

AMERICAN ASSOCIATION OF STRATIGRAPHIC PALYNOLOGISTS



J.B. Riding

NEWSLETTER



September 2007
Volume 40, Number 3



A.A.S.P. NEWSLETTER

Published Quarterly by the American Association of Stratigraphic Palynologists Inc.

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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.

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Dr. David K. Goodman (awarded 2005)
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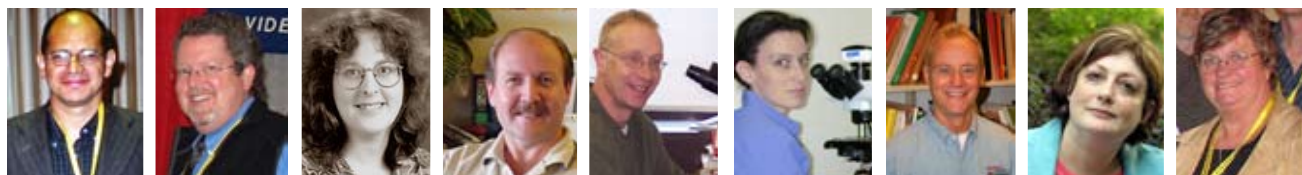
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Sophie Warny, Editor

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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. Deadline for next issues of the newsletter is **November 1**. All information should be sent by email. 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.**

PRESIDENT'S PAGE

By Carlos Jaramillo

The meeting in Panama is starting in less than two weeks. We have about 77 participants, twenty of them students, from 17 countries. My admiration goes to previous AASP meeting organizers, there is a lot of work involved, including hundreds of little details to take care of. We have sponsorships by BP, Ecopetrol, Chevron, ConocoPhillips, Exxon, and Statoil. We are very grateful to them to support our meeting and provide resources to help students attending the meeting. We will have a keynote speaker, Allen Herre, a world-expert on figs and fig-associated organisms, who will talk about the biodiversity in the tropics. There are two symposia, one on pollen morphology and phylogeny organized by David Jarzen, and the other on Cenozoic tropical vegetation dynamics organized by Vladimir Torres. There is also a number of talks about the Cretaceous-Tertiary boundary that look very interesting. We also have field trips to Barro Colorado Island, the Panama locks, and the Canopy Crane. We will give a free Sunday morning workshop, on analytical techniques for palynological analysis, using the free-share "R for Statistical Computing" software that can be downloaded from <http://www.r-project.org/>. There are already 15 people registered, the maximum allowed for this course.

Alfred Traverse will give a talk opening the meeting on the origins of AASP and how the first meeting was done, 40 years ago. He will also propose that AASP be renamed "The Palynological Society". We will have a discussion about this topic at the outgoing Board Meeting on Sunday afternoon. I totally agree with Al Traverse, our society has changed a lot since it was founded. Its geographical reach has changed, and the society is now a world-wide organization, with an important part of its members living outside USA. Its research interest has expanded. At the Panama meeting, we have talks from modern times to Paleozoic, from phylogeny to paleoclimate, honey, and the studies of mummies, clearly showing the diverse array of the research areas where palynologists are actively involved. Our journal *Palynology* is the premiere venue for palynological publication, not only in America, but worldwide. We are by far, the largest palynological association in the world, and we have maintained a constant production of books and special publications over the past 40 years. Our current name seems to convey only a segment of what our association is all about. "AASP, The Palynological Society" seems perfect to me. If you have another choice of a name, or do not want to change ours, please drop us a line.

At the time of this writing, we still do not have the results of the AASP 2008 elections and I do not know who is going to be the next president elect. I know, though, that Francine McCarthy will be the next AASP president at the Panama meeting. I am sure she will do an excellent job and I will help her in anyway I can to have a successful term. It was a privilege being the president of AASP and I look forward to continue serving our organization.

See you in Panama!

Bests

Carlos

2007 AASP STUDENT SCHOLARSHIP RECIPIENTS

Ilham Bouimetarhan - bouimetarhan@uni-bremen.de - University of Bremen



"Paleoceanographic and paleoenvironmental changes of the NW African region during the last 60 ka; palynological approach to land-sea correlation"

I obtained my Licentiate in Geology (Palynology and Palaeobotany) in 2001 from Rabat University, Morocco, where I also completed a MSc degree in 2004, studying the sustainability of Mediterranean coastal lagoon ecosystems under semi-arid climate (e.g. Nador Lagoon, NE Morocco). I have since become interested in how abrupt changes in precipitation can influence vegetation cover and fluvial discharge. The logical approach is to study proxies of environmental conditions such as temperature, salinity, fluvial discharge and vegetation in the fossil records offshore the area of interest.

I had the opportunity to participate in three scientific cruises on RV Prof. Logachev in the Mediterranean, RV Belgica offshore Morocco and two legs of RV Meteor offshore NW Africa.

I am currently undertaking a PhD project in the Research Centre Ocean Margins (RCOM / MARUM), University of Bremen, supervised by Dr. Karin Zonneveld, focusing on the short and long-term paleoceanographic and paleoenvironmental changes of tropical NW Africa during the last 60 ka and examining land-sea climatic linkages in relationship to the position of the intertropical convergence zone (ITCZ).

Palynological data from this area, a region of complex interactions between land, ocean and atmosphere are used to determine changes in both, the ocean and on the continent during the late Holocene. Currently, I am analysing organic-walled dinoflagellate cysts, pollen and spores from two well-dated marine sediment cores and 46 surface samples from the shelf and slope off NW Africa to reconstruct sea surface temperature, salinity and mixed layer depth, but also the vegetation development and hydrographic conditions on the nearby continent. In a later stage, results of this study will be compared with archaeological data from West Africa, especially the valleys of Niger, Mali and Senegal.

Nicolas Van Nieuwenhove - nvannieuwenhove@ifm-geomar.de
IfM-Geomar Leibniz-Institute of Marine Sciences, Kiel, Germany



"Holocene and last interglacial paleoceanography of the Nordic seas, based on dinoflagellate cyst assemblages."

I am a palynologist from a small country with a long tradition in palynology, Belgium. Most of my family and friends had no idea what I was talking about when I said I wanted to study geology, but I did, and in 2004 I obtained my Licentiate (Master) degree in Geology/Paleontology at the University of Ghent, Belgium. During a master-year at the University of Lille, France, I tumbled into the wonderful world of dinoflagellate cysts, and shortly after I moved to IfM-Geomar in Kiel, Germany to start my PhD-project.

My PhD, under the supervision of Dr. Henning Bauch and in cooperation with Dr. Jens Matthiessen, deals with dinocyst assemblages of the Holocene and Marine Isotope Stage (MIS) 5e, in the Greenland, Iceland and Norwegian (Nordic) seas. MIS 5e has good potential for providing scenarios for future climate

development, because of its assumed Holocene-like climatic conditions. The Nordic seas are an important area in this respect, because inflowing warm Atlantic water cools and sinks, forming cold deep-water and driving the Meridional Overturning Circulation.

So far, paleoceanographic reconstructions of MIS 5e in the area are mainly based on planktonic foraminifera and isotopes derived from them. However, planktonic foraminiferal assemblages show low species diversity at high latitudes, and can be affected by dissolution. Despite the fact that dinocyst assemblages provide a powerful alternative, good Holocene and last interglacial datasets of dinoflagellate cyst assemblages are (as good as) non-existent for the Nordic seas. My PhD-project aims to fill in this gap, by palynological analysis on a number of high-resolution sediment cores from key localities in the Nordic seas. Directly comparing the Holocene and MIS 5e dinocyst assemblages with one another and with foraminiferal, geochemical and IRD data, should allow to resolve the stability and intensity of interglacial conditions during MIS 5e in the Nordic seas, with respect to the Holocene.



PhD PROJECT IN SOIL FORENSICS

**ESR Kenepuru Science Centre, Porirua, WELLINGTON and
GNS Science Avalon, LOWER HUTT,
The Macaulay Institute, Aberdeen, SCOTLAND**

This is an exciting opportunity for a post-graduate student interested in undertaking a PhD in the area of Soil Forensics. The project would suit a flexible, self-motivated person with a research focus and the ability to work across a range of scientific disciplines including palynology, soil molecular biology and soil mineralogy. The project aims to further our understanding of the potential use and limitations of methods of biological analysis for soil evidence.

Soils are a valuable resource in forensic investigations because they contain signatures relating to origin. Soil analysis also has the potential to discriminate for use as critical evidence in forensic investigations. Soil is often found as trace evidence on clothing, vehicles, carpets, at crime scenes etc, but is rarely used, partly because of lack of awareness and access to appropriate expertise. This project will involve comparisons of established soil profiling methods such as palynology and mineralogy, with new methods such as molecular fingerprinting of soil microbial communities. At present there have been no published studies to assess whether these methods are complementary to each other and whether some methods may be more suitable than others for certain forensic applications (e.g. site specific matching). This PhD scholarship presents the opportunity to work on a collaborative research project with experts in the field of forensic palynology, soil microbial fingerprinting, and Forensic Scene Examination. The successful candidate will be registered at The University of Auckland in the Forensic Science Programme, Department of Chemistry. Experimental work will be carried out in Wellington at GNS Science and ESR, and a three month sabbatical will be spent at The Macaulay Institute (UK). A stipend of \$25,000 per year is offered to support fees and living expenses.

To apply for this vacancy please visit our website www.esrcareers.cri.nz
(refer vacancy 3/2/FHH)

For further details on this studentship contact Dr Douglas Elliot (Douglas.Elliot@esr.cri.nz)

Applications close 31st August 2007

MANAGING EDITOR'S REPORT...

Volume 30 of our journal *Palynology* was published during December 2006. It comprises ten research articles, and the proceedings of the 38th Annual Meeting in St. Louis, Missouri between September 18th and 22nd 2005. The latter includes the abstracts of talks presented at this meeting, the group photograph, and accounts of the six AASP awards presented at St. Louis. I would like to record my thanks to our Production Editor, Bob Clarke, for his input to this volume.

The 2007 issue of *Palynology*, volume 31, is virtually full at the time of writing; a provisional contents list is given below. I have also two manuscripts for final editing, two back with the authors for revision, and five with referees. This means that suitable manuscripts received now will be considered for volume 32 (2008).

During 2007, I have comprehensively revised the *Instructions for Authors* for *Palynology*. It has been placed on our website at <http://www.palynology.org/content/Palynology/astyle.pdf>. The intention is that an abridged version will be reproduced in *Palynology*.

Following a blank year in 2005 for issues of our Contributions Series, *Atlas of Pollen-Vegetation-Climate Relationships for the United States and Canada* was published in December 2006. This is AASP Foundation Contributions Series Number 43 (293 pages; 11 text-figures; 264 pages of vegetation maps and pollen plots). The authors are J. W. Williams and 13 others. The cover price is US\$48. Thanks are due here to Bob Clarke (production) and Vaughn Bryant (distribution) as always, and to Judi Lentin, the editor of the Contributions Series. No numbers of the Contributions Series have been published during 2007.

We are currently producing a reprint of the book *Palynological Techniques*, which was privately published in 1960 by Clair A. Brown. The initial production process is about to start, and we hope to republish this book during 2008.

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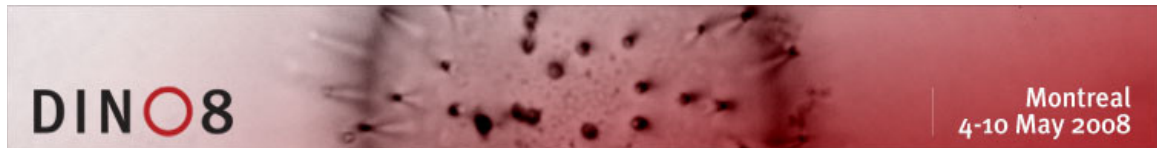
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E-mail: jbri@bgs.ac.uk or editor@palynology.org

Manuscripts for *Palynology* volume 31

To be published late 2007 as of 24th August 2007

- 1 *New species of dinoflagellate cysts from the Paleocene of the Anambra Basin, southeastern Nigeria*
By Hernan Antolinez, and Francisca E. Oboh-Ikuenobe
- 2 *Canada geese transported cultigen pollen grains to Crawford Lake from 14th to 15th century Iroquoian maize fields*
By J.H. McAndrews, and C.L. Turton
- 3 *Dinoflagellate cysts and the environmental evolution of the Oligocene to Lower Miocene, Site 1148, ODP Leg 184, South China Sea*
By Shaozhi Mao, Jie Li, Xiaodan Qin, Guoxuan Wu, and Rex Harland
- 4 *Melissopalynological studies from Oman*
By Alia M. Sajwani, Sardar A. Farooq, Elsadig A. Eltayeb, and Annette Patzelt
- 5 *Almond, pigweed, and melon pollen retention in the boll weevil (Coleoptera: Curculionidae)*
By Gretchen D. Jones, Shoil M. Greenberg, and Frank A. Eischen
- 6 *Validation of the Miocene fungal spore Mediaverrunites from Mizoram India*
By Bharati Nandi, and Atreyee Sinha
- 7 *An effective palynological preparation procedure using hydrogen peroxide*
By James B. Riding, Jane E. Kyffin-Hughes, and Bernard Owens
- 8 *Litosphaeridium too: two new dinoflagellate cyst species from the Cretaceous of California*
By Joyce Lucas-Clark
- 9 *A Mississippian (Early Carboniferous) palynological biozone for southern Gondwana*
By Valeria Perez Loinaze
- 10 *The acritarch genus Veryhachium Deunff 1954: taxonomic evaluation and first appearance*
By Thomas Servais, Marco Vecoli, Jun Li, Stewart G. Molyneux, Elena G. Raevskaya, and Claudia V. Rubinstein

Meeting announcement



DINO8: Eighth International Conference on Modern and Fossil Dinoflagellates

Montréal, Canada

4-10 May 2008

The Eighth International Conference on Modern and Fossil Dinoflagellates (DINO8: <http://www.dino8.uqam.ca>) is being organized by the Geochemistry and Geodynamics Research Centre (GEOTOP; <http://www.geotop.uqam.ca/>) and will be held at UQAM in Montreal from May 4 to 10, 2008. The conference will cover various fields of research relevant to the study of dinoflagellates including molecular biology, ecology, taxonomy, biostratigraphy, limnology, oceanography, paleoclimatology and paleoceanography.

Workshops are planned to provide hands-on knowledge on the taxonomy of Neogene and Quaternary dinoflagellate cysts, *in vitro* culture techniques, techniques of preparation and analyses, and quantitative data treatments for paleoceanographic purposes.

The preliminary program and information concerning registration are available on the internet at: <http://www.dino8.uqam.ca>

The organizing committee warmly welcomes students, researchers and professionals to attend DINO8.

Organizing committee:

Anne de Vernal (GEOTOP-UQAM)
André Rochon (GEOTOP and ISMER)

Contact: Taoufik Radi at: dino8@uqam.ca



News from India

To strengthen the mutual scientific cooperation between India and China, the 1st Sino-India International Conference on *Biodiversity and Environmental Changes in the Himalayas* was organized by Institute of Botany (Beijing) at Sanya, Hainan Province, China during March 28-April 01, 2007 in collaboration with Institute of Earth Environment (Xi'an, China) and Birbal Sahni Institute of Palaeobotany (BSIP, Lucknow, India) under the existing Scientific Exchange Programme between Indian National Science Academy (INSA) and Chinese Academy of Sciences (CAS). It was sponsored by the National Science Foundation of China, CAS, INSA, Department of Science & technology (DST, Ministry of S & T (Govt. of India), and People's Government of Sanya City. Mr. Haiyu Wu, Secretary General of People's Govt. of Sanya City formally inaugurated the Conference on 29th March. The Presidential Address was delivered by your correspondent Naresh C. Mehrotra, Director, BSIP. The conference was followed by an ecological expedition in and around the Sanya City.

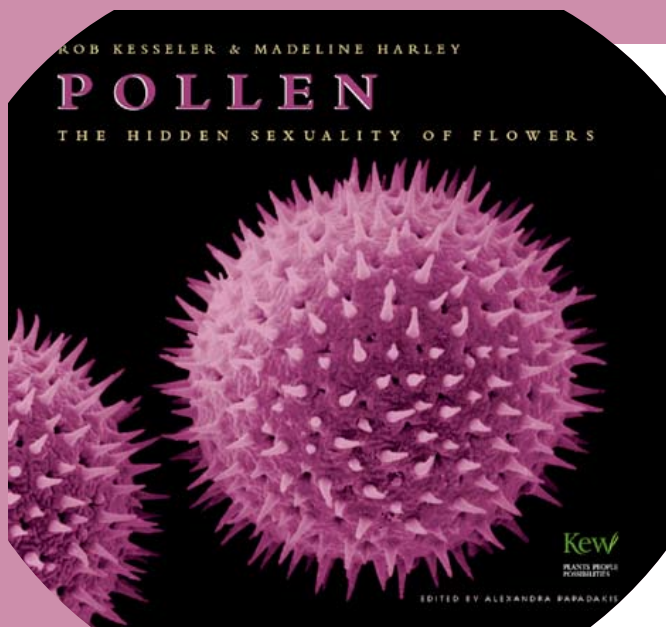
During the post-conference discussion to enhance the scientific co-operation between India and China, it was resolved to hold such meetings / conferences at regular intervals. It was decided to hold the 2nd Indo-China International conference on *Recent researches in Palaeobotany and allied disciplines and their impact on regional geological problems of the Himalayan belt* at BSIP (India) during November 2008, to be jointly organized by BSIP (Lucknow), Wadia Institute of Himalayan Geology (Dehradun) and Agharkar Research Institute (Pune). The conference is to be sponsored by INSA and DST (Govt. of India) and CAS. Key-areas identified for mutual cooperation in the near future are: Palaeobotany, Dendrochronology, Archaeobotany, Palaeoclimate, Biodiversity, and AMS and Carbon Dating.

This year our Institute is hosting a Symposium on *Palynology in Hydrocarbon Exploration* during November 14-15, 2007 and *XXI Colloquium on Indian Micro-palaeontology & Stratigraphy* during November 16-17, 2007.

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INDIA

Pollen: The Hidden Sexuality of Flowers

A book review by Alwynne B. Beaudoin, Royal Alberta Museum, Edmonton, Alberta



Pollen:
The Hidden Sexuality
of Flowers
by Rob Kessler and
Madeline Harley.
Firefly Books Ltd., 66
Leek Crescent,
Richmond Hill,
Ontario, Canada L4B
1H1. © 2006.
264 pages.
ISBN 1-55407-219-0.
\$60.00 (hardback).

As palynologists, we spend much of our working life peering down microscopes at pollen grains and so we know how beautiful and intricate these objects are. But trying to convey this fascination to museum visitors, students, or others outside science is difficult, mainly because the grains are so tiny and difficult to see and appreciate. The technology doesn't help, since many people are not comfortable with looking at material using a microscope. Relating the stuff seen under the microscope to something real is probably the biggest conceptual challenge facing anyone looking at a pollen slide for the first time. Visually disentangling the structural and textural features of the grains from the confusing complexity of mysterious blobs, shadowy forms and wavering lines seen through the microscope is tough, even when you think you know what you are looking at. It is at this conceptual step that good illustrations can be invaluable. This new book certainly provides a tremendous array of splendid illustrations. More importantly, the book makes an arcane subject seem interesting through its presentation of spectacular colourized images of magnified pollen grains as you have never seen them before.

This volume is the result of collaboration between an artist (Kessler) and a scientist (Harley) and uses the extensive botanical collections at Kew Gardens, England, where Harley is based. Although biology and science are not neglected, Kessler and Harley make it clear that the project was motivated primarily by artistic considerations. Therefore, their choice of pictures to include was driven by aesthetics, in other words, the specimens' visual and artistic qualities. Hence, sometimes imperfect, folded or crumpled grains were "chosen for their sculptural forms" (p. 9). They also found that "the choices provid[ed] starting points for discussion and reflection on [their] respective practices." Such discussions can be highly productive if both participants have an openness to challenge and a willingness to consider other perspectives, as, I feel, must have been the case here. However, Kessler and Harley emphasize that they did not set out to produce a textbook. Their intent was to produce a book that would allow readers "to enjoy and discover the extraordinary life and form of pollen grains" (p. 9). And in this they have succeeded magnificently.

This is a coffee-table book in the true meaning of the word: big, colourful, eye-catching, and well produced. Apart from the introductory and appendix material, where the font is painfully small, the text is generally clear and legible, although a few pages have light (e.g., lavender-coloured or pale green) text on a dark (black) background, which is hard to read. The book is modestly priced and good value for a large format book printed on high-quality glossy paper. (However, a word of warning: the sewn binding on my copy is deteriorating and the pages are coming loose after only a couple of readings. I suspect that this book is unlikely to withstand much handling or library use.) The volume weighs in at a hefty 2.4 kg and measures a generous 31.5 cm by 29 cm. It is definitely not a book you can curl up with, but this design provides plenty of real-estate for displaying the images.

And what images they are! Vibrant, detailed, highly coloured, and, generally, crisply captured. Pollen grains are visualized mainly through SEM, but some also by TEM and LM imagery, accompanied by stunning close-up photographs of flowers, both whole and sectioned. Most images occupy a full page, so that pollen grains generally appear 1000 to 2500 times larger than their actual size. When dealing with “small stuff,” scale is important and is often one of the most difficult things to get across to people. So I am somewhat ambivalent about the use of a scale factor (e.g., x1000) in the pollen image captions. I generally use a scale bar for exhibit material because people seem to find that more understandable, though I realise that in this project, for artistic reasons, it may not have been desirable. No scale information is provided for the flower or plant part images. Most of the raw black-and-white SEM images have been colorized, often with hues that mimic the originating flower or emphasize, in a kind of visual double-entendre, gaping orifices and protruding pollen tubes. Notwithstanding the subtitle of the book, there’s nothing hidden about the artistic direction or emphases in many pollen images. Generally, the pictures are of modern reference material, and so the grains are usually complete and not deteriorated. The images represent more than a hundred plant taxa, which are primarily from temperate ecosystems, though some are from tropical and subtropical taxa. Very few images of fossil or subfossil material are included.

The pictures in this volume are so arresting that it is easy to overlook the text, but that would be a mistake. The images act as a “hook” that should, I hope, lead people to read the explanatory and amplificatory material provided. Madeline Harley contributes a long essay (pp. 18 – 145), entitled “No Pollen – No Flowers; No Flowers – No Pollen,” describing the essential role of pollen in plant reproduction. Her discussion focuses on fundamental biology, explaining what pollen is, how it functions in plants’ reproductive cycle, and why pollen varies so much in form and structure. The explanation of basic flower structure as it relates to pollination and the discussion of pollen shape and structure are particularly noteworthy. She also explains how pollen is transported and illuminates the close relationship between pollen grain, transporting agent, and destination structure on the target plant. She delves only briefly into a discussion of pollinators and flower form and structure, and pollinators other than insects receive little attention. Honeybees are the “feature creature” in the pollination section. Harley also notes some applications of pollen studies, including detecting the origin of honey, forensic work for crime investigation, and investigation of plant history and evolution. The use of pollen studies for understanding climate or environmental change, which I would contend is the major application at present, gets short shrift, being mentioned in one sentence on p. 73.

Pollen: The Hidden Sexuality of Flowers - continued...

A book review by Alwynne B. Beaudoin, Royal Alberta Museum, Edmonton, Alberta

As you would expect from a senior scientist, this is an authoritative and informative contribution. It is a succinct but well-written survey and, notwithstanding the intent not to produce a textbook, serves as a fine introduction to pollen and its study. This chapter is wide-ranging and covers much important material, and is especially useful in explaining how pollen fits into plant life-cycles. I found it interesting and a good read. It is not, however, a beginner's text; the language level is often demanding and is most appropriate for fairly well-educated and scientifically-literate adults. Writing for non-specialists is extremely difficult and, with such a complex topic, it is hard to avoid technical terms. Nevertheless, I think some background material, written in simpler language, would have enhanced the appeal of a book that, at first glance, appears intended for non-specialist readers. For instance, many images were obtained using an SEM, which is not an instrument most readers will have seen or used. Yet many will likely be curious about how it works and is used for imaging. I think such detail would have enriched the presentation and added considerably to readers' appreciation for the pictures. This suggestion arises directly from my own recent experience in assembling a small exhibit of SEM images. "How does it work?", "What does it look like?" and "Why doesn't it take colour photos?" are common questions about the SEM. I also wish that Harley had emphasized more explicitly that pollen and seeds are not the same thing. This is one of the commonest misconceptions I find when talking to museum visitors; many think that plants grow directly from pollen and they are quite surprised when I explain that this is not so.

Rob Kessler provides two shorter essays, one discussing his reasons for exploring pollen as art ("Picturing the Invisible"), while the second is essentially a pictorial essay on "Pixilated Pollen." The first essay is especially interesting. Kessler locates his work within a long tradition of botanical art and illustration, tracing the lineage of pollen illustration from Nehemiah Grew in the late 1600s. He includes some fascinating engravings of pollen grains and flower structures from Kew's archives and other sources, including several by Carl Julius von Fritzsche from the mid 19th century, and provides comparative images he has captured of the same plant parts. What is truly remarkable about these engravings is how accurate in proportions and details they are, despite the fairly rudimentary microscope equipment available at the time. The engravings certainly demonstrate what can be done through close observation and patient study. Kessler explains how researchers during the last few centuries have tried to capture images of very small specimens, both with various photographic techniques and in drawings, such as those by R. P Wodehouse and Gunnar Erdtman. I was especially intrigued by some "magic lantern" slides of pollen grains captured by John Samuel Slater in the early 20th century (pp. 168 – 169).

Kessler also addresses the distinction between botanical illustration and botanical art. As he points out (p. 156), some have argued that "botanical illustration has little to do with art" because "[a]esthetic considerations are deemed inappropriate, anonymity of artistic expression an ideal, and beauty a pleasant but unimportant side effect." Not surprisingly, he takes issue with this viewpoint. For Kessler, I think, this is a distinction without a difference; the best illustration *is* art. As a museum curator involved in exhibit development, I would agree. The most accurate and detailed illustration will not convey information to the viewer unless it can also hold their attention so that they spend time looking at it. And they are not likely to do this unless it also has some attractive qualities and aesthetic appeal. Kessler

provides a thoughtful discussion of this tension between art and science and points out that, nowadays, there is a new rapprochement between the “two cultures.”

In “Pixilated Pollen,” Kessler sets out to transform “an exotic fusion of scientific knowledge and artistic interpretation into a personal *phytopia*” (p. 185). In this visual essay, Kessler mainly uses the device of paired related images, with a picture of the flower on one page and a colourized SEM image of the pollen grain on the facing page. The same layout was also used for many illustrations in Harley’s essay. I thought this pairing was very successful in making the connection between pollen grains and plants and conveying the message that pollen grains are not isolated entities but are part of an overall biological system. It is also extremely attractive to look at and I have already spent many hours entranced and absorbed in the pictures. These pollen images are both startling and truly fascinating and revelatory.

Despite a few criticisms, my overall reaction to this book is highly positive. The volume highlights the power of digital imagery and associated tools to make the natural world more accessible and attractive to a wide range of people. The variety and quality of material presented is impressive. The project represents a huge amount of work, time commitment, and thought from the authors. For the general reader, the pictures will provide a source of wonder and a window into a little-known aspect of natural history. For palynologists, the text will be informative and the images provide a valuable teaching and reference resource while also clearly illustrating many aspects of pollen morphology in detail. This book is an excellent addition to the small library of pollen textbooks as well as a superb addition to the larger library of botanical and scientific art books.



Paleopalynology,
2nd Edition
by Alfred Traverse
Series:
Topics in
Geobiology,
Vol. 28
2007, 814 p.,
210 illus.,
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Hardcover
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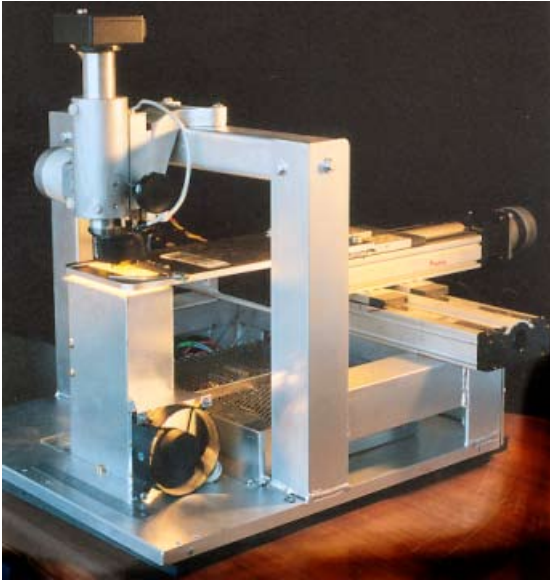
Paleopalynology 2nd Edition ... Now Available ...

Paleopalynology, second edition, provides profusely illustrated treatment of fossil palynomorphs, including spores, pollen, dinoflagellate cysts, acritarchs, chitinozoans, scolecodonts, and various microscopic fungal and algal dispersal bodies. The book serves both as a student text and general reference work. Palynomorphs yield information about age, geological and biological environment, climate during deposition, and other significant factors about the enclosing rocks.

Extant spores and pollen are treated first, preparing the student for more difficult work with fossil sporomorphs and other kinds of palynomorphs. Recognizing that palynomorphs occur together in rocks because of chemical robustness and stratigraphic distribution, not biological relationship, the central sections are organized stratigraphically. Among many other topics presented are the sedimentation and geothermal alteration of palynomorphs, and palynofacies analysis. An appendix describes laboratory methods. The glossary, bibliographies and index are useful tools for study of the literature.

Computer Program Replaces Palynologists?!

by D.M. Jarzen & V. M. Bryant



Every so often, an article appears in trade journals or newsletters, that champions some new computer program which has been developed to count and identify pollen and spores in slide preparations. This, the article argues, will be greeted with great joy by palynologists who will now be free to enjoy another cup of coffee. What they neglect to say is that "if the new counting systems really do work, then it will also force all of us to begin looking for another job!" At least to date, most of these computer-generated programs seem too good to be true, while others are considered too far off the wall to actually be of value to palynologists.

Recently a new system of automatic recognition of light microscope pollen images has been developed by Gary Allen (Massey University, Institute of Information Sciences and Technology, Palmerston North, New Zealand - see picture page 17) and associates. Allen and his colleagues plan to develop and popularize his new system through the manufacture of three prototype machines, which will be used to test the technique in palynological laboratories. In an effort to raise the needed capital for this project, Allen is surveying the potential need and likelihood of his equipment actually being used by palynologists around the world. The first phase of this effort is to reach a respectable number of palynologists and ask for their opinions and input. Thus far a few of us have been contacted by Allen, who has placed a survey of potential use on his website and asked people to visit it and express their views and fill out his short questionnaire. That web address is:
<http://autopollen.massey.ac.nz/Form/Survey.htm>

For the most part the equipment and program developed by Allen (a continuation of his Master's Thesis) appears workable and perhaps could be used in part to supplement our daily, routine, often very time-consuming, task of counting pollen and spores. Some of the several features of the system, as described by Allen on his website, include the recognition of known pollen images supplied by the user. Currently for each potential pollen type (genus or species) the computer is given 200 images that are taken in different orientations of the same pollen grain. Although not mentioned in Allen's article (Allen et al., 2006), we suspect the model for each series of 200 images is most probably a pristine pollen grain that has been acetolyzed, does not show any signs of corrosion, is not cracked or broken, not folded, and shows no visible signs of degradation. Once the computer is loaded with images of "probable" pollen types, the counting system uses standard prepared slides. Reports indicated that the automated identification and counting improves with the sparseness of pollen and debris on a slide, and overall with the cleanliness of the preparation. The captured images during counting are supplied in digital format, and are presented on a screen, however, real time viewing is available. The system can be adapted to perform other functions including size measurements and noting the abso-

lute location of objects on the slide for later revisiting using a conventional microscope. Magnification is 11x which, with a digital sensor, allows less than half a micron per pixel and 1 micron resolution.



Gary Allen and his associates certainly deserve our attention and perhaps this new system will correct some of the earlier problems encountered during previous attempts to use automated pollen counting systems. As early as the late 1960s, John Flenley of New Zealand began trying to adapt various systems to meet his goal of developing an automated pollen counting system. By the 1990s Flenley and his associates (Li & Flenley 1999) were applying neural networks analysis to automated pollen counting with limited success. Some AASP members may also remember that during the 1980s and 1990s several of the major petroleum companies believed that they could develop an automated pollen counting system that would not only replace their need for palynologists, but could also be shipped out as portable software and plugged into on-site laptop units, which could then examine slides of pollen and spores in processed core cuttings produced during actual drilling operations. To our knowledge, none of those attempts by the petroleum companies succeeded and eventually those plans were abandoned.

We have communicated by email with Gary Allen and we have posed a number of questions, which he believes are legitimate and which he believes can be resolved. We pointed out, as most of us know, the reality of a palynomorph assemblage (modern or ancient) is that many of the pollen and spores are crumpled, broken, or sometimes occur as small fragments. Others will be degraded beyond reasonable recognition. How, we asked him, will his system be able to recognize palynomorphs that are damaged in some manner?

Archaeologists, who face a similar problem as do palynologists in dealing with massive amounts of remains that must be tediously examined and cataloged, have also tried to find a way to computerize this process. During the mid-1990s, computer experts and a team of archaeologists spent years trying to find a way to program computers to recognize and identify small fragments of ancient pottery, dart and arrowheads, and pieces of chipped flint and stone from archaeological sites. Before they gave up they estimated that they would need approximately 1000 images of each "known item," which the computer could then use for comparison when viewing some new, "unknown item." Very soon the problem became one of data storage of the reference information and computer speed for conducting analyses.

The program designed by Allen and associates might be able to be used in some areas of palynology, where very broad areas of identification are useful and adequate. Perhaps it could be used in the collecting of airborne pollen samples where a program might be designed to separate and identify broad categories such as fungal, fern and pollen components. Nevertheless, we remain skeptical that this system, in its present form,

can be relied upon to examine critical samples. I (DMJ) can still recall when I was in the market for a new microscope while working at the Canadian Museum of Nature. The Nikon™ representative showed me his latest, top-of-the-line microscope that would automatically scan a slide and recognize a given form by its general shape. The Nikon representative set up the scope and after entering a few fossil forms, which I provided, into the microscope's databank, it began a scan of a slide presumable loaded with this particular pollen form. Admittedly, the scope did locate and provide coordinates for many of the forms sought, but it also missed many more because the pollen grains were partly covered by debris, or were in a different orientation than the true polar or equatorial views being used in the databank. Nikon is still trying to improve the system but has not yet succeeded.

The system as described by Allen and his associates is still in the very early stages of becoming a practical laboratory practice. The system can currently handle only 19 types of pollen forms, but with time this is expected to increase, with a trade off in processing time. A Powerpoint™ presentation describing the system and its various features may be seen at: <http://autopollen.massey.ac.nz/Documents/AutoStage.ppt>.

We remain skeptical that an automated computer system will soon eliminate the need for palynologists, and their day-to-day use of the microscope in making accurate palynomorph identifications. The human eye and thought processes are very sophisticated and over time (years of experience) may be honed to recognize and identify pollen, spores, dinoflagellates, acritarchs and other microfossils through a process that at least for awhile will never be duplicated by a computer. We doubt that Allen and his colleagues intend for their system to “replace” the human effort. Instead, what they envision is a new tool that might someday simplify a part of the laborious nature of our work. For this they deserve our applause. However, in the forensic work I (VMB) do, the wrong identifications of pollen and spores associated with criminal cases might send an innocent person to prison or release a guilty criminal. We think it may be a long time before automated pollen counting computers will be able to replace the skills and experience required of forensic palynologists.

The interested reader is directed to the following references, and the papers referenced within these publications.

Allen, G.P., Hodgson, R.M., Marsland, S.R., Arnold, G., Flemmer, R.C., Flenley, J. and Fountain, D.W. 2006. Automatic Recognition of Light Microscope Pollen Images. *Image Vision and Computing New Zealand 2006*, IVCNZ 06 proceedings pp. 355-360.

Langford M., Taylor G.E. and Flenley J.R., 1990. Computerized identification of pollen grains by texture analysis. *Review of Palaeobotany and Palynology*, 64: 197-203.

Li, P. and Flenley, J. 1999. Pollen texture identification using neural networks. *Grana*, 38: 59-64.

Ronneberger, O., Schultz, E. and Burkhardt, H. 2002. Automated pollen recognition using 3D volume images from fluorescence microscopy. *Aerobiologia* 18: 107-115.

Stillman E.C. and Flenley J.R., 1996. The needs and prospects for automation in palynology. *Quaternary Science Reviews*, 15: 1-5.

Straka, H. 1991, Computer aided identification of pollen and spores. *Grana*, 30: 605.



David Roubik

If you do not know about this website yet, and for those working on pollen in the tropics, this web site is a valuable resource!!!

<http://striweb.si.edu/roubik/>



Hello,

We, the makers of these plates for our book on pollen and spores of Barro Colorado Island, would like to give some working palynologists the chance to view them on line.

They are also available for "cutting and pasting", together with their names (see website).

If this helps to organize, classify and study these pollen and spore types, then we will have met our present goal- to make this information more accessible to all. We encourage users to inform us of any problems or suggestions concerning these photomicrographs. Their diagnostic traits and collection localities, along with keys, are available in the original book, published by the Missouri Botanical Garden in October, 1991.

[In the website, please note that the names in brackets are, to our knowledge, the senior synonyms that should replace names given in T. Croat's original book on the Flora of BCI]

Sincerely,

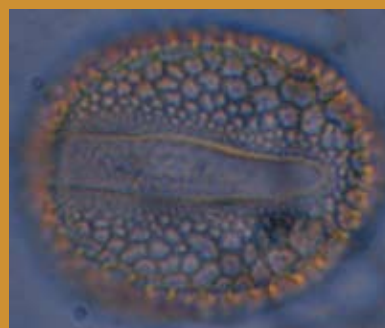
David Ward Roubik

Jorge Enrique Moreno Patiño

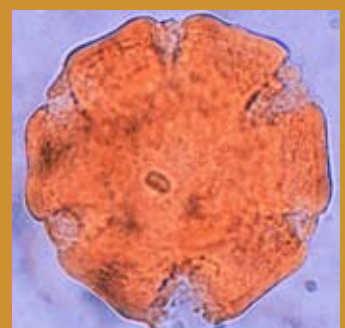
(Introduction reprinted from Dr. Roubik's website)



Cassia



Nautilocalyx



Clitoria

Recent AASP-Member Publications

compiled by Sarah de la Rue (sdelar1@lsu.edu)

It's been a busy summer for all of us, but the number and quality of palynology-oriented publications that are now available is quite rewarding! Please keep sending me your citations.....

Angiolini, L., Darbyshire, D.P.F., **Stephenson, M.H.**, Leng, M.J., Brewer, T.S., Berra, F., and Jadoul, F., *in press*. Lower Permian brachiopods from Oman: their potential as climatic proxies. *Transactions of the Royal Society of Edinburgh*. mhste@bgs.ac.uk

Angiolini, L., and **Stephenson, M.H.**, *in press*. Early Permian brachiopods and palynomorphs from the Alborz Mountains, north Iran and the Haushi Limestone, Oman: Evidence for palaeobiogeographic affinities. *Fossils And Strata*. mhste@bgs.ac.uk

Angiolini, L., **Stephenson, M.H.**, and Leven, Y., 2007. Correlation of the Lower Permian surface Saiwan Formation and subsurface Haushi Limestone, central Oman. *GeoArabia* 11: 17-38. mhste@bgs.ac.uk

Césari, S.N., 2007. Palynological biozones and radiometric data at the Carboniferous–Permian boundary in western Gondwana. *Gondwana Research* 11(4): 529-536. scsari@advancedsl.com.ar

Galfetti, T., Bucher, H., Ovtcharova, M., Schaltegger, U., Brayard, A., Brühwiler, T., Goudemand, N., Weissert, H., **Hochuli, P.A.**, Cordey, F., and Guodun, K., *in press*. Timing of the Early Triassic carbon cycle perturbations inferred from new U-Pb ages and ammonoid biochronozones. *Earth and Planetary Science Letters*. Peter.Hochuli@mcnet.ch

Garrison Jr., J.R., Brinkman, D., **Nichols, D.J.**, Layer, P., Burge, D., and Thayn, D., 2007. A multidisciplinary study of the Lower Cretaceous Cedar Mountain Formation, Mussentuchit Wash, Utah: a determination of the paleoenvironment and paleoecology of the *Eolambia caroljonesa* dinosaur quarry. *Cretaceous Research* 28: 461-494. dnichols745@comcast.net

Ghavidel-syooki, M., and **Vecoli, M.**, 2007. Latest Ordovician–early Silurian chitinozoans from the eastern Alborz Mountain Range, Kopet–Dagh region, northeastern Iran: biostratigraphy and palaeobiogeography. *Review of Palaeobotany and Palynology* 145: 173-192. marco.vecoli@univ-lille1.fr

Gómez, A., Berrío, J.C., **Hooghiemstra, H.**, Becerra, M., and Marchant, R., 2007. A Holocene pollen record of vegetation change and human impact from Pantano de Vargas, an intra-Andean basin of Duitama, Colombia. *Review of Palaeobotany and Palynology* 145: 143-157. hooghiemstra@science.uva.nl

Jacob, J., **Paris, F.**, Monod, O., **Miller, M.A.**, Tang, P., George, S.C., and Beny, J.-M., *in press*. New insights into the chemical composition of chitinozoans. *Organic Geochemistry*. Florentin.Paris@univ-rennes1.fr; mamiller@sahara.com.sa

Heimhofer, U., **Hochuli, P.A.**, Burla, S., and Weissert, H., 2007. New records of Early Cretaceous angiosperm pollen from Portuguese coastal deposits: Implications for the timing of the early angiosperm radiation. *Review of Palaeobotany and Palynology* 145: 39-76. Peter.Hochuli@mcnet.ch

Holzwarth, U., Esper, O., and **Zonneveld, K.**, 2007. Distribution of organic-walled dinoflagellate cysts in shelf surface sediments of the Benguela upwelling system in relationship to environmental conditions. *Marine Micropaleontology* 64: 91-119. zonnev@uni-bremen.de

Kershaw, A.P., Bretherton, S.C., and **van der Kaars, S.,** 2007. A complete pollen record of the last 230 ka from Lynch's Crater, north-eastern Australia. *Palaeogeography, Palaeoclimatology, Palaeoecology* 251: 23-45. peter.kershaw@arts.monash.edu.au; Sander.vanderKaars@arts.monash.edu.au

Khan, A. M. and **Srivastava, S. K.,** 2006. The paleogeographic significance of *Aquilapollenites* occurrence in Pakistan. *Journal of Asian Earth Sciences* 28: 251-258. sksrivastava@earthlink.net

Lenz, O.K., Wilde, V., and **Riegel, W.,** 2007. Recolonization of a Middle Eocene volcanic site: quantitative palynology of the initial phase of the maar lake of Messel (Germany). *Review of Palaeobotany and Palynology* 145(3-4): 217-242. wriegel@gwdg.de

Lindström, S., and **McLoughlin, S.,** 2007. Synchronous palynofloristic extinction and recovery after the end-Permian event in the Prince Charles Mountains, Antarctica: Implications for palynofloristic turnover across Gondwana. *Review of Palaeobotany and Palynology* 145: 89-122. sofie.lindstrom@geol.lu.se; s.mcloughlin@qut.edu.au

Liu, (C.)Y.-S., **Zetter, R.,** Ferguson, D.K., and **Mohr, B.A.R.,** 2007. Discriminating fossil evergreen and deciduous *Quercus* pollen: A case study from the Miocene of eastern China. *Review of Palaeobotany and Palynology* 145(3-4): 289-303. reinhard.zetter@univie.ac.at; barbara.mohr@rz.hu-berlin.de

Moss, P.T., and **Kershaw, A.P.,** 2007. A late Quaternary marine palynological record (oxygen isotope stages 1 to 7) for the humid tropics of northeastern Australia based on ODP site 820. *Palaeogeography, Palaeoclimatology, Palaeoecology* 251: 4-22. patrick.moss@uq.edu.au; peter.kershaw@arts.monash.edu.au

Mudie, P.J., **Marret, F.,** Aksu, A.E., Hiscott, R.N., and Gillespie, H., 2007. Palynological evidence for climatic change, anthropogenic activity and outflow of Black Sea water during the late Pleistocene and Holocene: Centennial- to decadal-scale records from the Black and Marmara Seas. *Quaternary International* 167-168: 73-90. mudiep@ns.sympatico.ca; f.marrett@liv.ac.uk

Oboh-Ikuenobe, F.E., **Benson, D.G.,** Scott, R.W., Holbrook, J.M., Evetts, M.J., and Erbacher, J., 2007. Re-evaluation of the Albian–Cenomanian boundary in the U.S. Western Interior based on dinoflagellate cysts. *Review of Palaeobotany and Palynology* 144: 77-97. ikuenobe@umr.edu; dbenson308@earthlink.net

Quintavalle, M., and **Playford, G.,** *in press*. Stratigraphic distribution of selected acritarchs in the Ordovician sub-surface, Canning Basin, Western Australia. *Revue de Micropaleontologie*. geoff@earth.uq.edu.au

Richter, D., Vink, A., **Zonneveld, K.A.F.,** Kuhlmann, H., and Willems, H., 2007. Calcareous dinoflagellate cyst distributions in surface sediments from upwelling areas off NW Africa, and their relationships with environmental parameters of the upper water column. *Marine Micropaleontology* 63: 201-228. zonnev@uni-bremen.de

Steenmans, P., **Wellman, C.H.,** and **Filatoff, J.,** 2007. Palaeophytogeographical and palaeoecological implications of a miospore assemblage of earliest Devonian (Lochkovian) age from Saudi Arabia. *Palaeogeography, Palaeoclimatology, Palaeoecology* 250(1-4): 237-254. p.steenmans@ulg.ac.be; c.wellman@sheffield.ac.uk; jfilatoff@yahoo.com

Stephenson, M. H., 2006. Developing countries must have good governance, but donors and lenders need to clean up their act as well. *AGID Journal of Geoscience and Development* 9: 9-10. mhste@bgs.ac.uk

Stephenson, M.H., 2006. Stratigraphic Note: Update of the standard Arabian Permian palynological biozonation; definition and description of OSPZ5 and 6. *GeoArabia* 11: 173-178. mhste@bgs.ac.uk

Stephenson, M.H., Angiolini, L., and Leng, M.J., *in press*. The Early Permian fossil record of Gondwana and its relationship to deglaciation: a review. In: Williams, M., Haywood, A., Gregory, J., and Schmidt, D., (Eds.), Deep time perspectives on Climate Change. *Geological Society, London, Special Publications*.. mhste@bgs.ac.uk

Stephenson, M.H., Leng, M.J., and Vane, C.H., 2006. Palaeolimnology of Palaeozoic lakes, focussing on a single lake cycle in the Middle Devonian of the Orcadian Basin, Scotland. *Earth Science Reviews* 77: 177-197. mhste@bgs.ac.uk

Strother, P.K., *in press*. A speculative review of factors controlling the evolution of phytoplankton during Paleozoic time. *Revue de Micropaleontologie*. strother@bc.edu

Umetsu, K., and Sato, Y., 2007. Early Cretaceous terrestrial palynomorph assemblages from the Miyako and Tetori Groups, Japan, and their implication to paleophytogeographic provinces. *Review of Palaeobotany and Palynology* 144: 13-24. f04j003d@mail.cc.niigita-u.ac.jp

Vajda, V., and **McLoughlin, S.**, 2007. Extinction and recovery patterns of the vegetation across the Cretaceous–Palaeogene boundary — a tool for unravelling the causes of the end-Permian mass-extinction. *Review of Palaeobotany and Palynology* 144: 99-112. s.mcloughlin@qut.edu.au

Versteegh, G.J.M., Blokker, P., Marshall, C., and **Pross, J.**, *in press*. Macromolecular composition of the dinoflagellate cyst *Thalassiphora pelagica* (Oligocene, SW Germany). *Organic Geochemistry*. gerardv@nioz.nl; joerg.pross@em.uni-frankfurt.de

Warrington, G., 2007. Palynomorphs from the Penarth Group (Rhaetian, Late Triassic) at outcrop in north-west Lincolnshire, England. *Proceedings of the Yorkshire Geological Society* 56(3):209-214. gw47@le.ac.uk

Willard, D.A., **Bernhardt, C.E.**, Brooks, G.R., Cronin, T.M., Edgar, T., and Larson, R., 2007. Deglacial climate variability in central Florida, USA. *Palaeogeography, Palaeoclimatology, Palaeoecology* 251 (3-4): 366-382. dwillard@usgs.gov; bechrist@sas.upenn.edu

Yang, X., Li, W., and **David J. Batten, D.J.**, 2007. Biostratigraphic and palaeoenvironmental implications of an Early Cretaceous miospore assemblage from the Muling Formation, Jixi Basin, northeast China. *Cretaceous Research* 28 (2): 339-347. david.batten@manchester.ac.uk

Zaviolova, N.E., and **Stephenson, M.H.**, 2006. The exine ultrastructure of *Plicatipollenites malabarensis* (Potonié et Sah) Foster, 1975. *Review of Palaeobotany and Palynology* 139: 241-252. mhste@bgs.ac.uk

Zonneveld, K.A.F., Mackensen, A., and Baumann, K.-H., 2007. Stable oxygen isotopes of *Thoracosphaera heimii* (Dinophyceae) in relationship to temperature; a culture experiment. *Marine Micropaleontology* 64: 80-90. zonnev@uni-bremen.de

Zonneveld, K.A.F., and Susek, E., 2007. Effects of temperature, light and salinity on cyst production and morphology of *Tuberculodinium vancampoe* (the resting cyst of *Pyrophacus steinii*). *Review of Palaeobotany and Palynology* 145: 77-88. zonnev@uni-bremen.de

PANAMA 2007

40th Annual Meeting, September 8-12, 2007

The 40th Annual Meeting of the AASP (<http://striweb.si.edu/aasp07>) will be held on Sept 9-12, 2007 at the Smithsonian Tropical Research Institute in Panama. The Smithsonian is located in Panama City; Panama is located at 9°N and borders Costa Rica and Colombia. The country is 50-120 miles wide and is bounded by 477 miles of Caribbean coastline and 767 miles of Pacific coastline. The temperature in Panama City is usually 80-85 °F (27 degrees °C) during most of the year. Much for the countryside is farmland, but large areas of forest remain in many regions. Close to the city, there are many Natural Parks to visit and explore. The capital, Panama City, is located on the Pacific coast next to the entrance to the Panama Canal. The city offers a wide choice of restaurants, hotels and some museums. Other large cities include Colon at the Caribbean entrance to the canal, and David, in the province of Chiriqui (for more information on Panama visit <http://www.panamainfo.com>). The Smithsonian Tropical Research Institute (STRI: www.stri.org) is a unit of the Smithsonian Institution, and one of the world's leading centers for basic research on the ecology, behavior and evolution of tropical organisms.

David Jarzen is organizing a symposium in Pollen Morphology and Phylogeny; and Vladimir Torres is organizing another one in Tropical Palynology. We also will have a special talk delivered by Al Traverse on the first meeting of AASP, 40 years ago. Also, on Sunday there will be a free, half-a-day workshop on Analytical techniques for palynological analysis, using the free-share "R for Statistical Computing" software that can be downloaded from <http://www.r-project.org/>. The course will focus on the basics of using R to perform statistical analysis. There is only room for 15 participants, and to participate you only need to register by writing to aasp07@si.edu and bring your own laptop with the software already installed.

A block of single and double rooms has been reserved in the Hotel El Panama for participants at the meeting (ask for the AASP 2007 rate). There will be an opening mixer on Sunday evening (September 9th) at the Hotel El Panama following a pre-meeting field trip to Barro Colorado Island, one of the research stations of STRI, or to the Canopy Crane at the Metropolitan Park in Panama City.

We have sponsorships by BP, Chevron, ConocoPhillips, Exxon, and Statoil, that will allow us to give more grants to attend the meeting, specially to students presenting at the meeting; preference will be giving to talks over posters. All you need to do is register by the early registration deadline and send an email asking to be included in the grant with your CV and proof that you are a student. We will send messages to those selected.

With the exception of keynote addresses, talks will be 20 minutes long (15 minutes for presentation and 5 minutes for questions). Information about registration, technical sessions, abstract submission, field trips and social events, and a tour to the Miraflores Locks at the Panama Canal can be found on <http://striweb.si.edu/aasp07>. Please direct questions about logistics to Audrey Smith (aasp2007@si.edu) and questions about the technical program to Carlos Jaramillo (aasp2007@si.edu).



American Association of Stratigraphic Palynologists 40th Annual Meeting

Panama

September 8-12, 2007

<http://striweb.si.edu/aasp07>

Hosted by the Smithsonian Tropical Research Institute

- a division of the Smithsonian Institution
- one of the world's leading centers for basic research on the ecology, behavior and evolution of tropical organisms.



Events

- Opening mixer
- Pre-meeting field trip to Barro Colorado Island or to the Canopy Crane at Metropolitan Park in Panama City
- Tour of the Miraflores Locks at the Panama Canal
- Short course on "R for Statistical Computing"



Guidelines

- Contributions accepted until July 5
- Student Financial Aid available
- Hotel rooms reserved at discount rate at the Hotel El Panama
- Additional information at <http://striweb.si.edu/aasp07>
- Contact us at aasp2007@si.edu

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