

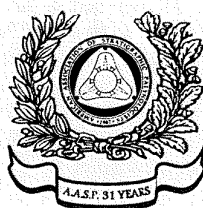


A.A.S.P. NEWSLETTER

Published Quarterly by the American Association of Stratigraphic Palynologists Inc.

August, 1998 Volume 31, Number 3

Presidential address	1
AASP Distinguished Service Award	2
AASP Student Scholarship Awards	2
Dino6, an impression	4
News from the UK	5
News from Southern Europe	5
Jongmans Medal goes to Maurice Streeel	5
Obituary: Leonard Wilson	6
Obituary: Bill Harris	6
Book reviews	8
LPP goes Milankovitch	11
Agenda	14
Editorial	16
Miscellaneous	16





A.A.S.P.

American Association of Stratigraphic Palynologists Inc.

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

AASP Scientific Medal recipients

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

AASP Board of Directors Award recipient

Robert T. Clarke (awarded 1994)

AASP Honorary Members

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

AASP Distinguished Service Award recipients

Robert T. Clarke (awarded 1978)
Norman J. Norton (awarded 1978)
Jack D. Burgess (awarded 1982)
Richard W. Hedlund (awarded 1982)
John A. Clendening (awarded 1987)
Kenneth M. Piel (awarded 1990)
Gordon D. Wood (awarded 1993)
Jan Jansonius (awarded 1995)
D. Colin McGregor (awarded 1995)
John H. Wrenn (awarded 1998)

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

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

AASP Membership Application - Membership in AASP is for the calendar year. Dues are \$30.00 U.S. per year for individuals and \$40.00 U.S. per year for institutional members. All members of AASP receive *Palynology* which is published annually, the AASP Newsletter, which is mailed out four times a year, and an annual Membership Directory.

Dues may be paid up to three years in advance. Overseas AASP Members (Individual or Institutional) who would like to receive their AASP Newsletter and *Palynology* by air mail, rather than book rate surface mail, need to include the applicable postage surcharge (noted below). Credit card users must pay a \$1.00 U.S. surcharge per transaction.

Air mail surcharge (increased for 1995 and beyond): Europe & South America: \$12.00 U.S. per year. Africa, Asia & Australia: \$15.00 U.S. per year. Credit card surcharge \$1.00 per transaction.



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Jan Willem Weegink, Editor

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

Deadlines for next issues of the newsletter, are October 31st 1998, January 15th 1999 and March 31st 1999. 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.

PRESIDENTIAL ADDRESS

Rolf W. Mathewes

By popular demand, I am taking this opportunity to update our readership on what has been happening at AASP this year. Following the small but intellectually successful 1997 meeting at Woods Hole, the Board of directors held an early "mid-year" meeting in Savannah, Georgia, on March 28, 1998. The Board and a number of non-board members spent a full day going over the usual business of the Association. Some of the results have already been announced, such as approval of the next slate for Board elections and preparations for the 1998 annual meeting to be held in Ensenada, Mexico (April '98 newsletter). Ballots for the upcoming elections should be sent out by mail later in July.

Your association and the AASP Foundation (our publishing arm) are in excellent financial health, as outlined in reports submitted by David Pocknall and Bob Clarke. Our paid-up membership is down somewhat from last year, perhaps reflecting hard times in some sectors of the economy, although 18 new individual members joined the organization.

Fred Rich attended the meeting as local committee chair to update us on preparations for the 1999 annual meeting, which will be held in Savannah. This historic city from the days of the war between the states will be an interesting meeting location. If your partners are not palynologists but enjoy history, architecture, fine dining, and antique shopping, they will love Savannah, (my wife Donna sure did) so bring them along in 1999!

Tom Demchuk also attended as your representative to AGI (American Geological Institute) and to bring us up-to-date on affiliation negotiations with the Geological Society of America. In May, GSA approved our bid to become an associated society, so that it will now be possible to schedule future meetings in conjunction with GSA, if we so desire.

There has been a lot of activity at CENEX, the Center for Excellence in Palynology at Louisiana State University. Both John Wrenn (Director of CENEX) and Ken Piel (Chair of CENEX Development Committee) attended and filed reports on progress in fund-raising and other initiatives. The 1997 campaign raised \$63,500, which brings the total of funds for the endowed chair close to the half million dollar mark (exact amount uncertain due to a proposed change in LSU accounting practices). Still some distance to go, but the committee is working hard on a number of prospects.

While on the subject of CENEX, it is my pleasure to announce that John H. Wrenn has been selected to receive the AASP Distinguished Service Award in 1998. The text of the citation that will be read at the awards ceremony in Ensenada this fall is attached for your reading pleasure. Congratulations again, John!

I would like to close by thanking the Board members and other who devote a great deal of time and effort to running AASP throughout the year.

Remember to send in your abstracts and hotel reservations for the Ensenada, Mexico meeting in late October. I hope to see many of you there.

Adios for now.

Rolf W. Mathewes

AASP DISTINGUISHED SERVICE AWARD
Vaughn Bryant

John H. Wrenn exemplifies the reason why after more than 25 years our professional society remains strong, financially secure, and continues to grow in international importance. The key to any non-profit organization is volunteerism. Without it, organizations such as AASP could not offer its wide range of membership benefits, survive financially, or continue to charge modest subscription fees. One way to spell volunteerism is

J-O-H-N H. W-R-E-N-N.

Although a member of AASP since the mid 1970s, school work and the early years of rearing a family prevented John from having the time needed to become a volunteer in AASP. However, in 1984 Doug Nichols asked John to help out as a member of the AASP Nominating Committee. That was the beginning of John's long list of contributions to help AASP. By the second half of the 1980s, John got more and more involved in AASP volunteerism.

John volunteered to be the AASP Newsletter Editor, next he served as a member of the AASP Public Relations Committee, and by 1988 he was serving as a Committee Member of the AASP Twenty-First Annual Meeting (Houston).

Before the end of the 1980s John also co-chaired one Dinoflagellate symposium, chaired another one a year later, coordinated the presentation of the first AASP sponsored short course, was the chair of the AASP Twenty-Third Annual Meeting (Tulsa), and then went on to chair the AASP Short Course Committee.

During the 1990s John has devoted even more of his time and effort to helping AASP complete the many tasks that need to be done. In 1990 John was the new President-Elect of AASP and then went on to serve as the AASP President in 1991-1992. When his term as President ended, John didn't rest on his laurels. Instead, he actually increased the time and effort he was devoting to AASP. John organized and conducted the AASP Twenty-Sixth Annual Meeting (Baton Rouge) and also organized and co-chaired one of that year's main symposia.

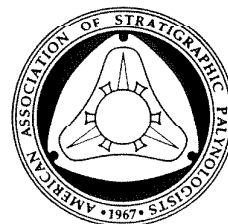
Two final points are among the most important in the long list of contributions that John has made to AASP. First, is his continuing role as Director of the Center of Excellence in Palynology at LSU, an academic center that was conceived and is largely funded by the efforts of AASP and its membership. Second, are his efforts as the Co-Chair of the IX IPC. Throughout the four-year period from the end of the VIII IPC until the opening ceremony of the IX IPC John never wavered in his commitment to getting the job done, regardless of how much time was needed and what personal sacrifices it would cost him. As those who attended the IX IPC know, the meeting was an overwhelming success and much of the credit goes to John for the many extra hours that he willingly gave to the task.

Our society wishes to thank you, John, for your many years of critically-needed help; yet we also realize that this Distinguished Service Award is but a small token representing the debt we owe you and the deep appreciation we have for your efforts. Thank you for being one of AASP's best volunteers!

Quote of the day:

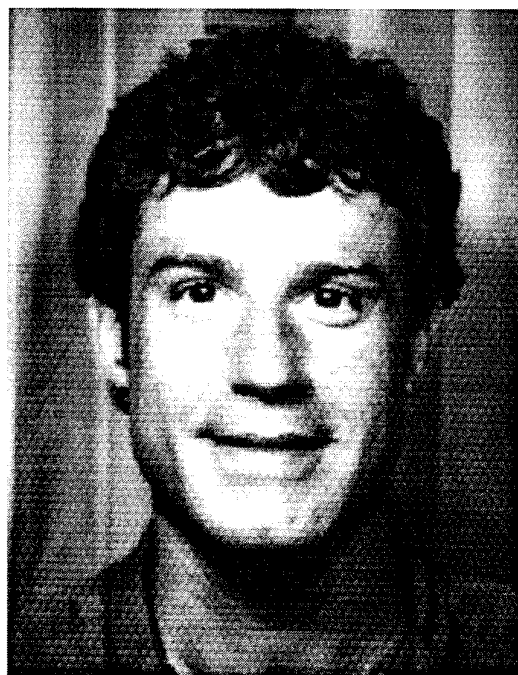
"I'd rather look at dinocysts."

(John H. Wrenn answering some "come and see me" POLPAL-SPAM message that got through POLPAL security)



The AASP Awards Committee congratulates Jonathan Hughes, Carlos A. Jaramillo, and Anne-Marie Tosolini, recipients of 1998 AASP Student Scholarships and of the Cranwell Smith Award. Fourteen applications were received from seven nations. These covered a very wide range of topics including Aeropalynology, Quaternary Palynology, and Stratigraphic Palynology.

Hughes and Jaramillo each receive \$1000 from the AASP Scholarship Fund. Tosolini's award is made separately from the Cranwell Smith Fund, but the pool of applicants and criteria are the same. The awards are based on the qualification of the student, the originality and imagination evident in the proposed project, and the likelihood of significant contribution to the science of palynology.



Jonathan Hughes is a Ph.D. student in the Biology Department at Simon Fraser University studying under the guidance of Dr. Rolf Mathewes. Jonathan received a B.S. degree in Natural Resources

from the University of the South (1989) and a M.S. in Botany from the University of Wyoming (1994). His doctoral thesis project is entitled "Late Holocene tidal marsh succession in the Pacific Northwest in relation to paleoseismology and sea level change."

The intent of his project is to better understand the response of tidal marshes / wetlands to great subduction zone earthquakes at two sites in Cascadia (Tofino area, Vancouver Island, British Columbia and Willapa Bay, southwestern Washington) during the late Holocene.

It is hypothesized that contemporary palynological and plant macrofossil assemblages can identify modern plant communities and that subduction zone earthquakes produce identifiable changes in the pollen and plant macrofossil composition of tidal marsh - wetland sediments. Both sites have extensive tidal marsh - wetland development with little human disturbance, have well-dated sediments, and provide unequivocal evidence for past great subduction zone earthquakes.

The study will focus on the behaviour of tidal wetland vegetation in response to tectonic strain accumulation, plate rupture, and postseismic rebound. Surface pollen and plant macrofossil assemblages will be used to interpret fossil time series. Palynology and plant macrofossil analysis, in conjunction with stratigraphy, dating and other published microfossil studies will further our understanding of earthquake recurrence intervals and magnitudes along the Cascadia subduction zone.



Carlos Jaramillo is working on his Ph.D. at the Paleobotany Lab. of the Florida Museum of Natural History at the University of Florida under the supervision of Dr. David Dilcher. Carlos earned his M.S. in 1993 at the University of Missouri-Rolla under the advice of Dr. Franca Oboh working on late Eocene-early Oligocene dinoflagellates of the Gulf Coast. He received his B.Sc. in Geology at the Universidad Nacional of Colombia, under the supervision of Dr. Fernando Etayo, studying Santonian dinoflagellates of central Colombia.

His winning proposal is entitled "Middle Paleogene Palynology of Colombia, South America: Biostratigraphic, Sequence

Stratigraphic and Paleogeographic Implications". Carlos' project will combine palynomorphs and palynofacies data of middle Paleocene-Eocene strata in central Colombia to improve the existent biostratigraphic zonation for the area, and propose a sequence stratigraphic framework for these oil-rich sediments. The pollen/spores taxonomic data will be used to understand patterns of plant diversity across the Eocene Thermal-Maximum in tropical areas. The palynomorph data will also be compared with the Paleogene palynofloras of Central America and the U.S. Gulf Coast, and related to the paleogeography of the Caribbean area. Carlos is planning the completion of his Ph.D. next year and looking forward to go back to Colombia where he hopes to establish a solid research program on tropical paleopalynofloras and promote the development of palynology in Colombia.



Anne-Marie Tosolini is currently attaining a Ph.D. in the School of Botany at the University of Melbourne under the guidance of Dr. Stephen McLoughlin and Dr. Andrew Drinnan. She graduated with BSC (Hons) in Geology in 1996 under micropalaeontologist Dr. Stephen Gallagher. The title of her dissertation is "Biofacies analysis of Lower Cretaceous non-marine, hydrocarbon source rocks of the Otway and Strzelecki Groups, Victoria."

This project will, for the first time, integrate the palynofacies, plant macrofossil associations and fluvial sedimentology of the Lower Cretaceous succession in the hydrocarbon on-rich Gippsland and Otway Basins of south-eastern Australia. This project will result in improved resolution of the biostratigraphy, and distribution and sedimentological / organic composition of fluvial sedimentary packages within the Lower Cretaceous succession. The study will be of significant value to basin modeling and hydrocarbon explorations. Biostratigraphic schemes established for this sequence provide the basis for Cretaceous correlations throughout the Australasian-Antarctic region.

After a short period of research, Anne-Marie has recorded strong facies controls on the distribution of some index taxa which will

have implications for their future use as biostratigraphic and paleoenvironmental markers.

She has also examined the previously unstudied megaspore assemblages from the Neocomian Lower Strzelecki Group. Currently, around 235 species of Lycophyte megaspores have been documented and are being described and illustrated for publication. Anne-Marie plans to use her award for further field work and to attend the Gondwana 10 Symposium in South Africa to present some of her results.

SIXTH INTERNATIONAL CONFERENCE ON MODERN
AND FOSSIL DINOFLAGELLATES (DINO 6)
Gordon Wood

A relaxing morning ride via bus to the "Elektrobygget" for Dino 6 and at night watching World Cup Football (soccer - ed.) in a Trondheim pub with a Lysholmer sandwiched a day of intriguing dinoflagellate presentations. The superb work of the organizing committee, including Kari Grosfjeld, Eric Monteil, Egil Sakshaug, Morten Smelror, Karl Tangen and a legion of helpful and courteous Norges teknisk-naturvitenskapelige universitet (NTNU) student assistants was graciously appreciated by the 200+ participants from more than thirty countries. The organizing committee's energy is exemplified by their perseverance through a bus strike, an end of the week air traffic controllers strike and some world renowned scientists unable to attend because they were probably walking a picket line.

The program consisted of approximately 100 papers spanning a five day period. Subjects varied from dinotoxins to dinopigments, calcareous dinoflagellates, fossil organic-walled dinoflagellates, dinoflagellates and Milankovitch cycles, dinoflagellates and paleoecology, dinoflagellates and dinosaurs, dinoflagellates and sapropel, to name a few. Fieldtrips were organized concerning the 'phytoplankton and dinoflagellate cysts of Trondheimsfjord' aboard the F/F Harry Borthen and a visit to the Hopavagan marine biological station where marine pelagic ecosystems and coastal eutrofication are being studied (COMWEB project). Two Workshops were held: "Neogene and Quaternary Dinoflagellates" led by M. Head, N. E. Poulsen and A. de Vernal and "Calcareous dinoflagellates" organized by H. Willems, D. Janofske and K. A. F. Zonneveld and a special session "Dinoflagellate evolution and systematics" chaired by R. A. Fensholt and F. J. R. (Max) Taylor. A fairly large, and enthusiastic, contingent of students were represented including a legion from the Laboratory of Palaeobotany and Palynology (LPP), most of whom presented research at the meeting.

It is difficult, and unrewarding, to attempt to choose 'highlights' at such a meeting because participants are attracted by the dinoflagellate theme, but are separated by specific interests associated with the group. The benefits of this conference is that there is a wide breadth of research and all papers contained informative data no matter what your explicit appeal. Calcareous dinoflagellates were addressed in several, well illustrated papers. These presentations were an eye opener for workers, like myself, who deal only with fossil organic walled microplankton and deliberately use hydrochloric acid to remove the unwanted calcium carbonate in our samples. The fact that Discoasters were shown to be alive (albeit entombed in annual sea ice), probably produced by dinoflagellates and did not become extinct at the Pliocene-Pleistocene boundary was somewhat unnerving. The polar occurrence of Discoaster producing organisms (rough cultures were started by melting sea ice) also mitigates against the belief that these organisms were indicative only of warm water

depositional environments. (It was with unbridled joy, and smugness, that I relayed these findings to our in-house nannoplankton worker.)

An impressive display of Posters was one of the highlights of the meeting. For the most part these presentations contained extremely well done graphics and were very informative. Posters were displayed for four full days and the objects of some lively discussion particularly during coffee/cookie (& beer) breaks.

The initial session was convened by William R. Evitt. The presence of Bill, and his wife Geisela, was a pleasant surprise to the gathering. Many of us had the pleasure of their company and hospitality when attending the two week Dinoflagellate Short Course Bill taught at Stanford University.

Another high point of the meeting was a presentation by W. A. S. Sarjeant preceding the Gala Dinner. In the proceedings volume it was noted as "From Excystment of Bloom? Personal recollections of thirty-five years of dinoflagellate and acritarch meeting". Myself, and others, always find Bill's presentations entertaining and informative and he did not disappoint the audience. The subject matter included illustrations and discussion from Ehrenberg to Recent workers, including Bill's own personal recollections. The research into the history of dinoflagellate/acritarch research obviously was time consuming and difficult but Bill's passion in the subject area was obvious. He admonished anyone for using glycerin jelly as a mounting medium (no matter how careful you are it degrades and cracks over time) and the fact that Georges Deflandre inadvertently blamed Bill for an article written by A. R. Loeblich, Jr., sent Bill a letter stating that he 'will never communicate with him for the rest of his life.'

The foresight of the organizing committee shone further by surprising everyone by announcing the publication of Bill's presentation in a Special Contribution of the NTNU. In addition to color prints of most of the slides used by Bill there are several pages of text. I can attest to the accuracy of the text by his notation (p.11) concerning the pronunciation of Llandovery, a word rooted in Welsh.

Following Bill Sarjeant's presentation was the Gala Dinner held in the 'Palmenkoven' of the Britannica Hotel. A very enjoyable fare of primarily 'Fruits of the Ocean' and some of the largest raspberries and black berries I have ever seen. The dinner included two presentations. The first was the Best Poster Session Award to Susanne Feist-Burkhardt and Jörg Pross for "New methods in light microscopy and their application to fossil dinoflagellate cysts." Henk Visscher (LPP-Utrecht) presented William R. Evitt an Honorary Membership in the Palaeobotanical-Palynological Society-Utrecht (PPUG) for his excellent contributions to the study of dinoflagellates. The evening was topped off by the NTNU Student Union-Pirum singing group (Norwegian Spice Boys?).

In brief, this was a very well organized meeting with excellent scientific contributions and several other memorable moments. The latter included the melodic ring of a cell-phone in the middle of Joyce Lucas Clark's presentation (...and John Bujak never told us who was calling...), the expletive uttered by a presenter after errantly pouring a cup of water (resulting in several minutes of laughter by the audience) and the sight of the lengthy pointing stick (javelin on steroids?) used by speakers during a Thursday morning session.

The only comment I can mention that is critical of the program is that only one paper broached comparisons between dinoflagellates and acritarchs. Just as dinoflagellate work has taken on extremely wide ranging avenues in the last four years, acritarch research has grown by leaps and bounds. Several excellent European acritarch workers could have presented an informative overview to this disparate audience, most of whom would have benefited by a

summary presentation concerning the diverse character of pre-Carboniferous organic-walled microplankton. The organizers of the next meeting might consider such a contribution as an invited paper for a plenary session.

NEWS FROM THE UK
By James B. Riding

Sandy Smith of Shell UK Exploration and Production, London has been elected to the position of Secretary of the Palynology Group of the British Micropalaeontological Society (BMS). Sandy topped the postal ballot recently and will take up his position this coming November, replacing Duncan McLean of the University of Sheffield, who has done the job since 1993. The speakers at the Annual General Meeting of the BMS will be Matthew Collins (Postgraduate Institute in Fossil Fuels and Environmental Geochemistry, University of Newcastle) and Norman MacLeod (Department of Palaeontology, The Natural History Museum, London). Matthew's talk is entitled Small beginnings: ancient molecules and micropalaeontology and Norman will speak on the renaissance of graphic correlation. Abstracts of these lectures appear in the latest edition of the BMS Newsletter (No. 58). AASP members are very welcome to attend this meeting which is to be held on Wednesday the 18th of November 1998, starting at 2.00pm. The venue is the Gustave-Tuck Lecture Theatre, Gower Street, University College London. The book publishers which we use for the BMS Publications Series, Chapman and Hall, have recently been taken over by a Dutch company, Kluwer Academic Publishers, Dordrecht, The Netherlands. It is hoped that Kluwer will wish to continue this series of books.

I could not attend DINO6 in Trondheim this June, but I hear that the meeting was a resounding success, with many excellent talks and posters and a high level of attendance from dinoflagellate workers world-wide. A strike of public service workers apparently prevented local boy Barrie Dale from attending and caused disruption to the return travel plans of many of the delegates. The next in this series of meetings, DINO7, is to be held in Japan in 2002.

A.P.L.E. (but not Macintosh) and Dino 6
Koldo Nuñez-Betelu

A number of people, even in Spanish speaking countries, may not be aware of the existence of the "Asociación de Palinólogos de Lengua Española, A. P. L. E." (Association of Spanish Speaking Palynologists) despite of being quite a mature group. Since this year, A.P.L.E. is celebrating its 20th anniversary. I'll take this as an excuse to make a summary presentation of this group for those unaware of its existence.

The association was founded in 1978 by a group of Spanish speaking palynologists and has grown steadily since then. Among its members there are actuo and paleopalynologists from Latin American Countries, Spain and some other countries. It was established with the aim of broadening the palynological knowledge of and to promote Palynology, especially with relation to its application to biology, botany, geology and medicine. To reach these goals, the association has always encouraged scientific research as well as the exchange of information and knowledge among its members and with the rest of the scientific community. There are several sections within the association and they include Paleopalynology, Melissopalynology, Biology of Pollen and Aeropalynology.

Those interested on getting more information on A.P.L.E. can contact its present Director, Dra. M. Suárez Cervera (suarez@farmacia.far.ub.es) or look at their web page: (<http://aple.usal.es/>).

Furthermore, it also publishes periodically a newsletter to inform its members on palynological progress, meetings, etc. This bulletin also features a scientific research paper on a topic of high interest. Since its start, A.P.L.E. has held a symposium once every two years. There, a general assembly is held and the board of directors is elected. This year's symposium will be celebrated at the University of Leon from September 29 to October 2.

Last but not least, a few words on another recently held meeting. I'm referring to Dino 6 and I want to take the opportunity to congratulate and to thank the organizers for this wonderfully run meeting. And not only for the meeting, but also for all the help given to the assistants to be able to flee the country in the middle of an airport controller's strike. There were lots of interesting talks and lots of interesting posters, no doubt about it. However, there was a significant contrast between posters and oral presentations. In fact, most posters were impressive not only in terms of content but also in terms of presentation. In the latter notably differed with the talks. If most posters had a well-organized and beautiful presentation, many talks lacked those qualities. In fact, according to a number of attendants that expressed their opinions to this correspondent and from what I witnessed myself, some talks even lacked much respect to the audience, to other presenters and to organisers, and I'm not talking about speakers from third world countries who may lack the necessary means to make expensive presentations! Poor organization, poor quality slides/transparencies (too much text, too little font, ...), talks too long (running through, no time for questions, ...) and much more could be "seen" or "heard" too often. I even got the impression that this kind of poor presentations, instead of nearing extinction, they are becoming more abundant. They are the black clouds in the brilliant sky of meetings like Dino 6. Thus, I want to formally propose that in next meetings there should be workshops on talk presentations at meetings. We all, speakers, audience and organizers alike, will benefit from them.

Maurice Streele - recipient of Jongmans Medal
G.F.W. Herngreen

The second recipient of the W.F. Jongmans Medal is Dr. Maurice Streele who recently retired as professor of Palaeobotany and Palaeopalynology at the University of Liège (Belgium). The Jongmans award was established four years ago by the Dutch Foundation of Geology and Palaeontology to honour distinguished earthscientists and to commemorate the life and work of Professor Jongmans. On special request of the board of the Foundation the announcement was made by Professor L. Stuchlik, the President of the Organizing Committee, during the 5th European Palaeobotanical-Palynological Conference held in June in Cracow (Poland).

Maurice Streele finished his studies as a botanist in 1957 by mapping the vegetation of the Hautes Fagnes, a famous peat-area in Belgium. On the basis of his study this area was designated as Nature Reserve. After graduating he spent two years in Katanga (Congo/Zaire) where, as an asistent for botanical expeditions, he prepared his PhD (1961) dealing with the vegetation of the alluvial plains. In the meantime Professor Leclercq was conducting her well known research on the Middle Devonian Cladoxylopsida. She thought Streele the right man to explore the, then, new field of abundant dispersed spores in the samples. He concentrated on the Devonian/ Carboniferous transition and his merit was also to incorporate data from marine strata where reference faunas are

found. Moreover, he worked in close collaboration with other experts in different fields of geology. Streeel has always been an advocate of interdisciplinary studies. He was successful in establishing palynology as an essential component in multidisciplinary research as carried out in very different countries all over the world.

In 1974 he was designated professor at the University of Liège and head of the department. The list of publications of Maurice is impressive, encompassing now more than one hundred and ninety papers including his 1986-7 landmark with a comprehensive palynozonation of the Devonian of the Ardenno-Rhenan area with 78 zones defined. His other duties included Secretary-General of the 'Commission Internationale de Microflore Paléozoïque' (CIMP), followed by a five year term as President. He received several distinctions, of which a prestigious one in Belgium. He was elected member of the Royal Academy of Sciences.

- G.F.W. Herengreen, Netherlands Institute of Applied Geosciences-National Geological Survey and Secretary of the Foundation of Geology and Palaeontology. He is obliged to Dr. Muriel Fairon-Demaret (Liège) for providing information and making available the text of the Laudatio and to Dr Henk W.J. van Amerom (Krefeld), President of the Foundation.

Obituary : Leonard R. Wilson
Submitted by the Oklahoma Museum of Natural History

Dr. Leonard R. Wilson, Sam Noble Oklahoma Museum of Natural History curator emeritus of micropaleontology and paleobotany, passed away at his home in Norman on July 15 after a long illness. His friendship and contributions to the museum will be sorely missed. A memorial service was held at 1 p.m. on Aug. 15 at St. John's Episcopal Church in Norman.

The University of Oklahoma community remembers Wilson as a gentleman and a scholar. "He was an extraordinary individual and one of the giants in his field, having developed the study of palynology and paleobotany in America," said Michael A. Mares, director of the museum.

Shortly before his death, Dr. Wilson and his wife Marian endowed the OMNH's collection of paleobotany and micropaleontology with a gift of \$100,000. "His collection, endowment, remarkable scientific productivity and his wit and grace will serve as a fitting memorial to a life well lived," said Mares. "He was, simply, a wonderful person."

Wilson received three botany degrees from the University of Wisconsin-Madison: Bachelor of Philosophy, 1930; Master of Philosophy, 1932; and Doctor of Philosophy, 1936. He also studied at the University of Leeds, Scotland and conducted post doctorate work at Ohio State University and the University of California at Los Angeles.

His career as an educator began in 1934 at Coe College, Iowa where Wilson was head of the department of geology until 1947 when he went to the University of Massachusetts in a similar capacity. In 1956, he became associated with New York University and the American Museum. He came to OU in 1957 as a professor of geology. Wilson joined the Oklahoma Geological Survey and received the prestigious honor of being named the George Lynn Cross Research Professor of Geology and Geophysics in 1962.

In 1973, Wilson was named curator of micropaleontology and paleobotany at the Sam Noble Oklahoma Museum of Natural History where he contributed extensively to the museum's collections and to the university through teaching and research. Although he retired in 1977, Wilson continued to conduct research and scholarly work at his office in the museum.

Wilson has been aptly described as a pioneer in the field of palynology, the study of spores and pollen. He published over 200 scientific papers effectively demonstrating the relationships of plants to sediments and rocks through time. He actively advanced the idea that plant microfossils could become a powerful biostratigraphic tool. Wilson was the first man to perceive the common uses of palynology in oil exploration and served as a consultant to 17 major and independent oil companies during his career.

Wilson received numerous academic honors and served in a multitude of professional posts. In 1972, he was elected to the Order of Mark Twain in recognition of his research in the Arctic and on Pleistocene deposits. Other members of the society include Presidents Kennedy, Johnson and Nixon and astronaut Neil Armstrong. In 1973, Wilson was awarded the Gunnar Erdtman Medal for Palynology by the Palynological Society of India.

Wilson was born July 23, 1906 in Superior, Wisconsin and would have been 92 this week. He is survived by his wife Marian of the home; a son Richard Graham Wilson of West Fork, Ark; a daughter, Marcia Wilson Roe of Norman; 11 grandchildren and seven greatgrandchildren.

Obituary: William Francis Harris 1903-1997
Dallas Mildenhall



Bill Harris was the doyen of New Zealand palynology, even though he came into this science relatively late in his career. From about 1937, and after his retirement in 1968, till his recent death he retained his interest in palynology, science in general, and in the ongoing careers of his fellow scientists. Only those people who worked closely with him knew just what a broad range of interests he had,

how many courses of study he had completed throughout his long life and his constant thirst for knowledge. The most abundant books on his book shelf were a series called "Teach Me" covering a wide range of subjects all of which he had absorbed. He had a marvellous linguistic ability - a polyglot - and a wide searching scientific mind and was constantly sharing his ideas and encouraging and teaching his junior staff. His modesty, kindness, love of privacy, and lack of personal ambition has meant that his achievements have not netted him the general recognition that he deserves. The rooms housing the palynologists at the Institute of Geological and Nuclear Sciences are named the Harris suite in his honour.

Bill Harris never liked to cause a fuss. And it was the same when he died, no fuss. He lived his last years in a rest home in Whakatane, a bit off the beaten track in northern New Zealand, where it was warm all year round but where past colleagues would not normally pass through unless just to see him. None of his old science colleagues knew that he had died until many months after the event. Letters suddenly were not answered, and it was not until Colin Lennie, a technician who had last worked with Bill in the early 1960's, visited late last year that all his science colleagues learnt that he had died some months previously.

Bill was born in Christchurch, New Zealand, on 18 June 1903. His father was a gardener who encouraged Bill to assist and instilled in him a love of the soil and a love and knowledge of the plants that grew in it. Bill was educated in Christchurch, leaving high school in 1917 to work for a local county council while studying commerce and music at Canterbury University College. In 1926 he moved to Wanganui where he played the violin in orchestras, mostly cinema orchestras, and taught music. But overwork and stress made him decide to change to an outdoor career. He then took a variety of farm jobs in Australia and New Zealand until in 1937, working as a gardener in Auckland, he decided to return to study for a Diploma in Horticulture. This he did. Bill had at this time a particular interest in the native ferns and he repeatedly visited the fernery at the Auckland Domain to learn to recognise and identify all the ferns growing there. The caretaker took an interest in what Bill was doing and persuaded him to see Lucy Cranwell at the Auckland Museum.

With Lucy's encouragement Bill prepared some pollen slides in the laboratory of Pharmacy School where he was doing a course in Pharmacy, a necessity as part of the Diploma in Horticulture. Erdtman's new acetolysis method was used and the results so impressed Lucy Cranwell that Bill was employed to prepare pollen slides from herbarium and fresh collections. Thus in 1939 under Lucy's tutelage Bill, now aged 36, was encouraged to change tact from Horticulture to do a Science Degree at Auckland University. However, he had no sooner completed his first year, Stage 1 botany and zoology, than he found himself in the army.

We know little about his war experiences. At 36 years of age, with a disability, he must have volunteered. But we do know that after four years with the 2nd Echelon 2 New Zealand Expeditionary Force, Bill returned to New Zealand with a wife, Nellie, whom he met and married while in Cairo, Egypt. Bill, who had suffered from poliomyelitis as a child and had a cleft palate, was declared medically unfit for active service but after some pulling of strings he finally enlisted in the medical core and was posted as batman to the officer who had originally declared him unfit. His role seems to have been purely administrative, but it involved recording the physical and particularly mental state of senior army personnel and was, understandably highly confidential. Bill maintained this confidentiality throughout his life. His cleft palate was not operated

on until the late 1940's when Bill was in his late 40's. At this time he wanted to ensure that the excitement he felt about the new science of palynology, was passed on to others, and he wanted to ensure that he was perfectly understood.

Returning to New Zealand in 1943 Bill, now aged 40, found that Lucy Cranwell had also married and was leaving for the United States. He was given the opportunity to succeed Lucy at the Auckland Museum but chose instead to join Botany Division of the New Zealand Department of Scientific and Industrial Research (DSIR). Bill also recommenced his science degree, this time at Victoria University of Wellington.

Bill work now involved studying atmospheric pollen, peat (but not the pollen it contained), allergies, micropalynology and archaeology. He did not fare well as the botany directors at the time thought that studying pollen was a waste of time since pollen dispersed so far and wide that you could not tell a coherent story about them, particularly when pollen occurred in peat. However, that did not stop Bill from earning a D.Sc. in 1957 for his work on the spores of the New Zealand Pteridophytes, and in 1968 finally publishing his book on peat classification by pedological methods.

In 1954 Bill became vice-president of the Palynology Section of the International Botanical Congress, and attended the conference in Paris in this capacity. His verbal reports of this conference consisted of as much a tour guide of the art galleries and descriptions of the art works, as they were scientific reports on the various outcomes. However, his written reports indicated that he had attended to his conference duties with dedication, enthusiasm and competence.

In 1958 Bill joined Ashley Couper, whom he had previously introduced to palynology, at the New Zealand Geological Survey (NZGS) working on a palynological study of the Quaternary Ice Ages and the Post-glacial, but also dabbling in much older material, particularly in late Cretaceous and Cenozoic sediments found in petroleum drillholes. The search for petroleum in New Zealand was gaining momentum at this time and palynological work was proving very useful in both marine and non-marine sediments. He was a pioneer in the use of the computer in palynology, but was constantly frustrated that as soon as palynological records were placed on computer the records became unusable because they were incompatible with the next generation of computers. During his 10 years at NZGS, till his "first" retirement in 1968, he also worked on diatoms, dinoflagellates, rhizopods, cuticles and the palynology of Mesozoic, Cenozoic and Pleistocene rocks while training technicians and younger palynologists who appeared from time to time. Bill finally retired in 1978, aged 75, after spending a lot of these last 10 years pioneering the palynological studies of cores of early Tertiary age from the off-shore Maui gas field, now New Zealand's largest producing gas field.

Bill's contribution to science, and to New Zealand science in particular was the keeping alive of palynology as a viable and useful science from the pioneering days of Lucy Cranwell and the encouragement and assistance he gave younger staff. Many of these "younger" palynologists went on to become leading world experts in their fields - Ashley Couper, Dave McIntyre, Geoffrey Norris, to name a few. His contribution of 2 books and over 60 papers illustrates his world standing in the field of palynology. However, his published work does not adequately reflect the wide range of work that he did.

He was involved in a number of innovative science discoveries, described all spores of native New Zealand ferns and fern allies, classified New Zealand peat types, and catalogued a number of past natural changes in the New Zealand environment. In the early to mid 1940's he and his co-worker Doris Filmer, discovered that locally produced honey, implicated in a poisoning outbreak, contained pollen from *Coriaria*, a plant that was well-known as causing death in cattle. In the late 60's and early 70's Bill, with Dave McIntyre and Geoff. Norris, demonstrated the usefulness of palynology in deeply buried coal measures found in petroleum exploration drillholes. This led to a rapid rise in the profile of the science. In the early 1970's he with co-worker Geoff. Norris, recognised that certain groups of pollen kept recurring through Quaternary (and Mesozoic) time. This led to a paper on the ecological significance of recurrent group of pollen and spores in New Zealand Quaternary sequences. The mathematics involved in this work and other statistical analyses of Quaternary sequences was subsequently published in a paper on species clustering and the ecological information that this gave.

This is but a brief summary of the very full and active life. One could also mention his love of painting (Bill considered himself a better artist than musician) with his portraits of saleable quality and music (he lived in a very small house with a lounge dominated by a grand piano). He also studied astrology, free masonry, occultism, theosophy, photography, classical music (a passion shared with his classically trained pianist wife), opera, violin, organ, indoor bowls, bridge, and languages. Bill's proficiency at languages is evidenced by his ability to speak Esperanto, French, German, Arabic, Bulgarian, Russian, Dutch, and Italian, and he could read a number of others. Nor have I mentioned his love/hate relationship with cars, the road and anybody or anything on it or along side it, the battles he had with management to get updated equipment (he once put in a requisition for a calculating machine and received a slide rule), his scrupulous honesty, which we realised went as far as not claiming allowable rebates on his tax returns, his superb memory (he apparently never took notes at any of the university lectures he attended), and his love of wine.

Bill was devoted to his wife Nellie who died about five years after his final retirement. She had been in poor health for quite a while and Bill had been constant in looking after her in those final years. They had no children.

- Dallas Mildenhall, Institute of Geological and Nuclear Sciences, Lower Hutt, New Zealand -

BOOK REVIEWS
By Reed Wicander

International Stratigraphic Guide, 2nd edition by A. Salvador (ed.). 1994. The International Union of Geological Sciences, IUGS Secretariat, Box 3006, N-7001 Trondheim, Norway, and The Geological Society of America, Inc., 3300 Penrose Place, P. O. Box 9140, Boulder, Colorado 80301. 214 pages.

As stated in the Preface, "The purposes of this second edition ... are ... to promote international agreement on principles of stratigraphic classification and to develop an internationally acceptable stratigraphic terminology and rules of stratigraphic procedure, all in the interest of improved international communication." To that end, the International Stratigraphic Guide succeeds admirably.

The second edition of the International Stratigraphic Guide is divided into 10 chapters, a Glossary of Stratigraphic Terms, a chronologic and bibliographic listing of National or Regional

Stratigraphic Codes, a Bibliography of Stratigraphic Classification, Terminology and Procedure, and an Index. Chapter 1 is an Introduction and gives the origin and purpose of the guide, as well as pointing out that the International Subcommittee on Stratigraphic Classification offers the Guide "as a recommended approach to stratigraphic classification, terminology, and procedure--not as a "code." Users should not feel compelled to follow it unless they are convinced of the logic and value of the stratigraphic classification, terminology, and procedures contained therein.

Following Chapter 1, the rest of the book is devoted to definitions of stratigraphic terms and units, naming of stratigraphic units, and the procedures to follow in establishing and revising stratigraphic units. The various stratigraphic units covered in detail in individual chapters include lithostratigraphic, unconformity-bounded, biostratigraphic, magnetostratigraphic polarity, and chronostratigraphic units. Stratotypes and type localities as well as the relationships between different types of stratigraphic units are also covered in separate chapters.

The second edition of the International Stratigraphic Guide contains several new chapters addressing topics that were not included in the 1976 first edition. Among these are unconformity-bounded units (Chapter 6) and magnetostratigraphy (Chapter 8). Interestingly enough, sequence stratigraphy is not covered other than a mention of it on p. 51 in the chapter on unconformity-bounded units. Another change from the first edition is the expanded coverage of igneous and metamorphic rocks throughout the book.

The Glossary at the end of the book provides a concise definition of various stratigraphic terms and concepts, as well as a reference to the pertinent section of the Guide for that term or a citation to an appropriate reference in the literature. There is also an extremely comprehensive Bibliography of publications relating to stratigraphic classification, procedure, and terminology.

This is an excellent reference book that should be in the library of all professionals that deal in any way with stratigraphy. It is also one of those reference books that all geology students should have. Dr. Amos Salvador (editor) is to be commended for the fine job he has done in preparing this second edition.

Ordovician K-bentonites of Eastern North America by D. R. Kolata, W. D. Huff, and S. M. Bergström. 1997. Geological Society of America Special Paper 313. Geological Society of America, 3300 Penrose Place, P.O. Box 9140, Boulder, Colorado 80301. 90 pages. \$46.00.

This Special Paper devoted to the Ordovician K-bentonites of eastern North America represents more than 20 years of research and incorporates information from outcrop and subsurface material, as well as published journals, industry reports, state and provincial geologic records, open-file reports, and theses. It is not intended to be a final, definitive report, but rather a progress report that will spur other researchers to further investigate Ordovician K-bentonites and their geological significance.

What are K-bentonites and why are they important? K-bentonites (also referred to in the literature as bentonites or metabentonites) are the potassium-rich clay beds resulting from the alteration of volcanic ash beds. There are at least 60 Ordovician-aged altered volcanic ash beds in eastern North America, covering an area of 1.5 million km². They range in age from Ibexian (Tremadoc-lower Arenig) to Cincinnati (upper Caradoc-Ashgill) with the greatest concentration in middle-Mohawkian (lower-middle Caradoc) strata. K-bentonites are important because they represent nearly isochronous rock units, having been deposited over large areas

during an instant of geologic time, and thus can be used for precise and detailed correlation. They therefore provide the framework for determining coeval lithofacies, relative rates of sedimentation between ash beds, and the timing of basin subsidence rates. In addition, such crystals as apatite and zircon contained in the K-bentonites can be used for isotopic dating of the beds and for providing absolute dates from which events recorded in sediments between K-bentonites can be placed.

As reflected in the thicknesses of the K-bentonites, a tremendous amount of volcanic ash and dust was blown into the atmosphere during the eruption of volcanoes along the southern coastline of Laurentia (present-day eastern coastline of North America) resulting from subduction of the Iapetus Ocean crust under Laurentia and its microcontinents during this time. Such eruptions may have resulted in climatic changes which possibly affected the biota.

After an initial discussion of the geologic setting where K-bentonites are found in eastern North America, a review of previous investigations follows. This Special Paper is then divided into eight sections in which all aspects of K-bentonites are covered. These topics are: Mineralogical and Chemical Characteristics, Clay Mineralogy, Biostratigraphic Framework, K-bentonite Distribution in Eastern North America (an extensive, detailed, and well-illustrated section taking up slightly more than half the volume), Regional Correlation of K-bentonites, Regional Cross Sections, Tectonic Setting and Origin of K-bentonites, Event Stratigraphic Implications, and a Summary and Conclusions.

As the authors point out in their summary, this study is just a first attempt at establishing a comprehensive K-bentonite stratigraphy for the Ordovician of eastern North America. Furthermore, there are other coeval beds in Alaska, South America, China and northern Europe, some of which may be equivalents of the beds in eastern North America. Hopefully, others will investigate these unique rocks which have such important stratigraphic implications.

Permian Stratigraphy and Fusulinida of Afghanistan with their Paleogeographic and Paleotectonic Implications by E. Ja. Leven and edited by C. H. Stevens and D. L. Baars. 1997. Geological Society of America Special Paper 316. Geological Society of America, 3300 Penrose Place, P.O. Box 9140, Boulder, Colorado 80301. 138 pages. \$45.00.

This Special Paper is an important addition to the body of knowledge concerning the Permian of Afghanistan. All stages of the Permian, from Asselian to Dorashamian, are present in Afghanistan based on the fusulinids studied. Furthermore, all of the fusulinid species recovered from almost all known Afghanistan Permian outcrops are described, including one new genus and 41 new species. Besides documenting the presence of extensive Permian Afghanistan fusulinid faunas, the authors use these faunas to compare the various tectonic zones present in Afghanistan and adjacent Pamir. In addition, the various fusulinid faunas suggest a variety of paleogeographic and paleoenvironmental settings for this region during the Permian.

This volume is divided into seven sections which include: an Introduction, Previous Studies, Permian Sequences and Exposures, Discussion and Analysis of Fusulinid Assemblages in Afghanistan and the Pamirs, Outline of the Stratigraphy and Major Features of Permian Sedimentation in Afghanistan and the Pamirs, Paleogeographic and Paleotectonic Implications, and a Systematics Paleontology section in which all new species and subspecies are described. In addition, a bibliographic citation, locality, geographic and stratigraphic distribution, and the number of

specimens examined is provided for all previously named species and subspecies in the Systematics Paleontology section.

This is a very useful volume for anyone working on Permian stratigraphy, fusulinids, or the paleogeography of Afghanistan as well as Tethyan regions outside of Afghanistan.

Roadside Geology of Maine by D. W. Caldwell. 1998. Mountain Press Publishing Company, P.O. Box 2399, 1301 S. Third Street W., Missoula, Montana 59806. 328 pages. \$18.00.

This latest addition to the extensive and well-received Roadside Geology Series by Mountain Press Publishing Company continues the excellent tradition of providing geological information on a state or region in an engaging, informative, and well illustrated format. Just as in the previous 19 Roadside Geology books, this one begins with an introduction to the geology, in this case, of Maine and its surrounding areas.

Maine's geology is placed within the context of the various Paleozoic mountain-building events such as the Taconic, Acadian, and Alleghanian orogenies. These orogenies were followed by the Mesozoic opening of the Atlantic Ocean, and during that period of time, Maine generally experienced erosion.

Maine's geologic record resumes with the onset of Pleistocene glaciation, some 1.6 million years ago, although only evidence of the last glacial advance (beginning about 40,000 years ago) is present in the state. The various types of glacial features are defined and discussed as they relate to the landscape of Maine. For example, did you know that Maine has the longest eskers (some continuing for more than a hundred miles) in the world? I didn't.

Following the introductory chapter on the Geology of Maine, the author, D. W. Caldwell divides Maine into four geographically distinct regions, and describes the geology along each region's major roads (and in some cases, as the author admits, some roads which are "a bit off the beaten track, poorly marked, and don't appear on ordinary road maps"). As with all of the Roadside Series books, each section is well illustrated with maps, diagrams, and black and white photographs. A Glossary, Additional Readings, and Index complete the book.

As you probably realize from my review of this and previous Roadside Geology books, I find these books to be excellent traveling guides for anyone interested in the geology of the area they are traveling through. I have used these books in my travels and my students are constantly borrowing them when they visit states for which one of these books is available. They are very reasonably priced and contain a wealth of information.

Geology Underfoot in Death Valley and Owens Valley by R. P. Sharp and A. F. Glazner. 1997. Mountain Press Publishing Company, P.O. Box 2399, 1301 S. Third Street W., Missoula, Montana 59806. 328 pages. \$16.00.

This book is divided into 30 individual vignettes, each of which tells the story of a particular geologic feature, relationship, or event within one of the most interesting and geologically diverse regions anywhere in the world -- Death Valley and Owens Valley, California. *Geology Underfoot in Death Valley and Owens Valley* is the latest (actually third) in the *Geology Underfoot* series (the previous two were: *Geology Underfoot in Illinois* and *Geology Underfoot in Southern California*—reviewed in April, 1995 AASP Newsletter, v. 28, no. 2:20).

Each chapter or vignette has a small box with directions on how to get to the particular area being covered, along with a map of the area under discussion. Each vignette is well written and illustrated

with numerous black and white photographs as well as diagrams and maps. The writing style is conversational and easy to follow, yet contains a lot of useful information. Some of the topics covered include: The Mojave River, Pleistocene Lake Manly and the Salt Pan, Desert Pavement and Desert Varnish, Ubehebe Crater, The Sailing Stones of Racetrack Playa, the Owens Valley Shock of 1872, Devils Postpile, and The Mono Domes, to name just a few. After reading this book for this review, my biggest regret is that I didn't go through my accumulated mail sooner (and seen this book) after returning from my semester's sabbatical in Australia. The reason? We drove through this area from Barstow to Lake Tahoe in June when visiting our families in California, and this would have been a great guide to have had on the trip. I'm not sure my family would have agreed, as we stopped enough times as it was. For \$16.00, you can't go wrong with this book if you are going to be in the area.

New Mexico Rockhounding - A Guide to Minerals, Gemstones, and Fossils by S. M. Voynick. 1997. Mountain Press Publishing Company, P.O. Box 2399, 1301 S. Third Street W., Missoula, Montana 59806. 320 pages. \$20.00.

New Mexico ranks as one of the best mineral, rock, and fossil collecting regions in the country, and this book lists and describes more than 160 mineral collecting localities and related sites of interest.

Following an Introduction, the book is divided into three parts. Part 1 covers the general topic of collecting in New Mexico with a section on the geology of New Mexico, mining, digging, and collecting in New Mexico, and collecting legality, safety, and responsibility. Part 2 lists and describes individual localities in New Mexico and what can be collected there. This section is organized geographically, detailing 29 of New Mexico's 33 counties. Specific instructions are given on how to reach the collecting site discussed. Part 3 lists the minerals of New Mexico and gives specific information about each one. The book concludes with a Glossary, References, and Index.

While this book contains a wealth of information on collecting sites, I was very disappointed in the quality of photographs throughout the book. As with other Mountain Press geology books, all the photographs (except for four plates of color photographs inserted into the middle of this book) are black and white. Unfortunately, these black and white photos are generally too dark or of poor quality. Several suffered from an annoying shadow (for example, p. 207, 238) or were just too dark to show anything (p. 261). On the other hand, the four color plates were very good, as were the many maps showing where various collecting sites were located.

If you are going to be going to New Mexico to collect rocks, minerals, or fossils, this book should prove useful in spite of the poor quality of photographs.

Treatise on Invertebrate Paleontology, Part L (revised), vol. 4, Mollusca 4, Ammonoidea by R. L. Kaesler (ed.). 1996. Geological Society of America, 3300 Penrose Place, P.O. Box 9140, Boulder, Colorado 80301. 393 pages. \$75.00.

This volume is a revision of the original Ammonoidea volume published in 1957. This volume is specific to Cretaceous Ammonoidea and is the fourth and final section of the revision of Part L. The other three sections (which haven't yet been published)

will be an Introduction volume, a volume on Paleozoic ammonoids, and a volume on Triassic and Jurassic ammonoids.

This volume is somewhat different from other volumes in the *Treatise* series in that it was prepared by a single author, Dr. C. W. Wright. As Dr. Wright notes in the Author's Preface, there have been six special developments since 1957 that have affected this revision. These include the recognition of dimorphism in almost all Cretaceous ammonoid families, the recognition of progenetic dwarf genera which are themselves dimorphic, advances in the understanding of suture ontogeny, intensive research and recollecting of classic faunas, resulting in increased understanding of phylogeny and stratigraphic relationships, and identification of aptychi as parts of ammonite jaws, but resisting placing them with particular species.

Another feature of this book that isn't present is the application of cladistic methods to the classification of various Cretaceous ammonite groups. As Dr. Wright points out, such an approach would result in the proposing of numerous new higher taxa for only part of the entire fauna, leading to serious problems in regards to the rest of group. Cladistic approaches to classification are thus ignored and the more traditional methods of classification used in the rest of the *Treatise* are followed in this volume.

This volume follows the practice of the rest of the *Treatise* in providing a detailed classification down to the genus level in the Systematic Descriptions section of the volume. A Cretaceous Correlation Chart and Stratigraphic Distribution of the Cretaceous Ammonoidea recognized in this volume is also provided, along with a Glossary of Morphological Terms, a References Section, and Index.

A Short History of Planet Earth: Mountains, Mammals, Fire and Ice by J. D. Maccougall. 1996 (Paperback Edition Publication Date 1998). John Wiley & Sons, Inc., New York, New York 10158. 266 pages. \$14.95.

As the title implies, this is a short history of Earth written primarily for nonscientists. As one would expect in such a summary-type of volume, the events of the past 4.6 billion years cannot be covered in detail. However, the major events are covered, albeit not in great detail, but with enough depth to satisfy the nonscientist and show how the geologic and biologic history of our planet is interconnected.

One of the features of this book that I like is the conversational style of writing and the posing of questions as topic headings and points of discussion within the various chapters. For example, in the chapter titled *Wonderful Life*, the author asks "Why did it take so long?" a question relating to why there isn't any fossil evidence of life prior to 3.5 billion years. Another topic covered by a question is "What causes global glaciation" a very pertinent and relevant question being asked by many people in relation to global climate changes.

The book is divided into 13 chapters with the first chapter (Reading the Rocks) being an introduction to Earth, its rocks, processes, interior, as well as the geologic time scale. The following chapters deal with the Precambrian, Paleozoic, Mesozoic, and Cenozoic eras, presenting a capsule geologic history, and emphasizing the biologic history for each era. Chapters 5 and 6 deal respectively with plate tectonics and geologic time, topics I would prefer to see introduced right away, rather than after a discussion of Precambrian history. The final chapter concludes with "What Comes Next? Geology and Man" and covers such topics as our finite natural resources, what is the danger of a meteorite impact, and the dangers to society from volcanic eruptions and earthquakes.

Overall, I found this book to be a good general overview of the history of Earth, written in an engaging style and one that examined such current topics as The Cambrian Explosion, and the different hypotheses concerning the various mass extinction events that have occurred during the past. A minor, and personal, complaint is that the titles of some of the various topics were too 'cute' for my taste. For example, "The Wild West" in chapter 9 refers to the Mesozoic mountain building episodes in the Cordilleran region of North America. This minor complaint aside, I found this an interesting and easy to read book that I would recommend to anyone wanting a general overview of Earth history. At \$14.95 it is also a bargain.

- Reed Wicander, Department of Geology, Central Michigan University, Mt. Pleasant, Michigan 48859

The Laboratory of Palaeobotany and Palynology (Utrecht)
goes Milankovitch
Marloes van Hoeve

The establishment of the astronomical timescale, which now extends back to nearly 12 Ma, opens new doors for palynological and palaeobotanical studies; firstly we can contribute to the general question of how the interaction between Milankovitch cyclicity, climate and depositional environment works and secondly we can place our general paleoenvironmental work within a more detailed time framework. At the Laboratory of Palaeobotany and Palynology in Utrecht so far three studies focus on these Milankovitch cycles: 1) >Palynology of the Miocene marine record of the Mediterranean=, 2) >Palynology of the Pliocene continental record of Ptolemais= and 3) >Stomatal analysis of oak leaves from a Miocene continental record=. Before we discuss these studies, I will first give a short introduction into the theory of Milankovitch. The climatic evolution of the earth during the Cenozoic largely reflects a trend towards lower temperatures and ice cap development of the polar regions, initially in Antarctica and later also in the Northern Hemisphere (e.g. Kennett and Barker, 1990). Superimposed on this long-term trend, the earth's climate has oscillated between cooler (glacial) and warmer (interglacial) periods. It has long been considered that these long and short term climatic oscillations are ultimately controlled by the variations of the earth's orbit around the sun. This theory was first expressed by Adhémar (1842), who suggested that the occurrences of the ice ages in the Pleistocene might be astronomically controlled. The works of Croll (1864) and Gilbert (1895) further elaborated the ideas of Adhémar, but notably after the studies of Milankovitch (1941) they became more generally accepted. Thereafter, these (cyclic) astronomically triggered climatic changes are known as Milankovitch cycles@.

The Milankovitch cyclicity depends on the interaction of gravitational forces in the rotating sun-earth-moon system as well as on the gravitational interactions with the other planets in our solar system. Such astronomical forces provoke changes in the eccentricity, obliquity and precession of the earth, with main periods of 400, 41, 23 and 19 kyr respectively (Berger, 1978). These variations are climatically important since they affect both the seasonal as well as the latitudinal distribution of the solar insolation (Berger and Loutre, 1993). For example, the caloric equator, the latitude at which the energy received from the sun is maximal, shifts with varying amplitude and frequency. This variation is largely defined by the cycle of precession and its modulation by the variation in eccentricity within limits of about 10°N and 10°S. At mid-latitudes (around 30°) the astronomical parameters produce different effects, such as changes in summer-

winter contrast and monsoon intensity. Toward higher latitudes (>40°) not precession but the effect of the varying obliquity is dominant (Berger, 1978).

Since astronomical cycles influence climate, and successively climate influences the sediment composition, it is not surprising that the latter can be related to the astronomical influence. The resulting sedimentation patterns (sedimentary cycles) can be preserved in the sedimentary record. This is the case when the sediment supplying mechanisms (e.g. erosion, tectonism and transport from land) as well as the sedimentary facies are sufficiently sensitive. Amplitudes and phases of these astronomical cycles of the past 12 Ma can be mathematically calculated (e.g. Laskar, 1990). Hence, if one knows which sedimentary cycle corresponds to which Milankovitch cycle, an accurate age-assessment of sediments deposited over the last millions of years is possible. Essential to this method is: a) the existence of an accurate time control based on magneto-, isotope and biostratigraphy in order to put an adequate number of datum points along sequences and b) a long enough time span represented (in outcrops/cores) to provide a reliable sampling of the cycles involved.

Palynology of the Miocene marine record of the Mediterranean (*A. Santarelli*)

Via a project named MIOMAR, the astronomical time scale has been extended into the Mediterranean Upper Miocene. Although rhythmically bedded sediments are widely exposed, (e.g. in Italy and Greece), the extension of the APTS Pliocene cycles in the Mediterranean could not easily be extended into the Upper Miocene because of the intervening Messinian evaporites and fresh to brackish water deposits. However, sections have been found where no such evaporites occur. In the framework of the MIOMAR project these marine land-sections, consisting of alternating marine marls and sapropels, have been selected for an integrated multilateral research.

Within the project, the Gibliscemi section on Sicily and the Faneromeni section on Crete were selected for a palynological investigation. Versteegh (1994) had already proven for the Pliocene that, by studying marine sediments in which continental (pollen and spores) and marine (mainly organic-walled dinoflagellate cysts) palynomorphs occur together, the relationships between astronomical forcing and paleoenvironmental changes can be recognized.

After reconstructing the dinocyst event biostratigraphy a detailed dinocyst-based sea surface temperature (SST) record has been established (see Fig. 1). The combined information, together with the available magneto- and planktonic foraminiferal biostratigraphy, indicate a Tortonian-lowermost Messinian age for the studied interval, including the Serravalian/Tortonian and the Tortonian/Messinian boundaries. This detailed stratigraphic record provides an unique opportunity to explore and improve the validity of the existing Tortonian dinocyst stratigraphy for the Northern Hemisphere.

By applying this stratigraphic record the astronomically calibrated time scale could be reconstructed and the APTS could be extended into the Tortonian. After the integration of the Gibliscemi and Faneromeni section with the Greek Metochia and Kastelli land sections, the characteristic sedimentary cycle patterns (sapropel/marl and CaCO₃ poor/CaCO₃ rich marl alternations) were correlated to the 65°N summer insolation curve La90 of Laskar (1990). This correlation provides age-assessments for all sedimentary cycles and for the recorded polarity reversals, planktonic foraminiferal and dinocyst events (Hilgen et al., 1995;

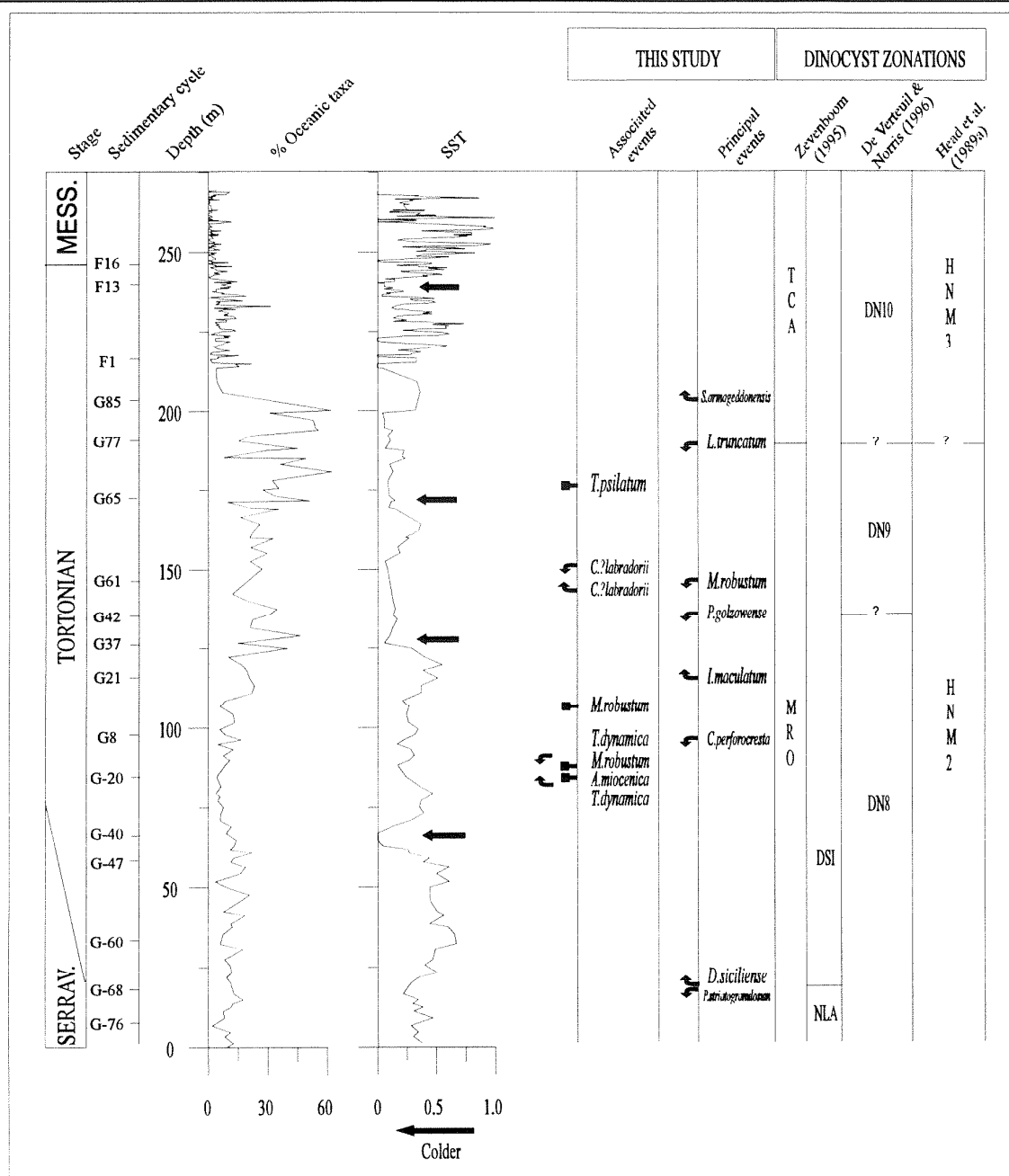


Figure 1: Biostratigraphic correlation of the dinocyst event stratigraphy in this study with other Tortonian dinocyst zonations from the Northern Hemisphere and (3 points average) values of the dinocyst based sea surface temperature (SST) proxy record. Arrows depict position of the major cooling events. Question marks indicate uncertainties in the biostratigraphic correlation.

see Tables 1-4). The Tortonian-Messinian boundary, placed at the first regular occurrence of the *Globorotalia conomiozea* group in the Mediterranean is dated at 7.24 Ma. The duration of the Messinian is thus estimated 1.91 Ma as the Miocene/Pliocene boundary has been dated previously at 5.33 Ma (Lourens et al., 1996).

Palynology of the Pliocene continental record of Ptolemais (*M.L. van Hoeve*)

At first sedimentary cycles were found in the marine record, exposed on land and in deep sea cores, throughout the Mediterranean Quaternary and Neogene. The latitudinal position, in combination with the semi-enclosed, land-locked configuration of the Mediterranean makes this area particularly sensitive to record astronomically induced oscillations in climate. The

geochronological application of the Milankovitch theory has resulted in the construction of a reliable Astronomical Polarity Time Scale (APTS) for the Quaternary and the Pliocene (e.g. Shackleton et al., 1990; Hilgen, 1991a,b). The APTS proved to be more accurate and to have much higher resolution than conventional time scales and has been successfully applied in paleoclimatic studies (e.g. Lourens et al., 1992; Versteegh, 1994).

Nowadays, Neogene sedimentary cycles have also been found in the continental record. Lacustrine lignite-marl alternations are exposed on land in deep open pit lignite mines in the intermontane Florina-Ptolemais-Kozani basin (NW Greece). High resolution multidisciplinary studies are now carried out on these sequences to determine long-term and short-term variations in the evolution of continental climate, depositional environments and ecosystems. The programme's approach includes integrated stratigraphy, sedimentology, palynology, palaeobotany, geochemistry and isotope geochemistry.

The typical lignite-marl cycles allow lithostratigraphic correlations between open pits in the entire mining area (Steenbrink et al., in prep). On the basis of these correlations the Ptolemais composite section was constructed. Results from magnetostratigraphic studies (Van Vugt et al, in prep) reveal three reversed and four normal polarity intervals in the composite. Absolute dates (the $^{40}\text{Ar}/^{39}\text{Ar}$ sanidine age of the volcanic ash layers and the assigned age of the associations of small mammals) indicate the upper normal interval to be the Cochiti subchron and the lowest normal polarity interval to be the Thvera subchron. The stratigraphic record indicates that the Ptolemais composite spans from 5.3 to 4.2 Ma and allows correlation of each lignite-marl alternation to the astronomical cycles of Laskar (1990). This Ptolemais composite section correlates well with the marine Rossello composite section on Sicily (see Figure 2). For the greater part of the section the number of lignite-marl couplets concurs with the number of precession related CaCO_3 cycles of the Rossello composite. This correlation confirms a precessional origin for the lignite-marl alternations.

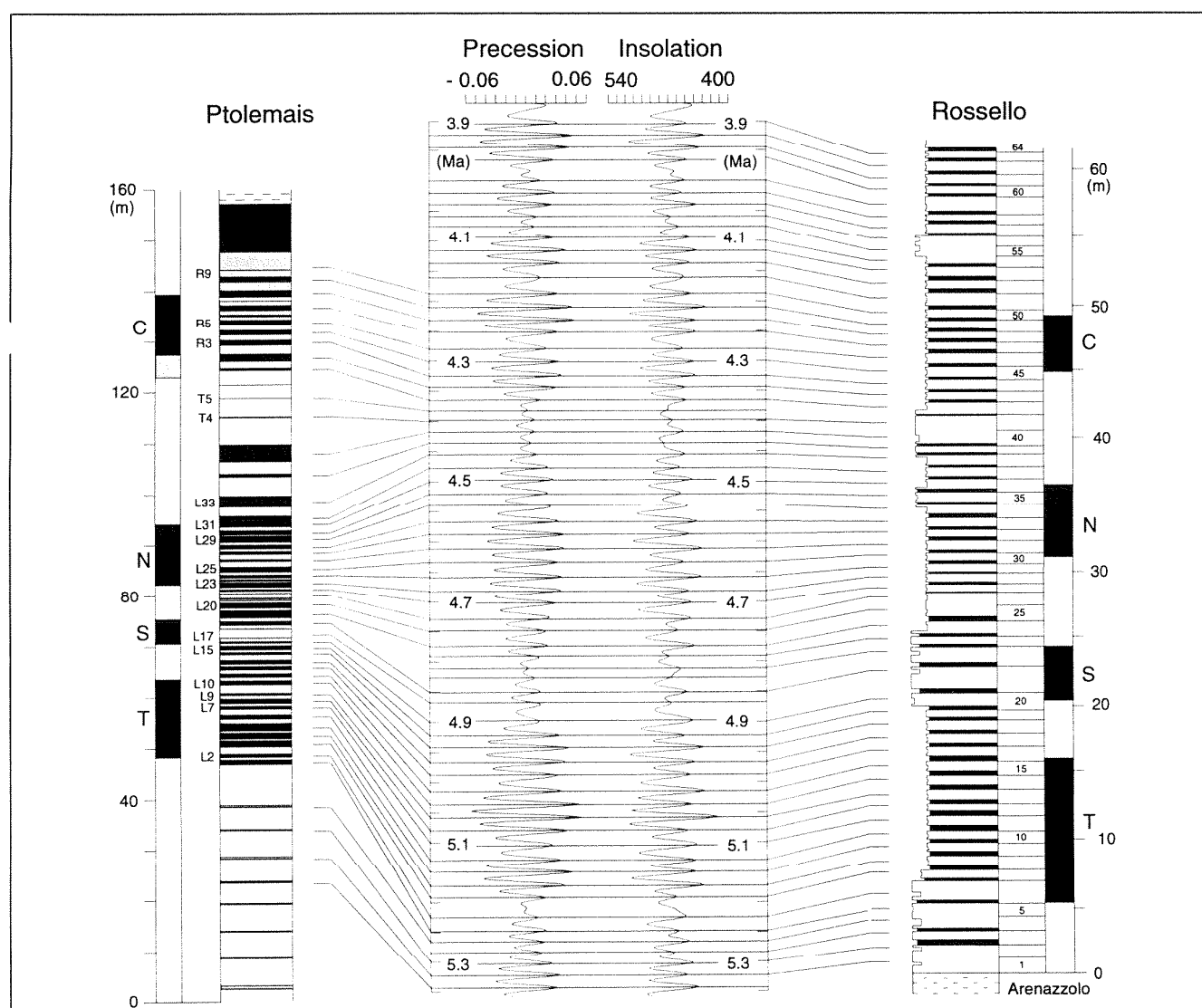


Figure 2. Continental (Ptolemais)- Marine (Rossello) Correlation. The subchrons: C = Cochiti, N = Nunivak, S = Situfall and T = Thvera (after Steenbrink and van Vugt)

Within this detailed stratigraphic framework, a palynological study is performed to detect terrestrial environmental changes and to link these changes to astronomically forced variations in the regional Mediterranean climate. Results on the upper part of the section indicate that the cyclicity of the lignite-marl alternations can also be recognized in the alternations of fungi and algae, palynomorphs that are indicative for certain depositional environments. The fungi, that dominate in the lignite, occur mostly in moist swamp-like environments (relatively low lake-level). The algae, dominating in the marls, occur in more open water environments (relatively high lake-level). In this way the depositional environment can be reconstructed; a lacustrine system with a lake-level that varies with the same periodicity as the precession cycles. In the lower part of the section the pollen signal shows an alternation of steppe elements such as Asteraceae, Chenopodiaceae and *Artemisia* in the grey marls, and a forest vegetation with *Cedrus*, *Pinus*, *Abies* and ultimately deciduous trees in the white marl. Such changes in vegetation are most likely related to changes in precipitation, whereby the steppe elements indicate relatively dry periods and the forest elements relatively wet periods.

Further study will focus on the combination of the local and the regional signal and will ultimately lead to the complete reconstruction of the depositional setting and climate, their interaction and their link to the astronomical forcing.

Stomatal analysis of oak leaves from a Miocene continental record (by E. Snel)

The relationship between cyclicity, climate and lithology was also studied in the Miocene sections of Lava (Greece). Here again it was determined that the lithological changes are mainly precession controlled. The study mainly focusses on the reconstruction of the prevailing climate during time of deposition of the alternating xylite and diatomaceous marls. Atmospheric CO₂ content is one of the factors controlling climate and, as it is closely related to global temperature, forms an important feature in paleo-climatic studies. Since variations in CO₂ levels lead to morphological responses of the vegetation, studying fossil plants can provide information on the paleoatmosphere. Particularly the stomatal index of leaf cuticles is an excellent tool, as it is directly (inversely) related to CO₂ level and it is hardly influenced by other environmental factors.

The stomatal analysis is carried out on Messinian *Quercus mediterranea* Ung. leaves that are derived from the xylite mines of Lava and Vegora in the Ptolemais Basin, North Greece. The main results are 1) comparison of the results from the fossil leaves with those of the herbarium material suggests that Messinian CO₂ levels are approximately equal to recent values and 2) leaves which have been collected in the dark xylitic beds from the rhythmically sedimentary successions of Lava and Vegora give consistently higher stomatal indices than the leaves from the lighter diatomaceous marls. Differences are rather small, not greater than 1%, but similar to the magnitude of the stomatal frequency response of *Quercus coccifera* L., the nearest living equivalent, to the 20th century rise in atmospheric CO₂.

These preliminary results may indicate a relationship between relatively high stomatal indices (and thus low CO₂ concentration) and organic-rich (xylitic) sediments which means deposition of the xylite in cold and dry periods corresponding to precession related insolation minima. These results are in agreement with the work of Steenbrink, van Vugt and van Hove (in press). As differences in stomatal properties between light and dark intervals are rather small, an extensive data set is needed, and further research should involve also other plant species.

References:

- Adhémar, J.A., 1842. Privately published.; Berger, A., 1978. *Jour. Atm. Sci.*, 35: 2362-2367.; Berger, A. and Loutre, M.F., 1993. *Quaternary Science Review*, 10: 297-317.; Croll, 1864. *Phil. Mag.*, 28: 121-137.; Gilbert, G.K., 1895. *Jour. Geol.*, 3: 121-127. Hilgen, F.J., 1991a. *Earth Planet. Sci. Lett.*, 104: 226 - 244.; Hilgen, F.J., 1991b. *Earth Planet. Sci. Lett.*, 107: 349-368. ; Hilgen, F.J. et al, 1995. *Earth Planet. Sci. Lett.*, 136: 495-510.; Kennett, J.P. and Barker, P.F., 1990. *Proc. ODP Sci. Res.*, 113: 937-960.; Laskar, J., 1990. *Icarus*, 88: 266-291.; Lourens, L.J. et al, 1992. *Mar. Micropaleontol.*, 19: 49-78.; Lourens, L.J. et al, 1996. *Paleoceanography*, 11: 391-413.; Milankovitch, M., 1941. Roy.Serb. Acad. Spec. Publ., 133: 1-633.; Santarelli, A., 1997, PhD Thesis; Shackleton, N.J., Berger, A. and Peltier, W.R., 1990. *Trans. R. Soc. Edinburgh*, 81: 251-261.; Versteegh, G.J.M., 1994. *Mar. Micropaleontol.*, 23: 147 - 183

AGENDA

Grazie al CAP website

<http://www.ualberta.ca/~abeaudoi/cap/cap.html>

1998

☞ August 31 - September 5 1998: 6TH International Congress On Aerobiology - Perugia, Italy. Includes sessions on "Fundamental Mechanisms in Aerobiology" convened by Franco Di-Giovanni (digi-sci@freespace.net) and Mervi Hjelmroos (mervih@ibm.net) and "Pollen as allergen carriers" convened by Estelle Levetin (el@centum.utulsa.edu) and Ann Cadman (106caa@cosmos.wits.ac.za).

Details: Giuseppe Frenguelli, Congress Secretariat freng@unipg.it
Web site: <http://www.fisbat.bo.cnr.it/AERO/News.html>

☞ September 5-7 1998: AMQUA 15th Biennial Meeting - Puerto Vallarta, Mexico. Theme: "Northern Hemisphere-Southern Hemisphere Interconnections". Details: Dr Socorro Lozano García, Instituto de Geología, Universidad Nacional Autónoma de México, Ciudad Universitaria, Apartado Postal 70-296, 04510, México D.F., México. Fax: +52 5 550 6644.

E-mail: AMQUAMEX@servidor.unam.mx

Website: <http://www.usu.edu/~amqua/>

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

E-mail: A.Bosch@nitg.tno.nl

Website: <http://www.nitg.tno.nl/eqmal/eqmal.html> (See the agenda)

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

☞ September 11-15 1998. CIMP Symposium 1998 - Pisa, Italy. Details: Organizing Committee CIMP '98, Università di Pisa, Dipartimento di Scienze della Terra, Via S. Maria 53 - I 56126 - Pisa, Italy. FAX: +39 50 500932 .

E-mail: albanii@dst.unipi.it

☞ September 21-25 1998: IAEG 1998 - 8th Congress of the International Association of Engineering Geology - Vancouver, British Columbia, Canada. Theme: Engineering Geology, A Global View from the Pacific Rim, Vancouver, British Columbia, Canada. Information: Ms Kim Meidal, Secretariat, 8th Congress IAEG, c/o BC Hydro, 6911 Southpoint Drive, Burnaby, British Columbia, Canada, V3N 4X8. Tel: (604) 528-2421, FAX: (604) 528-2558, E-mail: kim.meidal@bchydro.bc.ca

See <http://www.bchydro.bc.ca/bchydro/IAEG/IAEG98.html>

☞ September 29 - October 2 1998: The Spanish-speaking Palynologists Association (Asociacion de Palinologos de Lengua Espanola - APLE) 12th Annual Meeting - Leon, Spain. Details: Congress Secretary, Dr. Maria Amor Fombella Blanco, E-mail: dbvmfb@isidoro.unileon.es

Web site: <http://aple.usal.es>

☞ October 22-25 1998: Canadian Paleontology Conference - CPC-VIII - South-central Ontario, Canada. Details: Dave Rudkin (Convenor CPC-VIII), Department of Palaeobiology, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario, M5S 2C2, Canada. Tel: (416) 586-5592, FAX: (416) 586-5863, E-mail: davidru@rom.on.ca

☞ October 23-25 1998: British Diatomists' Meeting 1998 - Slapton Ley Field Centre (Field Studies Council), Slapton, Kingsbridge, Devon. Details: Ben Goldsmith, Environmental Change Research Centre, Department of Geography, 26 Bedford Way, London, WC1H 0AP, England, U.K. Tel: 0171 504 5536, FAX: 0171 380 7565,

E-mail: bgoldsmi@geog.ucl.ac.uk

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

E-mail: meetings@geosociety.org

☞ October 26-30 1998: International Geological Correlation Programme (IGCP) Project No. 396 'Continental shelves in the Quaternary' 3rd Annual Conference - National Institute of Oceanography, Dona Paula, Goa, India. Topics to be covered: Regional Perspectives; Palaeoceanography; Dating of shelf sequences; Seismic stratigraphy; Shelf processes; Geochemistry of sediments; Marine geotechnics; Non-living resources; Modelling. Details: Co-convenors Dr M. Veerayya and Mr K.H. Vora, IGCP 396 3rd Annual Conference, National Institute of Oceanography, Dona Paula, Goa, India. Tel: 221322 / 226253, Fax: 91(0) 0832 223340 / 239102,

E-mail: veerayya@csnio.ren.nic.in, vora@csnio.ren.nic.in. (At present there is a problem with csnio.ren.nic.in, hence you are requested to send your e-mails to: veerayya@darva.nio.org, vora@darva.nio.org)

Web site: <http://www2.env.uea.ac.uk/gmmc/index.html>

☞ October 27-31 1998: AASP 1998 Annual Meeting - Ensenada, Mexico. Details: Javier Helenes, CICESE, Departamento de Geologia, Ensenada, Baja California, Mexico. E-mail: jhelenes@cicese.mx, or Cristina Penalba, UNAM, Instituto de Ecologia, A. P. 1354, Hermosillo 83000, Sonora, Mexico, E-mail: penalba@servidor.unam.mx

Web site: [AASP Web site](http://www2.env.uea.ac.uk/gmmc/index.html)

N.B. The AASP fieldtrip is a geological-botanic transect from the western (Ensenada) to the eastern (San Felipe) coasts of Baja California. From coastal wetland, to chaparral, to conifer forests, to a cactacean forest in the desert, where we will probably see some of the tallest cactus in the world (cardon). It will take all day and lunch will be provided.

☞ November 10-13 1998: 18th International Symposium North American Lake Management Society (NALMS) - Banff Springs

Hotel, Banff, Alberta, Canada. Theme: Cooperative Lake and Watershed Management: Linking Communities, Industry and Government. Includes a special session on "Paleolimnology In Lake And Watershed Management" Details: Symposium Chair - Brian G. Kotak (kotak@compusmart.ab.ca), Program Chairs - Al Sosiak (asosiak@env.gov.ab.ca) or Everett - Fee (efee@telusplanet.net), Paleolimnology Session Chair - Ian D. Campbell, Canadian Forest Service, 5320-122 St. Edmonton, Alberta, T6H 3S5, Canada. Tel: 403-435-7300, FAX: 403-435-7359, E-mail: (icampbel@nrcan.gc.ca)
Web site: <http://www.biology.ualberta.ca/alms/1998.htm>

1999

☞ Date: April 1999. Fourth Symposium of African Palynology, Sousse University, Tunisia - Contact Prof. E. Roche, AIPA/IAAP Secretary, Musee de l'Afrique Centrale, Palynology, B-3080 Tervuren, Belgium. Fax. 32.4.366.53.38

☞ Date: TBA. Canadian Paleontology Conference - Calgary, Alberta, Canada.

☞ Date: TBA. International Botanical Congress - St Louis.

Laure Civeyrel and Annick Le Thomas are trying to organize a symposium on "Palynological Contributions to Phylogeny and Systematics" at this Congress. For more details on this symposium, contact Laure Civeyrel,

E-mail: civeyrel@isem.isem.univ-montp2.fr

☞ January 5-6 1999. QRA Annual Discussion Meeting - Department of Zoology, University of Cambridge, U.K. Title: 'Recent Advances In Quaternary Biostratigraphy'

The primary emphasis will be on the record from the British Isles, although evidence from further afield is also welcomed. It is envisaged that a wide range of taxonomic groups will be discussed, including vertebrates, pollen, plant macrofossils, molluscs, ostracods, beetles, chironomids and foraminifera. Details: Dr Danielle Schreve, c/o Department of Palaeontology, Natural History Museum, London SW7 5BD. Te: (0044) 0171 938 9258, Fax: (0044) 0171 938 9277,

E-mail: D.Schreve@nhm.ac.uk or Gill Thomas, Tel: (0044) 01242 543311, Fax: (0044) 01242 532997, E-mail: gthomas@chelt.ac.uk

☞ January 10-14 1999. Fourth Meeting of the World Archaeology Congress - Cape Town, South Africa. Theme: Global Archaeology at the Turn of the Millennium. Details: Carolyn Ackermann, Congress Secretariat, P.O. Box 44503, Claremont, 7735, South Africa. Tel: +27 (21) 762-8600, FAX: +27 (21) 762-8606, E-mail: wac4@globalconf.co.za or globecon@iafrica.com

Web site: <http://www.uct.ac.za/depts/age/wac>

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

E-mail: gacmac99@nickel.laurentian.ca

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

E-mail: tiercelin@univ-brest.fr

☞ June 1-5 1999: Canadian Association of Geographers (CAG) Annual General Meeting - Lethbridge, Alberta, Canada. Details: Dr. Robert Rogerson, Local Arrangements Committee Chair, E-mail: rogerson@hg.uleth.ca

☞ Date: days TBA, August 1999. CANQUA Meeting - Calgary, Alberta, Canada.

Conference website: <http://pc56.ss.ucalgary.ca/>

☞ August 3-11 1999: XV INQUA Congress. - Durban, South Africa. Theme: "The Environmental Background to Hominid Evolution in Africa". Commission on Palaeoclimate: Working group on Milankovitch and Plio-Pleistocene vegetation succession from 2.6 to 0.9 Ma: The INQUA working group of the Palaeoclimate Commission on "Vegetation successions at the scale of the Milankovitch cycles in between 2.6 and 0.9 Ma" will be represented by a morning symposium with invited speakers and an afternoon poster session on Long Pleistocene Records Friday 6th August 99, Symposium 6.4. Preference will be given to papers and posters with new high resolution data (at the Milankovitch and sub-Milankovitch scale), revising old interpretations and reviewing the recent progresses made in cyclostratigraphy. It is certainly not limited to palynology provided that detailed palaeoenvironmental data from continuous sections (marine or continental) are presented. For more information on this session, write to us: Dr Suzanne A. G. Leroy, Centre for Palaeoecology, School of Geosciences, Queen's University Belfast, Belfast BT7 1NN, N. Ireland. Ph: +44-1232-335 143 and 273 978; fax: +44-1232-321 280;

E-mail: s.leroy@qub.ac.uk.

<http://www.qub.ac.uk/geosci/admin/staff/leroy.html>.

See also Leroy, S., and Ravazzi C., 1996 - New working group within the INQUA commission on palaeoclimate: Searching for vegetation successions at the scale of Milankovitch cycles in between 2.6 to 0.9 Ma. Canadian Association of Palynologists Newsletter 19(1):26 -30 and look at the commission of palaeoclimate site: <http://inqua.nlh.no/comm/palclim.html> XV INQUA Congress details: Dr. D. M. Avery, Secretary-General, South African Museum, P.O. Box 61, Cape Town 8000, South Africa. Tel: +27-21-243330, FAX: +27-21-246716,

E-mail: mavery@samuseum.ca.za

See also <http://inqua.nlh.no/congress/congress.html>

☞ September 1999: VII International Symposium on Mesozoic Terrestrial Ecosystems - Buenos Aires, Argentina. Contact secretary: Georgina M. Del Fueyo, Museo Argentino de Ciencias Naturales "B. Rivadavia", Avenida Angel Gallardo 470, 1405 Buenos Aires, Argentina. Fax. 54.1.983.4151

☞ September 6-10 1999: 9th International Conference on Luminescence and Electron Spin Resonance Dating - Rome, Italy. Details: Scientific Secretariat, Dr. Emanuela Sibilia, Dipartimento di Scienza dei Materiali, Milano, E-mail: sibilia@mater.unimi.it or Organizing Secretariat, PR & Co., Roma, b.fersini@flashnet.it Web site: <http://www.mater.unimi.it/LED99/>

☞ September 13-17: 8th International Conference On Accelerator Mass Spectrometry - VERA Laboratory, Universitaet Wien, Vienna, Austria. Details: Conference Secretary Gabriele Kratschmann, Tel. +43 1 40480-700, FAX +43 1 4076200, E-mail: gabikra@pap.univie.ac.at

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

2000

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

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

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

☞ Date: TBA. Canadian Association of Geographers Annual Meeting - Brock University, St Catharines, Ontario

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

2001

☞ Date: TBA. GAC Meeting

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

☞ Date: TBA. Canadian Association of Geographers Annual Meeting McGill University, Montreal, Canada. A joint event arranged by the three Montreal universities in celebration of the 50th anniversary of the founding of the CAG.

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

2002

☞ Date: TBA. GAC Meeting

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

2003

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

EDITORIAL
Jan Willem Weegink

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

Artwork is absent in this issue, following my battle with a new superfast PC, new system and word-processing software, and their consequent inability to cooperate. It is normally not my intention to produce dull-looking pages.

INQUA Sub-Commission on Data-Handling Methods

From Newsletter 18: August 1998: African Pollen Database - an overview - Robert Marchant, Department of Geography, University of Hull, Hull HU6 7RX, UK, R.A.Marchant@geo.hull.ac.uk

Over the past four decades palynologists have collected records of vegetation change from many sites in Africa. Reconstructions of palaeovegetation changes, based on pollen records, now exist from essentially all biogeographic regions and vegetation types in Africa. With the ever increasing number of sedimentary sequences containing fossil pollen and radiocarbon data becoming available from Africa, there is a need to initially collate the information, and secondly, to interpret the data at a range of temporal and spatial scales. Indeed, the centralisation of palaeoecological data is an important aim of the International Geosphere-Biosphere programme (IGBP).

Pollen databases that aim to provide an ecological synthesis of pollen records at the continental scale have been established for North America since 1992, and Europe and Latin America since 1994. Pollen data is also held at a global scale within the Global Pollen Database, based at Boulder, Colorado. Following a BIOME 6000 meeting at the University of Lund in 1995, the African Pollen Database (APD) was established with its operational base at the

Laboratoire de Géologie du Quaternaire at CEREGE, Aix-en-Provence where it has been managed since 1996 under European Union support. This location was chosen as the base for the APD due to the considerable contribution made to African palynology from a number of personnel at this institute. CEREGE was also the base of the manager, Dr Hilaire Elenga whom has recently taken a post in Brazzaville, Congo. It is envisaged that the future management of the APD will be based at Brazzaville, with regional managers in eastern, northern and southern Africa. It is hoped this management structure will allow greater accessibility to the APD for indigenous palynologists, and enhance both the continental and regional understanding of African palynology.

With an increasing number of African palynologists, many without direct access to type-slide material, it is envisaged that an additional role of the APD will be to provide a flora of African pollen types; this would be accessed either through the World Wide Web, or in a hard format for those without access to the internet.

Data held within the APD is supplied as original counts with original taxonomic identifications - this raw format allows for the standardisation of percentage calculations in terms of the pollen sums used or other grouping of data required by different initiatives, such as the production of plant functional types for BIOME model simulations and data - model comparisons. This bringing together of data, from hitherto disparate research groups, makes it possible to standardise pollen data in terms of the nomenclature used for palynomorphs, the level of identification and to assess the degree of chronological control. For a full review of the data format see Leduc et al. (1998). In addition to being placed within a hierarchical database, all data held within the APD is available in TILIA format. As well as providing the ability to manipulate, analyse and graph stratigraphic data, the TILIA program is accessible to all participants. The APD currently contains 110 pollen records comprising 80 continental, and 30 off-shore records. Associated with these records are information on latitude and longitude, site descriptions, the available dating control and stratigraphy. In addition to this information, there is a bibliographic reference list and a dictionary of palynologists. Complimentary information, such as macro-fossil data, is also stored although other micro-fossil data such as diatom records are not held. Information held within the APD is available to palynologists working at the local, regional or global scales, archaeologists and environmental modellers. The data is available to non-profit making organisations and for research purposes. In terms of use, the original counts remain the intellectual property of the contributor with normal ethics applying to co-authoring of publications.

The geographic location of Africa in the tropical region, the extensive latitudinal range (70° of latitude) the high altitude range (0 to in excess of 5800 m) and the well developed archaeological record over a range of time-scales, highlights the importance of pollen records of vegetation history from this continent. The interpolation of these records at a continental scale will allow for inter-hemispheric and inter-tropical comparisons of vegetation response to climate forcing and the impact of human activity, with the European and Latin American pollen databases respectively. The standardisation of data from different researchers allows for direct data comparisons between sites and can fuel exciting developments within African palynology; such as that provided by the recent production of vegetation maps for 6000 and 18000 yr B.P. through the BIOME project. If, as recently has been the case, additional dating support is required to strengthen the existing chronologies for specific time periods, such as 18,000 radio-carbon years B.P. (the last glacial maximum), the holders of the original sediments can be contacted and offered further radiocarbon

support. Furthermore, the APD will promote scientific exchange and provide a platform for inter- and intra-disciplinary development.

It is hoped this exchange will prevent the duplication of work and allow for the strategic setting of future palaeoenvironmental investigations.

For more information regarding the APD please contact.

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Micropaleontological Reference Centers

The home page for Micropaleontological Reference Centers has been updated. In addition to, listings of Leg, Site, Core, Section, Top cm and Bottom cm for all foraminifer, calcareous nannoplankton, radiolarian, and diatom samples that are in the MRC holdings, the foraminifer collections database now includes depth below seafloor, area code, epoch, and a numerical age in Ma (for select Cenozoic samples). The radiolarian sample database has been updated by Annika Sanfilippo, with chronostratigraphic, biozone, and depth assignments for all radiolarian MRC samples from DSDP Leg 1-96 and ODP Leg 110-112. You can also find subepoch assignments and samples for all diatom (Legs 5-94) and select calcareous nannoplankton (Leg 1-36) MRC samples.

The age models used to determine numerical ages for foraminifer samples were generated by Michael Knappertsbusch (Natural History Museum, Basel) using Dave Lazarus' Age Depth Plot Program and linear interpolation between control points to arrive at samples ages was done with the Age Maker Program correlated with the Berggren et al. (1995) time scale. See the MRC home page for more details at:

<http://www-odp.tamu.edu/mrc/mrcenters.HTML>

For additional biostratigraphic information you can find downloadable range charts from DSDP Leg 11 to ODP Leg 114 at the Ocean Drilling Stratigraphic Network site:

<http://www.geomar.de/personal/twolf/SYNATLAN-home.html>

and for ODP Legs 104-146 at the ODP home page:

<http://janusaxp.tamu.edu/download/paleontology/>

Palaeontologia Electronica

The second issue of Palaeontologia Electronica (PE 1.2), the world's only electronic paleontological journal, is now available for FREE access by anyone with a WWW connection. The new issue features more technical papers, more editorials, more book reviews, more links to paleontological www sites--in short, more of everything.

PE 1.2 includes six technical articles that push the frontiers of integrated paleontologic research by utilizing many new approaches (e.g., full-color movies, interactive graphics, computer simulations) to address paleontologic research questions. All technical contributions have been rigorously peer-reviewed and are vividly illustrated, many with beautiful full-color graphics. Moreover, all technical papers are available in both html and pdf formats. Read the papers online or download them for later reading and/or printing.

Paleontologia Electronica encourages the discussion of the issues raised by these technical papers via (1) direct e-mail correspondence with the authors, (2) e-mail correspondence with the journal editors, and/or (3) postings to appropriate paleontological discussion lists (e.g., PaleoNet [PaleoNet@ucmp1.berkeley.edu], Vrtpaleo [vrtpaleo@usc.edu], Micropal [Micropal@ucmp1.berkeley.edu], Radfolks [radfolks@ucsd.edu]). Comments posted to the editors will be reviewed, submitted to the author for response (if necessary), and posted along with the article in a special "Discussions" section.

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All this (and more) makes Palaeontologia Electronica the place to come for the latest in on-line paleontology. Last, but not least, a summary of hit statistics and comments from readers of Vol. 1, Issue 1 confirms that Palaeontologia Electronica is well on its way to changing the nature of paleontological publishing. Come take a look at the electronic revolution in scientific publishing for yourself.

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Address changes and corrections

The correct address for Atinuka Akingbade is:

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Enough of this

