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Volume 29, Number 2

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Martin J. Head, Editor

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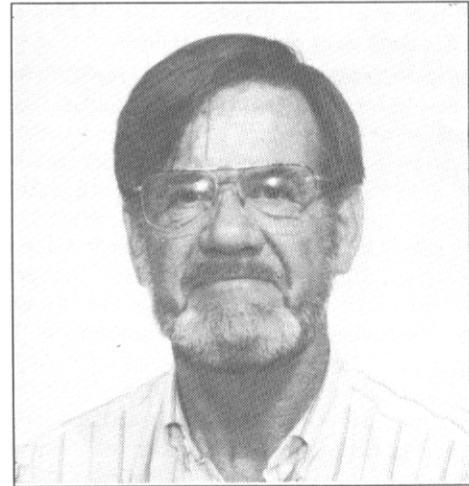
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THE AASP NEWSLETTER is published four times annually. Members are ENCOURAGED to submit articles, "letters to the Editor," technical notes, meeting reports, information about "members in the news," and information about job openings in the industry. Every effort will be made to publish all information received from our membership.

The deadline for the next NEWSLETTER, the third of 1996, is **June 15**. All information should be sent on computer disk (MS Word for the Mac is best, but anything will do) or by e-mail, if possible, or if not—send hard copy. Always include a duplicate typescript of all electronic copy sent so I can check formatting, diacriticals, etc. If possible, please illustrate your contribution with art, line drawings, eye-catching logos, black & white photos, color photos, etc. We look forward to contributions from our membership.



Jan Jansonius, President of AASP

PRESIDENTIAL ADDRESS

In the spring of 1996 AASP is healthy. Our membership has stabilized and starts to increase again. Our finances are in good shape. The latest details are given in the summary of the mid-year Executive meeting which follows this Address. We are confident that the AASP-sponsored organization of the IX IPC is solid, and that there is a genuine interest from participants around the world. We urge everyone to register as early as possible. That will save you the penalty for late registration, and also will be a great comfort for the organizers (and you will benefit from that!). **Registrations at the Marriott Hotel must be in place before May 31** in order to qualify for the low conference rate (the rates for the limited number of rooms with double, triple, and quadruple occupancy are incredible bargains)—and the financial well-being of the Conference budget requires that we have a sufficient number of attendees in the hotel. The concentration of delegates under one roof also will facilitate personal get-togethers. The exchange rate of the US dollar has never been better for foreign visitors, and this opportunity to visit the USA is not to be missed.

The American Association of Stratigraphic Palynologists has assumed a life of its own. Whereas nearly three decades ago it was just a gleam in someone's eye, it grew up with amazing speed. It has given new perspectives to, and formed a bond between palynologists from around the world. The life force of the organization was a distillation of the energy and time given by so many of its members. Few of the founding members are still active in the field, and soon all will have retired. Lately, paleopalynology is not a fashionable topic in North America. Managers spend reduced budgets on more easily quantifiable

activities like digitized data banks and seismic stratigraphy; they can "see" these data, and like to believe that the full stratigraphic story is right before their eyes. Not many palynologists are left to remind the managers that the fossils in a rock are the only positive means to define its proper stratigraphic position. Job opportunities are one measure of conceived relevance of palynology. Paleopalynology had a rapid growth, culminating in a brief golden age in the fifties, when the first generation of young stratigraphic palynologists burst upon the scene. The unfortunate correlative is that they all retire in a short span of time. As they are not being replaced in equivalent numbers, many American companies are in the process of losing the culture of palynological support. This is the more the pity as the new generation of palynologists is excellently trained, highly motivated, and eminently qualified to bridge the knowledge gap separating structural geologists and seismic stratigraphers from biostratigraphers. And, in a descriptive science like palynology, it is crucial that experience and the base of acquired knowledge be passed on to younger generations.

Not only are there fewer paleopalynologists in North America, but they carry a heavier workload than in years not long past. Thus, few find time to document new discoveries, or help in the volunteer jobs that have made AASP the best bargain among palynological societies or publications. AASP as an organization approaches a generation crisis: on its home turf the trend is towards more Quaternary and fewer stratigraphic palynologists, and fewer of its members reside in North America. Now, some suggest that AASP establish "sections," e.g., for Quaternary workers, or for those working in the new directions of forensics, entomopalynology, climate reconstruction, etc. Would such a move inspire more Quaternary palynologists to join AASP? Should they themselves instigate such a process? Those Quaternary workers who now are members have felt welcome and at home in AASP. Regardless of what we do, we need to make more clear that there is a cordial welcome for all kinds of palynologists in AASP, both as members and as Officers of the Board: I invite you to give that message to palynologists who are not members. Together we can make good things happen.

Jan Jansonius
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AASP MIDYEAR BOARD MEETING—SUMMARY

The AASP Midyear Board meeting was held at the Fairmont Hotel in Chicago on 16 March. Attendees were Rosemary Askin, Thomas Demchuk, Donald Engelhardt, Jan Jansonius, Jocelyne Legault, David Pocknall, Reed Wicander, and Gordon Wood. A brief summary of the proceedings follows.

SECRETARY'S REPORT: AASP is presently composed of 676 individual and 118 institutional members (793 total). Since the annual meeting convened in Ottawa, 54 individual and 9 institutional members have been purged for nonpayment of dues and 22 individuals and 9 institutions have elected to join the Association.

TREASURER'S REPORT: Total assets of the Organization are \$67,286.23. These assets include the Scholarship and Best Student Paper Accounts. Assets also accommodate moneys associated with the

IX IPC (e.g., Credit Card payments). The printing/ mailing cost of *Palynology* 19 has not yet been debited from the total amount (...the invoice is in the mail).

MANAGING EDITORS REPORT: Twenty-eight manuscripts are under consideration for *Palynology* 20. Of these, three have been typeset and seven are currently being revised by the authors. The Ottawa meeting abstracts have also been typeset and Dave Goodman and Robert Clarke are targeting publication of *Palynology* 20 to coincide with the IX IPC.

The ca. 1400p. "Palynology: principles and applications," will be published this year. This will be a three volume set: volume 1 is at the printer; volume 2 will be sent to the printer during the week of 18 March; volume three will be submitted to the printer on 15 April. The total cost of all three volumes (hardbound, *Palynology*-size format) will be approximately \$100.00. Congratulations to Bob Clarke, Jan Jansonius, and Colin McGregor.

Attendees paid homage to Martin Head for his dedication in getting the Newsletter out on time and his work with the AASP Web site.

Martin Farabee has resigned from the Editorial Board.

CENEX: John Wrenn provided the Board with a bound report documenting progress that has taken place at CENEX, Louisiana State University (LSU). In the few years that John has been CENEX director, he has overseen construction of a palynological lab, the incorporation of several major palynological slide collections and donated libraries, and secured funding from a myriad of sources. The latter includes recently received National Science Foundation Grant for Antarctic palynological studies (a joint study with Rosemary Askin, Polar Research Institute). These accomplishments, in addition to administrative and teaching obligations, are very impressive.

Discussion concerning the AASP-initiated CENEX project also focused on the critical need for fund-raising. The dramatic changes in both industry and academia in recent years has affected AASP's fund-raising capabilities and processes. The Board discussed possible solutions to this dilemma. Fruitful ideas included soliciting the help of a professional fund-raiser to more rapidly accrue the necessary money for a Chair of Palynology, in perpetuity, at LSU. The Board voted to actively pursue this approach, concentrating on the financial arrangements and the possible strategies professional fund-raisers may offer. In short, CENEX is an AASP obligation and the "large" amounts of money donated by, primarily, petroleum related companies takes AASP volunteers an inordinate amount of time to secure. An aggressive professional fund-raiser may offer the insight and direction needed to capture the remainder of the funds, from a variety of sources, that are needed to honor AASP's commitment with LSU/CENEX.

AWARDS: Merrell Miller submitted a lengthy tome for the Awards Committee. This Committee has done an outstanding job. At the recommendation of the Awards Committee the Board voted to bestow the AASP Medal of Scientific Excellence Award to two individuals (names to be announced at a later date). The Board voted to accept, in principle, the report of Owen Davis concerning the establishment of an AASP Teaching Award. Final decision for installment will depend on the development of specific criteria for judging individuals nominated for this new Award.

Gordon D. Wood, President Elect
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AASP BUSINESS LUNCHEON BACK ON AT IX IPC

After reconsideration by the organizing committee of IX IPC and the AASP Board at its midyear meeting on March 16, it was decided that there **will be** an AASP Business Luncheon at IX IPC. Because the cost of the luncheon is not included in the registration fee, there will be an additional cost for the luncheon. In addition, seating will be limited and so tickets will be sold on a first come, first served basis.

You can buy your AASP luncheon ticket at the registration desk when you register for the meeting. Because seating for the luncheon is limited, I urge you to purchase your ticket as soon after you arrive at the meeting as possible. See you there.

Reed Wicander, Past President
Central Michigan University



AASP EXECUTIVE MEETINGS

Please note that the AASP Executive meetings are scheduled for Monday and Wednesday nights (24 and 26 June) at 1830 hr. All interested members of AASP are welcome.

Jan Jansonius, President

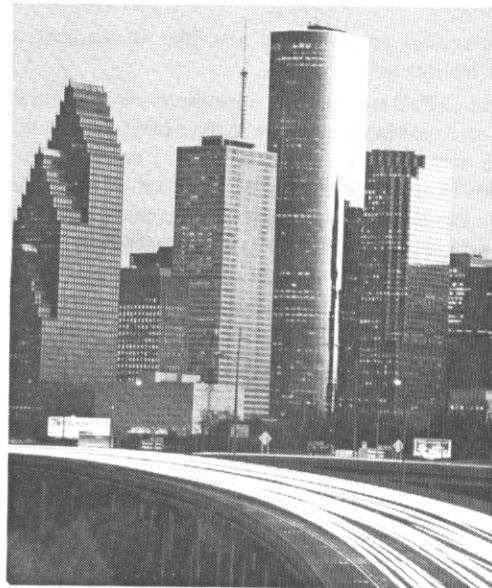


DON'T MISS THE BIG EVENT OF 1996—THE IX IPC

Registrations and abstract forms are arriving daily at such a volume that one would think we were the address for Santa Claus! The Committee is working around the clock getting everything ready for the coming IPC meeting in Houston. All indications suggest that this will be one of the best IPC meetings in decades, and we hope that those few of you who are still in doubt about coming, will now take the plunge and send in your registration forms. We would hate to leave you out of the world's most important palynology meeting.

As you will have discovered, the room rates at the J.W. Marriott Hotel on Westheimer, Houston, are very competitive, particularly when accommodation is shared. We therefore hope that all participants will register at the Marriott before the May, 31 deadline—and share the convenience of meeting other delegates after the sessions.

Although the IX IPC registration deadline, and even the abstract deadline, may have already passed, the Committee will do its best to accommodate those few members who send in late registration forms and abstracts. If you have any doubts, just call us or send us a fax or



Skyline of Houston—venue of the 9th International Palynological Congress

email message.

Come to IX IPC in Houston. It's going to be an event to remember!

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NEW IX IPC BULLETIN BOARD ON AASP WEB PAGE

This latest page on the AASP web site was initiated on March 14 to provide a rapid information service for those attending the IX IPC at Houston. It can be accessed from the AASP home page at:

<http://opal.geology.utoronto.ca:80/AASP/>

The IX IPC Bulletin Board includes useful email addresses, requests for shared accommodation, and latest information on field trips. You are welcome to use this Bulletin Board to post your personal messages. To do so, please email or fax your message directly to me for prompt uploading.

Martin Head, AASP WebMaster
head@quartz.geology.utoronto.ca

IX IPC—REQUESTS FOR SHARED ACCOMMODATION

Sarah Hall is looking for 2 or 3 female research students who would be willing to share a room with her at the J W Marriott hotel. If interested, please contact Sarah Hall at sappsavh@pegasus.huddersfield.ac.uk

Oscar Yepes and **Alan Hoffmeister** are seeking one or two male roommates for the IX IPC in Houston to share a room at the J.W. Marriott. Please contact Oscar Yepes at oyepes@umr.edu or Alan Hoffmeister at

aph@umr.edu as soon as possible if you, like us, are interested in reducing your housing costs.

Rosie Bruce, a PhD student from Australia, is interested in sharing accommodation at the Marriott Hotel with three other students in one of the quadruple rooms. If not at the Marriott, I am happy to share accommodation at another hotel nearby. I cannot afford to stay in a single room in any of the fairly decent hotels (sounds pretty sad, but true). If interested please contact me at R.Bruce@botany.uq.edu.au

Timothy Kroeger of Bemidji, Minnesota is willing to share hotel accommodations at the J.W. Marriott Hotel during the IPC. Contact TJKroeger@vax1.bemidji.msus.edu

Leonard Olaru is looking for cheap, possibly shared, accommodation at 9IPC. If interested, please contact him soon at: lola@dragon.uaic.ro

Nadia Maziane, a research student of the University of Liège, is looking for students to share a quadruple room at the J.W. Marriott Hotel. Please contact by phone: + 32 41 665 258, fax: + 32 41 665 700, email: gerrienn@vml.ulg.ac.be

These messages, and any updates, are posted on the IX IPC Bulletin Board which can be accessed via the AASP home page.—Ed.



AMOCO SUMMER INTERN POSITION IN BIOSTRATIGRAPHY

The Biostratigraphic Support and Development Section of Amoco Corporation is looking for a summer intern for 1996. The position will be at Amoco's Houston Westlake office and transportation costs to and from the location will be covered. The person hired should have at least a Bachelors, or nearly so, in geology or paleontology and a knowledge or interest in learning Graphic Correlation. Knowledge of the Tertiary microfossils succession, including palynology, is important. This 3-month position will be available in the May/June to August/September time frame. Please indicate your interest by contacting, offline, H.R. Lane at hrlane@amoco.com, or by writing to H.R. Lane, Amoco Corporation, P.O. Box 3092, Room 786W3, Houston, Texas 77253. FAX 713-366-7416.

POSITION WANTED

Palynologist available with over 10 years experience in biostratigraphic and paleoenvironmental studies. Currently working in the oil industry, on Paleozoic samples from North Africa; and experience with Mesozoic pollen and spores of Columbia, Trinidad, Ecuador, and Mesozoic dinoflagellate cysts of Europe. Looking for suitable position in industry. Speaks fluent Spanish, English, Dutch. If interested, please contact the AASP Newsletter Editor.

PHONE/FAX CORRECTION

Knut Faegri's phone/fax numbers are not as stated in the AASP Member's Directory. The correct phone number is +47 55 21 33 45; correct fax is +47 55 31 22 38.

Knut Faegri

Botanical Institute
University of Bergen, Norway



DALE & DALE AND DEEP SEA DINOS

Several recent publications have cited our sediment trap work wrongly, and the mistake seems likely to be perpetuated. The correct reference is: Dale, A.L. and Dale, B. 1992: Dinoflagellate contributions to the sediment flux of the Nordic Seas: In S.Honjo (Ed.), *Dinoflagellate Contributions to the Deep Sea; Ocean Biocoenosis Series No. 5*, Woods Hole Oceanographic Institution.

Barrie Dale
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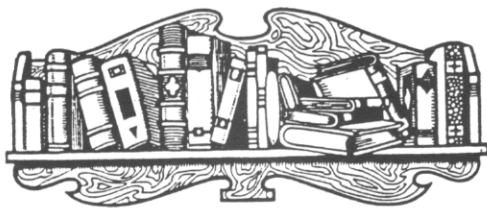
OBITUARY

(TED) TERAH L. SMILEY (1914–1996)

Quaternary Science lost a stalwart friend on February 29, 1996, when (Ted) Terah L. Smiley passed away at 82 years of age. Few have done more to promote Quaternary studies in such a selfless way. The Tree Ring Laboratory and the Department of Geosciences at the University of Arizona exist in their present form through Ted's tireless efforts. From 1958 to 1960 Ted served as the Director of the Tree Ring Laboratory, and he was director of the Geochronology Laboratories from 1956 to 1967, when it combined with Geology to form the Department of Geosciences. Ted Smiley welcomed Ernst Antevs to the program and wooed Gerhart Kremp from Pennsylvania State University. During his 1970 sabbatical in Cambridge, England, Ted established lasting relationships with Richard West, Harry Godwin, and other European Quaternarists. His efforts in the area of Arid Land Studies were recognized in 1973 with the "Award for Outstanding Contributions in Arid Zones Research," by CODAZR (The National Committee on Desert and Arid Zone Research). Without Ted Smiley, The First International Palynology Congress (April 23–27, 1962) could not have taken place. Ted Smiley initiated the planning for this meeting, and he provided its institutional and logistical support. For over two decades students, faculty, and visitors to Tucson benefited from Ted's kind ministrations. We all will miss him.

Submitted by Owen K. Davis
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THESES ABSTRACTS/SYNOPSES

The paleoecologic significance of Paleocene palynomorph assemblages from the Ludlow, Slope, and Cannonball formations, Southwestern North Dakota

Ph.D. thesis by Timothy J. Kroeger*

Paleoenvironment exerted control on the distribution of 133 palynomorph taxa from the Ludlow and Slope formations and Boyce and Three V Tongues of the Cannonball Formation (Fort Union Group, Paleocene) of southwestern North Dakota. The strata represent fluvial-deltaic systems that prograded eastward into the Cannonball Sea. Depositional environments include distributary channels, crevasse splays, crevasse-splay feeder channels, lignite-producing swamps and/or marshes, lakes, brackish to slightly brackish bays, lake and bay fills, and marshes.

Paleoenvironmentally sensitive palynomorph taxa were identified by subjective examination of pollen diagrams and objective analysis using detrended correspondence analysis. Two paleoenvironmentally restricted palynomorph associations were recognized. The Acritarch association, composed of *Ovoidites* cf. *O. ligneolus*, *Micrhystridium* Type-2, *Psiloschizosporis* cf. *S. spriggii*, *Cymatiosphaera* sp., and three unidentified acritarch taxa, is restricted to slightly brackish to lacustrine paleoenvironments. The *Pediastrum* association is dominated by *Pediastrum*, but contains additional algal taxa including *Psilainaperturites* sp. 2, *Ovoidites* cf. *O. ligneolus*, *Botryococcus* sp., *Micrhystridium* Type-1, and several species of dinoflagellates. The *Pediastrum* association occurs in lacustrine strata and in the basal portions of brackish-water strata, indicating that brackish-water conditions were preceded by less saline environments.

Palynomorph assemblages within lignite beds are characterized by sphagnaceous spores (*Stereisporites* spp.), *Gleicheniidites* spp., *Toroisporis* sp., *Reticuloidosporites pseudomurii*, *Fraxinopollenites variabilis*, *Rousea* cf. *R. parvicolata*, *Rousea* sp. 1, *Rousea* sp. 2, *Retitrescolpites anguluminosus*, *Cyrrillaceapollenites* cf. *C. exactus*, and *Myrtipites?* sp. 2. A possible early successional association also occurs in lignites, characterized by *Nyssapollenites* sp., *Quercoidites* cf. *Q. spissus*, *Wilsonipites* sp., *Foveotricolporites pachyexinoux*, *Cranwellia subtilis*, *Triatriopollenites subtriangulus*, *Dicotetradites rallus*, *Cricotriporites plektosus*, *Sparganiaceapollenites?* sp., and *Biretisporites furcosus*.

Kurtzipites spp., *Syncolporites* cf. *S. minimus*, and *Wilsonipites* sp. are typical of the progradational marsh deposits. *Rossipollis scabratus*, *Corollina* sp., *Sparganiaceapollenites* cf. *S. globipites*, *Jarzenipollenites trinus*, *Triporopollenites granilabratus*, *Rousea* sp. 4, and *Striatipollis* cf. *S. trochuensis* may represent members of salt marsh floral communities. Dinoflagellate cysts, especially *Deflandrea* cf. *D. flounderensis* are typical of brackish-water strata, although some taxa have wider paleoenvironmental tolerance.

*Ph.D. thesis, University of North Dakota, Grand Forks ND, May 1995. Advisory Committee: Patricia H. Kelley (Chair), Richard D. LeFever, F.D. Holland Jr., Joseph H. Hartman, Douglas J. Nichols (palynological advisor), L. Elliot Shubert.

Dinoflagellate cysts from the Lower Cretaceous Rio Argos succession (SE Spain)

Ph.D. thesis by Han Leereveld*

GENERAL INTRODUCTION AND SYNOPSIS

In contrast to views, still propagated a decade ago, that the entire Cretaceous period was characterized by uniformly warm conditions, it is now increasingly recognized that Cretaceous climates fluctuated considerably. Indeed, there is convincing evidence of prolonged intervals with exceptionally warm polar ocean waters. These conditions were formed under greenhouse states with up to at least 4 times the present CO₂ concentrations. In the context of the current concern of present and future environmental change, causes and effects of Cretaceous warming receive much attention in observational research and modelling exercises. Cretaceous greenhouse states are thought to have been initiated by increased rates of oceanic crustal production resulting in increased CO₂ release as well as global sea-level rise. In middle Cretaceous times the sea level may have been about 250 m higher than it is today, whereas high-latitude temperatures were about 10°C higher. The presence of occasional cooler intervals in the Cretaceous is indicated by sedimentary records of dropstones (ice-rafted debris) and glendonites (pseudomorphs of ikaite, calcium carbonate unstable at temperatures >0°C). Moreover, cooling trends can be inferred from shifts in the boundary between latitudinally determined faunal and floral provinces.

Throughout the Cretaceous one may observe a clear distinction between a low-latitude faunal/floral realm and contrasting northern and southern realm. The low-latitude tropical-subtropical zone is usually called "Tethyan" (in reference to the Tethys Ocean which separated Eurasia from Gondwana), whereas the adjacent northern and southern zones are generally referred to as "Boreal" and "Austral" respectively. Because of the marked compositional differences between Tethyan and Boreal faunas and floras, long distance correlation based on fossils is difficult and sometimes impossible. Magnetostratigraphy and/or isotope stratigraphy might be of help in this respect, but to date the necessary long continuous records from different areas are not yet available.

The need to understand Cretaceous global palaeoenvironmental and climatic changes on the one hand and the lack of precise correlation possibilities to infer the global extent of geological events on the other hand is recognized in IGCP Project No. 362 (Tethyan and Boreal Cretaceous, TBC). The project aims at stratigraphical correlation and definition of geo-events in the Cretaceous sedimentary sequences of the Tethyan and Boreal Realm. Main goals of the project are: (1) the establishment of a well-defined stratigraphic standard scale for the Tethyan and Boreal Cretaceous; (2) establishment of a high-resolution multizonal correlation scheme (including, amongst others, bio- and magnetostratigraphic scales, and isotope and sequence stratigraphic signatures) for correlation through highly diverse sedimentary facies types; (3) identification of nature and amplitude of global events.

Within the framework of the multidisciplinary TBC project the Rio Argos succession in SE Spain was chosen as reference section for the pelagic Tethyan Lower Cretaceous development for its completeness, fossil richness and excellent outcrop conditions. Various studies on this succession highlighted already cyclostratigraphy/sedimentology, ammonite stratigraphy, planktonic foraminifera stratigraphy, integrated biostratigraphy and sequence stratigraphy, and long-term sea-level fluctuations; in the near future further results from other disciplines will be published: calcareous nannoplankton, magnetostratigraphy, isotope- and chemostratigraphy. The present palynological study contributes to the aims of the TBC project by analyzing the middle Berriasian-

Barremian (Early Cretaceous) dinoflagellate record from the Rio Argos succession and emphasizing the potential of dinoflagellates in biostratigraphy and in the recognition of palaeoenvironmental and palaeoclimatic change.

Chapter 1 is a state-of-the-art report of integrated biostratigraphic and sequence-stratigraphic research on the Rio Argos succession. It involves the delimitation of calpionellid, planktonic foraminiferal, and preliminary dinoflagellate and nannofossil zones and their calibration against the Tethyan standard ammonite zonation and against the interpreted sequence stratigraphic signature for the Berriasian–lowermost Aptian. In comparison with the global sea-level chart several additional 3rd order sequences are identified. The presented combination of standard ammonite biochronozones and 3rd order depositional sequences enables precise chronostratigraphic calibration of the other biozones and thus provides a firm chronostratigraphic framework for global correlation.

In Chapter 2 and Chapter 3 the preliminary dinoflagellate cyst zonation as presented in the foregoing chapter is elaborated. The ammonite frame permitted determination of contemporaneous first and last occurrences of dinoflagellate cyst taxa in three areas, viz. SE Spain, SE France and Switzerland. Mainly based on these biostratigraphic events 10 successive dinoflagellate cyst zones are defined and characterized in the Lower Cretaceous of the Rio Argos succession, the type section of the Barremian at Angles, and the Broyon Quarry section in SE France: Upper Tithonian–Valanginian (Chapter 2) and Hauterivian–Barremian (Chapter 3). It is shown that the zonation has a potential for a world-wide application. In addition, a high-resolution zonation (described as a suite of subzones) is established based on 11 successive compositional changes in the Upper Berriasian–Hauterivian dinoflagellate cyst associations of the Rio Argos succession exclusively; those local changes are considered to reflect palaeoenvironmental and/or climatic changes of regional, interregional or global nature.

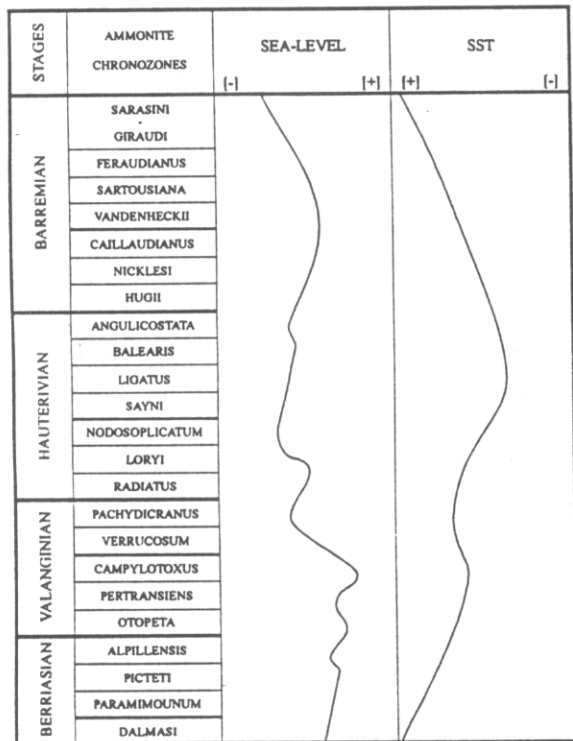


Fig. 1. Schematic representation of inferred long-term sea surface temperature trend and sea-level fluctuations in the middle Berriasian–Barremian from the Rio Argos succession (SE Spain).

In Chapter 4 a palaeoecological analysis of the quantitative dinoflagellate cyst data from the middle Berriasian–Barremian of the Rio Argos succession is presented (see Fig. 1). The analysis involved: (1) Determination of quantitative shifts in palaeoenvironmentally significant dinoflagellate groups; six groups are distinguished based on ecological information on modern analogs and known distribution patterns of various components of Early Cretaceous assemblages: Oceanic group, Neritic group further subdivided in Outer Neritic, Inner Neritic, Littoral and Low-Salinity groups. (2) Determination of typical Boreal taxa (Boreal immigrants) and diversity. (3) Determination of the number of first and last stratigraphic occurrences.

Based on the palaeoecological analysis the temporal dinoflagellate cyst distribution pattern in the pelagic succession from SE Spain appears to be primarily controlled by nutrient supply from land, sea surface temperature (SST), salinity and sea level. Several palaeoenvironmental and palaeoclimatic patterns are inferred: (1) A long-term middle Berriasian–Hauterivian SST decrease, associated with immigration of Boreal dinoflagellates. (2) A latest Hauterivian–Barremian SST increase, associated with increasing precipitation on land, as well as increasing fresh water and nutrient supply to coastal waters. (3) Sea-level fluctuations that may correspond to 2nd order global eustatic change. (4) Sea-level fluctuations corresponding to a periodicity between the 2nd and 3rd order. (5) Sea-level fluctuations corresponding to 3rd order change.

Since the dinoflagellate cyst data are well calibrated against standard sequence of Tethyan ammonite chronozones (Fig. 2), the regional patterns for SE Spain may provide a basis for a more precise correlation of Early Cretaceous palaeoenvironmental and palaeoclimatic developments on a global scale.

Traditionally chronostratigraphy of the Cretaceous System is based on ammonites because in general they provide the highest resolution and the best long distance correlation of sediments. However, the existence of latitudinal belts severely limits the global application of a single ammonite biostratigraphic scale. For this reason the Lower Cretaceous stages and substages which are formally defined on Tethyan ammonites (Berriasian, Valanginian, Hauterivian, Barremian and Aptian stages) have their informally used Boreal counterpart (Ryazanian, “Valanginian”, “Hauterivian”, “Barremian” and “Aptian,” respectively). In Chapter 5 focused on coeval stratigraphic dinoflagellate cyst events (first and last occurrences) in Tethyan and Boreal successions. The dinoflagellate cyst information relied on is exclusively derived from ammonite calibrated sections. Correlation of the selected events result in the following indications: (1) The uppermost Ryazanian is earliest Valanginian in age and not latest Berriasian. (2) The base of the presumed “Valanginian” in NW Germany is younger than the base of the Valanginian Stage. (3) The Upper Hauterivian Substage boundary does not correspond to a Boreal ammonite zonal boundary. (4) The Barremian Stage boundary coincides with the base of the Boreal “H.” rarocinctum ammonite Zone, i.e., higher than generally believed. (5) The Upper Barremian Substage boundary approximates the base of the Boreal *P. elegans* ammonite Zone, i.e., lower than generally believed.

The investigations described in this thesis have been supported by the LPP Foundation, Shell Internationale Petroleum Maatschappij, and The Netherlands Foundation for Earth Scientific Research (AWON, now GOA) with financial aid from The Netherlands Organisation for Scientific Research (ZWO, now NWO).

Han Leereveld
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*Ph.D. thesis, Utrecht University, 27 November 1995. Promotor: Prof. Dr H.



- P Piedmont Basin
- M Marche Basin
- C Caltanissetta Basin



Locations of the investigated sections and wells

sition in the Monterey Formation (California, USA) induced Middle Miocene global cooling through drawdown of atmospheric CO₂ (Vincent et al., 1985, 1985; Flower and Kennett, 1993). In their review of Middle to Late Miocene chronostratigraphy, Rio and Fornaciari (1994, p.27) stated that "...it would be tempting to revise the traditional chronostratigraphy 'adjusting' stages to major climatic steps in order to establish a sort of 'natural' chronostratigraphy." This notion was induced by the results of their study of the Mediterranean Miocene wherein it appeared that important events in the calcareous plankton record, traditionally employed to recognize the stages, are linked to episodes of global cooling. Intriguingly, they thereafter discarded this view, and recommended to continue to use the calcareous microfossil events as principal boundary criteria in the historic sense.

Meanwhile, however, in addition to calcareous plankton the study and interpretation of dinoflagellate cyst (dinocyst) associations has become increasingly successful in the stratigraphic analysis of marginal-marine Mesozoic–Cenozoic basins throughout the world. Moreover, the available quantitative studies on Recent and fossil dinocyst distribution resulted in the recognition of their potential in detailed palaeoenvironmental analysis (e.g., Wall et al., 1977; Edwards, 1992; Edwards and Andrie, 1992; Brinkhuis, 1994; Versteegh, 1995). The organic-walled cyst producing dinoflagellates are primarily associated with neritic environments, causing their consistent occurrence in marginal marine settings. Towards more offshore settings, the dinoflagellate signal increasingly consists of transported elements, thus allowing detailed correlations along the nearshore–offshore transect. Besides the establishment of proxies for changes in relative sea level, applications include recognition of changes in sea surface temperatures and productivity (e.g., Versteegh, 1995).

In view of the potential of dinocysts in bio- and ecostratigraphy, this thesis concentrates on their integration in studies aimed at the characterization and timing of the effects of global environmental change within the Mediterranean Miocene. For the purpose of this study

sections from northwest and central Italy have been investigated, including the (para)stratotypes of the Langhian, Serravallian, and Tortonian stages, and the newly proposed Paleogene/Neogene GSSP site (Carrosio or Lemme section). The results of this study, combined with available information from other disciplines, may lead to a better understanding of late Paleogene–Neogene chronostratigraphy and can possibly be applied to relate the Mediterranean Neogene succession and its stages to the global environmental changes.

SYNOPSIS

In Chapter 1 a detailed palynological investigation with emphasis on dinocysts has been carried out on the envisaged Paleogene/Neogene GSSP at Carrosio, Piedmont Basin, NW Italy, better known as Lemme section. Changes in the quantitative dinocyst distribution are used to construct sea surface temperature (SST) and "transport" proxy curves. The resulting SST curve is positively correlated to the available $\delta^{18}\text{O}$ curve from the same sample set. In addition, trends in the influx of (transported) shallow marine taxa are interpreted in terms of third order sea-level fluctuations. On the basis of the quantitative dinocyst distribution patterns two major sea-level fluctuations are inferred to have occurred during the O/M transition, with falling sea level coinciding with cooler periods. These sea-level fluctuations match well those plotted by Haq et al (1988) for the O/M interval and may reflect global (third-order) eustatic sea-level cyclicity. Furthermore, the previously defined dinocyst biozones of Brinkhuis et al. (1992) for the Oligocene/Miocene (O/M) transition interval can readily be recognized in the Lemme section. Their zonal scheme is relocated to the Lemme section in view of better availability of calibration, and because the section has now been proposed as GSSP section for the O/M and Paleogene/Neogene boundary.

In Chapters 2 and 3 an account is presented of the qualitative dinocyst successions of the Upper Oligocene–Lower Miocene Contessa and Santa Croce di Arcevia sections (central Italy). In these chapters several new dinocyst biozones are defined.

The methodology developed in Chapter 1 is further applied in Chapter 4 to construct SST- and sea-level proxies for the Oligocene/Miocene interval of the Contessa and Santa Croce di Arcevia sections (central Italy) and are compared to those established in the Lemme section (Chapter 1). These are used to further strengthen correlations made on the basis of the qualitative dinocyst information. The inferred sea-level trends allow for recognition of six third order cycles *sensu* Haq et al. (1988). The cycles appear to match those of the third order "Exxon curve" in the O/M interval, reflecting their cycles TB 1.3 to TB 2.2., although one additional cycle is inferred within TB 1.4. Furthermore, the SST curves also correlate well with the magnetostratigraphically calibrated $\delta^{18}\text{O}$ curve established by Miller et al. (1991) in the coeval interval in the North Atlantic. The relationship between the sea level and SST trends again suggests glacio-eustasy as an underlying mechanism for the recorded third order cyclicity. The dinocyst-based correlations match relatively well with previously established calcareous plankton records. The combined evidence indicates that previous interpretations of the magnetostratigraphic succession of the Contessa sequence across the O/M transition can be further refined. The newly proposed O/M GSSP at the base of subchron C6C2n seems to be associated with a major cooling event and appears to represent a threshold position between the Paleogene and the Neogene. As such, it may well serve as a definitive O/M boundary criterion.

Chapter 5 focuses on an assessment of local magnetozones of the Langhian, Serravallian, and Tortonian stages (Piedmont Basin, NW Italy) in terms of the global polarity timescale. Such an assessment is proposed on the basis of available biostratigraphic and sequence stratigraphic information in addition to newly established dinoflagellate cyst

(eco)stratigraphy. By application of dinoflagellate-based sea surface temperature and sea-level proxies through the methodology developed in Chapters 1 and 4, the assessment of the local magnetozones is further validated using the global sea-level chart of Haq et al. (1988) and the array of magnetostratigraphically calibrated Miocene cooling events recorded from the North Atlantic by Miller et al. (1991). The combined information indicates that the upper and lower limits of the Piedmont-based Middle and Late Miocene stages are all associated with an episode of distinct global cooling and sea-level lowering. A revised integrated stratigraphic assessment of the relative positions of the stages is presented. The rich and diverse dinoflagellate cyst associations allow for the definition of ten zones and fifteen subzones, spanning the upper Lower Miocene through lower Upper Miocene. The calibration of the (sub)zones is based on the established assessment of the local magnetozones in terms of the global polarity timescale.

During the course of investigation, several previously undescribed dinocyst species were recorded. Those considered of stratigraphic importance are described in Chapter 6, and are used as markers in the proposed biozonation schemes of Chapters 1–3 and 5.

In conclusion, the combined results indicate that the upper and lower limits of each of the Miocene stages are all associated with an episode of distinct global cooling and sea-level lowering. On this basis, it seems only logical to select the array of cooling events (so called Mi-spikes) and/or the corresponding sequence boundaries as boundary criteria in the ongoing and future studies concerning Miocene stage GSSPs, even considering their historical context. It is recommended to use the various accompanying bioevents to approximate the position of the climatic events in a given marine Miocene succession. The study furthermore illustrates the potential of dinocyst analysis in addressing correlation problems in the Neogene. For example, preliminary results of ongoing dinocyst studies in the marginal marine southern North Sea Basin (The Netherlands) indicate that these deposits may be accurately tied to the Mediterranean Miocene stages.

*Ph.D. thesis, Utrecht University, 30 October 1995, 221 pages, 9 plates (ISBN 90-393-1131-5). Promotor: Prof. Dr H. Visscher; Co-promotor: Dr H. Brinkhuis.



BOOK REVIEW

Pollen Flora of China (second edition, Chinese edition) by Wang Fuhsiung, Chien Nanfen, Zhang Yulong, and Yang Huiqiu; 1995. Science Press, Beijing; 461 pages, 205 plates. \$89.00. (For copies, contact: Dr. Qinhuia Jiang, Department of Geology, Peking University, Beijing 100871, Peoples Republic of China) Email: qjiang@geoms.geo.pku.edu.cn

Almost any published pollen atlas or guide to the pollen flora of a region is a must for the bookshelf of a serious palynologist. The cost of these publications is often expensive, but they become an invaluable reference source when one needs to know about the pollen flora of a given geographical region. This book is no exception. Although it is the second edition, I doubt that many palynologists outside China have copies of the earlier first edition.

This pollen guide to China represents an extensive look at pollen flora and is a useful guide when actual modern reference slides of key pollen taxa are not available for comparison. The authors have described, and have included photographs of, pollen types from over 1,400 individual species. These species come from 912 different genera found in 121 separate plant families. The 205 plates of light photomicrographs are mostly of high quality, yet a few of them are either too dark or too light to provide excellent resolution. Also included is a bibliography and an index listing all of the pollen types discussed in the text.

Unfortunately, for those who do not read Chinese, the text portion covering the morphological descriptions of each pollen taxa, common Chinese names for each species, each taxa's distributional range in China, and the ecological habitat for each species, will be of little value. Nevertheless, even in the text portion most will recognize the Latin names of each pollen type, and will be able to determine the dimensions of each pollen taxa, which are listed in numerical form for each type. I found that it was often important to note the size range for each taxa from the text portion of the book because many of the photomicrographs lack any explanation about the size of the illustrated grain and none include a bar scale on the photograph. Occasionally, one can determine from the plate caption that a specific photomicrograph might be illustrated at some specific scale (i.e., 1000x, 2000x, 2800x etc.).

In spite of the shortcoming, this book is a bargain at its price because of its value as a reference tool and pollen key to a wide area of Asia. Several years ago, as part of a legal case, I was asked to examine a number of samples taken from vats of imported honey, purported to have come from Mongolia. As I progressed with that study, my greatest problem was not having ample examples of key pollen types from some of the major floral types in Mongolia. A copy of the Flora of China might have made my study of those samples much easier.

From experience, I urge each of you to order your copy now, before this book goes out of print. Most pollen atlases and pollen floral guides seem to be printed in limited numbers, and soon are unavailable at any price.

Vaughn M. Bryant, Jr.
Department of Anthropology
Texas A&M University

BOOK ANNOUNCEMENTS

Flowering Plant Origin, Evolution & Phylogeny by David Winship Taylor and Leo J. Hickey (eds), 1996, Chapman & Hall. pg 403 with many plates. Price approx. \$50.

This book covers many aspects of flowering plant phylogeny and is a summary of recent areas of research. Of direct interest to palynologists is a chapter by Gil Brenner on the earliest angiosperm pollen (late Valanginian, Israel) and their evolution (inappertuate as ancestral). Two chapters cover paleobotanical topics including reticulate leaf evolution and a well preserved fossil gnetophyte. The remaining chapters summarize findings on flowering plant evolution including organs such as wood, flowers, and carpels, discussion of the herbaceous origin hypothesis of angiosperms and structural and molecular phylogenies of the base of the angiosperm phylogenetic tree.

David Winship Taylor
DWTAYLO2@IUSMAIL.IUS.Indiana.Edu

[A review of this book is slated to appear in the July issue of this Newsletter.—Ed.]

Fossil Floras of China Through the Geological Ages. English Edition, Editor-in-Chief: Li Xingxue. Published by Guangdong Science and Technology Press, 1995. Hardcover, 695 pp., 144 pls. ISBN 7-5359-1537-X/Q14. US\$80.00.

This book summarizes the principal achievements of paleobotanical study since the middle half of the nineteenth century, especially during the forty-odd years after the founding of New China. The whole text comprises 12 chapters. Taking geological time as the linking line, this book discusses in separate chapters the overall features and evolutionary history of floras in different geological periods ranging from Silurian to Quaternary, with particular emphasis laid on the systematic analysis and summary of composition, nature, characteristics and correlations, division, evolution and phytogeographical provinciality of those floras (based on megafossil plants supplemented partly with fossil spore-pollen evidence) in different periods, together with a certain number of paleobotanical study displaying the distinguishing features of China.

The price is US \$80.00 per copy. Please add \$6.00 per copy for surface mail or \$12.00 per copy for airmail. Checks should be payable in US fund and sent to:

Mr. Ma Zhengang
Nanjing Institute of Geology and Paleontology
Academia Sinica
39 East Beijing Road
Nanjing 210008
People's Republic of China

[Gordon Wood, who submitted this book announcement, says there are 144 glossy plates (11 in color), mostly of plant macrofossils. Most importantly each chapter (chapters are by geological age) contains an exhaustive palynological overview of PRC studies by individual Chinese expert(s), and the reference citations are extremely valuable.—Ed.]



THE UK SCENE

Jim Riding

This issue's UK report is devoted wholly to the British Micropalaeontological Society (BMS). The Society was founded in 1970 so was 25 years old last year. As a celebration, it was decided to hold a special Silver Jubilee Meeting at University College London on the 18th of November with invited guest speakers who would give review lectures on the major microfossil groups. The speakers were nominated by each of the five specialist groups of the Society, i.e., Calcareous Nannofossil, Conodont, Foraminifera, Ostracod and Palynology. Where possible (i.e., where we could afford!), an overseas expert was sought. I am pleased to report that the meeting was a great success; the attendance was around 120, the University College legis-

tics were as efficient as ever and the talks were well-presented and received. Most importantly, the lectures gave an unparalleled overview of modern micropaleontology, how our subject can be utilized and where it may go in the future.

The first lecture was on the ecology of modern deep sea foraminifers by Alexander Altenbach of Munich. Alexander spoke about his work on the dynamics of benthic food chains and how they can be modelled by foraminifers. These researches impinge on global flux studies and the understanding of climate change. This presentation was exceptionally well illustrated and put across in a consummately lucid style. The talk on calcareous nannofossils was a double act starting with Paul Bown (University College London) and finished by Jeremy Young of the Natural History Museum, London. Paul and Jeremy documented the early development of the study of calcareous nannofossils by pioneers such as Ehrenberg, Wallich, and Sorby and went on to describe the "biologization" of calcareous nannofossil paleontology, examples of modern work on biostratigraphy, paleoecology and the biochemistry of coccolith biomineralisation. The double act worked very well and the switch-over was relatively seamless! Despite suffering from acute laryngitis, Tom Cronin of the US Geological Survey (USGS) gave a wide-ranging discourse on how ostracodes can be utilized as bioindicators of environmental change. Tom described in detail work on the modern ostracode faunas of the North Atlantic region; certain species are remarkably environmentally sensitive and can be used to track changes in temperature, nutrient concentration, extent of sea ice etc. at several timescales. This lecture was an object lesson in the applicability of microfossil groups in modern environmental studies. Anita Harris, also of the USGS, gave a very entertaining talk on the response of conodont colour and texture to geothermal heat with examples from a modern caldera in New Mexico and a hydrocarbon exploration project in southern Nevada, USA. Again, the emphasis of the lecture was the applicability of these microfossils. Anita's style and superb graphics both efficiently communicated both case studies. The final talk of the afternoon was presented by Bill Riedel (Scripps Institution of Oceanography, California). Bill intended giving a practical demonstration of computer-based aids to micropaleontology, but time constraints prevented this. Bill used Cenozoic radiolarians as examples of how microfossils should be treated both taxonomically and phylogenetically. I was interested to learn that Bill favours the taxonomic methods espoused by the late palynologist Norman Hughes.

The palynological input was provided by John Richardson (Natural History Museum, London) and your correspondent. It was felt that no single specialist could give authoritative reviews on both miospores and microplankton. John gave a lecture on the palynological manifestations of early land plant evolution. The origins of bryophytes and vascular plants, and the attendant palynological evidence, was discussed in detail. John showed many slides of cryptospores and possible trilete spores. This Silurian-Devonian floral evolutionary burst was extremely rapid and successful; only the angiosperms had not evolved by the end of the Devonian. The Silurian-Devonian miospore record has helped place these macrofloral evolutionary events in a coherent chronostratigraphical framework. Exceptionally well-preserved macrofossil material has allowed spores to be related to their parent plants. The majority of morphological trends are largely gradualistic. Jim Riding (British Geological Survey, Nottingham) provided a review of marine microplankton with the major emphasis on fossil dinoflagellates. The talk was aimed at the non-specialist and stressed evolution and possible future areas of research. Jim started by explaining modern dinoflagellates, their morphology, tabulation, ecology and life cycles etc. Many examples of well-preserved forms illustrated the remarkable variety of morphologies from the Triassic to Recent fossil record of resting cysts. The preponderance and diversity of acritarchs in the Lower Paleozoic and the apparent "switch-over" to dinoflagellate cysts



Speakers at the BMS Silver Jubilee Meeting, University College London. Back row (left to right): Tom Cronin (ostracodes—USGS, Reston Va), John B. Richardson (miospores—Natural History Museum, London), Alexander Altenbach (foraminifers—Munich), Bill Riedel (radiolarians—Scripps, La Jolla), and James B. Riding (microplankton—British Geological Survey, Nottingham). Front row (left to right): Paul Bown (calcareous nannofossils—UCL, London), Anita Harris (conodonts—USGS, Reston Va), and Jeremy Young (calcareous nannofossils—Natural History Museum, London).

in the Mesozoic and Cenozoic was commented upon. It was suggested that biogeochemical studies may help resolve the possible relationships between many acritarchs and dinoflagellate cysts. Molecular work, such as RNA studies, are likely to be the focus of future research. Other areas likely to receive more attention are the refinement of dinoflagellate cyst spectral diagrams (“pollen-type” data presentation) and multivariate statistical analyses of dinoflagellate cyst data.

The meeting gave an excellent overview of modern micropaleontological researches. A reception followed by a dinner was held in the College in the evening. A former Chair of the Society, Bernard Owens (British Geological Survey, Nottingham) gave a lively and entertaining after-dinner speech. Prior to the formal meeting Matthew Farris (Keele University) was presented with the Simon Petroleum Technology Stratigraphy Prize for his excellent work on Middle Jurassic palynology while studying at Sheffield University last year. Alan Lord (UCL) stood down as Chair of the Society and Dick Aldridge (University of Leicester), a conodont specialist, was installed as the new Chair.

Mary McGann (USGS) has recently taken over from Bob Lundin as the US representative of BMS. Mary will coordinate all membership subscriptions and queries for members in the USA. This means that annual dues of US\$40 should be sent to Mary, who will make a single consolidated payment thereby minimizing bank charges. Mary’s address is US Geological Survey, Branch of P & S, MS 915, 345 Middlefield Road, Menlo Park, CA 94025. I will end with a plea for palynologically-related news items to be sent to me for inclusion in this feature.

James B. Riding
British Geological Survey
Nottingham, U.K.

CALL FOR PALYNOLOGY PAPERS

A special issue (no. 2., vol. 3, 1996) of the journal *Annals of Agricultural and Environmental Medicine*, devoted to the problems of palynology and clinical palynology, is now in preparation.

The issue is planned to be printed in the 2nd half of this year. I am looking for good original and review articles related to the topics. There is still room for two or three additional articles.

As preparations are in progress already, I will appreciate quick response from authors interested in contributing to this issue. I need to know the title and approximate number of pages. You will be in a good company!

To get more information on the journal (incl. contents, abstracts, selected articles in a full-text e-version) send a command “SEND GMF-LIST.TXT” to the address LISTSERV@GALEN.IMW.LUBLIN.PL

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UPCOMING CONFERENCES

International Organization of Paleobotany Conference (IOPC-V)

Santa Barbara (June 30–July 5, 1996)

Those who wish further information on the International Organization of Paleobotany Conference (IOPC-V) meeting in Santa Barbara (June 30–July 5, 1996) are encouraged to email Bruce Tiffney at tiffney@magic.geol.ucsb.edu

VIII International Conference on Harmful Algae

Vigo, Spain, 25th–29th June, 1997

First Announcement

The VIII International Conference on Harmful Algae will take place in Vigo, Spain, between 25th and 29th June, 1997. The conference will be hosted by the Instituto Español de Oceanografía, (Spanish Oceanographic Institute), the Ministerio de Sanidad y Consumo, Laboratorio Comunitario de Referencia (Ministry of Health, European Union Reference Laboratory), and the Conselleria de Pesca, Acuicultura y Marisqueo de la Xunta de Galicia (Ministry of Fisheries, Aquaculture and Shellfisheries of the Galician Government).

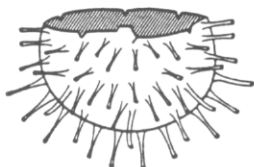
Contributions are invited on all aspects of toxic and harmful algae (including brackish and freshwater cyanobacteria, and ciguatera agents).

Papers which address the following problems will be especially welcome:

- i) Empirical and model studies of the population dynamics of harmful algae blooms, including the coupling of physical and biological processes, harmful algae–zooplankton interactions, growth patterns...;
- ii) Ecophysiological, biochemical and toxicological aspects of harmful and toxic algae species;
- iii) Problems related to monitoring, aquaculture, public health and the management of harmful algae events and their economic impacts.

Vigo is the most populous city of Galicia (NW Spain), and lies about 1 hour by road from the capital of Galicia, Santiago de Compostela, and 2 hours from Oporto in Portugal. Santiago and Oporto both have international airports, and there is a daily (except Sundays) air link between Vigo and Paris, as well as several daily flights between Vigo and Madrid and Barcelona. For further information, please contact:

Beatriz Reguera, Conference Coordinator
VIII International Conference on Harmful Algae
Instituto Español de Oceanografía,
Aptdo 1552. 36280 Vigo, Spain



Fifth Canadian Workshop on Harmful Marine Algae St. John's, Newfoundland, September 11–13, 1996

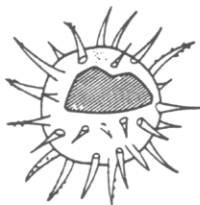
The Department of Fisheries and Oceans will host the Fifth Canadian Workshop on Harmful Marine Algae at the Northwest Atlantic Fisheries Centre in September, 1996. The workshop will be organized to promote exchange of new and unreported information and to plan for future research on aspects related to harmful marine algae.

The proposed program will include contributed oral presentations, poster papers, a review of relevant work done by different agencies, working group sessions, including a session on harmful marine algae and aquaculture site management, and a plenary session. The abstracts of papers and summaries of discussion groups will be published in a Canadian Technical Report of Fisheries and Aquatic Sciences Series.

The workshop is open to everyone (government agencies, university research community and aquaculture and other harvesting industry). There is no registration fee.

Anyone who wishes to participate, please reply to M.A. Paranjape by **May 1, 1996** indicating your name, mailing address, phone, fax, email, and whether you wish to present a paper or poster (with preliminary title) at the workshop. The next circular will include information on travel, accommodation, and other social activities.

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Ocean Ecology—Science
Department of Fisheries and Oceans
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St. John's NF A1C 5X1
Canada
Phone: 709-772-6184
Fax: 709-772-3207
Email: mparanjape@nflorc.nwafc.nf.ca



Society for Organic Petrology—13th Annual Meeting Carbondale, Illinois, September 15–19, 1996

The Society for Organic Petrology will hold its 13th Annual Meeting on September 15–19, 1996, at Carbondale, Illinois. For information please contact: John Crelling, Department of Geology, Southern Illinois University, Carbondale, IL 62901, phone (618) 453-7361, fax (618) 453-7393, email jcrelling@geo.siu.edu



COMPUTERS IN PALYNOLOGY

Micropaleontology course now available on Internet

The course "Introduction to Micropaleontology (Geol 6353)" will be offered by Internet by the Department of Geosciences, University of Houston, in the Fall Semester 1996.

It is hoped that this online mode of distance education will provide a unique opportunity for interested persons who do not happen to live near a university offering micropaleontology courses, or who for other reasons are unable to enroll in a traditional on-campus course, to learn more about the interdisciplinary science of micropaleontology.

Course description: Micropaleontology is the study of microscopic fossils, especially of plants, animals, and protists. This course is an introductory survey of the major groups of microfossils, including calcareous, siliceous, phosphatic and organic-walled types (foraminifers, ostracodes, pteropods, calcareous nannofossils, radiolarians, diatoms, dinoflagellates, conodonts, etc.). The skeletal anatomy, biology, mode of life, and geologic history of these benthic and planktic, marine and nonmarine organisms will be reviewed. Applications of micropaleontology to interdisciplinary research in biostratigraphy, paleoecology, paleoceanography, paleoclimatology and environmental science will be featured.

The instructor will be Dr. Rosalie F. Maddocks, Professor of Geosciences, University of Houston.

This course offers 3 semester hours of graduate credit in Geosciences. For information regarding the applicability of this credit to an advanced degree, the student should contact the institution offering that degree program.

Students must apply and be admitted to the University of Houston. It is expected that students will have completed a baccalaureate degree. A general familiarity with biological and geological principles is expected, which may have been gained in elementary Biology, Geology, Paleontology, or Oceanography courses.

The course will be conducted in English, and all students should have competence in reading and writing scientific English.

The course will be delivered by Internet, and all students must have an e-mail address. Telephone, Fax and Postal Mail may also be used as needed.

Prospective students are invited to contact one of the following people at the University of Houston for more information.

Prof. Rosalie F. Maddocks
Department of Geosciences
Phone: (713) 743-3429
Fax: (713) 748-7906
rmaddocks@uh.edu

Ms. Melissa Cantrell, Coordinator
Phone: 713-395-2800 ext. 6070
Fax: 713-395-2629
cantrell@jetson.uh.edu

and

Ms. Gwendolyn Choice,
Advising Assistant,
Telephone: 713-743-3401
Fax: 713-748-7906
E-mail: gchoice@uh.edu
<http://www.nsm.uh.edu/amicropaleo.html>

Free pollen analysis programs from Cambridge

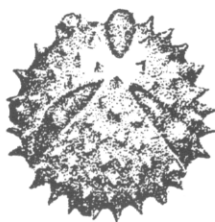
Pollen analysis software freely available from Cambridge includes the PSIMPOLL data crunching and PSCOMB plotting programs, both written by Keith Bennett. They are very simple, less temperamental than other plotting programs and plot better quality diagrams. Best of all, they are free and available via FTP from:

<http://www.palecol.plantsci.cam.ac.uk>

In addition there is a program for the Psion Organiser pocket computer called POLLTAX which is used for pollen tally counts, also freely available from the site above. The three programs are designed to work together and with the aid of a "comms-link" to your desktop computer from the Psion, data entry is rapid and precise.

Adam Gardner
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[This message was adapted from a posting to the QUATERNARY-L discussion list.—Ed.]



New Web site for Aerobiology

This is to announce a new web site for Aerobiology. The address is:
<http://www.unex.es/polen/index.htm>

It provides periodical information about airborne pollen from Extremadura (SW of Spain). Any suggestions or comments will be welcomed.

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THE STATE OF PALEONTOLOGICAL COLLECTIONS IN INDUSTRY

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As part of a larger effort by industry, academia, government entities and museums to identify and determine the state of invertebrate paleontology collections in the U.S., we have been charged with gathering and compiling information on such collections within the oil industry. Additionally, we want to get a feeling for the size, scope, quality, and archival condition which exists, for each collection.

We are seeking information on any existing industry paleontological collection which falls within the parameters set out below.

MATERIAL

- foraminifers, ostracodes, charophytes, conodonts—isolated ("picked") fossil specimens, or thin-section preparations
- palynomorphs, silicoflagellates, calcareous nannofossils, diatoms, trace fossils—slides (or photographs if they are accompanied by the original slide)
- any macroscopic collections that have been utilized in solving industry related business problems (home mantle display specimens are not sought)

Note: unprocessed samples/material will NOT be tallied

ARCHIVAL CONDITION: Included in "archival condition" we are looking for the amount and type of documentation which exists for the collection; for example, is there data on the specific locality from which the specimen(s) was obtained, the stratigraphic level, any paleobathymetric interpretation, etc. Obviously, the more specific the data accompanying the collection, the more useful it is. At the very least, general geographic information (e.g., northeastern Gulf of Mexico) is necessary and any other information you feel comfortable in providing.

SIZE: How large is the collection? (approximations will be sufficient, but specifics are appreciated)

SCOPE: What type of material does it contain? (Picked and mounted slides, free specimens, glass slides, photographs accompanying slides, etc.). What fossil groups are included in the collection? Age and/or geographic range?

We are looking for information on collections from any size oil companies, personal collections, those which may exist in large or small consulting groups, "orphan collections" (or those which may become "orphans" in the near future due to retirements, downsizing, death, etc.).

We are presently in the information gathering mode of this process. That accomplished, we will begin to compile the results in some meaningful format. The intent would be to gain a better handle on what collections actually still exist, where they reside, and how to preserve those which may be in danger of being disposed. As mentioned in the opening paragraph, this is a part of larger study concerned with the value, distribution, preservation, curation, and access to invertebrate paleontological collections in the U.S. Plans are to organize a cross-organizational (i.e., museums, industry, government, etc.) meeting later

this year with the intent of providing basic information to museums so that they may prepare for collections (space, manpower, budgets, etc.) that are in the "pipeline" and inevitably heading, sooner or later, for curation at a museum of some sort.

Any information you can provide will be helpful. We need this data in hand by mid-May, 1996. Please send information to:

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MEMBERS IN THE NEWS

Texas A&M first in the field of fossilized feces findings

by Lisa Johnson (from the *The Battalion* 102/79: 25 January 1996)

It is difficult for students to imagine Dr. Vaughn M. Bryant, head of the Texas A&M anthropology department, clad in a caveman's traditional trappings of leopard skin. But that is just what Bryant was wearing in a photo accompanying a 1979 *People Magazine* article about his "caveman diet." Shortly after the article appeared, *Texas Monthly* satirized Bryant's pet research subject, fossilized human feces, and called A&M "the crap capital of the world."

Bryant, whose early publicity did not earn him favor with the University's administration, took it all in stride. "I really got in a lot of trouble when I first came to work here," he said. "But my dad was an AP correspondent for a long time and he always told me, 'any news is good news as long as they don't misspell your name.'"

Bryant said "trouble" is inevitable given the nature of studies he has conducted throughout his anthropological career. He is one of the few anthropologists in the country who researches fossilized human feces, or coprolite. In fact, his feces findings affected his personal life, inspiring him to adopt a new diet and exercise program. In feces that Bryant studied, he found large amounts of plant remains and fiber, along with strands of hair, bone fragments, insect remains and teeth.

Bryant began studying coprolite in the 1960s along with a pioneer in the field, Dr. Eric O. Callen of McGill University in Canada. Callen was the only person at that time conducting extensive analyses of fossilized feces. When Callen died in the early 1970s, his coprolite collection, the world's largest, was given to Texas A&M, where Bryant was head of the anthropology department. It is an inheritance for which Bryant said he is grateful.

"The collection serves as a nice reference to show the historical development of a science," Bryant said. "This is Dr. Callen's personal research material, and having it is like having a collection of the personal letters of a diplomat." The collection is accessible to students from Texas A&M and other universities.

Dr. John Jones, a former graduate student of Bryant and an affiliate of the Smithsonian Tropical Research Institute, said the collection comprises mostly microscope slides of fecal remains from Mexico and

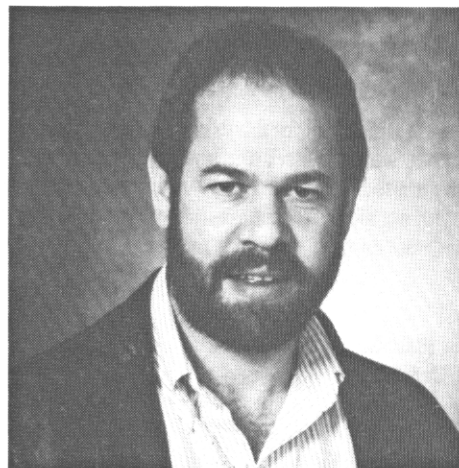
Peru. "The collection is basically a reference material for students," he said. "Because of its complete nature, it will never be broken up or added to in any way."

WEBMASTERS IN GREAT DEMAND

A Web Week survey reports that "Webmasters at big companies generally enjoy responsibility, authority and respectable remuneration." The typical webmaster is male (88 percent), in his 30s (55 percent), earns more than \$45,000 a year (58 percent), and often more than \$65,000 a year (38 percent). Rather than being nerdy troglodytes who emerge from their dens only for another meal of nachos, Cheez Whiz and Jolt cola, Web Week found that many webmasters play a leading role in developing their companies' on-line strategies. (Tampa Tribune, Nov. 6, A2)

[Thanks to David Goodman for submitting this tiny gem—Ed.]

EDITORIAL



Your Newsletter Editor and WebMaster

THE NINTH International Palynological Congress (IX-IPC) promises to be one of the big events in the history of palynology, and Houston is a great venue with a long list of attractions for delegates and spouses. For those many of you who haven't been to this part of the world, Houston is within reach of many interesting places including the spectacular Johnson Space Center, the scenic Galveston Island, and the historic site of the Alamo at San Antonio (but see the movie first!).

This issue features several IX-IPC items including an update (on p. 3) by the indefatigable co-organizers, Vaughn Bryant and John Wrenn. Please note the **May 31** deadline for booking your accommodation at the Marriott; and students wishing to share a room should know that *they* are responsible for finding roommates (sorry but neither the Marriott hotel nor the organizers can coordinate this). To help, I've created a special page on the AASP web site called the "IX-IPC Bulletin Board" (see p. 3). This is YOUR bulletin board! Use it to post your personal messages (by emailing or faxing to the WebMaster) and browse for all IX-IPC updates including offers/requests for shared accommodation. I will place messages on the bulletin board usually within a day of receipt. Messages will be accepted for posting until June 10. And just in case you're concerned about exposure, the AASP web site has received over a thousand visits since December 15!

I look forward to seeing you in Houston.



APPENDIX TO AASP NEWSLETTER, APRIL 1996
AASP MEMBERS E-MAIL DIRECTORY



This directory of AASP members was extracted from the World Palynology E-mail and WWW Directory, updated March 23, which can be found on the AASP Web site (<http://opal.geology.utoronto.ca:80/AASP/>). A dagger (†) indicates members who have a home page linked to the AASP Web site. If you are not already listed but wish to be, please contact the AASP Newsletter Editor/WebMaster: head@quartz.geology.utoronto.ca. The Web version of this list is usually updated daily.

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