



A.A.S.P. NEWSLETTER

Published Quarterly by the American Association of Stratigraphic Palynologists Inc.

October, 1997 Volume 30, Number 4

Presidential address	1
AASP meeting 1998, Ensenada, Baja California, Mexico	2
Symposium: Palynology at low latitudes	2
From our correspondents	2
Capita Nomenclaturae II	4
PhD Theses	6
Meetings	8
Calendar	11
Jobs, positions & -ships	13
Books and Journals	14
The Web	15
"Editorial"	15





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

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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 January 5th 1997, 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.

AASP PRESIDENT'S ADDRESS

While preparing this presidential address, I wondered if there was anything I could say that would warrant taking up more than a few minutes of your valuable time. For a while I initially thought that I might be able to get off easy and appeal to the old biblical dictum, which says "let thy speech be short, comprehending much in few words". Then, circumstances arose which started a train of thought that I would like to briefly share with you.

A few weeks ago I received an e-mail from a former doctoral student who is currently employed by the Geological Survey of Canada as a Quaternary palynologist and paleoclimatologist. I said "currently employed" because by the end of the year he will be unemployed. It seems that the Terrain Sciences Division of the GSC is eliminating all personnel and programs in Quaternary palynology and paleoecology as a budget-cutting measure. Such cuts are no longer news, as those in the private sector and other government agencies are well aware. It reminds me of a similar, but less severe cut experienced by the U.S. Geological Survey in 1995, recounted in the Oct. '95 AASP newsletter by Farley Fleming. These events hammer home the reality that no programs or persons are really immune when economics, politics, or just plain bad luck conspire to intervene. It made me think!

In the above example, I have heard that the cuts in the GSC are a culmination of a trend where several senior personnel had recently retired, others were getting close, and the remaining group was small enough to be a convenient target when cuts had to be made. But another fact almost certainly played a role, and this one applies widely throughout our discipline. Palynology is rarely viewed as a core discipline in most institutions. Rather it is seen as only one approach among many others, to carry out, for example, basin analysis and correlation, or archeological site analysis, or paleoclimatology, or any number of other applications. This fact is both a strength, allowing us to contribute to many different fields of inquiry, and a weakness, because when cuts in big organizations must be made, they generally happen first in "non-core" activities.

The solutions in this context appear relatively obvious. One, downplay your inherent weaknesses, and two, enhance your strengths! The most promising recent development to give palynology a higher profile is clearly the CENEX initiative to establish a well-funded center of excellence for palynology at Louisiana State University.

A lot of hard work by John Wrenn, Ken Piel, and many other dedicated individuals from AASP has gone into this initiative, and I think the success of their efforts will play a major role in determining the future of palynology, in North America and elsewhere. I applaud their dedication, and urge all of you to support CENEX in any way you can. Our recent affiliation with

GSA and other efforts to raise awareness of the value and utility of palynology will also help to "fly the flag" for our discipline. Of course, we could simply rely on providence to propel palynology into the glare of world-wide publicity - and this might well happen one day! All it would take would be the discovery of fossil spores in the water-lain sediments on the planet Mars.

Can you imagine the consequences, and all the new latin binomials we could publish?

We might soon see descriptions of the mundane *Marsispora rubra*, or *Canalia lovellii*, or my personal favorite binomial, *Cenexia extraterrestrials*. All right - since we are in Wood's Hole, I will concede that we would be more likely to find acritarchs - perhaps even with earthly connections like *Cyclopsiella polaris*. We can dream of such an unexpected windfall, but don't hold your breath in the interim.

While we wait, we might as well follow the two tried and true strategies that we have some control over, namely MORE, AND BETTER COMMUNICATION, and CONTINUED INNOVATION. This message, which I, and you, have no doubt heard before - really is good advice. I certainly hear it from my university president, deans, department chairs, alumni association, the university news office, as well as from granting agencies and politicians. Most of us are of course too busy - I know I am - with our everyday duties to do much about informing the public at large, or even our colleagues in related disciplines. But we must make the effort, if we really care about the future of palynology, and I think we all do.

We all have a great deal more in common than we often recognize. At the mid-year meeting of your board in Denver, I learned over coffee and stronger beverages that Gordon Wood, Dave Pocknall, and Doug Nichols - all solid stratigraphic palynologists, had their early training in Quaternary pollen analysis. I thought I was the only Quaternarist at the table, but Doug did a Quaternary M.Sc. with Cal Heusser at New York University, Dave did an honours thesis and then a Ph.D. on modern gymnosperm pollen in New Zealand, And Gordon's introduction to palynology was a course with Margaret Davis in Michigan. This small sample is almost certainly typical of many, if not most palynologists! Whether we work on acritarchs or pollen, in the Precambrian or Quaternary, at a university or oil company - remember that more things unite us than divide us, and there is strength in numbers.

In closing, I am left with the conviction that what makes AASP unique and interesting is the mix of individuals that compose it. In this era of the research team and collaborative grants, it is easy to forget that the really good new ideas, and often the best work in the final analysis, depend ultimately on individual palynologists doing their own thing, and doing it well. Wherever you may be, I urge you to be INNOVATIVE in your work, and then go forth and COMMUNICATE it to others!

- Rolf Mathewes -



AASP Annual meeting
October 27-31, 1998
Ensenada, Baja California, Mexico
First Announcement

Symposia, Technical Sessions, Posters, including

- Mesozoic and Cenozoic Palynostratigraphy of the Tethys
- Ecological - Paleoecological signals in the marine realm
- Quaternary terrestrial ecology of arid areas

A one-day field trip in Baja California leads through a vegetation and geology gradient between Pacific and Gulf coasts.

Details: Javier Helenes, CICESE, Departamento de Geologia, Ensenada, Baja California, Mexico - jhelenes@cicese.mx, or Cristina Penalba, UNAM, Instituto de Ecologia, A.P. 1354, Hermosillo 83000, Sonora, Mexico, penalba@servidor.unam.mx.

SYMPOSIUM: PALYNOSTRATIGRAPHY AT LOW LATITUDES

Tuesday, Nov. 18, 1997; Polamar, Isla
Margarita, Venezuela



This symposium will be held under the auspices of the Venezuelan Geological Society (SVG), during the joint VIII Venezuelan Geological Congress and First Latin American Sedimentological Congress, at the Margarita Hilton Hotel, November 16-19, 1997. Palynostratigraphy at Low Latitudes is being organized by Geoffrey Norris (University of Toronto, Canada) and Laurent de Verteuil (Petrotrin, Trinidad) and commemorates the 50th anniversary of Industrial Palynology in Venezuela.

- 8:00 - 8:10 Introductory comments and welcome (Geoffrey Norris)
- 8:10 - 8:20 Maria A. Lorente The history of palynology in Venezuela
- 8:20 - 9:00 Keynote Address: Mark B. Bush, Paul A. Colinvaux and Robert Rivera. Pleistocene refugia reconsidered: Modern and fossil pollen evidence
- 9:00 - 9:20 M. A. Carvalho. Paleocological and paleoclimatic studies based on palynology of Pliocene and Pleistocene sediments from the Foz Do Amazonas Basin.
- 9:20 - 9:40 Dave Shaw. The application of palynology to the interpretation of sequence stratigraphy and paleoenvironments in the Neogene of Trinidad
- 10:00 - 10:20 F. Oboh-Ikuenobe, A. 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
- 10:20 - 10:40 S. L. Gaponoff. High resolution paleoenvironmental interpretations of Eocene through Miocene core and sidewall core samples from the Eastern Venezuelan Basin, Orinoco Heavy Oil Belt
- 10:40 - 11:00 Valent Rull and Claude Poumot. Eocene to Miocene palynocycles of Western Venezuela
- 11:00 - 12:00 All Congress Conference
- 2:00 - 2:40 Ceremony: Mentors of Palynology in Venezuela: 50th Anniversary
- 2:40 - 3:00 Carlos Jaramillo and David Dilcher. Middle Paleogene palynology of La Pinalerita section, Llanos foothills, Colombia: Biostratigraphic and sequence stratigraphic implications
- 3:00 - 3:20 J. Carbon and Omar Colmenares. Estudio de los paleoambientes de sedimentacion
- 3:40 - 4:00 Mitsuru Arai, Jose Botelho Neto, Cecilia Cunha Lana and Elizabete Pedrao Low latitude palynology from Brazilian marine
- 4:00 - 4:20 Roel M. C. H. Verreussel, Ronald E. Besems and, and Michel G. Gaillard. A palynological zonation for the upper Cretaceous of Gabon
- 4:20 - 4:40 Oscar A. Yepes. Campanian-Maastrichtian dinoflagellate biostratigraphy and palynofacies analysis from Los Pinos Formation, Colombia
- 4:40 - 5:00 S. L. Gaponoff. High resolution paleoenvironmental interpretations of low paleolatitude late Albian conventional cores from Kuwait: A palynological approach
- 5:00 Conclusions and Symposium closing (Laurent de Verteuil)

From Our Correspondents

PALEONTOLOGY IN THE 21ST CENTURY

by Lucy E. Edwards

I spent September 3-9, 1997, at the Senckenberg Museum in Frankfurt. The occasion was an International Senckenberg Conference entitled "Paleontology in the 21st Century" and

affectionately nicknamed "Paleo21." Four organizers, Rich Lane, Jere Lipps, Fritz Steininger, and Willi Ziegler had enlisted about 10 scientific committee members (of which I was one) to help put together this meeting. Over 100 participants (108 at last count, mostly academics and museum types, but including government, industry, consultants, students, science writers, amateurs, and commercial collectors) from 30 countries gathered for a week to ponder the issues. The meeting can be summed up as exciting and stimulating and (sometimes) exasperating.

For the first 3 and a half days, the meeting was organized around discussion groups on 25 topics covering various aspects of organization, paleontological themes, and paleontological infrastructure. Topic coordinators came with outlines in hand (which had been posted on the Web for a month or so before the meeting). We held small (8-16 people) group meetings in which someone diligently took notes on a laptop, and which often continued well into the evening over beer. Then we typed up our salient points for the next day's viewgraphs and general-session discussions. Several times during the meeting, major issues of discussion were posted on PaleoNet.

Over these first days, Karl Flessa reported that in the United States, paleontology in academia has been relatively stable since 1980, although paleontology professors are getting older, as a cohort, and "lone paleontologists" (the only paleontologist in a department) are the rule, rather than the exception. John Armentrout told us that paleontologists would continue to contribute to oil exploration for the next 60 years. The need to better explain ourselves both to the public and to our colleagues surfaced repeatedly. Jere Lipps pointed out the Carl Sagan syndrome: if you are too good with the media, you don't get inducted into the National Academy of Sciences.

The last day and a half, interrupted by a one-day trip to the nearby Messel Quarry, concentrated on "pan-paleontological issues" (PPIs) and action items. Our directives were to identify the issues and do something about them. Although 40-plus issues had been identified during previous days, these issues were grouped into general categories: public outreach, funding, human resources/education, databases/collections, and interdisciplinary education and research. Not surprisingly, all but the interdisciplinary grouping had been broken out as topics prior to the meeting. Each discussion group could and did expect a group member to volunteer to perform a specific task (eg., Sherry Cady will initiate an exchange of new course contents, examples, data, references shown to be successful in interdisciplinary courses, compiled on PaleoNet within six months; Mike Simmons will investigate the potential to produce videos about integrated paleontology during the first six months of 1998; Malcolm Walter will compile on PaleoNet a list of current interdisciplinary conferences and contact persons and to display and disseminate new proposals for interdisciplinary conferences beginning immediately.)

With just over a day of sessions to go, Judy Parrish dared the general session to come up with an ambitious, multidisciplinary initiative to carry paleontology into the next century. Her dare was accompanied by the outline of a proposal to trace the phylogeny, via the fossil record, of all living organisms. The tenor of the meeting changed dramatically. Andy Knoll and friends put together a "preamble" setting forth the mission of paleontology.

"Paleontologists are custodians of the history of life and develop our understanding of the role of life in the history of the Earth.

Paleontology provides:

- a unique historical perspective on the place of humankind in nature
- tools for the discovery and development of resources on which industry and agriculture depend

- a framework for the understanding the sensitivity of the global system to past changes and for identifying possible consequences to human society.

Our understanding and capabilities have reached the stage whereby the paleontological community can embark on an integrated program of research."

Doug Irwin, Dave Jablonski, Judy Parish and a host of interested persons worked on an expansion of Judy's proposal, which now has a working title of "Past and Future Dynamics of the Biosphere."

The final afternoon, we put it all together. As a General Assembly, we approved:

- The preamble and the basic outline of the Past and Future Dynamics of the Biosphere Initiative.
- A consensus statement on the importance of systematics.
- A consensus statement on the importance of paleontology in all phases of education.
- A consensus statement on the importance of the preservation of international human resources and suggestion to include a focused international post-doctoral program in funding initiatives/requests.

We summarized action items that can be performed by scientific societies:

- Create and/or support an "educational Committee" and appoint a representative to an international paleontological outreach effort. Specific outreach activities such as spokesmen, websites, speaker's bureau, guided tours, and designated media contacts.
- Foster integrated research

We reminded ourselves that we as individuals can:

- Act to increase the number of students obtaining a fundamental understanding of the history of the biosphere and our place in it.
- Join societies and volunteer to speak.
- Perform specific individual action items as agreed to in our smaller groups.

Although the meeting was, for practical reasons, restricted in attendance, all interested parties are encouraged to participate in the ongoing dialog, through PaleoNet and/or the web site at <http://www.nhm.ac.uk/paleonet/paleo21/>.

As I write this, the web site contains all the original summary statements submitted by the 25 topic coordinators. Each topic coordinator is also responsible for a final summary, and drafts of these summaries will be posted as they are submitted to allow input from all prior to their final versions.

LE note: The PaleoNet listserver is administered through the Museum of Paleontology at the University of California, Berkeley. To subscribe, send a single line of an e-mail message to Listproc@ucmp1.Berkeley.edu.

The single line is

subscribe PaleoNet [your name]

The web page, at <http://www.ucmp.berkeley.edu/Paleonet/> or its mirror site at

<http://www.nhm.ac.uk/paleonet/>, contains additional information.

- Lucy Edwards -



THE UK PALYNOLOGICAL SCENE

Three UK members of AASP, Rex Harland, John Williams and myself, attended the recent AASP Annual Meeting held at Woods Hole, Massachusetts. Only around sixty people all told attended the 30th conference, which was given the theme 'Evolution of the Marine Phytoplankton'.

The thematic nature of this symposium, with several prominent guest speakers such as Richard Bambach, John Barron, Andrew Knoll and Sherwood W. Wise Jr., made for a coherent, focussed

few days which gave everyone abundant food for thought. Maybe many palynologists used up all their airmiles for last year's IPC in Houston and are still saving up for the next meeting. The Swope Centre at Woods Hole makes an ideal setting for an AASP meeting, not least as it is very easy (and reasonably cheap) to get there from Europe.

May I remind AASP members that the British Micropalaeontological Society (BMS) Annual General Meeting will be held at University College London on Wednesday 19th of November 1997. Two guest lectures will be given, including 'Dinoflagellates and the K/T boundary: Crisis? What Crisis?' by Henk Brinkhuis of the University of Utrecht, The Netherlands. The other presentation is by Andy Gooday of Southampton Oceanography Centre and is entitled 'Deep-sea benthic foraminifera: ecology and biodiversity'. Provided you are reading this prior to the 19th of November, AASP members are most welcome to attend. Other BMS news is that there is to be an election of members of the Palynology Group for the next Secretary. The nominees are Paul Dodsworth (Robertsons Research, Aberdeen), Gary Mullins (University of Portsmouth) and Sandy Smith (Shell UK, London).

A major conference entitled 'Biostratigraphy in Production and Development Geology' was held in Aberdeen during June this year. Apparently this conference was very well attended and some excellent presentations given. The major emphasis was on the North Sea and adjacent areas, but with contributions on, for example, Angola, Borneo and Nigeria. Another major palynological event held this summer was a reunion dinner of Sheffield palynologists to mark the retirement of Ted Spinner held on the 14th of June. Around 80 people attended the dinner, with many more sending greetings messages. Ted has been at Sheffield all his career and has run the MSc course in palynology since the early 1980s. I am sure that all ex-Sheffield students will remember Ted with genuine affection and wish him well for his retirement.

By far the most disturbing topic in British micropalaeontology at the moment is the recent news concerning the proposed abolition of certain academic positions at the Institute of Geography and Earth Sciences at the University of Wales at Aberystwyth. Furthermore, it has been reported that geology teaching may be entirely wound down over the next few years. These proposals apparently emanate from a review of the sciences throughout Welsh universities in response to cuts in the funding of higher education establishments. Evidently Chemistry, Biochemistry, Biological Sciences and Mathematics have previously been rationalised. These facts have been reported by the Welsh press. Aberystwyth has been a recognised centre for Micropalaeontology for many years and until recently ran a MSc course in the subject. Micropalaeontology, including palynology, at Aberystwyth is clearly likely to be profoundly affected by these changes. Robin C. Whatley and Alicia Moguilevsky, both Ostracod workers, have apparently already taken early retirement. I will try to obtain more news on this depressing storyline for the next issue of the Newsletter.

- James B. Riding -

ISJS - International Subcommission on Jurassic Stratigraphy - New chairman and secretary. Last autumn Prof. Dr. Raymond Enay retired as chairman for ISJS. Dr. Giulio Pavia (Dipt. Scienze della Terra, Torino Italy) has become the new chairman for ISJS. Giulio Pavia is assisted by the new secretary for ISJS, Dr. Fabrizio Cecca (Universita degli Studi di Urbino, Italy).

JMG - Jurassic Microfossil Group - New convenor for JMG. After 3 years as convenor for the JMG, I regret to announce, that this will be the last newsletter issued by me. My future research activities will mainly be Late Neogene-Quaternary dinoflagellate cyst studies with special reference to palaeoclimate and environment. Without

an active research within the Jurassic, I feel, that the responsibility for JMG should be given to an active member of JMG. I am planning to leave the post as secretary and JMG Newsletter editor at the 5th International Congress on Jurassic Stratigraphy, Vancouver, Canada, 12-25 August 1998. Anyone, who would like to take over as convenor for JMG, please contact me for questions. Also I would like to inform the upcoming JMG meeting at the 5th ISJS about any candidacy for the post as JMG convenor (secretary and newsletter editor).

JMG activities. At the International Symposium on Jurassic Stratigraphy in Poitiers, France, September 1991 the structure and activities of JMG were changed. The biostratigraphic tasks were transferred to the relevant stage working group. The purpose of JMG has since been to bring information to this large group of micropalaeontologist, who otherwise will be completely outside any information on the activities within ISJS.

Regarding the role of JMG, that is to bring information on activities of the International Subcommission on Jurassic Stratigraphy. The information shall lead micropalaeontologist may discover relevant task to be carried out for the stage working groups. Other activities within JMG are the JMG Members Research Directory Database, now managed by Patricia Whalen (Arkansas, USA), and the JMG publication index database, now operated by David Cole (University of Southampton, UK).

JMG Newsletter. The JMG Newsletter is published annually and sent to subscribers, the chairman and secretary of the International Subcommission on Jurassic Stratigraphy (ISJS), and convenors of working groups of ISJS. The JMG Newsletter is now distributed for approximately 5 US \$ per volume, which covers printing and mailing costs. The next volume of JMG Newsletter is due for autumn 1998.

- Niels E. Poulsen -

5th International Congress On Jurassic Stratigraphy - Vancouver, Canada, (12)-16-20-(25) August 1998

Information: Contact Professor Paul L. Smith, Earth and Ocean Sciences, University of British Columbia, 6339 Stores Road, Vancouver, B. C., V6T 1Z4 Canada, Tel: Office: +1 (604) 822-6456, Lab.: +1 (604) 822-2538, Fax: +1 (604) 822-6088 E.mail: psmith@eos.ubc.ca

Website: <http://geology.ubc.ca/jurassic/announce.htm>

- Niels E. Poulsen -

The Ninth Brazilian Meeting of Paleobotanists and Palynologists, 9-12 December 1997 - Guarulhos/SP/Brazil - in memorial: Prof. Dr. Murilo Rodolfo de Lima

Information: Prof. Dr. Maria Judite Garcia (President, Organising Committee) Universidade de Guarulhos, Departamento de Geociências, Praça Tereza Cristina, 01, Guarulhos, SP, Brazil - 07023-070, Telephone: 55 (11) 6464-1708, Fax. 55 (11) 6464-1702, 6464-1708 or 6440-2030, e-mail: geo@server.ung.br, <http://www.ung.br>

- Niels E. Poulsen -



The ICBN allows a name to be made in any arbitrary manner; there is complete freedom to coin new words. This may be very handy in cases of homonyms, where the junior name is, as it were, 'remanufactured', to produce a name that is recognizable as the substitute for an (illegitimate) older name. An example of this is "Albertia," which was turned into "Alterbia", which also proved illegitimate and so "Alterbidinium" was coined.

The language of nomenclature is Latin; if names have an origin other than Latin, the names are to be treated (as far as possible) as Latin. Up to some 150 years ago, Latin was the international language of science and learning. It still is the official language of the business of the Roman Catholic church, and of botanical nomenclature because descriptions/diagnoses of new plant taxa must be written in Latin for their names to be validly published. Paleobotanists (which includes palynologists) had received a dispensation and could make their descriptions in any language up till 1995, but since 1996 must include a diagnosis or description in Latin or English (the '*lingua franca*' of our age).

Although the Code stipulates that names must be used precisely as published, there are specific cases where corrections are allowed, and even mandated by the Code. The latter involves two situations: The first ensures that ancient Latin practice is maintained in forming the ending of names honoring a specific person or persons. Any family name (surname) can be latinized by adding the suffix *-ius* (or for females: *-ia*) to the surname. My own surname was latinized in this manner in the 18th century. (Given names can be latinized by adding a suffix *-us* or *-a*; my first name can be latinized as *Janus*). When a specific epithet is derived from such a latinized name, it is customary to use the possessive case (the genitive); thus, a species of *Poa* named for Mr Brown becomes "Brown's *Poa*," or *Poa brownii*. The genitive is formed by removing the ending of the subjective noun (-us or -a from Brownius or Brownia), and replacing it by *-i* for males, *-ae* for females. *Poa browniae* thus indicates that it was named for Mrs (Miss/Ms) Brown. [If a surname ends in *-er* or in a vowel, the suffix added to the noun is *-us* or *-a* - e.g. *Couperus/Coupera*, giving the genitives *couperi/couperae*; or, alternatively, *Campous/Campoa*, giving the genitives *campoi/campoeae*]. When ending in *-a*, no suffix needs to be added, and the unmodified name may be treated as a Latin noun, with a gender-neutral genitive ending *-ae*, although some prefer to add the suffix *-us*, gen. *-i*, etc.] If the original author indicated that he named the species for Mrs Brown, but wrote the epithet as "*brownii*," the latter must be corrected to "*browniae*." Similarly, if the species had been named for two or more members of the same family, the plural ending must be "*browniorum*," (or "*browniarum*" if the sisters Brown were so honored). These corrections are not only allowed, the Code demands that they are made.

The other case where the Code requires corrections is that of the wrong use of a connective vowel in composite words (but: only in adjectival epithets). Some examples are given in the Code: *Pereskia "opuntiflora"* must be corrected to *P. opuntiiflora* [derived from *Opuntia*, the stem of which is *opunti-*, to which the connecting vowel *-i-* must be added]; *Senecio "napeaeifolius"* must be cited as *S. napeaeifolius* [the name refers to resemblance of the leaves to those in the genus *Napaea*, not "*Napea*", and the connective vowel *-i-* should have been used rather than a genitive singular inflection of *-ae*]. For words with Latin elements the connecting vowel is *-i-*; for those with Greek elements, *-o-*; beware that there are many exceptions and irregularities, and conservative action is your best bet.

Other than these situations, the Code allows correction of typographical or orthographic errors, and standardization of some typographic conventions (Art. 60.1). Some unusual spellings, deliberately used by Linnaeus, are not to be altered, e.g. *Mesembryanthemum* (not *Mesembrianthemum*), *Amaranthus* (not *Amarantus*). However, Linnaeus' *Gluta "benghas"* is to be treated as an orthographic error and to be corrected to *Gluta renghas* (as it was derived from a vernacular name "renghas"). I consider that in

the same vein "*dettmaniae*" must be corrected to "*dettmanniae*" if it was Mary Dettmann who was honoured. Paragraph

Similarly, the orthographic error *Globba "brachycarpa"* is to be corrected to *G. trachycarpa*, (brachys=short; trachys=rough) and [similarly] *Hetaeria "alba"* must be cited as *H. alta* (albus=white; altus=high). The misspelling *Indigofera "longipednnculata"* is presumed to be a typographic error, and to be corrected to *I. longipedunculata*. The latter example is illustrative of a situation that may be observed in literature from countries where the Roman alphabet is not indigenous, and where authors may not always receive a final galley proof.

The Code (Art. 60.3) stresses that "The liberty of correcting a name is to be used with reserve, especially if the change affects the first syllable and, above all, the first letter of the name." Thus, the name *Lespedeza* is not to be altered, although it was intended to honor Vicente Manuel de Céspedes. It seems to me that the distinction between this stricture, and the allowance of correcting "benghas" to "renghas" is somewhat arbitrary and subjective (and unkind to Mr Céspedes). The main difference is in the ranks of these two names. However, it is instructive in showing that major changes in the orthography of a name should be handled by the process of conservation, rather than the opinion of an individual scribe.

The above example of "*longipedunculata*" indicates that, although authors have absolute freedom to create names, they do not have unrestrained freedom to abuse typography, or even (Latin) orthography. After all, if a name purports to be Latin (or Greek), but is modified in such a way that a Roman (or Latin scholar) will note the error in it, it should be corrected. Below are some examples from recent literature that I think are thus to be (or have been) corrected. They also may serve to encourage authors who are less familiar with Latin and its constructs, to refrain from hazarding guesses, but rather seek help (from Latin scholars at universities, high schools, herbaria, or among colleagues, who will gladly help them eradicate errors before they are committed in print). It would be beneficial if journal editors would likewise check up on correct Latin procedure.

☞ *Didymosporonites ovumformis* Martínez-Hernández & Tomasini 1989

The specific epithet is an unnecessary pseudo-compound, of which the first term is *ovum*, with the stem *ov-* (as used in oval, ovoid); this stem is then to be provided with the connective vowel *-i-*, and the epithet is to be cited correctly as *oviformis* (Art. 60.8; Rec. 60.G).

☞ *Fustisipora* Welmann 1993.

This generic name is compounded from the words *fustis*=barrel, and *-spora*. Again, as in the previous case, the stem of the word *fustis* is found by deleting the ending *-is* from the genitive case, giving *fust-*; this must be connected to *-spora* by the connective vowel *-i-*, and the correct form of this compound should have been "*Fustisipora*." [However, as this is not a specific epithet, but a generic noun, the Code doesn't allow us to make this correction.] As it stands, the word has a pleonastic form (reminiscent of the Dutch example of pleonasm "double-hinged French porte-brisée doors," a designation particularly lacking in French elegance).

☞ *Diporicellaesporites laevigataeformis* Ke & Shi 1978.

First off, the generic name probably should have been composed as "*Diporicellisporites*," although the irregular connective diphthong *-ae* does suggest the presence of more than one cell. It may have served as an example for the authors to similarly compound the specific epithet. However, if the name was intended to refer to the smooth wall, it should be corrected to "*laevigatiformis*."

☞ *Diporicellaesporites segmentus* Mustard & Rouse 1994 (nom. nud.).

The derivation of the specific epithet of this invalidly published binomial was incorrect, as “*segmentus*” is not a Latin word (*segmentum* is; it means a segment). Happily, when Rouse & Mustard 1997 did validate the name, they changed it to *D. segmentatus*, the epithet thus being constituted by an adjective. [The authors alternatively could have used the epithet “*segmentum*,” which would have been a noun in apposition, the ending of which is not affected by the gender of the generic name.]



⇒ *Hypoxylonites tennesseensis* Elsik 1990.

The specific epithet preferably should have been spelled “*tennesseensis*” because it indicates more precisely the derivation of the geographic part of the name, and better suggests how that should be pronounced.

⇒ *Inapertisporites pseudoreticulatus* Rouse 1959.

The specific epithet must be corrected to *pseudoreticulatus*, which is a true Latin word, the declension of which is clear. The word “*reticulatus*” is not (the nominative **or genitive** of) a Latin word, and its declension (e.g., when it would be transferred to a neuter generic name) would be a puzzle without clear solution; it must be treated as an orthographic error.

⇒ *Inapertisporites asymmetricus* Salard-Cheboldaëff & Locquin 1980.

The specific epithet obviously shows an orthographic (or typographic?) error in the classic orthography (as it is a compound of the elements a-syn-metricus, in which the -n- is assimilated into an -m-), and must be corrected to *I. asymmetricus*.

⇒ *Mohgaonidium deccani* Singhai 1974.

The specific epithet refers to the Indian Deccan Plateau from where the described species originates. Its ending sets a puzzling precedent: did Singhai latinize the word Deccan as a noun “*Deccanum*,” or “*Deccanus*”? Why not treat Deccan as a Latin noun, and (e.g. as in *pollen*, gen. *pollinis*) derive a genitive form “*deccanis*” from it? Or, why not follow the recommendation (Rec. 60.D.1) of the Code, and provide one of the standard suffixes for names derived from geographic names: *-ensis*, *-(a)nus*, *-inus*, or *-icus* (as in e.g. *deccaniense*, or *deccanicum*)? However, as this has nothing to do with a wrong connective vowel, the Code does not allow us to correct this poorly crafted epithet.

PhD THESES

Dinoflagellate cysts and astronomical forcing in the Mediterranean upper Miocene - Andrea Santarelli, Laboratory of Palaeobotany and Palynology, University of Utrecht, The Netherlands
LPP Contribution Series No.6 - NSG publication 970150 - ISBN 90-393-1812-3

PhD thesis defence October 8th, 1997

The climatic evolution of the Earth during the Cenozoic largely reflects a trend toward lower temperatures and ice cap development of the polar regions, initially in Antarctica and later in the Northern Hemisphere (e.g. Kennett and Barker, 1990). Superimposed on this long-term trend, the Earth's climate has oscillated between cooler (glacial) and warmer (interglacial) periods. It has long been realized that these long and short term climatic oscillations are ultimately controlled by the variations of the Earth's orbit around the Sun. This theory was first expressed by Adhémar (1842), who suggested that the occurrences of the ice ages in the Pleistocene might be astronomically controlled. The work of Croll (1864) and

Gilbert (1895) further elaborated the ideas of Adhémar, but notably after the studies of Milankovitch (1941) they became more generally accepted. Thereafter, these (cyclic) astronomically triggered climatic changes are known as Milankovitch cycles. The Milankovitch cyclicity depends on the interaction of gravitational forces in the rotating Sun-Earth-Moon system as well as on the gravitational interactions with the other planets in our Solar System. Such astronomical forcing invokes changes in the eccentricity, obliquity and precession of the Earth, with main periods of 400 and 100, 41, 23 and 19 kyr respectively (Berger, 1977). Eccentricity is a measure of the degree of elongation of the orbit and varies between nearly zero (circular orbit) and 0.06 (slightly elliptical orbit). Obliquity describes the angle between the Earth's axis of rotation and the orbit plane and varies between 22 and 25°. Axial precession results from a combination of rotation of the length axis of the Earth's orbit around the Sun and a process in which both the northern and the southern half of the Earth's rotation axis circumscribe a cone in such a way that the tip of each cone is located at the centre of the Earth.

These variations are climatically important since they affect both the seasonal as well as the latitudinal distribution of the solar insolation (Berger and Loutre, 1993). For example, the caloric equator, the latitude at which the energy received from the Sun is maximal, moves with varying amplitude and frequency, largely defined by the cycle of precession and its modulation by the varying eccentricity within limits of about 10°N and 10°S. At mid-latitudes (around 30°) the astronomical parameters produce different effects, such as changes in summer-winter contrast and monsoon intensity. Toward higher latitudes (>40°) not precession but the effect of the varying obliquity is dominant (Berger, 1978). Interference of high latitude obliquity effects and low latitude precessional dominance may occur (e.g. Fischer et al., 1990).

Since astronomical cycles influence climate, and in turn climate influences the sediment composition, it is not surprising that the latter can be related to the astronomical influence. The resulting sedimentation patterns (sedimentary cycles) can be preserved in the sedimentary record, provided that the sediment supplying mechanisms (e.g. weathering, erosion, tectonism, diagenesis and transport from land) as well as the relative sedimentary facies are sufficiently sensitive.

Hence, since amplitudes and phases of these astronomical cycles of the past 12 Ma can be accurately calculated (Laskar, 1990), provided one knows which sedimentary cycle corresponds to which Milankovitch cycle, an accurate age-assessment of sediments deposited over the last millions of years is possible. Essential to this method is: a) the existence of an accurate time control based on magneto-, isotope and biostratigraphy in order to put an adequate number of datum points along sequences and b) a long enough time span represented (in outcrops/cores) to provide a reliable sampling of the low-frequency cycles involved.

Such sedimentary cycles have been found in the marine record, exposed on land and in deep sea cores throughout the Mediterranean Quaternary and Neogene. The latitudinal position, in combination with the semi-enclosed, land-locked configuration of the Mediterranean makes this area particularly sensitive to record astronomically induced oscillations in climate. Hence, the geochronological application of these cycles has resulted in the construction of a reliable Astronomical Polarity Time Scale (APTS) for the Quaternary and the Pliocene (e.g. the last 5.32 Ma, see Shackleton et al., 1990; Hilgen, 1991a,b). The APTS proved to be more accurate and to have much higher resolution than conventional time scales and has been successfully applied in paleoclimatic studies (e.g. Lourens et al., 1992, Versteegh, 1994). In recent years, within the EU sponsored MIOMAR Project, an integrated, multidisciplinary, investigation have been set up in

order to extend the APTS into the (Mediterranean) Upper Miocene. The project proposal outlined a cooperative effort which had to bring together expertise from various complementary disciplines. The required combination of expertise and equipment is particularly well developed in Europe. This objective had to be achieved by two lines of approach, which concentrate on (1) the development of an accurate multiple biostratigraphy, integrated magnetostratigraphy, cyclostratigraphy and isotope stratigraphy and on (2) the impact of astronomically-induced climatic changes along marine environmental gradients for the upper Middle to Upper Miocene in the Mediterranean.

However, although rhythmically bedded sediments are widely exposed, (e.g. in Italy and Greece), the extension of the APTS Pliocene cycles in the Mediterranean could not straightforward be extended into the Upper Miocene because of the intervening (Messinian) evaporites and fresh to brackish water deposits.

In order to overcome the Messinian problem and to reach further down into the Upper Miocene, several long, marine land sections have been selected for an integrated stratigraphic framework. Of these, the Gibliscemi section on Sicily and the Faneromeni section on Crete were chosen for a palynological investigation. By studying marine sediments, in which continental (pollen and spores) and marine (mainly organic-walled dinoflagellate cysts; shortly dinocysts) palynomorphs occur together, the relationships between astronomical forcing and paleoenvironmental changes can be recognized (e.g. Versteegh, 1994, in the Pliocene).

Within the MIOMAR framework, this thesis aims to: a) the development of a high resolution dinocyst biostratigraphy for the Mediterranean Upper Miocene and its calibration to the astronomical solution and b) the portrayal of long-term and short-term (astronomically driven) fluctuations in the dinocyst and pollen/spores assemblages and their interpretation in terms of changes in the Mediterranean ocean-climate system.

In **Chapter 1**, a dinocyst event biostratigraphy and a detailed dinocyst-based sea surface temperature (SST) record is presented for the Upper Miocene. The combined information, together with the available magneto- and planktonic foraminifer bio-stratigraphy, indicate an uppermost Serravallian-lowermost Messinian age for the studied interval, including the Serravallian/Tortonian and the Tortonian/Messinian boundaries. Such a stratigraphic framework is used to explore and improve the existing Upper Miocene dinocyst stratigraphy for the Northern Hemisphere.

The dinocyst biostratigraphy presented in Chapter 1 is integrated with the available magneto- and planktonic foraminiferal data and applied in **Chapter 2** to construct an astronomically calibrated time scale. This calibration allows the extension of the APTS into the Tortonian. The studied Gibliscemi and Faneromeni sections are integrated here with the Greek Metochia and Kastelli land sections for the calibration of characteristic sedimentary cycle patterns (sapropel-marl; CaCO₃ poor-CaCO₃ rich marl alternations) to the 650N summer insolation curve La90 of Laskar (1990). This calibration provides ages for all sedimentary cycles as well as the recorded polarity reversals, planktonic foraminiferal and dinocyst bioevents. The Tortonian-Messinian boundary, placed at the first regular occurrence of the *Globorotalia conomiozea* group in the Mediterranean is dated at 7.24 Ma. The duration of the Messinian is estimated 1.91 Myr.

In **Chapter 3** the Faneromeni section on Crete, where the influence of the astronomical forcing is well expressed, is selected for a detailed paleoenvironmental investigation. The analysis shows that the deposition of sapropels coincides with maxima in continental input and minima in sea surface salinity. Furthermore, cross-spectral comparison among palynology based proxies and the age assessments of the Faneromeni sedimentary cycles derived in Chapter 2, yields convincingly results. Changes in the ratio

between continental and marine palynomorphs (S/D) closely matches the calculated amplitude variations in the 650N insolation curve of Laskar (1990) and is in agreement with previous findings of Versteegh (1994) in the Pliocene. The close to zero phase lag among the filtered obliquity components in this proxy suggests changes in local Mediterranean climate rather than possible effects of global glacial cycles, since the climatic response to a generic Milankovitch glaciation cycle has been suggested to lag obliquity by " 8 kyr in the Plio-Pleistocene (see Imbrie et al., 1992; Lourens et al., 1992; Versteegh, 1994). A strong precessional influence is shown in both the S/D as well as the dinocyst based sea surface salinity ratio (IN1/IN2). These data, combined, strongly support: a) the validity of the astronomically derived age assessments in Chapter 2 and b) suggest dry-wet oscillations enhancing fluvial run-off at times of sapropels deposition. Finally, one, non-cyclic abrupt change in the palynological associations is recorded at 6.68 Ma. This change points to sudden enhanced sea surface salinity and is synchronous with a decrease in sedimentation rate recorded in several marine land sections on Crete. This event is associated to tectonics or to a global sea level drop.

In **Chapter 4**, the resolution of the paleoenvironmental investigation performed in Chapter 3 is enlarged by using a set of closely spaced samples from the lowermost Messinian of the Faneromeni section (sedimentary cycle number F18 to F20 in Chapter 3). Sample resolution is " 1 kyr according to the APTS developed in Chapter 2. It is for the first time that Messinian cycles are subjected to such an high resolution palynological investigation. A strong similarity between the sedimentary cycles is found. Palynology based proxies indicate that the deposition of the sapropels coincides with: 1) an influx of dinocyst species indicative for reduced salinity, 2) increased continental input and 3) increased concentrations of dinocysts. The combined data suggest sapropels formation to have a common origin and to be triggered by increased river discharge (run-off).

Climatic and oceanographic evolution of the mediterranean region over the last glacial-interglacial transition; a palynological approach - Jordi Targarona i Pujolà, Laboratory of Palaeobotany and Palynology, University of Utrecht, The Netherlands
LPP Contribution Series No 7 - NSG publication 970147 - ISBN 9039317828

Key words: Mediterranean, Land-Sea correlation, Last Glacial-Interglacial transition

PhD thesis defence October 23rd, 1997

The Mediterranean Sea is a landlocked marginal basin of the Atlantic Ocean. It is connected to the Atlantic by the narrow and shallow sill of Gibraltar. At present, the Mediterranean region is influenced by three major climatic systems: the North Atlantic, the Mediterranean and the Monsoon. Clearly, changes in one of these systems are likely to change the evaporation/precipitation balance of the Mediterranean Sea and thus influence its circulation. An additional forcing to the system is winter cooling and precipitation in the Gulf of Lyons and the Adriatic Basin which determine the rates of Deep Water formation. As a result of this interplay between oceanographic and climatic elements, the system is very complex and extremely sensitive to climate change. However, key elements that have an important control on the system are sea surface temperature, sea surface productivity, precipitation and average continental temperatures. To understand the interactions among the different components of the Mediterranean system it is necessary to study coeval changes in these elements by means of their proxy records. An ideal model should integrate information from both the marine and terrestrial record. Up to now, most of the available paleoceanographic models of the Mediterranean consider the

marine record while deriving the climate information from the terrestrial record on land sections. Hence, the common problem to these models is the precise time correlation between records and therefore they lack detail. Here, an approach to solving this problem is attempted by means of marine palynology, allowing first order land-sea correlation.

Marine palynology is an ideal tool to investigate the relationships between climate and oceanography. Palynological assemblages can be related to vegetation patterns which in turn are influenced by climate. Thus, the main components of climate, temperature and precipitation, are studied from the pollen record while sea surface temperature and productivity variations are studied from the dinoflagellate cyst record. On the other hand, dinoflagellate cyst assemblages contain cysts from gonyaulacoid and peridinioid dinoflagellates. Gonyaulacoid dinoflagellates in general have an autotrophic nutritional strategy and predominate in oligotrophic environments. The Recent distribution of their cysts reveals a latitudinal pattern that can be related to sea surface temperature. In contrast, peridinioid dinoflagellates are mostly heterotrophic. Although they feed mainly on diatoms, they can also eat organic debris and other algae. High abundances of cysts from peridinioid species have been reported from high productivity areas such as ice margins, estuaries and upwelling systems. Because of these different nutritional and ecological strategies, gonyaulacoid and peridinioid cysts are considered separately.

To study in detail the relationship between climate and oceanography in the Mediterranean, five cores recovered in key locations of the Mediterranean are investigated for their palynological record. The time slice selected is the last Glacial-Interglacial transition, since this was a key interval, characterized by rapid climatic change.

Chapter 1 documents the environmental changes introduced into the Mediterranean via the inflow of Atlantic water. This is important to discern between the environmental changes transmitted into the Mediterranean region via the atmosphere and via the ocean. The chapter focuses on the gonyaulacoid portion of the dinoflagellate cyst record in cores from the Alboran Sea, the Mediterranean sub-basin next to the Strait of Gibraltar. First, from the Sea Surface Temperature signal present in the dinoflagellate cyst assemblage, a relative Sea Surface Temperature curve is constructed for the last deglaciation. Then, the validity of this curve is tested against the sea surface temperature curve from the $U_{K=37}$ record. Both curves are in good agreement. Dinoflagellate cyst assemblages indicate the presence in the Alboran Sea of cold water masses at times of Heinrich events H2 (20-19 ky BP) and H1 (14-13 ky BP). The reconstructed sea surface temperature curves in the Alboran Sea show the same trends as in the North Atlantic. This leads to the conclusion that the climatic changes originated in the North Atlantic were exported into the Mediterranean via the inflow.

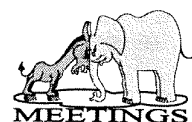
A controversy exists between two productivity models of the Alboran Sea; either the upwelling and fronts, now present in the Alboran Sea, were present over the deglaciation or they were installed at about 8 ky BP. The implication is that the fronts are expected to develop with a lower volume of Atlantic inflow, as during the Glacial, in the first case. Otherwise, their development has been related to the volume of inflow achieved at 8 ky BP. To provide a basis for solving this controversy, attention is given to the protoperidinioid part of the dinoflagellate cyst record in Chapter 2. First, the potential of *Protoperidinium* dinoflagellate cysts as a proxy for paleoproductivity is explored. Results from a set of surface sediment samples across the Alboran Sea upwelling system show that *Protoperidinium* cyst concentrations are highest underneath the upwelling. Then, cores from key locations in the fronts are examined on a high resolution for *Protoperidinium*.

Results indicate the continuous presence of nutrient-rich waters over the last deglaciation. These results in combination with published data from diatoms and a reinterpretation of the foraminifera record, lead us to conclude that the Alboran Sea upwelling and fronts were present before 8 ky BP.

The pollen record of Padul, a peat bog locality from Southern Spain, shows a clear vegetational succession for the last Glacial-Interglacial cycle. Over the last decade, this locality has become a standard reference for palynological studies in the Mediterranean area. However, one problem associated with the Padul record is the difficulty of correlating it with other vegetation records from Southern Spain. As a result, the timing of some events in the vegetation succession is a matter of debate. Since the chronology of marine sediments is better constrained than that of continental sections, in Chapter 3 the chronology of Padul is tested in the pollen record from a marine core obtained offshore Almeria, downwind of Padul. First, a general sequence of vegetation development in this core is reconstructed. In contrast to Padul, the record of this core shows interstadial conditions at 30 ky BP. This interstadial has also been found in pollen records from Iberia and northern Europe, and can be related to the Denekamp Interstadial. The climatic improvement after the Glacial is found to occur at 14 ky BP, about 1 ky earlier than in Padul. The rest of the record is consistent with Padul as to climatic trends, but the records show a different landscape evolution in the Almeria region and Padul.

Chapter 4 is an outgrowth of the previous three chapters. The proxies developed in the previous chapters are applied to palynological datasets from the Western and Eastern Mediterranean basins. A land-sea correlation of environmental changes on a basinwide basis is constructed. This allows us to address a basic question on the timing of the climatic and oceanographic changes leading to the formation of the last Sapropel (S1). Furthermore, the role of productivity with respect to anoxia in relation to sapropel formation are also evaluated.

Results show relatively high productivity only at the base of the sapropel. This leads to the conclusion that productivity plays a secondary role respect to anoxia in the formation of the sapropel. A review of the literature shows that the deposition of S1 was diachronous and that it started at shallow depths in the Aegean Basin at about 9.8 ky BP. In contrast, the end of the sapropel was synchronous and is dated about 5.4 ky BP. Therefore, the related climatic change must have started before 9.8 ky BP. The data show a peak in runoff at 10 ky BP. This may have resulted in decreased rates of Eastern Mediterranean Deep Water production, the main source of oxygen to the Mediterranean sea floor, and in anoxia in the Aegean Sea. Then, from 10 ky BP to 7 ky BP, a combination of increased runoff and rising sea surface temperatures in the Adriatic Sea drove sapropel formation. After 7 ky BP, runoff was low, but sea surface temperatures continued to rise. It is suggested that between 7 and 6 ky BP the influence of sea surface temperatures on sapropel formation became dominant.



TSOP

The Society for Organic Petrology (TSOP), 15th Annual Meeting in conjunction with the Canadian Society for Coal Science and Organic Petrology (CSCOP), July 26-30, 1998, Halifax, Nova Scotia, Canada.

Information: P.K. Mukhopadhyay, Global Geoenergy Res., Ltd., Box 9469, Station A, Halifax, NS B3K 5S3 Canada, phone/fax: (902) 453-0061, e-mail: avery@agc.bio.ns.ca.

Details and virtual abstract: <http://agc.bio.ns.ca/tsophalifax98>.
- MaryAnn Love Malinconico - Outreach Chair, TSOP -

8TH PLANT TAPHONOMY MEETING

Cardiff, UK.

The 1997 International Workshop on Plant Taphonomy will be held on the weekend of the 15-16th of November in the Department of Earth Sciences, University of Wales Cardiff. This is an open, and free, meeting with no formal theme, and will cover all and any aspects of plant taphonomy. The meeting will include several talks and posters, provisional titles include:

- Hofmann. Palynofacies and pollen assemblages in modern and fossil environments - what can we actually reconstruct.
- Martin-Closas. Plant taphonomy and sedimentology of the Stephanian fluvio-palustrine basin of Graissessac (France)
- Huber + D. Ferguson. The significance of wear and tear in fruit and seeds.
- Scott + J. Calder. Joggins - the inside story.
- Chaloner. John Lindley and 19th century plant taphonomy.

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tel: (44) 1222 874 000 (ex 5434) fax: (44) 1222 874 326

6TH CANADIAN WORKSHOP ON HARMFUL MARINE ALGAE

First Announcement

May 27-29, 1998, Biological Station, St. Andrews, NB, CANADA
The workshop is set in the seaside resort of St. Andrews located on the scenic Bay of Fundy, site where the pioneering studies on Alexandrium and PSP were conducted.

Participants are invited to submit provisional titles and subject categories (taxonomy, chemistry, ecology, toxicology, physiology, etc.) for oral and poster presentations. The workshop programme will be developed following submission of proposed titles.

There is no registration fee. Deadline for submission of titles- Dec. 15, 1997; abstracts - Feb. 2, 1998

Correspondance to: Jennifer Martin - Fisheries and Oceans Canada
- Biological Station - St. Andrews, N.B. Canada E0G 2X0, ph. 506-529-5921, fax 506-529-5862, MartinJL@mar.dfo-mpo.gc.ca

POLLEN AND SPORES: MORPHOLOGY AND BIOLOGY

London, 6th - 9th July 1998

An international conference of the Linnean Society Palynology Specialist Group (LSPSG) in collaboration with the Royal Botanic Gardens, Kew and the Natural History Museum, London. The conference is timed to coincide with the retirement from Kew of Keith Ferguson, founder and first Secretary of the LSPSG (1974-1987), and founder and Head of the Palynology Unit of the Royal Botanic Gardens, Kew (1972-1998). The programme will be a selection of both invited and contributed papers and posters on the following topics: pollen development, anther and tapetum, pollen - pollinator interactions, pollen - stigma interactions, pollen morphology in systematics and evolution, ultrastructure (fossil and living groups), pre-Cretaceous palynology, Cretaceous palynology, Tertiary palynology, Quaternary palynology, pollen and archaeology, preparation and techniques. For further details contact Lisa von Schlippe, Tel: +44 (0)181-332 5198, Fax: +44 (0)181-332 5176, Email: l.von.schlippe@rbgkew.org.uk, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, England, UK.

INTERNATIONAL SUBCOMMISSION ON SILURIAN STRATIGRAPHY - SW IBERIA FIELD MEETING 1998

Ossa Morena Zone, Portugal and Spain - June 15-18th, 1998

As was advanced through Silurian Times No. 5 (January 1997), the

Iberian Peninsula was elected as the site for the Silurian 1998 Field Meeting (the biennial field conference of the ISSS). It will highlight important Silurian sections (very complete and continuous, and in Mediterranean facies) of the Ossa Morena Zone in SW Spain and Portugal. Its schedule between the 15th and 18th of June has been coordinated with two other international meetings on fossil groups very important for Silurian correlation: the 6th International Graptolite Conference (GWG-IPA: June 19th-22nd) and the 7th Conodont Symposium held in Europe (ECOS VII: June 24-26th). We will try to coordinate schedules so that members of the Silurian Subcommittee and other working groups will be able to attend most other meetings.

Due to limited space (maximum of 60 places), first priority of registration to the Silurian Meeting goes to Titular Members of the Silurian Subcommittee (IUGS), next Corresponding Members of same and graptolite workers (GWG-IPA), and finally interested nonmembers.

Registration and costs - The registration fee for those attending exclusively the Field Meeting of the ISSS will be 6.000 Spanish pesetas (over 40 US\$), and includes the receipt of a special volume, which will be produced jointly with the Graptolite Conference, and will combine the extended abstracts and the field trip guides presented at both meetings.

A provisional estimation of the full cost for the Silurian Field Meeting (including the above mentioned registration fee, transports -high speed train ticket, coach travel-, lodging -also in Madrid for the night before-, meals and festivities) is in the range of 45.000-50.000 pesetas (approximately equivalent to 300-350 US\$, based on the official exchange rate at the end of July, 1997: 35-50 US\$ less for those registered also in the Graptolite Conference). The booking form with final prices will be included in the next circular. Once we know the provisional number of participants, we will try to get lower prices by means of group discounts, as well as official subsidies.

All correspondence to: Silurian Field Meeting 1998, UEI Paleontologia, Instituto de Geologia Economica, Facultad de Ciencias Geologicas, 28040 Madrid, Spain;

Tel: 34(1) 3495819 (Isabel); Fax: 34(1) 3944849

E-mail: jcgrapo@eucmax.sim.ucm.

OS02: THE DYNAMICS AND ENVIRONMENTAL CONSEQUENCES OF GLOBAL WARMING AT THE PALEOCENE/EOCENE BOUNDARY

Special session announcement for the fall 97 AGU meeting
San Francisco, December 8-12, 1997

The Paleocene/Eocene boundary interval (~55 Mya) has become the focus of considerable attention in earth and ocean sciences in recent years owing to the recognition that it was a time of abrupt global warming. A large body of new evidence is emerging that indicates this event was accompanied by dramatic changes in ocean circulation and chemistry, and in terrestrial precipitation patterns. Evidence also suggests that these climatic changes had a significant impact on both marine and terrestrial fauna and flora.

The origin of the P/E boundary event remains a mystery although several viable mechanisms have been proposed including volcanism and catastrophic disassociation of marine clathrates. Papers are invited that address the climatic and oceanographic dynamics of this event (observational or modeling on global and regional scales), and the marine and terrestrial biological response to this event. Papers on mechanisms for initiating rapid global warming, the dynamics (ocean or atmosphere) of greenhouse climates, and the paleoclimatology and paleoecology of the late Paleocene/early Eocene in general are welcome as well.

Convenors: JAMES ZACHOS, Dept. of Earth Sciences, University of California, Santa Cruz, CA 95064, Phone: 408-459-

4644, E-mail: jzachos@earthsci.ucsc.edu; and PAUL KOCH, Dept. of Earth Sciences, University of California, Santa Cruz, CA 95064, Phone: 408-459-5861, E-mail: pkoch@earthsci.ucsc.edu
For the official meeting announcement and detailed instructions for submitting abstracts, visit the AGU WWW site:
<http://www.agu.org/meetings/fm97top.html>

PALASS

The Palaeontological Association Annual Meeting will this year take place at The University of Wales College of Cardiff (Monday 15th - Thursday 18th December 1997). Following the trend of recent years, the signs are that the 1997 meeting will be well attended, with a good international contingent. So, if you plan to attend, get those abstracts in (abstract deadline August 22nd) and start making those travel plans. For more details see the Association Meetings page on the PalAss website. Abstracts sent to the organisers by email or on disk are particularly welcome.

The PalAss Web pages have just been updated. So in addition to cosmetic enhancements they include the latest (new look) newsletter, contents of forthcoming issues of 'Palaeontology', details of the November review seminar (Early Vertebrates) and the Annual meeting, special offers on PalAss publications, details of how ridiculously cheap and easy it is to join, and a more useful information than you can shake a stick at.

<http://www.nhm.ac.uk/paleonet/PalAss/PalAss.html>

<http://www.ucmp.berkeley.edu/Palaeont/PalAss/PalAss.html>

SIXTH INTERNATIONAL GRAPTOLITE CONFERENCE

(Graptolite Working Group, International Palaeontological Association), Madrid (Spain), June 19th-22nd, 1998.

The programme includes two days of formal talks (June 19-20th), a mid-Conference trip (Silurian Graptolites of the Central Iberian Zone: Sunday 21th), a fourth day (Monday 22th) for workshops, demonstrations, the business meeting of the GWG and the Conference Dinner, and a post-Conference field trip to the Iberian Cordillera (June 23-24th, ending in Madrid late in the evening of Wednesday 24th). As the Conference is being coordinated with the 1998 Field Meeting of The Silurian Subcommittee, it is offered as a joint pre-Conference trip to study graptolite localities of mainly Silurian, Ordovician and Lower Devonian ages, within the Ossa Morena Zone (Spain and Portugal).

Conference theme - The conference theme is Graptolite Evolution and Extinction, with particular emphasis on two sub-themes:

1. relationships with other Palaeozoic biotic and environmental crises, and
2. biochronology and chronostratigraphic applications for high-resolution stratigraphy.

Submission of volunteered contributions other than those related with the main conference theme, are also encouraged for papers across the broad spectrum of the graptolite research.

All correspondence to: Sixth International Graptolite Conference + SSS Field Meeting 1998, UEI Paleontologia, Instituto de Geologia Economica, Facultad de Ciencias Geologicas, 28040 Madrid, Spain; Tel: 34(1) 3495819 (Isabel); Fax: 34(1) 3944849; E-mail: jgrapto@eucomax.sim.ucm.es

- Deadline for abstracts, formal registration and payment: April 15th, 1998.

Informations regarding the Graptolite Conference will be periodically produced in the Web home page of the Graptolite Working Group: <http://wings.buffalo.edu/geology/gwg/>

BPS WINTER MEETING 1998

The 1998 winter meeting of the British Phycological Society will be held from 5-8 January at Royal Holloway, University of London. The local organisers are Eileen Cox, Harriet Jones, Jane

Lewis and Elliot Shubert, with Professor John Dodge acting as a liaison within Royal Holloway. The theme of the conference is "Tracing large-scale and long-term environmental change using algae." The Founder's lecture will be given by Professor John Dodge. There will be a Special Session on "Assessing trace element limitation of algal growth" with invited talks by Professor John Raven and Professor Hein de Baar. The Manton prize will be awarded for best student presentation. A prize will be awarded for best student poster. The time allotted to each paper will be 20 minutes, including discussion. Papers or posters are invited on any algal topic. Papers can be accepted only on the condition that they may be timetabled on any day of the meeting. Abstracts for the winter meeting should be prepared according to the following format.

R.J. GEIDER (Marine Biological Association of the United Kingdom, The Laboratory, Citadel Hill, Plymouth PL1 2PB; e-mail: rdg@wpo.nerc.ac.uk)

Dear Palynologists,

I am planning to organise a palynological symposium for the International Botanical Congress in Saint Louis in 1999, with Annick Le Thomas (Museum of Natural History Paris), entitled "PALYNOLOGICAL CONTRIBUTIONS TO PHYLOGENY AND SYSTEMATICS".

We already have several speakers, but we still need to make up a total of seven who can say that they will definitely come, or who can be put on the supplementary list. If you think you might like to participate or know somebody who would, please let us know as soon as possible, or pass the information on to other members of your staff. As you might be aware, we must submit our symposium proposal by the 15th of September to the selection committee.

The symposium will include only seven speakers, and so we need a full list of speakers two years before the date of the conference.

We would be very grateful if you could please let us know whether you are interested in attending the Congress? And, whether you would you be willing to give a talk?

Laure Civeyrel

Palynologie & Paléoenvironnements ISEM - c.c. 61

Université des Sciences Montpellier II

Place F. Bataillon

34095 - Montpellier Cedex 5 FRANCE

Tel: 33(0)4 67 14 39 25

Fax: 33(0)4 67 04 29 32

24th EUROPEAN MICROPAL. COLLOQUIUM

September 15th-23rd, 1998

The 24th European Micropaleontological Colloquium (24th EMC) will be held in Spain and southwestern France between September 15th and 23rd, 1998. The total number of participants is limited to 45, with allocation priority based on a first-come basis, including ten openings reserved for non-European participants.

The programme will comprise a poster session, and series of field trips at sites in northern Spain and southwestern France, at classic collecting localities for sampling purpose.

The itinerary will cover approximately 1700 kilometers, including Asturias Province, Cabo Penas, Ontoria and Arenas: Devonian and Carboniferous, mainly - conodonts and fusulinids; Cantabria Province (Hortigal: Paleogene - nummulitids; Cobrecas: Albian - orbitolinids); Burgos Province (Caniego: Albian - early acerbulinids; San Pantaleon de Losa: Santonian - Spirapertolina, Lacazina, etc.), Alava Province (Menoyo: Cenomanian-Turonian - foraminifers, ostracods and calcareous nannofossils; Lahoz: Cenomanian- praecalveolinids, orbitolinids, etc.; Corres and Leorza:

Paleogene - alveolinids and nummulitids); Navarra Province (Madoz: Aptian and Albian: orbitolinids, etc.; Puerto de Olazagutia: Maastrichtian - Siderolites and orbitoidids) and Guipuzcoa Province (Zumaya: Maastrichtian-Danian (K/T) and Paleocene-Eocene boundary event - foraminifers, calcareous nannofossils, etc.; and in Aquitaine, southwestern France: Biarritz: Paleogene - foraminifers, etc.; Tercis: Campanian-Maastrichtian boundary - proposed stratotype, foraminifers, nannofossils, etc.). Several sites of cultural and historic interest will also be visited. Total cost of the colloquium (registration, bus, hotel and meals - 8 days) is 132.000 pts. or US \$ 930 (at current rate), per participant (double occupancy). A limited number of partial grants will be available for particular cases.

All presentations of the Colloquium will be published in a special issue of *Revista Espanola de Micropalcontologia* (REM).

Deadline for manuscripts is Autumn 1998, and final publication is projected for Summer 1999, after normal procedures of referee reviews.

Because of the limited number of participants to the Colloquium your prompt reply is appreciated.

Preferred deadline: December 1st, 1997

- Marcos A. Lamolda, President OC 24th EMC -
gplapam@lg.ehu.es

TEL. (34 4) 4648800 ext. 2601 - FAX (34 4) 4648500

ORIGIN OF TERRESTRIALITY IN THE CARIBBEAN

Call for Papers

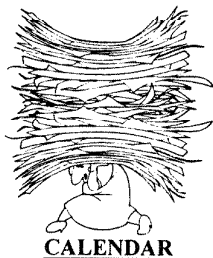
- to be held in conjunction with the 15th Caribbean Geological Conference, 29 June - 2 July, 1998, Kingston, Jamaica, West Indies. This symposium will focus on the origin of terrestrial biotas and environments in the Caribbean region. This is an opportunity for organismic biologists, biogeographers, and vertebrate and invertebrate paleontologists to interact and to discuss matters of mutual interest. Among topics for intended discussion:

- recent work on the tectonic origin of the Greater Antilles
- evidence for vicariance and dispersal in the origin of Antillean terrestrial faunas
- evidence for Mesozoic and Cenozoic terrestrial connections between the Americas and among the islands
- significance of recent vertebrate fossil discoveries in Cuba, Jamaica, and Hispaniola
- paleobotanical evidence for Antillean terrestrial environments in Mesozoic and Cenozoic

Abstracts must be submitted by January 1st, 1998. For more information: Ross MacPhee, Chairman and Curator, Department of Mammalogy, American Museum of Natural History, New York NY 10024, Vox: 212 769 5480, Fax: 212 769 5239
macphee@amnh.org

DINOFEST '98

Will be held in Philadelphia, hosted by the Academy of Natural Sciences April 17-19. Details at <http://www.dinofest.org/>



1997

★ November 16-19: Symposium on "Palynostratigraphy at Low Latitudes". Porlamar, Venezuela. This symposium commemorates the 50th anniversary of Industrial Palynology in Venezuela and is being convened under the auspices of the Venezuelan Geological Society (SVG) in association with the 8th Venezuelan Congress of Geology and the 1st Latin American Congress of Sedimentology. Details: Laurent de Verteuil, Geological Services Laboratory, PETROTRIN Ltd., Pointe-à-Pierre, Trinidad, WI Tel: (809)658-4200/10/20/30 Ex. 2317, FAX: (809) 658-3074, E-mail: devert@petrotrin.com - <http://opal.geology.utoronto.ca/AASP/>

★ November 20-21: Pleistocene Glaciations of NW European Shelf Seas: North Sea versus Irish Sea. Amsterdam, The Netherlands. Details: Dr C. Laban, Marine Geology Division, Rijks Geologische Dienst, Richard Holkade 10, 2000 AD Haarlem, The Netherlands. Tel: ++31.23.5300302, FAX: ++31.23.5352184, E-mail: c.laban@rgd.nl

★ December 9-12: Ninth Brazilian Meeting of Paleobotanists and Palynologists. Universidade Guarulhos, Greater São Paulo metropolitan area, Brazil. In memoriam: Prof. Dr. Murilo Rodolfo de Lima. Details: Profa. Dra. Maria Judite Garcia (President, Organizing Committee) Universidade de Guarulhos, Departamento de Geociências, Praça Tereza Cristina, 01 Guarulhos, São Paulo, Brazil - 07023-070. Tel: 55 (11) 6464-1708, FAX: 55 (11) 6464-1702, 6464-1708 or 6440-2030, E-mail: geo@server.ung.br

1998

★ February 10-13: 7th International Nannoplankton Association (INA) Conference. La Parguera, Puerto Rico. Will include results from all fields of nannoplankton research, including both palaeontological and biological aspects, with a special session on the role of coccolithophores in global change. Details from website: <http://www.uci.edu/INA7.htm>

★ April 6-10: 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@cismisun.univ-lyon1.fr

★ April 14-18 1998: Geoscience 98 Keele University, UK. Six Main Symposia over four days, plus parallel symposia and specialist sessions organised as half days of oral presentations and a half day of poster presentations. One symposium is "Geoarchaeology: exploration, environments, resources". Details of this symposium from: Prof. A.M. Pollard, Department of Archaeological Sciences, University of Bradford, Bradford BD7 1DP, England, UK, Tel: +(0)1274 383530, FAX: +(0)1274 385190, E-mail: A.M.POLLARD@bradford.ac.uk

★ 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>

★ April 20-22 1998: Applications of Stable Isotope Techniques to Ecological Studies Saskatoon, Saskatchewan, Canada. Details: Dr Keith A. Hobson, Canadian Wildlife Service, 115 Perimeter Road Saskatoon, Saskatchewan, Canada, S7N 0X4, Tel: (306) 975-4102, Fax: (306) 975-4089, E-mail: Keith.Hobson@EC.GC.CA or Dr Leonard Wassenaar, National Hydrology Research Center, Environment Canada, 11 Innovation Blvd., Saskatoon, Saskatchewan, Canada, S7N 3H5, Tel: (306) 975-5747, FAX:

- (306) 975-5143, E-mail: Len.Wassenaar@EC.GC.CA Website: <http://ecsask65.innovplace.saskatoon.sk.ca/isotope/>
- ★ 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. Details: Andrew S. Cohen, Department of Geosciences, University of Arizona, Tucson, Arizona, AZ 85721, USA, Tel: (520) 621-4691, FAX: (520) 621-2672, E-mail: acohen@geo.arizona.edu
 - ★ May 16-23: Environmental Change in Atlantic Islands Torshavn, Faroe Islands. Details: C. Caseldine, University of Exeter, UK., Tel: +44 1392 263 347, FAX: +44 1392 263 342, E-mail: c.j.caseldine@exeter.ac.uk
 - ★ 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 québécoise 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: Mire Agathe Morin, Département de géologie et génie 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.ulval.ca/quebec1998.html>
 - ★ May 18-23. 11th Meeting of the IWGP (International Working Group on Palaeoethnobotany). Toulouse, France. Details: George Willcox, IPO, CNRS Jales-Berrias, 07460, France. FAX: +33-4-75 39 37 96.
 - ★ 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@geomun.unibo.it
 - ★ 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, deborah@medicine.uct.ac.za <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 (LPSG) 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: caucamp@geoscience.org.za
 - ★ July 7-11 1998: FORAMS '98. Monterrey, Mexico. Details: gamperma@fiu.edu - <http://www.fiu.edu/~longoria/forams98.htm> August 17-20: 5th International Symposium on the Jurassic System IUGS Jurassic Subcommission. Vancouver, British Columbia, Canada. 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>
 - ★ September 5-7 1998: AMQUA 15th Biennial Meeting Puerto Vallarta, Mexico. Theme: "Northern Hemisphere-Southern Hemisphere Interconnections". Details: Dr Socorro Lozano García, Instituto de Geología, Universidad Nacional Autónoma de México, Ciudad Universitaria, Apartado Postal 70-296, 04510, México D.F., México. Fax: +52 5 550 6644. E-mail: AMQUAMEX@servidor.uman.mx
 - ★ 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 - <http://www.nitg.tno.nl/eqmal/eqmal.html>
 - ★ 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, Università 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 TBA. Canadian Paleontology Conference Antigonish, Nova Scotia
 - ★ September 21-25 1998: IAEG 1998 - 8th Congress of the International Association of Engineering Geology Vancouver, British Columbia, Canada. Theme: Engineering Geology, A Global View from the Pacific Rim, Vancouver, British Columbia, Canada. Information: Ms Kim Meidal, Secretariat, 8th Congress IAEG, c/o BC Hydro, 6911 Southpoint Drive, Burnaby, British Columbia, Canada, V3N 4X8. Tel: (604) 528-2421, FAX: (604) 528-2558, kim.meidal@bchydro.bc.ca <http://www.bchydro.bc.ca/bchydro/IAEG/IAEG98.html>
 - ★ 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

1999

- ★ GAC/MAC Meeting Sudbury, Ontario, Canada
- ★ CANQUA Meeting Calgary, Alberta, Canada.

✱ Fourth Symposium of African Palynology Sousse University, Tunisia

✱ 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

<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

2000

✱ GAC/MAC Meeting Calgary, Alberta, Canada

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

✱ Date: TBA. Canadian Paleontology Conference Toronto, Ontario, 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

2001

✱ GAC Meeting

✱ 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

2002

✱ 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

2003

✱ CANQUA Meeting Halifax, Nova Scotia, Canada (proposed).

JOBS, POSITIONS & -SHIPS

THE PALEONET "GET A JOB" PAGES

<http://www.ucmp.berkeley.edu/Paleonet/Jobs/Jobs.Html> (US)

<http://www.nhm.ac.uk/paleonet/Jobs/Jobs.Html> (UK & Europe)

PALEONTOLOGIST/BIOSTRATIGRAPHER

The Department of Geology at The George Washington University invites applications for a full-time tenure track position for a paleontologist/biostratigrapher with interests in invertebrate paleontology. The position will be filled at the Assistant Professor level.

The successful applicant will begin his/her duties at the beginning of the fall semester, 1998.

We are seeking a candidate who will be an effective teacher with the ability to direct both undergraduate and graduate research. He/she will collaborate successfully with the Department of Biological Sciences Robert Weintraub Program in Systematics and Evolution and with the interdisciplinary graduate level Geobiology

Program. The successful candidate will be expected to develop and pursue original research and to seek external research funding.

Applicants must possess a Ph.D. at the time of appointment. Post-doctoral experience is desirable. All applicants should submit a curriculum vitae, four letters of reference and a concise statement describing their areas of specialization and their teaching and research plans for the next five years. Review of applicants will begin on November 25, 1997 and continue until the position is filled.

Applications should be addressed to the Chair, Search Committee, Department of Geology, The George Washington University, Washington, D.C. 20052.

ASSISTANT PROFESSOR, PALEONTOLOGY

The Department of Geology of The University of Kansas invites applications for a tenure-track position of Assistant Professor with a specialty in invertebrate paleontology or micropaleontology. The appointment will begin on August 18, 1998, with a later starting date possible. Primary consideration will be given to applicants whose emphasis is on specimen-based study of invertebrate fossils or microfossils. Duties include teaching at the undergraduate and graduate levels, developing and maintaining an active program of research, working with other faculty members to develop a stronger program in sedimentary geology and paleontology, and providing professional service to the Department, the University, and the profession.

Applicants should have the Ph.D. degree or be in the final stages of completing the degree. Candidates may be required to show proof of U.S. citizenship or approved permanent-employment status. A letter of application, a complete CV, graduate-school transcripts, and three letters of recommendation should be sent to Roger L. Kaesler, Search Committee Chairman, Department of Geology, The University of Kansas, 120 Lindley Hall, Lawrence, Kansas 66045-2124 (tel.: 785-864-3338; fax: 785-864-5276)

UNIVERSITY OF WARWICK, UK

NERC Postgraduate Research Studentship : Position Available

Applications are invited for a NERC PhD Studentship in molecular ecology in association with Dr. Richard Geider at the Marine Biological Association, Plymouth. UK :-

The molecular regulation of phytoplankton photosynthesis

Phytoplankton photosynthesis plays a key role in removing CO₂ from the atmosphere and sequestering it in the deep sea. However, large areas of the ocean are often nutrient-limited, which has important implications for estimates of primary productivity and global C cycling. This project will set out to determine which nutrient limits growth of phytoplankton in the natural environment by studying the biochemical response of the photosynthetic apparatus to various nutrient-limited growth conditions, and specifically the molecular regulation of phytoplankton photosynthesis underlying these mechanisms. This proposal is part of an ongoing collaboration between Warwick and Plymouth Marine Laboratory/the Marine Biological Association through which some research cruise experience will be available. The successful applicant will also be eligible to attend a summer course in Biological Oceanography in Bermuda.

For further details contact Dr. Dave Scanlan by e-mail:

dp@dna.bio.warwick.ac.uk or phone (01203) 522572 (lab) or (01203) 528363 (office)

Prospective applicants who should already possess at least a 2i degree or M.Sc. in a relevant subject should try and contact me as soon as is possible.

A CV with the names, addresses and telephone numbers of two referees should be sent to Dr. D.J.Scanlan, Department of

Biological Sciences, University of Warwick. Gibbet Hill Road, Coventry, CV4 7AL, England, UK.

NERC FELLOWSHIPS IN FRESHWATER BIOLOGY
NERC (Natural Environment Research Council) is inviting applications for a number of postdoctoral fellowships (5 year) in Freshwater Biology. The Institute of Freshwater Ecology and the University of Lancaster jointly would be keen to host Fellows to work in the following general areas:

- Physical Limnology
- Lake Plankton Processes

These NERC fellowships are generally offered to UK and European Union citizens but anyone interested in exploring this possibility should contact either Prof. A.D. Pickering or Dr. R.I. Jones as soon as possible.

- Prof. A.D. Pickering, Institute of Freshwater Ecology, Ambleside, Cumbria, UK - tel: 015394-42468 / email: A.Pickering@ife.ac.uk
- Dr. R.I. Jones, Department of Biology, University of Lancaster, Lancaster, UK - tel: 01524-65201 / email: R.Jones@lancaster.ac.uk

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In March 1998, the Institute of Geological & Nuclear Sciences (GNS) begins a three-year research project on the Cretaceous-Tertiary (K-T) in New Zealand, specifically to place the K-T boundary event in its regional environmental context in order to better interpret faunal and floral change across the boundary. We will undertake a multidisciplinary study of a suite of well-defined K-T sections which represent an environmental transect from deep marine to terrestrial, including sections in Hawkes Bay, eastern Marlborough, north Canterbury, Otago and Westland-NW Nelson. The study is funded by the Marsden Fund, New Zealand's premier research fund. It is a collaborative study between GNS and Victoria University of Wellington, University of Auckland, and the Geological Survey of Denmark and Greenland (GEUS).

Examined are:

- radiolarians and other siliceous microfossils
- terrestrial palynomorphs
- marine palynomorphs
- palynofacies
- foraminifera
- sedimentology, sequence stratigraphy
- organic geochemistry
- mineral chemistry
- inorganic geochemistry
- carbon and oxygen isotope studies
- nannofossils

Links with other workers involved in mid to high latitude paleoenvironmental studies of the K-T boundary event (University of Utrecht, Denver Museum of Natural History, etc.).

Palynomorphs are seen as the crucial link for correlation of environmental changes between deep and shallow marine and terrestrial sections. Poul Schioler, Graeme Wilson and co-workers have successfully combined palynofacies analysis with allostratigraphy to improve correlation and environmental interpretation of Late Cretaceous formations in Canterbury-Marlborough and Cretaceous-Paleogene sequences in Otago. Rich dinoflagellate floras have been recovered from the deep marine sections in Marlborough as well as the shallower sections in Canterbury and Otago.

Because of the importance of this group, we are offering to fund a three-year doctoral study of palynomorphs and palynofacies analysis of the K-T boundary in New Zealand, to be based at the Research School of Earth Sciences, Victoria University and

supervised by Mike Hannah. Additional support and supervision will be provided by Graeme Wilson, Ian Raine (both at GNS) and Poul Schioler (GEUS). Funding includes a \$14,000 per year tax-free allowance, and full coverage of field and laboratory expenses. Prospective students are encouraged to seek additional support to cover tuition fees, extra living expenses or extraordinary costs. 1997 fees at VUW are \$2500 for NZ students and \$16,500 for foreign students (with dispensations for Australia and Germany). Contact Dr Chris Hollis, STA Research Fellow, Geology Department, Geological Survey of Japan, 1-1-3 Higashi, Tsukuba, Ibaraki 305, Japan, Email: chollis@gsj.go.jp
Fax: +81-298-54-3533, Tel: +81-298-54-3797



BOOKS & JOURNALS

"The Genus *Alexandrium* Halim (Dinoflagellata)" by Professor Enrique Balech.

Publishing this book was a "labour of love" on our part. Prof. Balech of Argentina was 79 years old when I invited him to Sherkin in 1989 for our red tide conference. I offered then to publish his life's work on the Genus *Alexandrium*. Thankfully Prof. Balech is still alive and well and continuing his excellent work.

The dinoflagellate genus *Alexandrium* was originally described on only one species from Alexandria Harbour, Egypt. Since then, because of the interest in the *tamarensis* group of *Gonyaulax*, more species are being described or transferred to *Alexandrium*. The *tamarensis* group has contained many of the PSP-causing plankton species. The genus now has about 30 recognized species.

In this monograph, Dr. Balech presents an historical discussion, details conservative characters for taxonomy of the group, details each species, and discusses the relationship with some other genera. Professor Balech based his study on specimens from the type location of the type species, whenever possible, and many other geographic areas.

ISBN: 1 870492 61 7 (151 pages) - Hardback only

Price: 55.00 pounds stg (or equivalent in U.S.)

(plus surface postage 3.00 pounds sterling or airmail postage 9.50 pounds stg)

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PBB

- Gorteria: Supplement 4. 1997. Stegenga, H. et al. Checklist of the marine algae of the Netherlands. 60 pp. \$25.00

- Ecology & Marine Biology, Nordstrom, K. et al. 1997. Estuarine shores. Evolution, environmental and human alterations. This is the first book to fully examine the interaction between physical and biological estuarine processes across the shoreline. This is also an account of environments that intersect the shallow subtidal, intertidal, and frequently flooded supratidal shoreline and define the land-water contact. Included are analyses of seagrass beds, intertidal flats, beaches, salt marshes, mangroves, human-altered environments such as reclaimed land, disposal area. etc. 400 pp. \$150.00

- Summerhayes, CP. et al. 1996. Oceanography. An illustrated guide. This book includes discussion on improved sampling techniques- advanced remotely operated vehicle systems and satellite monitoring. It also covers all aspects of oceanography:

weather systems, physical geography, chemistry, biology, measurement techniques, and economics. 352 pp. \$74.95

- Whitton, B. & M. Potts. 1997. The ecology of Cyanobacteria. Their diversity in time and space. paperback. 22 chapters written by 30 authors include aspects of physiology, biochemistry, geochemistry, and molecular biology. There are three chapters dealing specifically with molecular ecology. Contents include: introduction, evolutionary record, cyanobacteria in geothermal habitats, Mats and stromatolites, marine plankton, freshwater blooms, picoplankton & other non-bloom forming cyanobacteria in lakes, soils and rice fields, limestones, salts and brines, oil pollution, cyanobacterial dominance in polar regions, cyanobacteria in deserts, detecting the environment, molecular responses to environmental stress, metal-metabolism and metal-toxicity, repetitive DNA, Nostoc, Spirulina, symbiotic interactions, Cyanophage, cyanobacterial responses to UV-radiation, and toxins. 32 pages of color photos which incorporate about 150 views and LM. number of pages has not been established. No price set as yet. Stock on these books will be available soon. If you are interested, just send me an email message.

Dr. Pamela Burns-Balogh: balogh@balogh.com

Balogh Scientific Books, <http://www.balogh.com>

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THE WEB IN ALL OF ITS COLOURFUL GUISES

Those interested in Carboniferous swamps might like to check out Monte and Harrison Hieb's Plant Fossils of West Virginia at url: <http://www.clearlight.com/~mhieb/>

Hans Kerp's history of Paleozoic forests is at:

<http://www.uni-muenster.de/GeoPalaeontologie/Palaeo/Palbot/ewald.html>

WEB VERSION OF GEOREF

GeoRef, the most comprehensive database in the geosciences, is now available on the World Wide Web through Community of Science, Inc. (COS). The advanced search interface and new Internet pricing from the American Geological Institute (AGI) make the COS version of GeoRef an excellent value for administrators and librarians, and a convenient, powerful tool for individual researchers.

The GeoRef database, established by AGI, covers the geology of North America from 1785 to the present and the geology of the rest of the world from 1933 to the present. GeoRef includes references to all publications of the U.S. Geological Survey, and covers masters' theses and doctoral dissertations from U.S. and Canadian universities. It contains over 2 million references to geoscience journal articles, books, maps, conference papers, reports and theses. A unique new feature of GeoRef on COS is the addition of GeoRef in Process, a database of recently added supplementary information to the main GeoRef database. GeoRef on COS offers subject and author searching; field searching with map type, document type, and language options; and easy-to-use information downloading options. Updates to GeoRef are available twice per month and updates to GeoRef in Process are published three times each year.

The American Geological Institute provides information services for its member societies and the geoscience community and also represents the interests of the geoscience community on national science-policy issues, and K-16 curriculum developments. More

information about the American Geological Institute is available from its Web site at <http://www.agiweb.org> or by calling 703-379-2480.

Community of Science, Inc. offers World Wide Web information products to universities, R&D corporations, professional societies, government agencies, and foundations. The company is privately held and based in Baltimore, MD. More information about COS is available from its Web site at <http://cos.gdb.org>.

- Thomas Demchuk -

Information regarding the safekeeping of collections of geodata, including such things as collections of preparations and samples are readily found on the AGI home page at <http://www.agiweb.org>. There are a number of other programs on this page, as well, that may be useful to know about (e.g., the Preview Database on the GeoRef page, where the newest publications are abstracted).

A similar initiative is "ICAL", originating from the University of California, where safe havens are found for "orphaned" and "abandoned" collections. Further information on this is instantly available at this is instantly available at:

<http://www.ucmp.berkeley.edu/ICAL/>

- Jan Jansonius -

NEW SCIENTIFIC METADIRECTORY

SciCentral is a new interdisciplinary Web site. SciCentral opened at <http://www.scicentral.com> in June 1997, and is metadirectory of science and engineering resources conceived and created by professional scientists. The aim of SciCentral is:

- to aid the science community by enabling direct and efficient access to only the most valuable internet resources, and
- to prepare a platform for communication between scientists and engineers so that they may work together to solve the complex research problems confronting us today.

Use of SciCentral is free.

The DB of Palaeontological Types in Austrian Collections includes already more than 30000 palaeozoological and palaeobotanical specimens (true types, figured and unfigured specimens) described in more than 800 articles. It is understood as a pragmatic and useful tool for taxonomic and systematic investigations.

Try <http://www.oeaw.ac.at/~oetyp/palhome.htm>



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. Artwork is 100% proof digital, and is stolen oops ahem borrowed from Corel Clipart and some uncited websites. A report on the AASP annual meeting in Woods Hole is expected for the next issue of this newsletter.

Luis Valverde Vega of Lima, Peru announces the discovery of a new Miocene petrified forest locality in the district of Sexi, Peru. He asks anyone interested in this find to contact him at:
L. V. Vega, Jr. Callo 241, Lima, Peru
fperalta@lulli.com.pe - 0051.1330.6712 (Fax)