

May, 1997

Volume 30, Number 2

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A.A.S.P. NEWSLETTER

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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 July 3rd 1997 and October 3rd 1997. 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.

EDITORIAL

Finally, there is ample opportunity to find out all and more about Pierre Zippi. More edils. at the back.

NEWS FROM THE SECRETARY-TREASURER

Membership status of the AASP as at the time of the mid-year board meeting held in Denver, 12 April, 1997 is as follows:

	Individual	Institutional	Total
Annual Meeting 1996	693	118	811
New Members	44	3	47
Reinstated Members	0	0	0
Honorary Members	7	0	7
Outstanding Paper Award	0	0	0
Archives (Hunt)	1	0	1
Purged (Jan 1997)	-39	-8	-47
Resignations	-19	-4	-23
Totals	687	109	796

Notes: 1. Of the paying individual members 85 are only paid through 1995, 113 are only paid through 1996, and 487 are paid through 1997 and above; 2. Of the Institutional members 2 are only paid through 1995, 32 are only paid through 1996, and 75 are paid through 1997 and above.

New member numbers have almost kept pace with resignations/retirements, and purging, but we still had a net loss of 15 members. Please welcome the following new members to the association:

Sigmar Bortenschlager (Austria)	Gamal Lashin (Czech Republic)
Josefa Carbon (Venezuela)	Mariotti Lippi (Italy)
James G. Coda (England)	Magdy S. Mahmoud (Egypt)
Maria Cotter (Australia)	Enrique Martinez-Hernandez (Mexico)
Alex Cullum (Norway)	Jean-Frank Mayagilo (Tanzania)
Edward J. Cushing (United States)	Jennifer M. McMahon (United States)
Mona Hussein Darwish (Egypt)	Thomas A. Minckley (United States)
M. Deb (India)	Azuka S. Okonwko (Nigeria)
Stephen M. Douglas (Canada)	Festus N. Osegbo (England)
Michael Dunn (United States)	Oscar Hugo Papu (Argentina)
Warren T. Eastwood (Wales)	Laura Lynn Pyle (United States)
Jose H. Goncalves Melo (Brazil)	Jaime Rueda-Gaxiola (Mexico)
Kathleen Grey (Australia)	Thomas Servais (Belgium)
Raquel Guersin (Canada)	Darrin Stead (Wales)
Guy Harrington (England)	Philippe Steemans (Belgium)
Marloes Van Hoeve (The Netherlands)	Michael Stephenson (England)
N. Ichinnorov (Mongolia)	Mathilda Stuke (United States)
Hartmut Jager (Germany)	Lucio Riogi Tokotake (Brazil)
Devra Jarvis (Italy)	Gerald R. Urquhart (United States)
Hiroshi Kawamura (Canada)	Volker Wilde (Germany)
Margaret L. Kneller (United States)	Robert W. Williams (Norway)
Chevron Nigeria Ltd (Nigeria)	
Sejong Books Inc. (Hong Kong)	Ub's Bibl.T.Mat.Nat.Fak (Norway)

From a financial perspective AASP has quieted down since the 9th International Palynological Congress. In summary, we processed almost \$120,000 in credit card transactions for registrations and fieldtrips. Because of the outstanding and "timely" marketing of the 3 volume book "Palynology: Principles and Applications" at the IPC, we have processed on behalf of the AASP Foundation many thousands of \$'s in publication sales made with credit card; this has continued well into 1997.

Thanks to the mailings that went out with the last newsletter in 1996 and the first in 1997 we have retrieved a number of members from the "purge list". In addition, we have a large number of members who have elected to pay their dues for multiple years (especially those using credit cards), such that many are now paid through the year 2000. But you can see from the list summarizing the membership status that there are many members who are only paid up through 1995 and 1996. Please make an effort to pay your dues and not risk being purged from the list on 1 January 1998. Have you wondered why you have not have received Palynology 20? If you are using credit cards please make sure that you include all numbers on your card and the card expiration date. Please donot send credit card numbers by e-mail or by fax; for safety reasons I prefer to receive them by mail - the old fashioned (and slower) way!

Thanks for your continuing support of the association.

David Pocknall, Secretary-Treasurer

CHANGES (address and connectables) as brought to our attention

- Ronald E. **Besems** - Shell EP International Ventures B.V., Oostduinlaan 75, 2596 JJ, Den Haag, The Netherlands
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- Rex **Harland** - Dinodata Services, 50 Long Acre, Bingham, Nottingham, NG13 8AH United Kingdom
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AASP MEETING LATEST INFORMATION

Tentative Schedule

Sunday, September 14: Arrivals (3pm and later) and evening welcome reception/buffet, AASP board meeting (7-9 pm)

Monday, September 15: Technical sessions, evening icebreaker

Tuesday, September 16: Technical sessions, evening lecture on "The evolution of Phanerozoic marine ecosystems" (Bambach)

Wednesday, September 17: Technical sessions, meeting banquet dinner

Thursday, September 18: Technical sessions, AASP luncheon & board meeting
Friday, September 19: departure by noon

Meeting Venue - The Swope Center at the Marine Biological Laboratory (MBL) in Woods Hole provides meals and housing to participants at a very reasonable cost. The meeting rooms are a 2 minute walk from the Swope Center itself; meals and coffee breaks

are served in the dining room, which is in the same building as housing. The housing is dormitory style and all rooms have private baths. The dining room looks out over picturesque Eel Pond. There are also local pubs situated within a few minutes walk in Woods Hole village.

Addition Housing - There are a few local motels nearby (accessible by automobile) for those requiring private accomodation. Prices range from 65USD to 130USD per night and do not include food. (A "meals only" option at SWOPE may be selected for 55USD per diem).

The Marlborough tel: (508) 548-6218

Sleepy Hollow, tel: (508) 548-1986; 65-85 USD per night.

Natulis, tel: (508) 548-1525; 76 - 130 USD per night.

Getting to Woods Hole - Air travel to Boston's Logan international airport puts participants within a two-hours drive of Woods Hole. There is frequent (hourly) commercial bus service to Woods Hole from Logan airport. A van will be available to meet arriving bus passangers, the station is only a few blocks away from SWOPE. Rental cars are available for travel from Boston Logan to Woods Hole.

Registration and further Information - Registration for the 4 day meeting is 95USD with reduced rates for students, retirees and accompanying guests. Room & board based on double occupancy will be \$73 per diem. Regisration forms are due June 15. Please be sure to register early as space is quite limited.

If you are on the www, please see the meeting website for updated information. The URL is:

http://www2.bc.edu/~strother/1997_AASP/1997.html

or you can access it through the AASP home page.

For further information please contact:

- Paul K. Strother, Weston Observatory of Boston College, Department of Geology & Geophysics, Weston MA 0293
U.S. Tel: 617 552 8395. Fax: 617 552 8388
email:strother@bc.edu.
- Or, Reed Wicander, Department of Geology, Central Michigan University, Mount Pleasant, MI 48859. Tel: 517 774 3179.
Fax: 517 774 2142. email: reed.wicander@cmich.edu

Registration, housing and abstract forms are attached at the back of this newsletter.

CANDIDATES FOR BOARD OF DIRECTORS

For PRESIDENT ELECT

CHRIS DENISON



Christopher N. Denison received his B.Sc. in Geology and Ph.D. in palynology from Sheffield University, England. He joined Robertson research in North Wales in 1974, where he worked on North Sea Mesozoic dinocyst palynology and palynofacies. He later transferred to the Robertson office in Houston, immediately prior to the oil bust.

After 2 years as an "independent consultant" in Houston he joined Chevron Overseas Petroleum in California in 1987, where he continues to work on Mesozoic and Tertiary palynological projects from various parts of the world. His research interests are still primarily in the areas of palynofacies and dinocysts as environmental indicators in deltaic settings.

After twice assisting with the Nominating Committee, and presenting papers at several AASP annual meetings during 20 years as a member, Chris feels it is now time to make a more substantial contribution to the organisation.

PAUL STROTHER



Paul K. Strother began studying palynology as a sophomore at Penn State University with Alfred Traverse. He received a B.S. in biology from Penn State in 1975, subsequently obtaining a Ph.D. in 1980 from Harvard University under the direction of Elso Barghoorn. Currently, he is Research Professor at the Weston Observatory, a research facility of the Department of Geology & Geophysics at Boston College. Paul is a AAAS Fellow and a member of numerous professional organisations. A member of AASP since 1977; Paul has served on the nominating committee, the student awards committee, and is now part of the new technical editorial staff for Palynology. In 1996 he organised the first symposium on cryptospores for the IX IPC in Houston. He is presently Co-chair (along with Sarah Damassa) of the 1997 AASP local committee for the upcoming meeting in Woods Hole. Paul's research interests are primarily in Precambrian and Lower Paleozoic palynology and paleobotany, especially the rather new group, the cryptospores and their bearing on the origin of land plants. He represents a second-generation member of AASP but without ties to industry that have been so important to the history of the society to date. To that extent, his nomination represents a move away from the traditionally biostratigraphic focus for AASP into the broader landscape of palynology as a whole, providing a forum for researchers interested in all of the various aspects of palynology.

For SECRETARY-TREASURER

DAVID POCKNALL

(Currently and unopposed for re-election)



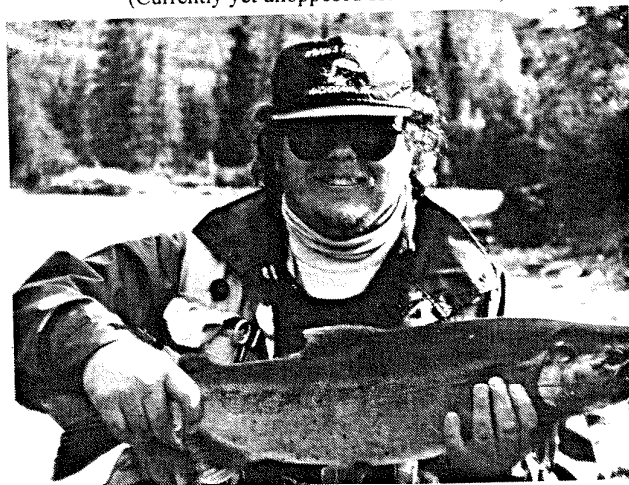
David T. Pocknall joined AASP in 1985. He is a palynologist with Amoco Exploration and Production technology, Houston, where he

specialises on the Cretaceous and tertiary. His present projects are in Latin America and Trinidad. He previously worked with the New Zealand Geological Survey for 13 years. David has served AASP as secretary-treasurer since 1993, and was Chairman of the Nominating Committee in 1992. He was Newsletter Editor for the Geological Society of New Zealand from 1990 to 1991.

For MANAGING EDITOR

DAVE GOODMAN

(Currently yet unopposed for re-election)



David K. Goodman is an ageing paleontologist who lives, fly fishes, and works for ARCO Alaska in Anchorage. He has previously held assignments with ARCO in Midland and Plano, both in Texas; he was at Exxon Production Research Company in Houston from 1978 to 1983, prior to joining ARCO. He holds B.S. and M.S. degrees from Virginia Tech and a Ph.D. from Stanford. Remarkably, he still maintains more than a passing interest in the fossil history of the dinoflagellates. He has served on the Technical Advisory Board for the Treatise on Invertebrate Paleontology and the Technical Advisory Committee for the PALCAT Project sponsored by the AMNH in New York. He has been managing editor of AASP since 1987. He currently serves on the editorial boards for Marine Micropaleontology, Paleontologica Electronica, and for the Houston IPC Proceedings Volume. Dave joined AASP in 1976. He is the ghillie for the Alaska Fly Fishers and collects trilobite fossils, armadillo fetishes, photographs of Gordon Wood, and bamboo fly rods.



For DIRECTORS AT LARGE

BOB CUSHMAN



Robert A. Cushman Jr. earned his Ph.D. in geology with a minor in organic geochemistry from the Colorado School of Mines in 1994 under the direction of Dr. Douglas J. Nichols at the U.S. Geological Survey. His dissertation topic was the palynostratigraphy of the

Upper Cretaceous (Cenomanian-Campanian) Mancos Shale in western Colorado. Bob earned a M.Sc. degree in geology from Loma Linda University in Riverside, California in 1983. His thesis topic was the Palynology and paleoecology of the Eocene Green River Formation in Fossil Basin, south-western Wyoming. During the summers of 1982 and 1986, Bob worked as a summer intern in palynology with Phillips Petroleum in Bartlesville, Oklahoma and Standard Oil Production Company in Dallas, Texas, respectively. From 1988 to 1991 Bob worked as an exploration geologist for BP Exploration in Houston, Texas.

Bob is currently an assistant professor of geology at Loma Linda University in the dept. of Natural Sciences where he teaches historical geology, paleopalynology, paleobotany, and invertebrate paleontology. Bob's current research interests include the palynostratigraphy and paleoecology of the Mid-Cretaceous Cedar Mountain and Dakota formations in eastern Utah and western Colorado, the palynology of the Eocene Green River Formation in Fossil Basin, Wyoming, and the palynology of the Eocene Bridgewater Fossil Forests, Victoria, Australia.

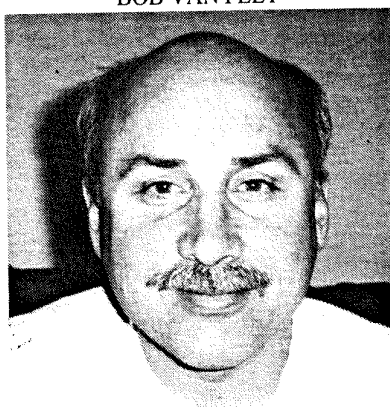
JOYCE LUCAS-CLARK
(no face available as yet)

Joyce Lucas-Clark is a consultant in Palynology and Organic Petrography, and the president of Clark Geological Services (CGS). She joined AASP in 1977. She received her BA and MA degrees from the University of California at Santa Barbara (1969, 1981) and her PhD at Stanford University (1986). She worked for Mobil Exploration and Producing Services and Chevron Overseas Petroleum Inc. prior to establishing CGS.

Joyce served as Director at Large of AASP in 1994-1995, helped organise the 1981 AASP meeting in San Francisco, and currently serves on the editorial board of *Palynology*. She received the AASP/NSF travel grant to present a paper at the 8th IPC in Melbourne Australia in 1988.

Current interests and consulting are mainly in California and the southeastern U.S. coastal plain near Savannah River Site. She works mainly with Cretaceous and Tertiary dinoflagellates, and secondarily on pollen and spores and organic maturation and palynofacies.

BOB VAN PELT



Robert S. Van Pelt is a Senior Geologist/technical Group Leader with Bechtel Savannah River Company and Adjunct Professor at the University of South Carolina (Aiken campus) working on Cretaceous through Tertiary palynology as part of the Environmental Restoration Program. Bob received a B.S. in geology from the University of South Carolina (1983), where he

was introduced to palynology through a class with Dr. Arthur Cohen. He continued graduate work in palynology at the City University of New York and received a Ph.D. in Earth Environmental Sciences in 1990. His dissertation research, guided by Dr. Daniel Habib, established the dinoflagellate stratigraphy and palynofacies of the Middle Jurassic Twin Creek Limestone Formation in the Idaho-Wyoming-Utah Overthrust Belt.

His research interests are mainly in palynofacies and biostratigraphy of Jurassic through Tertiary dinoflagellates. Presently, he is primarily engaged in the application of palynology to hydrogeology and environmental restoration activities at the Savannah River Site, South Carolina.

He has been a member of AASP since 1984, assisted in organising the 1986 (New York) AASP meeting, and currently (since 1996) serves as a technical editor for *Palynology*.

PIERRE A. ZIPPI
(no face available as yet)

I believe that I have the broad-based palynological background to address the interests of palynologists of various disciplines ranging from paleoclimatology and ecology to stratigraphic palynology, and even forensic palynology.

Since 1996, I have been in charge of biostratigraphy at ARCO International Oil and Gas Company, providing biostratigraphic and paleontological support and solutions for ARCO's world-wide oil and gas exploration. From 1992 to 1996, I held the positions of palynologist and biostratigraphic coordinator for ARCO Alaska, Inc.

I received a B.S. (1978 Geology) from Penn State, where Al Traverse first introduced me to paleopalynology. I then continued my studies in biostratigraphy with a M.S. (1982 Marine Geology) from the University of Georgia for a thesis involving Late Neogen foraminifera and climate. Afterwards, I studied with Geoff Norris at the university of Toronto to obtain a Ph.D. (1992 Palynology/Geology). Geoff provided me with the funds and the academic latitude to pursue a multifaceted approach to palynology. For my thesis and related studies, I worked with all types of palynomorphs, including pollen, spores, dinoflagellates, freshwater algae, fungal spores and a few forms that are still of an uncertain affinity.

From 1989 to 1991, I was research associate at the Institute for Environmental Studies, at the University of Toronto. There, I investigated the use of modern freshwater algal palynomorphs as indicators of paleoenvironmental conditions (pH) in recent freshwater lakes. Additionally, I held a position of lecturer and course director at the Department of Geology, University of Toronto from 1988 to 1990.

My activity in academia has continued during my professional career through my appointment as an affiliate assistant professor at the University of Alaska, Fairbanks, in May 1994. At UAF, I serve as Ph.D. committee member and co-advisor in the Department of Geology and Geophysics.

In addition to the mainstream palynological practices, I have had diverse interactions with numerous applications of palynology to paleoecology, paleoclimate, forensic archaeology, and especially quantitative biostratigraphy. Since 1986, I have been developing and marketing biostratigraphic and geological software solutions through my company PAZ Software.

I currently serve on several boards, including the editorial board of *AASP Palynology*, and as board member and treasurer of the nonprofit Palynodata Inc.

I have been a member of AASP since 1983.

Readers may view a more complete biography on the Internet at: <http://web2.airmail.net/paz/PZcv.html>



PALYNOLOGY: PRINCIPLES AND APPLICATIONS, edited by Jan Jansonius and D. Colin McGregor. [Dallas, Texas]: American Association of Stratigraphic Palynologists Foundation. 3 vols. [12] + ii + 1-462 p.: [12] + 463 910 p.: [12] + 911-1330 p. \$100.

Reviewed by William A.S. Sarjeant, Department of Geological Sciences, University of Saskatchewan, 114 Science Place, Saskatoon, SK, Canada S7N 5E2

Palynology is a discipline that has truly matured only within the last forty years. The earliest textbooks concentrated exclusively on the reproductive bodies of land plants: even the three volume *Paleopalynologiya*, published in the U.S.S.R. under I.M. Pokrovskaya's editorship (1966), accorded no mention to palynomorphs of other sorts. It was only in Gunnar Erdtman's *Handbook of Palynology: An Introduction of Pollen Grains and Spores* (1969) that an appendix by the reviewer on "Microfossils other than pollen grains and spores in palynological preparations" was at last given space. (This textbook was republished, as Erdtman's *Handbook of Palynology* ed. S. Nilsson & J. Pragowski, in 1992). Almost the same time, W.R. Evitt contributed an article on "Dinoflagellates and other organisms in palynological preparations" to a compilative volume, *Aspects of Palynology*, edited by R.H. Tschudy & R.A. Scott (1969): but this occupied only 40 of that work's 500 pages. Such a small proportion, and the placement of my own contribution as a mere appendix to an extended study of spores and pollen, made it evident how small was the regard still being given to the other palynomorphs.

However, matters were changing. My own book *Fossil and Living Dinoflagellates* (1974), the first text on these micro-organisms, attracted so much attention that it remained in print for fifteen years. One of the two volumes on Palynology, in the series of "Benchmark Papers in Geology" (M.D. Muir & W.A.S. Sarjeant, eds., 1977), was devoted to "Dinoflagellates, Acritarchs and other Microfossils": and Alfred Traverse's *Paleopalynology* (1988), though giving heaviest stress to spores and pollen, not only gave extended mention to those other groups but even depicted a chitinozoan on its cover!

Now we have available the largest work yet to be devoted to palynology. It is gratifying to find that, in the sections devoted to specific groups of palynomorphs in volumes 1 and 2 (the third volume treats with broad concerns), the pages dealing with those once-undervalued other groups number almost 540, as against 360 on spores and pollen. The pendulum has indeed swung far. For those of us who helped it to swing, this is deeply gratifying.

The three volumes are bound in a sturdy blue cloth, with clear spine lettering and an attractive front-cover design. The paper is of good quality, the print and two-column format suitable for easy reading. The volumes are sensibly housed in a slip-case large enough to cause them to be easily extracted. Though most of the 125 plates are in monochrome, fourteen are in colour. For such a lavish production, the price (\$100) is modest indeed--though, as noted later, it is high enough to deter class instructors from listing this work as required reading.

The first volume is devoted to "Principles" and contains fourteen chapters, three of which are divided into subchapters. The

"Introduction" by the editors contains a historical review of the development of palynology. It is oddly inconsistent in that, while the full names are given of authors of most of the early works referred to, a few are not so favoured (e.g. Reinsch, Bartlett, Seward and Naumova, all on p. 1). In the modern era, no-one is given initials, even though the proliferation of workers would have made this helpful. It is disappointing to find that in their review of "Publications and communications" only one of Erdtman's historically important textbooks on spores and pollen is cited, while my own (1974) and F.J.R. Taylor's (1987) texts on dinoflagellates gain no notice. Neither is the single published review of literature on tasmanitids (Muir & Sarjeant, 1971) accorded mention. In general, however, this is a good and reasonably comprehensive review of a very broad scientific field.

Alfred Traverse's account of "Nomenclature and Taxonomy: Systematics" contained some surprises and provoked, in this reviewer at least, certain disagreements. A surprise was to learn that fungi are nowadays considered closer to animals than to plants (p. 11). In Table I, it is stated that dinoflagellates were moved out from acritarchs "to Dinophyceae"; but of course, the dinoflagellates, as a group, were never called acritarchs! The problem that some workers still treat dinoflagellates as animals is mentioned only obliquely and acritarch "parataxonomy" is not discussed. As one who mourned the abolition of that convenient botanical category, the organ genus, I cannot agree that its resurrection would be "unfortunate" (p. 25). It is incorrect to say that the form genus replaced the organ genus (*idem.*); both categories existed side-by-side in several successive editions of the International Code of Botanical Nomenclature until the winds of taxonomic foolishness blew the organ genus away. Most readers, however, will find this a useful chapter, the comparison of codes in Table II being especially valuable.

The chapter by G.D. Wood, A.M. Gabriel & J.C. Lawson on "Palynological Techniques- Processing and Microscopy" is likewise useful and contains salutary warnings of the dangers that may be encountered. I can add another: a sediment containing finely powdered volcanic glass, from an ash fall, may cause so rapid a reaction with hydrofluoric acid as to be virtually explosive. In consequence, if the presence of such an ash is even a possibility, the earliest minutes after placement in that acid should be watched till it is clear that reaction is proceeding normally. My single criticism of this chapter is that the technique of ultraviolet microscopy, so valuable in determining the detailed structure of chitinozoans or acritarchs blackened by the effects of induration or mild metamorphism, is not discussed.

The chapter on "Archean and Proterozoic Palynology" by Andrew Knoll, is excellent, with a very good treatment of the taxonomic and stratigraphic problems encountered in studying these earliest palynomorphs. My only disappointment was that Diver & Peat's (1979) concept of cryptarchs gained no mention here; though it has problems, it remains a useful approach in dealing with (at least) multi-component microfossils of uncertain affinity.

I had much greater problems with Paul Strother's chapter on "Acritarchs". In the discussion of the history of study, the Downie, Evitt & Sarjeant classification (1963) is not mentioned, even though it is used later in the chapter. Boris Timofeyev's alternative nomenclature (1965) and the work of Mädlar (1967) likewise receive no mention, while the reasons for the abandonment of the term "hystriosphere" are not explained. The assumption that all



acritarchs are cysts (p. 91) is not justified. I would also quarrel with the opinion that "for practical reasons, the basic taxonomic unit in acritarch systematics is the genus" (p. 92). Can a genus like *Micrhystridium*, which contains some 190 species even after the revisions by Sarjeant & Stancliffe (1994), truly be considered a practical taxonomic unit? (There are several other acritarch genera that are almost as large). It is not true to say (p. 94) that "several subgroups are now recognized as prasinophytes"; rather (as the ensuing text demonstrates, p. 98) it is the case that particular genera from several subgroups are now believed to be prasinophytes, with varying degrees of confidence. (The status of *Leiosphaeridia*, for example, is in highest measure equivocal). The small attention paid to Mesozoic acritarchs--which, though not of highly varied morphology like the Paleozoic forms, are often extremely abundant and environmentally significant--and to non-marine forms is to be regretted. The misspelling *Tasminites* on p. 97 should also be noted. The plates, however, are excellent and I was pleased that Strother, unlike Knoll, included a sensible discussion of the "cryptarch question".

In contrast, I found nothing serious to fault in the chapter by Robert Fensome, James Riding & F.J.R. "Max" Taylor on "Dinoflagellates"--a full and thorough account, clearly introduced and well illustrated. In particular, I endorse their critical assessment (p. 129) of the "alternative terminology" proposed by Below (1987).

There was a time when ammonite specialists, by exclusively utilizing what were virtually personal terminologies, almost ceased to be able to communicate with one another. In recent years, we have been approaching that situation in the characterization of new dinoflagellate taxa, with several systems of description and plate nomenclature in use. I was pleased to see its undesirability thus recognized.

The collective chapter on "Green and blue-green algae" focuses attention on types of microfossils hitherto little studied. It is necessarily unequal; three subchapters consider relatively large groupings (Dorothy Guy-Ohlson on 'Prasinophycean algae'; B. van Geel & H.R. Grenfell on 'Spores of Zygnemataceae' and David Batten on 'Colonial Chlorococcales') whereas the two others treat essentially with single genera (Batten & Grenfell on '*Botryococcus*' and Reed Wicander, C.B. Foster & J.D. Reed on '*Gloeocapsomorpha*'). Guy-Ohlson gives proper consideration to the problems of defining prasinophyte taxa and presents (p. 184) an interesting criticism of Kjellström's analysis of wall structure. However, I regretted her use of the name *Pterospermella* which, albeit validly published, was conceptually redundant from inception and should be allowed to fall into disuse. Batten's treatment of polymorphism in the colonial *Chlorococcales* is salutary, while his excellent photographs should facilitate the future study of this neglected group. All the other subchapters contain new observations; all should prove of lasting value.

The introduction to "Spores", by Geoffrey Playford & Mary Dettmann, will be instantly comprehensible to the qualified botanist. However, it uses so many unexplained technical terms that it makes heavy going for palynologists having only a geological background, like the present reviewer. Fortunately, the plates are excellent and the discussion of current spore nomenclature and taxonomy valuable, though perhaps giving too restricted a picture of the development of the present approaches and of the reasoning behind the use of those confusing words 'microspore' and 'miospore'.

Perhaps because of my own inadequate knowledge but more probably because of their author's high competence, I can only praise the ensuing chapters by David Jarzen & Doug Nichols on "Pollen" and by Bill Elsik on "Fungi". Elsik, in particular, deserves credit for having almost singlehandedly ended the neglect by palynologists of the long-despised fungal spores.

The treatment by Merrell Miller of "Chitinozoa" is sound and well illustrated. His discussion of Patrick Cashman's results (p. 317-388) is quite well reasoned, though I do not concur in his conclusions. H. Szaniawski's chapter on "Scolecodonts" constitutes an extension of Polish pre-eminence in research on this group, originating as it did in the definitive studies by Roman Kozłowski and Zofia Kielan-Jaworowska. I regret only the lack of photographs of scolecodont assemblages.

Thereafter, "Miscellaneous" palynomorphs are examined in a succession of subchapters, briefly introduced by editor Jansonius. Included are 'Clitellate cocoons' by Svein Manum, 'Melanosclerites' by Patrick Cashman, 'Microforaminiferal linings' by Russell Stancliffe, 'Invertebrate cuticular fragments' by Merrell Miller and 'Older plant macerals (excluding spores)' by D. Edwards & C.H. Wellman. All these will be of great value to future studies that extend beyond the mere dating of assemblages into the realm of palaeoecological interpretation. The subchapter on "Linotolypidae" and cenospheres" by Merrell Miller & Jan Jansonius, though equally satisfactory, might better have been placed in a separate chapter on "Palynological pseudofossils", along with an account of the equally dubious 'anellotubulites' and a discussion of other erroneous interpretations of past times, such as Paul Tasch's supposed Permian dinoflagellate cysts, subsequently shown by Stover & Evitt (1978) to be merely mineral grains.

The first volume concludes with a series of subchapters by various authors under the general heading "In situ pollen and spores in plant evolution". Their placement is surprising, in that they would more naturally have followed the chapters on "Spores" and on "Pollen", with which they inevitably overlap. Indeed, they represent somewhat of a departure from the overall theme of the volume and might have been better placed into volume 2. They lie too far outside my competence for me to make reasonable criticisms.

Volume 2, "Applications", begins with an "Introduction to biostratigraphy and time scales" by Ray Christopher & David Goodman. This concentrates very heavily on The North American Stratigraphical Code and on The International Stratigraphical Guide--perhaps understandably for an AASP readership, but disappointingly from the viewpoint of biostratigraphers from other lands. (This imbalance is in part redressed in the later chapter by Lewis E. Stover et al., p. 649-652, where different approaches to zonation are usefully contrasted). Neither is there much background on the development of stratigraphical concepts, from the time of Alcide d'Orbigny to that of W.J. Arkell--a story that would have facilitated the reader's comprehension of certain of the present complexities. However, this chapter does contain much that is useful, especially with regard to the stratigraphical approaches that are nowadays being adopted in the search for petroleum.

The ensuing chapters successively recount the stratigraphical distribution of palynomorphs--"Paleozoic phytoplankton" by S. Molyneux et al.; chitinozoans by Florentin Paris; "Paleozoic spores and pollen" in eight subchapters contributed by ten authors; "Mesozoic-Tertiary dinoflagellates, acritarchs and prasinophytes" in a collective large chapter (110 pages) by eleven authors;

"Mesozoic-Tertiary spores and pollen" in seven rather uneven subchapters by six authors; and, finally, palynomorphs of the "Aquatic Quaternary" by Peta J. Mudie & Rex Harland and of the "Non-aquatic Quaternary" by G.M. MacDonald. Three of the subchapters in "Mesozoic Tertiary spores and pollen"--those by Zavattieri & Batten, Koppelhus & Batten and Batten & Koppelhus--strike me as having been more suitable, because of their restricted subject matter, for publication in a journal rather than such a volume as this. (I imply no criticism of their scientific content). Otherwise I have only praise for these chapters. The range charts will be an invaluable reference for stratigraphers until new discoveries inevitably cause them to fall out of date; the excellent plates will continue to be of value, long after that time.

Unlike the first two volumes, volume 3 is explicitly a hodge-podge: "New directions, other applications and floral history". The writings grouped under the subheading "New frontiers in palynology" were, I found, all of great interest--Vaughn Bryant & R.G. Holloway on 'Archeological palynology'; E. Weinstein on 'Pollen analysis of underwater sites'; K.D. Sobolik on 'Pollen as a guide to prehistoric diet'; C.D. Jones & Vaughn Bryant on 'Melissopalynology'; M.W. Pendleton, Vaughn Bryant & B.B. Pendleton on 'Entomopalynology'; M.K. O'Rourke on 'Medical Palynology'; and Vaughn Bryant, J.G. Jones & D.C. Mildenhall on 'Forensic studies in palynology'. All those articles interested me sufficiently to wish they had been longer.

Computer buffs will no doubt be fascinated by the account by Judi Lentin et al. of "Personal computers in palynology". I am not one and, consequently, wasn't. Several of the subsequent subchapters would, I thought, have been more appropriate as journal articles--those by Lucy Edwards, J. Guex & Edwards; Jiang: Elbe; and Nichols. Though again I do not question their scientific merit, their scope seems too restricted for a volume of this kind. Of the other chapters and subchapters, all those on "Fecal Pellets" present new and valuable information, as do most of those on "Palynomorphs in ores and petroleum"--in particular, Colin McGregor's review of 'Palynomorphs in petroleum and formation water', which forms a valuable entry point into the important literature on these topics from the former U.S.S.R., eastern Europe and China.

The section on "Vegetational history" exhibits a serious imbalance, in that it contains nothing on the Permian, Triassic, Jurassic or later Cenozoic, while even the treatment of the Carboniferous--that vastly important period in plant history--is very partial. This may well have been because suitable additional authors could not be found. Martin Head's account of "Modern dinoflagellate cysts and their biological affinities" made apparent to me the enormous growth of knowledge in this field in recent years; indeed, his listing of modern cyst-producing dinoflagellates quite startled me! Even so, it remains true that the majority of living dinoflagellates do not require to encyst, either for reproductive or survival purposes. Barrie Dale's treatment of "Dinoflagellate cyst ecology: modeling and geological applications" was characteristically competent, though I was disappointed that he did not refer to my own joint experiments in that field (Sarjeant, Lacalli & Gaines, 1987). The last chapter, on "Economic applications", was too much of a scientific ragbag to impress.

I have left for special mention what I consider the best and most valuable chapter in this third volume--David Batten's searching and perceptive study of "Palynofacies", with its splendid illustrations. His analyses of 'Palynofacies and palaeoenvironmental interpretation' and of 'Palynofacies and petroleum potential' are

alike impressive. This is sure to be rated a classic contribution to the development of palynology.

What, then, is my overall impression of these three volumes? Well, perhaps a few of the contributions seemed to me inappropriately published here, but that is a trivial criticism. My strongest feeling is that they should have been issued, not as a combined work, but as three separate books that might have purchased individually at a lower price than \$100.00. The first volume, and the greater part of the third, would serve as invaluable texts for senior undergraduate students.

Volume 2 is unsuited for such an audience, but will be of great value to the practising biostratigraphers for whom it is so clearly intended.

Yes, I know that in terms of current pricing, \$100 might not be a high cost to U.S. students, but it is much more costly for citizens of all other nationalities whose currencies are less strong. Moreover, three volumes is altogether too much for an undergraduate student to handle. If volumes 1 and 3 were to be issued separately (as paperbacks, perhaps), I would unquestionably list them as required texts for both the courses I teach on microfossils, at undergraduate and at graduate level. Might this possibility be contemplated?

Whatever the decision, the two editors are to be congratulated for having, after a long and hazardous scientific voyage, brought so impressive a ship successfully to harbour.

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THESIS ABSTRACT

Early Cretaceous Palynomorphs from the Southern Coastal Plain of Israel and A Study of Striate Spores of the Fern Family Schizaeaceae* - Ph.D. dissertation by Pieter J. de Haan - March 1997. Dept. of Plant Biology, University of California, Davis, USA. Supervisor: J. A. Doyle.

Core samples from Late Jurassic (middle Oxfordian-Tithonian) and Early Cretaceous (late Berriasian-late Aptian) intervals of six oil wells in the southern coastal plain of Israel (Ashqelon-1, Talme-Yafe-4, Gevar'am-1, Helez-31, Helez-3, and Helez-2) were investigated palynologically. Dinoflagellate cysts, found in all the samples, were the primary tool for dating the formations (Gevar'am, Helez, Telamim, Talme-Yafe, and Yakhini Formations). The dinocyst zones of the western Tethys realm are recognized in these samples. These new datings allowed a reinterpretation of the chronostratigraphy of the studied area. It is concluded that the incision of the Gevar'am canyon occurred in the middle Oxfordian in an estuarine environment, which indicates a major regional uplift of the Arabo-Nubian platform during this stage. Datings with dinoflagellate cysts of the Yavne Member (notable for its angiosperm pollen flora, *Afropollis*, *Schrankipollis*, *Similipollis*, and reticulate tricolpates) and the overlying parts of the Yakhini Formation (late Barremian) contradict those of earlier investigations (late Aptian to Albian).

Pollen and spore analyses are correlated with other palynological studies in Israel and Northern Gondwana. Abundance of fern spores and Araucariaceae pollen, and relatively low percentages of *Corollina* in Israel and other areas point to a continuous wet belt along the Early Cretaceous paleoequator, from Israel to Columbia. One new form-genus, *Huntisporis*, and one new combination, *Huntisporis sinuosus* (Hunt, 1985), are erected.

Morphological comparisons between extant and fossil striate spores of the family Schizaeaceae show that spores of *Mohria rigida* and *Anemia hirsuta* closely resemble *Cicatricosisporites aralica* and the spores of the macrofossil *Anemia dicksonioides*. The spores of the macrofossils *Anemia sphenopteroides* and *Schizaeopsis macrophylla* resemble each other; both belong to the form-genus *Fisciniasporites*.



CLICK!! said the geologist to the bug by Niels Poulsen

A "standard" Image capture, storage and retrieval system.

Palynology and many other biological and geological disciplines depend on photographic documentation of the objects observed. We built the system described below using

"standard" computer and video hardware and software components, which are cheap, easily installed and friendly in use. We prefer this solution to custom designed products, which often are difficult to use and expensive to update in the modern day fast developing computer world.

I (Niels) asked one of my colleagues (HC), who is one of the GEUS computer experts, to help me selecting a video camera, a picture grabbing system and an image catalogue for my PC to replace the classical camera and film technique. In addition the annoying tendency of old prints and film to fade and become mouldy has been solved by storing images on CD-ROM from which they may be recovered on any PC, MAC or UNIX computer system.

The system we created is not unique, and parts of it may be omitted or replaced by other products. We present this experience in the hope that it may help other colleagues to acquire some useful and cheap equipment.

The image path from the microscope to the CD-ROM starts with a standard surveillance video camera (price a few hundred US dollars) with a resolution of 460 TV lines in colour. All settings on the video camera are used in "auto" mode. The video camera comes with a C/CS mount. It is installed on the microscope on a video camera tube. The additional lenses usually required for a photo camera are not needed. Even the "family video camera" may be used, if it has a removable lens.

The output of the video camera should match the input on the video grabber card and may be composite or Y/C. A Y/C (super-video) output is to be preferred, as this gives a slightly better quality than composite video. Composite video signals can easily be converted to super-video and vice versa. This, however, requires a converter, which is an additional cost.

The video signal is transferred to the computer by a MRT Video Port Pro video grabber card. This card is a "credit card" size card (PCMCIA) which we use both on a laptop computer directly and on the stationary PC by an adapter socket.

In the computer, there are several software possibilities for capturing the images (single video frames). There is an "invisible" program (TWIN) that allows all TWIN-aware programs to capture images directly. Programs from Microsoft, Adobe and Corel and our image database program, MiniCat by Prostar are among the TWIN-aware. Secondly we have a dedicated image capture and processing programme that comes with the card, MRT Image Wizard (Version 3.2). We have tested this programme. It consists of two separate screen-capture programmes: a very simple "MRT Image Office" and a more advanced program "Image Wizard". The latter allows not only pre- and post image capture image processing, adjustment of colour, contrast, light etc., but also many advanced processing functions, for example, image sharpening, softening, rotation, negative-to-positive conversion, sculpturing and edge thinning and thickening. A "stacking" feature allows the digitisation and addition of multiple images to suppress noise and enhance light recovery from the microscope if required.

After processing images are stored in the MiniCat Catalogue Builder programme that allows the addition of text to the images. Images may be displayed as "thumbnail images" for easy comparison of multiple images or as slide shows to display more detail. A text search system is built in. Images stored in this database are compressed automatically. The program necessary to view the database is built into the resulting file and may be distributed freely along with the database on a floppy or CD-ROM. The processed images are also stored on CD-ROM outside database to ensure that they may be retrieved by any computer system, supports this standard, including DOS or Windows based PC's, MAC's or any UNIX box.

To prepare plates for publication programmes as Fractal Imager and Corel Photopaint have been chosen. Text processing programmes like Word for Windows also have facilities for the inclusion of images.

To store images on CD-ROM a Hewlett Packard CD burner was acquired. It comes complete with SCSI adapter card and two sets of software, the simplest possible by HP and an advanced version, Eazy CD Pro by Adaptec.

The CD burner solves the problem of storing images for 20 years without any degradation in quality on a medium that will not be too exotic by then because of the wide distribution of the CD medium. The recording surface of a CD-ROM is vulnerable to scratches though and should be handled carefully. It is possible to have the surface lacquered to protect it.

The system is functioning very well, and we will of course help with additional comments and addresses, if others should be interested in using a similar video system set up.

The MiniCat programmes from Prostar Interactive Media can be found at <http://www.minicat.com>. Other web addresses are:

Fractal Imager by Iterated Systems: <http://www.iterated.com/>

Hewlett Packard CD-burner 4020: <http://www.hp.com/>

MRT Video Port Professional: <http://www.mrtmicro.com/>

Syquest EZ135 removable harddisk: <http://www.syquest.com/>

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LPP PART TWO - PALEOPHYSIOLOGY

by Henk Visscher

In the previous Newsletter, I mentioned the development of new methodology as one of LPP's areas of scientific emphasis. Since understanding of modern plant/environment responses provides an essential background for a biologically validated insight in the significance of paleobotanical signals, most of LPP's paleoecological methodology is characterized by the intergration of actualistic data and/or models. Many of you, I hope, may be familiar with aspects related to LPP's second P. But we do not discriminate between the study of micro- and macrofossils. Rather than taking a palynological example, therefore, in this issue I will outline our current exploration of a 'paleophysiological' approach to the study of plant macrofossils.

Global atmospheric CO₂ concentrations continue to rise, from the pre-industrial level of ~280 ppmv to a projected 530-600 ppmv by the middle of next century. A decreasing number of stomata on leaves of land plants still provides the only morphological evidence that this anthropogenic CO₂ increase has already affected the biosphere. An inverse relationship between stomatal frequency in leaves of C₃ plants and CO₂ increase is repeatedly demonstrated by analyzing herbarium material collected over the past 200 years and by growing seedlings under pre-industrial CO₂ levels. In contrast, CO₂-doubling experiments are less equivocal as to an ongoing decline in stomatal frequency. Many experiments suggest only minor responses or no significant change at all. Consequently, it has been assumed that notably in tree species the plateau of stomatal frequency response has already been approached within the past 40 years at CO₂ levels between 310 and 350 ppmv.

Reviews discussing the effects of elevated atmospheric CO₂ on stomatal frequency of long-lived plants recognize that uncertainties with respect to the interpretation of the limited data so far published are notably related to two aspects: (1) leaf material from herbaria provides restricted data sets and intrinsic variation that

may be strongly biased by unknown environmental conditions other than CO₂ concentration; and (2) effects of experimental single-step CO₂-doubling on seedlings may not be representative of responses to the global increases of 1 to 2 ppmv CO₂ per year or per growing season. It is noted that any unambiguous assessment of the current rate of stomatal frequency response among tree species would require their prolonged monitoring, either in the field or experimentally at modest incremental CO₂ increase.

As a realistic alternative to prolonged monitoring, we developed a new method by detecting stomatal frequency response in retrospect from records of annual leaf shedding that have been preserved in favourable sedimentary settings. It may be predicted that presently formed peat deposits have the potential to contain continuous and prolonged records of buried leaves that are uninterruptedly linked to living trees. We therefore explored the Mariagepeel peatland reserve in the southern Netherlands for sites where such records could be obtained. In addition to several places where buried leaf records can be linked to present populations of birches and oaks, we found a small mire where annual leaf shedding of a single birch tree (*Betula pendula*) has consistently contributed to local peat formation during the past 40 years (Wagner et al., 1996).

Stomatal frequency is conventionally expressed in terms of mean stomatal density and mean stomatal index; stomatal index = [stomatal density/(stomatal density+epidermal cell density)] x 100. We examined these parameters for the buried birch leaves, sampled from a core at 35 intervals of 0.5 cm. Leaves from the youngest sample date from 1992. A time-scale with an estimated accuracy of "1 year was constructed by combining tree-ring analysis with palynological (pollen influx) and sedimentological (sand influx) data that could be calibrated against historical information on regional land cultivation. Supplementary to the buried material, we investigated fresh leaves collected during three successive growing seasons (1993-1995). The tree is now consistently monitored for stomatal frequency variation.

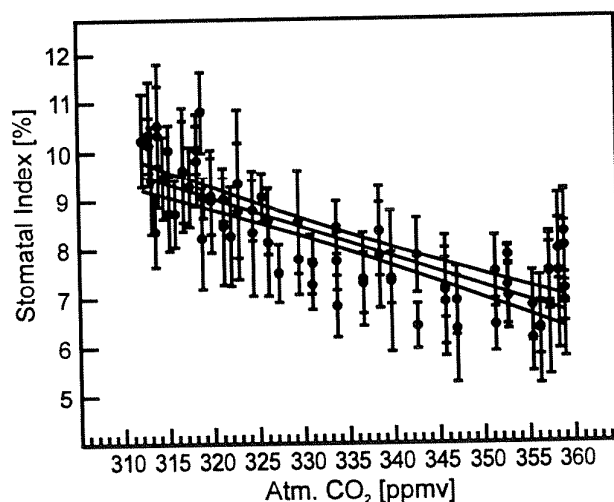


Figure: Response of stomatal index for *Betula pendula* to global atmospheric CO₂ increase in the period 1952-1995 (after Wagner et al., 1996).

The obtained 43-year time-series for mean stomatal frequencies, display significant declining trends corresponding to a global atmospheric CO₂-increase of ~50 ppmv (Figure). The natural experiment now convincingly confirms that individual deciduous trees are equipped with a plastic phenotype, capable of sustained adjustment of mean stomatal frequency to increasing CO₂ concentration. The near-linearity of the realized range of stomatal

frequency response during the lifetime of the individual birch indicates that at least in *Betula pendula* the lower plateau of the response has not yet been reached. Because stomatal density can become neither zero nor infinite, the prospective range of stomatal frequency change is likely to be a sigmoid function of changing atmospheric CO₂ concentrations. Using peat- and herbarium-based data for the past century for calibration, we predicted response curves for stomatal indices of birches and oaks. Our models suggest that non-linear stomatal frequency responses may vary from one tree species to another, but seem to confirm that the maximum effect of anthropogenic CO₂ increase on stomatal frequency has already been reached (Kürschner et al., 1997; Yes, the other one is the son of; but No, hardly any interest in fossil plants other than being modelling objects).

Apart from predicting the future, the important corollary of the stomatal frequency response is that stomatal analysis of fossil representatives of extant species has the potential of determining palaeoatmospheric CO₂ levels. In Late-Glacial/early Holocene peats, for example, tree leaves can abundantly occur. Detailed insight in species-specific response rates may improve the accuracy of quantifying short-term shifts in CO₂ levels during the last deglaciation. The temporal resolution and accuracy of such leaf-based CO₂ records could well exceed direct ice core measurements (ongoing Ph.D. research F. Wagner). By using stomatal frequency data, it is even possible to detect atmospheric CO₂ fluctuations within the past 10 million years (Van der Burgh et al., 1993; Kürschner, 1995; Kürschner et al., 1996; and note that you can rely on Marine Micropaleontology, if you want to publish interesting data on terrestrial macrofossils).

Stomatal frequency research at LPP is continued by Wolfram Kürschner and Friederike Wagner, together with staff and M.Sc students, and with a lot of national and international collaborative support. We have financial aid from the Netherlands Organization for Scientific Research (NWO) and the Deutsche Forschungsgemeinschaft (DFG). Work is now concentrating on the European Holocene. However, we are planning to extend this work to taxonomically and ecologically tree species from other parts of the world. We invite readers of the AASP Newsletter to collaborate in tracing and interpreting suitable records of buried leaves in Late Glacial and Holocene lake and mire deposits from sites that are far-away from Utrecht. If you have suggestions, please: h.visscher@boev.biol.ruu.nl

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PALYNOSTRATIGRAPHY AT LOW LATITUDES

Porlamar, Isla de Margarita, Venezuela
November 18th, 1997

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.

Submissions for oral presentations on any aspect of palynological research from low paleolatitude basins are actively solicited. Studies that consider the ecologic and taxonomic structure of modern or fossil low latitude plant/algal communities are particularly encouraged. We are also seeking papers that show innovative use of taphonomic and palynofacies data within a sequence stratigraphic context. Abstracts should not exceed 250 words and should be sent directly to Laurent de Verteuil. Contributors are asked to submit their abstracts by **May 1st 1997**. In view of the timing constraints, abstracts should be submitted by FAX (809 658-3074) or email (devert@petrotrin.com) only. Senior authors will be notified of acceptance of their paper by May 30th, 1997. Papers may also be submitted as extended abstracts with a maximum length of 8 single spaced pages, including text, figures and references. The deadline for extended abstracts is **June 30th, 1997**. All abstracts will be published in the congress transactions.

Registration - In order to register individuals must fill in a written registration form and mail it to the Sociedad Venezolana de Geólogos. Registration forms accompany the congress hardcopy second circular which can be obtained by writing to Juan H. Rios or Maria Lorente, or by contacting either of them by phone, fax or email.

Maria Lorente - Maravén, Aparto 629, Caracas 1010A, Venezuela - Voice: 582 908 2381 - Fax: 582 908 2053, email: epxgl@bioserv.maraven.pdv.com

Juan Humberto Rios - Apdo. De Correos No. 17493, Parque Central, Caracas - Venezuela - Voice: 582 234 0716 - Fax: 582 234 0716, email: svg@mailser.reacciun.ve

Fees	SVG	Non-members	Students
	members		
Before May 30	US\$ 180	US\$ 225	US\$ 15
Before Sept. 15	US\$ 225	US\$ 250	US\$ 25
After Sept. 15	US\$ 250	US\$ 300	US\$ 30

Field Trips, Short Courses and Workshops - There will be six field trips (E) and six short courses/workshops (CS) run in association with the congress. To register for a field trip or short course tick the appropriate box on the congress registration form. The costs for these events have not yet been determined. Those wishing to participate should make contact with SVG representatives Juan H. Rios or Maria Lorente, email: svg@mailser.reacciun.ve; Fax: 582 234 0716, or by mail at the SVG office.

- E1 Integrated view of Misoa Formation, Maracaibo Basin (3 days); post congress.
- E2 Margarita flysch (1 day); pre and post congress.

- E3 Continental margin evolution during Mesozoic and Paleogene times in northwestern Venezuela (3 days); pre congress.
- E4 Stratigraphy and sedimentation of Cretaceous and Tertiary carbonate rocks of the Eastern Venezuelan Basin (3 days); pre congress.
- E5 Recent carbonate environments (3 days) post congress.
- E6 Margarita Island ophiolites (1 day); pre and post congress.
- CS1 Sequence stratigraphy (G. Allen); post congress.
- CS2 Turbidites (E. Mutti); pre congress.
- CS3 Carbonates (B.H. Purser); pre congress.
- CS4 Core Workshop (J.Y. Chatellier & M. Mahmoudi); post congress.
- CS5 Hydrocarbon potential in sedimentary systems (G. Kline); pre congress.
- CS6 Continental wrench tectonics (G. Zolnai); post congress.

Travel - In order to enter Venezuela one needs a valid passport with a visa from the Venezuelan embassy in your country, or with a "Tarjeta de Turismo" (Tourist Card). The majority of airlines serving Venezuela can expedite Tarjetas de Turismo having a duration of up to 60 days.

If you plan to travel to Venezuela via Caracas (Simon Bolivar International Airport) it is recommended that you make your reservations to Margarita Island (Santiago Marino de Porlamar Airport) well in advance. The same applies if you are arriving via Barcelona or Maracaibo. All of the following airlines fly to Maracaibo at least once a day.

Route	Airline	Return cost
Caracas-Porlamar	Aserca	US\$ 92
	Avensa	US\$ 92
	Zuliana	US\$ 84
	Aerpostal	US\$ 80
	Laser	US\$ 90
Maracaibo-Caracas	Aserca	US\$ 124
	Avensa	US\$ 124
	Aerpostal	US\$ 120
	Zuliana	US\$ 92
	Avensa	US\$ 60
Barcelona-Porlamar	Aserca	US\$ 48
	Avensa	US\$ 92
Barcelona-Caracas	Aserca	US\$ 92
	Avensa	US\$ 92

Hotels - Congress headquarters and all technical sessions will be held at the Margarita Hilton. Congress organizers have obtained special rates of between US\$55.00 and \$75.00 per night plus tax (single occupancy) at the following hotels: Margarita Hilton, Dynasty, Omni and La Perla. All three additional hotels are within walking distance from the Hilton. Hotel rooms may be booked in advance using the registration form.

General Information - Venezuela is 4 hours behind Greenwich Mean Time and one hour ahead of Eastern Standard Time. The temperature in November varies between 25C and 30C. The island is generally dry but November is within the rainy season and intense showers of short duration can be expected. Electricity: 110 volts at 60 c/s. The Venezuelan currency is the Bolivar or "Bee", which presently trades at about 480 B's to one US dollar. Additional info through <http://opal.geology.utoronto.ca/AASP>

Hasta la vista en Margarita



MAPPLSC IN ASIA-PACIFIC BIOSTRATIGRAPHY

The demands of the modern exploration industry require the ability of biostratigraphers to apply contemporary techniques to fossil data and integration of results with a broad range of geological information. An understanding of basin analysis techniques for applied stratigraphy is fundamental to the efficient use of paleontological data.

This course is designed to give specialised training in biostratigraphy, particularly with respect to the needs of the hydrocarbon exploration industry in the Asia-Pacific region.



The Massey Advantage - Massey University is committed to learning excellence. Papers and theses in this programme are supervised and controlled not only by professional teaching scientists from Massey University, but also by professional research scientists from the Institute of Geological and Nuclear Sciences.

Massey University has an international reputation as a progressive learning institution, and has a prestigious standing for the applied nature of its teaching and research. In recent years, the university has become a national leader in commercialising new research advances. Situated above an active tectonic margin the university is ideally located for geoscience field excursions.

MapplSc in Asia-Pacific Biostratigraphy - This Master of Applied Science is a postgraduate qualification especially suitable for those seeking a career in the exploration industry, as well as those already employed in the industry and who wish to develop their careers. The degree offers a formal specialised postgraduate education programme which includes skills and techniques demanded by modern hydrocarbons exploration.

Collaboration between Massey University and the Institute of Geological and Nuclear Sciences provides:

- Expert focus on the biostratigraphy of Southeast Asia and the Pacific.
- The opportunity for overseas students to research their own choice of material under expert supervision to maximise the relevance of the course.
- Training input from the largest group of professional research paleontologists in the Southern Hemisphere.

Programme Goals

- Provide modern stratigraphic analytical techniques and biostratigraphic concepts.
- Promote study and research related to the exploration industry in the Asia-Pacific region.

Eligibility

Entry requirements to the MAppSc in Asia-Pacific Biostratigraphy:

- a 4 year degree in geology, earth science, geography or a related topic that includes at least 40% at an advanced level of work relating to biostratigraphy
- written and spoken English at a standard appropriate for postgraduate study (Massey University offers specialist tuition to students needing qualifications in English)

Course of Study - The course runs from 1 July to 30 June the following year. It has two compulsory papers and a research thesis. The papers are:

- 19.801 Applied Micropaleontology 20 pts
(includes Foraminifera, palynology, nannofossils, dinoflagellates)
 - 19.802 Applied Stratigraphic Techniques 20 pts
(includes quantitative correlation and facies analysis, computer handling and processing of biostratigraphic data)
 - 19.887 Research Thesis (of own choice) 60 pts
- Examination of the first two papers is by continual assessment (assignments). Students may work on material from their own

(local) area if they wish. Theses are co-supervised by Massey University and the Institute of Geological and Nuclear Sciences. This exclusive industry focused course is limited to a maximum of 15 students.

Massey University - Massey University is New Zealand's largest tertiary institution. Over 900 academic staff teach over 10,000 internal students and a further 17,000 off-campus students throughout the country who are enrolled in open learning programmes.

The University's Palmerston North campus is set in a beautiful park-like setting of 40 hectares, and is surrounded by over 500 hectares of teaching and research farms. Massey University has plenty to offer socially and because it is close to the city there's plenty of nightlife. Outdoor activities, including skiing, rafting, horseriding, sailing, golf, tennis, swimming etc are all available near the campus or within easy reach of the city.

The campus has a strong postgraduate community, with over 1,500 students undertaking advanced study.

The Institute of Geological and Nuclear Sciences Ltd - The Institute of Geological and Nuclear Sciences Ltd is an independent research and consultancy organisation owned by the New Zealand government. Through its predecessor organisations (DSIR, New Zealand Geological Survey) it has a 130 year history of providing scientific excellence to the geological community.

The expertise of the Institute's Paleontology Group is extensive, covering most fossil groups, and biostratigraphic sequences throughout the Asia-Pacific region. Institute paleontologists have pioneered many contemporary stratigraphic techniques and have international research recognition. Close collaboration with companies through consultancy contracts ensures an exploration perspective will be maintained throughout the course.

Registration - To receive further information and a registration form, contact:

J.A. Palmer, Course Co-ordinator - Asia/Pacific Biostratigraphy, Department of Soil Science, Massey University, Private Bag 11 222, Palmerston North, New Zealand
Phone: +64-6-356 9099

Fax: +64-6-350 5632

Email: d.m.brunskill@massey.ac.nz



McGILL, McGILL AND McGILL

1. **Graduate Research Opportunities** - Applications are invited for graduate students to pursue PhD and MSc degrees beginning in September, 1997 in the field of biological oceanography/physiological plankton ecology in the Biology Department at McGill University. The broad area of research is the study of iron regulation of plankton productivity in the sea(1). Research projects that are presently under investigation are elucidating the mechanisms of iron acquisition by marine phytoplankton(2) and the iron requirements of heterotrophic protozoa and bacteria(3). Field studies are being conducted in the subarctic Pacific Ocean and the Canadian Arctic. Undergraduate students with strong academic records who have degrees in Biology, Biochemistry, Chemistry or Microbiology are encouraged to apply. International students should apply in their home country for financial support to help cover costs of tuition. Please visit our WEB site at:

<http://www.mcgill.ca/Biology/biology1.htm>

for detailed information regarding the McGill Biology graduate program. Qualified applicants should send a cover letter outlining their research and career interests, a resume, unofficial transcripts

and the names and addresses of 2 referees to the following address before June 1, 1997.

2. **Graduate Research Opportunity** - Funding is available to support a graduate student at the PhD level to study nutrient cycling in the Arctic Ocean during the International North Water Polynya (NOW) Study. The project is part of an interdisciplinary investigation of the chemical and physical control of productivity and distribution of biota in Arctic polynyas. The doctoral research will focus specifically on silica utilization by phytoplankton (diatoms) and its role in regulating new and export production. An intensive field program is scheduled for spring and summer of 1998. Although preference will be given to students having a MSc degree in Biological Oceanography or a related field, undergraduate students with strong academic backgrounds are encouraged to apply. International students are encouraged to apply in their home country for financial support to help cover costs of tuition. Please visit our WEB site at:

<http://www.mcgill.ca/Biology/biology1.htm>

for detailed information regarding the McGill Biology graduate program. Qualified applicants should send a cover letter outlining their research and career interests, a resume, unofficial transcripts and the names and addresses of 2 referees to the following address before June 1, 1997.

3. **Postdoctoral Research Opportunity** - A postdoctoral position is available in the Department of Biology at McGill University to study N-based production in the Canadian Arctic. The successful candidate will join a large interdisciplinary group of oceanographers and ecologists studying the physico-chemical control of plankton abundance and productivity in the North Open Water (NOW) polynya (77N, 72W). One research expedition to the NOW is scheduled for spring and summer of 1998. The starting date for the position is January 1, 1998, and funding is for 2 years. Applicants should have a PhD in Biological Oceanography or a related field (e.g. Botany, Microbiology), and experience working at sea. Preference will be given to those individuals with research expertise using stable isotopes to measure N utilization (or C) by plankton. Qualified individuals should send a covering letter, resume, one copy of their 2 most significant or relevant publications, and the names and addresses (postal and e-mail) of three referees. The deadline for applications is September 1, 1997.

Dr. Neil M. Price - Department of Biology, 1205 Ave. Dr. Penfield, McGill University, Montreal, QC, CANADA H4B 2S1

email: NPRICE@bio1.lan.mcgill.ca

514 398 6468 (voice) 514 398 5069 (fax)

THE WEB IN ALL OF ITS COLOURFUL DISGUISES



I - Una Smith - am now completing an extensive study of a Cretaceous fossil fruit known to occur in the western United States. This fossil is important for several reasons:

1. it is the largest known Cretaceous fruit;
 2. it perished at the Cretaceous-Tertiary boundary;
 3. it has an extraordinarily complex seed-dispersal mechanism;
 4. it is closely related to the opium poppy, family Papaveraceae.
- Numerous specimens have been found at marine localities; most of these specimens are exquisitely preserved and thus have tremendous scientific value. In the hope of locating additional specimens before I publish a description and range map for the fossil, I have put up a Web page, please take a look!

<http://pantheon.cis.yale.edu/~una/fruit>

Una Smith - Department of Biology, Yale University, New Haven, CT 06520-8104



I - Matt Fraser - have begun a "thread" on the Paleo Forum portion of my website for Field Opportunities in Paleontology. If anyone has any info regarding such opportunities that they want to post, please feel free to do so. If you would prefer that I post it for you, drop me an email and I can do some "HTML-ization" to the post to "snazz" it up.
<http://www.pitt.edu/~mattf/PaleoPage.html>
 Matt Fraser - mattf+@pitt.edu



EHUX
 Pictures of *Emiliana huxleyi* blooms from satellites, space-shuttles, boats, and the sea-shore; and SEM pictures of coccoliths and coccolith-covered cells, are included in a new web site for *Emiliana huxleyi* (this one is from Jeremy Young & borrowed from the net): <http://www.soc.soton.ac.uk/SUDO/tt/eh/>
 The site includes contributions by UK and other scientists and also an extensive list of references on *E. huxleyi* work.
 Toby Tyrrell - Southampton Oceanography Centre, University of Southampton, European Way, Southampton, SO14 3ZH, UK
 email: T.Tyrrell@soc.soton.ac.uk



LSPSG
Pollen and Spores: Morphology and Biology. 6-9 July 1998.
 This is the fourth in an occasional series of palynological conferences organised by the Linnean Society Palynology Specialist Group (LSPSG) in collaboration with the Royal Botanic Gardens, Kew and the Natural History Museum, London. The previous conferences were: The Evolutionary Significance of the Exine (1974); Pollen and Spores: Form and Function (1985) and Pollen and Spores: Patterns of Diversification (1990).
 The conference is timed to coincide with the retirement from Kew of Keith Ferguson, founder and first Secretary of the LSPSG (1974-1987).
 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; Palynology and archaeology; Preparation and techniques. The proposed registration fee will be c. =A3130.00 sterling with reduced rates for students. Registration forms will be included with the second circular.
 For more information contact Lisa von Schlippe, Conference Administrator, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, UK. Fax + 44 (0)181 332 5176/5278; email: l.von.schlippe@rbgkew.org.uk
 (the neat little icon is borrowed from the web)



PALAEOBOTANICAL RESEARCH GROUP **Westfälische Wilhelms-Universität Münster**

Check this out: The Westfälische Wilhelms University in Münster is one of the few German universities where palaeobotany is taught and palaeobotanical research is carried out. Research of the so-called "Forschungsstelle für Paläobotanik" (= Palaeobotanical Research Unit) primarily focuses on Palaeozoic and early Mesozoic floras. The aims are to get a better insight in the natural relationships between the various, long since extinct

groups of fossil plants, their development and ecology, as well as biostratigraphy, palaeoclimatology and phytogeography.
<http://www.uni-muenster.de/GeoPalaeontologie/Palaeo/Palbot/ebot.html>
 (the icon is borrowed from the Web & modified)

PHYCOLOGY (Biology 451). 3 semester credits. The University of Montana, Flathead Lake Biological Station, 311 Bio Station Lane, Polson, MT 59860-9659.

The Flathead Lake Biological Station is a Center of Excellence of the University of Montana. Operated year round as a community information center and research facility, the station offers an outstanding summer academic program for advanced undergraduate and graduate students.

Researchers and students live and study together in a pristine mountain setting on the shores of Flathead Lake, 85 miles north of Missoula, Montana. Flathead Lake is the largest natural freshwater lake in the western U.S.A.

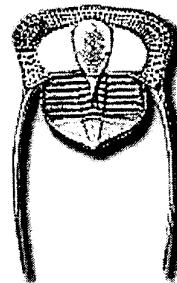
The Phycology course will be offered three days a week during the 4-week session from June 11 - July 4, 1997. The goal of the course is to give students an overview of the largest, most diverse, and arguably the most important group of plants on earth: the algae. Students will learn the features that distinguish the major groups of freshwater algae--greens, bluegreens, yellow greens, reds, diatoms, and flagellated algae--and how to identify common genera in each group.

The course will emphasize the ecology and diversity of algae in freshwater habitats, and methods for using algae to assess water quality and the biological integrity of aquatic ecosystems. Up to one day per week will be devoted to collecting algae from a variety of habitats in northwest Montana.

Besides the ecology of algae and methods for phycological study, lectures will cover the phylogeny, taxonomy, morphology, and physiology of freshwater algae.

Instructor for the course will be Dr. Loren Bahls of the Flathead Lake Biological Station. Dr. Bahls has 30 years experience using algae as indicators of water quality and ecosystem integrity. His main research interests are the ecology and biogeography of diatoms in the northern Rocky Mountains and Great Plains.

For more information or registration materials, call the FLBS at 406/982-3301 or send an e-mail message to sgill@selway.umn.edu or to ccoats@selway.umn.edu. The deadline for registration is May 16, 1997.



PalAss

The Palaeontological Association web pages have been improved and updated. They now include even more essential information and exciting announcements. A full catalogue of Association publications. The latest edition of the 'Palaeontology Newsletter' (not yet available from any other source!) including: reductions in membership costs!?, lively debate on the value of fossils in private collections, an amazing once in a lifetime offer - member price reductions of up to 95 percent on Association Publications, contents of Palaeontology Volume 40, part 1, the dates of the 1997 ANNUAL CONFERENCE (don't miss out on this palaeontological jamboree, put the dates in your diary now!), informative book reviews, surprising play reviews(!), thorough meeting reviews, dates and details of forthcoming meetings. All at the usual url's:
<http://www.nhm.ac.uk/paleonet/PalAss/PalAss.html> (UK)
<http://www.ucmp.berkeley.edu/Paleonet/PalAss/PalAss.html> (US)
 (logo borrowed from site and thoroughly chastised)



NWAS

The 11th Northwest Algal Symposium will be held in Victoria, B.C. May 9, 10 and 11th, 1997 at the University of Victoria. The low tides during this weekend will allow for a great field trip to Botanical Beach on the rugged west coast of Vancouver Island as well as inter-tidalling close to UVic. The conference will begin on Friday night with registration, a guest speaker and a brief poster session. Presentations will take place Saturday and Sunday with breaks for field trips and another opportunity to view posters. Students (both graduate and undergraduate) are strongly encouraged to attend and to present. Plan on joining us for the traditional Saturday Night Banquet to be held in our Faculty Club.

Housing: Individual and group housing will be available right on campus. Units with kitchens will also be available (details coming soon). For those wishing to stay off campus, reservations can be made through Tourism Victoria toll-free (Canada & US) 1-800-663-3883. For more information please contact Patrick Lucey or Cori Barraclough @ (250) 472-6947 or via e-mail: cbarr@uvvm.uvic.ca

For convenience, details of the XVIth International Seaweed Symposium are also available at:
<http://seaweed.ucg.ie/iss/iss98.html>

MORE MEETINGS

WOGOGOB '97 - Time: August 10.-16. Venue: All Russian Geological Research Institute (VSEGEI), Sredni prospect 74, 199026 St. Petersburg, Russia.

All correspondence to Tania Koren at above address or tel: (812) 213 95 37; fax: (812) 213 57 38; e-mail tkoren@dronov.usr.pu.ru
Registration: USD150 (Students USD100) to be paid by cash on arrival.

Fee covers: programme, abstracts, field transport and packed lunch on excursions, welcoming reception, coffee/tea breaks.

Accommodation: Rooms will be reserved at Hotel Rus' for those returning registration form by APRIL 10. Hotel station and connections to meeting venue.

Single room USD 30, 50, 60; Double room USD 40,45; shared apartment 1+2, USD 45. Prices as of time of writing.

Breakfast USD 4-5; Lunch (near institute) USD 5, dinner is near city centre within easy walking distance to underground, USD10.

For those wishing to save money, remember to bring tea bags or instant coffee and make your own breakfast in room.

Those needing alcohol should bring their own duty free drink.

Schedule:

August 10. Arrival and registration, welcoming party

August 11-12 Meeting sessions

August 13-15 Field trips; Banquet in evening of 15.

August 16 Departure

Meeting programme: Lecture topics to include recent research in Ordovician palaeontology, biostratigraphy, sedimentology, sequence stratigraphy and palaeogeography of Baltic and adjacent areas. A business meeting of the Ordovician Subcommission will be held together with an introduction to the new IGCP project on Ordovician biodiversity.

Excursions:

Day 1. Cambrian and Ordovician outcrops along the Volkhov River

Day 2. Visit to the Putilovo Quarry

Day 3. Visit to the Tosno River Valley.

A special visit to the oil shales (kukersites) can be arranged on August 16. for a limited number and extra cost of USD 10.

All localities are within 30-120 kms of St. Petersburg.

General information:

Standard slide projectors and overheads will be available.

All lectures limited to 20 minutes (including discussion).

Posters are welcome.

Abstracts by e-mail, fax or diskette (ASCII), not to exceed 1 A4 page, single spaced. Submitted by JUNE 1.

There will be no time to see architectural sites of St. Petersburg, although some points of interest will be included at the end of excursion day 2. Those wishing to stay on in St.Petersburg should allow at least two days. Please indicate this in reply letter.

CONFIRMATION OF HOTEL BOOKING WILL BE INCLUDED IN FINAL CIRCULAR TO BE SENT JUNE 30.

Ole A. Hoel - Paleontologisk Museum, Sars Gate 1, N-0562 OSLO, NORWAY - E-mail: o.a.hoel@toyen.uio.no

R.C.A.N.S. SECOND CONGRESS

SEPTEMBER 29 TO OCTOBER 6, 1997 - SALAMANCA



Main changes in the marine and terrestrial atlantic realm during the Neogene - On the occasion of the RCANS interim-colloquium (Regional Committee on Atlantic Neogene Stratigraphy; Subcommission on Neogene Stratigraphy) that took place in Tours (France), it was presented the proposal to hold the second Congress in Spain, organized by a team from the Department of Geology of the University of Salamanca, together with other institutions.

Salamanca, geographically placed in the Duero Basin with a wide representation of Continental Neogene sediments, seems to be the best place, together with the history and beauty of the city, for the event to take place. On the other hand, the Paleontology team of Salamanca practices its scientific activities in the Marine Neogene of the Guadalquivir Basin, an area of great geological interest, since it has been one of the corridors for the Atlantic-Mediterranean Sea communication. It will also be part of the Congress' scientific activities.

Scientific Program:

1. Main changes: event-stratigraphy and ecostratigraphy
2. Marine and Continental biogeography
3. Geodynamic evolution
4. Neotectonic processus
5. The Atlantic realm and relation with other regions

Excursions

1. The Neogene of the Duero Basin, 29-30 September
2. The Guadalquivir Basin and Algarve (Spain-Portugal), 4,5 and 6 October

Participation and Registration Fees

Attending members: 33000 pts (before 31/5/97) - 38500 pts (after) Students (20-26 years old, certifying their student status): 22000 - 25300 pts. Accompanying persons: 20000 - 20000 pts

The Congress official languages will be Spanish and English, although it is convenient to use English.

Correspondence and further information: Secretary of the Organization Committee - Departamento de Geologia (Paleontologia), Facultad de Ciencias-Universidad de Salamanca, 37008 Salamanca, Spain.

Phone: 34-23-294497, Fax: 34-23-294514,

Email: civis@gugu.usal.es - angel@gugu.usal.es

Registration and non-scientific correspondence: Secretaria Tecnica RCANS Second Congress, Viajes y Congresos S.A., c/ Sierpes, 1-BAB, 37002 Salamanca, Spain

Phone 34-23-267292, Fax: 34-23-269208

THE 7th EAST COAST PROTISTOLOGY CONFERENCE

will be held May 21-23, 1997, at the University of Rhode Island. The Plenary speaker will be David Caron, Woods Hole Oceanographic Institute. There will be a symposium on Marine Protist Diversity. Abstract and registration deadline is April 18th, 1997. For abstract and registration materials, contact

L. Hufnagel
BMMG Dept.
Univ. Rhode Island
Kingston, RI, USA 02881
tel: 401-874-5914
E-mail: aun103@uriacc.uri.edu.

This is a reminder about the Third Symposium of African Palynology, to be held in Johannesburg from 14 to 19 September 1997. There are still a few places available on the Cape Fynbos excursion, to run from 4 to 14 September. For further details please contact Ann Cadman on 106caa@cosmos.wits.ac.za



POSITIONS & JOBS

NHM - Applications are invited for the post of Research Palynologist/Palaeobotanist at The Natural History Museum. This position is intended to strengthen the Museum's research within the "Ecological Patterns and Processes" and the "Floras and Faunas" research themes.

Applicants should have a doctoral degree in palynology, paleobotany or closely-related topic (and probably some post-doctoral experience) with proven expertise and publications. The successful applicant will be expected to develop a programme of research centering on the systematics and interactions of Mesozoic, Cenozoic, and modern spores, pollen, and plants in a way that will use and augment The Natural History Museum's extensive and international collections in this area.

This tenure-track appointment will be for three-years in the first instance, with the possibility of permanent employment. Salary, depending on experience, will start at about 20,000 GBP per annum.

Applications can be made by sending a curriculum vita to: Pauline Thomas - Personnel Section, The Natural History Museum, Cromwell Road, London SW7 5BD, UK

The closing date for receipt of application CV's is 16 May 1997. For further details please contact Ms Thomas (pmt@nhm.ac.uk).

THE FIELD MUSEUM - Paleobotanist, Assistant Curator, Career-track. The Department of Geology seeks a broadly interested, productive colleague with an innovative, specimen based research program in evolutionary plant paleontology. Special areas of interest are systematics, phylogeny, and the evolution of form. The successful candidate will have a Ph.D., a record of scientific achievement, and is expected to pursue an interdisciplinary approach building strong interactive ties with the Department of Botany. In addition to research, the position entails the curation of a major paleobotanical collection, including participation in a current major collection improvement initiative. Curators also participate in a wide range of public learning programs (including exhibits, mentoring, and informal education), development, administrative and service activities. Participation in undergraduate and graduate education at area universities is expected. An appointment at the Associate Curator level may be considered under unusual circumstances.

The Department of Geology has 8 staff curators and 6 career professional staff, and maintains major collections in paleontology, meteoritics, and physical geology. The Department recently

completed a major renovation of the Geology research laboratories, and several collection areas are currently in progress to improvements. Modern lab facilities include a planned TIMS (thermal ionization mass spectrometer) lab, SEM, paleomagnetism, computer image analysis, biochemistry, fossil and rock preparation, photography, and scientific illustration.

Consideration of Applications begins on June 15. Please include: CV; statement of research objectives; and copies of relevant publications. Direct applications to, and arrange for three referees to write letters of support to: Search Committee, Dept. of Geology, The Field Museum, Roosevelt Road at Lake Shore Drive, Chicago, IL 60605-2496. As an Equal Opportunity institution, applications from qualified women and minority applicants are encouraged. Olivier Rieppel - Curator, Dept. of Geology, The Field Museum, Roosevelt Road at Lake Shore Drive, Chicago, IL 60605-2496, USA - Phone: (312) 922-9410, ext. 414, Fax: (312) 922-9566 email: rieppel@fmppr.fmnh.org

PHYCOLOGY - 3 semester credits. The University of Montana, Flathead Lake Biological Station, 311 Bio Station Lane, Polson, MT 59860-9659.

The Flathead Lake Biological Station is a Center of Excellence of the University of Montana. Operated year round as a community information center and research facility, the station offers an outstanding summer academic program for advanced undergraduate and graduate students. Researchers and students live and study together in a pristine mountain setting on the shores of Flathead Lake, 85 miles north of Missoula, Montana. Flathead Lake is the largest natural freshwater lake in the western U.S.A.

The Phycology course will be offered three days a week during the 4-week session from June 11 - July 4, 1997. The goal of the course is to give students an overview of the largest, most diverse, and arguably the most important group of plants on earth: the algae. Students will learn the features that distinguish the major groups of freshwater algae--greens, bluegreens, yellow greens, reds, diatoms, and flagellated algae--and how to identify common genera in each group.

The course will emphasize the ecology and diversity of algae in freshwater habitats, and methods for using algae to assess water quality and the biological integrity of aquatic ecosystems. Up to one day per week will be devoted to collecting algae from a variety of habitats in northwest Montana.

Besides the ecology of algae and methods for phycological study, lectures will cover the phylogeny, taxonomy, morphology, and physiology of freshwater algae.

Instructor for the course will be Dr. Loren Bahls of the Flathead Lake Biological Station. Dr. Bahls has 30 years experience using algae as indicators of water quality and ecosystem integrity. His main research interests are the ecology and biogeography of diatoms in the northern Rocky Mountains and Great Plains.

For more information or registration materials, call the FLBS at 406/982-3301 or send an e-mail message to sgill@selway.umd.edu or to ccoats@selway.umd.edu. The deadline for registration is May 16, 1997.

DESMID TAXONOMY PHD RESEARCH STUDENTSHIP

Applications are invited for a PhD Research Studentship available from June 1st 1997 for a project in desmid taxonomy. The project will involve the use of a wide range of techniques (classical and molecular) to study the systematics and phylogeny of the traditional genus *Staurastrum*. The study will serve as a PhD thesis at the University of Cologne, Germany and will start at the Forschungsinstitut Senckenberg in Biebergemuend (Spessart, Germany). The thesis will be supervised jointly by Prof. Michael Melkonian (Cologne) and Prof. Dieter Mollenhauer

(Biebergemuend). The position is available initially for 2 years according to the salary level of BAT IIa/2.

Applicants should hold a first or upper second class honours degree in a relevant life sciences discipline or an M.Sc. or Diploma degree.

Applications, including CV, and the names, telephone, FAX and email numbers of two academic referees, should be made to Prof. Michael Melkonian, Botanisches Institut, Lehrstuhl I, Universitaet zu Koeln, Gyrhofstr. 15, D-50931 Koeln, Germany by letter, email (mmelkon@novell.biolan.uni-koeln.de) or FAX (49 221/470-181).

One-Year Postdoctoral Position in Paleoecology - A one-year postdoctoral position in paleoecology is available at the University of Arizona. Responsibilities will include the day-to-day management of research projects on the taphonomy and isotope paleoecology of Holocene molluscs and brachiopods. Specific duties involve field work in the northern Gulf of California, cataloging and preparation of specimens, analyses of growth banding, microsampling of growth bands for stable isotopic analyses, interpretation of stable isotope variation, preparation and interpretation of SEM images, and the preparation of proposals and manuscripts. Familiarity and experience with sclerochronology, stable isotopes of oxygen and carbon, and/or bootstrapping techniques would be beneficial. Support beyond the first year is not assured and will depend on the success of proposals for external funding.

Salary is \$24,000 plus benefits and the position is available starting in August, 1997. Interested individuals should submit a C.V., a list of publications, and the names of two persons who would be willing to write letters of support (letters themselves are not required at this time).

Please send this material to Dr. Karl W. Flessa, Department of Geosciences, University of Arizona, Tucson, AZ 85721. Inquiries may be sent to kflessa@geo.arizona.edu. Information about the Department of Geosciences can be found at: <http://geo.arizona.edu/index.html>.

Review of candidates will begin on May 10 and continue until the position is filled. The University of Arizona is an EEO/AA/ADA compliance employer. Women and minorities are particularly encouraged to apply.

SMITHSONIAN INSTITUTION - Associate director for research and collections.

The National Museum of Natural History, Smithsonian Institution, the world's largest natural history museum, seeks candidates

worldwide for the position of Associate Director for Research and Collections. The successful candidate will oversee and direct a scientific research and collections program involving over 100 researchers and 120 million objects, as well as provide strategic guidance in integrating research and educational activities for the nearly six million people who visit the Museum each year.

The Museum will maintain and increase its world class scientific and collections program and provide intellectual and institutional leadership in the disciplines in which the Museum conducts research. To realize these aspirations, the Museum will undertake a major capital campaign to endow elements of the research program, upgrade a number of exhibit halls, and extend the reach of its public education. Candidates should possess a distinguished record of scientific achievement in an area of research carried out at the Museum, and have experience in positions of scientific leadership and advocacy.

For complete information and application package write to Mr. Tom Lawrence, Office of Human Resources, Smithsonian Institution, 955 L'Enfant Plaza, S.W., Suite 7100, Washington, D.C. 20560 or call 202-287-2432 by no later than 1 July 1997. Salary will be commensurate with experience. EEO/AA.

BOOKS

The 2 volume in one of Tomas, Identifying marine phytoplankton (Marine diatoms & dinoflagellates plus Marine phytoplankton) is now scheduled for May publication. It's still not sure if they are going to reprint the Marine Diatom volume separately... Right now the paperback double volume is tentatively listing at \$79.95

Balogh Scientific Books, Champaign, Illinois
balogh@balogh.com - <http://www.balogh.com>
phone: +1 217 355 9331; fax: 355 9413

EDITORIAL

Although the candidates for the Board of Directors are all listed and their essentials presented, not all photographs have arrived in time for this issue. Those missing will be depicted in the very next newsletter.

Since this is already Volume 2 of the Year 30, I would like to invite all members to help commemorate AASP's 30st birthday, by submitting contributions and suggestions of informative, inquisitive or uplifting nature to my address.

As always, yours truly, Jan Willem Weegink.



REGISTRATION AND HOUSING FORM

30th Annual Meeting American Association of Stratigraphic Palynologists
September 14 - 18, 1997
"Evolution of the Marine Phytoplankton"

Name:
Address:
.....
tel: fax:
email:
roommate preference (M ☐ / F ☐)

Meeting Registration Fee:

Professional	\$95
Student or Retired	\$70
Accompanying guest	\$50

Housing and Meals* (\$73 per day, double occupancy and includes all meals)

Sunday, September 14 ☐
Monday, September 15 ☐
Tuesday, September 16 ☐
Wednesday, September 17 ☐
Thursday, September 18 ☐

..... days @ \$ 73 per day
meals only option days @\$ 53 per day)

TOTAL COSTS

Registration: **DUE JUNE 15, 1997** is payable by check in US dollars made out to "AASP."

Please remit funds to: Ken Piel, Secretary
AASP 1997 Annual Meeting
PO Box 81011
Springfield MA 01138-1011 USA

International and overseas participants are welcome to pay by credit card:

MASTERCARD ☐ / VISA ☐ No Expires:

Signature

* Housing costs are based on double occupancy on a first come first served basis. Please specify a preferred roommate or you will be assigned one arbitrarily. All rooms come with bedding and a private bath. The conference housing fee includes all meals. You may request a single (at a higher rate of \$93 per diem), but please bear in mind that space is limited to about 140 participants, and we cannot guarantee the availability of singles).

ABSTRACT FORM

30th Annual Meeting American Association of Stratigraphic Palynologists
September 14 - 18, 1997
"Evolution of the Marine Phytoplankton"

Name:

Oral Presentation ☐ / Poster ☐

I qualify as a student for judging purposes: ☐

Please follow the style for abstracts as used in Abstracts and Proceedings in the back of Palynology volume 20: 233. Abstracts should be limited to one typed page with one inch (2.5 cm) margins, single-spaced using any 12 point font.

Submit abstracts on a floppy disk as either Microsoft Word (preferred) or Word Perfect files. Alternatively, you may submit abstracts via email to reed.wicander@cmich.edu. Please send a hardcopy version of your abstract either by regular mail or fax to 517 774 2142. We need the hardcopy to help guarantee that we receive all abstracts correctly.

Titles and Abstracts Due: July 11, 1997

Send Abstracts to:

Reed Wicander
Department of Geology
Central Michigan University
Mount Pleasant MI 48859 US

phone: 517 774-3179
fax: 517 774-2142
email: reed.wicander@cmich.edu



Sample abstract format:

PALYNOLOGICAL INVESTIGATIONS OF THE CARBONATE FRACTION OF SNG METEORITE AH-84001

Graham Williams¹, Fred Rich¹ and William DiMichele²

¹Laboratoire d'Études de Quelques Choses de la Paranormale (L.E.Q.C.P),
17 rue d'Avenue, Fredericton, New Brunswick E3B 6E1, Canada

²Department of Paleobiology, MRC NHB 121, Smithsonian Institution, Washington DC 20560

Approximately 7 grams of AH-84001 were obtained from trimmings produced during display requirements at the Smithsonian Institute. The carbonate fraction was processed using conventional palynological techniques. Special precautions were taken at the L.E.Q.C.P. to insure against any possible contamination of the sample. Although recovery was poor, analysis revealed the presence of 2 species of spore-like objects, which, upon closer examination, clearly represent the vestiges of a panspermic structure of biogenic origin. These exosporae are somewhat smaller than those seen earlier, with an antipolar architypical archaeopyle bordered with micro-efluenceae and barbecue pits opposite the antepenultimate cingulum. Such results carry grave implications for our continued efforts to elucidate the sequence stratigraphic framework for the martian near surface.

