A.A.S.P. NEWSLETTER

Published Quarterly by the American Association of Stratigraphic Palynologists Inc.

February, 1998
Volume 31, Number 1

A.A.S.P.

American Association of Stratigraphic Palynologists Inc.

The American Association of Stratigraphic Palynologists, Inc. - AASP - was established in 1967 by a group of 31 founding members to promote the science of palynology. Today AASP has a world-wide membership of about 800 and is run by an executive comprising an elected Board of Directors and subsidiary boards and committees. AASP welcomes new members.
The AASP Foundation publishes the journal Palynology (annually), the AASP Newsletter (quarterly), and the AASP Contributions Series (mostly monographs, issued irregularly), as well as several books and miscellaneous items.
AASP organises an Annual Meeting which usually includes a field trip, a business luncheon, social events, and technical sessions where research results are presented on all aspects of palynology.

AASP Scientific Medal recipients
Professor William R. Evitt (awarded 1982)
Professor William G. Chaloner (awarded 1984)
Dr. Lewis E. Stover (awarded 1988)
Dr. Graham Lee Williams (awarded 1996)
Dr. Hans Gocht (awarded 1996)

AASP Board of Directors Award recipient
Robert T. Clarke (awarded 1994)

AASP Honorary Members
Professor Dr. Alfred Eisenack (elected 1975)
Dr. William S. Hoffmeister (elected 1975)
Professor Leonard R. Wilson (elected 1975)
Professor Knut Faegri (elected 1977)
Professor Charles Downie (elected 1982)
Professor William R. Evitt (elected 1989)
Professor Lucy M. Cranwell (elected 1989)
Dr. Tamara F. Vozzhennikova (elected 1990)
Professor Aureal T. Cross (elected 1991)

AASP Distinguished Service Award recipients
Robert T. Clarke (awarded 1978)
Norman J. Norton (awarded 1978)
Jack D. Burgess (awarded 1982)
Richard W. Hedlund (awarded 1982)
John A. Clendening (awarded 1987)
Kenneth M. Piel (awarded 1990)
Gordon D. Wood (awarded 1993)
Jan Jansonius (awarded 1995)
D. Colin McGregor (awarded 1995)

Awards at each Annual Meeting: Unocal Best Applications Paper Award, Best Student Paper Award, and Best Poster Award.

Student Scholarships to support studies in palynology. Currently up to two scholarships of $1000 (U.S.) each annually. The qualification of the student, the originality and imagination evident in the proposed project, and the likelihood of significant contribution to the science of palynology are factors that will be weighed in selection of award winners. Previous winners of this award are eligible only if they are pursuing a different degree than the one they were pursuing when they received the previous award. AASP Scholarships are available to all students of palynology in all countries. Students need not be AASP members.
Application forms appear in the January issue of the AASP Newsletter. Chairman of the AASP Awards Committee is Owen K. Davis (palynolo@geo.Arizona.EDU).

AASP Membership Application - Membership in AASP is for the calendar year. Dues are $30.00 U.S. per year for individuals and $40.00 U.S. per year for institutional members. All members of AASP receive Palynology which is published annually, the AASP Newsletter, which is mailed out four times a year, and an annual Membership Directory.
Dues may be paid up to three years in advance. Overseas AASP Members (Individual or Institutional) who would like to receive their AASP Newsletter and Palynology by air mail, rather than book rate surface mail, need to include the applicable postage surcharge (noted below). Credit card users must pay a $1.00 U.S. surcharge per transaction.
Air mail surcharge (increased for 1995 and beyond): Europe & South America: $12.00 U.S. per year. Africa, Asia & Australia: $15.00 U.S. per year. Credit card surcharge $1.00 per transaction.

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Jan Willem Weegink, Editor

AASP NEWSLETTER EDITOR

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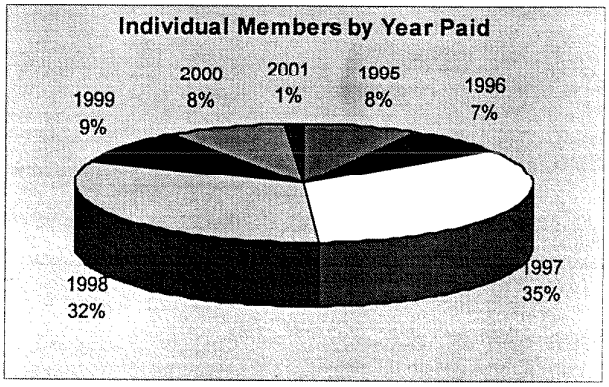
The AASP Newsletter is published four times annually. Members are encouraged to submit articles, "letters to the editor", technical notes, meetings reports, information about "members in the news", new websites and information about job openings in the industry. Every effort will be made to publish all information received from our membership. Contributions which include photographs should be submitted a week before the deadline.

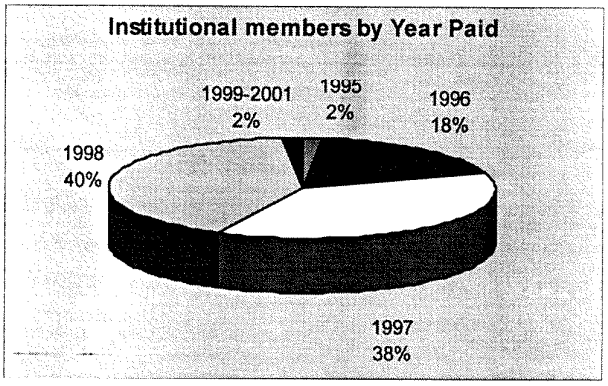
Deadlines for next issues of the newsletter, are March 31st 1998 and June 31st 1998. All information should be sent on computer disks (MS Word for Windows is best) or by email; if possible, send a hard copy. Always send a duplicate typescript of all electronic copy sent for checking. If possible, please illustrate your contribution with art, line drawings, eye-catching logos, black & white photos, colour photos, etc.

We DO look forward to contributions from our membership.

MEMBERSHIP

At the time of writing we had 698 individual members and 116 institutional members of AASP. These numbers have been used to produce the pie charts shown here. The three pie charts show the regional distribution of our individual members, and the status of payment of both individual and institutional members. From a regional standpoint the United States and Canada account for 43% of the membership of AASP, with Europe and the United Kingdom being the second major grouping. In recent times there has been an increase in members from Africa and also South America. It is encouraging to see our membership become more diversified from a regional standpoint.



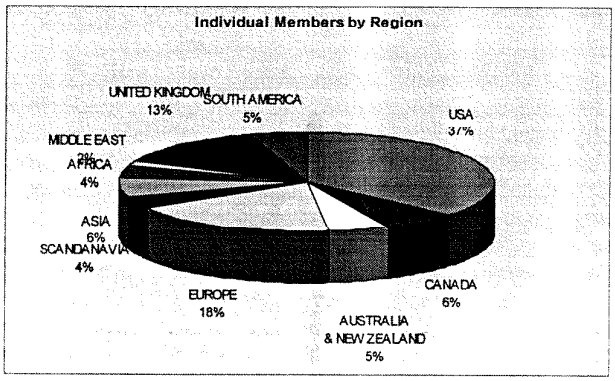


This years AASP meeting will be held outside of the United States in Ensenada, Mexico which to the best of my knowledge is the first time that this has occurred with the exception of meetings associated with International Palynological Congresses. I encourage other regional groups to consider holding an AASP meeting after the millennium.

The financial picture is not pretty. We have members who have paid through 2001 but technically we are able to pay for only 3 years in advance. As you can see from the pie chart less than 50% of individual members have paid up through 1998 which is this

years financial year! There has been a consistent number of payments coming in the mail each day but I need more. The by-laws require that I purge the membership of members who are more than 6 months in arrears. What I have consistently done in the past is remove members who are 2 years in arrears so the 8% of members who are in the 1995 category will be removed, probably by the time you receive this newsletter. They certainly won't be receiving it. The number of 1996's have been reduced in the latest batch of payments which is encouraging, but I expect at the beginning of next year there will be some to remove from the membership list. REMEMBER YOU HAVE TO BE PAID THROUGH THE CURRENT YEAR OF PUBLICATION OF *PALYNOLOGY* TO RECEIVE IT, so all members paid through 1997 should have already received the journal or will be receiving it very shortly.

In the Institutional member category we have a similar situation with less that 50% being paid through 1998 or above. This may not be a problem because I will be sending out separate invoices to those in arrears and often because they are paid through publication clearing houses they are a little slow coming in. However, I believe there will be some removed from the list. We are consistently having new members sign up but there are not enough to offset the loss. Therefore the membership numbers over the next few years will continue to decrease.



It is with sadness that we record the death of two of our members. Gonzalo Vidal (Sweden) and Richard Stapleton (United States) have passed away in the past year. Our sympathies are extended to the families of these palynologists.

- David Pocknall, Secretary-Treasurer -

From Our Correspondents

THE UK PALYNOLOGICAL SCENE

- James B. Riding -

A very Happy New Year to all AASP members everywhere from the UK membership. The main palynological news this quarter is the move of the Centre for Palynology within the University of Sheffield. For many years now, the Department of Geology/Earth Sciences has been split between the original location in the older Mappin Street Building, close to the city centre, and the more modern Dainton Building on the main University site at Brookhill. In recent years, the intention has been to assimilate the entire Department, including the Centre for Palynology, in the Dainton Building. Clearly, a geographically united Department is a stronger and more efficient one. Furthermore, it was an anomaly that the Geology Department, which is within the Faculty of Pure Science, had an outpost in the Mappin Street Building which houses Engineering Departments belonging to the Faculty of Applied Science. As with many moves of this nature, the proposed removal dates had been delayed several times for various reasons. As I write this in early January, all the palynological staff and students are now ensconced in the new accommodation in the Dainton Building, however there are certain items, such as the slide collection, yet to make the journey up the hill. The Centre for Palynology now has a suite of modern palynological preparation laboratories in the 'new' building.

This move represents a real watershed in palynology as the subject was first introduced into the Sheffield Geology Department at Mappin Street in the early 1950's by Professor Leslie R. Moore. The first PhD students researching in palynology in the Department included Charles Downie, Leonard Love, Roger Neves, Bill Sarjeant and Herbert Sullivan. A one-year MSc course in palynology was started in 1965 in response to the needs of industry for consistent numbers of trained palynologists. Both the MSc and PhD programmes are still going strong and Sheffield has maintained a tradition of offering training facilities to non-UK students. A significant proportion of palynologists trained at Sheffield; many more will have visited the Mappin Street Building at some time in their careers. For example, Bill Evitt stopped by to see Charles Downie and Bill Sarjeant in the late 1950's to discuss his new ideas on dinoflagellates (see the 1984 paper by Bill Sarjeant in the *Journal of Micropalaeontology*, Volume 3(2), pp. 1-6). David Wall and Barrie Dale also started their palynological careers at Sheffield. Obviously I could go on here but in the interests of brevity I will refrain from doing so!

The addresses of David Jolley, Duncan McLean, Charles Wellmann and the rest of the staff and students of the Centre for Palynology is as follows:

Centre for Palynology, Department of Earth Sciences, University of Sheffield, Dainton Building, Brookhill, Sheffield S3 7HF, UK

(Apparently, the palynologically appropriate last two letters in the postcode are one of those bizarre coincidences!!).

We offer our congratulations to AASP member Geoff Warrington of the British Geological Survey, who recently received a DSc from the University of London in recognition of his work on Triassic palynology and stratigraphy.

As a follow up to my piece in the last Newsletter, I do not know which of the three candidates has been elected to the position of Secretary of the Palynology Group of the British Micropalaeontological Society. Likewise I have no further news on the situation at the University of Aberystwyth, where it has been proposed to abolish certain positions in the Institute of Geography and Earth Sciences. I hope to give updates on both of these matters in the next Newsletter.

NAPC 2001: PROPOSAL

- Thomas Demchuk -

At the recent Geological Society of America Meeting in Salt Lake City, a meeting of representatives of the Association of North American Paleontological Societies (ANAPS) was held as early organizational efforts are underway for the North American Paleontological Convention (NAPC) for the year 2001. This meeting in 2001 will be held at the convention facilities on the University of California-Berkeley campus. Early indications are that this meeting will be held in the summer, probably late June or early July so as not to conflict with the University academic year.

A major theme of discussion during this informal meeting was the organization of symposia and sessions so as to facilitate greater cooperation between all facets of paleontology, Rather than having individual sessions on individual disciplines, discussion centered around chronostratigraphic and paleoenvironmental themes that would include presentations on many facets of paleontology.

As representative of AASP attending this meeting, I was asked to gather support from the general AASP membership in participating and attending this meeting in Berkeley in 2001. In informal discussions with members of the AASP Executive, it would be in AASP's best interests to fully participate in NAPC, integrating our discipline with others for the benefit of all micropaleontology.

I am putting forward a proposal that for the year 2001, AASP hold it's annual meeting in conjunction with NAPC in Berkeley. This would encourage our membership to attend and participate, while still allowing AASP to retain it's identity through individual palynological session(s) and a business luncheon. More importantly, AASP and palynology would have a venue for integration, and to publicize the importance and significance of our micropaleontological discipline. In informal discussions with the NAPC Berkeley Chair (Jere Lipps, UC-Berkeley), he was very receptive to the idea of AASP holding it's annual meeting in conjunction with NAPC. At the recent AASP Board meeting in Woods Hole, a proposal was submitted to hold the 2001 AASP meeting in San Antonio, but the organizer (proposer) has agreed to move this venue to 2002 in light of having our meeting with NAPC 2001 in Berkeley.

This article is to gather feedback on the above proposal, i.e. should we have our meeting in conjunction with the 2001 NAPC in Berkeley? Further, if so interested you are encouraged to submit ideas for sessions and symposia which will be multi-disciplinary in nature. I will be more than happy to forward any appropriate ideas to the NAPC organizing committee. I would welcome any discussion on this topic.

- Thomas D. Demchuk, Conoco Inc., P.O. Box 2197, Houston, TX 77252-2197
thomas.d.demchuk@usa.conoco.com

PALYNOLOGY GAINS STRENGTH IN SW EUROPE

- Koldo Nuñez-Betelu -

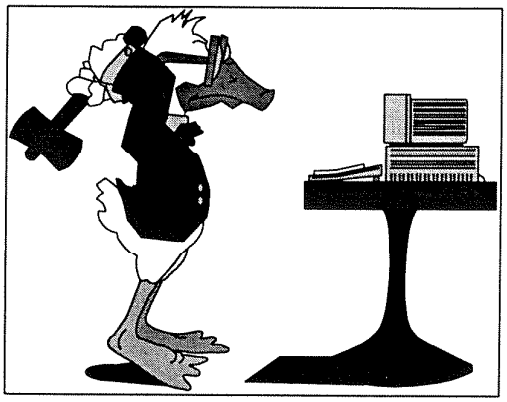
From October 12 to 18 the Spanish Society of Paleontology celebrated its 12th annual Congress in A Coruqa (Galiza, Northwestern Spain). The main topic of this meeting was "Fossils of Galiza" but it also hosted the 5th International Meeting of the IUGS-UNESCO-IGCP on the Lower Paleozoic of Northwestern Godwana (Project 351).

The autonomous region of Galiza is rich in Paleozoic outcrops as well as in present-day estuarine settings that host many turistic resorts.

Due to these geological features many of the works presented at this meeting were focused either in the Paleozoic or the Holocene. A diverse array of papers covered almost every research item related to Paleontology, including Palynology. The increased number of participants with respect to previous editions and the expanded amount of topics covered in this edition demonstrated the good health of the paleontological research in southwestern Europe.

A highly interesting fact was the dramatic increase in palynology related studies to the point that a meaningful percentage of all papers were fully palynological, outnumbering this way many other research fields of Paleontology. Acritarchs were the kings of Paleozoic palynology with studies addressing the age of certain Galizan units, stratigraphy, ecological behaviour of phytonplanctonic groups, etc. Studies based on terrestrial palynomorphs covered Carboniferous, Triassic, Paleogene and specially the Holocene, with emphasis on vegetational changes and climatic fluctuations.

Up to a few years ago, Palynology has been the poor sibling of Paleontology in southwestern Europe. However, the number of papers and the broadness of the topics covered by the palynological studies indicates that Palynology is getting itself a place in micropaleontological research studies in this part of the world. In fact, still there are relatively few palynologists in southwestern Europe despite the fact that palynology could be applied towards the resolution of a nearly infinite number of poorly solved problems. The trends observed in the Galizan meeting are very hopeful, thus, for the southwestern European palynology. It seems that the example of the late Professor Vidal will be followed by the new generations.



DIL - DINOFLAGELLATE IMAGE LIBRARY

The Dinoflagellate Image Library (DIL) is an integrated database consisting of (1) a collection of more than 25,000 images of fossil dinoflagellates on disk and (2) databases to access images and view data concerning each of the stored images. The DIL runs on Macintosh computers using HyperCard (to view images) and FileMaker (to access frame-data information). Using a very basic computer platform, users can view multiple images of dinoflagellate species quickly and efficiently, review age information for those images, and make basic taxonomic identifications, species comparisons, and preliminary age interpretations without the need for an extensive literature library.

The microfossil images are mainly from the published literature (as well as some non-published photomicrographs from other sources). The database includes full taxonomic citation (based on the Lentin & Williams indexes) and the following information for each photomicrograph: age, geographic location, author(s), date, plate and figure data from original source, photograph type (SEM, brightfield, phase, Nomarski), and orientation. The disk containing the image library has an almost instantaneous access time of 0.2 sec per frame per image.

The image library represents considerable potential value for your organization (big or small) as a primary reference tool for biostratigraphic applications using fossil organic-walled dinoflagellates. The image library can save both time and money, and it will allow palynologists to spend more time at the geological integration of palynological data rather than routine data collection. It also serves as a marvelous training tool for students or micropaleontologists who must gain a working knowledge of the group in a short amount of time. The library provides immediate access to otherwise widely disseminated (or perhaps unavailable) photographs for the fossil group, and thus saves effort by substantially reducing the time spent on literature searches and species identifications. In a word, the image library can put a significant part the published photographic record of fossil dinoflagellates at your fingertips for immediate access.

As long as our supply lasts, ImageWare will include, with the purchase of the DIL, a Panasonic TQ-3032F Optical Disk Player at no additional cost (list price of the player is ca. $5,500). Hardware requirements for the DIL include a Macintosh computer and a multisynch monitor to display images; HyperCard and Filemaker

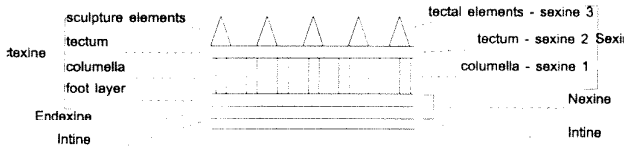
software are also necessary. Please contact ImageWare directly for additional details, pricing, and delivery information.

Jennifer E. Hansen, Technical Sales, ImageWare, 6721 Round Tree Drive, Anchorage, AK 99516 USA
e-mail: flyfish@alaska.net

Glossary of Pollen and Spore Terminology - The Electronic Edition - by Peter Hoen

Introduction - The terminology used in palynology has long been recognised as a deterrent to those who are not specialists in the subject. We hope that this glossary will make the subject more widely accessible at the same time as simplifying the application of palynological terms without losing any precision. We recognise that the Glossary is not perfect, and anticipate that revisions will be needed in the future.

This introduction sets out the objectives of the glossary, explains the format that has been followed in the text and the illustrations and, for those who may be interested, records the history of the project.



Objectives - The objective of the project has been to provide a concise manual of terminology that can be used to clarify the communication of information concerning pollen grains and spores.

It is hoped that this will help to make palynological literature more accessible to non-specialists and to beginners in the field. In this way it should encourage an increasingly standardised approach to the description of pollen grains and spores.

We have tried to keep the glossary as simple as possible so that it can easily be used without much previous experience of palynology.

Format - The entries are arranged alphabetically. The form that appears first (the singular, plural or adjectival form of the term) is generally the most commonly used form, although if all forms are widely used the singular is given first. A number of terms are mainly, or exclusively, used as adjectives.

Where the term is printed in **bold** typeface this indicates that the term is in current usage and is recommended for continued use. Where the head word is printed in normal text this indicates that an alternative term should be used in preference. The definitions and literature references provided for such terms are included because they may be helpful in interpreting the literature. In each case the preferable, synonymous term is indicated.

Cross references are also given to terms that indicate the opposite condition (antonyms) and to related terms (indicated by "see also"). A comment is provided where this may help in the application of a term, or to qualify the circumstances in which it is applied.

The literature reference given for each term is not necessarily the earliest publication in which the term was used but has been selected as a helpful source of further information.

Illustrations - Simple schematic illustrations have been provided where appropriate. These contain the minimum amount of information needed to explain the feature.

Some conventions have been used:

- Where both equatorial view and polar view are shown, the equatorial view (e) is generally given to the left of the polar view (p).
- Drawings of pollen grains or spores seen in equatorial view are always shown with the distal pole uppermost.
- Features of ornamentation are generally illustrated by a surface view on the left and a sectional view to the right.
- Arrows have been used to indicate the particular part of the diagram to which the term applies. In other cases the feature referred to is shaded. In some cases both arrows and shading have been used.
- A solid line is used to indicate a feature visible at the surface whilst a dotted line indicates a feature that lies below the surface, or behind another feature.
- A standardised section of a pollen wall, illustrated below, is used as the basis of a number of the diagrams referring to wall stratification.

History of the glossary - This glossary is the outcome of a initiative that began with the establishment, under the auspices of the International Commission for Palynology (now, the International Federation of Palynological Societies) of a Working Group on Palynological Terminology. With Jan Muller as Secretary, the Working Group communicated by means of circulars and questionnaires distributed among its members. Siwert Nilsson took on the role of Secretary of the Working Group between the 4th International Palynological Congress in Lucknow (1976) and the 5th IPC held in Cambridge in 1980. A report of the progress made by the Group was published by Nilsson and Muller (1978).

At the 5th IPC it was proposed that the Working Group should work towards the publication of a glossary that would summarise and explain palynological terminology. After the Cambridge IPC Stephen Blackmore became Secretary and questionnaires continued to be circulated, in an effort to establish the approaches to terminology that could be adopted in a glossary. However, as previous experience had shown, relatively few palynologists replied, calling into question the utility of the Group's methodology. During a lively debate at the 6th IPC in Calgary (1984), the Working Group was dissolved with the intention of seeking a more rapid method of progress.

A revitalised Working Group, with Wim Punt as Secretary, emerged at the 7th IPC in Brisbane (1988). Punt offered to convene a small committee that would start work on drafting a glossary. It was agreed that drafts of the glossary would be circulated as widely as possible so that the text could be revised as thoroughly as possible before publication (Report in Palynos 12,2, 1989). To achieve this, it was decided that draft manuscripts would be circulated to the representatives of each of the societies affiliated to the IFPS and to all members of the newly convened Working Group.

Wim Punt then acted as convenor of a committee consisting of Stephen Blackmore, Siwert Nilsson and Annick Le Thomas. The First Draft, with a red cover, was circulated in 1989 and stimulated considerable interest. A Second Draft, with an orange cover, followed in 1990 and again drew many comments and suggestions from the Working Group. These comments were incorporated in a Third Draft, not widely distributed, which also included the very detailed comments of palaeopalynologists Al Traverse and Jan Jansonius.

In March 1991, at the invitation of Knut Faegri the committee met in Bergen to revise the Third Draft and to consider the illustration and publication of the resulting glossary. The process of reconciling outstanding differences of opinion and revising the definitions, started in Bergen, was subsequently continued at meetings in Utrecht and London.

In August 1992 an illustrated version of the Third Draft was prepared by Peter Hoen and distributed at the 8th IPC in Aix-en-Provence in a pale yellow cover as the First Concept. Once again the project benefitted from the detailed comments of many palynologists. These have been included in this edition.

It will be clear that this has been a collaborative project, with contributions from many palynologists, from all branches of the discipline. Only through this long and rather elaborate procedure has

it been possible to produce the present glossary, which we hope goes some way towards meeting the original objectives of the project.

Acknowledgements - This glossary has benefitted from the advice and expertise of many palynologists worldwide. The compilers are particularly grateful to K. Faegri, J. Jansonius and A. Traverse for their especially significant contributions. Among the many other palynologists who have actively participated in the project we would like to thank O.A. Abbink, C. Caratini, S. Chanda, M.J. Diéz, I.K. Ferguson, I. Fernandez, C.A. Furness, M.M. Harley, A. Hemsley, P.P. Hoen, M. van Houte, M. Keith-Lucas, M.V. Oshurkova, B. Owens, M.I. Rodríguez-García, H. Straka, R.W.J.M. Van der Ham, G.A. Van Uffelen, M. Vavrdova, B.S. Venkatachala.

We are grateful to artists of the Botanical Institute, Norway, for their initial drawings to elucidate the terms. The illustrations are partly those of Faegri and Iversens Textbook, ed. IV (1989), and partly prepared by Dorothy Büchner. Peter Hoen provided additional drawings and digitized all illustrations.

The Glossary is dedicated to J. Muller and G. Thanikaimoni, who were both very active in promoting international efforts to make progress with palynological terminology.

THE ELECTRONIC EDITION

It has been a while since the latest edition (LPP Contribution Series No.1, 1994) of the **Glossary of Pollen and Spore Terminology**. The first three editions of the glossary where drafts, for discussion purpose only, and resulted in the final and official edition. And it was thought to be the last one, because not much could be improved, and all terms were included. But as time goes by it turned out that there still are terms available and the glossary can be improved.

With the arrival of the Laboratory of Palaeobotany and Palynology on the Web, new possibilities arose for the glossary. This will make it more accessible, and gives the opportunity to let the users interact and make it more up to date as it already is. So from now on its everybody's glossary.

So what can be expected from this edition ?

First of all new terms, 15 in total, have been included (In the text marked with an asterisk). Hopefully still more to come. Also more examples have been added, mostly from fossil species (thanks to Grebe, 1971).

And then of course the improvements, as I may call them so. The drawings are in full color now, and it is (will be) possible to get a full screen picture. Some of the old drawings have been changed to make them more obvious, new ones have been added. The second improvement is that other terms, used in a definition, are just one mouse-click away. So now it is easy to go to related terms, synonyms, etc.

This is what will become available:

1. A non-graphics version for quick access, with the possibility the get a full-screen sized drawing by clicking on the bullet.
2. A full graphics version which will have more or less the same outline as the book, with small full-color drawings and the possibility the get it full-screen by clicking on it.
3. All versions can be downloaded for installation on the PC to make it quicker and easier accessable.

The address to look forward to is:

http://www.biol.ruu.nl/~palaeo/glossary/index.htm

The first (paper) edition is still available for free, and will most likely become a collector's item. Just sent a request to:

THE GLOSSARY, Laboratory of Palaeobotany and Palynology, Budapestlaan 4, NL-3584 CD Utrecht, The Netherlands

An e-mail to p.hoen@boev.biol.ruu.nl will let you have your hardcopy within a couple of weeks. At the same address you can find an ear and/or eye for your comments on the glossary or if you find terms that should be included.

By Laurent De Verteuil - A one day symposium entitled **Palynostratigraphy of Low Latitudes** was held on November 18th, 1997, in Isla Margarita, Venezuela. The symposium was put on in conjunction with the joint 8th Venezuelan Geological Congress and the 1st Latin American Sedimentological Congress. Symposium organizers Laurent de Verteuil (Petrotrin, Trinidad) and Geoffrey Norris (University of Toronto, Canada) put together a solid program of twelve oral papers (excluding cancellations) and one keynote lecture.

Maria Antoinetta Lorente (Maraven) led off the sessions with an invited paper on the historical development of palynology in Venezuela. Lorente's well conceived presentation outlined the development of the different laboratories and the training of local palynologists, against the economic backdrop of boom and bust cycles and major restructuring in the Venezuelan oil industry. Younger heads particularly enjoyed the archive photos of Dutch palynological legends at work in early Bataafse/Shell laboratories. This historical paper was most appropriate as the symposium marked the celebration of 50 years of industrial palynology in Venezuela. This event was further commemorated during the symposium by an awards ceremony recognizing the Mentors of Palynology in Venezuela. During the ceremony there were not a few clearly heartfelt moments, as for example, when the current generation of palynologists presented service awards to retired veteran technicians, whom no doubt first introduced them to hydrofluoric acid and laboratory technique.

Other contributions almost entirely comprised applied palynostratigraphy, with an understandable over-representation of Latin American case studies. In his keynote address, however, Mark Bush (Florida Institute of Technology) showcased modern pollen rain data and lake spectra from lowland Amazonia, Equador, Costa Rica and Panama, to explore long-held assumptions about neotropical palynology. For example, the dogma of anemophilous dominated homogeneity of pollen spectra from varied tropical lowland forests can be rejected; entomophilous taxa comprise over 50% of several measured spectra and show clear affinites with source vegetation. Also, flower morphology and pollination syndrome are important characters in determining the representation of a taxon in the pollen rain. Other data indicate that cooling, rather than drying, was the primary variable driving Pleistocene floral changes in the Amazon basin. That is, lowland rainforests there did not retreat into river valley "refugia" surrounded by grassy savanna-woodlands, as has been widely hypothesized by vicariance biogeographers. In an abstract that was unfortunately not ultimately presented, Marcel Carvalho (Universitat Heidelberg) found support, in three Plio-Pleistocene wells from Foz do Amazonas Basin, for the idea of limited savanna development during glacial intervals. Such data and ideas should directly impact the sequence interpretations made by palynologists working tropical Neogene basins, and represent an important ecological direction for invigoration in industry palynostratigraphy.

Stratigraphic palynologists working with low latitude assemblages have, since the classic Orinoco work by Muller (1956) and development of the method by Van der Hammen and co-workers, long used relative abundance of key pollen types to infer depositional environments and delineate cycles of sedimentation. The development of sequence stratigraphy and genetic basin analysis has provided a welcome paradigm for further taphonomic and paleoecological interpretation of such palynological assemblages. This new focus was evident in many of the

symposium contributions. At the regional scale, Valenti Rule (Maraven) and Claude Poumot (Elf) showed how the Palynocycle approach developed by Elf for the Neogene of South-East Asia might be applied to delineate Eocene-Miocene sequences in Western Venezuela. This approach is entirely different from that used to the same end by Rule in PALYNOLOGY 21, and it would be interesting to compare the results where/if they overlap. At the field/reservoir scale, Josefa Carbon and Omar Colmenares (Intevep) presented an elegant integration of palynomorph and palynofacies datasets with electric log and sedimentological data from cores, that allowed them to characterize marginal and shallow marine environments in the Eastern Venezuelan Basin. Dave Shaw (Epoca) showed some results from an integrated study of upper Neogene Trinidad outcrops which incorporated data from hand-held gamma ray logs, paleontology and standard field techniques, into a genetic sequence interpretation. Other papers pursued this theme and new interpretations of some old stratigraphy engendered a certain amount of brisk comment from the floor. Carlos Jaramillo (University of Florida), for example, showed fighting form in defense of his dissertation views concerning the age of parts of the Mirador Formation in Columbia.

Speaking of stratigraphic age, Sue de Villiers and Ann Cadman (University of the Witwatersrand) presented results of an intriguing study of correlative angiosperm assemblages from two localitites in South Africa, one of which may be credibly dated to middle Eocene on the basis of planktonic foraminifers. What is intriguing is that both assemblages contain pollen attributable to the Compositae, in particular, *Mutisia*-type pollen and high-spined *Tubulifloridites antipodica*. If substantiated, these records may represent the oldest for the family and will have thought-provoking biogeographic implications.

Dinocysts are under-represented in the Tertiary deltaic systems that are hydrocarbon prospective in Columbia, Venezuela and Trinidad, and this accounts for the emphasis on pollen results in most of the symposium contributions. The infectious protists were effectively showcased, however, in two papers, both treating the Cretaceous. Roel Verreusel (LPP Foundation) presented the framework of a dinocyst based zonation being used by Shell in Gabon, and Matsuru Arai (Petrobras) demonstrated latitudinal provincialism and Aptian through Senonian assemblage turnover in Brazilian basins.

The Margarita Hilton and surrounding beaches and cafes in Porlamar provided a perfect setting for the low lat enthusiasts in attendance to talk shop and swap HF stories over beers and lobster (I did not know that in Columbia HF is a blackmarket commodity). The organising committee of the conference are to be commended for their choice of location and Geoff and I again thank all those who presented papers and attended the symposium. The full list of titles for the papers presented follows:

Maria A. Lorente The history of palynology in Venezuela

Keynote Address: Mark B. Bush, Paul A. Colinvaux and Robert Rivera. Pleistocene refugia reconsidered: Modern and fossil pollen evidence

Marcel A. Carvalho. Paleoecological and paleoclimatic studies based on palynology of Pliocene and Pleistocene sediments from the Foz Do Amazonas Basin.

Dave Shaw. The application of palynology to the interpretation of sequence stratigraphy and paleoenvironments in the Neogene of Trinidad

Francisca Oboh-Ikuenobe, Alan P. Hoffmeister and R. Christfield. Patterns of palynomorph and palynofacies distribution in upper Oligocene to lower Miocene sediments in the Cote D'Ivoire-Ghana transform margin

Sharma L. Gaponoff. High resolution paleoenvironmental interpretations of Eocene through Miocene core and sidewall core samples from the Eastern Venezuelan Basin, Orinoco Heavy Oil Belt

Valent Rull and Claude Poumot. Eocene to Miocene palynocycles of Western Venezuela

Carlos Jaramillo and David Dilcher. Middle Paleogene palynology of La Pinalerita section, Llanos foothills, Colombia: Biostratigraphic and sequence stratigraphic implications

Josefa Carbon and Omar Colmenares. Estudio de los paleoambientes de sedimentacion del Mioceno de la cuenca Oriental: Caracterizacion de los conjuntos de palinomorfos y palinofacies

Mitsuru Arai, Jose Botelho Neto, Cecilia Cunha Lana and Elizabete Pedrao Low latitude palynology from Brazilian marine

Roel M. C. H. Verreussel, Ronald E. Besems and Michel G. Gaillard. A palynological zonation for the upper Cretaceous of Gabon

Oscar A. Yepes. Campanian-Maastrichtian dinoflagellate biostratigraphy and palynofacies analysis from Los Pinos Formation, Colombia

S. L. Gaponoff. High resolution paleoenvironmental interpretations of low paleolatitude late Albian conventional cores from Kuwait: A palynological approach

IF CRIME VICTIM CAN'T TALK,
POLLEN IN HIS CLOTHES MIGHT

Technique can help solve cases, A&M expert says

By ALLAN TURNER - Copyright 1997 Houston Chronicle

COLLEGE STATION -- The killers were wise guys.

First, they dispatched their victim with a few well-placed stabs. Then, after ripping labels from his clothing and hacking off his hands and feet to obscure his identity, they pitched the bloody remains to the side of a particularly desolate stretch of West Texas highway.

Led to the corpse by circling buzzards, sheriff's deputies were baffled. The case was the type that, despite the best efforts of law enforcement, often languishes unsolved for many years. It seemed the perfect crime.

But the killers didn't reckon with dealing with Texas A&M's Vaughn Bryant and the fingerprints of nature. Bryant, 57, head of the university's anthropology department, also is one of the nation's foremost proponents of forensic palynology -- the application of the study of pollen to criminal investigations.

"All the deputies knew," Bryant said recently, "was that this guy had been stabbed a number of times and that he was Hispanic. They didn't know if he was a drifter, an illegal alien or what. They tried all the normal forensic techniques, then after six months they decided to go the pollen route."

Examining dust from the victim's clothing under a powerful scanning electron microscope, Bryant -- who holds degrees in botany and geography as well as anthropology -- discovered large

quantities of marijuana pollen. Additionally, he found telltale traces of pollen from plants that grow primarily in the American Midwest. A couple of years have passed and the case still is unsolved -- not even forensic palynology works miracles. But investigators no longer are concentrating their efforts in South Texas, where they had been drawn by the victim's ethnicity. They are now taking a much closer look at the marijuana trafficking operations of a Kansas City drug gang.

Bryant, who has assisted the FBI, the federal Drug Enforcement Administration and numerous local law enforcement agencies in pollen cases, believes the microscopic grains of evidence ultimately may be as valuable as DNA testing in solving crimes.

"When it works," he said, "it works marvellously."

In Germany, the technique is credited with eliciting a confession from a murderer. When the suspect was confronted with the fact that his muddy boots had entrapped pollen from plants that grew only near the murder site, his protestations of innocence crumbled. In New Zealand, stolen sheep were identified by the pollen in their wool. And in the United States, prime honey adulterated by cheaper varieties routinely has been identified by pollen comparison.

Bryant, who entered the field about 20 years ago as a scrutiniser of honey, offered countless stories of how palynology has solved a case, or at least provided key evidence.

But, he admitted, persuading law officers to routinely test for pollen has been an uphill battle.

The state's top medical examiners admitted examining pollen could provide valuable clues but said it rarely is done.

Dallas County Medical Examiner Jeffrey Barnard likened the procedure to studying insects found at a crime scene, a field called forensic entomology and one that has gained acceptance only in recent years.

"It takes a while to break ground, for a procedure to become popular," he said. "It's not going to be used on every case, but it certainly has great potential."

"I am not aware of any use here," said Harris County Medical Examiner Joye Carter. "It's not a simple thing to do. You're taking a very tiny piece of evidence -- you're really dealing with ultramicroscopic material. It's not like you have a whole plant."

> "I can remember when DNA first came out," he said. "There was great hesitancy to use it at first. The lab techniques were not good enough. The results couldn't be used in court. But now it's standard".

Sherri Deatherage Green with the Texas Department of Public Safety said no training in forensic palynology is offered at the department's academy.

"It's so specialized that its usefulness as a routine matter is probably less than the traditional study of blood and DNA and trace fibres," she said.

Vincent DiMaio, chief Bexar County medical examiner in San Antonio, laughed when asked about the discipline.

"I've never heard of it," he said.

Bryant admitted the forensic study of pollen can be daunting. Pollen from the crime scene must be well preserved, then microscopically compared to other known pollens. Bryant estimated there are more than 1 million plant species world-wide. A&M has a library of some 15,000 pollen slides.

Still, he suggested, "laziness" may be a reason for law enforcement's slow adoption of the procedure.

"I go out and lecture," he said, "and the big problem I have is that they often think it is a great idea, but they don't see its direct applicability. They're concerned that it's not court-tested, that such evidence wouldn't be admissible in court. But it is. There are convictions that could be cited as examples, but they're outside Texas.

"Another thing is that most of them don't have a clear idea of how great the differences are in pollen in Houston, for example, and those in Brazos County."

Many plants, he said, disperse their pollen over very limited areas. Thus, the presence of such pollen in the hair or clothing of a victim or suspect can offer powerful evidence regarding that person's movements.

The same thing with the study of bugs. In the early days, the view was a maggot is just a maggot. Now, it's unbelievable how close you can come to establishing the time of death by examining the kinds of maggots growing on a carcass."

Forensic palynology, he said, is another such overlooked technique.

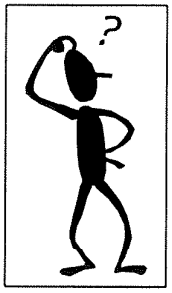
Bryant, the Dallas-born son of a South American correspondent of The Associated Press, long has been drawn to cutting-edge fields of academic study. While a doctoral candidate in botany at the University of Texas, he became fascinated with the work of Canadian botanist Eric O. Callen. Callen, considered somewhat eccentric by more orthodox academics, was a pioneer in the study of fossilized human feces.

When Callen died in the early 1960s, Bryant became the leading researcher in the field of coprolites, gleaning groundbreaking information on the diet and lifestyle of ancient man. He even popularized a high-fiber, so-called "cave man" diet that presaged today's health-conscious dietary regimens. Bryant's academic career also included stints as a mapmaker for archaeologists.

Bryant became involved in forensic palynology in the early 1980s when the federal government asked his help in curbing honey subsidy fraud.

"At that point, the USDA was offering subsidies for honey production in this country," he said. "But there was fear that some producers were adulterating their honey with cheaper foreign honey. They'd buy Mexican honey for 20 percent less, mix it with their product and collect the subsidy."

Such uses for pollen studies have found wider acceptance than in life-and-death criminal cases. Often, he said, investigators emphasize procedures that provide clear-cut indications of guilt or innocence. Results from pollen tests often are more subtle. Still, when he surveys the use of forensic palynology, he sees many missed opportunities.



The O.J. Simpson murder trial was a case in point.

Even though evidence from fibres and hairs and DNA analysis of blood stains found in clothing at the crime scene and Simpson's car and apartment played a role in the trial, no effort apparently was made to check for pollen, Bryant said.

"Testimony during the trial suggested that the person or persons who committed the double murder may have hidden in bushes in front of the victim's home," he said. If that assumption had been correct, he said, pollen from those bushes might have rubbed off on the assailant's clothing, linking him to the crime scene.

"It seems to me that the bottom line of law enforcement is to see that justice is done, to see that the guilty are caught and the innocent set free," Bryant said. "It seems to me that anything that helps answer those questions is important, no matter how minuscule it might be."

(Ednotes: Ed's attention was drawn to this article by Vaughn Bryant and a simultaneous observant AASP member from Texas, whom we will refer to as Mr.A, although his real name is Gordon Wood. The original article contained a photograph of Vaughn Bryant holding a piece of sinister footwear, which on the xerox looked like a sneaker. Some people have made insinuating remarks as to the nature of Mr Bryant's relationship with the shoe, which we will not repeat here, but which can be obtained from Mr. Wood.)

CONFERENCE REPORT

- Ann Cadman -

In September 1997 The Bernard Price Institute (BPI) of the University of the Witwatersrand (WITS), Johannesburg, hosted the Third Symposium of African Palynology, under the auspices of the International Asssociation of African Palynology/Association Internationale de Palynologie Africaine (IAAP/AIPA). The Symposium was held on the West Campus of the University, at the WITS Club Conference Venue. Total registration for the Symposium was 75, of whom only about a dozen were South Africans. The remainder were from 25 countries, mostly African and European.

After an informal meet-and-greet function at registration on the Sunday evening, the formal proceedings opened on Monday morning with the WITS Choir's rendition of our national anthem, followed by several traditional songs. Thereafter Professor Bruce Rubidge, Director of the BPI, welcomed delegates to both our university and country. The President of IAAP/AIPA, Dr Bechir Ben Tiba of Tunisia, expressed his thanks on behalf of the Association, and Ann Cadman thanked the donors who had provided sponsorship for various delegates.

The scientific programme commenced with the keynote address by Professor James A Doyle of the University of California, Davis, speaking on "The rise of angiosperms as seen in the African Cretaceous pollen record". The topic represented a unifying theme for the Symposium, and set the scene for an interactive week among delegates whose interests and research fields spanned the entire geological column, and ranged across into aerobiology and the allergy related sphere as well. Papers ranged from subjects such as "Regional stratigraphy and palynology of the Devonian system of Saudi Arabia", through "Taxonomic significance of pollen apertures in some African Boraginaceae" to "Aeropalynological studies on the atmosphere of Mansoura city, Egypt".

Entertainment was not neglected: the Vice©Chancellor of WITS, Professor Charlton, hosted a cocktail party at the BPI. Later in the week delegates visited the Sterkfontein australopithecine site, where Dr Cathy Kuman of the WITS Palaeoanthropology Unit explained the research programme. Prof Louis Scott of the University of the Orange Free State and Dr Marion Bamford (BPI) spoke on their involvement in the site (pollen and wood studies, respectively). Local Rotarians provided a traditional braai (barbeque).

An afternoon was spent at Gold Reef City, a reconstructed old mining town, where the highlight was probably an underground tour. The grand finale of the social calendar was the official dinner, held at the Restaurant Gramadoelas (translation: wild, in the bush).

Apart from the week's programme, delegates were also able to join two excursions, one pre- and one post-symposium. The latter was a one-day outing to the Makapansgat australopithecine and archaeological sites, about 300 km north of Johannesburg, attended by 33 delegates. The former was a ten-day excursion covering a circular route round the country, via Springbok, Cape Town and Port Elizabeth. Twenty-seven participants were whirled around South Africa on this trip, the object of which was to cover as many natural vegetation zones as possible. We were very fortunate to be joined on this excursion by Professor Braam van Wyk of Pretoria University ©©© he totally astounded and amazed all delegates with his vast and intimate knowledge of the local flora.

At the closing ceremony Dr Ben Tiba of Tunisia invited delegates to attend the Fourth Symposium of African Palynology, to be held in Sousse, Tunisia, in 1999. At the close of proceedings we South Africans felt very pleased that we had been able to welcome palynologists to our country --- the Symposium went off very well, both scientifically and socially: the general consensus was that, because it was a relatively small meeting, without parallel sessions, everyone was able to attend all presentations. This made for a very friendly and interactive result, where we were able to catch up with what was happening in fields other than our own.

CHANGES IN THE MARINE FLORA OF THE NORTH SEA

July 13-15 1998

University College Scarborough, North Yorkshire, UK.

FIRST CIRCULAR AND CALL FOR CONTRIBUTIONS

The conference, organised jointly with the Natural History Museum, will explore the patterns, monitoring, causes and consequences of recent changes in the marine flora of the North Sea. It will present a synthesis of current work in this area and, through field based workshops, investigate recent developments in biotope and biodiversity surveying. Sponsorship for the publication of a conference volume is currently being sought, and it is intended that prizes will be awarded for the best post-graduate talk and poster.

For info please contact Mary Barry, CERCI, University College Scarborough, Filey Road, Scarborough, North Yorkshire, YO11 3QG, UK Tel 01723 362392 Fax 01723 370815 Email maryb@ucscarb.ac.uk

BIODIVERSITY, BIOTECHNOLOGY& BIOBUSINESS

2nd Asia-Pacific Conference on Biotechnology

23 - 27 November 1998, Perth, Western Australia

Organised by WA Branch, Australian Biotechnology Association with Department of Conservation & Land Management and Murdoch University.

Biodiversity and biotechnology are inextricably interlinked and the challenge for the next decade is to conserve and sustainably exploit the rich biodiversity of the Asia-Pacific region. This presents not only scientific challenges, but also requires integration with environmental, social, legal and economic requirements.

This conference will provide a blend of papers on basic scientific and conservation issues and the application of new biotechnologies to these. It will also explore how the biotechnology industry can benefit from the unique biodiversity of the region and how this benefit can be realised. The social and legal issues such as access and ownership of biodiversity will also be discussed. The conference will be of relevance to scientists, managers, investors, legal practitioners and policy makers.

The purpose of this conference is to facilitate the exchange of information and views on the management and utilisation of biodiversity and the role biotechnology plays in this.

There will also be mid-congress excursions to Rottnest Island and Kings Park and special interest workshops are being arranged.
No specific tours have been organised, however the Conference Organisers will assist you in organising suitable tours in the Perth area (Vineyard tours, Rottnest Island), to the north of Perth (Monkey Mia, Shark Bay and Coral Bay, Exmouth and Ningaloo Reef, tropical Broome) or to the south (Margaret River region, forests of the south-west, the rugged south coast of Albany and Esperance).
Biodiversity, Biotechnology & Biobusiness, Congress West Pty Ltd, PO Box 1248, West Perth WA 6872, Australia
Fax +61 8 9322 1734,
e-mail biodiversity@science.murdoch.edu.au

SUMMER FIELD COURSE IN MARINE BOTANY
SHOALS MARINE LAB

Operating under the Division of Biological Sciences at Cornell University in cooperation with the University of New Hampshire at Durham, the Shoals Marine Laboratory (SML) offers unique opportunities for students to experience marine science. Located on 95-acre (38 hectare) Appledore Island, Isles of Shoals in the Gulf of Maine, this near-pristine environment allows students to study many aspects of the intertidal and sub-tidal ecologies. The laboratory facilites on island are complemented by the field capabilites of the SML-owned research vessel, John M. Kingsbury. Interested student may contact me directly and/or visit the SML web site at http://www.sml.cornell.edu/.
Seaweeds, Plankton & Seagrass:
The Ecology & Systematics of Marine Plants
Dates: June 8 - 22
Semester Credits Earned: 4
Cost: $1,800 (Financial aide is available!)
An introduction to the biology of marine plants, with an emphasis on the macroalgae common to the Gulf of Maine and Isles of Shoals. Lecture topics will include productivity in the world's oceans, life history studies, rocky shore ecology, commercial cultivation of algae, phytoplankton ecology, biogeography and the molecular evolution of marine plants. Field and laboratory exercises include collection and identification of algae from Appledore's intertidal and subtidal habitats, experimental design and data analysis for field study, and tidepool community surveys. Individual field projects may involve studies of vertical and spatial zonation patterns, productivity, photosynthesis, and desiccation.

TENTATIVE LECTURE TOPICS:
Introduction to marine producers
Brown, green and red algae
Rocky shore ecology
Marine vascular plants
Salt marshes
Commercial cultivation of marine algae
Diatoms and other Chrysophyta
Dinoflagellates and cyanobacteria
Phytoplankton ecology
Tropical coasts with reefs, mangroves and seagrasses
Molecular evolution and biogeography of marine algae
TENTATIVE LAB AND FIELD EXERCISES:
Collection & identification of macroalgae
Field study of Ascophyllum growth
Productivity of different morphological types of macroalgae
Recovery of photosyntheses after desiccation
Tidepool surveys
Collection and indentification of phytoplankton
Experimental design and data analysis for field projects
Individual field projects

For specific questions about the course content: Dr. Zechman, Department of Biology, California State University, Fresno, CA 93740-8034, Phone: (209) 278-4095
email: zechman@csufresno.edu

V INTERNATIONAL SYMPOSIUM: CEPHALOPODS - PRESENT AND PAST
Vienna 6-9th September, 1999

on the occasion of the 150th anniversary of the Geological Survey of Austria.
More than 150 years of Austrian cephalopod research are a good basis for a meeting between workers on recent and fossil cephalopods. The predominant aim of the symposium should be the deciphering of connections between recent and fossil cephalopods and comparison of cephalopod phylogenies concluded from fossil evidence and phylogenies based on genetic analysis of recent animals.
Dr Kathleen Histon, Geologische Bundesanstalt, Rasumofskygasse 23, Postfach 127, A-1031 WIEN, Austria
Tel.0043 - 1 – 712567416, Fax.0043 - 1 - 712567456

MAPS ARE ONE OF THE MOST EFFECTIVE WAYS OF SUMMARIZING PERCEPTIONS OF THE WORLD OF THE PAST- ACTING AS A BASIS FOR CONSTRUCTIVE CRTICISM AND INTERDISCIPLINARY WORK.

At the big INQUA Congress in Durban, South Africa in 1999, an inter-disciplinary Quaternary 'map room' display and a workshop on mapping strategies are planned.
The idea is to provide an open display and forum for all types of maps on any aspect of the Quaternary and late Tertiary. We also hope to publish a compendium volume and/or a compendium web site which compiles the latest and most useful Quaternary maps, providing a valuable reference source for all.
Some good topics that spring to mind include maps of ice-sheet extent, paleovegetation, historic patterns of forest loss, past sea levels/coastlines, climate parameters (from data or from models), past human distributions, animal distributions etc etc.
They can be on any scale from a province to the whole world.
If you are interested, please contact; Jonathan Adams, MS 6335, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA, e-mail; Jonathan@elvis.esd.ornl.gov
http://www.esd.ornl.gov/ern/qen/nerc.html

BOOKS & JOURNALS

MaryAnn L. Malinconico would like to buy a used copy of A. Traverse's Paleopalynology, hard cover or paper back. Condition doesn't matter as long as all the pages are present. Please reply to love@ldeo.columbia.edu
or 821 Paxinosa Ave., Easton, PA 18042.

Hass, H.C. & Kaminski, M.A. (eds.) 1997. Contributions to the Micropaleontology and Paleoceanography of the Northern North Atlantic.- Grzybowski Foundation Special Publication No. 5, 271pp. (ISBN 83-901164-5-6).
It contains 16 original and scientifically reviewed papers that focus on several aspects of the micropaleontology and paleoceanography of the northern North Atlantic and adjacent areas. It includes a chronologically organized section that presents papers from the Paleocene to the most recent sediments, papers on present-day benthos and plankton investigations as well as papers that introduce

a new benthic foraminifer species and a new planktic foraminiferal morphogroup, respectively. Additionally, one paper deals with the ultrastructure of planktic foraminifer tests affected by bottom current transport in the North Atlantic.

BRINGING FOSSILS TO LIFE: AN INTRODUCTION TO PALEOBIOLOGY

by Donald R. Prothero (Occidental College, Los Angeles, CA)
Just published by WCBrown/McGraw-Hill, 457 pp., paperback
ISBN 0-07-052197-2
You can order a desk copy through the Web at: www.mhhe.com or call (800)338-3987 to order a desk copy.
CONTENTS
PART I: The Fossil Record: A Window on the Past
1. The Fossil Record
2. Variation in Fossils
3. Species and Speciation
4. Systematics
5. Evolution
6. Extinction
7. Functional Morphology
8. Paleoecology
9. Biogeography
10. Biostratigraphy
PART II: Life of the Past and Present
11. Micropaleontology
12. Colonial Life: Archaeocyathans, Sponges, and Cnidarians
13. Lophophorates: Brachiopods and Bryozoans
14. Jointed Limbs: The Arthropods
15. Kingdom of the Seashell: The Molluscs
16. Spiny Skins: The Echinoderms
17. Dry Bones: Vertebrates and their relatives (including graptolites, conodonts)
18. Fossilized Behavior: Trace Fossils

PALAEOECOLOGY: ECOSYSTEMS, ENVIRONMENTS AND EVOLUTION

Brenchley, P.J. and Harper, D.A.T. Chapman & Hall 1998 420 pp.
The book is a richly-illustrated synthesis of modern palaeoecological theory and practice with numerous case studies from around the world.
Contents:
1. Investigating the history of the Biosphere
2. Environmental Controls on Biotic Distribution
3. Taphonomy
4 Adaptive Morphology
5. Trace Fossils
6. Fossils as Environmental Indicators
7. Populations and Communities
8. Palaeobiogeography
9. Evolutionary Palaeoecology of the Marine Biosphere
10. Fossil Terrestrial Ecosystems
e-mail David Harper at

THE PRIVATE LIFE OF PLANTS: A NATURAL HISTORY OF PLANT BEHAVIOUR

David Attenborough, 1995., Princeton University Press, Princeton, New Jersey, USA. 320 pp. ISBN 0-691-00639-3. (Hbk.)
Good science writing for the public is extremely difficult. And scientists who are good writers are a rare breed. In Sir David Attenborough we find a longtime and skilled practitioner of this art. I can remember reading *Zoo Quest to Madagascar* (published in 1961) when I was very young and watching in fascination an old black-and-white TV as Attenborough, dressed in safari gear, sat in the midst of a desert somewhere, piecing together fragments of shell to make an enormous egg and speculating that this extinct bird was the giant Roc of Arabian Nights legends. With time and new technology, Attenborough's communication skills have become more refined, yet he has never lost the ability to convey enthusiasm and fascination for natural history.
Attenborough is best known for his programs on zoology. But in this latest endeavour, he turns his attention to the world of plants. *The Private Life of Plants* continues a long tradition of books produced to accompany his TV series. Splendidly illustrated with dozens of colour photographs, this book is subdivided into six chapters ("Travelling", "Feeding and Growing", "Flowering", "The Social Structure", "Living Together", and "Surviving"), mirroring the structure of the TV series for which it is a companion volume.
Each chapter concentrates on a particular activity of plants. "Travelling" examines seeds and seed dispersal, the stage of most plants' life cycle when they can travel most easily. It surveys some of the ingenious ways in which plants enlist the witting or unwitting aid of animals and birds for transportation, by producing attractive fruits for example. "Feeding and Growing" highlights methods plants use to try to protect themselves from creatures that would feed on them, including a formidable array of camouflage, mechanical and chemical defences against predators. Attenborough points out that this warfare takes place in a co-evolutionary fashion. As plants develop new defences, animals develop new ways of getting around them. Ultimately, all animal life is dependent, even at second or third hand, on plant food. Graphic images and descriptions show how some plants (pitcher plants, sundews, Venus' flytrap) have turned trapper and carnivore, deriving part of their nutrition from insects.
For palynologists like myself, the most interesting chapter covers pollination ("Flowering"). Although wind pollination is mentioned, most attention is paid to the complex interactions between plants and their animal, bird, or insect pollinators. This provides a very different perspective to the one I am used to from pollen records, where the majority of pollen types are from wind-pollinated plants. Attenborough describes how flower structure, including shape, colour, and scent, can be modified in a myriad of ways to accommodate different pollinators and how plants entice their preferred pollinators by offering nectar for instance. In some cases, the plant may be completely dependent on one species of insect for pollination. This must be an important consideration for those concerned with biodiversity and ecological integrity.
The "Social Struggle" begins with the great storm or hurricane that devastated much of England in October 1987. Attenborough shows that an event seen as a disaster for trees and forests was an opportunity for many other types of plants, especially those that thrive in forest clearings or gaps. Interestingly, research I have read elsewhere suggests that such "super storms" have probably been a regular feature in some northern forests. Storm events, with a recurrence interval of several centuries, have been identified in the forests of the eastern US. Clearly, such rare, on a human scale, events play an important role in an ecosystem where the dominant life forms may have lifetimes that are measured in centuries. Competition — for light, water, nutrients, and growing space — forms the basis of the social struggle for plants. Attenborough also explores the role of fire, not so much as a destructive agent, but as a positive influence in forest maintenance and regeneration.
"Living Together" focuses more explicitly on plant-animal and plant-insect interactions. Attenborough shows that these relationships often have benefits for both partners; plants get protection and sometimes nutrition, and insects get a home and a secure food supply. Attenborough turns his attention to less obvious relationships such as the partnership between mycorrhizal fungi and plants. The apogee of such symbiosis is lichen, an intimate association between fungi and algae. Attenborough

surveys some of the multitudinous forms of lichen and emphasizes their importance as pioneering organisms in harsh environments. More sinister are plant parasites, deriving nutrition from other plants. The most spectacular of these is rafflesia and Attenborough includes a remarkable series of photographs showing one flowering, producing the biggest flower of any plant.

Extremes are the keynotes for "Surviving"— extremes of cold, of heat, of drought, or of moisture. Suitably, the chapter begins with a visit to the extreme ends of the earth, Antarctica and the Canadian Arctic, where Attenborough finds some plants that can survive even under the most severe conditions. At the equator on Mount Kenya, plants have to survive diurnal swings between extreme cold and heat. As a result, the mountain has developed its own unique flora. Similarly, on the tepuis of South America, drenched by torrential rainfalls, an astonishing range of endemics has developed, including many carnivorous plants. Attenborough estimates that the tepuis have 900 species of orchids, most of which are endemic. Then Attenborough explores the boundary between land and sea, where the mangroves reign, coping with salinity and instability.

To children especially, plants often seem boring because they don't appear to *do* anything. The time scale over which a plant grows and develops is quite different to that which controls human metabolism and activities. Plant activities are generally imperceptible. Many of the episodes in *The Private Life of Plants* featured time-lapse sequences of plants, often accompanied by wonderful sound effects, making growth and development seem to happen almost at our pace. This is lost in the book, yet many of the colour photographs do have an immediacy and dynamism, as though motion has just been suspended. There are several still sequences, such as ones of a tent-making caterpillar colony, or the development of a pitcher plant's trap, which vividly convey a sense of activity.

A disproportionate amount of space is devoted to those over-achievers of the plant kingdom, the orchids. And most chapters concentrate on the bizarre and strange. Thus readers will learn much about the flowering and pollination of the giant titan arum of Sumatra which, as Attenborough notes, is virtually unknown to science, and very little about the behaviour of the ubiquitous dandelion. Much attention is paid to plant-animal and plant-insect interactions, as though throughout Attenborough had a secret yearning for his own field of zoology. The geographic scope is impressive, from poppies in Canada's Arctic to lichens in Antarctica, from succulents in the deserts of Namibia to giant sitka spruce in Canada's west coast rainforest. Keeping track of these journeys would have been helped by a map of the major world vegetation types or ecoregions and the location of some of the places visited. This is a book that gives a big picture.

This book is not written from a botanist's or taxonomist's viewpoint, but very much from the perspective of the natural historian. Latin binomials are confined to the index; plants are called by common names in the text. Botanic purists may "Harrumph!" in annoyance, but it probably makes the book accessible to a wider readership. As such, it is a book that can be enjoyed by anyone interested in natural history. Adults will enjoy the text; children will be fascinated by the colour pictures. Despite its deceptively simple style, it is packed with information. From my own position, it would make great supplemental reading for an introductory course in palynology. Especially so since many students come to palynology from varied backgrounds (geology, anthropology, geography), and sometimes have only the vaguest grasp of botany and the role of pollen in plant life-cycles. Often, getting students to understand that pollen grains aren't seeds can be a herculean endeavour!

The appeal of this book undoubtedly lies in its very personal view of the world of plants. Attenborough often takes a quirky and unexpected look at aspects of the plant kingdom. He thinks that plants have often used us as much for their ends as we have them for ours. I especially enjoyed the "wheat's-eye-view" of its domestication - enlisting humans to enable it to defeat rival plants and spread over huge areas of the globe! Although Attenborough states that scientific sources would be out-of-place in this book, it would have been useful to have a list of further reading for anyone whose interest had been caught by a specific topic.

But these are minor quibbles. This is a book to be enjoyed. Like many others of my generation I suspect, I can attribute at least part of my own fascination for the natural world to some of Attenborough's early broadcasts. This present book, and its TV series, will serve to introduce a whole new generation to the wonder of plants. By making plants seem as charismatic as animals, Attenborough has done a great service to the science of botany.

- Alwynne B. Beaudoin, Edmonton, Alberta -

THE WEB IN ALL OF ITS COLOURFUL GUISES

A new page paleobotanists.
http://www.uni-wuerzburg.de/mineralogie/palbot1.html

The International Association for Plant Taxonomy announces availability of the English text of the International Code of Botanical Nomenclature (Tokyo Code) on the WWW:
http://www.bgbm.fu-berlin.de/iapt/nomenclature/code/tokyo-e/

The Geological Survey of Canada, Council of Chairs of Canadian Earth Science Departments, and the Paleontology Division of the Geological Association of Canada have produced or recently updated the following web pages that you may wish to check for access to Canadian paleontology:
http://www.nrcan.gc.ca/~rose/paleo/directry.htm
http://www.nrcan.gc.ca/~rose/paleo/links-cd.htm
http://iago.stfx.ca/people/paleodiv/pd.html

Regarding the first web page, a searchable Directory of Canadian Paleontologists, the most obvious initial technical defects have been resolved, but a big deficiency still is in the missing or out-of-date information on many individuals, especially quaternary and vertebrate workers outside of geology departments. Please help us complete the database by submitting your data and encouraging your colleagues to do so, perhaps by forwarding this message on. Perhaps electronic tools of this sort will allow us to deal easier with reductions in professional paleontology resources and provide us with mechanisms for strategic analysis of our situation. The primary purpose of the directory is to put Canada-based workers in contact with each other and to make them accessible to potential clients and colleagues in Canada or beyond. For this reason, paleontologists based outside of Canada are not included, except for members of the Paleontology Division of GAC.

Note also that the Links to Canadian Paleontology page gives instructions regarding a new electronic Discussion Group that may serve as a communications vehicle amongst Canadian paleontologists.

Terry Poulton, Chief Paleontologist, Geological Survey of Canada, ph. 403 292 7096, FAX 403 292 6014, poulton@gsc.nrcan.gc.ca

I have available for free distribution a caliper interface program for Windows that imports measurements into Excel. It is written in Visual Basic 4 and available in 16-bit, 32-bit, and Excel VBA macro versions. Serial port settings for most caliper interfaces are built in. You can check out the details and download the software from my university web site
http://www.usd.edu/esci/programs/
There is also a link at SUNY
http://life.bio.sunysb.edu/morph/
under Software, Support routines.
Professor Timothy H. Heaton, Director of Earth Sciences, University of South Dakota, Vermillion, SD 57069
theaton@usd.edu, www.usd.edu/~theaton

EXTANT PLANKTIC FORAMINIFERA AND THE PHYSICAL ENVIRONMENT IN THE ATLANTIC AND INDIAN OCEANS - An atlas based on CLIMAP and Levitus (1982) data
This publication is available at ETH
(http://www.erdw.ethz.ch/~heinz/HH1996/aa_start.html)
and the NGDC since1996. Due to a reorganisation of the NGDC World Wide Web services the URL of the NGDC mirror site has changed to:
http://www.ngdc.noaa.gov/mgg/geology/hh1996.html
The symbolic link from the old NGDC site will be removed soon. Frequent users may wish to hold the files on their local computer (see http://www.erdw.ethz.ch/~heinz/HH1996/obtain.html)
You can download the atlas from our anonymous ftp server.
address: ftp://eurasia.ethz.ch/pub/
user: anonymous
password: guest
download the directory /HH1996 or the files therein. Overall size: 1.9 MB You can then use the atlas with your WWW browser, using the <open file> command, starting with <aa_start.html>
I would appreciate a short note by e-mail (hilbrecht@erdw.ethz.ch) if you download from the anonymous ftp site (consider it the equivalent of a reprint request). If you can not ftp you may still receive the files as e-mail attachments.

After only 150 years, the Palaeontographical Society at last has a presence on the internet. Find out about what our aims, membership, how to obtain catalogues and order monographs (with members' discounts) in our sesquicentennial year at:
http://quercus.ge.man.ac.uk/PalSoc.html

CLIMATE CHANGE WWW SITES
gopher://gopher.ssec.wisc.edu/11/mcidas.d/other.d
a global view on the present ocean

http://www.ssec.wisc.edu/
http://www.nottingham.ac.uk/meteosat/
a global view on the present atmosphere

USGS global change data sets:
http://geochange.er.usgs.gov/pub/info/holdings.html

Nomenclature on
http://www-ocean.tamu.edu/~baum/paleo/paleogloss/paleogloss.html

UTCC website
The University of Toronto Culture Collection of Algae and Cyanobacteria now has a website where you can find a complete list of all the strains they have in culture.
http://www.botany.utoronto.ca/utcc
Comments are welcomed and may be sent to
jacreman@botany.utoronto.ca

The first issue of Palaeontologia Electroncia (PE) is officially released. The home site of the journal can be found at Texas A&M University...
http://www-odp.tamu.edu/paleo/index.htm
with local mirrors at the following institutions:
Carelton University, Canada
(http://www.earthsci.carleton.ca/paleo/index.htm)
ETH, Zurich
(http://www.erdw.ethz.ch/~pe/index.htm
Universitat de Valencia, Spain
(http://www.uv.es/~pardomv/pe/index.htm)
Additional mirror sites are on the way and will be linked into the pages mentioned above as they come online.
In addition, all PE sites contain the following resources & information

GSC
The Geological Survey of Canada, Council of Chairs of Canadian Earth Science Departments, and the Paleontology Division of the Geological Association of Canada have produced or recently updated the following web pages that you may wish to check for access to Canadian paleontology:
http://www.nrcan.gc.ca/~rose/paleo/directry.htm
http://www.nrcan.gc.ca/~rose/paleo/links-cd.htm
http://iago.stfx.ca/people/paleodiv/pd.html
Regarding the first web page, a searchable Directory of Canadian Paleontologists, the most obvious initial technical defects have been resolved, but a big deficiency still is in the missing or out-of-date information on many individuals, especially quaternary and vertebrate workers outside of geology departments. Please help us complete the database by submitting your data and encouraging your colleagues to do so, perhaps by forwarding this message on. Perhaps electronic tools of this sort will allow us to deal easier with reductions in professional paleontology resources and provide us with mechanisms for strategic analysis of our situation. The primary purpose of the directory is to put Canada-based workers in contact with each other and to make them accessible to potential clients and colleagues in Canada or beyond. For this reason, paleontologists based outside of Canada are not included, except or members of the Paleontology Division of GAC.
Note also that the Links to Canadian Paleontology page gives instructions regarding a new electronic Discussion Group that may serve as a communications vehicle amongst Canadian paleontologists.
Terry Poulton, Chief Paleontologist, GSC

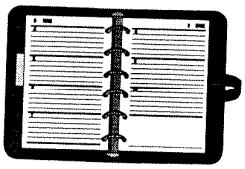
The 1997 edition of the Palaeontographia Italica has been published.
Abstracts are now available on our website which is at:
http://www.dst.unipi.it:/dst/pal/index.html

Koeltz Scientific Books, P.O.Box 1360, D-61453 Koenigstein / Germany, Fax: +49 6174 937240, Phone: +49 6174 93720
E-Mail: koeltz@ibm.net
Internet: http://www.koeltz.com
DILLARD, GARY E.: Freshwater Algae of the Southeastern United States. Part 3: CHLOROPHYCEAE: Zygnematales: Zygnemataceae, Mesotaeniaceae and Desmidiaceae (Section 1). 1990. (Reprint 1997, Bibliotheca Phycologica, vol.85). 51 plates. VI, 276 p. gr8vo. Paper bd. 120.00 DM/US $71.00

Contents: Introduction/ Key to Classes/ Key to Orders of the Chlorophyceae: Order Zygnematales: Family Zygnemataceae (Spirogyra, Sirogonium, Debarya, Mougeotia/ Zygogonium/ Zygnemopsis / Zygnema)/ Family Mesotaeniaceae (Mesotaenium, Spirotaenia, Cylindrocystis, Netrium, Roya, Genicularia, Gonatozygon)/ Family Desmidiaceae (Penium, Closterium, Docidium, Pleurotaenium, Triploceras, Tetmemorus)/ Appendix: I:Nomina excludenda/ Appendix II: Nomina addenda/ Bibliography.

The International Association for Plant Taxonomy announces availability of the English text of the International Code of Botanical Nomenclature (Tokyo Code) on the WWW:
http://www.bgbm.fu-berlin.de/iapt/nomenclature/code/tokyo-e/
The appendices are currently being converted and will be published as they become available.

Australasian Society for Phycology and Aquatic Botany
14th Conference, 1998
The next ASPAB conference will be held in conjunction with the meeting of the New Zealand Marine Sciences Society, from the 9th - 11th of July in Dunedin, New Zealand. Official notices and requests for abstracts will appear soon. For further information, please contact Wendy Nelson or Catriona Hurd
WendyN@tepapa.govt.nz
HURD@phyton.otago.ac.nz



AGENDA 1998

➢ April 6-10 1998: 3rd International Symposium 14C and Archaeology. Lyon, France. Details: Secretariat of the 14C and Archaeology Symposium, Centre de Datation par le RadioCarbone - Batiment 217, 43, Bld du 11 Novembre 1918 69622 Villeurbanne Cedex, France. FAX (33) 72 43 13 17, E-mail: cdrc14@cismsun.univ-lyon1.fr

➢ April 19-23 1998. 1st IGBP PAGES Open Science Meeting London, UK. Theme: "Past Global Changes and their Significance for the Future". Details: Frank Oldfield, IGBP PAGES International Project Office, Bärenplatz 2, CH-3011, Bern, Switzerland, Tel: +41 31 312 3133, FAX: +41 31 312 3168, pages@ubeclu.unibe.ch,
http://www.pages.unibe.ch/pages.html

➢ May 14-18 1998: Penrose Conference: Linking Spatial and Temporal Scales in Paleoecology. Near Annapolis, Maryland, USA. Meeting will consider the question of how understanding of patterns of modern and ancient species distributions and the processes that regulate these patterns are influenced by the spatial and temporal scales at which data are collected. Participation in the conference is limited to 80 people. Application deadline December 15 1997. Details: Andrew S. Cohen, Department of Geosciences, University of Arizona, Tucson, Arizona, AZ 85721, USA. Tel: (520) 621-4691, FAX: (520) 621-2672, acohen@geo.arizona.edu

➢ May 18-20 1998: GAC/MAC Meeting Québec City, Québec, Canada. Will include a Special Session on "Distribution Patterns of Fossils in Paleozoic Sequences of Northeastern North America". Field trip on "Paleontology, Stratigraphy and Sedimentology of Lower to Middle Paleozoic Rocks of the Anticosti Basin, National Park of Mingan Islands and Anticosti Island". The Association québecoise pour l'étude du Quaternaire (AQQUA) will hold its annual meeting during the conference, and will co-sponsor, with the Canadian Geomorphology Research Group (CGRG), a symposium on "Quaternary sea levels in Canada, particularly during the Holocene". Details: Mme Agathe Morin, Département de géologie et genie géologique, Université Laval, Pavillon Adrien-Pouliot, Sainte-Foy, Québec, G1K 7P4, Canada. Tel: (418) 656-2193, FAX: (418) 656-7339 E-mail: quebec1998@ggl.ulval.ca
See http://www.ggl.ulaval.ca/quebec1998.html

➢ May 18-21 1998: 1998 UNESCO Conference: "Learning from the Past: Global Paleoclimatic Changes" Yarmouk University, Irbid, Jordan. Details: Prof. Ali Jawad Ali, UNESCO Chair for Desert Studies and Desertification Control, Faculty of Science, Yarmouk University, Irbid,Jordan. FAX: +962-2-247983, E-mail: ajawad@yucc.yu.edu.jo

➢ May 18-23 1998. 11th Meeting of the IWGP (International Working Group on Palaeoethnobotany). Toulouse, France. Details: George Willcox, IPO, CNRS Iales-Berrias, 07460, France. FAX: +33-4-75 39 37 96.

➢ June 2-6 1998: Canadian Association of Geographers Annual Conference Ottawa, Ontario, Canada. Details: Mark Brosseau (mbrosseau@uottawa.ca) Will include a symposium on "Impacts of Global Climate Change in Southwest Yukon" organized by Peter G. Johnson at peter@aix1.uottawa.ca. Conference details: Marc Brosseau, Tel: (613) 562-5800, Ext. 1058, FAX: (613) 562-5145, E-mail: mbrossea@uottawa.ca
Web site: http://www.uottawa.ca/academic/arts/geographie

➢ June 7-12: Dino 6. Trondheim, Norway. Details: Dino 6 Secretariat, NTNU Museum of Natural History and Archaeology, Attn: Morten Smelror, N-7004 Trondheim, Norway. Tel: +47-73-592147, FAX: +47-73-592223, morten.smelror@vm.ntnu.no
Website: http://www.ntnu.no/vmuseet/dino6

➢ June 24-26: 7th International Conodont Symposium (ECOS VII). Bologna and Modena, Italy. Details: M. C. Perri, Dipartimento di Scienze della Terra e Geologico Ambientali, via Zamboni 67, 40126 Bologna, Italy, Tel: 39-51- 354560, FAX: 39-51-354522, E-mail: perri@geomin.unibo.it

➢ June 26-30 1998: 5th European Palaeobotanical and Palynological Conference Krakow, Poland. Details: Mgr. Grzegorz Worobiec, W. Szafer Institute of Botany, Polish Academy of Sciences, Lubicz 466, 31-512 Krakow, Poland. FAX: (48 12) 21 97 90, E-mail: worobiec@ob-pan.krakow.pl

➢ June 28-July 5: Gondwana 10: Event Stratigraphy of Gondwana. An International "Out of Africa" Symposium. University of Cape Town, South Africa. Details: Deborah McTeer, Gondwana 10 Congress Co-ordinator, Postgraduate Conference Division, UCT Medical School, Anzio Road Observatory, 7925, Cape Town, South Africa. Tel: +27-21-406-6348, FAX: +27-21-406-6263, E-mail: deborah@medicine.uct.ac.za
Website: http://www.uct.ac.za/depts/cigc

➢ July 6-9 1998: Pollen and Spores: Morphology and Biology Palynological conference organized by the Linnean Society Palynology Specialist Group (LSPSG) in collaboration with the Royal Botanic Gardens, Kew and the Natural History Museum, London. Includes: 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; Palynology and archaeology; Preparation and techniques. Details: Lisa von Schlippe, Conference Administrator, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB. FAX: + 44 (0)181 332 5176/5278, E-mail: l.von.schlippe@rbgkew.org.uk

➢ July 8-10 1998: Geocongress '98 Geological Society of South Africa, Pretoria, South Africa. Theme: "Past Achievements/Future Challenges". Details: Geocongress '98, P.O. Box 798, Pretoria 0001, South Africa, FAX: (012) 841-1221, E-mail: eaucamp@geoscience.org.za

➢ July 7-11 1998: FORAMS '98. Monterrey, Mexico. Details: Martha A. Gamper, E-mail: gamperma@fiu.edu
See http://www.fiu.edu/~longoria/forams98.htm

➢ July 26-30 1998: The Society for Organic Petrology (TSOP) 15th Annual Meeting In conjuntion with the Canadian Society for Coal Science and Organic Petrology (CSCOP) Halifax, Nova Scotia, Canada. Abstract title deadline is March 1, 1998; abstract deadline, April 1, 1998. Details: P.K. Mukhopadhyay, Global Geoenergy Res., Ltd., Box 9469, Station A, Halifax, Nova Scotia B3K 5S3, Canada, Tel:/FAX: (902) 453-0061, E-mail: avery@agc.bio.ns.ca.
Web site: http://agc.bio.ns.ca/tsophalifax98.

➢ August 16-20: 5th International Symposium on the Jurassic System IUGS Jurassic Subcommission. Vancouver, British Columbia, Canada. Field trips, 12-16 August and 21-25 August. Details: Paul L. Smith, Earth and Ocean Sciences, University of British Columbia, 6339 Stores Road, Vancouver, British Columbia, V6T 1Z4, Canada. Tel: (604) 822-6456, FAX: (604) 822-6088, E-mail: psmith@eos.ubc.ca
See http://www.eos.ubc.ca/jurassic/announce.html

➢ August 23-29 1998: International Council for Archaeozoology (ICAZ) 8th International Congress Victoria, British Columbia, Canada. Details: Rebecca Wigen (rwigen@uvvm.uvic.ca) or Quentin Mackie (qxm@uvic.ca) Includes a symposium on "High Resolution Faunas at the Pleistocene/Holocene Boundary" organized by Jon Driver (driver@sfu.ca)
Conference web site: http://www.uvcs.uvic.ca/conferce/archzool/

➢ September 5-7 1998: AMQUA 15th Biennial Meeting Puerto Vallarta, Mexico. Theme: "Northern Hemisphere-Southern Hemisphere Interconnections". Details: Dr Socorro Lozano Garcia, Instituto de Geología, Universidad Nacional Autonoma de Mexico, Cuidad Universitaria, Apartado Postal 70-296, 04510, Mexico D.F., Mexico. Fax: +52 5 550 6644.
E-mail: AMQUAMEX@servidor.uman.mx
Website: http://www.usu.edu/~amqua/

➢ September 6-11 1998: SEQS Symposium - "THE EEMIAN - local sequences, global perspectives" Kerkrade, The Netherlands. Details: Dr Th. van Kolfschoten, Institute of Prehistory, Leiden University, P.O. Box 9515, 2300 RA Leiden, The Netherlands, Tel:: +31- 71-5272640 / 5272390, FAX: +31- 71-5272429, E-mail: T.van.Kolfschoten@Rulpre.LeidenUniv.nl or Dr J.H.A. Bosch, Netherlands Institute of Applied Geoscience TNO - National Geological Survey, Department Geo-Mapping, North and East Netherlands, P.O. Box 511, 8000 AM Zwolle, The Netherlands, Tel:: +31- 38-4574588, FAX: +31- 38-4574557, E-mail: A.Bosch@nitg.tno.nl
Website: http://www.nitg.tno.nl/eqmal/eqmal.html (See the agenda)

➢ September 7-11 1998: The Second International Conference on Climate and History Norwich, UK. Theme: "Climate and History: Past and Present Variability - A Context for the Future". Arranged to coincide with the 25th anniversary of the Climatic Research Unit at the University of East Anglia. Details: Prof. Trevor D. Davies, Climatic Research Unit, University of East Anglia, Norwich, NR4 7TJ, England, UK. Tel: +44 1603 592721, FAX: +44 1603 507784.
Website: http://www.cru.uea.ac.uk/cru/conf/

➢ September 11-15 1998. CIMP Symposium 1998 Pisa, Italy. Details: Organizing Committee CIMP '98, Universita di Pisa, Dipartimento di Scienze della Terra, Via S. Maria 53 - I 56126 - Pisa, Italy. FAX: +39 50 500932 . E-mail: albani@dst.unipi.it

➢ Date: TBA. Canadian Paleontology Conference Antigonish, Nova Scotia

➢ September 26-29 1998: Canadian Paleontology Conference Toronto, Ontario, Canada.

➢ October 26-29 1998: Geological Society of America, Annual Meeting, Toronto, Ontario, Canada. Details: GSA HQ, Box 9140, 3300 Penrose Place, Boulder, Colorado 80301, U.S.A. Tel: (303) 447-2020, X133, E-mail: meetings@geosociety.org

➢ October 27-31 1998: AASP 1998 Annual Meeting Ensenada, Mexico.

➢ November 11-13 1998: 18th International Symposium of the North American Lake Management Society (NALMS) Banff Springs Hotel, Banff, Alberta, Canada. Includes a session on: "Application of Paleolimnology in Lake and Watershed Management"; for details of this session contact Ian D. Campbell, E-mail: icampbell@nofc.forestry.ca
For details of the conference, see the web site at http://www.biology.ualberta.ca/alms/home.htm

AGENDA 1999

➢ Date: TBA. CANQUA Meeting Calgary, Alberta, Canada. Conference website: http://pc56.ss.ucalgary.ca/

➢ Date: TBA. Fourth Symposium of African Palynology Sousse University, Tunisia

➢ Date: TBA. Canadian Paleontology Conference Calgary, Alberta, Canada.

➢ Date: TBA. International Botanical Congress St Louis. Laure Civeyrel and Annick Le Thomas are trying to organize a symposium on "Palynological Contributions to Phylogeny and Systematics" at this Congress. For more details on this symposium, contact Laure Civeyrel, civeyrel@isem.isem.univ-montp2.fr

➢ May 26-28 1999. GAC/MAC Meeting Sudbury, Ontario, Canada. Details: P. Copper, Department of Earth Sciences Laurentian University, Sudbury, Ontario, P3E 2C6, Canada. Tel: (705) 6675-1151, Ext: 2267, FAX: (705) 675-4898, E-mail: gacmac98@nickel.laurentian.ca

➢ May 1999, days TBA: Second International Limno-Geology Conference Brest, France. Details: Jean-Jacques Tiercelin, Directeur de Recherche au CNRS, UMR 6538 "Domaines Oceaniques", CNRS URA 1278, Groupe Riftogenese Est-Afrique, Universite de Bretagne Occidentale, Departement des Sciences de la Terre, 6, Av Le Gorgeu, 29285 Brest - France, Tel:/ax1: (33) 298 01 61 80, E-mail: tiercelin@univ-brest.fr

➢ August 3-11 1999: XV INQUA Congress. Durban, South Africa. Theme: "The Environmental Background to Hominid Evolution in Africa". Details: Dr. D. M. Avery, Secretary-General, South African Museum, P.O. Box 61, Cape Town 8000, South Africa. Tel: +27-21-243330, FAX: +27-21-246716, E-mail: mavery@samuseum.ca.za
See also http://inqua.nlh.no/congress/congress.html

➢ October 25-28: Geological Society of America, Annual Meeting. Denver, Colorado, U.S.A. Details: GSA HQ, Box 9140, 3300 Penrose Place, Boulder, Colorado 80301, U.S.A. Tel: (303) 447-2020, X133, E-mail: meetings@geosociety.org

AGENDA 2000

➢ Date: TBA. GAC/MAC Meeting Calgary, Alberta, Canada

➢ Date: TBA. 10th International Palynological Congress (IPC) Nanjing, China.

➢ Date: TBA. Canadian Paleontology Conference Antigonish, Nova Scotia, Canada

➢ November 13-16: Geological Society of America, Annual Meeting. Reno, Nevada, U.S.A. Details: GSA HQ, Box 9140, 3300 Penrose Place, Boulder, Colorado 80301, U.S.A. Tel: (303) 447-2020, X133, E-mail: meetings@geosociety.org

AGENDA 2001

➢ Date: TBA. GAC Meeting

➢ Date: TBA. CANQUA Meeting Whitehorse, Yukon Territory, Canada (proposed).

➢ November 5-8: Geological Society of America, Annual Meeting. Boston, Massachusetts, U.S.A. Details: GSA HQ, Box 9140, 3300 Penrose Place, Boulder, Colorado 80301, U.S.A. Tel: (303) 447-2020, X133, E-mail: meetings@geosociety.org

AGENDA 2002

➢ Date: TBA. GAC Meeting

➢ October 28-31: Geological Society of America, Annual Meeting. Denver, Colorado, U.S.A. Details: GSA HQ, Box 9140, 3300 Penrose Place, Boulder, Colorado 80301, U.S.A. Tel: (303) 447-2020, X133, E-mail: meetings@geosociety.org

AGENDA 2003

➢ Date: TBA. CANQUA Meeting Halifax, Nova Scotia, Canada (proposed).

"EDITORIAL"

Most of the information on coming events and new websites emanate directly from Internet discussion groups, and AASP and CAP websites, which are hereby gratefully acknowledged.

"Editor":..... is the person who is in charge of a newspaper or magazine and who decides what will be published in each edition of it ...[....]..... is a computer program that enables you to make alterations and corrections to stored data.... (Collins Cobuild English Dictionary, 1995 edition)

Artwork is 100% proof digital, and is stolen ooops ahem borrowed from Corel Clipart and some uncited websites.

Due to persistent inconveniences in the area of metabolic parameters of the editorial carbon-based module, this NL is late.

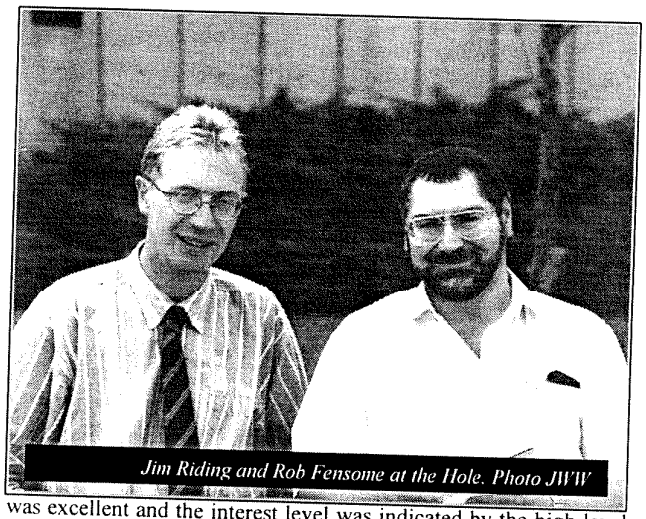
CAP NEWS: PALYNOLOGY AT THE HOLE

Rob Fensome and Andrew MacRae
Geological Survey of Canada (Atlantic)
Dartmouth, Nova Scotia

This article first appeared in CAP Newsletter 20(2):7-12, 1997

The 30th Annual Meeting of the American Association of Stratigraphic Palynolygists (AASP) took place this year in the idyllic setting of Wood's Hole, Massachusetts. Wood's Hole is the home of the Marine Biological Laboratory (MBL), Wood's Hole Oceanographic Institution (WHOI or "Hooee" as it seems to be called by locals), Alvin the submersible, and the ferry services to the evocative Martha's Vineyard and Nantucket islands. The venue was indeed different from a hotel-orientated setting, more familiar for AASP meetings. Most attendees stayed at the Swope Center of the MBL, which not only provided beds, but meals, "free" booze during the 5 o'clock to 6 o'clock happy hour (hic), and a sumptuous lobster supper (yes, which even we lobster connoisseurs from Nova Scotia enjoyed, though perhaps we may have been mellowed in our lobster assessment capability by the foregoing happy hour).

Not only the accommodation differed from the usual format. The organizers, Sarah Damassa, Ken Piel and Paul Strother, decided to focus the meeting around a particular theme and invite several "keynote" talks relating to that theme. The theme chosen was "Evolution of the Marine Phytoplankton" and the invited talks were on diatoms, dinoflagellates, invertebrates, nannoplankton and Precambrian life. We'll discuss these talks in more detail below. We feel that this experimental format was a resounding success from the scientific point of view: the general quality of the talks



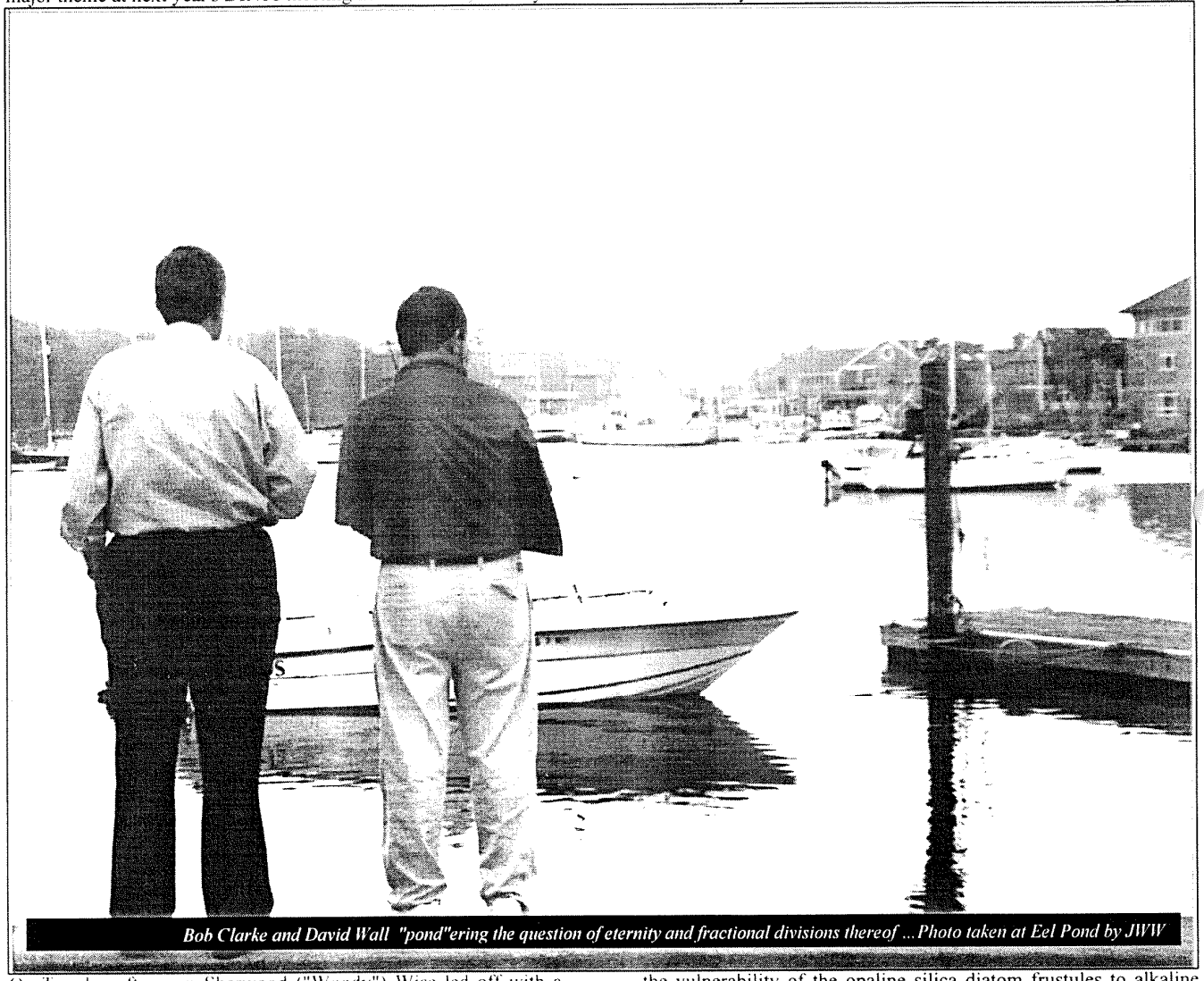
Jim Riding and Rob Fensome at the Hole. Photo JWW

was excellent and the interest level was indicated by the high level of animated discussion that arose in the ample seheduled question periods. What may have been a problem was the marketing of the idea: the fact that only 59 people registered, although possibly a sign of the times, may also reflect the feeling of non-phytoplankton oriented palynologists that the meeting would hold no interest for them. If this is the case, it's a shame because it was not the intention of the organizers to exclude other aspects of palynology, and other aspects were certainly well represented among the presentations.

So, more about the juicy invited talks. Andrew Knoll was the first invitee off the mark on Monday morning. He discussed "Life in the Precambrian Oceans". Andy noted that leiospheres, which are presumably the earliest remains of eukaryotes, first appeared about 2400 Ma and that acritarchs showed substantial morphological differentiation by 1300 Ma. This diversity was abruptly curtailed at the onset of the Varinger glacial event, but increased again at the same time as the Ediacaran fauna, only to decline again just before the end of the Precambrian. It is sobering to think that all these events happened before the Cambrian "explosion", which only 50 years ago was heralded as the onset of significant lifie on earth. Andy also showed that examination of Precambrian fossils can stimulate the discovery of new living organisms - a new living genus and species was discovered in intertidal encrustations after fossils from analogous Precambrian paleoenvironments had pointed the way.

The Monday afternoon invited paper was on dinoflagellates, coauthored by the two of us and three other Canadian,

neontologists Max Taylor and Gary Saunders and paleontologist Graham Williams. We're not sure if there is some significance to the fact that it took only one author each to discuss the other keynote topics, but five of us to discuss dinos! (Shades of "How many Lower Slobovians does it take to screw in a light bulb?"). Anyway, we attempted to review the evidence for the course and pattern of dinoflagellate evolution, bringing in considerations from the fossil record, biogeochemical evidence (more below), and the ultrastructure of modern dinos and their molecular phylogenetics (i.e., "RNA studies"). The way all these sources of evidence are coming together is an exciting current development that will be a major theme at next year's DIN06 meeting in Trondheim, Norway.



Bob Clarke and David Wall "pond"ering the question of eternity and fractional divisions thereof ... Photo taken at Eel Pond by JWW

On Tuesday afternoon Sherwood ("Woody") Wise led off with a relaxed and stimulating discussion of calcareous nannofossils, which of course mainly consist of coccoliths. Woody told us that the group first appeared in the Late Triassic and diversified to such an extent through the Jurassic that the expansion is reflected in the change from "black" to "brown" to "white" Jura in Europe. Through to the Early Cretaceous, the greatest diversity and abundance was in open ocean environments. In the Late Cretaceous, this focus shifted to the continental shelves and interior seaways, the result being the great chalk belts of North America and Europe that gave the Cretaceous its name.

Woody noted that, unlike dinoflagellates, nannoplankton underwent a sudden and drastic extinction at the K/T boundary, rebounded to some extent in the Paleogene, but then generally declined in the Neogene. Many aspects of this pattern - appearance in Late Triassic, diversification in the Jurassic, peaks in mid to late Cretaceous and decline in the Neogene - are intriguingly familiar to dinoflagellate workers.

John Barron is perhaps best known to a general audience for his papers on paleoclimatology, but his roots are in the diatom business, and it was as a specialist in that siliceous group of microfossils that John addressed us on Wednesday morning. He told us that the earliest definitive diatoms are from the Early Jurassic, but the earliest forms are from the Early Cretaceous. Diatoms may have evolved earlier than these records suggest, but the vulnerability of the opaline silica diatom frustules to alkaline pore waters and temperatures in excess of 50°C makes their preservation in older rocks a risky business. John suggested that continued study of diatoms in protective concretions should in the future contribute significantly to our understanding of early diatoms. There was an "explosive" (John's word) radiation of diatoms in the Late Cretaceous, but no major extinction event at the K/T boundary. He suggested that the presence of resting spores (or "cysts") in the life cycle allowed diatoms to survive that environmental crisis - a possibility that we might also invoke for dinoflagellates. In the Cenozoic, diatoms had their ups and downs that John related to climate, but, unlike dinos and nannos, no general decline in the Neogene.

With no disrespect intended to Andy, Woody and John, the star of the invited speakers was Richard Bambach, who delivered an exceptional presentation on the "Evolution of the Marine Ecosystem" after dinner on Tuesday. Richard reviewed the changes in ecosystem structure through time, emphasizing the metazoan invertebrates. The first 2.5 billion years of the history of life was a story involving only producers and decomposers - no consumers. Consumers first appeared in the Vendian, but their limited presence even then allowed the sessile Ediacaran fauna to survive. With the Cambrian radiation and consequent increase in consumers, Ediacaran type faunas could no longer survive. Richard pointed out that, although there is perhaps not a significant difference between Paleozoic and later diversities of marine animals, Paleozoic forms were mostly gristle and skin - if you look inside a brachiopod, "there's no one home". However, organisms that dominated the Mesozoic and Cenozoic seas were fleshy, more massive, and included more carnivores, signifying a change in energy transfer and other ecological factors. Why a talk on such macrofossils at a meeting focusing on phytoplankton? Well, phytoplankton are "fish food" of course, and a full understanding of the ecological and evolutionary patterns among consumers can only be gained by a consideration of patterns at the lower end of the food chain. Richard posed the critical questions: 1) what changes in the primary ecosystem influence the consumer system; and 2) what are the feedbacks from consumers that influence primary producers?

Of the other talks, space limits the number that we can mention specifically, and we have to be honest and say that, even between the two of us, we didn't attend every talk - collaborative discussions (perhaps the most valuable aspect of meetings) distracting our attention for some of the time. Apart from the invited presentations, the highlight for both of us was Nina Talyzina's talk (coauthored by Michael Moldowan and the late Gonzalo Vidal) on the distribution of dinosterane geochemical biomarkers in Early Cambrian acritarchs. Using a novel application of a technique from cell biology, Nina was able to extract and concentrate fractions from standard palynological preparations based on their different fluorescence characteristics. The resulting fractions consisted of leiospheres and tasmanitids, neither of which yielded dinosteranes, and acanthomorph acritarchs, which did. These results have obvious implications for the affinities of some acanthomorph acritarchs, and are consistent with molecular phylogenetic evidence, which suggests that the dinoflagellate lineage evolved in the Late Precambrian. Nina's work is intriguing, innovative, thoughtful and clearly carefully carried out. Questions remain however; where does the dinosterane come from - one wouldn't expect it to be associated within the "sporopollenin" walls in the living organisms; are we sure that the closest living relatives of dinoflagellates (apicomplexans and ciliates~ lack dinosteranes; and are the results repeatable using confirmed dinos and prasinophytes of the later fossil record?

Paul Strother reminded us that that bane of a group, the "boring" leiospheres, are polyphyletic and can be marie, and, perhaps surprisingly, non-marine as far back as the Cambrian. Thomas Servais, in a paper co-authored with Stuart Molyneux, expressed skepticism about whether "lineages" of (especially Ordovician) acritarchs can be considered truly evolutionary in nature.

John Beck provided a summary of his work on the Silurian Arisaig Group of Nova Scotia, a spectacular succession that has received surprisingly limited palynological attention in the past. In addition to a diverse acritarch flora (130 species), an impressive non-marine

Rex Harland and Thomas Servais re-fuelling after a day's drinking. Photo by Jim Riding

spore and cryptospore flora occurs starting in the Llandovery, and transgressive-regressive trends are evident in the distribution of major palynomorph groups and palynofacies.

Moving up section into the Mesozoic and Cenozoic, Raffaella Bucephalo Palliani and Jim Riding presented a very interesting story of Early Jurassic dinoflagellate migrations and paleoecology. Tipped off by the fact that certain taxa have different ranges in the Boreal and Tethyan Realms, Raffaella and Jim revealed evidence for two migrational events, one at the early~late Pliensbachian boundary, the other in the mid Toarcian.

Calcareous dinoflagellates are a group that have had a blossoming of attention lately, with several recent major monographs (most written, oddly, by authors with surnames starting with a "K"). Calcareous dinos with visible tabulation all show a stable peridiniacean pattern, and have a range of characteristic "apical" archeopyles, the likes of which have only very exceptionally been found among organic-walled forms. However, Sarah Damassa presented the final talk of the meeting on a group of organic-walled cysts that clearly show the archeopyle styles so characteristic of calcareous cysts. Sarah's interpretation was that these new forms do not appear to represent linings of calcareous cysts from which the inorganic component has been dissolved, but separate, albeit related, forms. Sarah's material is from the Eocene to Miocene of several localities in the North Atlantic and its borderlands.

The history of dinoflagellate studies has had its share of enduring "dynamic duos" - its own versions of Batman and Robin. There was Cookson and Eisenack in the 1950's and 1960's and Lentin and Williams in the 1970's through 1990's. The "Batman and Robin duo" (though we're not revealing who we think of as Batman and who as Robin) forever associated with Wood's Hole is that of Wall and Dale. David Wall and Barrie Dale carried out seminal work on dinoflagellate cyst-theca relationships at the Marine Biological Laboratory primarily in the mid to late 1960's. The dynamic duo was reunited at this meeting, and both were active participants. Barrie, indeed, treated us to a talk, co-authored with his wife, Amy Dale, on environmental controls on the evolution of cystforming dinoflagellates. Barrie and Amy took the 20 most common modern cyst types and assigned them to four environmental categories: warmer coastal, colder coastal, cosmopolitan and oceanic. Barrie pointed out that the geological record of these categories shows some notable trends. The warmer water and oceanic types, as well as most of the cosmopolitan types have longer histories (back to the Eocene in many cases) than the colder water types (only back to the late Miocene at most). Thus the warmer water and oceanic forms have been able to "track" their environments during times of climate change and the cosmopolitan forms have been able to tolerate those same changes. In contrast, the colder water species have more recently evolved in response to the onset of new cold water environments.

Gordon Wood and co-authors presented an integrated palynological and organic geochemical study of an Eocene source rock in Pakistan. Through an interval of less than 2 m, there were large vertical variations in organic facies and the proportions of reworked Jurassic palynomorphs and in situ palynoflora. Particularly unusual was the occurrence of organic remnants of possible diatoms (whose presence is consistent with the geochemical biomarkers) and a nearly monospecific assemblage of an undescribed dinoflagellate. The latter assemblage also yielded an unusual, unidentified dinosterane-like molecule that can perhaps serve as an indicator of similar environments.

There were several papers dealing with purely Quaternary topics. CAP Secretary/Treasurer, Francine McCarthy, in a paper co-authored with Steve Blasco, David Dubas and Kevin Gostlin, asked "Where have all the sediments gone?" We found out that the title didn't refer to some Great Rock Robbery perpetrated at geological departments throughout the world, but an apparent gap in the sedimentary record of Georgian Bay since the mid Holocene, its temporal extent confirmed by palynology. The authors attributed the gap - actually a condensed succession - to a dramatic decrease in sediment influx due to cessation of transgression. Francine alluded to the important environmental implications of this interpretation.

The only paper of the technical session (in contrast to the invited papers) that was not based on palynomorphs was presented by Melissa McQuoid, from Victoria, B.C. Her paper, coauthored with Louis Hobson, involved a study of diatoms and silicoflagellates as Holocene climatic indicators in Saanich Inlet, B.C. The inlet has laminated sediments that can be sampled at annual and subannual resolution. Short cores have revealed a record over the last 100 years, and longer timescales can be examined from cores taken on the JOJDES Resolution's visit to Saanich Inlet as ODP Leg 169S (see CAP Newsletter 19(2):16-18, 1996, and CAP Newsletter 20(1):8-10, 1997).

John Wrenn presented a paper with several co-authors on the application of palynology and other microfossil methods (phytoliths and diatoms) to high-resolution dating in Holocene sediments in the Mississippi Delta area. By a combination of plant introduction records and other historical events a very precise chronology was established for the period AD 1750 to 1900, an interval otherwise undatable using radiometric techniques. Particularly interesting was the use of characteristic carbon spherules in palynological preparations to recognize the onset of the use of different types of fuel, and the use of Vigna luteola (cow pea) pollen as a proxy for sugarcane production.

A common topic of discussion during this meeting was the application of computers to palynology. This subject received specific attention in a Tuesday morning session entitled "Palynology and the Internet". Owen Davis discussed in general terms about the protocols in use on the Internet and their utility for palynology. Clearly there is great potential for the easy storage and distribution of large amounts of palynologically related text and image data on the World Wide Web. Subsequent speakers discussed several implementations of palynological data distribution and analytical tools. For example, there was free software from the International Quaternary Association (Louis Maher), paleobotanical information (Mike Boulter), and the Global Pollen Database (Eric Grimm and John Keltner). In two later talks during the last day of the conference, Robert Williams and Eric Monteil introduced the audience to Dinium-Alpha, program for storing dinoflagellate images and morphologic and stratigraphic data. Robert also gave an impromptu demonstration of digital image processing as it applies to palynomorphs. With image capture hardware becoming relatively inexpensive and yielding much better results than a few years ago, a suprising amount of work can now be done "filmless", offering advantages in cost and versatility.

Outside of the formal talks, there was a demonstration by Ken Piel of a new graphical interface to the PALYNODATA database of pre-Quaternary palynological information. This vast dataset is now much more accessible than in earlier implementations. Another commercial demonstration was for equipment for microwave-enhanced digestion of palynological samples (as described in Palynology, Vol. 18, p. 23).

Awards were given out at the AASP Business Luncheon at - where else - the Swope Center on Thursday. Robert Booth, a student of Fred Rich at Georgia Southern University, won the best student paper award for his presentation "Palynology and Depositional History of Late Pleistocene and Holocene Coastal Sediments from St. Catherines Island, Georgia, U.S.A." (He also won the award for the longest title - just kidding.) Merrell Miller of AMOCO, Houston won the best poster award for his poster "Palynological Characterization of a Silurian Transgressive Event". And last but not least, our own former CAP President from Simon Fraser University, Rolf Mathewes, was inducted as the new President of the American Association of Stratigraphic Palynologists. Congratulations Rolf doubly so if you're still with us at the end of this wordy review!

As far as meetings go, this was one of the best organized and most stimulating that we have attended, and Ken, Paul and Sarah are to be commended for arranging and staging such a successful meeting.

Catwoman Sarah Damassa flanked by Batman ("Andrew") Macrae and Robin Fensome. Photo by Jim ("The Joker") Riding.

"They say TIME is the FIRE in which we BURN"
(Quote from the StarTrek motion picture "Generations")

First Announcement

1998 AASP Annual Meeting

Tuesday, October 27 – Friday, October 30, 1998
(one-day workshop on Tuesday, October 27, 1998)
Ensenada, Baja California, Mexico

Hotel Coral & Marina (approximately $75 US + tax per night)

DEADLINE: Title and Abstracts Due July 31, 1998

Proposed Agenda and Registration Information

Estimated Registration Fees:	Before August 31	After August 31
Professionals	$US 125.00	$US 145.00
Students	$US 75.00	$US 85.00
Workshop Tuesday (**limit 12-14**)	$US 50.00	$US 60.00
Field Trip Saturday (**limit 30**)	$US 30.00	$US 35.00

Registration fee includes: Icebreaker; Wine Tasting/Dinner/Guitar Concert (Thursday); Business Luncheon; admission to talks Wed. - Fri.; program & abstracts, and coffee breaks
Workshop fee includes: notes, transportation to CICESE and coffee breaks.
Field Trip fee includes: transportation, lunch and guidebook.

Proposed Meeting Agenda

October 27 Tuesday	8:00 a.m. - 6:00 p.m.	**Workshop on Jurassic Dinoflagellates (Jim Riding):** CICESE
	4:00 p.m. - 7:00 p.m.	**Registration:** Hotel Coral & Marina
	7:00 p.m. - 10:00 p.m.	**Ice Breaker:** Hotel Coral & Marina
October 28 Wednesday	8:00 a.m. - 6:00 p.m.	**Technical Sessions:** Hotel Coral & Marina
	7:00 p.m. - ?????	**AASP Board of Directors Meeting:** Hotel Coral & Marina
October 29 Thursday	8:00 a.m. - 6:00 p.m.	**Technical Sessions:** Hotel Coral & Marina
	7:00 p.m. - 10:00 p.m.	**Wine tasting/dinner/guitar concert:** Bodegas de Santo Tomas
October 30 Friday	8:00 a.m. - 12:00 noon	**Technical Sessions:** Hotel Coral & Marina
	12:00 noon - 2:00 p.m.	**Business Luncheon:** Hotel Coral & Marina
	2:00 p.m. - 6:00 p.m.	**Technical Sessions:** Hotel Coral & Marina
	6:00 p.m. - ?????	**AASP Board of Directors Meeting:** Hotel Coral & Marina
October 31 Saturday	7:00 a.m. - 7:00 p.m.	**Field Trip:** Botanical-Geological Transect across northern Baja California

Proposed Symposia:

Mesozoic and Cenozoic Palynostratigraphy of the Tethys
Contact: Sharma L. Gaponoff (SLGA@chevron.com), or
Joyce Lucas-Clark (jluclark@pacbell.net)

Ecological - Paleoecological Signals in the Marine Realm
Contact: Barrie Dale(barri.dale@geologi.uio.no)

Quaternary Terrestrial Ecology
Contact: Cristina Penalba (penalba@servidor.unam.mx), or
Owen Davis (palynolo@geo.arizona.edu)

General Technical Sessions
Contact: Javier Helenes (jhelenes@cicese.mx)

American Association of Stratigraphic Palynologists
Student Scholarship

The American Association of Stratigraphic Palynologists is pleased to announce its program of Student Scholarships to support studies in palynology. Currently, two scholarships for $1000 (US) each may be awarded annually, and a third award of $1000 may be given through the Lucy Cranwell Fund. Ordinarily, the scholarships will be awarded to beginning graduate students, but advanced undergraduate students may also apply.

Basis of Awards - The qualification of the student, the originality and imagination evident in the proposed project, and the likelihood of significant contribution to the science of palynology are factors that will be weighed in selection of award winners.

To Apply - Part A of this form is to be filled out by the student and Part B by the student's faculty supervisor. The faculty supervisor will send both forms together to the address given at the end of Part B. A total of four pages, including forms A and B will be accepted. Additional material will not be considered. Receipt of the packet will be acknowledged to the student's email address. Scholarship applications must be postmarked no later than ***April 2, 1998*** *and awards will be announced by May 2, 1998.*

Part A - Application for A.A.S.P. Student Scholarship

Student's name: _____

Address: _____

Email address: _____

Three most recent universities or other institutions attended (earliest listed first). Include the institution that you will be attending during tenure of the scholarship, the degree you will be seeking, and the anticipated completion date:

Institution	***Degree***	***Beginning Date***	***Completion Date***
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Current Academic Supervisor: _____

Background in palynology: Palynology classes, seminars and short-courses:*

Date	***Instructor***	***Title***
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Professional experience: Research and publications*

Date	***# Samples Counted***	***Citation or description***
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Awards, honors and funding (include institutional support):*

Date	***Amount Agency (source of award)***	***Title***
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Title of proposed investigation: _____

_____

Use additional sheets as needed, but a total of only 4 sheets, including forms A and B will be accepted.

(OVER)

Summary of the investigation (250 words or less); include objectives, why you selected this problem, its significance, and how you plan to approach and carry out the investigation.

_____

_____

_____

_____

_____

I agree that the recommendation I am requesting from my faculty supervisor will be held in confidence by officials of my institution, and I hereby waive any rights I may have to examine it. ***yes*** _____ ***no*** _____

Date: _____ *Applicant's signature* _____

Part B - Endorsement by Faculty Supervisor

1. *Ranking of the applicant versus other students you have known who are pursuing the same degree:*
   lower 50% ___ *upper 50%* ___ *upper 25%* ___ *upper 10%* ___ *upper 5%* ___

2. *Did the idea for the project originate from student?* ***yes*** _____ ***no*** _____

3. *Can you verify the student's statements as to other awards, honors, or financial aid received or applied for?*
   yes _____ ***no*** _____

Comments: _____

_____

_____

_____

_____

4. *Please provide a brief summary (100 words or less on an attached sheet) or your assessment of the applicant's project and his or her potential to attain the objectives. Among other traits, please comment on the student's native intellectual ability, ability to express him (her)self, perseverance, imagination and the probable creativity, and the value of the project.*

Faculty supervisor's name _____
Position: _____
Institution: _____
Address: _____
_____
_____

Signature: _____ ***Date:*** _____

Please return Parts A and B to:

Owen K. Davis
Department of Geosciences
University of Arizona
Tucson, AZ 85721-0077
U.S.A.

Phone 520 621 7953
FAX 520 621 2672
palynolo@geo.arizona.edu
http://www.geo.arizona.edu/palynology
http://www.geo.arizona.edu/antevs

A total of only 4 sheets, including forms A and B will be accepted