

**JULY, 1988**  
**VOLUME 21, NUMBER 3**

1988 Annual Meeting Announcements .....	1
Letter to the Editor .....	3
Positions Available .....	5
General Announcements .....	5
Identifying Foreign Honey .....	7
Marijuana Pollen High in L.A. Air .....	7
Old Bones Pose a Sex Problem .....	8
There's No Brew, Like An Old Brew .....	9
Meetings of Interest .....	10
Book Reviews .....	11
For Your Book Shelf.....	14

## **AASP NEWSLETTER**

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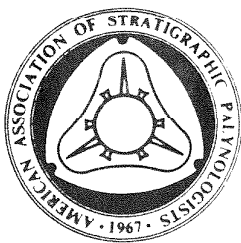
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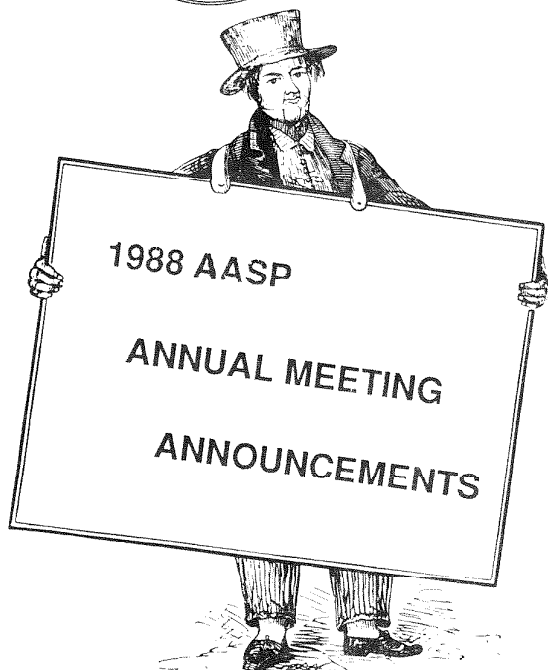


# AASP NEWSLETTER

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J. H. WRENN, EDITOR



## MEETING SCHEDULE

The tentative schedule for the 1988 AASP Annual Meeting in Houston, Texas, November 10-12, includes thirty-two papers and nine contributions for the poster session thus far. The schedule for the meeting is:

Nov. 10, a.m., Paleozoic Symposium with 9 papers.

Nov. 10, p.m., Quaternary Symposium with 6 papers.

Nov. 11, a.m., Cenozoic Session with 7 papers.

Nov. 11, p.m., Mesozoic Session with 7 papers.

Nov. 12, a.m., "Potpourri" 3 papers thus far.

The nine poster contributions will be presented at the appropriate sessions. The tentative titles and the session in which they are scheduled are listed below.

### Symposium on Paleozoic Palynology (November 10, morning)

Foster, C. B., Reed, J. A. and Wicander, R. Gloecapsa-morpha prisca Zalesky 1917: A restudy - taxonomy, geochemistry, and paleoecology.

Miller, M. A., Brett, C. and Kleffner, M. Ludlow age acritarchs and spores from the Pittsford Shale, New York, U.S.A.

Wood, G. D. Paleoeecologic and biostratigraphic significance of chitinozoans and acritarchs from the Lower Silurian Osgood Member of the Salamonie Dolomite, Indiana and Kentucky, U.S.A.

Wright, R. P., Savage, B. A., Laroche, T. M. and Barrick, J. E. The application of palynology to stratigraphic interpretation in the Marathon Orogenic Belt, Texas, U.S.A.

Barker, G. A. and Wood, G. D. Palynomorphs from the Devonian Woodford shale, Tobosa Basin, Southwest Texas and Southeast New Mexico, U.S.A.

### COFFEE BREAK

Chitaley, S. Palynomorphs of Upper Devonian Venango Formation of northwest Pennsylvania.

Willard, D. A. Lycospora: intra- and interspecific variability and association of species with depositional environments.

Barker, G. A. Pollen and spores from the Lower Permian (Gearyan) of Kansas, U.S.A.

Eshet, Y. The Permian-Triassic boundary of Israel - a stratigraphic approach.

### Quaternary Symposium (November 10, afternoon)

Adams, K. Implications of pollen concentrations on modern plant surfaces for archeopalynology. (tentative)

Bryant, V. Surface pollen samples from west Texas: A study of pollen dispersion, concentration, and preservation.

Clary, K. Reducing ambiguity in the archeological pollen record by improving recovery of economic pollen.

Davis, O. Sources of pollen clumps found in archeological samples.

Sobolik, K. The identification and quantification of pollen recovered from coprolites.

Mathewes, R. Confirmation of early Holocene warm interval-pollen and fossil treeline evidence in British Columbia, Canada.

**Cenozoic Symposium** (November 11, morning)

Graham, A. Challenges in paleoecological reconstructions for neotropical regions.

Elsik, W. C. and Tomb, A. S. Compositae pollen morphotypes in the Gulf Coast Neogene.

Tomb, A. S. and Elsik, W. C. Fossil Compositae pollen morphotypes.

Jones, J. and Gennett, J. Palynology of the type section of the middle Eocene Stone City Formation, Burleson Co., TX.

Head, M. J. Palynostratigraphy of Paleogene deposits from the Central Basin, Spitsbergen.

Yi, M. S. Palynostratigraphy of Lower Tertiary strata in Price Canyon, Utah.

Wrenn, J. H. and Satchell, L. S. Cenozoic dinocyst biostratigraphy of the Exxon CH-45 Core, West Florida Carbonate platform, Gulf of Mexico.

**Mesozoic Symposium** (November 11, afternoon)

Litwin, R. J. and Skog, J. E. Oamerosporites verrucosus Madler A zone fossil for U.S. Late Triassic strata.

Zavada, M.S. Ultrastructure of fossil dispersed monolucate pollen from the Triassic Chinle Fm. of southern Utah.

Tocher, B. A. Dinoflagellate cyst assemblages and the Cenomanian-Turonian (Late Cretaceous) Oceanic Anoxic Event: new data from southern England.

Bujak, J. P., Davies, E. H., Fensome, R. A., Helenes, J., and Williams, G. L. New insights into the Cretaceous stratigraphy of the Labrador Shelf.

Wrenn, J. H., Stein, J. A., Breard, S. Q., and White, R. J. Biostratigraphy of the Cretaceous - Tertiary boundary, Brazos River Section, Texas.

Zippi, P. A. Early Cretaceous angiosperm pollen from the Mattigami Fm., Ontario.

Kremp, G. O. W. The Geodynamic situation at the Cretaceous-Tertiary transition.



**AASP Golf Tournament**

Please refer to your April, 1988 issue of the AASP Newsletter for the announcement of this activity. This tournament is planned to be a fun day, so no matter how you play - indicate your interest NOW. If you are an expert, you will be challenged; if you are a high-high handicapper, you can enjoy the company, the scenery, the refreshments and bashing and/or drowning balls; if you are something in between, you will have a great day. Guaranteed.

Please indicate your interest, as early as possible, by responding to:

John A. Clendening  
Amoco Production Company  
P. O. Box 3092  
Houston, TX 77253  
or call: (713) 556-3549

**CAP Meeting**

The 1988 Annual CAP Meeting will be held in the OAK-ROOM of the Westin Oaks Hotel beginning at 5:30 p.m. on Thursday, November 10, 1988. All CAP members are invited to attend.

**Prediction of Hydrocarbon Reservoir Potential from Paleotemperature and Petrographic Data**

A joint symposium sponsored by The Society For Organic Petrology (TSOP) and the American Association of Stratigraphic Palynologists (AASP) will be held in Houston, Texas, on Wednesday, November 9, at the Hotel Inter-Continental, Houston, 5150 Westheimer Road (across the street from the Galleria).

The program will address the hypothesis that porosity and permeability of reservoirs undergo a complex, yet predictable, multistage physicochemical evolution in response to increasing thermal stress and burial depth. This evolution will be described and related to thermal maturation of organic matter (kerogen, vitrinite, hydrocarbons) in shales associated with potential reservoir rocks. Data relating stage of pore system evolution to vitrinite reflectance will be presented for several basins with special emphasis being placed on the destructive phase of hydrocarbons and reservoirs beyond which commercial hydrocarbon accumulations should not be expected. Once calibration to specific formations (basins/trends) has been established, maximum paleotemperatures alone can be an accurate predictor of commercial hydrocarbon basements and a reliable tool for risk assessment.

Calibration of paleotemperature data to commercial hydrocarbon occurrence prediction is made possible by correlating: (1) petrographic criteria for recognition of processes that affect pore systems, including incipient metamorphism, (2) interpretation of vitrinite reflectance ( $R_o$ ) and fluid inclusions and their applications to paleothermal histories, and (3) basin tectonics. Generation of organic acids and their role in the creation of secondary porosity will be presented and discussed. Also, the program will include brief "tutorial" reviews of vitrinite reflectance, interpretation of vitrinite data (including interpreted maximum paleotemperatures) from dispersed organics, and its application to petroleum exploration. A panel discussion will follow the presentation of papers.

Participants presenting papers will include: John Hayes (Consultant, Littleton, Colorado), Ron Surdam (University of Wyoming), Rick Tobin (Amoco Production Co., Houston), Dennis Prezbindowski (Consultant, Tulsa, Oklahoma), Francis Ting (West Virginia University), Roger Sassen (Louisiana State University), and John Clendening (Amoco Production Co., Houston).

For additional information regarding registration, etc., contact:

Dr. John A. Clendening  
Amoco Production Co.  
P. O. Box 3092  
Houston, Texas 77253  
or call: (713) 556-3549

## LETTER TO THE EDITOR

Dear John:

We are writing in order to generate discussion, and perhaps some action, on a number of topics we feel worthy of consideration by the general membership of AASP. After a considerable period of incubation, we were finally prompted into writing this letter by the receipt of two publications:

- A newsletter recently published by one of the British paleontological societies discussed events at yet another of their frequently-held "local" meetings. Taking differences in population size and geographic distances into consideration, we are very impressed (and not for the first time) with the frequency British paleontologists congregate, in a somewhat informal manner, compared to the relative infrequency with which we do so in the United States.
- The February issue of *Geobyte* contains an enticing article by Corrad and Beightol entitled: *Expert systems identify fossils and manage large paleontological databases*. What caught our attention is not just the fact that they appear to have developed a working artificial intelligence tool, but also that the product was developed in Switzerland, and not in North America.

The purpose in making these observations is not to beat a nationalistic drum: an expert system for systematic paleontology is great, regardless of whether the development occurs in Argentina, Switzerland, or California. On the contrary, our purpose is simply to ask the question: is it just our imagination or is there less of a commitment and dedication to paleontology in the United States than in Canada, Britain, The Netherlands, and, yes, even Switzerland?

As you are well aware, John, the need for paleontology to more successfully become integrated with other geologic subdisciplines was readily apparent at the most recent SEPM Research Conference (Houston, December 1987). The conference was entitled "Innovative Biostratigraphic Approaches to Sequence Stratigraphy"; however, out of 26 papers only three were palynological (Ford and Goodman; Davies and Bujak; and Chen and Wright) - foraminiferal studies dominated the presentations. Attendance by palynologists was also very low. We have to wonder why. What "innovative" methods in palynology are being pursued and what role can AASP play in promoting this type of research?

We imagine that somewhere amongst the bylaws and minutes of AASP there are some mumblings about "furthering the science of palynology...etc." AASP has filled a valuable role in retaining a certain measure of cohesion among a rather diverse group of specialists; however, there is much additional work that we might

seek to accomplish. We feel palynology has suffered somewhat by the lack of strong ties between AASP and the Paleontological Society; however, that is another issue. For now, we would like to suggest several ways in which AASP could be effective in its mission to promote palynology, particularly in the United States.

- This country needs a central palynological type collection, such as might be housed at the National Museum (Washington, D.C.). North American types are presently scattered over 3,000 miles of back-rooms in academia, industry and the U.S.G.S. How do our colleagues deal with the problem of examining type material? Too often, we are reduced to relying on a single photograph in the literature accompanied by a wholly inadequate description. Perhaps the members of AASP would be interested in forming a committee to lobby for such a national collection. Universities could unload collections that they may no longer want (and thus fail to properly curate); members of AASP could be encouraged to donate both holotype and syntype material. We already have a couple of representatives at the Smithsonian: Joan Nowicke and Scott Wing. Perhaps they would be interested in sharing their views on this idea.
- Dinoflagellate workers are in great need of a current taxonomic catalog. The problem with a hard-copy catalog is that you cannot easily interleave additional text (such as emended descriptions), change names as species are transferred to different genera (without defacing the original), or merge your own photographs with those of the holotype. The obvious answer is the development of a computer-based database containing both images and text. It takes little imagination to see how PC-based optical disc catalogs for dinoflagellates, as well as other palynomorph groups, would benefit our members. Imagine, for example, ordering Judy Lentin's 100 images of Vozzhennikova's dinoflagellate specimens on optical disc, then copying those images to appropriate points in your in-house version of the catalog.

Again, perhaps those AASP members interested in delving into such a project would wish to form a committee for that purpose. The project is not unrealistic: John Van Couvering (Micropaleontology Press; American Museum of Natural History) has already initiated work on a computer-based catalog of foraminifera. Dr. Van Couvering is very interested in finding additional subscribers to the catalog. Digibase, Inc. (DGI), the company responsible for designing the system, remains receptive to suggestions affecting system requirements and configuration. The proposed committee may wish to approach these organizations to assess the degree to which their system would satisfy the needs of palynologists.

- With increasing frequency one hears moans of agony over the "rise and fall of palynology." If palynology no longer retains its relative importance to the solution of either geological or evolutionary questions, then perhaps we should rethink our role as earth scientists. Many of us in AASP, however, believe that the disciplines of biostratigraphy (in general) and palynology (in particular) have yet to mature in terms of their power to aid in interpreting the rock record. If we are correct in this assumption, then it would behoove us to convince geology departments across the U.S. that a palynologist would be as respectable an addition to their staff as would an isotope or organic geochemist. Perhaps the AASP public relations committee could initiate a program to address this issue. For example, an earlier brochure describing science of palynology might be expanded upon.
- Finally, we would like to address the possibility of having AASP maintain palynological reprint collections. So much of our work is dependent upon the availability of reprints. The maintenance and availability of significant reprint collections would be invaluable to anyone who needs to consult out-of-print articles. We wonder what happens to reprint collections of retiring palynologists, such as Bill Evitt and Al Loeblich. Plans may well have already been made for those particular reprints; however, it seems that AASP could provide a valuable service by maintaining such collections. We envision a system wherein significant collections would remain intact (and enhanced by subsequent additions) and be loaned to selected academic institutions at the request of faculty members who maintain a quality graduate research program.

Action on many of the topics we have raised would obviously require substantial time and monetary commitments - we know that it will not be easy. We also realize that we are not the first AASP members to make some of these observations and suggestions. We suppose many of these ideas have already been debated in the regularly-held board meetings; however, we do not recall seeing the presentation of such discussion in the Newsletter. We suggest, therefore, that you open the AASP Newsletter to a discussion of these issues.

Sincerely,

Leonard N. Ford, Jr. and V. Eileen Williams

(Comments, suggestions, replies, etc., to this letter are welcome. Please send them to the Newsletter Editor.)

## POSITIONS AVAILABLE

### Paleoecological Technician

The Social Sciences Center of the Desert Research Institute is seeking applicants for a Paleoecological Technician to be involved in the day-to-day operation of a paleoecology laboratory, assist in report and proposal writing, and actively participate in the research of other members of the Social Sciences Center. Research emphasis is on semi-arid and arid climate areas.

Requirements include a Master's degree; expertise in the reconstruction of Quaternary vegetation history and climate through study of fossil pollen and plant macrofossils; and past experience in the Great Basin and/or the Intermountain West. The successful candidate should have demonstrated competence in problems relating to stratigraphy and dating, and interest in relating changing environments of the past to human cultural adaptation.

This is a technical position with a salary range of \$17,969 to \$24,022 and full benefits. The position is dependent upon continued funding, DRI is a soft money institution. Applications must be received by August 26, 1988. To apply, send resume, list of three references, and a letter indicating academic and research strengths to:

Personnel Office  
Desert Research Institute  
P. O. Box 60220  
Reno, NV 89506



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### JOIN ARCO ALASKA, INC., ... AS WE CONTINUE TO EXPAND THE DEVELOPMENT OF OUR ALASKA FIELDS

ARCO Alaska, Inc., a major subsidiary of Atlantic Richfield, one of the Nations' top energy companies, is currently seeking EXPERIENCED geologists for the following positions in a newly formed GeoScience Operations Group designed to support on-going and future exploration/development programs.

#### Biostratigraphic, Micropaleontologist

Candidates should be genuinely interested in integrated applications and be familiar with current computer-oriented biostratigraphic programs. Qualified candidates should be familiar with Mesozoic and Cenozoic faunas of Alaska and the Arctic. Primary expertise in foraminifer is required with knowledge of diatoms and radiolaria a plus.

#### Biostratigraphic, Palynologist

Candidates should be genuinely interested in integrated applications and be familiar with current computer-oriented biostratigraphic programs. Qualified candidates should be familiar with Alaska assemblages, including dinoflagellates, of the Mesozoic and Cenozoic.

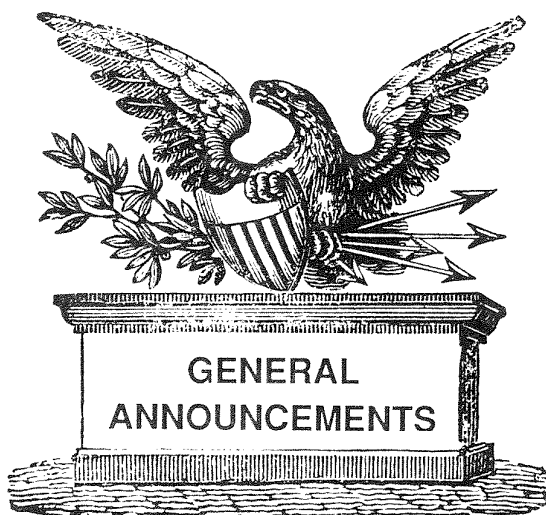
#### Sedimentary Petrologist-Petrographer

Candidates should be experienced in: Clastic diagenesis, provenance studies, burial effects on porosity and permeability, porosity prediction techniques, etc., and should be adept in the use and interpretation of data analyzed via petrographic microscopes, SEM, X-ray diffraction. Experience with a great range of sandstone compositions is preferred. Should be genuinely interested in integrated applications and be willing to perform a technology transfer function.

Qualifications: Requires advanced degree in Geology or equivalent with a minimum of five years applicable experience.

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### Correction and Apology

Michigan State University was cited in the April Newsletter (Vol. 21, #2) as the alma mater of Director-at-Large candidate Stephen A. Hall. Such is not the

case. The University of Michigan at Ann Arbor is the correct institution. Sorry Stephen.

## APLF Publications of Interest

The Association des palynologues de Langues Francaise (APLF) holds a meeting biannually. The most recent meeting was held in Bordeaux (Sept. 28 to October 2, 1987) and was jointly convened with the Dinoflagellate Group of the British Micropalaeontological Society. The successful meeting attracted 160 people. Two volumes have issued from the meeting.

1. The abstract volume contains over 100 abstracts, mostly in French though some are in English. Approximately 30 papers deal with dinoflagellates; many more treat spore-pollen. It is an impressive collection of abstracts that should be of interest to all palynologists.

The volume is published by Centre National de la Recherche Scientifique in the series "Travaux et documents de geographie tropicale," no. 59, 138 p. This inexpensive, but valuable, volume costs 50FF (about U.S. \$9.00) and can be ordered from:

CEGET-CNRS  
Service Documentation  
Domaine Universitaire  
33405 TALENCE CEDEX (France)

It is well worth the price!

2. The "Proceedings of the Xth Symposium of the Association of French-Speaking Palynologists" has just been published. This 416 page volume contains 34 articles, with English summaries, and 26 plates. An order form listing the titles (in French and English) of the papers in the volume, its cost and how to order the volume is attached at the rear of this Newsletter.

(Thanks to Claude Caratini, Institut Francais, Pondicherry, India for bringing these volumes to our attention and sending the order form attached hereto. - Ed)

## Computer Graphics Software for Quaternary Palynologists and Other Paleoecologists: Free

GRANAPLOT is a FORTRAN IV computer program for producing publication-quality pollen diagrams (percentage, concentration, and influx data). The program is designed to run on mainframes that provide access to DISSPLA, a graphics software package used at many institutions. It can also be used for macrofossil data and any other sort of stratigraphic data to be displayed as a series of graphs as in pollen diagrams. It is a very flexible program that allows for adjustment of the size and proportion of all parts of the diagram. Options

include saw-tooth curves, bar graphs, 95% confidence intervals, 10X or 5X auxiliary curves, sediment symbols, pollen zone boundaries, and radiocarbon date labels. Ancillary programs allow plotting of difference diagrams that compare two pollen stratigraphies, printing of tables summarizing the pollen data, and writing the data into files that can be read by statistical programs.

GRANAPLOT is available free to all interested persons. GRANAPLOT and a set of ancillary programs can be obtained in one of two ways:

- (1) Send a blank 5 1/4- or 3.5-inch diskette to the address below; it will be returned containing the programs in ASCII format readable by an IBM-PC or compatible computer. The programs can be uploaded to a mainframe through a terminal-emulator program.
- (2) Send your request via electronic mail and the files will be transferred to you on BITNET.

Richard P. Futyma  
Biological Survey  
New York State Museum  
Albany, NY 12230  
(518) 486-2029  
BITNET address: USERBMH3@RPITSMTS

## Dissertation Catalog

Ann Arbor, Michigan--UMI (University Microfilms International) is pleased to announce the publication of Earth Sciences. A Catalog of Selected Doctoral Dissertations. The catalog contains 2090 citations to doctoral dissertations and masters theses published between 1985 and 1987.

Some specific interest areas included in Earth Sciences are:

### Earth Science

Agriculture  
Chemistry  
Engineering  
Geodesy  
Hydrology  
Paleoecology  
Physical Geography  
Physics  
Remote Sensing

### Geology & Oceanography

Economic Geology  
Geochemistry  
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Mineralogy  
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UMI's Dissertation services allow access to over 900,000 dissertations and master theses--printed, online or on compact disc. Researchers can locate bibliographic references, study other methodologies, locate original research and remain up-to-date in their specialized fields with the use of these dissertations.

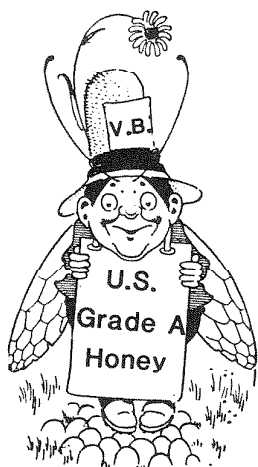


Many science collections are available from UMI Research Collections, including the Society of Petroleum Engineers Technical Papers and the International Joint Commission Archives. For details on these and other collections or dissertations, call the appropriate toll-free number listed below.

Continental U.S. & Hawaii: 1-800-521-0600

Michigan & Alaska: Collect 313-761-4700

Canada: 1-800-343-5299



## A&M Department Head Finds Method of Identifying Origins of Foreign Honey

A pollen expert at Texas A&M is helping to preserve the jobs and money of U.S. honey producers by identifying foreign-made honey through a method he developed.

By studying pollen grains found in honey, Dr. Vaughn M. Bryant, Professor and Head of the Anthropology Department, has devised a method of tracing the origin of honey. He separates the pollen, examines it under a microscope, and then records the type of plant from which the grains originated. He then can tell from what areas of the country the plant can be found.

The 1985 Farm Bill created the Honey Support Program, a plan designed to provide loans for farmers and higher market prices for their honey. The program requires the produce to be domestic, but the Department of Agriculture suspects some farmers buy imported honey at a lower price, and then claim it to be their own in order to receive the higher price offered by the government buyback program, Bryant said.

By sending random samples to A&M, the USDA is able to spot the foreign honey.

Bryant, who has written a book and several journal articles on the subject of pollen, compares his findings with the information sent by the USDA and comments on whether the honey could possibly be from the United States.

Compared to the amount of money that could be lost in imported honey, the \$50 fee is relatively low, he said, and the money is used to pay lab costs and materials.

Bryant said most of the samples are legitimate.

The government wants producers to know about this program to deter future illegal imports, he added.

Before the support program began, China and Mexico were the leading importers of honey into the United States. Though President Ronald Reagan recently extended the program through 1990, the buyback rates are expected to go down as much as 5 percent each year, according to the American Bee Journal.

Some farmers think the lowering rates might pressure others to buy the imported produce to mix in with their own honey. Bryant's testing will serve to keep anyone from using foreign honey as his own.

Pollen researchers have become increasingly important to the oil industry because of their ability to use pollen in core samples to find productive drilling areas. But the field still is relatively small and unknown.

"There are only a few of us," Bryant said.

(Thanks to Vaughn Bryant for this interesting item by Ty Walters, Reporter, from The Battalion, February 10, 1987. It makes for sweet reading. -Ed)

## Marijuana Pollen High in L.A. Air

Los Angeles (UPI) - A sample of West Los Angeles air examined by allergists this month found that 40 percent of the airborne weed pollen came from hemp--better known as marijuana--officials said Wednesday.

"One would assume that it's coming from illegal cultivation," said Scott McCreary, Executive Director of the local office of the Asthma and Allergy Foundation of America.

McCreary said the sample was taken Nov. 19 on the sixth-floor patio of an office building near the intersection of Wilshire Boulevard and Barrington Avenue in trendy West Los Angeles.

But because pollen can travel 30 miles or more through the air and because of shifting winds, there is no way to trace their origin, he said.

McCreary said, however, the organization's sampling station in the San Fernando Valley, unlike the station in West Los Angeles, never has turned up marijuana weed pollen.

"There is no health hazard," McCreary said, adding that marijuana intoxication is possible only after the plant has been dried and then smoked or eaten. And pollen from the marijuana plant does not cause the kind of misery to allergy sufferers that other plants such as ragweed do.

Laboratory technicians at the center, which samples the air twice weekly, first noticed higher than usual hemp pollen in a July 28 sample, but it was small enough to be considered insignificant, McCreary said.

He and other officials at the center aren't sure what the Nov. 19 findings mean. It could simply be a seasonal phenomenon. The fact that there are few other kinds of weed pollen in the air this time of year coupled with the possibility that the marijuana season may be peaking later than normal because of a cool summer could help explain it, McCreary said.

The most recent analysis of the air on November 24 showed lower counts for all pollen.

(Gordon D. Wood sent this piece in from the Houston Post, Thursday, November 26, 1987. Thanks, Gordon. - Ed)

## Old Bones Pose a Sex Problem

(by Terry Ingram, Financial Review, Thursday, May 26, 1988, Sydney, Australia)

Was Thomas Paine really a woman?

This question (imagine Thomasina, rather than Thomas Paine) was certainly exercising visiting orthodontists at the recent Lindesay Antiques and Decorative Arts Fair in the Sydney suburb of Darling Point.

On exhibition was the supposed skull and other related memorabilia of the noted 18th century philosopher.

However, word was out that what Moss Vale antique dealer John Hawkins had brought out from England in a velvet lined box was indeed the skull of a woman.

This was obviously uninformed speculation, for orthodontists were unable to confirm the sexuality of the skull. They were unable to do so because it was a "marriage".

Just as separate pieces of previously unrelated furniture are being regularly brought together in holy matrimony (the separate parts being salvaged from the decaying pieces of other furniture) so old bones are being knitted together.

The Paine jaw bone was a ring-in and any male chauvinist pig knows that the jaw bone (which is responsible for the expression jawboning) says a lot about a skeleton's sex.

Science may one day be able to clarify the issue. Plaque analysis, muse the increasing band of necrophiliacs in the salesroom, seems set to follow pollen analysis (palynology) as a factor in the dating of collectibles.

By identifying the dust of 24 vegetables found in the keyhole of a chest of cedar drawers, palynologists have been able to date the construction of the chest to April 14, 1894.

Similarly, by picking away at the remnants of vegetable strands lodged between the teeth, anatomical dentists should be able to date skulls which in the growing market for mortenalia have a special appeal and value.

Pollen analysis, of course, can be out by plus or minus 200 years.

Plaque analysis is slightly more reliable but problems have arisen by the recent upgrading of dental care standards. Purist collectors view the repeated removal of dental plaque as something akin to the removal of original finish from furniture.

Australia's gin-sodden past also presents problems, the principal of which is rot

It is also possible that an entirely fake impression could be gained from a study of the orthodontist's tooth pick as many a condemned man was given the grace of a fine farewell meal.

The advance in plaque analysis may be the answer to the harassed finances of the Vatican. If the Pope could prove up some of the claims made about relics it could have an outstanding de-accession sale.

Science would finally come to the rag-and-bone business, and few would welcome it more than Moss Vale dealer John Hawkins who showed the Paine relics at Lindesay, having been lent them by a Mayfair owner.

At the opening of the fair, Mr. Hawkins said that after his death in 1809, Paine had been buried on his estate at New Rochelle, New York. The body had been disinterred by William Cobbett in September, 1819, and the bones returned to British soil. The remains were taken back to England by Cobbett who kept them on his mantelpiece at Normandy Farm near Farnham until his death in 1835. Cobbett's son then inscribed Paine's name on the skull and various limbs and put them in a trunk.

The bones became the property of Mr. Tilly of Bedford Square, London, after Cobbett ran into debt.

Paine became the founder of Australia by default. He helped the Americans raise money which won them the War of Independence, ending America's role as a penal colony.

Mr. Hawkins could hardly be described even as an upper-class rag-and-bone dealer for the Paine memorabilia was not for sale. However, a descendant of the philosopher visited the exhibition by chance and decided the skull was a must. Mr. Hawkins added that the descendant was not interested in making contact with the Financial Review and, therefore, declined to arrange an introduction.

A sale had been arranged at a nominal price.

However, with advances in technology it can be assured that one day soon human plaque will be as desirable as Dresden plaques. Mortenalia, a growing collectable, awaits only the arrival of an Australian William Randolph Hearst to make the dead live.

Make that William Randolph Hearse, for the hearse is one of the favorite buys.

[This article, from the "Financial Review," Thursday, May 26, 1988, Sydney, Australia, was sent in by Alan Partridge (Esso Australia, Ltd., GPO Box 4047, Sydney, NSW 2001, Australia.) Thank you, Alan. It's certainly one topic you can get your teeth into. Even so, I hope we all continue to floss in spite of the disservice it may be to the new science of "plaque analysis."]

By way of background and explanation of the newspaper article, Alan noted the following:

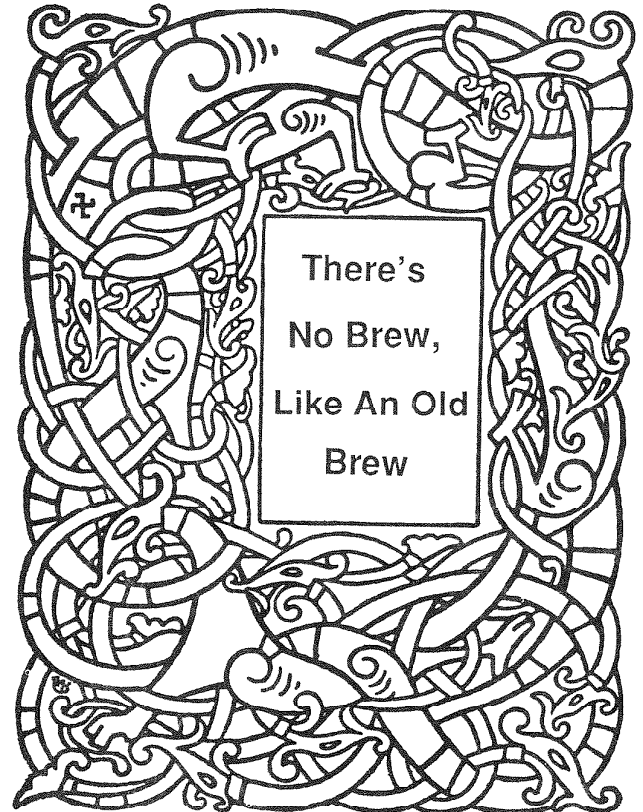
\* \* \*

The palynological work that the reporter is having a "dig" at was done by Michael Macphael, formerly of Esso Australia, Ltd., but now a consultant. Michael has been investigating the key holes of old furniture and the doors of old houses around Sydney, the original settlement in Australia. He has found a distinct assemblage characterized by "cultivated cereal" pollen which he dates back to the first 20-30 years of settlement. He argues that from historical records, it was only during this time (i.e., 1788-1820) that cereal crops were grown in Sydney on any scale. The crops were also grown close to the houses to prevent theft (remember Australia was originally settled as a penal colony). However, because of poor soils and high rainfall in Sydney, the latter causing crop loss due to rust, cereal production was/or had to be moved. Initially, this was to Tasmania and then to areas on the other side of the local mountain range. Naturally, you would expect lower cereal pollen in younger "keyholes." Like in the U.S.A. if you can demonstrate the provenance of early colonial antique furniture, you improve its sale value. The reporter in the article (see above) is rather "cynical"

about the application of science to the antique market, hence, his "dig" at palynology.

\* \* \*

(It's a relief to know that if there is an increase in the number of palynologists looking into keyholes, there is a valid, scientific reason. -Ed)



According to Scottish legend, before there was whiskey, there was heather ale--a stout brew sweetened with the nectar of heather blossoms. The early inhabitants of northern and central Scotland, the Picts, reputedly guarded their secret brewing recipe to the end: the last Pict known to possess the secret threw himself from a cliff rather than divulge it to another tribe.

The validity of the legend and the previous existence of heather ale has been doubted by most historians, but things are brewing in Scotland that may change that. Neolithic pot shards, recovered from a 4,000 year old site on the Hebridean Island of Rum (honest), by Edinburgh archeologist Caroline Wickham-Jones have brought things to a head.

Some of the shards covered with a fibrous residue were submitted for palynological study to archaeobotanist, Brian Moffat. The pot residues yielded an unusual mixture of pollen grains including heather (*Calluna*), bog myrtle, meadowsweet, royal fern, and "cereal pollen" (apparently that of barley and oats). Moffat concluded this was nothing less than the leftovers of a Neolithic cool one.

Glenfiddich Scotch whisky distillers agreed to test his conclusion and brew up some heather ale based upon his implied Neolithic recipe. Various mixtures and concentrations were tried until they produced a brew that smelled like heather and tasted almost like dry vermouth.

Sixty bottles of the heather ale were distributed and consumed at a reception hosted by Glenfiddich at the Royal Museum of Scotland in Edinburgh last November. Apparently the archaeologists and reporters present made short work of the brew with Neolithic gusto. Archeologist Wickham-Jones noted that one of her associates woke up with the first Stone Age hangover in millennia.

(Thanks to Virgil D. Wiggins for sending in a copy of the "Explorations" column by James I. Kilgore from which the above account was extracted. Additional data is given in Kilgore's column in the July, 1988, issue of OMNI Magazine. - Ed)

## MEETINGS OF INTEREST

### 4th IAA Conference

The next International Aerobiology Association (IAA) Conference is scheduled for September 3-7, 1990, in Stockholm, Sweden. The Congress sessions will commence on Tuesday morning, September 4, 1990, and close on Friday afternoon September 7, 1990.

Field trips are being planned in addition to various shorter excursions during the Conference. A congress dinner and other special events for both delegates and accompanying members will be arranged.

#### Scientific Programme/Symposia

1. The significance of air pollution in aerobiology.
2. Aeroallergens
3. Meteorological aspects of aerobiology.
4. Ecological aspects of aerobiology - past and present.
5. Bio-aerosols indoors.
6. Methodology, sampling and analyzing.
7. Microbiology & palynology.
8. Phytopathology.
9. Committees and working group reports (General Symposium).
10. Minisymposia on special topics.

### Congress Language

The official language of the Congress will be English. If at all possible, simultaneous interpretation (French, German) will be arranged.

### Call for Papers

Contributions can be given both as papers and/or posters. The deadline for Abstracts will be announced in a later circular.

### Publications

A Program, an Abstracts Volume and various Booklets will be produced. The publication of refereed papers is under investigation.

### Enquiries

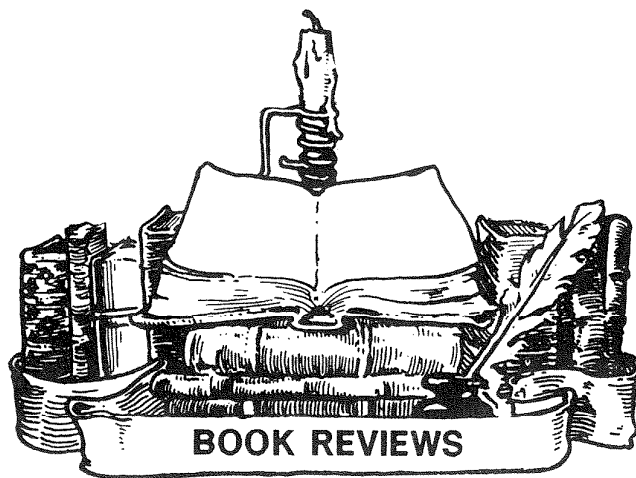
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Aerobiology is the study of airborne organisms, air spora, in both outdoor and indoor environments. The air spora is composed of viruses, bacteria, algae, microfungi, fungal, moss and fern spores, pollen, minute seeds, plant and animal fragments, protozoans, minute insects, spiders, etc. The aerobiological pathway includes source, take-off, passive transport, deposition and impaction of these organisms.

Aerobiology is an interdisciplinary science of great significance and importance in many fields such as human, plant and animal pathology, allergology, pneumonology, ecology, phytogeography, palynology, microbiology, entomology, biometeorology, aerosol physics, etc.

The interaction between the airborne microorganisms and meteorological parameters, air pollutants or other environmental factors needs increasing attention and exploration within the broad scope of aerobiology.



**Time's Arrow, Time's Cycle. Myth and Metaphor In the Discovery of Geological Time**

by Stephen Jay Gould. Harvard University Press, 222 p., \$17.50.

In Time's Arrow, Time's Cycle, Stephen Jay Gould interprets the writings of three earth historians according to the extent to which they viewed geologic time as linear (time as an arrow) or as cyclical. Time's arrow and time's cycle are the metaphors of the subtitle. The myth lies in how textbooks have portrayed these earth historians. Gould contends that the development of historical geology as described in textbooks is one dimensional: a "cardboard" history. The textbook villains invoked biblical explanations to incorrectly interpret earth history; the textbook heroes used field evidence to discover the truth about geologic time. Through explication of the writings of Thomas Burnet, James Hutton (and John Playfair's interpretation of Hutton) and Charles Lyell, Gould seeks to show the fallacy in viewing the discovery of geologic time as the triumph of rational scientific investigation over speculative religious dogma. Underlying Gould's revised history of geology, however, is a clear message to modern geologists to consider some events in earth history as unique and some phenomena as representing geologically sudden changes. (At the risk of revealing the book's ending: the Cretaceous-Tertiary boundary should come to mind here.)

Gould's chapters on Burnet and Hutton explore two themes: (1) the extent to which each writer recognized the linear and the cyclical elements of earth history, and (2) the methodology of each author. In both chapters illustrations from the texts of Burnet and Hutton provide focal points for the discussion.

In explaining the frontispiece from Burnet's The Sacred Theory of the Earth Gould argues that Burnet considered time to be both directional and cyclical. Gould also rejects the idea that Burnet's history was purely speculative by citing Burnet's search for a rational explanation of the flood. Burnet, Gould concludes, was not the closed minded theologian of geologic myth.

On the other hand, Gould believes that James Hutton holds a false position as an unqualified hero in the history of geology. Hutton misread geologic time by concentrating on cyclicity alone. Hutton's view of earth history is contained in his drawing of an unconformity in his Theory of the Earth. Hutton's recognition of renewal of the earth's surface through uplift made possible the extension of geologic time. However, Hutton's theory of a cyclical earth history omits linear time. (Despite the fact that the dust jacket description states the opposite.) Cycles alone, with no progressive linear element, provide no means for the ordering of events. This gives us, according to Gould, not only Hutton's world with "no vestige of a beginning--no prospect of an end" but also a world with no unique events to mark advancing time. Myth surrounds Hutton's methodology as well.

Gould cites evidence that Hutton's method was not one of field observations leading to interpretations. Hutton formulated his theory first and gathered his evidence in subsequent field excursions.

Hutton has achieved his heroic place in the history of geology because our understanding of Hutton derives from John Playfair's Illustrations of the Huttonian Theory of the Earth. According to Gould, Playfair not only made Hutton more readable, he also introduced sequential time into Hutton's cycles.

Gould's chapters on Burnet and Hutton could stand alone as independent essays. However, in the context of the book, these chapters serve as warm-ups for the main event: Gould on Charles Lyell and his Principles of Geology. In his discussions of Burnet and Hutton, Gould's argument is with the geologists who have made Burnet a villain and Hutton a hero. He holds Hutton blameless for the creation of the myth. Not so Lyell: "Lyell constructed the self-serving history that has encumbered the study of earthly time ever since." (p. 104)

Dispassionate in his critiques of Burnet and Hutton, Gould becomes personally involved in his discussion of Lyell. Lyell's stature is one reason for this greater effort on Gould's part: the larger the hero, the stronger the attack. In addition, Gould finds in Lyell a writer who developed arguments with style - a style not unlike Gould's own. The same techniques ascribed to Lyell by Gould are used by Gould himself: historical justification, metaphor and contrasting adjectives. An example of the last technique is: "Professional historians know better, of course, but their message has rarely reached

working geologists, who seem to crave these simple and heroic stories" (p. 111-112).

The real reason behind Gould's intense discussion of Lyell is Gould's desire to de-emphasize the role of gradual change in earth history. The adherence to concepts of uniform rates and process, Gould claims, denies the significance of unique events. According to Gould, Lyell's version of earth history encourages misinterpretations of the evidence for significant breaks in the continuity of earth history: "For more than a century, many geologists have been stifled...by a belief that proper method includes an *a priori* commitment to gradual change, and by a preference for explaining phenomena of large scale as the concatenation of innumerable tiny changes" (p. 174).

In this book Gould investigates the basis for his discomfort with uniformity in geological processes. He adopts the arrow and cycle metaphors to show that his rejection of gradualism stems from gradualism's reliance on a cyclical pattern. He concludes that both cyclical phenomena and events on a linear scale must be considered to correctly interpret the evidence of earth's history.

Many features of *Time's Arrow*, *Time's Cycle* can not be covered in a review. The array of little-known facts, the figurative language, the gradual development of the arguments (no sudden jumps here) and the numerous allusions to art and literature as mirrors of Western thought combine to make the book a pleasure to read.

The strength of the book, however, lies not in the enjoyable aspects, but in the disturbing ones. A multitude of questions arise, questions which can be asked even by readers who do not have Gould's admirable familiarity with the texts he interprets. Historical geologists and geology's historians should read *Time's Arrow*, *Time's Cycle*, and read it with a skeptical eye. In the process of questioning Gould's interpretations most readers will be forced to re-examine their own understanding of change through geologic time.

Reviewed by:

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#### **Formation Processes of the Archaeological Record**

by Michael B. Schiffer. University of New Mexico Press, Albuquerque, NM, 428 p. + XXII. \$15.95 paper.

Geology and archaeology have long been very closely allied disciplines. Within the last decade we have witnessed the growth and development of a specialized subdiscipline, geoarchaeology. As a contribution to this field, Schiffer has presented a volume dealing with processes contributing to the formation of archaeological

sites. While approached from the viewpoint of archaeology, this volume will be applicable to a wide variety of research specializations in that it deals with environmental as well as cultural factors of site formation.

The volume is divided into four parts, each containing several chapters. In Part I, Schiffer examines the theoretical background and implications of formational processes through the use of Transformation Theory. This section is overly thorough and presents an excellent overview of the current theoretical underpinnings.

In Part II, the author examines several varied cultural practices which all contribute to the formation of archaeological sites. Chapter 3 details the process of reuse within an archaeological context, including types, mechanisms, and their interpretive value for archaeology. Several models are presented in Chapter 4 to quantitatively assess the means of cultural deposition of artifacts within sites. These models attempt to detail the mechanisms involved in aspects other than reuse such as: loss, abandonment, disposal of dead, caching behavior, etc. The modification of artifact position once in an archaeological context are treated extensively in Chapters 5 and 6. These processes involve modern cultural practices such as pothunting, plowing, and other earth-moving phenomena.

In Part III, Schiffer examines a myriad of natural or environmental site formation processes. In the introduction to Chapter 7, the author explains the nature of environmental processes in relation to the artifact. In one instance, Schiffer calls for the elimination of "inappropriate" labels such as perishable and non-perishable which pervade the archaeological literature. While from the standpoint of accuracy this position is admirable, it would be perhaps more defensible had the author offered alternatives for those terms he wants replaced. Schiffer does present a good, thorough discussion concerning the agents of deterioration. While a more thorough discussion of the categories of deterioration agents would have been desirable, his focus on the specifics of decay by artifact type is exhaustive and an excellent treatment. Chapters 8 and 9 deal extensively with the geological factors affecting site formation at both the site and regional levels respectively. These two chapters contain a wealth of geoarchaeological data and are very well written.

Part IV is an examination of various applications of formation processes to archaeology. Case studies of particular excavations including Hohokam and Broken K Pueblo are emphasized in Chapters 11 and 12, respectively. Finally, in way of conclusion, Schiffer examines the effect of the archaeologist's own behavior on the archaeological record.

In general, the book is well written and informative. The references are exhaustive and will form a good starting point for anyone interested in geology and geoarchaeology. The only drawback I found was in Part II. This sec-

tion seemed somewhat laborious and overstated. The same information could have been presented in half the space, and it would have been more readable. In spite of this minor objection, the book is relevant to both professionals and advanced students. It is a valuable reference and should be a well used addition to one's bookshelf. At its current price it is admirably suited for use in graduate courses in geoarchaeology as a supplemental text.

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### **Phylogeny Reconstruction in Paleontology**

by R. M. Schoch, 1986, Van Nostrand Reinhold, 353 pages, \$52.95

This book was intended by its author to serve as a supplemental text on the uses of phylogeny reconstruction in paleontological studies. In this goal, it succeeds quite well, being an informative, well referenced and indexed book that progresses from introductory to advanced material. The author discusses various aspects of phylogeny reconstruction from the paleontological, rather than the neontological, perspective. If you have ever sat through a course on evolution in which the instructor proceeded on the first day to dismiss the value of fossils to evolutionary studies, you will appreciate this book.

Schoch, a vertebrate paleontologist, has organized the book in a logical manner progressing from a chapter summarizing methodologies, through those treating the adequacy of the fossil record (heresy to most cladists), biogeography and beyond. The science of palynology is very much in the "alpha" state of purely descriptive studies, with very few studies primarily concerned with changes in lineages over time. Not that all palynological studies ignore evolutionary concerns--studies that immediately come to mind are Wiggins (1982) and Doyle et al. (1982)--however, these are the exceptions rather than the rule. If palynology is going to take the next step, the topics in this book, although concerned more with animals, must be considered.

Chapter 1 provides a summary of methodologies, discussing the intuitive or "seat of your pants", cladistic (the dreaded C-word), phenetic, and molecular schools of evolutionary study. The last school may not be *apropos* to most palynologists, but is playing an increasingly significant role in studies of extant organisms, and may become more important to paleobiologists in the future. Each school is discussed in detail, with an extensive bibliography and index of the admittedly complex terminology (next Icebreaker you're at, try saying "symplesiomorphy", with a straight face, ten times in rapid succession).

A detailed discussion of the conceptual basis of phylogeny reconstruction is provided in chapter 3. A discussion of the modern and historical definitions of homologies and their uses in phylogeny reconstruction is provided. Parsimony is the concept underpinning much of modern cladistic theory. It holds that the solution requiring the fewest steps is likely to be the correct one, and is nicely dealt with in English in this chapter. Although most cladists utilize parsimony-based methods, parsimony requires assumptions about the workings of evolution which may not in fact be correct, as this book points out. Techniques such as clustering, compatibility analysis, and the Wagner Groundplan-divergence Method, are thoroughly discussed. The chapter concludes with discussions on construction of phylogenetic trees, ancestor-descendant relationships, monophyly, and evolutionary rates.

Chapter 4, the Adequacy of the Fossil Record, first deals with the dogma that the fossil record is inherently incomplete and thus of little or limited value for certain types of phylogenetic studies. This argument has been applied by cladists to the use of stratigraphic occurrence in determining character polarity (discussed in Doyle and Donoghue, 1987) as was done by Doyle, et al., (1982). Several formulae are presented to evaluate the completeness of the record. Harper's (1980) seven points on the rationale of determining relative ages from fossil sequences are presented and discussed, leading to sections on the use of phylogenies in biostratigraphy and Shaw's Graphic Correlation Method.

Chapter 6 is a concise examination of Systematics, Taxonomy, and Classification, that should be considered before construction of new schemes. A discussion of the rules and codes of nomenclature concludes the chapter. Chapter 2 deals with the species concept and concepts of fossil populations.

Not all palynologists will rush to study the evolution of palynomorph characters. However, for those desiring to take their science to a new level, this book provides a fine reference and starting point.

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**Pollen of the High Andean Flora (Quebrada Benjamin Matienzo), Province of Mendoza, Argentina**

by Monica Wingenroth and Calvin J. Heusser. Instituto Argentino de Nivología y Glaciología (IANIGLA), Mendoza, 1983, 195 pp. (Copyright IANIGLA, 1985). Servicio Centralizado del Documentación y Información, Centro Regional de Investigaciones Científicas y Tecnológicas, Casilla de Correo No. 131, Correo Central, 5500 Mendoza, Argentina. \$45.00 U.S. (in English or Spanish).

This handsomely illustrated book presents the first phase of a study aimed at the reconstruction of the vegetation and climate of a region of the High Andes following the last ice age. It is primarily a descriptive and pictorial representation of the pollen grains of living phanerogams from the tundra of the Benjamin Matienzo Valley and is the first reference collection from the Cuyo Zone, Cordillera de Los Andes

A brief introduction to the study includes a description, maps and photographs of the geographic location and geomorphic setting of the valley. A single page is devoted to the vegetational communities encountered in the region, which left this reviewer pleading for more detailed information regarding the tundra vegetation. This "chapter" would have been more effectively presented by including additional information about soil types and slope conditions as they influence (or are influenced by) the distribution of the endemic plant communities. The introductory chapters are enhanced by the inclusion of superb color photographs of both the general area and the tundra vegetation-which may, in part, explain the price of the volume.

The strength of this publication is in the descriptions and illustrations of the pollen grains of 74 living species of tundra plants. Families and genera within families are grouped in alphabetic order with facing descriptions and illustrations. Descriptions are detailed and include mean sizes, ranges, standard derivations and modal values. Illustrations are of an unusually high quality and

comprise both light micrographs and SEM photographs which are sufficiently clear to delineate important morphologic characteristics. Appendices to the descriptive portion of this study include keys to the identification of species, a glossary of terms, an index to families and genera, and a comprehensive bibliography

This book should prove to be a welcomed addition to the library of the palynologist concerned with the Holocene high latitude/altitude pollen records. The logical organization of the descriptive materials along with the quality of illustrations make it an excellent reference source. Studies treating the modern pollen rain and fossil pollen record are in progress (Preface, p. 13) and are intended to elucidate fluctuations of temperature and precipitation in the Central Andes.

Reviewed by:

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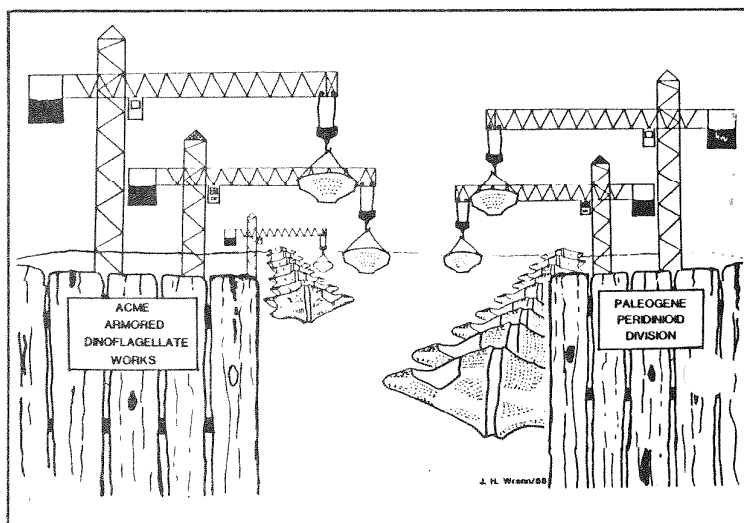
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**Late Jurassic and Early Cretaceous Palynology of the Perth Basin, Western Australia**

by John Backhouse. Geological Survey of Western Australia, Bulletin 135 (233 pages, including 51 plates).

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