

July, 1992
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Volume 25, Number 3
J.K. Lentin, Editor

AASP 25th ANNIVERSARY YEAR

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MESSAGE FROM THE PRESIDENT

AASP NEWSLETTER EDITOR:

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The AASP NEWSLETTER is published 4 times annually. Members are ENCOURAGED to submit articles, "letters to the editor", technical notes, information about "members in the news" and information about job openings in the industry. Every effort will be made to publish all information received from our membership.

Deadline for the next newsletter, the last in 1992, is Oct. 15. Please send all information on computer disk in ASCII or Word Perfect format, if possible, if not - send a typed manuscript. 1992 is our Silver Jubilee - celebrating our 25th anniversary as an organization. We look forward to contributions from our membership.

NEW OFFICERS: AASP extends its thanks to all members who were willing to accept the duties for various offices and who ran in the 1992 elections. My congratulations to those who won. The new AASP officers for 1992-1993 are:

President Elect	Lucy Edwards
Secretary-Treasurer	Gordon Wood
Managing-Editor	David Goodman
Directors-at-Large	Martin Farley Martin Head

These officers will join the incoming President, Robert L. Ravn and Directors-at-Large Sarah Damassa and Arthur Sweet, who will be serving the second year of their two year term. I will be serving as past president.

NEW OPPORTUNITIES FOR PALYNOLOGISTS: The nearly universal corporate downsizing in the oil industry continues and has dominated the thoughts of many AASP members this year. While the palynologic staffs of many large oil companies are shrinking, new opportunities will develop for consultants as companies farm out an

increasing amount of their routine palynologic biostratigraphy.

Another new opportunity that may be on the horizon for federal, state and consulting palynologists is providing age dates for a joint federal and state mapping program approved by Congress on May 18th. The National Geologic Mapping Act of 1992 provides for the establishment of a National Cooperative Geologic Mapping Program within the United States Geological Survey. The purpose of this act is to expedite the production of a geologic-map database that can be applied to, among other things, land-use management, earthquake risk reduction, conservation of natural resources, groundwater management and environmental protection. Which states will be involved in the program is unclear at this time. Those that participate will have to match Federal dollars on a 1:1 basis.

The mapping will include paleontologic age and paleoenvironmental studies. The details of how, where and what kind of paleontologic studies will be conducted has yet to be determined. Implementation of biostratigraphic studies may vary from state to state. Many state geologists as well as AGI Geologic Advocate Craig Shifferies, worked hard to see that there was strong support in Congress for this much needed program. Paleontology is an important part of the program, thanks to their efforts.

NEW AASP BOOK TO BE PUBLISHED IN SEPTEMBER:

The AASP Foundation is about to publish a new, hard bound book entitled "Neogene and Quaternary Dinoflagellate Cysts and Acritarchs", edited by M.J. Head and J.H. Wrenn. This volume consists primarily of the papers presented at the Second Symposium on Neogene Dinoflagellates, which was held under the auspices of the Fourth International Conference on Modern and Fossil Dinoflagellates (Woods Hole, Massachusetts, April, 1989).

This 448 page volume contains 18 papers and 76 halftone plates dealing with dinocysts and acritarchs from Italy, the North Atlantic, the South China Sea, and the Bay of Bengal, just to name a few locations. The papers are a mixture of dinocyst and acritarch taxonomic, paleoenvironmental, biostratigraphic, and areal distribution studies.

The volume is at the printer now and will be available for purchase in September.

Cost: US\$ 40.00

An order form is attached to the end of this NEWSLETTER.

PARTING REMARKS:

This is my last Presidential letter to AASP members. I close it with my sincere thanks to all the members of the Board of Directors, the NEWSLETTER Editor, committee chairpersons and committee members who have served AASP during my tenure of office.

The AASP can only function because of the voluntary efforts of our members in these positions. We all owe them a debt of gratitude, though I think that each volunteer would tell you that they receive a great deal of satisfaction from having served AASP and its members in their various positions.

I encourage each of you to help the organization function by getting involved. Volunteer to serve on a committee, or to review manuscripts for the Managing Editor, or by submitting materials to the Editor of the NEWSLETTER. Since most committees are formed around the time of the annual meetings, please let me or President-Elect Bob Ravn know as soon as possible of your interest to serve AASP.

Finally, but not lastly, thank you for the honor that you bestowed on me by electing me the 25th President of the American Association of Stratigraphic Palynologists.

John H. Wrenn
President, AASP Inc.

H. TATE AMES

A Memorial

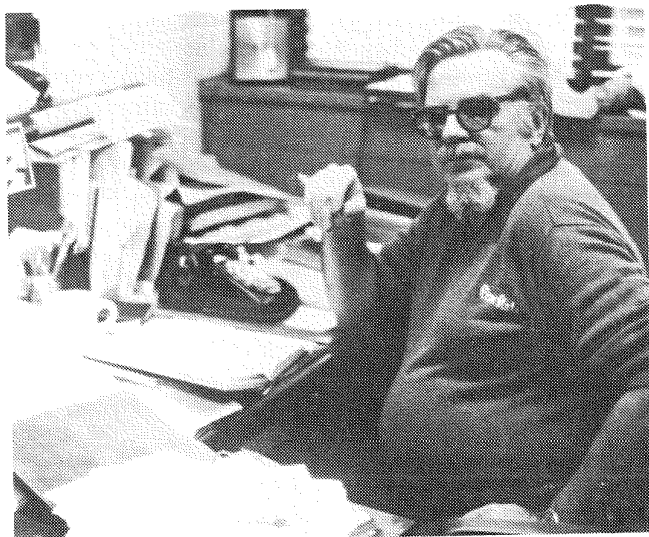
Herbert Tate Ames, former editor of the Catalog of Fossil Spores and Pollen, died in May at the age of 61. He had resided in State College, Pennsylvania, after retirement from The Pennsylvania State University in 1983.

Tate was born in Boston, Massachusetts, May 18, 1924. He graduated from Wesley Hills High School in Massachusetts and entered college at Brown University. World War II interrupted his studies, and he served in the U.S. Army Air Force. In 1948 he received an A.B. degree from Brown. In 1949 he entered the University of Massachusetts, where his career in palynology began.

At the University of Massachusetts, he studied palynology with L. R. Wilson, and in 1951 received his M.S. degree, having completed a thesis on "Plant microfossils in a Colorado Cretaceous coal." Tate's thesis dealt with the palynoflora of the Laramie Formation (Maastrichtian) near Como, Colorado. In his samples he came across a palynomorph of undescribed morphology that later came to be known as *Aquilapollenites*. Tate then attended Louisiana State University, where he began a Ph.D. dissertation on the palynoflora of the Wilcox Group (Paleocene and Eocene) in Louisiana. During that time he served as a geologist for Louisiana Wildlife and Fisheries, was Assistant Curator at the L.S.U. Geological Museum, and was briefly an instructor at Florida State University.

Tate joined the Penn State staff in 1956 as a Research Assistant in the Coal Research Section. There he served as Associate Editor of 41 volumes of the Catalog of

Fossil Spores and Pollen (CFSP) and four volumes of cumulative indexes to the CFSP, as Co-Editor of three volumes of the CFSP, and as Editor of two volumes of translations. The CFSP, which ceased publication in 1985, was at one time the primary source of taxonomic and nomenclatural information for stratigraphic palynology.



H. Tate Ames 1924-1992

Tate married Frances S. Silsbee, affectionately known as Brownie, who died in 1981. He and Brownie had two sons and two daughters. Tate was active in community affairs, especially with the Youth Services Bureau in State College, and was named a Volunteer of the Year by that organization.

While at Penn State, Tate functioned as an informal adviser, confidant, and friend to several generations of Penn State palynology students. His knowledge of the International Code of Botanical Nomenclature and its application to palynology was prodigious. Besides his work on the CFSP, he coauthored seminal papers on topics ranging from the definition of nomenclatural types to the palynostratigraphic dating of tectonic deposits.

Tate was a man of enormous generosity and personal warmth, witty and erudite, and given to earthy humor and trenchant observations on life. He may have been the finest, most human, being I have known, and I feel a great loss at his passing.

Douglas J. Nichols

LETTER TO THE EDITOR



Dear Editor,

AASP SHORT COURSE

A short course on the morphology, taxonomy, classification and geologic occurrences of fossil fungal palynomorphs was presented by Dr. William C. Elsik under the auspices of the AASP Short Courses Committee chaired by Martin B. Farley at the Adam's Mark Hotel in Houston February 26-28, 1992.

I was one of 12 participants who attended the course and I am glad I availed myself of the opportunity to take this course. Bill Elsik conducted the course itinerary with careful precision and logic. He steadily and fluently carried us from learning of the basic concepts in modern and fossil fungi, gradually taking us through morphological features for identifications and classification of fossil fungi, their geologic and stratigraphic occurrences, and finally culminating in a commentary on topics pertaining to biostratigraphic and environmental importance of paleomycological studies and their significance in the evolution of modern fungi. The lectures were accompanied by projected slides of drawings and figures selected from Bill's vast treasure of such collections and xerox hand-outs for a quick review and reference.

Bill's lectures were absorbing, informative and thought provoking. The lectures were followed by informal discussions in which Bill encouraged all attendants to get involved, and provided stimulus in Questions and Answers sessions for greater exchange of ideas and independent views. A vote of thanks to Mrs. Mary Lynn Mikeska Elsik is due for meticulously carrying out the responsibilities of handling the projector, circulating the hand-outs and maintaining daily schedules. Each participant received a binder of hand-outs. The binder provides a comprehensive and precious reference manual to those interested in pursuing paleomycological research. It contains 190 pages

of informative text on the morphology, taxonomy, classification and the geologic history of the fungi. Text-figures include those depicting the various aspects of fossil fungi including types of fungi, diversity of the fungi through time, and ranges of occurrences of fungal palynomorph genera. The 90-page extensive bibliography is compiled into a separate section and provides access to important literature on fossil fungi. Additionally, 200 slides of fossil fungal palynomorphs and a micro-floppy disk covering primarily the references to fossil and selected extant fungi are also included in the binder.

This course was a treatise to render vital facts of fungi, both modern and fossil, and to lead the paleomycologists, palynologists and paleobotanists into approaches and lines for further investigation in the subject. A suggestion for a repeat course is a positive indication of its merit and its usefulness to those pursuing research in fossil fungi.

Indeed, it was a learning experience so rewarding to all of us. I, for one, and am confident my colleagues as well, gained a great deal of vocabulary and information on fossil fungi given from Bill's preeminence in the subject matter achieved through his brilliant and outstanding professional career. I consider my trip to Houston was invaluable in terms of both money and time well spent.

Ramakant M. Kalgutkar
Institute of Sedimentary and Petroleum Geology
Geological Survey of Canada Sector
Energy, Mines and Resources Canada
3303-33rd Street, Calgary, Alberta, Canada
T2L 2A7

Dear Editor,

SOCIETY FOR PHYTOLITH RESEARCH FORMED

Much like the beginnings of AASP in 1967, a group of dedicated researchers interested in phytolith (silicon plant crystals) research have incorporated and formed a new professional society called *The Society for Phytolith Research*. The reason this announcement is being included in the *AASP Newsletter* is because of the growing importance of phytolith research and its related value to the field of palynology. During the last decade palynologists and phytolith researchers have begun to examine the same sets of core samples from many types of Quaternary deposits. They then have combined the data sets from both disciplines to develop highly-refined interpretive results. For this reason, palynologists might want to examine the benefits of using phytolith data, in combination with pollen studies, from many types of Quaternary deposits. Perhaps there would also be similar benefits for those working in Tertiary and older deposits as well.

If you want to join (\$10.00/year), or learn more

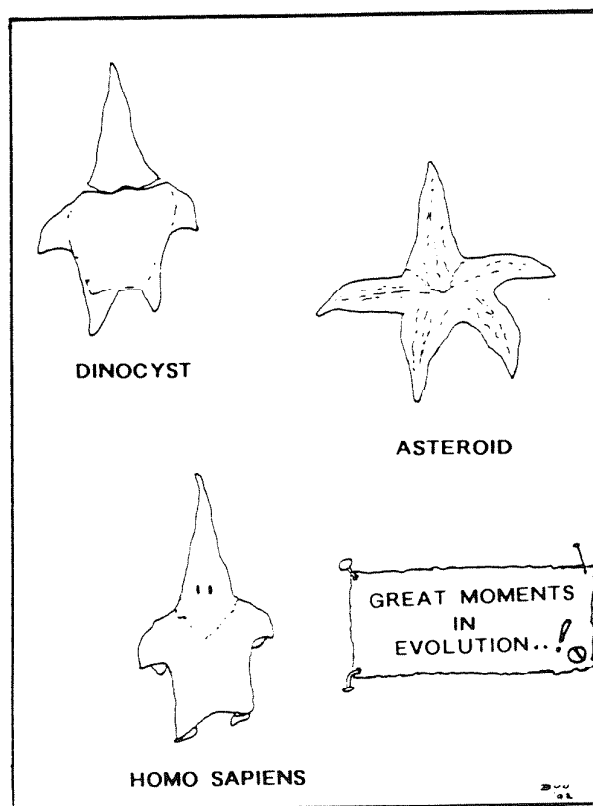
information about the Phytolith Society, please contact:

Dr. John Jones, Treasurer
The Phytolith Society
Smithsonian Tropical Research Institute
Unit 0948, APO AA
Miami, Florida 34002-0948

Although not all of our AASP members might be interested in joining this new society, some might be. More and more we are finding that a combination of phytolith and pollen data from Quaternary deposits form a very nice parallel and provide two data sets for the interpretation of fossil records. I believe that this type of combined approach is the wave of the future and this is why I believe that some of our palynologists might want to learn more about phytoliths and how to use the information.

As an aside, I wonder if anyone in the oil industry has ever thought of looking for phytoliths in the pre-Quaternary fossil record.

Vaughn M. Bryant, Jr.





NOTICE

AASP 25th ANNIVERSARY MEETING

The 25 annual AASP Meeting will be held this year at the International Palynological Congress in Aix-en-Provence. The luncheon meeting will be held Thursday, September 10, 1992, at the Pullman Roi René Hotel. According to the latest figures, 160 members have reserved to attend the lunch meeting. It may be one of the largest annual meetings in our 25 year history.



A COURSE ON PALEOGENE DINOFLAGELLATE CYSTS

Directly following the DINO V Conference, Graham Williams, Lew Stover, Sarah Damassa and Henk Brinkhuis will jointly present a 5-day course on Paleogene

dinoflagellate cysts. The course will be held at the University of Utrecht.

Course dates are **Monday April 27 to Friday May 1, 1993.**

The course will concentrate on stratigraphy and paleoecology. A well-documented manual, including e.g., line-drawings and range charts, will be available for the participants.

The fee for the course is set at US \$550 - exclusive of accommodation and evening meals, with a minimum of 15 participants. The maximum number of participants is 24.

You can obtain more information and/or ensure your participation by sending a letter or fax to:

Henk Brinkhuis
LPP Foundation
Lab. Palaeobot. Palynol.
University of Utrecht
Heidelberglaan 2, 3584 CS Utrecht
The Netherlands
Fax: +31.30.535096

You can submit an international money order to ABN-AMRO Bankaccount no. 46.50.04.512 of the LPP Foundation, indication: "Paleogene Course 1993", or pay at arrival. Henk Brinkhuis can make hotel reservations (in Utrecht) if wished for.

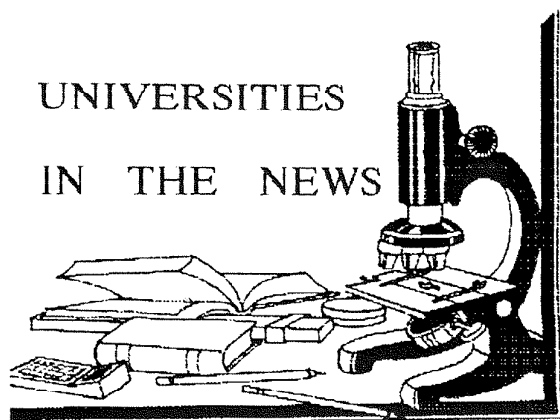
HELP WANTED

The AASP Short Course/Workshop Committee would like to receive comments from the membership about possible short courses and workshops which may be held in conjunction with either the Baton Rouge (1993) or College Station (1994) Annual Meetings. We have received some suggestions for courses: Repeat of Bill Elsik's Fungal Palynomorph Course, Processing Techniques, Chitinozoans, Cenozoic pollen, Cenozoic dinoflagellates, Acritarchs, and Statistical Techniques. This list has been suggested by those who would like to take the courses, so instructors have not been identified. We would appreciate suggestions for other courses or volunteers or suggestions for instructors. We would also like to know what length is considered reasonable for short courses/workshops and whether formal short courses or more informal workshops are preferred.

Please address comments to:

Dr. Martin Farley
Exxon Production Research Co.
P.O. Box 2189
Houston, Texas 77252

UNIVERSITIES IN THE NEWS



THE TECHNICAL UNIVERSITY OF BERLIN

REPORT ON THE PALYNOLOGY WORKING GROUP

The establishment of the pre-Quaternary palynology working group at the Technical University of Berlin (TUB) is a relatively recent development which can be traced back to the year 1981 when an HF laboratory was installed in the TUB office and laboratory complex at Ackerstrasse. This complex is situated in the old West Berlin working-class district of Wedding. It is in a former factory building which was reconstructed to house, among others, the (then) newly established research project "Geoscientific Problems in Arid Areas" (= Sonderforschungsbereich 60; project leader, Prof. Dr. Eberhard Klitzsch). Funding for the Arid Areas Project was provided primarily by the German Research Foundation (DFG) to further interdisciplinary geoscientific research in the arid and semiarid areas of NE Africa.

In an early phase of the African research project it became evident that organic-walled microfossils could contribute valuable stratigraphic and palaeoecological information. In the beginning the project was a one man program started by Dr. Eckart Schrank who provided the nucleus to attract further funding for palynologists and technicians.

PALYNOLOGICAL AND PALAEOONTOLOGICAL RESEARCH WITHIN THE AFRICA PROGRAM

In the arid areas of NE Africa Phanerozoic fluviatile to marine sandstone/shale sequences (the former "Nubian" series) have a wide distribution. In this situation palynofossils may be excellent biostratigraphic tools in the subsurface while macroplants, trace fossils and invertebrates are the major biostratigraphic markers in the surface

sections. During the past decade, numerous field trips in Egypt and the Sudan yielded one of the largest macrofossil collections of the area. The macroplants have been, or are still, investigated in cooperation with French palaeobotanists: the late Dr. Annie Lejal-Nicol (foliage) Nicole Vaudois-Miéja (fruits and seeds), and Bernadett Giraud (woods). A compilation of the most important micro- and microfloristic results, with respect to their importance to plant biostratigraphy and palaeoclimatology is in preparation (E. Schrank).

At present four African Ph.D. students are preparing palynological theses at the Technical University of Berlin:

Awad, Mohamed Z., University of Khartoum: Stratigraphy, palynology and palynofacies of Jurassic through Tertiary nonmarine sediments from central Sudan.

Dina, Alphonse, University of Tananarive: Jurassic and Cretaceous dinoflagellate, pollen and spore assemblages from Madagascar.

Ibrahim, Mohamed, Alexandria University: Dinoflagellates, pollen, spores and foraminifera from northern Egypt.

Kholif, Suzan E.A., Alexandria University: Jurassic dinoflagellates, pollen and spores from northern Egypt.

These Ph.D. projects are funded by the German Academic Exchange Service (DAAD), the German Research Foundation (DFG) and by the Egyptian Government (Channell System). Technical facilities are provided by TU Berlin, supervision is done by E. Schrank.

Other palynological work within the framework of the African Arid Areas Program include the following:

Dr. Otfried Hankel, Permo-Triassic to lower Jurassic (Karoo) palynology, biostratigraphy and phytogeography of East Africa, including Madagascar.

Dr. Eckart Schrank, Cretaceous palynology of Egypt, Sudan and Somalia.

FURTHER PALYNOLOGICAL RESEARCH AT THE TU BERLIN

The appointment of Prof. Dr. Bernd-Dietrich Erdtmann to the TU Berlin in 1987 brought, among other things, new palynological facilities and a new Palaeozoic dimension to the current palynological research. At present the following colleagues are active in the Erdtmann group:

Rainer Brocke, on acritarchs from the Ordovician of China, a Ph.D. thesis in preparation;

Dr. Thomas Heuse, on acritarchs from the weakly metamorphic Proterozoic/Early Palaeozoic of Germany;

Dr. Andreas Hoffknecht is working on the maturity of organic walled fossils from China and Germany;

Michael Steiner is doing a Ph.D. research on Precambrian/Cambrian acritarchs and other algae from China;

Ivo Paalits on the Ordovician/Silurian palynomorphs from the Hercynian basement of southeastern Germany.

UNDERGRADUATE PALYNOLOGY TEACHING

Some basic information on the main palynological groups is integrated in a palaeobotany lecture given regularly by E. Schrank during the summer semester. This is supplemented by a palynological technique, laboratory and microscopy course during the winter semester.

FACILITIES

In the Ackerstrasse complex there are two laboratories with four fume hoods which are used by the palynology group. The optical equipment includes several Leitz microscopes, among them a research microscope (Ortholux II POL, interference contrast objectives and a variomat camera). Additional light and electron optical facilities are available in the central Electron Microscopy Department of the TU Berlin. Inorganic and organic chemical analysis is supported by the geochemistry group of the African project which has access to modern analytical equipment such as AAS, ICP and IR spectroscopy.

The Rushdi Said and Coy H. Squyres libraries which provide basic geological information on northeastern Africa are kept in the Ackerstrasse office complex. A wide variety of relevant literature is available in the libraries of the three Berlin universities, the Technical University, the Free University and Humboldt University. Furthermore the (former Prussian) State Library, the libraries of the Botanical Garden and that of the former Academy of Sciences offer a host of useful books. However, the personal reprint collections in the Ackerstrasse complex remain probably the most important source of palynological information.

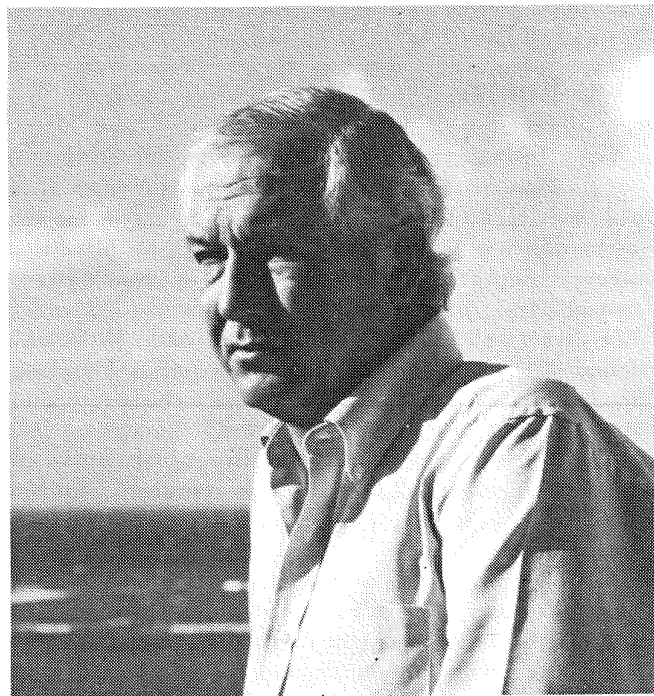
E. Schrank
Technische Universität Berlin
Ackerstr. 69
D-1000 Berlin 65 GERMANY
Telephone: 030/ 31472657

Fax: 030/ 31472837

WHERE ARE THEY NOW

25 YEARS LATER

Many members of the AASP recognize the names of most of the founding members of AASP from the literature and may be curious about what they are doing now and what they look like now. Each of the founding members of the AASP has been invited to send a photograph and write a short discourse on their current life styles - 25 years post-Tulsa. During our 25 year celebration - the "Where are they now" column features the founding members.



Logan Urban

Logan Urban

At the time of the organization of the AASP Logan was employed at Phillips Petroleum Company in Bartlesville, Oklahoma. Logan is a product of the L.R. Wilson school of Palynology at the University of Oklahoma

where he completed a Masters Degree in 1965. At Phillips Logan was the palynological supervisor working of biostratigraphic correlations, source rock identification, vitrinite reflectance, thermal maturation and hydrocarbon potential interpretation until 1975. In that year he moved on to a position of Senior Exploration Geologist in Bogota, Colombia and Miami, Florida. He headed studies on South American plate tectonics and a plate tectonic reconstruction and geological evolution of the Caribbean Basin.

In 1981 Logan set up United Energy Development Company and at the same time was manager of Wang O.K.L.A. Investments. In this position Logan has drilled and completed 45 producing wells.

Currently Logan is smiling a lot and raising Brittany bird dogs. He owns about 15 dogs now and calls the kennel "Nasty Dogs". He thinks that raising bird dogs may be more profitable than running an oil company in these days and times - but he still has the oil company.

Ben Bourn

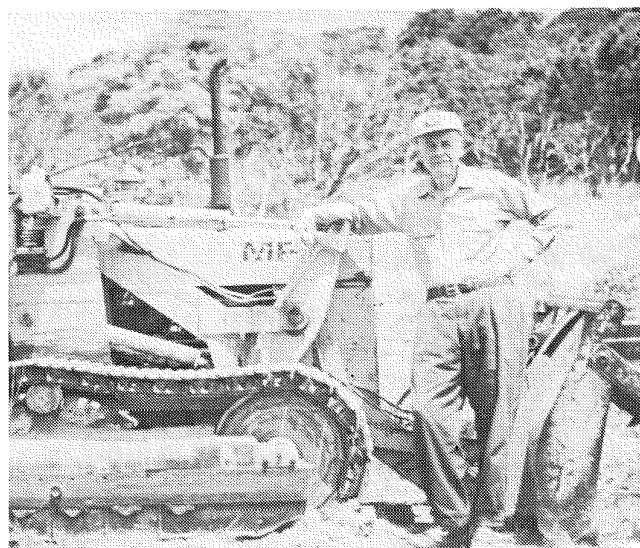
In December 1967 I was working for Chevron in their Oklahoma City office. My work was exclusively on Paleozoic palynology projects. When the Oklahoma City office was closed, I was transferred to Jackson, Mississippi where most of the palynological projects involved Mesozoic assemblages. As you might imagine, this was like ending one career and starting over in a new one. However, I found this extension of my palynological knowledge fascinating, plus I had the good fortune to be sent to study dinoflagellates in Bill Evitt's two week seminar.

I spent eight months in Jackson, Mississippi before that office was closed and I was transferred to New Orleans. I worked in New Orleans for seven years and then retired in 1978.

My wife, Ruth, and I built a house on her ranch in Bosque County, Texas and we have lived here since my retirement. The move to the ranch was a radical change in my daily routine - from sitting eight + hours a day at the microscope as well as reading literature and writing palynological reports, I went to physical outdoor labor.

About the photograph, I don't want to give the impression that I operate a front loader - it was just a handy prop. The fuzzy background are the "cedars", with hardwoods mixed in, which we want to leave on the hill sides and tops. The hardwoods are mainly "Spanish Oaks" and several varieties of Elm. The Oaks turn a brilliant shade of red in the fall, around Thanksgiving.

Thank you once again for your interest in the founding members. We were a group of individuals interested in making palynology a useful tool in the



Ben Bourn

exploration for hydrocarbons. It is nice to be remembered 25 years later.

EDITORS NOTE: All founding members have been asked to send a photograph and a short article to describe their various current positions. I urge all founding members to get this information to me as soon as possible...JKL

THESIS ABSTRACTS



Shelia R. Vardy, 1991. The Deglaciation and Early Postglacial Environmental History of Southcentral Newfoundland: Evidence from the Palynostratigraphy and Geochemical Stratigraphy of Lake Sediments. Unpub. M.Sc. Thesis, Department of Geography, Memorial University of Newfoundland, St. John's, Newfoundland. 20 pp.

The purpose of this thesis is to reconstruct the chronology of deglaciation and early Holocene environmental change in south central Newfoundland. Previous palynological studies have helped to define the timing of deglaciation and the sequence of postglacial environmental change in certain parts of Newfoundland, but firm chronology of events for the entire island has not been established.

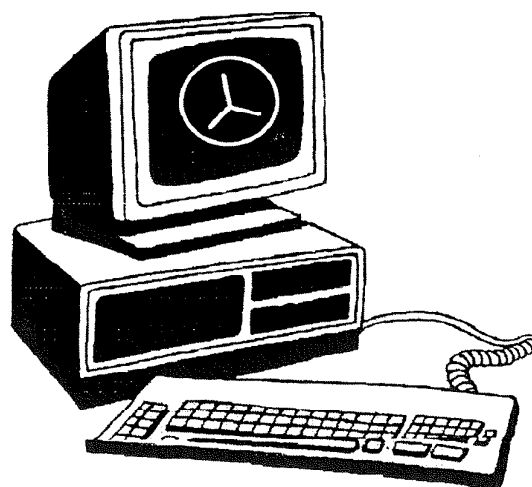
Radiocarbon dating, pollen analysis and geochemical analysis have been carried out on sediment cores from four ponds, including three within the proposed limit of the main Newfoundland ice cap and one from the Hermitage peninsula, which was apparently affected by a smaller local ice cap. The pollen, sediments and geochemical stratigraphies of the basal sediments of these cores confirm that the basal radiocarbon dates represent early stages in the postglacial sequences. The basal dates from the Northwest Gander River Pond ($10,200 \pm 240$ BP; GSC-5027), Moose Pond ($10,000 \pm 170$ BP; GSC-5029), and Pool's Cove Pond (9710 ± 120 BP; GSC-4945) are therefore considered minimum ages of deglaciation but it is difficult to determine when the Conne River site became ice free since the basal date of $11,300 \pm 100$ BP (GSC-3436; Blake, 1983) is suspected of being too old.

All four sites were apparently ice covered during the Late Wisconsinan, and there is no evidence that deglaciation occurred before the Younger Dryas episode. It is inferred that all three sites within the limit of the main Newfoundland ice cap were ice free before 10,000 BP, and that deglaciation progressed by downwasting, possibly beginning by 10,500 BP in areas of high elevation. The basal date of 9710 ± 120 BP (GSC-4925) from Pool's Cove Pond on the Hermitage Peninsula provides a minimum date of deglaciation, but this site may have been ice free by 10,100 BP.

The reconstruction implies that deglaciation of southcentral Newfoundland began in the middle of the Younger Dryas cold period, and can therefore only be considered tentative, especially in light of doubts about the accuracy of bulk sediment radiocarbon dating of basal lake sediments.

(Reprinted from the CAP Newsletter, V.15,no.1. Thanks Alwynne!)

EDITOR'S NOTE: Recent graduates of either M.Sc. or Ph.D. programs are urged to submit their abstracts for publication in the AASP NEWSLETTER. Professors are urged to urge their students to submit abstracts for publication in the AASP NEWSLETTER.



THE PALCAT INTERACTIVE PALEONTOLOGICAL DATABASE AND IMAGE STORAGE/RETRIEVAL SYSTEM

by

D.K. Goodman, R.C. Becker and J. van Couvering

The paleontological disciplines require specialized, if not unique, computer storage and data exchange systems in order to manage extremely large data sets of intimately related textual information and photographic images. These data sets are used to document fossil taxa which have a wide and variable spectrum of morphological characteristics, and which have complex environmental, chronological and geographic distribution patterns. The PALCAT (PALEontology CATalog) system is an interactive relational database and high-resolution image retrieval platform specifically designed to increase the efficiency with which scientists use paleontological information. The system provides users with the unique ability to "build" or "browse" electronic catalogues within a single integrated software environment. PALCAT incorporates a unique combination of analog and digital optical disk technology to manage very large data sets containing both text and images. It opens new horizons for the future of specimen-based research by providing a means to condense and access otherwise widely-disseminated information onto a single desktop system.

PALCAT was designed and developed as a cooperative project by a team of professional paleontologists (from Agip, Amoco, Chevron, Exxon, Mobil, Marathon, Shell and Unocal) and Electro Communications Systems (ECS) in Dallas, Texas under the auspices of the American Museum of Natural History (Micropaleontology Press) and in cooperation with the American Association of Stratigraphic Palynologists. Technical problems were overcome by cooperation and compromise among paleontologists, hardware specialists, and software engineers. A group of paleontological research scientists

designed and specified the overall user interface, relational database table structure, and primary functional requirements of the system from a user's perspective (overall work session flow, use of images as data elements, as well as other required equipment including microscopes and data input devices). Hardware and software engineers integrated these design parameters into a desktop hardware system. As one example of a cooperative solution, high resolution images were mandated by the requirements of many users regarding acceptable visual quality to make valid identifications or perform morphological comparisons. Existing analog optical disc storage technology did not have the required resolution to satisfy these users, and consequently digital image storage capabilities were also incorporated into PALCAT. The resultant combination of analog optical disc and high-capacity digital image storage devices is "transparent" from a user's perspective.

The basic PALCAT hardware configuration contains the following: (a) 386/486 IBM compatible computer and SVGA monitor for text data viewing; (b) 12" analog optical disk recorder/player or player-only for image storage; (c) 1 Gbyte removable cartridge erasable or WORM optical disk drive for storage of digital images as well as very large databases; (d) hi-resolution multisync monitor for image viewing; (e) hi-resolution image capture board; (f) microscope equipped with B&W or color video camera; and, (g) optional digital flatbed scanner to capture existing photographic material. Variations on this basic set-up can be configured to meet specific needs and budgetary constraints of individual users. Several options to the hardware system include use of relatively inexpensive laservision players to view pre-recorded images, systems with digital record/analog view capability, and inclusion of a "live-video" window which displays a specimen being viewed under a microscope onto a monitor for comparison with recorded images from the database. Current development activity includes enhanced data display, search/retrieval optimization, expanded system hardware configurations, automatic compression/decompression of digital images, and possible implementation on UNIX and Macintosh operating systems. The system can also be incorporated into a local area network (LAN) which employs the client-server database architecture of Gupta's SQLBase.

The PALCAT system operates under Microsoft Windows 3.0 on PC DOS compatible personal computers and was developed using the SQLWindows/SQLBase relational database software from Gupta Technologies. The PALCAT system is designed to operate in conjunction with a wide range of associated paleontological software packages (DOS and Windows), including expert system shells, taxon identification keys (ANGIOKEY, DINOKEY), literature databases (PALYNODATA), biostratigraphic data entry utilities (BUGIN, RAGWARE), as well as optical scanning and image processing software.

PALCAT will include all search functionality of the SQLBase relational database software. The user simply specifies a set of appropriate criteria to initiate a search

routine. The result of the search consists of the database records for one or more fossil taxa which meets the selection criteria, along with a series of recorded images for each taxon. As the user browses the textual records for each successive taxon on one monitor, the initial image for that taxon is retrieved from either the analog or digital optical disk and is displayed on a second video monitor; the user can then browse through the collection or, "stack", of successive images for that taxon or update text fields in the record.

All types of original image source material can be incorporated into the electronic catalog; images can be captured directly from both transmitted light and scanning electron microscopes via video or digital cameras, or by optical scanning of 35mm transparencies, photographic prints, and published photomicrographs. Ultimately, hundreds of thousands of images can be stored and accessed on a network using multiple, connected storage devices. Analog image storage clearly provides an incremental advantage over digital storage regarding media (disc) requirements and practicality for the end user. In addition, the analog format offers a considerable cost savings by requiring only one disc (capacity 108,000 images, either full color or grey scale) in comparison to the multiple digital optical discs that would be needed for an image library identical in size. PALCAT offers a practical, fast and efficient image storage and retrieval system at a relatively economical cost. Information technology in the form of analog image storage capability is such a critical element of the PALCAT architecture that it would not have been possible to build such a system without the analog medium.

The *Ellis and Messina Catalog of Foraminifera* (published by Micropaleontology Press, a division of the American Museum of Natural History in New York) is the first major paleontological catalog to be adapted (by ECS) for use on the PALCAT platform. The printed catalog consists of approximately 76,000 pages of fossil images and text, and is currently used by numerous industrial and academic research institutions throughout the world. The catalog images were scanned and recorded onto an analog optical disc. The catalog text was converted into ASCII files using OCR software; these files will be imported into the database after final editing at the American Museum. A dinoflagellate image library (developed by ImageWare, Midland, Texas) containing approximately 25,000 images is currently in production, and additional regional- and/or group-specific databases are available or are being planned by several third-party vendors.

PALCAT offers ease of updating the electronic catalog for both Micropaleontology Press as well as the end users by eliminating the need to manually interleave new pages into existing volumes of the catalog each year. Furthermore, the program offers the end user the ability to update an existing catalog with proprietary images and data, or to extract or construct an entirely new catalog within individual laboratories, including full image capture and retrieval capabilities, with its standard software.

Finally, companies and universities who would not otherwise be able to justify a printed catalog, can now implement a PALCAT related image database as an easy-to-use reference work for educational and training purposes. PALCAT, therefore, widens the base of end users for the *Ellis and Messina Catalog of Foraminifera*; it provides an ease of production, distribution and updating not previously possible for both the publisher and the user; and it significantly broadens the scope of database activities available to end users for a variety of research applications.

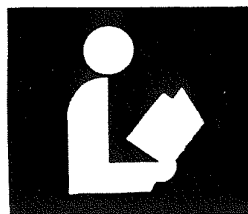
In the past, paleontologists have exchanged photographic information using traditional media - photographs, 35mm slides or technical publications in scholarly journals - all of which are based on "hard-copy" or paper format. PALCAT offers the entirely new option of electronic dissemination of very large image data sets for scientific purposes, and thereby truly represents the future of data exchange for science. However, the fundamental concept of the PALCAT system is not limited to paleontology. Numerous scientific, educational and commercial applications exist which require a large image database. Potential future applications may include, among other things, medical databases (eg., histology, surgery, dermatology), botanical/zoological collections and identification guides, museum/research collections of cultural artifacts and fine arts, automotive or machine catalogues, and a host of others.

PALCAT offers any organization or individual conducting paleontological research the opportunity to create and use image-based databases and to bridge fundamental problems related to the standardization of image file formats. There are many digital file formats currently available for the digital storage of image data. This variety of digital formats creates difficulty regarding both standardization of one or more formats for use by an organization and conversion of one digital file format into another for data exchange. PALCAT offers a global solution to the situation in two ways: (1) PALCAT will operate on any PC-based personal computer system anywhere in the world, and (2) the stored video images represent a universal standard because PALCAT is a "closed" system utilizing NTSC video images that can be recorded, exchanged and played by any paleontologist in the world using the system. Finally, although the system was originally designed in cooperation with and intended for use by a rather limited group of research scientists, PALCAT interfaces can be easily modified for other integrated image databases, and thus has the potential to provide a universal standard hardware and software platform for image databases in a wide variety of research and educational applications.

In summary, the PALCAT system offers significant potential as the first integrated and widely supported platform utilizing a graphical user interface to electronically archive paleontological data. It creates more open access to data resulting in standardized taxonomy and more efficient identification procedures, substantially reduced

learning curves for persons unfamiliar with particular fossil groups, and more effective retention of the cumulative knowledge of experienced paleontologists.

Interested individuals should contact the authors for more information.



BOOK REVIEWS

Book Review Editor - Reed Wicander
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Mt. Pleasant, Michigan 48859

Pollen and Spores of Borro Colorado Island. David W. Roubik and Jorge Enrique Moreno P., Monographs in Systematic Botany (Volume 36) 1991. Missouri Botanical Gardens, St. Louis, Missouri. 270 pages, 97 plates. \$36.00.

This book is a must for the bookshelf of any serious palynologist. It represents the finest, and most extensive, collection of tropical pollen and spore photographs ever collected in one volume. The authors describe 1,269 different pollen and spore types and include photomicrographs of 1,210 of them. Also included is a detailed pollen and spore key to all types.

For more than a decade the two authors worked on the preparation of what they hoped would become the first comprehensive guide to pollen and spores of a lowland tropical forest in Central America. Their study began in 1979 when they realized they would need tropical rainforest palynomorph data to complete their on-going studies of pollination biology and the impact the Africanized honey bee was having on the biota of tropical America.

But why focus on the flora of the island of Borro Colorado, located in Gatun Lake in the middle of the Isthmus of Panama? According to the authors, they searched for an ideal location on the mainland before finally selecting Borro Colorado Island. They made their choice because: 1) the island was established as a nature reserve in 1923 and has remained undisturbed since that time; 2) a series of extensive botanical studies of the island's flora had already been conducted and published, making it one of the most studied tropical floras in Central America; and 3) the natural flora of the island contains a mixture of tropical plants from both the Pacific and Atlantic coastal zones and also contains representatives of

plant taxa from as far north as lowland Mexico and as far south as South America.

The authors carefully planned their initial research and took great care to publish their final results in a way that would make their data easy to use. They admit that for diagnostic work, when one is trying to identify an unknown pollen type, the best material to use is a comparative slide collection. However, for most of us, who have limited modern pollen reference collections, this alternative is not always possible. With this in mind, Roubik and Moreno state that they tried to make their photographic plates as clear and as informative as possible. To achieve this goal they took great care to illustrate many of the pollen and spore types in several views so the reader can make direct comparisons between various pollen and spore taxa that look nearly identical. Another advantageous feature of the photographic plates is that all of the genera and species are arranged in sequence by family. The cryptogams first, the gymnosperms second, and the angiosperms are third. The families are listed alphabetically within each group, and the angiosperms are divided into two main sections: the monocots and dicots.

After a brief introduction, followed by several pages of discussion about how the plants in this study were identified, how pollen and spores were processed, and how the palynomorphs were photographed, the rest of the book is devoted to pollen keys and 97 pages of photographs. The first pollen key is in fact a table that lists all 131 plant families covered by the authors' research. In that table they list the "general" characteristics of pollen types they found in each family. For example, the table indicates that the Rutaceae plant family produces monad pollen that is either tricolporate or stephanocolporate.

The second pollen key is arranged in the traditional format based mainly on aperture types. In this key the authors have listed the family names of pollen types that fall into each category. For example, the Rutaceae family is listed in both the tricolporate and the stephanocolporate portions of this pollen key. And, as one might expect, the list of plant families having pollen types that are "tricolporate" is spread out over five pages while those listed under other headings, such as "dicolpate," include pollen in only two plant families, Dioscoreaceae and Pontederiaceae.

The third pollen key is the most comprehensive, and it is the longest one in the book. This key is arranged by families in the same alphabetical order as the photographic plates. Under each of the headings is listed all of the pollen types included in each of the 131 plant families covered by the book. Each palynomorph species includes a description of its apertures, ornamentation, thickness of the exine, any unusual morphological characteristics, the grain's size range, information about the voucher specimen, and the page and plate number of the grain's picture.

Other nice features of this book include an extensive bibliography of over 200 reference sources, a glossary of more than 150 terms the authors used in their

descriptions, and an index listing all 1,269 plant taxa discussed in the book's text.

I recommend this book without reservation. Not only does it represent one of the best pollen keys ever produced, but it also represents one of the few pollen keys ever produced. The reason why there is so few regional pollen keys is easy to understand. First, anyone who has ever tried to expand a pollen reference collection by first collecting flowers, and then processing the floral parts to extract pollen, will appreciate the work and effort that goes into making a pollen reference collection or pollen key. For example, finding and collecting plant specimens, while they are in flower, and correctly identifying them, is a difficult task in any region of the world. However, by far the most difficult region to collect flowers is in a tropical rainforest. Some plants and their flowers can be found near the ground, but the majority of rainforest trees produce flowers in the canopy layer or on branches high above the ground. Also, other rainforest plants, such as epiphytes, are often found attached to branches high in the forest canopy layer. Second, anyone who has worked with photography knows how time-consuming it can be to take pictures of pollen grains and then develop each print with precision to get clear, sharp images for publication. Third, and perhaps most importantly, few professional palynologists can afford the research time (in this book's case, more than a decade) it takes to produce an extensive pollen key.

This book would be a bargain at any price because of its value as a reference tool and as a key to a wide variety of tropical spores and pollen. I urge each of you to order your copy now, before the volume goes out of print. And, just for fun, when you get your copy, see how many of the palynomorphs you can identify on the front and back covers before you have to search for them among the nearly 100 pages of photographs!

Reviewed by:
Vaughn M. Bryant, Jr.

MUCH MORE ON TRIASSIC FLORAS OF MIDDLE EUROPE

Detlef Mader, 1990. *Palaeoecology of the Flora in Buntsandstein and Keuper in the Triassic in Middle Europe*. 2 Volumes, lxxxvii + 1582 pp., 71 figures, 890 photos on 103 plates (48 plates in color), 63 tables. G. Fischer-Verlag, Stuttgart, New York; ISBN 3-437-30650-2, US-ISBN 1-56081-302-4; DM 370.

These two tomes on the paleoecology of the Buntsandstein (936 pp.) and Keuper (337 pp.) floras are an enormous work for which the word, voluminous, is an understatement. Five chapters on the Buntsandstein flora form Volume I, while the sixth chapter comprising much of

Volume II is devoted to the Keuper floras. There is a 212 page index at the end of Volume II. The importance of the Buntsandstein and Keuper floras in Middle Europe (i.e. Germanic basin) and their relevance to understanding climatic change through the Triassic of Europe make these two volumes a valuable reference source.

Volume I is largely devoted to the paleoecology of *Pleuromeia sternbergii* and other *Pleuromeia*-like lycopods. Remarkable is the description of an in-situ assemblage of sub-vertically standing stems of *P. sternbergii* found by the author near Lammersdorf (Eifel, Germany) and compared with similar stem casts from Bernburg/Saxony, Germany. Comparisons with other in-situ lycopods from the Upper Carboniferous (Nova Scotia, Canada) and Lower Cretaceous (Hauterivian; Quedlinburg, Germany) are also made. These lycopods are portrayed as pioneering plants on dry sand plains, and occupied at least some of the ecological niches filled by riparian angiosperms later in the Cretaceous.

Volume II concentrates on *Voltzia* and *Equisetites* and the progressive elimination of the Buntsandstein floral elements in the Keuper.

Both volumes give much attention to the integration of sedimentology, pedology, and paleobotany, a practice that is frequently avoided by geologists, while the identification and illustration of various types of root traces and root tubes is all too often ignored by paleobotanists. Tables and figures are numerous and essential to understanding chronostratigraphy, paleoenvironments, and megacycles versus magnacycles. Limiting the value of this work, little attention is given to other Triassic plants, cycadophytes and Bennettitales are only briefly mentioned, and floral assemblages are detailed mainly in tables and figures. Little information is given on cuticular analysis or on anatomically preserved material. A small section is devoted to palynology, but Mader talks mostly about theoretical applications, operational biases, and preservational limitations rather than case examples where palynology supports or fails to support his paleoecological interpretations. But he does state that palynology provides local and regional information not available elsewhere on floral communities.

The text is organized and subdivided by a large number of individual sections with sequential numbers, each with their own heading. At first glance the text looks as though it is well organized, but first appearance is deceptive: Each chapter contains numerous ancillary statements or subjects, integrated and interwoven with the main subject of the chapter. From chapter to chapter there are countless duplications, needless repetitions, and frequent digressions that create a complicated and redundant language tapestry. There is no systematic order to the numbered sections or chapters relative to subject matter, making many of his points difficult to follow and forcing the reader to figures

and tables for simplicity. Data is scattered throughout the book rather than concentrated coherently. Many statements are vague, unsupported, and without cross reference, even though supporting data in some cases is adequately presented elsewhere. Because of his style, many statements appear as supposition or unsupported speculation, or worse - proof by assertion through repetition.

For example: "The Bunte Mergel consist chiefly of.....mudstones, which originate by suspension settling in large lakes and smaller ponds in an extensive floodplain to playa mudflat. In various larger pools and smaller puddles, shrinkage of the water cover by evaporation leads to supersaturation with carbonate that gives rise to precipitation of mainly microsparitic carbonates in stagnant to slightly or moderately agitated water." In another example Mader gives an explanation for the origin of meandering river channels from an anastomosing or braided stream network as a product of dune migration stabilization by concrete palaeosols and thicker mudstone units.

Even though his arguments for major climatic change through the Buntsandstein and Keuper seem reasonable based on the dominant facies types and associated floras, documentation for his paleoenvironmental interpretations is too scattered and incomplete. His preoccupation with braidplains and oligochannel belts in distinction to floodplains and meander channel belts is a potential bias. Paleomagnetic data imply north to south progradation of Schilfsandstein sand bodies, allowing for proximal meander channel belts that graded distally to braided distributary channels. If a cyclical climate existed in the Tethyan realm as it did in eastern North America during the Triassic, then cyclical climate and different flow regimes could have produced superimposed channel forms of very different morphology, as they do in the Stockton Fm. of the Newark basin in New Jersey and Pennsylvania.

Evidence for channel types is indirectly given through paleosol types and their extent of development. Not all blue-violet and red-violet paleosols are necessarily paleosols. Some may represent thin lake deposits developed on top of paleosols (as is commonly the case in the Chinle/Dockum of Arizona, New Mexico, and Texas, and in the Newark basin where red-violet, blue-violet, purple, and purple-grey lake beds can be traced for hundreds of square kilometers) rather than an extreme case of podoturbation (vertebrate bioturbation) where all traces of roots have been destroyed. The scarcity of blue-violet and grey-blue "paleosol" clasts in breccia conglomerates need not be evidence for stabilized channels, but rather an indication of poor playa lake development between active channels.

Mader presents contradictory environmental indicators if the climate was dominantly arid to semi-arid. In the Newark Supergroup of eastern North America calcareous

lacustrine playas commonly have desiccation cracks, or oscillatory rippled siltstones when the water was shallow. Alternating wet to dry climatic cycles allow spore-bearing palynofloras to be preserved in grey to black claystones during wet periods, and arid indicators such as mud cracks, gypsum and evaporite pseudomorphs, and red mudstones to form during dry periods. Mader gives poor documentation of arid conditions within his braidplain sequences. Even though his tables and figures contain information on evaporites, the level of resolution is too coarse. Every four meter lacustrine to playa to floodplain cycle in the Newark has evidence for arid conditions in one part of the cycle, and very wet conditions in another part. It is within the wet parts of cycles that megafossil plants are most likely to be preserved. Consequently, his interpretation that occurrences of *Pleuromeia sternbergerii*, *Thamnopteris*, *Equisetites mougeoti*, and coniferophyta wood are indicators of halophilic habitats is doubtful.

The color plates are spectacular, even though they illustrate mostly sedimentary and pedogenic features. Unfortunately, most of the plates illustrating megafossils are in black and white. Their quality ranges from good to poor with little contrast. Plate headings are not always in agreement with captions of individual figures, and there is an illustration of the same in-situ stems that appears in five different plates (pl. 27/1, pl. 32/1, pl. 65/1, pl. 28/6, and pl. 30/1). Tables and line drawings are sometimes difficult to read because of the enormous amount of information they contain. Interestingly, in Table 31, which is designed to show which plants are indicators of arid climates, taxa interpreted to have significant xeromorphic features are typically found in the wettest habitats. Among these taxa are arborescent lycopods and ferns, horsetails, and cycadophytes, which in the Newark Supergroup are adapted for climatic extremes in a monsoonal climate.

Aside from the fact that this work is much too wordy and repetitious, it contains much new information that is far too valuable and important to be discounted. It sets an example for interdisciplinary integration and synthesis that will help to reduce barriers of communication between those disciplines, and improve respect among scientists. As Kerp (1991) said in his review of this work, "a scientific editor could have done a good job. If presented more clearly and less fragmentary, the text could have been reduced to at least half of its present length, thus making this book much more accessible and cheaper." At the price of \$260 for both volumes, it is beyond the reach of most individuals.

For additional comments and criticisms, see Kerp, H., 1991. *Albertiana* 9, September: 26-28. ISSN 0169-4324, Univ. Utrecht, The Netherlands.

Review by
Bruce Cornet

Archaeological Geology of North America, Edited by N.P. Lasca and J. Donahue, 1990. The Geological Society of America, Inc., 3300 Penrose Place, P.O. Box 9140, Boulder CO 80301. Hardbound edition, 8-1/2" x 11" format with deluxe binding, 543 p., illustrated and indexed. ISBN 0 8137-5304-x, hardbound, \$62.50.

This volume (Centennial Special Volume 4) was published as a contribution to the Decade of North American Geology (DNAG) Project in celebration of the Centennial of the Society. The volume is organized into 7 main sections containing 3-9 chapters per section.

The first Section contains three articles dealing with the Eastern Provinces of Canada. LaSalle and Chapdelaine's article deals with Quebec and the Maritime Provinces and focuses on the question of human arrival in this region. Julig, McAndrews, and Mahaney's chapter examine the paleo-indian distribution in the Thunder Bay region of Ontario, focusing on the Cummins site. Buchner and Pettipas discuss paleo-indian occupations surrounding Glacial Lake Agassiz.

Wilson paper opens the section on Western Canada and focuses upon a review of techniques and approaches and serves to integrate several geological themes which have developed. Bobrowsky et al. (Chapter 5) present an overview of archaeology and geology from the Provinces of Saskatchewan, Alberta, British Columbia, and the Yukon Territory.

The section detailing geoarchaeology of the Eastern United States contains seven papers, each focusing on particular geological factors. For example, the discussions of depositional history of the North Carolina flood-plain (Larsen and Schuldenrein) and point bar geoarchaeology from the Savannah River, South Carolina (Brooks and Saddman).

The nine chapters comprising the section on the Central United States generally approach this topic in a more integrative manner. The review articles on the Southern Plains (Ferring), San Juan Basin (Hall), and tephrochronology in Alaska (Dixon and Smith) are excellent. While several chapters focus on particular sites (Shelemon & Budinger; Waters), major issues are addressed in these chapters.

Three chapters comprise the section on Costa Rica and Mexico. Two of the three chapters (23 & 24) examine particular geoarchaeological problems. However, chapter 25, which examines archaeological sites on the continental shelf, is included within this section. All sites mentioned are associated with the United States (map, page 440) and I question the inclusion of this chapter within this section. It seems more appropriate to place this chapter in the general section for North America.

The section on North America-General; contained three well-written papers. The chapter on Mollusks (Rollins et al) presents a very good overview of the technique, and its application to geoarchaeology. Two

chapters detail examinations of copper sources (chapter 27) and archaeometallurgy of the Old Copper Industry in North America (Chapter 28).

The last section contains 7 chapters detailing specific techniques used in geoarchaeology. These provide very informative and useful overviews of established techniques as well as providing new applications. The chapters on stable isotope geochemistry and high resolution geophysical methods were exceptionally well done.

In general, all articles were well written, informative, and detailed. The illustrations were excellent and served to effectively illustrate the points. My only criticism of the volume is the lack of coverage for many areas. For example, California is represented by a single article dealing with the Calico Site and the Pacific Northwest States of Washington and Oregon are not mentioned at all. Preferably, Canada, the United States, Mexico and Central America should have been divided into areas with at least a single chapter devoted to regional synthesis within each section. Mexico and Costa Rica are the only two sites south of the United States to be included and both address specific problems. Researchers working in these areas will not find this volume particularly informative unless they are dealing with those specific topics.

In spite of this short-coming, the volume is immensely informative, especially for incoming geology and/or archaeology students. This volume represents an enormous effort by all the contributors and the editors. The editors are to be commended for a job well done. This volume should also be an important addition for all Quaternary scientists.

Richard G. Holloway
Biology Department
University of New Mexico

Phytoarchaeology, by R.R. Brooks and D. Johannes. Historical, Ethno- & Economic Botany Series Volume 3, Theodore R. Dudley, General Editor. Dioscorides Press, 9999 S.W. Wilshire, Portland OR 97225, 224 p., no price given.

This volume represents an integrated approach to the topic of phytoarchaeology. This topic, as defined by the authors, refers to the various relationships between vegetation and archaeology. This volume is divided into two parts. The first, details examinations of various aspects of phytoarchaeology. Part II, is a regional examination of remote sensing in phytoarchaeology.

The first two chapters explore plant distributions over the surfaces of ancient mines. Comparisons of different indicators and regions are made. The next three chapters detail indicators of human modification to the landscapes. The authors examine prehistoric trade routes,

anthropogenic soil modification and the topic of ancient crops and fields. Discussions of these topics draw examples from diverse geographical locales and time periods.

The identification and interpretation of plant remains such as pollen, seeds, and phytoliths are examined in Chapter 7. This chapter could very well have been expanded. Emphasis appears to be placed on utilizing pollen data as a dating technique. While, as the authors point out, this can be accomplished under certain conditions, the complicated nature of using palynological data for this purpose is not effectively presented. The authors also have lightly treated the important topic of modern seed rain contamination of archaeological deposits. The discussion of this is cursory and deserves a great deal more space than was allocated here. Likewise the discussion of phytolith data should have been expanded. In all the discussions of prehistoric plant remains, no reference to the factors involved in the preservation and/or deterioration of the assemblages are given.

The discussion of vegetational changes at specific archaeological sites (Chapter 8) is much better. This aspect, however, concentrates on vegetational differences on archaeological sites as a site indicator rather than the usual application of this term to refer to temporal vegetation change.

Statistical analyses of vegetation data is examined in Chapter 9. Sampling techniques are discussed and several statistical techniques are examined. Unfortunately, these are applied only to the modern vegetation and no application of these techniques is applied to the past.

Part II, focuses on Remote Sensing. Chapters 10 and 11 provide the background and basic principles of this technique. These chapters provide a good overview of the method. The remaining chapters (12-16) detail specific examples of the utility of this method in different regions of the globe.

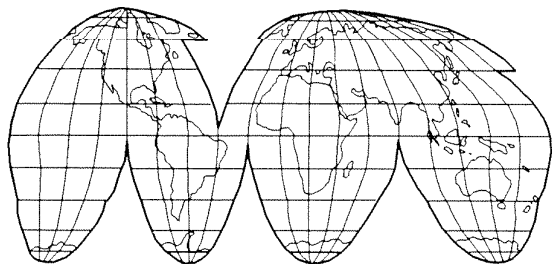
This volume is ideal for the beginning student in archaeology. As a reference text, however, I found it too cursory for direct application. There is a wealth of data presented among the chapters. However, in an attempt to include numerous examples, the authors appear to have adopted a presentation which decreases readability. In spite of these deficiencies, the book is a worthwhile supplemental text for introductory classes.

Richard G. Holloway
Biology Department
University of New Mexico

IF YOU READ A BOOK
AND THINK IT'S GREAT

SEND IN A REVIEW!

THE LAST WORDS.....



NSF TRAVEL GRANTS

Dr. Elliot Burden has informed us that the following individuals are the recipients of this years NSF Travel Grants to Aix-en-Provence to attend the 8th International Palynological Congress, Sept. 6-12, 1992.

John H. Beck
Dr. Owen K. Davis
Sarah Fowell
Dr. Linda E. Heusser
Carol Hotton
Margaret Kneller
Dr. Douglas Nichols
Dr. Satish Srivastava
Dr. Paul Strother

Congratulations to the winners.

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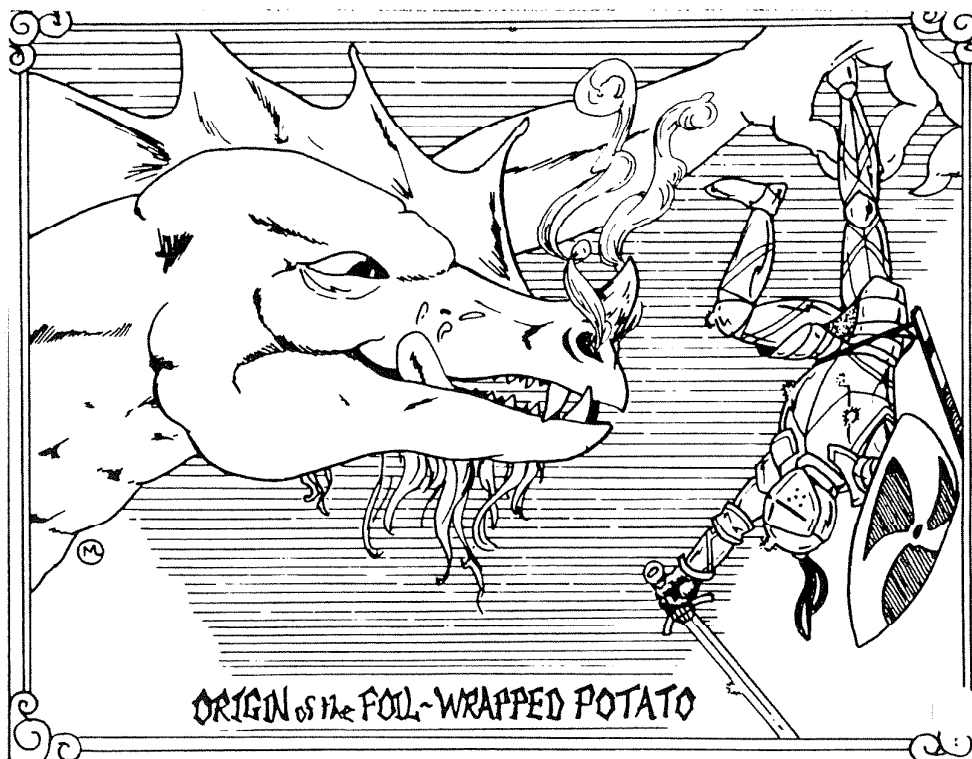
The job of editor of any newsletter is not fun. Being editor of anything during the summer is particularly bad. Everyone has better things to think about than sending in letters to the editor, articles or information to the editors of all of those struggling newsletters. In Canada my friends tend to send goodies to Alwynne Beaudoin the terrific editor of the CAP NEWSLETTER. I'm not too sure where (or if) our USA members send information - it isn't often sent to me. Our European members have a selection of newsletters to write to, as do our Aussie members. The question is... Are NEWSLETTERS really worth the effort? If so, why is it so difficult to fill them?

There is a lot being said about quality of education for children in our schools. I recently had the pleasure of looking at a new geological source book for young children which was put together by Norrie Robins and her sisters. (for more information call Norrie!) I sent my copy to a friend working in science programs for children in Calgary.

On the topic of education, I recently came across an article about education with the following quote from William Brock, former US Secretary of Labor: "700,000 young people drop out of U.S. schools each year. If we were killing 700,000 buffalo a year, we'd have a national revolution." Interesting thought.

Please write soon.....

Judith Lentin, Editor



ANNUAL DUES NOTICE

DUES MAY BE PAID UP TO THREE YEARS IN ADVANCE. OVERSEAS AASP MEMBERS (INDIVIDUAL OR INSTITUTIONAL) WHO WOULD LIKE TO RECEIVE THEIR NEWSLETTER AND PALYNOLOGY BY AIR MAIL, RATHER THAN SURFACE MAIL, NEED TO INCLUDE THE APPLICABLE POSTAGE SURCHARGE (NOTED BELOW). CREDIT CARD USERS MUST PAY A \$1.00 U.S. SURCHARGE PER-TRANSACTION.

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Signature: _____

Send dues, surcharges (if applicable) and Student Scholarship contributions, with this form, to:

Dr. Gordon D. Wood
AASP Secretary-Treasurer
Amoco Production Co.
P.O. Box 3092
Houston , TX 77253 U.S.A.

BE SURE YOUR NAME IS ON YOUR CHEQUE OR INTERNATIONAL MONEY ORDER

Your cancelled cheque is your receipt. If you need a written receipt, advise the Secretary-Treasurer when you pay your dues.

All drafts should be payable through a U.S. based bank.

Name: _____

Address: _____

City & State: _____

Country: _____ Zip: _____

Membership Application Form

Please type or clearly print information. The AASP directory file is limited to 5 lines @ 29 characters.

Date: _____

Name:

(First) (Middle) (Last)

Address:

Telephone:

Fax:

Nature of work (graduate student, exploration stratigrapher, etc.)

Send to: Dr. Gordon D. Wood
Amoco Production Company
P.O. Box 3092
Houston, Tx 77253 U.S.A.

Please send \$30.00 U.S./yr
with you application.

Change of Address Form

Date: _____

Listed Name: _____

New Address

Name:

(First) (Middle) (Last)

Address:

Telephone:

Fax:

Send to: Dr. Gordon D. Wood
Amoco Production Company
P.O. Box 3092
Houston, Tx 77253 U.S.A.