

EDITORIAL

Thanks to all of you who commented on the previous edition of the newsletter. Predictably, though embarrassingly, there were a number of typos in Newsletter no. 56, some more serious than others. I hope though that none of you can use me as an excuse not to attend the AGM this November, as a flyer with the correct date went out with Vol. 16, Part 1 of the Journal of Micropalaeontology, and is also included in this edition of the Newsletter. This was just one of a number of deliberate mistakes included in no. 56 to assess how many members actually read the Newsletter, and judging by the number of emails I received, I have no reason to doubt its usefulness. This, combined with Duncan McLean's canny observation on the taxonomic disclaimer (see Letter to the Editor) has led me to at least think about being more careful this time.

I'm glad to see that the book reviews and conference reports have kept rolling in. The **copy deadline** for the next edition of the Newsletter will be **Friday 30th January 1998**, set to allow those of you attending conferences such as PalAss to write up your experiences. As for book reviews, if any of you have in mind a particular book, CD-ROM, or computer package that you would like to review, that has just been, or is about to be published, please contact me and I will see what I can do. I am currently seeking reviewers for the following titles:

- Benton, M. J. 1997: Vertebrate palaeontology (second edition). Chapman & Hall, 452pp. ISBN 0-412-73810-4 (paperback) £24.99.
- Bell, G. 1997: Selection: the mechanism of evolution. Chapman & Hall, 699pp. ISBN 0-412-05521-X (hardback) £55.00.
- Bell, G. 1997: The basics of selection. Chapman & Hall, 378pp. ISBN 0-412-05531-7 (paperback) £29.95.
- Rose, M. R. and Lauder (eds) 1996: Adaptation. Academic Press, 511pp. ISBN 0-12-596421-8. \$34.95.
- Tomas, C. R. (ed.) 1997: Identifying marine phytoplankton. Academic Press, 858pp. ISBN 0-12-693018-X.
- Wright, C. W., Calloman, J. H. and Howarth, M. K. 1996: Treatise on Invertebrate Paleontology, Part L Mol lusca 4 (revised) Volume 4: Cretaceous Ammonoidea. The Geological Society of America, Inc. and The University of Kansas. Boulder, Colorado, and Lawrence, Kansas, 362pp. ISBN 0-8137-3112-7.

Please contact me by telephone, mail or email if you are interested in reviewing any of these titles. At the very least, you get something to help fill up your shelf. As always, contact details appear towards the back of the newsletter.

PHIL DONOGHUE, *Editor*

TREASURER'S REPORT

I am pleased to report that the finances of the Society are in a relatively healthy state. I have paid for Part 1 of this year's Journal and we have sufficient funds to cover Part 2. The vast majority of the 1997 annual subscriptions are now in. The late payment fee that we have introduced this year I think helped with this. Many of our non-UK members have used the credit card facility. The Geological Society Publishing House make quarterly payments in respect of the Library subscriptions which also helps with financial planning. I therefore anticipate that this year's accounts will show, for the first time in some years, a healthy surplus.

JAMES RIDING, *Treasurer*

LETTER TO THE EDITOR

Dear Sir, I notice that the 'taxonomic/nomenclature disclaimer' included in the *Newsletter of Micropalaeontology* continues to be irrelevant to a large part of the Society. May I remind you that nomenclature for the Palynology and Calcareous Nannoplankton Groups is governed by the International Code of Botanical Nomenclature rather than the I.C.Z.N. As far as I can tell the offending disclaimer was first introduced into the newsletter in 1991 (under the editorial pen of a foraminifera worker) and has remained unchanged since. This despite the palynological background of subsequent editors. Although the B.M.S. is in good company in its current practice (the Palaeontological Association likewise ignores the I.C.B.N.), I think that it is time that this omission was rectified in our newsletter. Yours sincerely,

DUNCAN McLEAN *Industrial Palynology Unit, Department of Earth Sciences, University of Sheffield, Mappin Street, Sheffield S1 3JD, UK.*

Dear Duncan, thanks for picking us up on that mistake. Please rest assured that the editor has been undergoing continuous self-flagellation since your letter arrived, and incidentally, that the disclaimer has been corrected accordingly.

BRITISH MICROPALAEONTOLOGICAL SOCIETY ANNUAL GENERAL MEETING

Wednesday 19th November
Anatomy Lecture Theatre, Gower Street, University College London at 2.00 pm

AGM SPEAKERS

Dr Andrew J. Gooday
(Southampton Oceanography Centre)

Modern deep-sea benthic foraminifera: their biodiversity and ecology

Deep-sea biology is an exciting and fast-moving research area. Recently, there have been some major advances in our understanding of ecological processes on the deep-ocean floor, the largest but still least-known habitat on earth. What was previously considered a homogeneous and stable environment is now known to be disturbed on a variety of spatial and temporal scales by processes such as 'benthic storms' and seasonal pulses of organic material originating from primary production in the euphotic zone. Not only do these and other events disturb the seafloor, they also increase the small-scale heterogeneity of the sedimentary environment. This heterogeneity is believed to play an important role in maintaining the surprisingly high levels of species diversity which are a characteristic feature of deep-sea benthic communities. Benthic foraminifera are arguably the most important components of these communities (apart from bacteria) and there have been recent advances in our knowledge of their biology which parallel those in deep-sea biology generically. In this talk I will focus on two main themes; biodiversity and seasonality. The mainly calcareous species preserved in the sedimentary record are just the tip of the foraminiferal diversity iceberg. Modern sediment samples from the ocean-floor may contain over 200 species of benthic foraminifera, many belonging to soft-bodied taxa with little fossilisation potential. These species probably make a substantial contribution to total deep-sea faunal diversity. Seasonal fluctuations in foraminiferal populations have been described from shallow water environments, and more recently from bathyal continental margin sites, but are unexpected in the central oceanic abyss. I will discuss recent evidence suggesting that certain abyssal species have dynamic populations which respond to seasonal phytodetrital pulses. Most of these species are hard-shelled, preservable forms and can be used as seasonality indicators in the palaeoceanographic record. Thus the signal for this and other environmental characteristics seems to be clearly conveyed by fossil foraminifera, despite the fact that these represent a minor component of the original faunas.

Dr Henk Brinkhuis
(Univeristy of Utrecht, The Netherlands)

Dinoflagellates and the K/T boundary: Crisis? What Crisis?

The biotic extinctions associated with the Cretaceous/Tertiary (K/T) boundary have intrigued generations of geologists over the centuries. Prior to the launch of the 'impact theory' by the Alvarez and Smit groups in 1980, libraries were filled with the wildest of theories concerning possible underlying mechanisms of the K/T boundary events. The finding of evidence for an extra-terrestrial impact prompted even more intensive study of the K/T boundary on a world-wide scale, and controversies and associated lively debate have dominated the literature over the last two decades. In this presentation, the K/T boundary will be appraised, including its present definition, and most recent information will be briefly reviewed. Subsequently, the role of organic-walled cyst-producing dinoflagellates (a group of plankton not pushed to extinction at the K/T boundary) will be discussed. Examples will be presented of how this group can be employed to portray environmental changes associated with the K/T boundary events and their aftermath. Finally, results from a multi-disciplinary study of a highly unusual K/T boundary section from the type area of the Maastrichtian Stage (near Geulhem in The Netherlands) will be presented and placed in a global K/T boundary context.

Local Secretary: Professor Alan Lord, Department of Geological Sciences, University College London, Gower Street, London WC1E 6BT. Tel: 0171-380 7131, Fax: 0171-388 7614, Email: dean.maps@ucl.ac.uk

NEW MEMBERS

We warmly welcome the following new members who have recently joined the Society: Gillian Bunting; Kim A. Freedman; Madeline M. Harley; Martin J. Head; Wolfgang Mette; Gary Mullins; William A. S. Sarjeant; D. Paul Watson; James M. Wells and Gwydion Williams.

JAMES RIDING, *Treasurer*

ROBERTSON RESEARCH INTERNATIONAL STRATIGRAPHY PRIZE

In order to emphasise its involvement in the field of geology and to promote its development, Robertson Research International (RRI) established an annual award in stratigraphy in 1992. This RRI Stratigraphy Prize is for the best MSc thesis in the field of stratigraphy in the U.K. The award is directed to those students participating in the MSc courses completed by examination at the universities which hold such courses. Preference is given to those students who work in the fields of micropalaeontology (with an emphasis on stratigraphic and environmental aspects). Further information concerning the scheme may be obtained from Jim Fenton or John Church, Robertson Research International Ltd, Tyn-y-Coed, Llanrhos, LLANDUDNO, Gwynedd LL30 1SA.

OFFPRINTS FROM VOLUMES 1 TO 12 OF JOURNAL OF MICROPALAEONTOLOGY

The sale of the Journal, volume 1 - 12 continues. We have decided to offer individual papers (offprints) for sale from all of these parts aside from Volume 3 (copies of which are in short supply) and Volume 6, part 1 (which is sold out). This aspect is detailed in the advertisement which is reproduced elsewhere in the newsletter. Papers are £0.70 each, which breaks down as 50p plus 20p to cover post and packing. Clients able to collect them from BGS, Nottingham, therefore will be charged only 50p each. This offer, it is anticipated, will attract clients who wish to buy copies of papers they use especially frequently and authors of papers who wish to purchase extra reprints. Authors will be charged 50p per reprint plus post and packing charges. However, papers from parts which have already been broken up will be sold at discounted prices. Furthermore, clients who order in excess of 100 copies (subject to availability) will be offered a substantial discount. Interested parties should contact Jim Riding.

POSITIONS AVAILABLE ON COMMITTEE

There are currently two positions available on committee. These are the posts of Secretary and Publicity Officer. Those wishing to put their names forward for consideration at the AGM in November should contact the acting secretary, Dr A. James Powell, by Wednesday 12th November. Each candidate should have a proposer and seconder.

MEETINGS OF THE BMS

The AGM of the British Micropalaeontological Society will be held on Wednesday 19th November at 2.00 pm in the Anatomy Lecture Theatre, University College London. Members will be asked to vote on new members of The Committee, and after other Society business, there will be two invited lectures. This years speakers are Dr Andrew J. Gooday (Southampton Oceanography Centre); 'Modern deep-sea benthic foraminifera: their biodiversity and ecology'; and Dr Henk Brinkhuis (Univeristy of Utrecht); Dinoflagellates and the K/T boundary: Crisis? What Crisis? The AGM will be followed by the traditional wine reception, held in the Rock Room, Department of Geology, UCL.

MEETINGS OF OTHER BODIES

Fins, fangs and phylogeny: the origin and early evolution of vertebrates. A review seminar held at the Lapworth Museum, University of Birmingham, under the auspices of the Palaeontological Association. The meeting will take place on Wednesday 5th November, beginning at 10.00-10.30. As well as the familiar conodont-turned-fish specialists, speakers will include Dr Henry Gee (Nature) on Garstang, Dr Sebastian Shimeld (Reading) on molecular genetics and the origin of vertebrates, Dr Helmut Wicht (Frankfurt) on extant agnathans, Dr Mike Coates (UCL) on the origin of jaws, Becky Hitchin (Bristol) on Palaeozoic actinopterygians, and Dr Peter Forey (NHM) on lobe-finned fishes. The meeting has been organised by Paul Smith, Ivan Sansom and Philip Donoghue of the School of Earth Sciences, University of Birmingham. For futher details contact either of the above on 0121 414 (4173 - Smith); (6147 - Sansom); (4523 - Donoghue).

8th Plant taphonomy meeting, Cardiff, UK, 15-16th November 1997. The 1997 International workshop on plant taphonomy will be held at the Department of Earth Sciences, University of Wales Cardiff. This is an open, and free, meeting with no formal theme, and will cover all and any aspects of plant taphonomy. The meeting will include several talks and posters. All enquiries about the meeting can be made to Tim Jones jonestp@cardiff.ac.uk (tel: 01222 874 000 ext. 5434; fax: 01222 874 326).

Palaeobiogeography of Australasian Faunas and Floras. This meeting is to be held at the University of Wollongong, NSW, Australia between the 8th-11th December 1997. For further details please contact Tony Wright, School of Geosciences, University of Wollongong, Wollongong NSW 2525, Australia. Tel.: + 61 42 213 329; Fax: + 61 42 214 250; Email: t.wright@uow.edu.au

Palaeontological Association Annual Meeting. This year's Pal. Ass. meeting will take place on 15th to the 18th December 1997 at the University of Wales College Cardiff. The Local Secretaries are Prof. Dianne Edwards FRS (earth@cardiff.ac.uk) and Dr Chris Berry (berrycm@cardiff.ac.uk), Department of Earth Sciences, University of Wales College of Cardiff, PO Box 914, Cardiff CF1 3YE. Tel.: 01222 874264 or Fax: 01222 874 326. This year's post-conference field trips are to the Carboniferous-Jurassic of the South Wales Coast, and Ordovician trilobites of the Builth-Llandrindod inlier and their evolution.

Sixth international conference on modern and fossil dinoflagellates. DINO-6 will be held in Trondheim, Norway from the 7th - 12th June 1998. Themes of the conference include: dinoflagellate evolution; productivity of Recent and ancient seas; biogeography and ocean circulation; dinoflagellates and the climatic record; dinoflagellate habitats; calcareous dinoflagellates; biochemistry and fossil biomarkers; harmful dinoflagellates. For further details please contact the DINO-6 Secretariat, NTNU Museum of Natural History and Archaeology, Attn. Morten Smelror, N-7004 Trondheim, Norway. Tel: +47-73 59 21 47; Fax: +47-73 59 22 23; Email: morten.smelror@vm.ntnu.no Further details are available on the DINO-6 web site: <http://www.ntnu.no/vmuseet/dino6>

The 5th International Palaeobotanical-Palynological Conference is being held at the Polish Academy of Sciences, Kraków, Poland between June 26-30 1998. For further details contact Mgr Grzegorz Worobiec, W. Szafer Institute of Botany, Polish Academy of Sciences, Lubicz 46, 31-512 Kraków, Poland. Fax: (48 12) 21 97 90; Email: worobiec@ib-pan.krakow.pl

Pollen and Spores: Morphology and Biology. London, 6th - 9th July 1998. An international conference of the Linnean Society Palynology Specialist Group (LSPSG) in collaboration with the Royal Botanic Gardens, Kew and the Natural History Museum, London. The conference is timed to coincide with the retirement from Kew of Keith Ferguson, founder and first Secretary of the LSPSG (1974-1987), and founder and Head of the Palynology Unit of the Royal Botanic Gardens, Kew (1972-1998). The programme will be a selection of both invited and contributed papers and posters on the following topics: pollen development, anther and tapetum, pollen - pollinator interactions, pollen - stigma interactions, pollen morphology in systematics and evolution, ultrastructure (fossil and living groups), pre-Cretaceous palynology, Cretaceous palynology, Tertiary palynology, Quaternary palynology, pollen and archaeology, preparation and techniques. For further details contact Lisa von Schlippe, Tel: 0181-332 5198, Fax: 0181-332 5176, Email: l.von.schlippe@rbgkew.org.uk, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB.

The 5th International Symposium on the Jurassic System is organised by the IUGS Jurassic Subcommittee and will be held in Vancouver, B.C., between 17th-20th August 1998. There will be pre- and post-meeting field trips to the Canadian Rockies, the Coast Mountains, the Queen Charlotte Islands, and Nevada. For further details contact Paul L. Smith, Earth and Ocean Sciences, University of British Columbia, 6339 Stores Road, Vancouver, B.C. V6T 1Z4, Canada. Tel.: (604) 822-6456; Fax: (604) 822-6088; Email: psmith@eos.ubc.ca The symposium website is located at <http://www.eos.ubc.ca/jurassic/announce.htm>

CONODONT GROUP

This will be my last group report as Secretary of the Conodont Group. Following the AGM in November, Gail Radcliffe (University of Durham), will be taking over from me. I will be replacing Ivan Sansom (University of Birmingham) as Chairman. I would like to thank Ivan for all the work that he has put in over the last four years as Secretary (1993-1995) and Chairman (1995-1997).

Over the summer, members of the Conodont Group have been very active on the conference front. Dick Aldridge (University of Leicester) gave a plenary talk on Conodont Palaeobiology at the Fifth International Congress of Vertebrate Morphology at Bristol 12-17 July. Mark Purnell (University of Leicester) and Phil Donoghue (University of Birmingham) also spoke. St Petersburg proved to be a popular place for British conodont workers this summer. Dick, Mark and Steph Barrett (also Leicester University) were there for the WOGOGO meeting in July. Please don't ask me exactly what WOGOGO stands for. I had several different answers to my questions on the subject. I understand that it has something to do with a working group on the Ordovician of the Baltic. Steph presented a poster and Mark took the opportunity to visit Tania Tolmacheva. Giles Miller (Natural History Museum) was also in St Petersburg in September to present a talk at the IGCP 406 project meeting on the Canadian Arctic. Phil Donoghue gave his second talk of the summer at the Society for Vertebrate Palaeontology and Comparative Anatomy meeting in Derby this September.

Dick Aldridge and Steph Barrett travelled to Estonia at the end of July to chat to Viive Viira and Peep Männik (Estonian Academy of Sciences, Tallinn) about Ordovician prionodontids and early Silurian conodonts. They also carried out fieldwork where Steph collected samples in an attempt to find that illusive level which has *Eoplacognathus* and nothing else so that she can continue trying to reconstruct the apparatus and its function. Phil Donoghue travelled to Edinburgh to look at museum collections and at the time of writing this article was planning a trip to Washington to do the same. While most of the Conodont Group were travelling over the summer, Kim Freedman (University of Leicester) was confined to Leicester to monitor her decomposing Branchiostoma experiments and travelled to London occasionally to look at *Jamoytius* at The Natural History Museum.

Coming soon to the Conodont Group...

Paul Smith, Ivan Sansom and Phil Donoghue are hosting the Winter Pal. Ass. review seminar on the first 100 Ma of

vertebrate evolution. Andrew Swift (University of Leicester) will be leading the next Christmas Conodont Group Field trip. There will be a group meeting on the morning of Monday 18th December followed by an afternoon excursion to coastal exposures in the Penarth-Lavernock Point area around Cardiff. Further details will have been posted on the BMS web site (<http://www.nhm.ac.uk/bms/conod.htm>) by the time this article has been published.

Congratulations to Phil Donoghue who obtained his Ph.D. in February. Most of his thesis should be published this year; two papers with Mark Purnell on ozarkonid architecture (Phil. Trans Royal Society & Palaeontology) and one single author paper on conodont growth (Phil. Trans Royal Society). Dick Aldridge has been nominated as the next Chief Panderer, and will take up the post in 1998. Mark Purnell reports that the latest edition of the Pander Society Newsletter is now up on the web site. Please note the Pander Society web site address has changed. It is now at <http://www.le.ac.uk/geology/map2/pander/intro.html>. All that remains is to wish Gail Radcliffe all the best as the new secretary. She will be contacting you for your contributions in the new year if not before.

C. GILES MILLER *Dept. of Palaeontology, The Natural History Museum, Cromwell Road, South Kensington, London SW& 5BD*

FORAMINIFERA GROUP

With many BMS Foraminifera Group members in the field, summer might be regarded as a slow time for foram news. Not so. New project results are coming in, the Fall meetings are almost upon us, and the utility of the world-wide web for accessing on-line foraminiferal information/resources continues to grow.

Norman MacLeod recently returned from a field trip to Belize whose purpose (in part) was to evaluate the potential of this British Protectorate for future micropalaeontological research. Very little is known about the geology and paleontology of Belize with most stratigraphic data being "projected" into the country from better-studied sections in Mexico, Guatemala, and Honduras. MacLeod's efforts focused on the southern part of the country where macrofossil and microfossil localities had been found by Dr. Brian Holland of Belize Minerals Ltd. Fortuitously, the Belize government is currently engaged in an extensive roadworks project in southern Belize and there are a large number of new roadcuts expos-

ing a variety of lithologies that would otherwise have been very difficult to sample. Preliminary results suggest that southern Belize contains a long and fairly continuous Upper Cretaceous section with abundant shallow-water foraminiferal faunas in the numerous limestone beds. Macrofossils are also locally abundant with a number of well-preserved rudistid bioherms having been located by Dr. Holland. It is hoped that these sediments will also prove to contain foraminiferal faunas.

A number of meetings of interest to foraminiferal specialists are planned for the coming Fall. Highlights include:

Annual Meeting of the Geological Society of America, 20-23 October, Salt Lake City, Utah. (see <http://www.geosociety.org/meetings/97/index.htm>)

Micropaleontology of the Cretaceous Western Interior Seaway: Integration of the Tethyan and Boreal Record. Monday, October 20. Cushman Foundation Symposium organized by David H. McNeil and Mark Leckie.

Process from Pattern in the Fossil Record. Tuesday, October 21. Paleontological Society Symposium organized by Frank K. McKinney, Jeremy B. C. Jackson, and Scott Lidgard.

Late Ordovician Mass Extinction — Silurian Recovery and Associated Perturbations of Global Earth Systems. Wednesday, October 22. Organized by Stanley C. Finney, William B. N. Berry, and Walter C. Sweet.

Eighteenth Regional European Meeting of Sedimentology, 2-4 September, Heidelberg.

Second European Meeting on the Palaeontology and Stratigraphy of South America. Organized by Peter Bengston and Heinrich Bahburg. (see <http://ix.urz.uni-heidelberg.de/~dc8/geo/1st-sam.html>).

Regional Meeting of IGCP Project 381 "South Atlantic Mesozoic Correlations." Organized by Peter Bengston. (see <http://ix.urz.uni-heidelberg.de/~dc8/geo/1st-381.html>)

Biotic Recoveries From Mass Extinctions, 12-14 September, Prague. (see <http://www.gli.cas.cz/conf/recovery/recovery.htm>). Paleontology in the 21st Century Workshop (An International Senckenburg Conference) 3-10 September, Frankfurt Germany. (see <http://www.nhm.ac.uk/paleonet/paleo21>)

The last meeting is of particular interest because of its topic (the future of palaeontology), its broad scope, and its unusual format. Micropaleontology (esp. foraminiferal micropalaeontology) will be the focus of many sessions ranging from industrial biostratigraphy to electronic publications. Because of this meeting's delegate format it is important for all BMS members to read over the materials provided in the Paleo21 WWW site and make their views known to the coordinators of the various subtopics.

Finally, there is a new monograph on Quaternary benthic foraminifera that has been published by the Geological Survey of Canada.

Patterson, R.T., Burbidge, S.M. and Luternaur, J.L. 1997. An Atlas of Common Quaternary Shelf Benthic Foraminiferal Species From Off the Coast of British Columbia. Geological Survey of Canada Bulletin.

Information on this publication can be accessed at the following address: <http://superior.carleton.ca/%7Etpatters/Books.html>.

NORMAN MACLEOD, *Dept. of Palaeontology, The Natural History Museum, London SW7 5BD.*

NANNOFOSSIL GROUP

The Nanno group have been fairly active in recent months with a field trip and a research meeting. This year's field trip was to Boulonnais in Northern France in the early part of March. The trip was attended by a jolly crowd including Jeremy Young, Jackie Burnett, Paul Bown, Andy Howard, Nicky Hine, Matt Hampton, Sarah Ford and Pat Quinn. Having struck lucky with the weather we visited various localities along the coast, taking in some good geology, wine, cheese and of course the tarts should get a special mention.

On the strength of this trip we will probably run another next year so look out for details on "coccolithnet" or in the next newsletter.

The research meeting held at the Natural History Museum in May was a well attended success which we again hope to make an annual event. In all we had five speakers talking on a wide variety of topics.

Firstly Andy Howard from UCL outlined the details of his research which involves a morphometric study on



'Il y'a une belle tarte' - the nanno-group gad about in northern France

Late Cretaceous Arkhangelskiellids. Next up was Toby Tyrell from Southampton who talked on the effect of light intensity on *Emiliana huxleyii*, and its effect on light in the water column. The next talk was by Glyn Gorrick, a freelance science illustrator from Cambridge. He brought along some of his paintings which he talked us through, some of which include coccoliths and their part in the carbon cycle.

After refreshments Pat Quinn from Sheffield explained his research in which he is trying to provenance nannofossils from ceramics, and establish what they may reveal about inter island trade in the Bronze age.

Finally, Jeremy Young brought the formal proceed-

ings to a close with his talk on chirality in coccoliths, demonstrating how much of a pervasive feature this is and how it can aid identification and taxonomic relationships. Discussion continued afterwards in the Bar.

Anyway, lookout for future events or get in touch if you think we're not getting through, we'd especially like to hear more from nanno workers in Wales and Scotland.

MATTHEW HAMPTON, *Network Stratigraphic Consulting Ltd., Unit 57, The Enterprise Centre, Cranborne Road, Potters Bar, Herts EN6 3DQ.*

Email: 100710.1020@compuserve.com

OSTRACOD GROUP

Since the trip to Ludlow this Easter the Ostracod Group has been relatively quiet. ISO'97 the International Ostracod Symposium is being held in Greenwich this July, a preview of which is included at the end of this report. A full report of ISO'97 will appear in a later edition of the BMS newsletter. This group report takes the form of an update to let everyone know

what other individuals have been getting up to in the last few months. Watch this space for news of the next Ostracod Group event.

Congratulations to Ian Slipper (Greenwich) who was awarded his Ph.D. after being examined by David Siveter (4/7/97). A copy of Ians thesis abstract can be found at the end of this article. Ian has agreed to become the next Ostracod Group secretary, and will officially take up the post after ISO'97.

I should like to take this opportunity to thank, on behalf of the group as a whole, Mark Williams (BGS) for his sterling work as group secretary for the last two and a bit years. Jonathan Holmes (Kingston Uni.), along with Jim Marshall and Jan Bloemendal (both Liverpool Uni.) and Nigel Richardson (Edge Hill Uni.) have recently been awarded £170k for a project entitled 'High resolution lacustrine record of Holocene climate change'. This 3 year project funded by NERC starts this September, and is a multidisciplinary study of Holocene lake sediments from N. Lancashire. Jonathan, predictably, will be dissolving all the ostracods in order to look at their stable isotope and trace element chemistry. Jonathan will be looking to fill a 21 month research assistant post sometime this autumn, to start in January 1998.

Mick Frogley, for those not at Ludlow, has been awarded a 3 year research fellowship with St. John's College, Cambridge (October 1996). Micks work will follow on from his thesis studies on Quaternary lacustrine successions from NW Greece.

Alasdair Bruce (supervised by Dave Horne Snr. and John Whittaker) will be coring Holocene sediments from the Fleet in late July. He will be ably assisted by the Royal Engineers.

Giles Miller (BMNH) is currently looking at some Wenlockian ostracods from the Canadian arctic, and will be visiting St. Petersburg this September to talk at the IGCP 406 conference on said Canadian realm.

Nicky Johnson (alias Tinker-bell) submitted her Ph.D. thesis (Ostracod biogeography during the Cenomanian-Turonian Oceanic Anoxic Event in Europe) at the University of Greenwich in September 1996. Less than 48 hours later she was in Madrid, Spain to work for three months on the European Network Project 'Evolutionary Ecology of Reproductive Modes in Non-Marine Ostracoda'. Nicky was working with Angel Baltanas and Walter Geiger assisting with the database part of the network project, and on the morphometrics of sexual and parthenogenic populations of *Limnocythere inopinata*. The work included sample collection, lab preparation and computerised data collection for analysis. Nicky also attended a full network meeting of the EU Project in Parma, Italy. Thesis abstract given below.

On the 17th February this year Nicky had her Ph.D. thesis viva in London at the Natural History Museum with Prof. Robin Whatley, Prof. Andy Gale, Dr Florence Lowry and Dr David Horne present. Nicky was awarded her Ph.D. and had a slap-up meal in an excellent Italian restaurant afterwards.

Nicky started a 3 year work contract with the British Antarctic Survey in Cambridge as a Geological Data Assistant at the beginning of July. The job remit is to update, maintain and develop the use of BAS' central geological database. Nicky can be contacted at work in the following ways:-

Snail-mail: Nicola Johnson, Geoscience, British Antarctic Survey, High Cross, Madingley Road, Cambridge CB3 0ET. Email: najo@pcmail.nerc-bas.ac.uk or N.Johnson@BAS.AC.UK
Tel: (Direct Line): 01223 251439; Fax: 01223 362616

OSTRACOD BIOGEOGRAPHY DURING THE CENOMANIAN-TURONIAN OCEANIC ANOXIC EVENT IN EUROPE

Nicky Johnson

ABSTRACT

Podocopid ostracods from the Plenus Marls at sites in England show stepped extinctions through an interval marked by a strong positive carbon stable-isotope excursion, corresponding to the Cenomanian-Turonian Oceanic Anoxic Event (CTOAE). Platycofid ostracods, however, do not appear to be affected. Ostracods, benthonic crustaceans with no pelagic stage in their life cycles, may offer a unique insight into water mass distributions and circulation patterns during the CTOAE interval, which lasted approximately 100,000 years. From a detailed literature review concerning the CTOAE and Plenus Marls, two opposing theories are recognised. These are that either the Oceanic Anoxic Event (OAE) resulted from a transgression and expansion and intensification of the Oxygen Minimum Zone (OMZ) or from a regression coupled with climatic cooling. The distribution data of 48 species of ostracoda from samples collected across southern England from Compton Bay (Isle of Wight), White Nothe (Dorset), Beggars Knoll (Wiltshire), Pitstone (Chilterns), Sewell (Chilterns) and from Menoyo (northern Spain), Baddeckenstedt and Wunstorf (northern Germany) is presented. Correlation of the southern England Plenus Marls stratigraphy to Spanish and German sections is problematical and therefore relies heavily on the foraminifera *Rotalipora cushmani* and the belemnite *Actinocamax plenus*. The discovery of the virtual absence of Cytherelloidea from English sections has led to a detailed study of the global palaeobiogeography and biogeography of this genus and initial conclusions challenge the commonly held view that it is a warm-water indicator. After detailed studies and analyses of the palaeobiogeography of all the ostracod species recovered across southeast England, clear biogeographical changes

are evident through the Plenus Marls. It is felt that the ostracod data neither fully supports nor disproves either of the opposing theories. The data, when coupled with the δO^{18} data, would appear to be best explained by an Oceanic Anoxic Event (OAE) induced by warm climate conditions leading to a brief cooling in the climate closer to the Cenomanian-Turonian boundary. This, in turn, probably terminated the OAE.

TURINIAN OSTRACODA FROM SOUTHERN ENGLAND

Ian J. Slipper

ABSTRACT

Ostracod assemblages from samples collected through the Turonian Stage of the Late Cretaceous from Dover, Kent, south-east England, consist of one hundred and three species group taxa. These are described and illustrated. This represents a significant increase in the knowledge of the Turonian fauna, since previous estimates of the number of species present during the Turonian are less than thirty.

This improvement has been brought about by the selection of an appropriate processing method. Freeze-thaw processing is recommended for chalks and hardgrounds which comprise much of the Turonian Stage. The white spirit, solvent method is shown to be preferable for marls.

Nineteen species and six subspecies are here described as new: *Polycope lunaplena* sp. nov., *Cytherella vulna* sp. nov., *Cytherella weaveri* sp. nov., *Cytherelloidea granulosa parca* ssp. nov., *Cardobairdia longitecta* sp. nov., *Bairdoppilata turonica* sp. nov., *Pontocyprella robusta cometa* ssp. nov., *Pterygocythereis* (*Diogmopteron*) *carolinae* sp. nov., *Bythoceratina* (*Bythoceratina*) *saxa* sp. nov., *Bythoceratina* (*Bythoceratina*) *staringi conmacula* ssp. nov., *Monoceratina minangulata* sp. nov., *Patellacythere weaveri* sp. nov., *Schuleridea langdonensis* sp. nov., *Karsteneis nodifera tabasca* ssp. nov., *Karsteneis oculocosta* sp. nov., *Karsteneis petasus petasus* sp. et ssp. nov., *Karsteneis petasus antecursor* sp. et ssp. nov., *Karsteneis praekarsteni* sp. nov., *Idiocythere caburnensis* sp. nov., *Isocythereis postelongata* sp. nov., *?Mauritsina paradordoniensis* sp. nov., *Rehacythereis stellatus* sp. nov., *Rehacythereis venticursus venticursus* sp. et ssp. nov., *Rehacythereis venticursus patbrowni* sp. et ssp. nov. *Bythoceratina* (*Bythoceratina*) *antetumida* is introduced for a secondary junior homonym. By comparison with the faunas from Devon and the Czech Republic, the biostratigraphical analysis is shown to have only local significance due to diachronism of the first appearances

of the ostracods. This diachronism is used to explore migration pathways which suggest that the origin of the Turonian ostracod fauna may have had more than one source.

A model relating ostracod diversity inversely to sea-level is given for the Cenomanian to Santonian stages of the Late Cretaceous, which suggests that the sea-level at Dover during the Turonian, was greater than previously thought, given its marginal setting.

13th International Symposium on Ostracoda University of Greenwich 27th-31st July 1997

-Preview-

From 27th to 31st of July the School of Earth and Environmental Sciences at the University of Greenwich will host the 13th International Symposium on Ostracoda (ISO'97), under the Chairmanship of Dr. D. J. Horne. Currently there are 111 registered attending delegates, 8 non-attending delegates and 19 accompanying family and friends; from America, France, Poland, Austria, Italy, Israel, Peoples Republic of China, Japan, Germany, Turkey, Holland, Czech Republic, Sweden, Spain, Canada, Belgium, Brazil, India, Yugoslavia, Luxembourg, Australia, Portugal and Wales.

The symposium organising committee comprises Dr. David J. Horne (University of Greenwich), Prof. Alan Lord (University College, London), Dr. Ian Boomer (University of East Anglia), Dr. Jonathon Holmes (Kingston University) and Dr. Ian Slipper (University of Greenwich), conference treasurer. The aim is to have three days of scientific sessions, each with a focused theme, and keynote speaker. Each theme will then go forward to be published in a special issue of an international journal, which will present our work to much wider audience. The three themes are:

- 1) Non-marine Ostracoda: evolution and environment.
Keynote speaker: Dr Patrick De Deckker (Australian National University, Canberra):
Non-marine ostracods: Providers of information on evolution and environments.
- 2) Marine Ostracoda and global change,
Keynote speaker: Dr Tom Cronin (US Geological Survey, Reston, USA):
Ostracoda in Paleoclimatology: Appreciated but under-utilised.
- 3) Evolutionary biology and ecology of Ostracoda.
Keynote speakers: Dr Roger Butlin (University of Leeds, UK) & Dr Paolo Menozzi (University of Parma, Italy) :

Open questions in evolutionary ecology: Do ostracods have the answers?

Papers submitted to the organising committee have been through a preliminary round of reviewing before being accepted for presentation at the symposium, in order to ensure presentations of high scientific quality. A further round of reviewing will be carried out by the journals concerned: *Marine Micropaleontology*, *P3*, and *Hydrobiologia*. There are also, at present, 36 posters which will be presented during the meeting. Several workshops have been proposed which concentrate on the use of video technology in ostracodology:

- A demonstration of Video-microscopes by Euromicrovision.
- Video techniques in the study of live specimens (K. Abe, D. Horne, J. Vannier).
- Demonstration of NODE The Non-marine ostracod database for Europe (D. Horne).

There are three field excursions associated with the symposium, two beforehand, and one after. Trip 1 on Friday 25th July will visit the Cretaceous marine Gault and Chalk of Kent, concentrating on the sections around Folkestone and Dover. Trip 2 on Saturday 26th July will collect living freshwater, brackish water and marine ostracods from the north Kent coast and the Stodmarsh nature reserve. One of the video workshops on Sunday 27th will study live collections from the previous day. On the final trip we plan to visit some of the classic Palaeozoic, Mesozoic and Tertiary British localities studied by T. R. Jones during his working life. The field trip will leave Chatham on Friday 1st August for a five day journey by minibus. The participants will spend two nights in Ludlow near the Welsh Border, staying in the renowned "Feathers Hotel", one night in Bath and one night in Swanage on the Dorset Coast, travelling back to Chatham via Charing in Kent.

To cater for family and friends during the scientific sessions a family program has been arranged, which will make visits to Canterbury, Central London and Leeds Castle. All participants, however, are invited to join in the mid-symposium excursion on a guided tour of the City of Rochester, which will be followed by a civic reception.

All delegates will be staying in the University halls of residence, and will make use of the restaurant facilities during the week of the symposium. Due to the en-

thusiastic response of the scientific community, the organisers have had to move the scientific talks to a larger venue, the St. Georges Centre. The original venue in the Jellicoe Building will house the poster sessions, registration and help desk, tea and coffee, workshops and displays from publishers Elsevier, the British Micropalaeontological Society and Stuart Baldwin second hand and antique scientific books.

<http://www.uea.ac.uk/~e387/2circulr.htm>
up to date information

<http://www.uea.ac.uk/~e387/3circulr.htm>

IAN SLIPPER, *School of Earth and Environmental Sciences, Medway Campus, University of Greenwich*. Email: i.j.slipper@greenwich.ac.uk

PALYNOLOGY GROUP

The retirement of Dr. E.G. (Ted) Spinner from the University of Sheffield was marked by a reunion of Sheffield palynologists on the 14th of June 1997. The reunion dinner was attended by more than 80 colleagues and ex-students who have passed through Sheffield over the years. Some arrived from as far afield as Australia and California. Messages of appreciation of Ted's contribution to palynology were received from a further 50 people. Ted has remained a member of the B.M.S. since its inception in 1970. Although never taking office he has actively supported the Palynology Group in its various guises, and successfully encourages his students and colleagues to do the same. One of Ted's achievements is to have been the author of the first paper concerning Carboniferous microfossils to appear in the Society's *Journal of Micropalaeontology*. How fondly we all think of *Triangulipapillaesporites*! Since the mid 1980's Ted steered the Sheffield M.Sc. course in Palynology through thick and thin (though most of the students were pretty clever). Under his guidance the course survived the leanest of times for oil prices, numerous funding and research reviews and has outlived several courses provided by competing institutions. Despite uncertainties in the prospects for Higher Education, Ted leaves the Sheffield Palynology school in a strong position for the future. I am sure that the wider palynological community within the B.M.S. will join with those of us from Sheffield in recognising a debt of gratitude to Dr. Spinner.

The reunion presented an opportunity to update colleagues on recent developments. Not only has Sheffield University's Centre for Palynological Studies received a new slimline name to become the Centre for Palynology,

it also has a new director in the guise of Associate Professor Bernard Owens and a new lecturer in Palaeozoic palynology: Charles Wellman. Charles comes to us without any previous experience of life in Yorkshire but has been warmly received by the 'Sheffield Mafia'. His appointment coincides with the promise of relocation of the Centre to purpose-built offices and laboratories. Building work is ongoing and the move is expected to be complete for the next postgraduate academic intake.

The international conference '*Biostratigraphy in Production and Development Geology*' was held in Aberdeen in June. The conference was notable in bringing together exploration company g&g personnel and biostratigraphers, including many members of the Palynology Group. Most papers presented were not surprisingly focussed on applications in the North Sea. The following were of specific note for palynologists: Cullum '*A multidisciplinary approach to palynological studies in Arctic Canada*'; Duxbury, Kadolsky & Johansen '*Sequence stratigraphic subdivision of the Humber Group (Late Jurassic - Ryazanian) in the Outer Moray Firth (UKCS, Central North Sea)*'; Jones & McLean '*Application of rapid microwave preparation to palynology in production and development drilling*'; Gaponoff & Nelson '*Albian palynology of the Pinda Formation, Cabinda, Angola: time and environmentally controlled approach to a palynological zonation*'; Mangerud, Soyseth, Dreyer, Martinsen & Ryseth '*Biostratigraphic field study of the Palaeogene succession in the Hermod area, PL169, Norwegian North Sea*'; McLean & Davies '*Constraints on the application of palynology to the discrimination of Euramerican Late Carboniferous hydrocarbon reservoirs*'; Morley '*Biostratigraphic characterisation of systems tracts in low latitude Tertiary sedimentary basins*'; Simmons, Bidgood & Brenac '*The potential for high resolution correlation and palaeoecological interpretation of the Neogene successions of northwest Borneo*'; Van der Zwan & Brugman '*Biosignals from the EA Field, Nigeria*'.

The Palynology Group is to have a new secretary in the very near future. Three members have expressed an interest in the post and, as there is no Group meeting planned in the next few months, a postal ballot will be held in order that the new secretary can take over at the B.M.S. Annual General Meeting. All group members should receive ballot papers to be returned to the Group chairman, David Jolley. Anyone who does not receive a paper should contact the current Group secretary. The candidates are: Dr. Paul Dodsworth (Robertsons, Aberdeen), Dr. Gary Mullins (University of Portsmouth), and Dr. Sandy Smith (Shell UK, London)

DUNCAN McLEAN, *Industrial Palynology Unit, Department of Earth Sciences, University of Sheffield.*

*Journal of Micropalaeontology***SALE OF BACKPARTS OF VOLUMES 1 TO 12**

The BMS holds stocks of backparts of Volumes 1 to 12 of the *Journal of Micropalaeontology*. The Journal was instigated in 1982 and has rapidly developed into one of the leading journals in the field; the subject matter and geographical scope varies widely and all microfossil groups are well represented. Society members, non-members and institutions may purchase backparts of Volumes 1 to 12 inclusive for £2.20 each including second class postage. Domestic postal charges are significantly less, the more copies are ordered, for example, full sets in the UK are £28 (£20 + £8 for parcel post and packing). Overseas clients should remit £3.50 per part inclusive of surface mail postage. Pre-payments are acceptable, but clients (especially from continental

Europe and overseas) are advised to request an invoice to avoid over- and under-payments. The parts are £1 each exclusive of postage, therefore clients able to buy them direct from the Secretary (address below) can make substantial savings. Individual copies (offprints) of papers are available at £0.70 each inclusive of (domestic) postage and packing. Authors of papers wishing to purchase multiple copies should direct enquiries to the Secretary; bulk discounts are available on papers from certain parts. Please indicate the parts you require in the left hand column below; a tick will indicate one copy. Should you wish to order multiple copies, please clearly indicate the number you require.

___ Volume 1	(July 1982)	Seventeen papers, 153 pp.
___ Volume 2	(July 1983)	Fourteen papers, 117 pp.
___ Volume 3, Part 1	(March 1984)	Thirteen papers, 82 pp.
___ Volume 3, Part 2	(September 1984)	Twelve papers, 128 pp.
___ Volume 4, Part 2	(August 1985)	Thirteen papers, 187 pp.
___ Volume 5, Part 1	(April 1986)	Fourteen papers, 114 pp.
___ Volume 5, Part 2	(December 1986)	Eleven papers, 106 pp.
___ Volume 6, Part 1	(May 1987)	SOLD OUT.
___ Volume 6, Part 2	(November 1987)	Ten papers, 121 pp.
___ Volume 7, Part 1	(May 1988)	Thirteen papers, 109 pp.
___ Volume 7, Part 2	(December 1988)	Nine papers, 138 pp.
___ Volume 8, Part 1	(June 1989)	Thirteen papers, 130 pp.
___ Volume 8, Part 2	(December 1989)	Ten papers, 117 pp.
___ Volume 9, Part 1	(May 1990)	Ten papers, 114 pp.
___ Volume 9, Part 2	(March 1991 for 1990)	Seventeen papers, 141 pp.
___ Volume 10, Part 1	(August 1991)	Fifteen papers, 114 pp.
___ Volume 10, Part 2	(December 1991)	Eleven papers, 120 pp.
___ Volume 11, Part 1	(June 1992)	Eleven papers, 105 pp.
___ Volume 11, Part 2	(December 1992)	Fifteen papers, 137 pp.
___ Volume 12, Part 1	(August 1993)	Thirteen papers, 139 pp.
___ Volume 12, Part 2	(December 1993)	Ten papers, 114 pp.

I wish to order _____ parts @ £2.20 each (£3.50 overseas), inclusive of second class postage.

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I enclose remittance of £_____ Cheques should be in £-sterling and made payable to 'The British Micropalaeontological Society'.

I do/do not require a receipt (delete as applicable).

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Jim Riding, British Geological Survey, Keyworth, NOTTINGHAM, Nottinghamshire NG12 5GG

BIOSTRATIGRAPHY IN PRODUCTION AND DEVELOPMENT GEOLOGY

The Geological Society's Petroleum Group organized a two day international meeting on 16th and 17th June 1997 at the magnificent King's College Conference centre of Aberdeen University. The meeting was well attended and a full programme of talks and posters divided into a North Sea theme on the first day (predominantly Paleogene and Chalk) and a more international aspect on the second. Unfortunately I was unable to attend the second day, so my comments are necessarily incomplete. The talks on the first day were of diverse quality and interest, but by and large the theme of 'Production and Development Geology' was honoured.

The day started off with a lecture by Andrew Hurst of Aberdeen University (Challenges in Production Geoscience) and was followed by Mike Bowman (a non-biostratigrapher - not even an avocational one) of BP Exploration who presented a stimulating key note talk entitled 'The role and value of 'High Impact Biostratigraphy' in reservoir appraisal and development' (evidently High Resolution Biostratigraphy is passé). The talk gave an interesting perspective on the impact of biostratigraphy to business needs and was naturally enough peppered with buzz words (e.g. Perfect Vision, Perfect Targeting, Perfect Profile, etc). Some of Bowman's remarks were curious. For example, he suggested that 10 years ago the perception of biostratigraphy was as a low impact discipline, broad brushed, unfocussed and lacking in integration, and of most use as a fairway analysis tool. Although it is clear what he meant, it is a little misleading - what has changed most, perhaps, is the amount of time and care that biostratigraphers give to data generation (improved taxonomy, identification of local influxes, recognition of contemporaneous reworking, etc - hardly new concepts). However, the biggest undeniable impact over the last ten years or so has come through the rise of graphic correlation (although not so much in Production and Development) and the popularity of rig-site biostratigraphy (particularly in the realm of horizontal wells and that curious term 'biosteering'). After his preamble, Mike Bowman concluded his key note presentation with some interesting case histories: Donan Field (Perfect Targeting), Forties Field (Perfect Vision) and Andrew Field (Perfect Profile).

Other talks of note included Pete Morris (Microstratigraphic Services) on the difficulties of biostratigraphy in the Magnus Field (recognition of facies faunas related to switching off of sand deposition) and Matt Wakefield (British Gas) on probabilistic

biostratigraphy applied to the Fleming Field (conventional mid-Paleocene bioevents subjected to a variety of methodologies including graphic correlation and Ranking and Scaling). The presentation by geologist Chris Bell (Chevron) on the Alba Field was excellent and demonstrated the company's commitment to rig-site biostratigraphy (and included a photo of Neil Hulme, Bill Braham and Jonah Chitolie to prove the point): the recognition of reworked intervals has enabled the reservoir to be expanded thereby increasing reserves. Nick Holmes (Ichron Ltd) also gave a star turn this time on the Andrew Formation - demonstrating the applicability of the Charnock and Jones approach to microfacies analysis and its importance in well path placement.

A sub-plot to the first day, was the Chalk Group which received good coverage, with examples from the Valhall and Hod fields (two Amoco presentations) and Eldfisk (a Phillips Norway double act by Pedersen and Fjellsaa followed by Bob Young). Dave Shipp (Robertsons) neatly summarized developments in the horizontal drilling in carbonate reservoirs in the Danish sector of the North Sea (the first being in 1987 on the Dan Field). Other presentations during the day (Stan Duxbury on the Humber Group, Gavin Gillmore on Palaeogene biozonations, and Gunn Mangerud on the Paleocene of the Hermod area) had less immediate relevance to Production and Development Geology.

How the second day went, I'm not sure, but it was encouraging to see a biostratigraphy conference so well attended. I would hope that similar thematic conferences may be arranged in the future, ideally with the collaboration of the BMS.

JAMES POWELL, *Dinosystems, 37 Alton Road, RICHMOND, Surrey TW9 1UJ, UK.*

FIRST INTERNATIONAL CONFERENCE ON THE APPLICATION OF MICROPALAEONTOLOGY IN ENVIRONMENTAL SCIENCES, 15-20 June 1997, Tel Aviv, Israel.

This conference was very ably organised by Valentina Yanko of Tel Aviv University and was attended by about 70 participants from around 30 countries. The range of interests embraced foraminifera, ostracods, radiolaria, thecamoebians, diatoms, calcareous and siliceous nannofossils, and isotope and heavy metal geochemistry. Palynologists were conspicuous by their absence.

Plenary lectures were given by John Murray, UK, on 'Foraminiferal response to environmental change'; Jim

Kennett, USA, on 'Foraminifera as indicators of naturally stressed environments: a Santa Barbara Basin perspective'; Valentina Yanko, Israel, on 'Benthic foraminifera as bioindicators of stressed environments: anthropogenic problems - foraminiferal solutions'; Ed Reinhardt, Canada, on 'Foraminifera as a paleoenvironmental proxy in marine archaeology'; Victor Breslar, Israel, on 'New interdisciplinary scientific and methodological bases for ecotoxicology of microorganisms'; Alla-Valeria Mikhalevich, Russia, on 'The new conception of the foraminiferal macrosystem'; and Joel Kronfeld on 'Considerations of dating foraminiferal ooze using Uranium-series techniques'.

There were separate sessions on microorganisms as indicators of: recent environments; pollution; palaeoenvironments of the Quaternary; Mesozoic and Cenozoic. The final session was on methods and classification. There were 21 talks apart from the plenary lectures. The poster session attracted 28 entries and the standard of presentation was high.

This proved to be a very good meeting with plenty of discussion between micropalaeontologists working on different groups and different time periods. There was also some good integration of geochemical, biological and micropalaeontological data. The messages that came across strongly were that the various microfossil groups have great potential in monitoring environmental processes and change (whether natural or induced by man) and that they are the only organisms that can provide a direct proxy for the historical record of past environments. This is especially important for monitoring the effects of pollution and for global changes of temperature, sea-level, etc. Micropalaeontologists need to advertise this to other researchers involved in studying such changes.

In the concluding session it was agreed that there was ample scope for a future conference in a few years time that might involve more biologists and focus particularly on contemporary environmental change.

Of course, it was not all work and no play. There were excellent welcome and farewell parties, tours of the botanic gardens and the old town of Jaffa, and most participants managed fit in a trip to Jerusalem, the Dead Sea, or the ancient port of Caesarea which is currently being excavated. Needless to say, the weather was hot and sunny but also rather humid but there was always the chance to relax in the sea at the end of the day.

JOHN MURRAY, *Department of Geology, Southampton Oceanography Centre, Empress Dock, European Way, Southampton SO14 3ZH, UK.*

2ND EUROPEAN PALAEOLOGICAL CONGRESS 9th-12th July

Climates: past present & future was the theme of the 2nd European Palaeontological Congress that was held in Vienna from the 9th-12th July 1997 [with a day either side for field excursions]. Of the 140 participants it was sad that only 5 came from the UK, especially as the whole conference was run very efficiently in English. Indeed the organisers Heinz Kollmann and David Ferguson are to be congratulated on the way in which the meeting ran so efficiently throughout what was a rather wet time in Vienna!

Micropalaeontological contributions, both in the lecture sessions and in the poster displays were excellent, with most groups being mentioned. There were papers on foraminifera, ostracods, dinoflagellates, calcispheres, charophytes, calcareous nannofossils and palynomorphs as well as papers on everything from the shape of leaves to Triassic insects and Pleistocene rodents' teeth! As befits a climatic conference there was considerable evidence on modelling methods, from local climatic situations in single basins to the whole-world models of Bill Hay. Sequence stratigraphy, milankovitch cyclicity and extra-terrestrial impacts all received mention as did something about the human psyche that left most of us gasping for coffee.

There is a possibility that a conference volume might appear during 1998; watch this space for information!

It is clear from the UK attendance, and the UK membership of EPA in general, that there is a surprising lack of interest in the activities of the Association on this side of the Channel. The European Palaeontological Association organises a major congress every four years and workshops during the intervening years. The 1998 workshop is now being planned and may be held at the University of Portsmouth with the theme of 'Cretaceous biotas'. EPA publishes 2 or 3 newsletters per year. EUROPAL is a sizeable volume with information about meetings, book reviews and keynote articles from previous meetings and workshops. The cost of membership is very low [c.a. £15 p.a. - depending on the exchange rate with the French Franc; join now and get a bargain!]. I am currently the UK member of the EPA Council and can provide information for anyone interested in the work of the Association.

MALCOLM HART, *Department of Geological Sciences, University of Plymouth, Drake Circus, Plymouth PL4 8AA. Tel. 01752-232156; Fax. 01752-232155; Email: mhart@plymouth.ac.uk*

BRITISH MICROPALAEONTOLOGICAL SOCIETY PUBLICATIONS SERIES

This series comprises textbooks printed by established publishing houses on behalf of the Society. Publications are largely stratigraphical monographs but also included are conference proceedings and other thematic sets of papers. BMS members are entitled to a discount of 20% on current list prices.

STRATIGRAPHICAL ATLAS OF FOSSIL FORAMINIFERA (Second Edition)

D.G. Jenkins and J.W. Murray (editors), 1989. 593 pp.
ISBN 0-13-852187-5. OUT OF PRINT.

MICROPALAEONTOLOGY OF CARBONATE ENVIRONMENTS

M.B. Hart (editor), 1987. 296 pp.
ISBN 0-13-584137-2. OUT OF PRINT.

NANNOFOSSILS AND THEIR APPLICATIONS

J.A. Crux and S.E. van Heck (editors), 1989. 356 pp.
ISBN 0-13-609215-2. OUT OF PRINT.

NORTHWEST EUROPEAN MICROPALAEONTOLOGY AND PALYNOLOGY

D.J. Batten and M.C. Keen (editors), 1989. 356 pp.
ISBN 0-13-626821-8. OUT OF PRINT.

These books were published by Ellis Horwood Limited and are now out of print. The distributors have no remaining stock, therefore members cannot purchase these volumes. Second hand copies may be available from dealers.

OSTRACODA AND GLOBAL EVENTS

R.C. Whatley and C.A. Maybury (editors), 1990, 648 pp.
ISBN 0-412-363003. Non-members £77.00/BMS members £61.60.

A STRATIGRAPHICAL INDEX OF DINOFLAGELLATE CYSTS

A.J. Powell (editor), 1992. 290 pp.
ISBN 0-412-362805. Non-members £77.00/BMS members £61.60.

MICROPALAEONTOLOGY AND HYDROCARBON EXPLORATION IN THE MIDDLE EAST

M.D. Simmons (editor), 1994. 418 pp.
ISBN 0-412 427702. Non-members £55.00/BMS members £44.00.

The above are published by Chapman and Hall and should be ordered with pre-payment from: Order Processing, I.T.P.S., Cheriton House, North Way, Andover, Hampshire SP10 5BE (telephone: 01264-332424; fax: 01264-342787). Post and packing within the UK is free; orders from overseas will be surcharged according to the weight of the book(s) ordered. Overseas clients are therefore advised to contact I.T.P.S. for specific information.

BMS POSTER MEETING

Lapworth Museum, School of Earth Sciences, University of Birmingham, 30th April 1997

This year's poster meeting attracted more than twenty contributions all of which were of an extremely high standard. To save time and space I won't mention all of the posters, but here are a few which I enjoyed...

Plenty of posters dedicated themselves to the ongoing conodont research projects, notably, Gail Radcliffe and Howard Armstrong produced a poster entitled: Biotic recovery after mass extinction: a case study from the Upper Ordovician - Lower Silurian of Anticosti Island, Quebec. This poster presented an extensive account of their current studies, tackling global issues succinctly, with clear well laid out conclusions.

BRITISH MICROPALAEONTOLOGICAL SOCIETY FIELD GUIDES

1. **MESOZOIC AND CENOZOIC STRATIGRAPHICAL MICRO-PALAEONTOLOGY OF THE DORSET COAST AND ISLE OF WIGHT, SOUTHERN ENGLAND**
Out of print.
2. **THE LOWER PALAEOZOIC OF THE NORTHERN WELSH BORDERLAND AND SOUTH WALES**
D.J. Siveter, 1988. 47 pp. £5.50.
3. **THE JURASSIC AND CRETACEOUS OF EASTERN ENGLAND**
R.H. Bate and I.P. Wilkinson, 1988. 71 pp., £5.50.
4. **CRETACEOUS OSTRACODA OF THE WEALD**
D.J. Horne, 1988. 42 pp., £3.75.
5. **AN INTRODUCTORY GUIDE TO THE NEOGENE AND QUATERNARY OF EAST ANGLIA FOR OSTRACOD WORKERS**
A.R. Lord, D.J. Horne and J.E. Robinson, 1988. 11 pp., £2.25.
6. **THE MESOZOIC AND TERTIARY OF SOUTHERN ENGLAND: THE DORSET COAST AND ISLE OF WIGHT**
M.C. Keen, A.R. Lord, R.C. Whatley, 1988. 79 pp., £5.50.
7. **RECENT FRESHWATER OSTRACODA OF THE LAKE DISTRICT**
D.J. Horne, 1988. 28 pp., £2.75.
8. **RECENT AND QUATERNARY OSTRACODA OF THE FIRTH OF CLYDE, S.W. SCOTLAND**
J.E. Whittaker, 1988. 50 pp., £5.00.
9. **ST. DAVIDS AND RECENT MARINE AND ESTUARINE OSTRACODA OF THE CARDIGANSHIRE AND PEMBROKESHIRE COASTS**
R.C. Whatley and C.A. Maybury, 1988. 8 pp., £1.25.

These field guides were produced for the pre-and post-Symposium field excursions of the 10th International Symposium on Ostracoda held at Aberystwyth in 1988. The prices include postage and packing (surface mail overseas). All eight field guides cost £28 inclusive of postage and packing. Please make cheques (in £-sterling only) payable to 'The University of Greenwich' and not the Society and send to the address below.

DAVID J. HORNE, *School of Earth Sciences, University of Greenwich, Medway Towns Campus, Pembroke, Grenville Building, Chatham Maritime, Kent ME4 4AW.*

Cathy Stickley and Tracy Paramor from UCL presented two detailed, excellently produced posters. Cathy's looking at the Palaeoceanography of the late Quaternary sediments of the SW Pacific and Tracy is working with BAS and has produced a clear, well illustrated account of the Antarctic Circumpolar Current; its oceanographic and climatic significance in the Late Quaternary.

Giles Miller joined us all with some SEM shots of some enigmatic fossils and a poster explaining the BMS web site which he claimed that no one would read (so that proves him wrong!).

Guy Harrington from Sheffield cast doubt on the validity of the oceanic record as a climatic indicator, producing some interesting results which were presented

in his poster entitled: Palaeocene-Eocene greenhouse climate fluctuations: a case for the terrestrial record.

Robin Smith from Leicester produced an innovative poster entitled: Cretaceous ostracods with preserved appendages from Brazil. It must have taken him hours to cut each little circle out! Each SEM shot of these exquisitely preserved ostracods was mounted on a circular card.

The winning poster entitled 'Fractal grain distribution in the Antarctic agglutinated foraminifera' was presented by Katie Allen of the Southampton Oceanographic Centre. Katie was awarded the Strata Data Prize for this well laid out, easily assimilated, and clearly presented poster. Unfortunately the £50 prize came in the form of a cheque, so we were unable to share in Katie's success!

The meeting was a success as it attracted a very high standard of posters, but also a great disappointment as very few people turned up to view the work presented. Many thanks to Phil Donoghue and Paul Smith for organising the event.

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ISO '97

The 13th International Symposium on Ostracoda was held on the 27 to the 31 of July 1997 at the University of Greenwich, Chatham. 126 participants attended from 23 countries. Two pre symposium field trips were arranged, the first of which was to view the Cretaceous strata of Kent on the Friday which was blessed by excellent weather. Those who chose the second trip on the Saturday to collect living material were not quite so fortunate with the weather but Dave Horne took the prize of who was the wettest, wading into every bit of water he saw. The live material was collected in rock pools at Margate and from the Stodmarsh nature reserve near Canterbury. The next day a workshop was arranged to view the living ostracods using video cameras providing some spectacular results with a chance for participants to make their own videos. Paloma Alcorlo demonstrated to everyone what such equipment could be used for, showing her video of freshwater ostracods mating, complete with seductive music.

Papers were presented from Monday to Thursday in the elegant venue of a church. For the first time in the history of the International Symposia on Ostracoda,

the organisers had decided that rather than publish a single symposium volume this time the symposium would be published in three separate, well established journals. Three themes were targeted: 1. Non-marine ostracod evolution and environment (to be published in *Palaeogeography, Palaeoclimatology, Palaeoecology*); 2. Marine ostracods and global change (to be published in *Marine Micropaleontology*); and 3. Evolutionary biology and ecology of ostracods (to be published in *Hydrobiologia*). Each theme had a keynote speaker to begin the session, the first of which was 'Non-marine ostracods; providers of information on evolution and environments', by Patrick DeDeckker. This session had a strong geochemistry slant in many of the talks. The rest of Monday was dedicated to this theme after which there was a reception in the church with the Mayor of Gillingham, kindly laid on by Gillingham Borough Council.

Tuesday saw the beginning of the second theme with a keynote address by Tom Cronin on 'Ostracoda in Paleoclimatology; Appreciated but under utilised'. The rest of the day continued this bent with many excellent talks. The day ended with a trip down the Medway river on a paddle steamer, compliments of Gillingham Borough Council. Wednesday started with a special session including some spectacular videos of bioluminescent Myodocopid ostracods attacking and feeding on live prey, made by Katsumi Abe and Jean Vannier (just when you thought it was safe to go back into the water....). After lunch a trip to the historic town of Rochester had been arranged, and after returning by paddle steamer a reception was held in the gardens of the Commissioners house in the Historic Dockyard at Chatham.

The final day tackled the final theme of the symposium with a keynote address by Roger Butlin entitled 'Open questions in evolutionary ecology; Do ostracods have the answers?' This was a most interesting session with the rest of the day following the third theme. As well as the 47 papers presented at the symposium there were in excess of 30 posters on display.

The meeting was a great success and very enjoyable, setting a high standard for the next International Symposium on Ostracoda in 2001, to be held in Japan. Congratulations to the organising committee (David Horn, Ian Boomer, Jonathan Holmes, Alan Lord and Ian Slipper). Look out for the symposium journals in Spring 1998. The post-symposium followed in the footsteps of T.R. Jones looking at Palaeozoic, Mesozoic and Tertiary localities which were studied by T.R. Jones during his working life. The 5 day trip started off in the Welsh Borderlands, then went south to Bath and finally to Swanage in Dorset before returning to Chatham. It was organised by David Siveter and Alan Lord, with additional help from

Ian Boomer, David Horne and Ian Slipper. For those who missed out, the field guide will be published by the B.M.S. (No. 10).

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BIOSTRATIGRAPHY IN PRODUCTION AND DEVELOPMENT GEOLOGY

In late June the University of Aberdeen hosted a special meeting of the Petroleum Group of The Geological Society of London on "Biostratigraphy in Production and Development Geology". The meeting was organized by Dr. Mike Simmons of the university and Dr. Bob Jones of BP Exploration and was attended by 120 geoscientists from all around the world.

The meeting successfully illustrated the innovative role that biostratigraphy now plays in helping cost effectively maximize recovery from oil fields. About 30 oral and poster presentations were made which illustrated the utility of biostratigraphy in correlating at a reservoir scale and help define reservoir architecture and connectivity. The wellsite applications of biostratigraphy were also emphasized.

Conference proceedings will be published in a special publication of The Geological Society.

For more information contact Mike Simmons at Aberdeen University (m.d.simmons@abdn.ac.uk) or Bob Jones at BP (jonesbob@bp.com).

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**CRETACEOUS - TERTIARY MASS EXTINCTIONS:
BIOTIC AND ENVIRONMENTAL CHANGES**

MacCloud, N. & Keller, G. (eds) Norton 1996. £40. 575pp.

With the publication of the meteorite impact hypothesis in 1980, a large number of scientists (excluding many palaeontologists) and the media have accepted that a meteorite caused the global extinction at the end of the Cretaceous, in particular the final demise of the dinosaurs. Such is the influence of certain scientific figures, the need to generate large research grants and the undeniable human failing to be famous for 15 minutes, the debate has become highly polarised and acrimonious. This debate has troughed with "impactors" calling into question the scientific abilities of those who have raised doubts as to the applicability of the impact hypothesis. In a small way this debate has extended into the tea rooms, seminars and undergraduate tutorials of all geology departments. If like me you are utterly fed up of arguing against hard rock colleagues about the difficulty of proving cause and effect, and defending the palaeontological database then this is the book for you.

This single volume provides a review that comprehensively documents the biotic and environmental changes of the late Cretaceous and early Tertiary. Through careful sampling, rigorous adherence to stratigraphic procedure and a pragmatic approach the authors in this compendium have finally dispelled the myth that large parts of the biosphere were decimated on the last day of the Cretaceous. Indeed, it is difficult to find evidence in these pages for a single group of organisms which did go extinct on that day.

There is no denying that incontrovertible physical and chemical evidence exists for the impact of a large (c. 10km diameter) meteorite on the Yucatan Peninsula c. 65 m.y. ago. The existence of the meteorite however does not provide the final piece of evidence to explain the late Cretaceous mass extinction, indeed to date the "impactors" have provided little direct evidence to support an impact driven mass extinction. Two critical facts have been largely ignored, firstly that there is a well documented decline in biotic diversity during the late Campanian to early Maastrichtian and secondly, the clear discrepancy between the timing and intensity of the mass extinction at high and low latitudes.

The biotic changes which were occurring before the meteorite impact mirror a number of oceanographic, sea level and temperature changes. There is now evidence for a significant continental glaciation during the

middle Maastrichtian in the Weddell Sea (ODP Site 690) with marked cooling an increase in $d_{18}O$ and major sea level fall. These data suggest a glaciation of a similar magnitude to that seen in Antarctica during the Middle Eocene. Stable isotope values indicate that cool temperatures prevailed through the late Maastrichtian and, that the sea level fall just prior to the *P. hantkeninoides* Biozone was the result of ice build-up. At Site 690 $d_{18}O$ isotopes indicate a warming just prior to the K-T boundary and at Stevns Klint and Nye Kløv warming is marked by a rising sea level and the influx of tropical planktonic foram species. The cause for this global warming is as yet unresolved, Milankovitch, volcanic outgassing and impact are all plausible hypotheses.

The definitive tests of whether this mass extinction was caused by gradual climate deterioration and the associated oceanographic changes or meteorite impact are well known, but rarely applied. Did the extinction occur at, below or after the main indicators for impact (micro-spherules, Ir anomaly, shocked quartz etc.), and was the extinction gradual or catastrophic?

The K-T boundary is readily identified in the boundary stratotype section at El Kef, Tunisia, on lithological, palaeontological and geochemical criteria. There is a marked lithological change from chalk deposition in the late Cretaceous to a thin dark, organic rich clay layer boundary clay. A 2-3mm thick red clay at the base of the boundary clay layer contains the Ir-peak, Ni-rich spinels and a $d_{13}C$ negative shift are present in the red oxidised basal part of the boundary clay. The first appearance of Tertiary microfossils occurs at the base or within a few centimetres of the red clay layer. The first appearance of *Globoconusa conusa* occurs at the base of the boundary clay. Most if not all these criteria can be recognised in the best K-T boundary sections, though in terrestrial (Pardo et al. Ch. 6; Stets et al. Ch. 14) and Southern High Latitude sections dominated by clastic deposition (Askin & Jacobsen Ch. 1; Hollis Ch. 7) the boundary can be more difficult to place.

The datasets presented in this book demonstrate that many taxa, previously thought to go extinct at the K-T boundary, go extinct in the upper Cretaceous and many Cretaceous species occur within the Danian. These facts may be explained in terms of Signor-Lipps effects due to habitat shift and the occurrence of Cretaceous taxa in the Danian by reworking, but both are dispelled in Chapter 5 (MacCloud) which presents statistical tests for these phenomena.

The K-T impact event did not cause mass extinction in the planktonic forams (as commonly claimed; (Keller Ch. 4; MacCloud Ch. 5; Pardo et al. Ch. 6). Though susceptible to taphonomic effects and reworking the calcareous nannoplankton record (Gartner Ch. 3) shows a reproducible general pattern from a number of sections. In sections with the boundary clay, the youngest Cretaceous nannoplankton assemblages occur to within 2-3 cm of the boundary. When nannofossils are present in the boundary clay they are invariably solution resistant upper Maastrichtian species, a residue of the late Cretaceous microflora. In the Gulf of Mexico the presence of high energy deposits and reworking makes the nannofossil record difficult to interpret.

Many invertebrate groups for example, belemnites and ammonites (Stinnesbeck Chapter 11; Zinsmeister & Feldman Ch. 12; ammonites disappeared 5 m below the K-T boundary in Chile), marine reptiles, rudists (Johnson & Kauffman Ch. 9) and inoceramid bivalves (Zinsmeister & Feldman Ch. 12) have not been shown to coincide with the K-T boundary in any complete marine section (MacCloud Ch. 5). The turnover in species of palynofloras (Askin & Jacobsen Ch. 2), radiolarians (Hollis Ch. 6; 38 of 45 named species range well into the lower Tertiary), non-marine ostracodes (Brouwers & De Deckker Ch. 8; cold temperate endemics remain largely unaffected, a number of Cretaceous genera coexist with Paleocene taxa) or benthic forams (Pardo Ch. 6; many become extinct c. 300 k.y before the K-T boundary) do not coincide with the K-T boundary either.

The decline in the diversity of planktonic forams is variable amongst species and may occur at, below or above the K-T boundary. Graphical correlation (MacCloud Ch. 5) used to combine biostratigraphic data from two unbiased sections Nye Kløv and the Brazos River with comparable data from El Kef (found previously to be free of Signor-Lipps Effects) confirms the patterns from other groups that none of the observed microfaunal changes was related to the emplacement of impact ejecta.

In the K-T boundary transition in Southern High Latitudes (Antarctica, New Zealand; Chs 2, 7, 12) changes in diversity are relatively minor and gradual reflecting global environmental changes associated with increased sea level, increased precipitation and increased upwelling. A similar situation is reported from Northern High Latitudes (Alaska, Denmark; Chs 8,10) for invertebrates, non-marine ostracodes, palynofloras and planktonic forams. At Nye Kløv only one species of planktonic foram goes extinct at the boundary, *Rugoglobigerina rugosa*, a surface dweller. All other species survived up to 200 - 300

ky after the event. Marine palynomorphs (Ch. 2) from Seymour Island, Antarctica show a long-term gradual species and genus level turnover that accelerated just prior to the boundary. This change correlates with sea level rise and temperature changes. Samples across the boundary in this section are dominated by a stable conifer-Proteaceae-Nothofagidites non-marine palynoflora.

In comparison with the fossil records of the groups discussed above that of the vertebrates is poor (Archibald Ch. 15; Stets et al. Ch. 14), is not global in extent and is biased towards the Western Interior of North America. The eastern Montana data shows that there is a general reorganisation of the terrestrial component of the vertebrate fauna, as apparently all the nonavian dinosaurs became extinct they were replaced within 1 m. y. by the mammals. Vertebrate species survival rate reaches 53 - 64% across the K-T boundary. The mass extinction is concentrated into five major taxa, the sharks and relatives, lizards, nonavian dinosaurs and marsupials. Together they account for 78% of the total K-T vertebrate extinctions. The vertebrate database does not allow rates of extinction to be calculated.

In a detailed study of Ager Basin succession (Colombo. Ch. 16) charophytes and dinosaurs seem to go extinct c. 2 m.y. prior to the boundary. In China (Stets et al. Ch. 14) dinosaur remains, especially eggshells are present above the boundary (defined on a significant floral change within Chron 29R). Final extinction in dinosaur populations occurred in a step-wise fashion through the early Paleocene. This appears to have been triggered by environmental stress, associated with a change from tropical to temperate humid climate and a disappearance of the food plants as indicated by the palynological data.

Are clade extinctions random (affecting all organismal groups in varied habitats) or selective (affecting only certain groups in specific habitats).

The impact scenario predicts the collapse of the food web following "nuclear winter" conditions. There is no evidence for grading of extinction intensity through different trophic levels (MacCloud Ch. 5). The fossil record of the planktonic forams is the best of all the groups considered in this book, and shows that the major effects of the mass extinction were felt in low latitude open marine environments. The K-T boundary event preferentially removed specialised tropical and subtropical taxa (ecological specialists) e.g. globotruncanids, rugoglobigerinids, planoglobulinids, pseudotextularids and racemiguembelinids. Stable isotope ranking of late Cretaceous species shows that all deeper dwelling species

living at or below thermocline depths disappeared (Keller Ch. 4). The apparent absence of a mass extinction in the planktonic forams in nearshore, continental shelf sections (e.g. Brazos River, Stevns Klint, Nye Kløv) can be attributed to the absence of deeper water species in these areas. This low latitude bias is also recorded in the demise of the rudist framework reefs (Johnson & Kauffmann Ch. 9).

Did survivors exist and what environmental conditions favoured their survival.

Cretaceous survivorship amongst the planktonic forams (Keller Ch. 4) in low latitudes was not random. Only small species with simple unornamented morphologies (e.g. heterohelicids, pseudoguembelinids, guembelinids, hedbergellids, globerinellids) survive. These are all surface dwelling, ecological generalists. The eventual demise of this group 200 - 300 k.y. after the K-T boundary appears to be due to ecological competition from newly evolved Tertiary faunas, better adapted to the prevailing environmental conditions.

Above the Ir - spike in Antarctica marine palynomorphs show a relatively abrupt replacement of *Monumiella seelandica* by *Senegalinium obscurum* associated with a gradual influx of *Spinidinium* and Paleocene taxa. Paleocene samples record a gradual change to angiosperm dominated assemblages reflecting the gradual increase in rainfall associated with a rise in sea level.

Paleocene mollusc faunas from Alaska (Marincovich Ch. 10) contain a large number of relic Mesozoic taxa including *Arctica ovata*, *Cyrtodaria rutupiensis* and *Camptochlamys alaskensis*.

The palaeontological data therefore support the view that the end Cretaceous mass extinction was caused by a deterioration of the climate and associated oceanographic changes. Climate change and biotic turnover was underway for several hundreds of thousands of years prior to any evidence for impact. These changes were more marked in low latitudes. The demise of reef communities occurred in response to the rapid disappearance of the Supertethyan climate zone and is coincident with an increase in argillaceous sediment in shelf settings. The abrupt restructuring of reef habitats from rudist to coral-algal to algal-coral to oyster framework reefs in the Caribbean many reflect increasing nutrient availability on the continental shelves (allied to increased rainfall and run-off). Environmental changes resulted in the disruption of the stratification in the Maastrichtian Ocean, expansion of the oxygen minimum zone and the decline in

low latitude surface productivity. These effects diminished rapidly towards the poles. In these respects the end Cretaceous mass extinction has many features in common with other climatically controlled mass extinction events.

With global cooling one might predict an increase in clastic sedimentation in continental shelf settings. The outstanding question of whether clastic sedimentation at the K-T boundary is related to tsunamis deposition or climate change is addressed in Chapters 17, Keller & Stinnesbeck; 18, Stinnesbeck & Keller; 19, Stinnesbeck et al.). In a global review there is insufficient evidence to present any of the clastic deposits as tsunamis of a single impact origin. Clastic deposits are spread through the last 200 k. y. of the Maastrichtian, contain no unequivocal impact ejecta and they do not represent a single instantaneous event as shown by repeated colonisation of ichnofauna. Lithofacies changes can be directly related to sea level changes (see particularly Chapter 18), with microfossils and sedimentary structures indicating lowstands at the time of deposition of these deposits.

Are you now convinced of the climate change hypothesis? Then do not read Chapter 20 (Landis et al.). This proposes the "Pele Hypothesis" an attempt to explain rising atmospheric oxygen through the Upper Cretaceous as measured in trapped air bubbles in amber (relates also to Ch. 13, Hengst on dinosaur oxygen demands). The explanation asserts that mantle outgassing from 122 - 83 Ma linked to an increase in photosynthesis via Monterey effects caused a rise in oxygen levels. As the authors admit this idea is speculative. They attempt to correlate ocean crust production, rise in atmospheric oxygen, sea level and global temperature. This correlation is by no means convincing. The raw $\delta^{18}O$ and $\delta^{13}C$ curves are not presented and would be essential in any test of carbon cycle dynamics. The authors also pose the question "Are there other reasonable explanations for the increasing oxygen in air bubbles in Cretaceous amber? Yes you might reply, the rise of the angiosperms.

In terms of production a more comprehensive introduction and rigorous editing would have removed the considerable duplication of hypothesis explanation in each chapter. Refereeing standards were clearly variable across the papers and a more consistent style of chapter would have made for easier reading. A number of chapters continually mixed pattern and process. The former provides the data, the latter the interpretation. Several Chapters (vertebrates and calcareous nannoplankton) appeared to be entirely process driven. The absence of range charts in descending order in many chapters was irritating and

it was often difficult to find out where a group or taxon actually became extinct in some chapters (again the calcareous nannoplankton and the vertebrates). Typographical errors were minor, references comprehensive and extremely useful, the diagrams are generally adequate.

Problems notwithstanding I consider this book an essential purchase for those involved in palaeobiological research or teaching. All libraries should have a copy and this book will become the standard reference text for those annual tutorial essays on mass extinction. I recommend a copy is placed on the tea room table!

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BIBLIOGRAPHY OF EUROPEAN PALAEO-BOTANY AND PALYNOLOGY 1994-1995

Thomas, B. A., Cleal, C. J., Pardoe, H. S. & Fraser, H. E. (eds) 1996: National Museum of Wales, £5.00.

The 161 pages of this book detail some recent research in palynology and palaeobotany. It is divided into sections listing papers covering the Pre-Cambrian, Palaeozoic, Mesozoic, Tertiary, Quaternary, general palynology and palaeobiology, Ph.D. theses and the murky underworld of "papers in press" and "work in progress". The book comes to a finalé with some gossip on what your contemporaries were doing in 1994-1995 and finishes with a very handy section of addresses (postal and electronic) and phone/fax numbers. The references in each section are well presented, though it's difficult to ascertain how comprehensive the lists are; a quick glance through my own specialized area revealed the absence of a couple of familiar names. The reason is very simple; the editors rely on the local representatives who, in turn, rely on we palynologists and palaeobotanists for information. Those of you who are lucky enough, or rich enough, to have access to on-line databases such as Georef/BIDS may wonder why bibliographies like this are published when most of this information and much more is so readily available. You should note, however, that this book contains references not to be found on either. There are two things I would like to see in the next edition. The first is a basic keyword/subject index and the second, and I hope this doesn't sound too Euro-phobic, is translations of some more of the titles.

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PALYNOLOGICAL CORRELATION OF MAJOR PENNSYLVANIAN (MIDDLE AND UPPER CARBONIFEROUS) CHRONOSTRATIGRAPHIC BOUNDARIES IN THE ILLINOIS AND OTHER BASINS. Russel A. Peppers, 1996. Geological Society of America Memoir No. 188, 111 pages

Palynology is an inherently visual science. This fact is demonstrated by most research students who, upon finding a new piece of palynological literature, eschew the abstract and turn straight away to the back of the paper, which is where the photographic plates are most likely to be found. With this publication by Russel Peppers they might be disappointed, but if they were to bear with their instincts they would find an extensive fold-out which provides two correlation panels. Even a brief inspection of these will give an appreciation of the scope of this work, for in the first of these panels Peppers has attempted to correlate almost the whole of the Silesian (to stick with the European stratigraphical nomenclature) between the Western Interior Basin of the United States in the West, to the Donets Basin in the East. In the text he even ventures further East to China. That represents a considerable period of geological time over a significant (arguably the most economically significant) part of the Carboniferous world.

This book represents a considerable expansion of Peppers' Late Carboniferous correlation panel presented in the proceedings of the 9th International Carboniferous Congress in 1984. A large number of new or revised correlations (principally between American basins) are presented and coherently argued, and a large amount of new biostratigraphical data is presented. The essence of the book is that palynology and palaeobotany have a major role to play in inter-basinal and international correlation. As such it should be recommended reading for all stratigraphers working in the Carboniferous. All too often the potential contribution of the plant fossils is subsumed by interests in other fossil groups. Our science needs advocates such as Peppers to expound the virtues of palynology on an international stage.

Peppers has a very easy and often chatty style. This helps immensely when describing similar fossil occurrences across the same stratigraphical boundary but in different areas. However, the text is broken up by a large number of tables detailing miospore abundances in different samples. While the presentation of such a wealth of data is laudable and, indeed, a strength of the book, it is detailed information which is not vital reading if one is to follow Peppers' narrative and arguments. I particularly objected to having to skip in mid-word from page

17 to page 33 in order to find that the Union Coal is younger than the Gentry Coal because it contains fifteen and a half pages of tables ...tains *Florintes mediapudens* (amongst other things). Maybe the publishers are trying to build the tension. I feel that these tables would have been best left to an appendix, and then some horizontal lines added to make them easier to reference. Other than the frequent occurrence of these annoying tables, the book is well order and clearly formatted. For those who are not familiar with the plethora of coal seam and formational names for the whole of the Euramerican Carboniferous I can recommend a large wall and drawing pins. Continual reference to the correlation panel is a must for all but the most encyclopaedic of readers. But then, I suspect that few other than the most devoted Carboniferous biostratigraphers, reviewers and the stratigraphically insane would endeavour to read this book from cover to cover.

A minor complaint is that hidden deep within Appendix 1 are three systematic recombinations. I would have preferred that these were mentioned in the abstract, and that the reasoning behind the recombinations was discussed.

On the whole I can recommend this book to all palaeontology and stratigraphy libraries. While the correlations and conclusions will be of relevance to many workers in the Carboniferous the text does deal with the minutiae of palynostratigraphy. As such, it is a volume for the specialist. Nevertheless, it will stand as an authoritative reference volume, particularly for North American palynology. The extensive list of references alone will make the book worthwhile for initiates into Late Carboniferous palynology. My one disappointment with the book is that correlations jump from western Europe to the Donets basin without any reference to an extensive literature from the eastern European palynologists. But then this is an American work, and perhaps Peppers has left that for the Europeans to resolve. Taking up such a challenge and dealing with it in as thorough a way as Peppers has dealt with the North American 'Silesian' will require a considerable amount of work.

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MICROPALAEONTOLOGY IN PETROLEUM EXPLORATION

R.W. Jones. Oxford University Press. ISBN 0 19 854091 4. 1996, 432 pp, £95.00.

Bob Jones of BP Exploration must be one of the leading lights in industrial biostratigraphy working in the U.K., and this volume is in many ways a personal testament to his experience over the past 15 or so years. His mammoth book is divided into three main parts: 1. The major microfossil groups, 2. Applications, and 3. Case histories.

The groups covered in the first part of the book include calcareous microfossils (foraminifera, calcareous algae, *Bolboforma*, calcispheres, calpionellids, ostracods et al.), siliceous microfossils (diatoms, radiolarians, silicoflagellates, et al.) phosphatic microfossils (conodonts, ichthyoliths, et al.), palynomorphs (acritarchs, chitinozoans, dinoflagellates, spores and pollen et al.) and calcareous nannofossils. Bearing in mind Jones' expertise in calcareous microfossils it isn't perhaps surprising that they get the lion's share of the coverage (56%); to be fair calcareous microfossils are diverse and have been more intensely studied industrially, at least historically (what is all the more extraordinary is that sixteen pages out of the eighty-eight covering calcareous microfossils are devoted to references). Palynology doesn't do too badly (24%), but siliceous forms and phosphatic forms and nannofossils get a miserly 9%, 4% and 7% respectively.

I don't feel qualified to comment too closely on any of the microfossil groups other than the palynomorphs. This chapter offers an elementary rather than a comprehensive review with most of the diagrams lifted straight from other publications (notably Haq and Boersma, 1978 and Lipps, 1993). Inevitably, dinoflagellates and pollen and spores get most coverage; disappointingly, dinoflagellate only get one range chart (Middle Miocene of the Gulf of Suez) which is hardly representative. There is also a very small section on palynofacies.

The middle section of the book deals with applications. The first chapter comprises a short section on 'Biostratigraphy' and 'Quantitative Biostratigraphy' (graphic correlation et al.), followed by a more extensive section on 'Palaeoenvironmental Interpretation' with greatest attention afforded to foraminifera. The chapter closes with some 'Preliminary Observations on Benthonic Foraminifera Associated with Petroleum Seeps'; it strikes

me as incongruous that 'preliminary observations' should be included in such a book interesting though they undoubtedly are. 'Integrated Stratigraphy' is to all intents and purposes 'Sequence Stratigraphy' with a bit about time-scales tagged on. The review is similar to that of Jones et al. (1993) with a few more up-to-date examples; carbonate sequence stratigraphy gets equal attention (a little disproportional). The time-scale of Haq et al. (1987) is reproduced in full but at a greatly reduced scale (a magnifying glass is a prerequisite). The chapter on industrial applications gets scant consideration - it would have been useful to see coverage given to biosteering (is a 'biosteer' a castrated biostratigrapher?) particularly in reference to horizontal drilling which is all the rage at present.

Roughly the last half of the book is devoted to case histories from around the world reflecting Jones' wide experience. These are divided into clastic (Eastern Paratethys, Niger delta, Mackenzie Delta, Gulf of Mexico, North Sea and South Atlantic) and carbonate examples (Middle East and Papua New Guinea). These generally make interesting reading, but like much of the rest of the book a lot of the space is taken up by long lists of references. Almost all the diagrams are lifted from the literature (and at times appallingly reproduced) which goes to show what can be done with a photocopier.

The book closes with a short chapter on 'Other Commercial Applications' (environment, coal, minerals and engineering) followed by a comprehensive index over forty pages long with taxonomic entries intermixed with the more general, which I found rather a nuisance (another private irritating niggle is Jones's use of benthonic rather than benthic - surely it's benthos not benthonos).

Overall, it is clear that an enormous amount of time and effort has gone into this book and Bob Jones is to be congratulated on achieving such a Herculean task. But by its very nature the book reads rather like the course notes to a series of lectures (perhaps that is just what it is). In this context, the most likely reader will be the post-graduate student starting out on an MSc course. The level of detail is probably too great for the undergraduate (as reflected by the enormous reference lists at the end of each chapter) while industrial micropalaeontologists (or should that be biostratigraphers?) will probably want to refer to more specialist publications - although Jones's book will provide a quick entry to a sphere with which you are not very intimately acquainted. However, at £95 per copy (and no discounts to BMS members - this is not in the BMS Publication Series), it would be difficult to recommend

an MSc student to invest. I expect that some libraries may take the plunge, in which case the students will be queuing up to borrow it.

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INTERNATIONAL STRATIGRAPHIC GUIDE SECOND EDITION

Edited by Amos Salvador. The International Union of Geological Sciences and The Geological Society of America, Inc. ISBN 0-8137-7401-2 1994, 214 pp, \$48.50 (surface mail from GSA).

I've had this little book on desk waiting to be reviewed for longer than I care to admit. I've been putting off the evil day because I'm really not quite sure what to say on subject that one could call 'as dull as ditch water'. So here goes: Following chapters on Principles of Stratigraphic Classification, Definitions and Procedures, and Stratotypes and Type Localities, there are more practical chapters on Lithostratigraphic Units, Unconformity-bounded Units, Biostratigraphic Units, Magnetostratigraphic Polarity Units and Chronostratigraphic Units. The final chapter deals with the relation between different kinds of stratigraphic units. The last few pages are devoted to a Glossary of Stratigraphic Terms, which is particularly useful from a biostratigraphy point of view, and a comprehensive bibliography (which at over 50 pages constitutes about a quarter of the whole book).

The biostratigraphy chapter is of particular interest to myself, and it appears to be set out logically with definitions of biozone types clearly set out. The guide plums for Range Zone (taxon-range zone and concurrent-range zone), Interval Zone (with a useful distinction between highest-occurrence zone and lowest-occurrence zone), Lineage Zone, Assemblage Zone (thankfully Opel zones have not been included in the Guide because they 'do not appear to correspond consistently to any one kind of biozone') and Abundance Zone (in preference to Acme Zone).

The section on Unconformity-Bounded Units is curious in that it skates around the whole subject of 'sequences' as developed through the study of seismic stratigraphy. The controversies between the merits or otherwise of defining sequences by unconformities, transgressive surfaces or condensed sections have been avoided, and arguably should be tackled in a third edition of the Guide. This is particularly important as many so-called sequences appearing in the literature (e.g. for the North Sea Mesozoic and Cenozoic) are little more than a means of effecting biostratigraphically controlled log correlation. Similarly, the parallel nomenclature of allostratigraphy (as advocated by the 1983 North American Stratigraphic Code) have not been addressed.

This is a thoroughly useful little book if you want clarification on an issue concerned with stratigraphical nomenclature; it will also be of particular interest if you are involved in the creation of a new biozonal scheme or are involved in a Global Boundary Stratotype Section and Point (GSSP) debate (the Guide will act as an acceptable rule book). It will be of equal interest to the pragmatic pedant at one extreme and the pedantic pragmatist at the other.

Finally, it has to be said that the cover of the book is as dull as ditch water (a dingy reddish-brown) and does nothing to improve the image of stratigraphical nomenclature. A cheery bright cover or dust jacket would certainly have lifted my spirits and, who knows, might have stimulated me to write this review sooner.

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UNDERSTANDING FOSSILS - AN INTRODUCTION TO INVERTEBRATE PALAEOONTOLOGY

Peter Doyle 1996, John Wiley & Sons, 409pp. ISBN 0-471-96351-8. £17.99.

After adjusting to the unusually 'chatty' style of the first chapter, this book develops a very informal relationship with the reader and fulfils its promise as a comprehensive introduction to invertebrate palaeontology. Over 409 pages Doyle has produced a primary-level text which assumes a palaeontological approach intermediate between 'Invertebrate Palaeontology' (Clarkson) and 'Palaeobiology' (Briggs and Crowther).

The book is divided into three sections (key concepts, the major fossil groups, and fossils as information): The emphasis of section one lies with the understanding of basic preservational, evolutionary, and stratigraphical concepts and therefore offers the reader a general, but solid, palaeontological base before progressing into the realm of taxonomy. The second section, a review of eleven major fossil groups, is clearly presented although the tendency to over-generalise information and encourage the reader to classify palaeontological specimens according to an informal morphological, rather than taxonomical, notation (particularly true of Chapter eleven - the echinoderms) is rather unsatisfactory. In contrast, Chapters ten and thirteen guide the reader through the subject of Brachiopod and Coral taxonomy, and evolution remarkably well - a subject frequently the source of pure frustration to the undergraduate palaeontologist. Section three is commendable; each of the chapters on palaeobiology, palaeoecology, and biostratigraphy are opened with a section of general considerations which highlight the basic data requirements to undertake such studies and the remainder of each chapter reserved for a diverse suite of recent case-studies.

The consistent clarification of palaeontological terminology and unassuming style of writing enables the reader to dip into the text without the need for a great deal of prior knowledge or 'cover-to-cover' reading. Accordingly, the presentation of specialised, referenced material in text-boxes provides a taste of what can be gleaned from further reading. For the most part these provide a useful addition to the book, however, these do tend to become overdone in some chapters (particularly in section one) and consequently distract from the main text. A brief 'suggested reading' review provided at the end of each chapter (before the bibliography) provides a refreshing change to the dry reference lists so frequently presented in undergraduate texts - and consequently ig-

nored. Illustrations are generally clear and frequently innovative, although many morphological illustrations are of lesser quality than expected, the photographic figures are also of variable quality.

In the preface, Doyle indicated that this book was intended for undergraduate students and that its brief taxonomical aspect was intentional (pared down to remove unnecessary detail) but probably annoying to specialists. It is true that this is a fresh approach from the traditional texts published for such an audience, but rather than 'annoying specialists' it appears to restrict the use of the book. Of great use to true beginners, it may not compete with Clarkson's 'Invertebrate Palaeontology' which, because of its taxonomical detail, remains an invaluable companion throughout an undergraduate degree course. Conversely, it does excel over Clarkson's text for this very reason, in that prior knowledge of basic palaeontological concepts is not assumed - concepts which may otherwise be more difficult to grasp in the aforementioned text.

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EARLY VERTEBRATES

Philippe Janvier. Oxford Monographs on Geology and Geophysics No. 33; 393pp. 1996. ISBN 0-19-854047-7 (cloth) £75.00

Until relatively recently, the world of vertebrate palaeontology has been of little interest to micropalaeontologists. However, the reclassification of conodonts as craniates, possibly vertebrates (depending of course on what these terms mean to you - if anything) has pushed, in some cases unwillingly, an otherwise unassuming group of palaeontologists into the controversial area of vertebrate origin and early evolution. Entrance into this field is not an easy one as most of the available syntheses are now seriously out-of-date, and most review papers either too technical or too simple. Janvier's new book entitled '*Early vertebrates*' is therefore extremely timely but does it fill the niche?

Many like-minded members of The Society will already have peeked at and salivated over Janvier's new text but balked at buying because of the prohibitively expensive cover price. This is a shame because Janvier has produced a modern classic, covering areas previously encompassed by the overly-simplistic *Palaeozoic fishes* (Moy-Thomas 1939, revised by Miles 1971), and Jarvik's overly-lengthy *Basic structure and evolution of vertebrates* (neither of which I would be without, but both are now

out of date, difficult to find and offensively priced). Janvier's plan has been to provide only enough information regarding the various groups of early fish for a general survey and understanding of the phylogenetic relationships within and between the various groups, essentially an organ providing a basis for classification of lower vertebrates. However, he surpasses the depth of Jarvik's behemoth by providing lists of 'further reading', arranged under sub-topics at the end of each section. Each group is subject to a skeleton cladistic analysis, although that Janvier does not include any of the data matrices on which these are based must be considered a missed opportunity, and one of the few criticisms I have of the book. Each section is self-contained and profusely illustrated with the author's characteristically exquisite line drawings. The prevalence of line-drawings over half-tones should have kept the price down, but evidently it has not. Most of the half-tones are in the penultimate chapter which is a historical review of past and present personalities in early vertebrate research, from early Scots including the foxy Lady Eliza Maria Gordon Cumming of Altyre, through luminaries such as Gross, Ørvig, and the armour-fetishist Bashford-Dean of hagfish-fame. With characteristic modesty Janvier has left himself from the review, although if nothing else this book will ensure that he figures prominently in any such future review.

Janvier's treatment of conodonts in the main portion of the text clearly predates his 1995 *News & Views* review for *Nature* in which he not only gave up the ghost as opponent to the hypothesis suggesting that conodonts were vertebrates (=craniates), but even went so far as to postulate a close affinity to everyone's favourite agnathans, the Osteostraci. Conodonts are therefore treated in Chapter 7 with other oddballs such as *Ainiktozoon* and the 'Calcichordata', and he sums up with similar conclusions as those in Forey & Janvier (1993: *Nature* 361), where the authors were still highly sceptical of the anatomical and histological data presented by that time. However, Janvier has redressed the problem of a lengthy publication delay by including an appendix covering the main advances in this and other controversial fields. From recent advances in our knowledge of conodont palaeobiology, such as the South African conodont with preserved anatomy (Gabbott *et al.* 1995: *Nature* 374), Janvier steps down from the fence and concludes (p. 361) "the doubts expressed here as to conodont affinities fade away as new material turns up". However, this book is more than a review, it is clearly a statement of Janvier's ideas as they currently stand, or at least how they stood at the end of 1995, and it includes a wealth of new hypotheses regarding relationships and homology in a number of different groups, many of which are simply sitting up and just begging to be tested.

Obviously, the cover price is obscene, but I cannot say that *Early vertebrates* is not worth the money, because it has no rival. However, the real shame in this is that Janvier and/or Oxford University Press have missed an opportunity to corner an undergraduate market that could have been generated by the use of their book as a course text, clearly covering a weak area of Benton's *Vertebrate palaeontology*. This could be remedied by the release of a cheap edition at the £20 mark, although I won't be holding my breath. At the very least, every university library must have a copy of this book, and even if like many conodont workers you're a mere dilettante in the field of vertebrate palaeontology, failure to read this book may be life-threatening.

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EVOLUTIONARY PALEOBIOLOGY: IN HONOR OF JAMES W. VALENTINE

Jablonski, D., Erwin, D. H., and Lipps, J. H. (eds). The University of Chicago Press, 492pp. Dec 1996. ISBN 0-226-38913-8 (paperback) £23.95.

Given the diverse nature of the contributions to this text, united under the umbrella of 'evolutionary palaeobiology', it is surprising to find that there is a single uniting theme running through the topics dealt with, this theme is the career of James Valentine. Jablonski, Erwin and Lipps have pulled together what they aimed to be portrait, albeit incomplete, of a field which was almost single-handedly created by the man to whom this festschrift is dedicated. Valentine has had a very long and distinguished career that has encompassed a number of different fields, and this diversity of interests is fully encompassed by the list of contents. Most of the subjects dealt with in the various chapters could quite easily have appeared in the pages of The Paleontological Society's journal *Paleobiology*, and indeed many or most of them already have done, for most of the contributions are reviews of various debates, albeit brought up to date with new data in a number of cases. However, despite the preponderance with resolving all issues of nature and the fossil record to a series of equations, there are a number of essays which deal with fossils as animals, and of these, Cowen's discussion of Carrier's constraint on locomotion and respiration in air-breathing vertebrates must surely rank as one of the highlights of the entire festschrift. Carrier's constraint is the effect of lateral flexure of the body (the mode of locomotion inherited from fishy ancestors) on the lungs, thereby re-

stricting the locomotor capability of a vertebrate which cannot move and breath at the same time unless the constraint can be overcome. Cowen discusses how this has been overcome in a number of different ways, such as dorso-ventral undulation in cetaceans, maintaining a rigid thorax and using only the tail for propulsion, as in mosasaurs, maintaining a rigid thorax and using paired fins for propulsion, as in plesiosaurs, losing a lung as in sea snakes, and by leaping out of the water and breathing while in the air, as Cowen proposes for Ichthyosaurs.

Another of the highlights was Kidwell and Brenchley's paper on trends in the thickness of marine skeletal accumulations through time. After screening the data through a number criteria to prevent bias, these authors found that the apparent increase in skeletal accumulations through time held true as a signal in their data sets representative for the Lower Palaeozoic (Ordovician-Silurian), Mesozoic (Jurassic), and Cenozoic (Neogene). Kidwell and Brenchley consider a number of explanations for this trend, among them sampling bias, diagenesis, palaeogeography, taphonomy, hardpart producers and reducers, but in the end they considered that the appearance of widespread durophagy in the Devonian, coupled with a selective response to stronger hardpart microstructure by the producers, the cause of increased skeletal accumulation through time.

In addition to my two fav's, there were also a number of (often conflicting) papers on palaeocommunities (chapters 5-7), some of which considered the up and coming controversy over community stasis or 'coordinated stasis', which has been pushed so much by proponents such as Brett, Baird, and Eldredge. It is a shame that the case was not put forward by Brett and Baird themselves, although the main theme of the book is James Valentine and not the various disparate topics entertained.

Other topics covered include molecular palaeogenetics, hierarchies, competition, biogeography, and diversity. I guess the dominance of North American authors vs the rest of the world is a simple result of this being a festschrift to a North American scientist, but Valentine's work has attracted attention, admiration and respect from all over the world. It is shame that this could not have been reflected in the authorship, but then you're damned if you do and damned if you don't.

The price of the book is reasonable enough given that most course texts cost around £25 anyway. *Evolutionary palaeobiology* is for you if you're an avid fan of *Paleobiology*, and like the journal, it is bound to throw up ideas for your own research program, even if you didn't have one to start with!

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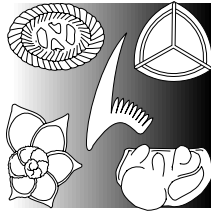
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The British Micropalaeontological Society (BMS) is a registered charity (No. 284013) founded in 1970, originally as the British Micropalaeontological Group (BMG), through the initiative of Professor Leslie Moore of Sheffield University. The original aims of the BMG were to promote micropalaeontology in the UK, to encourage the multidisciplinary study of British type sections, and to provide a means of communication.

The constituted objectives of the BMS is "the advancement of the education of the public in the study of Micropalaeontology". Although primarily aimed at the inhabitants of the U.K., membership is "open to all persons and organisations engaged or actively interested in the science of Micropalaeontology in the British Isles or in the British geological sequence".

The society currently has 689 members, of which 515 comprise individual members. According to the 1994 Directory of membership, 52% of the individual members were resident in the U.K., 20% in the rest of Europe, 14% in the U.S.A., and 14% in the rest of the world. In addition, the Society has 174 Institutional subscribers from around the world (32% U.S.A., 31% Europe, 19% U.K. and 18% rest of the world).

The BMS is organized and operated "exclusively for scientific and educational purposes and not for profit". Most activities of the society are organized by specialist groups (there currently five groups: Conodont, Foraminifera, Nannofossil, Ostracod and Palynology) and members may be associated with more than one group if they choose. Group meetings are held regularly throughout the year and the Annual General Meeting takes place in November (usually in University College London). Special meetings are held irregularly and have a multidisciplinary and/or international flavour.

The Main Committee of the Society is drawn from the membership. The posts of Chair, Secretary and Treasurer carry a three year term of office. Secretaries and treasurers may seek re-election for a second term of three years. Other members of the committee (including group representatives) are elected for a two year term of office and are eligible for a second term. The committee also in-

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cludes the editors of both the Journal and Newsletter, as well as the Publicity Officer (position vacant) and Membership Treasurer.

The first committee meeting was held in 1971 (Leslie Moore as Chairman and Bernard Owens as Secretary/Treasurer), and the inaugural meeting took place in association with the Geological Society in Sheffield ('Microfossils and British Stratigraphy') during March of that year.

The BMG became a Society in 1975 under the chairmanship of Dr. Bob Cummings. A circular was produced until 1976, when the newsletter was inaugurated, as *The British Micropalaeontologist*, first edited by P.J. Bigg. The newsletter was renamed *Newsletter of Micropalaeontology* in 1995. The first BMS publication (apart from *A Stereo-Atlas of Ostracod Shells*) was *A Stratigraphical Index of British Ostracoda* (edited by Ray Bate and Eric Robinson) which appeared in 1978 and was published as a Special Issue of *Geological Journal*. Subsequent volumes have been published as a series, commencing with the *Stratigraphical Atlas of Fossil Foraminifera* (edited by Graham Jenkins and John Murray) in 1980. Since then, ten further special publications have published for the BMS by Ellis Horwood Ltd., and since 1990, two by Chapman and Hall. During this time, stratigraphical indices or atlases have been produced for ostracods, foraminifera (2 editions), nannofossils, conodonts and dinoflagellate cysts, as well as a number of thematic volumes. These are available to BMS members at discounted rates.

Since 1977, the Society has published, biannually, its own micropalaeontographical series: *A Stereo-Atlas of Ostracod Shells* (first produced in 1973, edited by Professor Peter Sylvester-Bradley and Dr. David Siveter of Leicester University), and occasional field guides. The year 1982 is a milestone in BMS history as this saw the initiation of the society's own journal, the *Journal of Micropalaeontology* (first edited by Lesley Sheppard). The Journal was initially produced once a year, but since 1984 has become established as a twice yearly publication of growing international repute. The editor and the editorial board will consider for publication original papers and review articles dealing with all aspects of micropalaeontology.

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