to be achieved is given less attention. The big agenda item is the budget and financial control. In this climate the focus of the executive staff is thus on those things that government is pushing and creativity is stifled."

What the Sydney Chapter did in June

After a hiatus of a couple of months, I managed to fill June with a number of events to ensure that members got value for money for their subscription.

AGM and dinner

It had been decided to couple the AGM with the workshop, maximising the number of members to participate. However, through a series of comedies of error when it came to start the meeting, we didn't have a quorum. Fortunately, Peter Wilson was still in the building, albeit very ill with a heavy head cold, and after bribing him with a large remuneration we were able to start the meeting. The minutes of the meeting are presented elsewhere, so I won't say any more. Probably because of the low number of members present, we were able to get through much of the business in roughly one and a half hours – which was just as well as I had booked a table at the local pub for a post meeting dinner.

It was little embarrassing but there were more people at the pub for dinner than at the meeting. This was mainly due to having invited people from the workshop who currently are non-members. Getting on my soapbox for a second, we really must start actively recruiting postgraduate students and technical staff at herbaria to join ASBS if we intend to have a viable society in the 21st Century. Not everyone has the genes of Joseph Hooker and lives to the ripe age of 92. We are fortunate that the Woolloomooloo Bay Hotel are used to people from the Gardens for we made as much noise as was possible for a table with 18 people on it. I know it must have been a good evening, for most of us got home at a reasonably late hour.

Long Weekend Picnic

The workshop immediately preceded the Queen's Birthday long weekend. I thought, seeing the Barkers were up from Adelaide, it would be an ideal opportunity to have a picnic. Unbeknownst to me, they were forced to take a Saturday flight or be trapped in Sydney to the middle of the week, so we had the picnic anyway without them.

The venue was roughly 5 km downstream from Wisemans Ferry on the Hawkesbury River. A historically important town as it was the first crossing of the river from the mouth and a convict

built road was constructed linking Newcastle with Sydney. Of course, being a typical ASBS picnic, the camping area at Mill Creek, which had the better barbeques, was full and so we had to resort to the picnic area, which was more exposed. It was not an excellent day for a picnic, so the turnout was lower than normal. There was a cold wind and as the day progressed it became more threatening with heavy clouds.

This was the second picnic that the Conn's were absent from (they were holidaying at some luxury resort at Batemans Bay), but we did have my old (affectionately) reliables like Jenny Hart and Andrew Perkins from Sydney University and David Morrison. We also had a number of ASBS picnic virgins – Bob Coveny and Peter Hind and his wife from the Herbarium and their zealous naturalist friend Mark Sherring.

Just after midday, Bob, Andrew, Peter and Mark decided to go on a botanical foray. The rest of us had had enough of botany for one week (did I just write that? I must be ill) and just lazed around the picnic area enjoying the congenial company. By 4pm the weather was looking positively evil, and so we decided that it was time for coffee and cake. Our botanisers had not returned but Margaret Hind assured us they would be back soon and reluctantly we left her. I found out later that they returned around 6pm when it was well and truly dark with a suite of botanical novelties. Now that's dedication for you!

Meanwhile, Jenny, David and me were enjoying a log fire and coffee and substantial cakes, watching the drizzling mist rolling up the river. That's how we ended the "Last GST Free ASBS picnic".

Peter Jobson

Dob in a Senior Australian

NOMINATIONS FOR THE 2000 SENIOR AUSTRALIAN OF THE YEAR AWARDS OPEN

The National Australia Day Council, in partnership with National Seniors Association, has launched the call for nominations for the 2000 Senior Australian of the Year Awards. Anyone can nominate a Senior Australian for the awards.

The Senior Australian of the Year Awards are open to all Australian citizens aged 60 or over and seek to acknowledge those who:

- are outstanding role models to the community
- make a significant or outstanding contribution to the wellbeing of others
- present a significant positive image of aging and/or

- have achieved a significant new achievement for themselves

Not only will a Senior Australian of the year be named, but the Awards will recognise a number of Senior Australian Achievers in each State and Territory.

To find out how to dob in a Senior Australian contact the National Australia Day Council on 1300 655 193 or visit their website at www.nadc.com.au.

Nominations can be made online and close on August 11th 2000.

Working on a northern Australian plant group?

In the last couple of months both Barbara Waterhouse of AQIS in Mareeba (Qld) and Tricia Handasyde of CALM in Kununurra have asked for advice on just who are the experts in particular groups of plants, so that they can send specimens to them for identification. The book produced by the Council of Heads of Australian Herbaria (Puttock & Cowley, 1997) has been drawn to their attention but this is fast going out of date. Hopefully such information will be made available on the web in the future, where it should be more easily upgraded.

While those of us who work within the larger herbaria usually have a good knowledge of which particular groups of plants are being worked upon and by whom, those in more isolated parts of Australia are not always so fortunate. Both Tricia and Barbara work in areas usually not so accessible to botanists without considerable effort and expenditure of time and money. The maintenance of a local herbarium is, for them, only a part of their duties and so specimen sheets bearing correct identifications by the person most expert in the group are always welcome.

So... if you are interested in seeing specimens of your group from these particular areas, write to Tricia or Barbara at the addresses given below and make them aware of your involvement.

Barbara Waterhouse
NAQS Botanist
AQIS
C/- Centre for Tropical Agriculture
PO Box 1054 (28 Peters Street)
Mareeba Qld 4880

Tricia Handasyde
CALM Regional Office
Messmate Way
PO Box 942
Kununurra WA 6743

Reference

Puttock, C.F. & Cowley, K.J. (eds) (1997). *Plant Systematics Research in Australasia*. 6th edn. The Council of Heads of Australian Herbaria, Canberra.

Robyn Barker

REVIEWS

Historical Biogeography Workshop Royal Botanic Gardens, Sydney 8–9th June 2000

Over a two-day period, 19 participants were dazzled and impressed with the tutelage of Rod Page from the University of Glasgow. The aim of the workshop was to look at ways of assessing historical associations, which includes gene trees and species trees, host–parasite cospeciation, and biogeography. The workshop featured some of the computer programs that Rod has developed, including GeneTree, TreeMap and Component. Most of the participants were from either Sydney or Canberra, but we also had Bryan Simon from Brisbane and Robyn and Bill Barker from Adelaide. There was a nice mix of students, university systematists and herbarium botanists. Rod is currently in New Zealand on sabbatical, but wanted an excuse to bring his family to Sydney for a few days. His main current research interests are co-evolution between host and parasites, although he has worked in the past on biogeography.

The workshop was computer-based, so everyone had to supply their own computer. Fortunately, David Morrison, out of a Miss Marple sized carry bag, supplied enough power boards to go around. (He claims he was asked by Peter Weston to do this, but looking at his broad shoulders, I think he normally has everything, including the kitchen sink in that bag.) I, of course, had a computer with a mind of its own like a shopping trolley, and so spent most of my time re-installing the computer programs rather than completing the exercises.

The course format was essentially a background lecture, followed by a series of computer exercises to get hands-on experience with the concepts concerned. Rod is an excellent lecturer, and presented his material concisely and clearly. The two main things that Bill Barker managed to get out of his PhD were touch-typing and being able to manage his income to the extreme. He therefore spent most of his time during the lectures rapidly typing down everything Rod said. As much of the material Rod covered is available in his latest book, Bill was able to produce his own, albeit abridged, copy. The

book, however, is cheaper than the course fees, as Rod is quick to point out.

Rod is also a patient man, and easily dealt with the whole gamut of questions, from how to activate a particular option in one of his programs to the mentally challenging ones from Peter Weston and David Morrison, both having obviously done lots of background reading, including reading the manual. David, in particular, was particularly adept at finding errors in the manuals and “special design features” in the programs.

Rod’s main thesis is that there are three forms of historical association that can be studied using phylogenies, and that these are all merely variants of the same basic ideas. Thus, studying the relationships between genes and organisms is conceptually the same as studying the relationships between parasites and their hosts, and between organisms and biogeographic areas. In all three cases, the data analysis involves comparing two “cladograms”, one for each half of the relationship, and there are strong analogies between the terms used. The differences between the three studies are all related to what processes we might be willing to postulate for incongruencies between the two trees.

So, over the years, Rod has produced computer programs to analyse data for these three types of study, starting with biogeography (Component), then host–parasite relationships (TreeMap), and finally genes versus organisms (GeneTree). These programs improve in presentation and usability through time, and Rod politely refers to his earlier programs as “clunky”. All except Component are available for both PC and Macintosh, and can be freely downloaded from Rod’s web page (<http://taxonomy.zoology.gla.ac.uk/rod/rod.html>) Component is available only for PC and is commercially available from the Natural History Museum.

To round off the workshop, Rod gave us an overview of some of the other computer programs

that he has been involved with developing. These included NDE, for editing Nexus data files, TreeView, for viewing and printing publication-quality phylogenetic trees, Spectrum, for performing spectral analysis (which has been developed in conjunction with Mike Charleston), and Circles, for helping with structural alignments of RNA sequences.

By the end of the workshop, we all felt we had been given an excellent introduction to these topics, along

with some very useful computer programs, and I'm sure that we will see Australian publications in the near future citing these in their methods sections.

Peter Jobson

National Herbarium of NSW

(With no help *whatsoever* (?) from David Morrison, UTS — so I must be blamed for all of the libelous content.)

International Botanical Professional Expedition

We are helping China to organize the "International Botanical Professional Expedition" for world botanists and plant-related professionals.

You and the members of your group, institution and Society are sincerely invited.

Please be kind to pass this message to other botanical professionals, if we could not reach them yet.

This is the first time in a half Century that China opens her rich natural resources to the worldwide botanical professionals. British Royal Horticultural Society (RHS) has been doing the expedition 1-2 times per year, and they said it's fantastic!

About the expedition lines and timetable, please download the htm files from the web (List see below).

We would recommend you do the reservation (free) as soon as possible. If you could not fit it into your schedule of this year, but are interested to go next year; please also let me know.

Waiting for your reply

Sincerely yours

Dr. Eric Katz, 21CEP Manager

(A Non-Profit Organization - An Internet Network of the Professional Scientists Worldwide)

The Expedition documents:

<http://www.21cep.com/scts/bway1.htm> <<http://www.21cep.com/scts/bway1.htm>>

<http://www.21cep.com/scts/rway1.htm> <<http://www.21cep.com/scts/rway1.htm>>

<http://www.21cep.com/scts/wway1.htm> <<http://www.21cep.com/scts/wway1.htm>>

<http://www.21cep.com/scts/booking.htm> <<http://www.21cep.com/scts/booking.htm>>

INCITES

News articles, summaries and releases posted to the Australian Science and Technology Online innovation gateway for May and June 2000

Confidence in Industry Minister Nick Minchin falls after details emerge of cutbacks across his portfolio due to implementation of the GST. (News) 31/5/00
http://www.asto.com.au/News00/gst_budget_bite.htm

The campaign to have the R&D tax concession restored, or increased, faces a major hurdle. (News) 24/5/00
http://www.asto.com.au/News00/taxconcess_recov.htm

S&T budget overview: few initiatives to match the boost that medical research received last year. (News) 24/5/00
http://www.asto.com.au/News00/sci_budgetwrap.htm

US and Australian innovation systems compared: Australia still lacks a common understanding of the steps required for successful innovation. (Summary) 16/5/00
<http://www.asto.com.au/News00/OzUScompared.htm>

The CRCs could provide a model for other areas of the Australian research system, shows Science and Technology Industry Review article. (Summary) 29/5/00
<http://www.asto.com.au/News00/CRCJRNALSUM.htm>

The newly independent ARC has produced a booklet as part of its new strategic plan. (News brief) 6/5/00
<http://www.asto.com.au/News00/ARCplan.htm>

The AVCC strikes a deal with the Copyright Agency Limited that brings to an end a long running legal dispute (Media Release) 5/5/00
<http://www.asto.com.au/News00/ipavcc00.htm>

The Clunies Ross National Science & Technology Award 2001 opens for nominations. (Media Release) 1/5/00
<http://www.asto.com.au/News00/CRawards00.htm>

A sharpening in the drop off in Business Expenditure on Research and Development has come as a surprise to analysts and places increased pressure on the Government to take a more interventionist stand on innovation policy. (News) 3/7/00
<http://www.asto.com.au/News00/berddog.htm>

The Federal Government has launched its National Biotechnology Strategy and has made the creation of a \$20 million Biotechnology Innovation Fund (BIF) a central plank. (Summary) 2/7/00
<http://www.asto.com.au/News00/BiotechFund.htm>

Australia's major facilities documented: A survey of research facilities with a replacement cost estimated at more than \$5 million has been completed. (Summary) 26/6/00
<http://www.asto.com.au/News00/FactsOnFacilities.htm>

The Australian Research Council and the Rural Research & Development Corporations are planning to form a new joint genomics and gene technology body to interact with industry. (Summary) 26/6/00
http://www.asto.com.au/News00/new_genbod.htm

Global landscape for R&D documented in US Science and Engineering Indicators 2000. (News) 19/6/00

<http://www.asto.com.au/News00/USindicatrs.htm>

Inventing Our Future: The link between Australian patenting and basic science. Study adds weight to the idea that the nation is locked into an old economy. (Summary) 16/6/00

<http://www.asto.com.au/News00/OZpatents.htm>

The Business of Borderless Education study fails to find evidence of a virtual university that succeeds. (Summary) 16/6/00

<http://www.asto.com.au/News00/BorderlesEd.htm>

What is scientific and technological culture and how is it measured? A timely analysis of S&T policies developed in OECD countries that have shared the objective of cultural change (Abstract) 16/6/00.

<http://www.asto.com.au/News00/SciCulture.htm>

Innovation Summit Implementation Group delivers interim report. (News)15/6/00

<http://www.asto.com.au/News00/ISIGintrim.htm>

The events calender: <http://WWW.ASTO.COM.AU/calend.htm>

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CONFERENCES/WORKSHOPS

Investigator 200 Symposium

In conjunction with the Albany Branch of the Wildflower Society of Western Australia and the Royal Western Australian Historical Society, ASBS will hold a symposium at Albany, Western Australia, to commemorate the bicentenary of the visit of HMS Investigator. The symposium will consist of a day's lectures on 9 December 2001 (the anniversary of their first day ashore in New Holland), followed by a day of excursions to sites where Robert Brown and his associates explored during their three-week stay at King George Sound. Suggested topics for the symposium include the principal personnel (Matthew Flinders, Robert Brown, Ferdinand Bauer, Peter Good, William Westall), the *Investigator*, the voyage, the sojourns at King George Sound and Lucky Bay, the collections, the plants, and the art. There will also be papers on the local (i.e. Albany) perspective. If there is sufficient interest the lecture program will be extended over two days. It is likely that a follow-

up function will be held at Esperance, the closest town to Lucky Bay (Bay I of Robert Brown), visited by the expedition in early January 1802. I hope that the tall ship STS *Leeuwin* will be in port at Albany during the symposium and will then incorporate bicentennial activities into its summer sailing schedule along the south coast of Western Australia.

For further information please contact

Alex George

'Four Gables'

18 Barclay Road

Kardinya

Western Australia 6163

Phone (08) 9337 1655

fax (08) 9337 9404

email: ageorge@central.murdoch.edu.au

(please note my new email address)

First Announcement

Joint Conference Society of Australian Systematic Biologists & Australasian Evolution Society University of Melbourne & Museum Victoria, Melbourne 16-20 July 2001

The Society of Australian Systematic Biologists (SASB) and the Australasian Evolution Society (AES) will hold joint meetings at the University of Melbourne and Museum Victoria, Melbourne, 16-20 July 2001. The conference will include contributed papers and plenary sessions with speakers from both societies. Papers are encouraged from across a wide spectrum of systematics and evolutionary biology, and the program will be interdisciplinary wherever possible.

Workshops have been proposed on the new opportunities digital publishing offers to taxonomic and systematic journals in Australia; and on the controversial phylocode. Expressions of interest from those interested in organising other workshops or activities are very welcome; please contact the organisers.

Also included will be a social function and tours of the new Museum Victoria, which will open in late

2000 in Carlton Gardens, adjacent to the historic Royal Exhibition Building and a short walk from the University of Melbourne.

Organisers:

Mark Elgar
The University of Melbourne
Email: m.elgar@zoology.unimelb.edu.au

Robin Wilson
Museum Victoria
Email: rwilson@museum.vic.gov.au

We hope that all evolutionary and systematic biologists will note these dates for their 2001 diaries. Further information, additional contact details, and a call for papers and posters will be provided in the second announcement.

Clunies Ross National Science & Technology Award

The Ian Clunies Ross Memorial Foundation is pleased to announce that the Clunies Ross National Science & Technology Award 2001 is now open for nominations.

Now in their ninth year these Awards have honoured 52 special Australians from every state and territory who have made an outstanding contribution to the application of science and technology for the economic, social or environmental benefit of Australia.

Please note that nominations close on Friday 14 July 2000.

Award recipients will be publicly honoured with a silver medal at a formal ceremony and dinner to be held March 2001 in Melbourne.

Nomination forms are available from:

Mary Bolger
Ian Clunies Ross Memorial Foundation
Suite 505, 89 High Street, Kew Vic 3101
Tel: (03) 9854 6266 Fax: (03) 9853 5267
Email: icr@cnet.com.au or visit our web site at
www.cluniesross.org.au

Legumes Down Under 2001: W.A. *Acacia* post-Conference tour and Symposium

An *Acacia* tour and associated Symposium will be conducted in Western Australia immediately following the Legume Conference in Canberra in July 2001. Because notification of these *Acacia* events was not able to be included in the first Conference Announcement the following brief notes are provided here.

The field trip will traverse the species-rich, semi-arid north-eastern wheatbelt region of W.A. and extend into the adjacent arid *Acacia* shrublands. The route is expected to take in places such as Wongan Hills, Kalannie, Paynes Find, Morawa, Dalwallinu and Moora. Issues relating to species diversity, variation, conservation, utilisation, etc. will be covered.

A 1 day symposium, tentatively titled, The utilisation potential of dry-land Australian acacias, will be held in Dalwallinu, a small township located about 250 km NE of Perth. The following day the tour will return to Perth.

Arrangements are under way with Ansett to obtain discount airfares to and from Perth and possible international connections if required. It is expected that there will be limited seats available on the *Acacia* tour buses.

Further information and registration details will be included in the Registration Brochure for Legumes Down Under 2001.

The tour and Symposium are being supported by relevant government agencies, the Dalwallinu Shire and W.A. tourism groups.

Further information:
Bruce Maslin
W.A. Herbarium
Department of Conservation and Land Management.
Email: brucem@calm.wa.gov.au
Tel: 08-93340515.
Fax: 08-93340515.

NEWS FROM FASTS

The Billion Dollar Investment

FASTS has released a list of spending priorities for science and higher education in Australia.

Professor Sue Serjeantson, President of the Federation of Australian Scientific and Technological Societies (FASTS), said that a new national investment was needed to stimulate new high-wage, high-technology industries in Australia.

"This is a quick list of how to spend one billion dollars to Australia's advantage," Professor Serjeantson said. "It's a lot of money, but the return to Australia will be immense."

"The cost of not making this sort of investment is frightening. What sort of jobs are we going to have in Australia ten, twenty, thirty years from now, if

they are not based on innovative science and technology?"

She said the billion dollar list is designed to flag issues the Government will address in its response to the Innovation Summit (due 30 August) and the Chief Scientist's Capability Review (due November).

"The science community has been very patient with this Government," she said. "We are aware that processes have to be worked through, but every day Australia delays investment in the knowledge-based economy is another day we fall further behind."

"This is a first go at setting national priorities in these areas. We are not talking about a one-off hit, but an amount the nation needs to commit each year."

The list is contained in an article to be published in the Canberra Times tomorrow (Thursday).

How FASTS would spend an extra billion dollars a year in research and higher education:

- Double funds to the Australian Research Council large grants \$100 m
- Improve laboratories and libraries in universities \$100 m
- New scheme to provide major national research facilities \$60 m
- Retraining, HECS relief for new science and maths teachers \$20 m
- Assist libraries with electronic subscriptions to journals \$10 m
- Measures to stimulate careers for younger scientists \$50 m
- Tax credits to stimulate innovative companies \$250 m
- Additional funding for the CRC Program \$50 m
- Priority environmental projects \$40 m
- Boost funding to science agencies (CSIRO, AIMS, AGSO etc) \$70 m
- New commercialisation stimulants \$20 m
- Increase funding to awareness programs, particularly in industry \$20 m
- University salary equivalence for NHMRC and ARC fellowships \$10 m
- Overdue university salary increases (scientists' share) \$200 m

"Science meets Parliament" Day, 2000

I am delighted to announce the dates for "Science meets Parliament" Day for 2000. The event will be held in Canberra on Tuesday October 31 and Wednesday November 1, and again provides an opportunity for scientists and technologists to personally put the case for science to their MPs.

Early November will be an excellent time to approach Parliamentarians. It is the beginning of a Budget cycle, and Parliamentarians will be particularly responsive to issues and concerns from their electorates because 2001 is an election year. As a benefit of membership of FASTS, the event is only open to scientists who are members of Societies or groups affiliated with FASTS.

The Budget to be handed down in May this year is expected to offer few funding initiatives. But the position next year will be different. Not only will the Government be in pre-election mode, but several initiatives affecting science and technology will be coming to fruition. Recommendations from the Innovation Summit will be flowing through the policy-making channels; and the Chief Scientist's review of Australia's science capability will be complete.

Last year 170 scientists and technologists met 140 Parliamentarians, and a report of this day has been posted on the FASTS' web site. There have already been significant shifts on four of our five core issues. These are detailed below.

Both Parliamentarians and scientists clearly enjoyed the event last year. The average meeting

lasted nearly an hour, double the scheduled 30 minutes. Parliamentarians wanted to know how science could help both their electorate and the nation, and were generally impressed by the case for investment in Australia's science and research.

This year we are hoping to increase the number of younger scientists at the event. It may be possible for your Society to sponsor suitable young representatives, or to schedule one of your regular meetings in Canberra for that week. The Australian Institute for Physics held their Heads of Departments meeting in Canberra in the same week, enabling their members to attend SmP Day at a relatively small cost.

Details about registration for the event will follow shortly. In the meantime, could you please publicise the event among your members? I will provide an electronic copy later this week for those Societies with electronic newsletters.

Yours sincerely

Sue Serjeantson

Four issues from the 1999 "Science meets Parliament" Day

Issue: Bringing the Boys (and Girls!) Back Home

There are schemes in place to send Australians overseas but not to bring them back. There are bilateral arrangements with some countries for

scientific travel, but these bilateral schemes do not cater for expatriate Australians.

Response: "I fully support your suggestion for a scheme of fellowships and stipends for expatriate scientists. To encourage further opportunities in this regard I announced at the recent Innovation Summit that I propose to make up to five million dollars from the Technology Diffusion Program available to fund joint proposals from the business and research community to bring the best researchers and innovators to Australia to pass on their knowledge and experience to Australians." (Minister Nick Minchin to Sue Serjeantson, March 6 2000)

Issue: HECs Equalisation

Teachers with tertiary qualifications in science, mathematics and computing begin teaching on the same pay and conditions as all other teachers. Yet they have a greater HECs burden than teachers from the humanities or those from B.Ed courses which attract the lowest HECs rate.

Response: (From the ALP) "A Federal Labor Government will offer scholarships to high-achieving school leavers to study education with a focus on areas of undersupply, currently maths, science and IT. Recruiting high performing students into a teaching career will be a thirty year investment in raising the standard of teaching. The scholarships will be structured so that each teacher's HECs debt will be paid by the Commonwealth Government each year they remain teaching. This means that a teacher would receive about \$1,500 a year for up to ten years, if they stay in the profession." (ALP Shadow Minister for Education, Michael Lee in a speech to the Sydney Institute, Monday March 6 2000)

The Minister for Education is also working to address this issue.

Issue: A National Site-Licence for Academic Electronic Information

The Australian research enterprise is critically dependent on speedy access to global information, including access to scientific and scholarly journals. FASTS supports developing a coordinated national strategy to facilitate access by universities and major research institutions to electronic academic publications.

Response: Minister David Kemp has acknowledged the urgency of the problem, and his interest in assisting the sector to find solutions. A number of investigative studies have been

commissioned by DETYA to contribute to the development of the higher education information infrastructure.

DETYA is looking at a number of overseas initiatives, including Canada's Foundation for Innovation for the national site licensing for electronic journals and databases in identified fields at a cost of around \$50 million; and the Joint Information Systems Committee (JISC) funding of university library infrastructure in the United Kingdom.

Issue: Science for the Bush

The provision of sufficient bandwidth for electronic transmission of information is a major problem for rural and regional Australia. Inadequate bandwidth and slow access speed is a crucial limitation to the uptake of S&T. FASTS calls upon the Government to ensure that rural and regional Australia has access to digital transmission services of comparable bandwidth to those available in metropolitan areas.

Response: The Government recently announced a \$150 million project to provide untimed local phone calls to 37,000 remote phone customers. This will reduce the cost of internet and e-mail access to many people.

The ALP plans to modify its telecommunications policy to widen services to the country to provide access to data services such as the internet. The draft policy will be discussed by the Executive this month, and finalised by July.

Cooperative Research Centres

Every few years, the Government of the day re-examines the future of the CRC Program. This ad hoc arrangement, which results in unpredictable schedules for CRC proposals, does not recognise the long lead time required for building collaborative links that result in high quality proposals and effective business plans. The success of the CRC Program has earned it the right to be established as an ongoing part of the Australian R&D landscape. FASTS suggests that bipartisan support be given to the long term continuation of the Cooperative Research Centre Program.

Response: Applications for a new round close in July 2000. There has been no response from Government or Opposition on the issue of making a regular cycle of applications for CRCs.

Australia doomed to carry "old-economy" tag

Tuesday May 9 2000

Australia's peak council for scientists and technologists said that tonight's Budget confirmed that Australia would continue to wear the "old economy" tag given it by international money markets.

Professor Sue Serjeantson, President of the Federation of Australian Scientific and Technological Societies (FASTS), said that national policy had failed to come to grips with the speed the world is moving.

"The rest of the world is investing in research and innovation while Australia considers reports," she said. "This Budget has not made the necessary investment decisions, and we are falling behind."

"Australia is failing to keep up with the challenges of the knowledge-driven economy. The future lies in industries based on high technology, and this requires investment in research, development, innovation and industry links."

She pointed to a study released yesterday by the University of Melbourne, showing education expenditure by the Government is at its lowest level since 1991-92.

"This Budget should have doubled the funding for the Australian Research Council, which would have helped reverse the decline in funding for Australian universities."

"It should have encouraged more scientists and mathematicians to become teachers, to inspire the next generation. It should have worked to reverse

the decline in R&D by industry, and it should have restored funding stripped out of universities since 1996."

Professor Serjeantson said the Government would excuse its general inaction because it is working through a process. Both the Innovation Summit Implementation Group and the Chief Scientist are scheduled to release major recommendations in the next few months.

"But Australia can't wait until Budget Day in 2001 for the Government to authorise expenditure in these areas. These recommendations should be implemented in a special mini-Budget as soon as they are released," she said.

Professor Serjeantson said the only bright spot in an otherwise gloomy budget was additional funding for medical research, and some sorely needed assistance to the higher education sector.

"Now let's see the Government deal with 'unfinished business' in other areas of science, technology and higher education," she said.

Professor Serjeantson said the Government was pinning too many hopes on stimulating private investment in research and innovation.

"Amending the capital gains tax system is a positive move, and I understand this has led to a healthy increase in venture capital investment in these areas. But the Government has a responsibility to invest in its own right, for all Australians with an interest in the future."



Fundraising Appeal for the Renovation of the Australian Academy of Science Dome

The Academy of Science is raising funds for the renovation of the Dome. Designed by Sir Roy Grounds, the Dome is heritage listed and has been a Canberra landmark since its construction in 1958-59. It is the only Australian building to have won two Royal Australian Institute of Architects awards. The copper dome is larger than St Paul's in London and St Peter's in Rome.

Our goal is to raise \$2.4 million. We are very grateful to Professor John Shine, who contributed \$1,000,000, and the Council of the Centenary of Federation, which contributed \$525,000 towards this goal. These funds will provide:

- silicon treatment to the roof to prevent further leakage
- removal of asbestos, replacement of basement doors and re-insulation of the boiler
- installation of air conditioning
- filtering of water in the moat
- rewiring for power and lighting
- construction of a new plant room and tunnel under the moat for air conditioning, filtration and electrical switchboard
- construction of two additional bridges over the moat
- installation of up-to-date fire detection devices and control board
- works to improve fire safety and containment in the basement
- placement of safety film on glass doors
- addition of stairwell balustrades to meet safety requirements
- upgrading of the kitchen to improve catering
- landscaping of the forecourt and the new plant room.

We are seeking an additional \$875,000 to upgrade the audio-visual and computer projection equipment in the Wark Theatre, respray the vermiculite to cover salt damage to the Theatre ceiling, provide moat lighting, resurface the terrazzo floors, recarpet the Jaeger Room and Bassett Library, and undertake a master landscape plan that incorporates the entire precinct between Ian Potter House (another heritage-listed building) and the Dome.

The Academy welcomes donations of any size, and all donations are tax deductible. The Academy's Council has decided that donors who contribute \$500 or more (\$550 after 1 July) may be acknowledged with a small plaque to be affixed to a seat in the Wark Theatre. The seats are part of the Dome's heritage listing, and the plaques can be inscribed with the donor's name or with the name of another person or organisation that the donor wishes to honour. Donors who provide funding of \$5000 or more may be acknowledged more prominently, and we would be pleased to discuss options with you.

Information about the fundraising campaign is on the Academy website at www.science.org.au/dome. Please contact the Academy's Executive Secretary or Development Officer should you have any queries.

Phone: (02) 6247 5777
Fax: (02) 6257 4620
Email: do@science.org.au



Do you have any souvenirs of the Dome?

The Academy of Science is searching for souvenirs of the Dome that visitors might have picked up on school trips or holidays to Canberra in years gone by. Do you have any that you no longer want?

In May Michael Caton, who starred as Darryl Kerrigan in *The Castle*, launched the nationwide souvenir search, which will continue to December 2000.

“We are encouraging people across Australia to donate to the Academy those marvellously kitsch ashtrays, placemats, fridge magnets, egg cups, trays and beer mugs from the ‘60s and ‘70s that feature an image of the Dome – the sort that Darryl Kerrigan would have proudly displayed in his poolroom,” said Caton.

The souvenirs will first be on display from 6 April to 27 May 2001 at the Canberra Museum and Gallery as part of the Australian Science Festival, the ACT Heritage Festival and celebrations for the Centenary of Federation. They will then be shown on a rotating basis within the Dome.

Although we won’t be able to return the souvenirs, we will show our appreciation by listing the names of donors on our Dome website and in the exhibition.

Please mail your souvenirs of the Academy’s Dome to:

Dome Souvenir Search
Australian Academy of Science
GPO Box 783, Canberra ACT 2601.

Tell us how you came by the souvenir, and let us know your name and address so that we can acknowledge your donation.

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, Wilhelm).

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.

Send orders and remittances (payable to "A.S.B.S. Inc.") to:

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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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This list will be kept up to date, and will be published in each issue. Please inform us of any changes or

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.

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: - an unformatted word-processor file on an MS-DOS or Macintosh diskette (Microsoft Word 6 or an earlier version is preferred), accompanied by a printed copy; as an email message or attachment, accompanied by a fax message reporting the sending of the file; or as two typed copies.

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

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

Notes

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