The Systematics Association

Newsletter

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Contents

From the President

It seems hardly any time at all that I eased my backside into the president's chair but the end of my second year is fast approaching and thoughts are turning to election of a President Elect to be announced at this year's AGM and to take over December 2000. As from the last turnaround we now have elections for this post and so this is to start the ball rolling. Nominations for President Elect should be sent to me by 1st October 1999 and include the name of the candidate,the names of two seconders and about 200 words in a statement on why the candidate is suitable for the job. The statement should be written by the candidate. The nominations will then be circulated amongst the members together with a voting slip to be returned by 20th October to Dr Julie Hawkins, School of Plant Sciences,University of Reading, Whiteknights,Reading RG6 2AS.The tellers are Dr Julie Hawkins and Dr David Williams,Department of Botany,The Natural History Museum,Cromwell Road, London SW7 5BD. The count will take place 21st October 1999.

This year's Annual Address is to be given by Dr Mark Chase,Royal Botanic Gardens, Kew. Mark and colleagues have been extremely active over the last few years working on a classification of Angiosperms incorporating a wealth of new molecular data. Some of the systematic problems they have encountered, such as handling large a data sets,are of general relevance to systematists and I'm sure his talk will be very pertinent to a wide variety of systematists. More details will follow nearer the AGM.

This is the last Newsletter before the Biennial meeting in Glasgow so I encourage you to register soon. Among the open session there are two thematic days: one on Morphology, Shape & Phylogenetics and another on Co-Speciation. Please see separate article below on the Biennial Meeting for further details.

Dr. Peter Forey

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From the Editor

One of the little amusements of systematics is discovering the meaning of names.My own favourite is that of a genus of ammonite, *Rossalites*, named by Ray Casey in his 1961 monograph of the Lower Greensand ammonites.It is a heteromorph ammonite, and the pieces known then were hockey-stick shaped,and rather large and knobbly. Hence the name,from the limerick:

There was a young man from Rossal,
Who found a remarkable fossil.
He could tell by the bend,
And the knob at the end,
'Twas the penis of St. Paul the Apostle.

What I'd like is to start collecting fun or surprising published names of taxa and print them in this newsletter. So please e-mail them to me,and watch this space!

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Council News

Systematics Association Grants 1998/99

The Systematics Association Grants and Awards subcommittee received 41 applications for the 1998/99 round of funding.The total amount requested was £28179, remarkably similar to the £28100 requested from 39 applicants in 1997/98.As usual,the proposed projects covered a diverse array of taxonomic groups,disciplines and methodologies. Applications were received from 16 countries with just over half of the applicants from the UK (25).

To allocate the £6000 of available funding,all of the

projects were reviewed and ranked by a six strong committee comprising Richard Bateman (Royal Botanic Garden Edinburgh),Gordon Curry (University of Glasgow), Pete Hollingsworth, chair, (Royal Botanic Garden Edinburgh),Rod Page (University of Glasgow), Paula Rudall (Royal Botanic Gardens Kew) and Nikky Thomas (Harrison Museum).

Nine grants (22% of applicants) were approved by the Systematics Association Council, for funding totalling £6070 (21.5% of the total requested).The successful projects are:

£700 Michelle van der Bank

Department of Botany, Rand Afrikaans University, South Africa

Molecular taxonomy of the African and Australian Thymelaeaceae

£780 E.Ann Butler

Institute of Archaeology, London,UK

The micromorphology of legume fruits:a study aid to the interpretation of archaeobotanical remains

£500 Stephen Cameron

Department of Microbiology and Parasitology, University of Queensland, Australia

The endosymbiotic ciliates of Western Australian kangaroos and wallabies (Marsupialia:Macropodidae)

£700 David Fewer

School of Biology and Biochemistry, Queens University Belfast,UK.

Disjunct populations of the marine red alga Rhodochorton purpureum

£500 Aneta Kostadinova

Department of Biodiversity, Bulgarian Academy of Sciences,Bulgaria

A molecular approach in assessing species diversity in the trematode genus *Echinostoma* (Digenea: Echinostomatidae)

£290 Lucy-Ann Muir

Department of Earth Sciences,University of Bristol, UK.

A study of graptolite populations from southern Scotland and a cladistic analysis of Llandovery monograptids

£1000 David Roberts

Department of Plant and Soil Science,University of Aberdeen,UK

Reproductive biology and conservation of Mauritian orchids

£1000 Gediminas Valkiunas

Institute of Ecology, Lithuanian Academy of Sciences, Lithuania

Keys for identification of species of bird haemosporidian parasites (Protista:Haemosporida)

£600 Stefanie Zaklan

University of Alberta,Canada

Did the hermit give rise to a king? A phylogenetic view of the Paguroidea (Anomura:Crustacea).

Reports documenting progress in research projects supported by 1997/8 SA grants are now arriving.In this issue of the newsletter, Jason Hilton describes how a Systematics Association grant was used to purchase vital computer hardware for the Chinese Academy of Sciences,Beijing, for digital image capture and computerised plate reconstruction in palaeobotany.

Recent publications stemming from SA grants include:

Luxton,M.(1998) The oribatid and parasitiform mites of Ireland,with particular reference to the work of J. N. Halbert (1872-1948).Bulletin of the Irish Biogeographical Society 22,2-72.

Ogren,R.E.and Sluys,R.(1998) Selected characters of the copulatory organs in the land planarian family Bipaliidae and their taxonomic significance (Tricladida:Terricola).Hydrobiologia 383,77-82.

Sluys,R.(1998) Land planarians (Platyhelminthes, Tricladida,Terricola) in biodiversity and conservation studies. Pedobiologia 42,490-494.

Finally, please note that application forms for the 1999/2000 round of funding can be obtained from October 1st (from Pete Hollingsworth,Chair, Grants and Awards Subcommittee,Royal Botanic Garden Edinburgh,20A Inverleith Row, Edinburgh,EH3 5LR, U.K.) or by downloading the form from the Association Website:

http://www.geology.gla.ac.uk/palaeo/syst99/

Completed application forms must be received by December 31st 1999.

Dr. Pete Hollingsworth

Edinburgh Botanical Garden
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Award Recipients

Li Cheng-Sen and Jason Hilton

An important part of many systematic and taxonomic investigations is the ability to adequately illustrate morphological features,with many studies including high quality photographic prints. However, not every research facility has suitable quality photographic systems,which was the case until recently for the Department of Palaeobotany at the Chinese Academy of Sciences in Beijing. This Department was faced with an antiquated photographic facilities and was plagued by poor quality consumables and excessive running costs, resulting in sub-standard results. After careful deliberation and weighing up the costs involved,the Department opted to try a new solution, employing computerised image capture systems,and

applied to the SA for financial support. In 1998 the SA awarded the Department a research grant entitled "Digital image capture and computerised plate construction in palaeobotany" to alleviate these problems. This permitted the purchase of essential equipment in order to upgrade existing microscope systems using a high resolution video-camera and video capture card attached to an existing computer system. The grant also included the purchase of specific software for image manipulation (Adobe Photoshop) and plate construction (Corel-Draw),as well as a high quality printer for photo-quality output.

Since it has been established this facility has been heavily used and has provided excellent results,and has been used in several recent research programmes. In addition to the positive results,these technologies have reduced previously prohibitive expenditure on photographic consumables and have resulted in an increase in image output. These emphasise the fundamental points behind the application;digital image capture is easy, effective and cheap in comparison to other methodologies and is a versatile way for providing top quality results from a variety of mediums. We are extremely grateful that the Systematics Association made this award,allowing us to open up into new areas of scientific research methodologies. This is now a core facility in our laboratory and will be continue to be heavily used and further developed in the future.

Many thanks,

Li Cheng-Sen and Jason Hilton

Department of Palaeobotany, Institute of Botany, Chinese Academy of Sciences, Xiangshan, Beijing, 100093, P.R.China.

After 18 months working in China, Jason is now based at the Department of Earth Sciences, Cardiff University.

Biennial Meeting — Glasgow, 23rd-27th, August

Abstracts submitted for Talks and Posters at the Biennial Meeting are now available from the Systematics Association WWW site:

http://www.earthsci.gla.ac.uk/palaeo/systass/biennial/biennial.html

The latest versions of these documents as either a *Rich Text* or a *Adobe Acrobat* document. There may be a few glitches initially, but hopefully you will all be able to get access to at least one version of these documents. It all works well for me,but I guess it is optimistic to expect that it will do so for everyone else! If you do have problems, contact me and I will see what I can do. As a final resort,a printed version of all the Abstracts will be distributed at the meeting.

The two thematic conferences to be held at the Biennial now have their own WWW sites.Visit the *Morphology, Shape & Phylogenetics*, and the *Co-Speciation* WWW sites - the links are again on the SA WWW page. Check these out for information on speakers and abstracts.

Don't worry if there are mistakes or omissions - later versions of these documents will incorporate any changes or additions that are sent to me up to the week before the conference. You should visit the site regularly as latest versions will be up-loaded as appropriate over the coming weeks.I will also be putting up a timetable once we have sorted out the details.

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Collaborators needed

Colleagues in the University of Yangon,Myanmar (formely Rangoon,Burma),with whom we are putting together a project on mammal systematics and biodiversity surveys,are looking for an international contact who might wish to collaborate on entomological projects.

Currently one of the staff (Maung Maung Gyi, Lecturer) is working on a species of fruit fly which is a known pest of the kilo guava.The title of the project is:"Investigations on the population dynamics, ecology and genetics of the oriental fruit fly *Bactrocera dorsalis* (Hendel,1912) in Yangon".The University is currently restricted to postgraduate students and is desperately underfunded. That said, the staff and Professor are extremely keen to make international contacts (they see this as the best way of moving their studies forward);they are friendly, knowledgeable and a pleasure to work with.

Anyone who is interested or knows someone who might be interested in working with the Department of Zoology, University of Yangon on related entomological projects should contact Dr Paul Bates, Harrison Zoological Museum (hzm@btinternet.com) or tel/fax 01732-742446.

Recent meetings

Major Events in Early Vertebrate Evolution — NHM, 8th–9th April, 1999.

Back in early April nearly 200 palaeontologists, developmental and molecular biologists descended on the Natural History Museum to attend a meeting organized by Per Alberg of the Palaeontology Department on "Major Events in Early Vertebrate Evolution". During the two day conference,the Flett theatre was bursting with international and national delegates,interested in new questions challenging the way in which we view vertebrate evolution.

The conference was unique in bringing together scientists from fields not normally associated,and as we were informed in the introductory lecture by Per, the two disciplines of palaeontology and developmental biology do in fact have much to offer each other.

Dealing with early vertebrates is tough,many of the of the morphologies are not known to living animals and therefore it is often difficult to understand and interpret the function behind certain structures,as the weird turn into simply bizarre. Included in the latter category is the extinct,mid-Palaeozoic shark Stethancanthus,which has one of the strangest appendages known to vertebrates;a 'spine-brush complex' jutting out of its head. The uniqueness of this appendage has previously been attributed to a plethora of functions,until Mike Coates & Co.at University College London looked hard at the histology and found that it to be a specialized fin-baseplate extension (see *Nature* 396:24-31 December 1998).

Mark Wilson's (University of Alberta) recent discoveries of two Devonian gnathostomes (jawed vertebrates) give enlightening clues towards the developmental patterning and evolutionary origins of paired fins - a story that did not go unnoticed by the weekly journal *Science* (vol.284,23 April 1999). Modern fish have a set of pectoral fins just behind the gills,in addition to a set of pelvic fins located on the belly. Current theories propose that the pectoral fins originated along the belly and migrated upwards. However,Wilson found that the new fossils showed a different picture,as the pectoral fins are located in a similar position to those of modern fish. His explanation that the pelvic and pectoral fins arose independently on two different parts of the body, is currently challenging existing ideas.

Further work also mentioned in Science included that of developmental biologist Georgy Köntges and colleagues at Harvard University, who have applied the knowledge that neural crest cells provide an explanation of the organizational pattern for vertebrate skulls,to the age old question of jaw evolution. By looking at the extant jawless fish,the lamprey, he has been able to trace the cartilage produced from the rhombomeres (discrete compartments in the developing hindbrain from which the neural crest cells emerge).He found that the first and second gill arches are fused,contridicting existing theories,as this structure was originally thought to have appeared only in jawed fishes. Thus, if the gill arches are fused in both lampreys and jawed fish,it seems likely that the first gill arch may not have been an independant structure.Such findings could indeed unravel the mystery of how jaws evolved.All in all exciting times indeed.

Julia J. Day & Dr. Per E.Ahlberg

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Book Review

Evolution, 2nd edition, by Colin Patterson

I agreed to review this book because Colin Patterson always had something interesting to say about evolution. He operated from first principles, rather than from received knowledge,and he had an eye for accuracy and brevity (not an easy combination). Furthermore,his unnerving sense of honesty, could be mistaken for rudeness,if one didn't know better. I remember him approaching me after one particular talk I delivered at a Royal Society Symposium on the genome's contribution (molecular drive) to evolution, roughly 10 years after I had given a similar talk at the Natural History Museum. He said it was beautifully clear, that he understood what I was proposing and the evidence for it,and...he suspects it was the first time that I understood it! There was no offense meant,he was merely pointing out that learning to develop an idea and present it clearly depended on an improved understanding of the originator as much as of the audience.

Colin's 2nd Edition is his testimony to his own improved understanding of what he was trying to say in the first edition and in other material surrounding various exhibits on evolution at the NHM. Patterson takes the opportunity to explain, yet again,with his erudition and persistence,the crucial distinction between process and pattern,something the late Beverley Halstead had failed to understand in his complaints to *Nature*.

Colin's new understanding of the interactive complexities revealed by contemporary genetics of development is summarised in his important statements, for example,that 'there is no gene for third pair of bristles'nor 'for the fourteenth spot on the wing',something that those advocating the pseudoscience of so-called 'evolutionary psychology', with its supposed separate genes for aggression, sexuality, sociability etc etc seem woefully ignorant of. Similarly, Colin's personal aside over natural selection is a pleasure to read 'and when natural selection is generalised as the explanation of all evolutionary change or of every feature of an organism it becomes so all-embracing that it is much the same class as Freudian psychology and astrology'. In other words, selection should not be deduced from patterns of diversity;it is a proposed process of evolution which needs experimental and observational proof one case at a time.

The beauty of this book is that it is the product of a working scientist thinking aloud;as it is said elsewhere,he is a footballer's footballer. At the same time it is also a text,with well constructed figures, which attempts to be as comprehensive and as modern as possible,within the constraint that,as an NHM publication,it would be bought and hopefully read by the eager Great Unwashed,who visit the NHM. It was a particular pleasure to see such a public book provide adequate detailed accounts of neutral theory and genomic events such as gene duplication,etc that underlie life's evolved patterns,as much as natural selection. It was,therefore,with some amazement that I spotted on the back cover, prominently heading a list of features of the second edition "new chapters on neural [!] evolution",instead of neutral evolution. Colin would never have let this error slip by his unerring eye. It is unfortunate that he died before the finishing touches could be put to what is a beautifully thought out text,with personal insights delivered in an English prose that glints with intelligence.

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