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Presidential Message.....	1
Message from C.B. Beck.....	2
Coming Events.....	5
Book Reviews.....	7
Parting Shots.....	11
Photos of '89 Fieldtrip.....	

AASP NEWSLETTER

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AASP NEWSLETTER

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Presidential Message

This is my first attempt at writing a "Presidential Message". The name of this column is so intimidating (for the writer) that I suddenly understand and appreciate the "fireside chat". Somehow the idea of just sitting down for a pleasant conversation with my palynological friends is immensely more inviting.

The AASP has come a long way, particularly in the last few years. The organization stands on the threshold of a very new and different venture. We, as an organization, are in the process of selecting a university for an endowed CENTER OF EXCELLENCE IN PALYNOLOGY. At the Mid-Year Board of Directors meeting to be held in Denver (see announcement, for details), we will hear the final presentation of seven universities who are competing for the privilege of having the CENTER. Ken Piel from Unocal and Stephen Hall from the University of Texas have both worked very hard towards gathering the information about the various universities which might be interested, compiling a list of suitable candidates, visiting the schools and reporting back to the Board of Directors.

The following is a list of the seven finalists:

University of Arizona, Tucson
University of Texas, Austin
University of Oklahoma, Norman
Louisiana State University, Baton Rouge
Pennsylvania State University, University Park
Michigan State University, East Lansing
Texas A & M, College Station

Years ago, when the idea was first presented regarding a chair in palynology, many of us thought it was an impossible dream. A chair at any major university is astronomically expensive. We are talking millions. How, you may well ask, do we expect (plan, dream, hope, etc.) to come up with that kind of funding? Certainly not from your dues, gentle reader. It was this obstacle, seemingly insurmountable, that has held us back for years. It wasn't until Ken and Stephen really got their teeth into the project that we learned exactly how the funding of a chair is handled by the universities. We all can think of

situations where some fabulously wealthy individual has given his/her *alma mater* large sums of money to have a chair established in their name, but this is actually not common. The funding of the AASP Chair will be achieved by a joint fund raising effort by the AASP and the chosen university.

There are other interesting things happening as well. The AASP has attempted to impact the design of computer software development for data storage. The idea behind this effort is to limit the number of systems so that data are interchangeable and so that the equipment required for palynological systems has other uses within departments of organizations. Members of the PACSYD committee have seen some rather surprising, state of the art, computers with imaging capabilities that are simply awesome.

Consider for a moment the possibility of having a photograph of every good example you have ever seen of a single species displayed for you on a computer terminal. When you take a photograph of an important marker species, there will be no removing the film from the camera, no messy darkroom work, no cutting and trimming the pictures, no placing them in books with scant notes to remind you where you found them. With the modern technology, a video camera is attached to your microscope instead of a 35mm camera. The video camera captures an image of your critter and saves it to disk. What you see on the screen is exactly what the finished product looks like. No more worry about whether the ASA was correctly recorded. As you photograph that critter, the same information that you used to write down in your photo-log book is now typed into the computer and permanently attached to that specimen. It doesn't take any longer but the results are astonishing because of the ability of the computer to store and recall. Every picture you have ever taken of that species can be instantly displayed, over 40 individual specimens per screen. Entire catalogues of images will be available to you. We are not talking here about the misty vistas of the future. I saw a magnificent display of this powerful tool just yesterday afternoon at Shell Oil Company in Houston.

The Autumn, 1989 issue of the Paleontology Newsletter of the Paleontological Association contained a short article on the possible fate of the internationally famous fossil site of Mississippian age at Crawfordsville, Indiana. It

is in the process of being purchased by a group of commercial and amateur collectors from Michigan, Illinois and Missouri. They plan to completely excavate the site and sell the fossils, and no scientific study is planned.

An effort is being made to prevent the destruction of this valuable scientific resource, hopefully by designation as a National Landmark. In order to present an effective application for such a designation, it is necessary to document widespread acknowledgment of the paleontological importance of the locality. If you support this effort, please write to Prof. Gary Lane, Department of Geology, Indiana University, Bloomington, Indiana, U.S.A. 47405. Should you have been so lucky as to have read the wonderful book *WONDERFUL LIFE* by Stephen Jay Gould, you will immediately recognize that, although interpretations may have been made on the fossils from a special fossil locality, there is always a need for new studies. In *WONDERFUL LIFE* Gould describes the reinterpretation of the strange genus *Opabinia* from the Burgess Shale. New techniques have allowed a reconstruction of this critter in a way which is truly astonishing. We here in Canada, where the Burgess Shales are located, can perhaps be a bit smug, we have laws to protect fossil localities. Only the actions of paleontologists (that means you) can protect fossil localities in the USA. So contact Gary Lane and lend a hand to his battle.

At the AASP meeting in Tulsa, I asked for members of the AASP to drop me a note with ideas and comments about the direction of the AASP. I here repeat that request for the sake of the members who were not fortunate enough to have attended the meeting. Please write.

As a final note, I want to take this little space to publicly thank the PhD students at Texas A & M University for their efforts in presenting a symposium on Applied Palynology at the meeting in Tulsa. These five students, Gretchen Jones, Michael Pendelton, Eri Weinstein, John Jones and Kristin Sobolik, were "asked" by their supervisor, Vaughn Bryant, to put together a symposium, when they returned from summer vacation, with less than a month to prepare. They provided us with some fascinating insights in to the new ways palynology is being applied to solving some old problems. Thanks guys and keep up the good work!

Best wishes for 1990
Judith Lentin, President

Note:
dues are due!

FROM THE PRESIDENT OF THE INTERNATIONAL ORGANIZATION OF PALYNOLOGISTS CHARLES BECK

Editor's note: The manuscript submitted to us by Charles Beck, the original manuscript, has been revised. We are pleased to see that the manuscript is now in a form who wants it. Please contact Charles Beck, experiencing some difficulties, and we must increasingly work to ensure the appeal made by Mike Boulter (IOP) in the last issue of the Newsletter. Any comments from our members would be quite welcome.

The health of any research should be directly related to the importance of the questions asked and the quality of the efforts to answer them. Unfortunately, the very existence of some small fields may be threatened by the lack of understanding of their importance by university administrators and government officials faced with economic constraints, and they may be assigned a priority for support much lower than deserved. For example, today, in many countries, molecular biology and geophysics receive major support, sometimes to the exclusion, and often to the restriction, of support for systematic and evolutionary studies. Systematic and evolutionary (including ecological) studies of extinct organisms have been especially severely affected.

This problem was discussed at the IOP Business meeting in Melbourne in August 1988. The lack of support for paleobotany in Great Britain was emphasized especially strongly, but it became apparent from numerous comments that the problem exists in many other countries as well. The problem in the United States is reflected in the recent decision of David Dilcher to move (in the summer of 1990) from Indiana University to the Florida State Museum. Fortunately, he will be able to move a major part, possibly all, of the paleobotanical collection to Florida where it will continue to receive excellent care and be available for study by the international paleobotanical community. The failure of Michigan State University to replace Aureal Cross, and the University of Montana to replace Charles Miller, with paleobotanists upon their recent retirements is additional evidence of the growing problem as is the great difficulty that recent recipients of the Ph.D. have had in securing positions in the field. Some who have found academic positions are not teaching or doing research in paleobotany, and others have gone into entirely different fields. Ironically, one of my recent students is now a technician in a molecular biology laboratory.

What is the solution to this international problem? It has been suggested to me that perhaps all we need to do is wait, and the pendulum of support will swing in the other direction. I believe this passive stance is very dangerous. Once university positions are lost, they are very difficult to regain. Thus, we must actively attempt

to educate university administrators, legislators and other government officials who control the economic support for many major universities about the scientific importance of our field.

At the request of IOP members attending the business meeting in Melbourne, and with some suggestions from David Dilcher, I have prepared the following. It can be used as is, or as modified by IOP members, in whatever ways they feel might be useful to the cause of paleobotany. Assuming that it will be distributed primarily to nonpaleobotanists, I have kept it largely non-technical. Upon request, the IOP secretary will supply copies to be duplicated.

A CASE FOR THE SUPPORT OF PALEOBOTANY

Paleobotany is an important broad area of investigation because paleobotanists utilizing data from fossils ask questions, and solve problems that cannot be resolved with data from any other source. Research efforts center on several different, but often overlapping, subdivisions including morphology, taxonomy, ecology, plant distribution (phytogeography), and evolutionary relationships. Consider the following questions, the answers to which attempt to capture in brief the essence and significance of these areas:

1. What is the nature of plants that lived in past geologic time from recent pre-history to the Pre-Cambrian, over 500 million years ago? The only basis for answering this question is evidence from the fossilized remains of these plants that occur in rock strata of the Earth's crust. Knowledge of organisms, plants and animals, and the variation in their form and structure through geologic time, provides both a record of their existence and the only direct evidence of evolution. It is also the source of data for studies of taxonomy, ecology, and evolutionary relationships, and provides the most direct basis for determining rates of evolution.
2. Why do we need to apply principles of taxonomy to fossil plants? It is through taxonomy that we name and identify plants, those that lived in past geologic time as well as those that live on Earth today. Without names we would have no effective means of referring to and utilizing organisms in Paleobotanical and other studies; and the importance of a uniform worldwide system of names is evident to all.
3. Why are we interested in the ecology of extinct plants? The kinds of plants in a sediment, as well as its composition, provide the basis for estimating the conditions under which the plants lived and under which the sediment was deposited. It is important to understand the conditions, both biotic and abiotic, under which these plants lived in order to more accurately interpret their morphology and their role in the plant community.

4. Why would one wish to study plant distribution? A knowledge of the distribution of plant (and animal) fossils in time (i.e., through the geologic record) and space is of the utmost importance. It provides the basis of biostratigraphy and furnishes essential data for interpreting and understanding the climates and the positions of the continents during Earth's past history.

5. Finally, Why do we seek to understand evolutionary relationships of extinct plant groups? The ultimate goal of systematic paleobotany is to understand the origin of major groups of plants and the course of their evolution through time. Systematists who study living plants as well as those who study fossils use several methods to suggest relationships of major groups, but the only direct means of determining the ancestors of plant groups is by a study of the fossil record.

The best way to understand the significance of a field is through specific examples of the use of information which it generates. Such information may be used in practical applications or to contribute to the solution of major problems in the field or in related fields. For example, paleobotany is of great practical importance in providing evidence for biostratigraphy. The use of pollen grains and spores is especially important in identifying oil-bearing formations and in correlating disjunct strata, and many paleobotanists who are specialists in the study of pollen and spores (palynologists) are employed by major oil companies and state and national geological surveys for such purposes.

Evidence from paleobotany is routinely used in solving problems and developing new hypotheses in systematic and evolutionary biology. Consider a few examples:

1. Until 1960, evolutionary biologists were confronted with the dilemma of the existence of complex seed plants in the Carboniferous and no recognized ancestral group. The psilophytes of the Devonian were so relatively simple in morphology it was impossible to conceive of the seed plants having evolved directly from any member. In 1960 the progymnosperms, a more complex group with some characteristics of both psilophytes and early seed plants were recognized, thus providing the intermediate group that had been anticipated.
2. The place, if any, of the bryophytes in vascular plant evolution has been a longstanding problem of considerable interest. Recently, German workers discovered gamete-producing plants similar to those of bryophytes in the Lower Devonian Rhynie Chert of Scotland. The association of these gametophytes with some of the most morphologically simple spore-producing vascular plants known suggests a possible early, evolutionary relationship between bryophytes and some vascular plants, although the nature of this relationship is still unclear.

3. Very primitive seeds and seed-like structures have been found in increasing numbers in Upper Devonian sediments during the past several decades. All are characterized by a similiar, funnel-shaped structure, apparently adapted as a pollen-catching mechanism. This remarkable similarity in morphology is the basis of the belief that the gymnosperms, the first seed plants to evolve, were derived from a single ancestral source--that they were monophyletic. A slightly younger seed-like structure recently discovered in France deviates from this pattern in lacking the specialized, pollen-catching structure at all. This striking difference in morphology as well as the implied differences in reproduction biology suggest that seed plants might have evolved at least twice, thus supporting the view that gymnosperms might be polyphyletic.

4. The origin of angiosperms and the closely related problem of the nature of the primitive flower are among the most compelling problems in paleobotany. Since the 1930's the primitive flower has been thought by many systematists and morphologists to be large, with many conspicuous floral parts arranged helically on an elongate axis, much like that of *Magnolia*. These flowers were probably pollinated by insects. A competing viewpoint, introduced in the latter part of the last century, considers the primitive flower to be small and simple, consisting of few floral parts, with many such flowers attached helically to an axis (forming a "catkin"). Flowers of this type characterize wind-pollinated plants such as Poplar and Willow. Paleobotanical discoveries during the recent past have shown conclusively that simple flowers of the latter type were common along primitive angiosperms that lived during mid-Cretaceous time. It is not clear, however, that this was the primitive type since several other flowers have been described from even older strata. It seems likely, however, that continued research will eventually solve this problem.

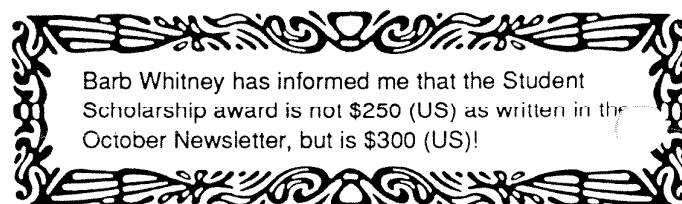
These four examples, from among many that could have been chosen, show clearly how research in paleobotany is contributing to the solution of long-standing problems in evolutionary biology. It might seem, at first thought, that paleobotanical systematists and molecular systematists have little in common, yet both have, ultimately, the same goal--understanding evolutionary relationships of organisms. And there can be a mutually beneficial relationship between them. A knowledge of paleobotany assists molecular systematists in choosing problems on which to do research, and evidence from each discipline can provide tests of hypotheses based on evidence from the other.

I have emphasized the role of paleobotany in research thus far in this essay. It follows that paleobotany also has an important place in undergraduate and graduate curricula. As a significant area in evolutionary biology, all educated persons should have some knowledge of the field. Furthermore, one must have a significant

information base and a knowledge of methods and techniques in order to do research in an area. It is essential therefore, that information about fossil plants must be included in introductory botany and biology courses as well as in undergraduate courses in systematics and evolution. In addition, specialized courses in paleobotany and palynology are necessary in order to prepare future researchers in the field and to inform persons in related fields of the significance of paleobotanical data to their own research efforts.

As the only means of documenting the evolution of organisms through time, as a major contributor in clarifying the evolutionary relationships of organisms, and as the source of data essential for the solution of problems in the interdisciplinary areas of biostratigraphy, paleogeography, paleoecology and paleoclimatology, paleobotany is a science of utmost importance that deserves the strongest possible support.

C.B. Beck
Ann Arbor



Barb Whitney has informed me that the Student Scholarship award is not \$250 (US) as written in the October Newsletter, but is \$300 (US)!

MENTE ET MALLEO

Under the motto Mente et Malleo in 1922 the Carpatho-Balkan Geological Association (CBGA) was founded. Presently, eight countries of this region are formal members of the association.

The XIV Congress of CBFA was held September 20-23, 1989 at the "Kliment Ohridski" University of Sofia, Sofia, Bulgaria.

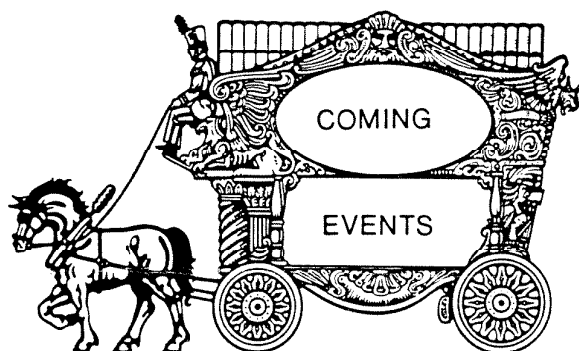
The program consisted of three days of formal presentations (nearly 500 accounts delivered), a session of poster presentations and field trips.

A poster session "Microfossils in Bulgarian Stratigraphy", September 19 - 23, 1989 was organised too. Topics of widespread concern were presented, almost half of them within the scope of palynology. One could see the greater part of the stratigraphic scale covered, e.g.: Early Paleozoic acritarch dating of low-grade metamorphic rocks, W. Bulgaria (by R. Kalvatcheva), uppermost Silurian - lowermost Devonian

chitinozoan biostratigraphy, subsurface of N. Bulgaria (by I. Lakova), spore-pollen zones in the Westphalien, N. Bulgaria (by J. Latcheva), middle and upper Triassic palynozones from NE Bulgaria (by L. Petrunova), and Miocene marine and Neogene nonmarine diatoms, (by D. Temniskova & N. Ognjanova). Silicoflagellates, diatoms and ebridians in sediments from the Black Sea were also considered.

Fruitful discussions and an exchange of views with some foreign colleagues attending the congress took place. It was emphasized that microfossils prove to become more and more important when regional correlation schemes are to be made and specified.

Stanislav Kolev
Geological Institute, Sofia



1990 Annual Meeting Announcement

AMERICAN ASSOCIATION OF STRATIGRAPHIC PALYNOLOGISTS

Plan now to join your colleagues in Banff, Alberta, Canada for the 23rd Annual Meeting of the American Association of Stratigraphic Palynologists, to be held at the Banff Springs Hotel. The meeting will commence on Wednesday, October 10 with a symposium, followed by two days of technical sessions on Thursday and Friday. The field trip will be on Saturday, October 13.

Program

The meeting will commence on Wednesday, October 10, with an all day symposium entitled "Event Stratigraphy, A Multidisciplinary Approach, with emphasis on the Cretaceous of the Western Interior of North America." The symposium is being organized by Art Sweet and David McIntyre. Topics to be covered include dinoflagellate stratigraphic events and provincialism, regional palynological datums and phylogenetically and environmentally based angiosperm floristic events.

Other disciplines to be covered will include magnetostratigraphy, mammalian evolution, decapod zonation, plant macrofossils, geochemistry, radioisotopic dating, lithostratigraphy and sedimentology. Two days of open technical sessions will be held on Thursday, October 11 and Friday, October 12. Papers on any palynological topic are welcome, and necessary to ensure a successful meeting. Students are encouraged to present papers in competition for the L.R. Wilson Student Paper Award. A poster session will run concurrently with the technical sessions, with space available for many posters. Consider the newly instituted Best Poster Award, when preparing your material for presentation. A special invited address by A.R. Sweet, Geological Survey of Canada, will start the technical session on Thursday morning. Dr. Sweet will present an overview of the Cretaceous - Tertiary boundary and discuss many aspects of research on this interval, which has attracted much interest over recent years.

Please consider this announcement a preliminary call for papers for the technical sessions. Titles for both papers and posters are required by May 31. Abstracts are due by July 31. An abstract form will be included with the April newsletter.

Field Trip

The field trip on Saturday, October 13, will travel south through the Front Ranges of the Rocky Mountains east of Banff, where Upper Paleozoic strata will be observed. The second part of the trip will concentrate on examination of Upper Cretaceous strata. There will be opportunities to collect interesting palynological material from localities in the Foothills. A Cretaceous - Tertiary boundary locality may also be visited in this area. The trip will end in Calgary at a reasonable time.

Tyrrell Museum of Paleontology

This world famous facility is situated in Drumheller, approximately 145 kilometres (90 miles) east of Calgary. For those who wish to visit the Tyrrell Museum special arrangements can be made for a trip on Sunday, October 14, returning to Calgary in the late afternoon.

Banff and area

Banff is situated in Banff National Park which is one of the worlds great mountain destinations. It is a busy year round tourist attraction set amongst spectacular scenery. There are many nearby hiking trails. Bus tours can be taken to places such as Lake Louise and the Columbia Icefield. Shopping facilities in Banff are many and varied. There are also numerous restaurants, with a wide variety of cuisine.

Weather

In October days are mild, often sunny, and nights cool, with temperatures down to freezing. Snow is a distinct possibility but there is unlikely to be enough for skiing.



Banff Springs Hotel

This historic and elegant hotel is a short distance from the Banff town centre. It has fine dining facilities and numerous shops offering a wide variety of items. The Banff Springs world class golf course should still be open at the time of the meeting, unless there is too much snow. The hotel has indoor and outdoor heated pools and horseback riding and tennis are available at the hotel.

Getting to Banff

Banff is situated approximately 130 kilometres (80 miles) west of the Calgary International Airport, which is served by a number of Canadian and U.S. airlines. Rental cars, from the major companies, are available at both the airport and in Banff. There is limited bus service from the Calgary Airport to Banff, and a charter bus may be arranged if necessary. It is hoped that both an official airline and an official rental car company will be designated for the meeting.

For further information on any aspect of the 1990 Annual Meeting contact:

David J. McIntyre
Institute of Sedimentary and Petroleum Geology
3303 33rd Street N.W.
Calgary, Alberta
Canada, T2L 2A7
Tel. (403) 292 7089

1990 AASP Meeting Committee

D.J. McIntyre (Chairman) B.G.T. van Helden, J.H. Ford,
T.D. Demchuk

Announcement

The 1990 Mid Year Board of Directors Meeting will be held in Denver, Colorado. We will meet at the Dillon Inn in Denver on April 27, 28, and 29, 1990. The Dillon Inn is only a couple of blocks from the Airport in Denver with frequent courtesy buses. When calling the hotel to make your reservations please state that you are with the AASP meeting. This will give you the special rate of 41.00/night for the meeting and assure that we have sufficient rooms booked to receive the meeting room without charge. The telephone number of the Dillon Inn is (303) 388 8100. The meeting will start at 8:00AM on Saturday and Sunday. As a concession to those who wish to sleep in, free Continental Breakfast will be served in the meeting room, for all those staying in the hotel (only).

XV International Botanical Congress Tokyo

The Organizing Committee of the XVth International Botanical Congress wishes to announce that the XV IBC will be held in the Tokyo area during August and September, 1993: Nomenclature session 23 - 27 August; general session 28 August - 3 September. The first circular of the XV IBC will be prepared in 1990 and distributed to those who are interested in the Congress. Request for information and other questions and comments may be sent to the Secretariat at: XV International Botanical Congress, Tokyo, Department of Botany, Faculty of Science, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113, JAPAN.



Book Reviews

Pollens d'Angiospermes du Tertiaire de l'Inde et Leurs relations avec les Pollens du Tertiaire d'Afrique ; Selected Tertiary Angiosperm Pollens from India and their Relationship with African Tertiary Pollens.

G. Thanikaimoni, C. Caratini, B. S. Venkatachala, C. G. K. Ramanujam, and R. K. Kar (Editors), Institut Francais de Pondichery, Travaux de la Section Scientifique et Technique, Volume XIX, 1984, 93 pages + 72 plates of fossil pollen illustrations (SEM images and photomicrographs), Hardbound, 22 x 28.5 cms format, Institut Francais, Service des Publications, B. P. 33, Pondichery 605001, India; Price not given on the book, in Catalog Indian Ruppes 200.00, approx. French Francs 100.00 (According to the Catalog, payments can be made in US\$, French Francs or other European currency at the prevailing exchange rate at the time of ordering).

Indian Tertiary palynology is relevant and of interest for Southeast Asian and African studies particularly due to the northward Indian Plate passage during the Cretaceous-Miocene period. The plethora of Indian literature full of poor illustrations and inadequate descriptions that has accumulated in the last four decades presents a formidable task to sort out meaningful valid genera. Several Indian and French palynologists who were active in palynological research on the African Continent recognized several palynological elements common to India and Africa. They also realized the impending nomenclatural chaos in Indian literature if remedial steps were not taken. In May 1982, Dr. G. Thanikaimoni initiated the idea of an Indo-French Workshop on Tertiary Palynology to salvage useful taxa from Indian literature. The workshop was held at the French Institute, Pondicherry, on April 18-30, 1983. The workshop participants brought type material for reexamination, reinterpretation, and comparison to their proposed taxa. Several specimens were rephotomicrographed and SEM images were prepared whenever possible for better illustrations.

The resultant pollen atlas consists of descriptions and discussions of 36 genera arranged alphabetically. The French text is printed on the left column and the English on the right of each page. Each generic description contains the original diagnosis and emended diagnosis wherever available or necessary, followed by a general description based on the species examined. Fossil and recent affinities and ecology are discussed briefly. A representative list of fossils is given to show their Tertiary distribution.

The representative species of 36 genera and several comparative recent pollen are illustrated by 970 photomicrographs and SEM images in 72 plates. The illustrations are reproduced on good quality glossy paper. A map of India showing Cenozoic sedimentary basins is provided before the text for locality references.

Among the genera included in this atlas is a newly proposed genus and a new generic nomen substitutum. Six generic descriptions are emended. Similar species under different genera have been compared but all have not been transferred to their appropriate genera. These are illustrated under their original names. Thus if one refers to these names in the illustrations, there is no quick way to find them in the text. Objective synonymies are also avoided. New combinations are given without citing their status or a complete reference to their basionyms (e.g., C. rarispinosus: p. 19), although previous similar new combinations are considered invalid (e.g., E. ruedae: p. 21). Most of the emendations are actually the edited versions of original diagnoses without any new findings as stated in ICBN Art. 47. Still several nomenclatural remarks and discussions are useful.

Frequent changes in the ICBN rules and recommendations contribute to nomenclatural instability. Thus, leaving out such nomenclatural changes at the discretion of the users of the atlas appears to have been a good decision by the editors. Still, the citation of publication dates, full reference of taxa names, and their types with reference would have been useful additions. The generic index at the end of the text provides page and illustration references for the 36 genera treated, but gives only illustration references for comparative fossil species and extant pollen. To locate their discussion in the text may be an irksome experience.

The printing is clear and crisp on nonreflective paper and errors are few. The binding is sturdy. Despite the flaws in organization it is still an excellent reference source for Tertiary fossil pollen and their comparable recent material with ecological references. This book is a bargain at its price.

Satish K. Srivastava
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Precambrian in Younger Fold Belts edited by Vladimir Zoubek with Jean Cogne, Dimitar Kozhoukharov, and Hans G. Krautner. 1988. John Wiley & Sons Ltd., 1 Wiley Dr., Somerset, New Jersey 08875-1272. \$350.00 hardbound. 885 pages.

This book is the compilation of Project 22 of the International Geological Correlation Programme, correlation of the Precambrian rocks in the younger fold

belts of the European Variscides, the Carpathians, and Balkans. It is a massive book with contributions from over 40 authors.

The book is divided into two parts. **Part I.**

Precambrian in the European Variscan Belt covers the Precambrian in the Bohemian Massif, Precambrian of Dobrogea, Precambrian in the Horst Mountains of the Rhine Graben Area, Precambrian in the Variscides of Western France: Armorican Massif and Western Parts of the central Massif; and Precambrian Basement in the Variscan Belt of the Pyrenees. The final chapter is on the Variscan Belt: Conclusions, with correlations and summarizes the stratigraphy and petrology of the Precambrian rocks of the Variscan Belt.

Part II. Precambrian in the European Alpine Belt: Carpathian and Balkan Areas is divided into four chapters. The first two chapters cover the Precambrian in the Carpathian and Balkan areas respectively, while the third chapter presents the interregional correlations of the area.

Palynology is represented in the book in a chapter on biostratigraphy. It was pleasing to read in the introduction the author's comments on the stratigraphical importance of microfossils to correlation within the Precambrian: "The interpretation of isotopic ages being in many cases ambiguous in the polymetamorphic Precambrian of the younger fold belts, biostratigraphic methods have come to the fore. In this situation, the stratigraphical importance of microfossils has rapidly increased in the last decade, and particular attention has been paid to the micropalaeontological research in the Project work".

The biostratigraphy chapter covers the microfossil (mostly acritarchs) biostratigraphy of the Armorican Massif and Bohemian Massif, presenting several range charts, the type of microfossils recovered, the historical research of the area, the stratigraphical distribution and biological significance of the microfossils recovered, and a comparison of the Bohemian and Armorican areas in terms of the microfossil assemblages recovered.

This book is obviously intended for library purchase as its price (\$350.00) is prohibitive to most professionals and students. However, it is a book anyone working on the Precambrian should have access to. It contains in one volume the current state of knowledge of Precambrian rocks in the younger fold belts of the European Variscides, the Carpathians, and Balkans. In addition to the text, photographs, and sections presented, this volume also contains a complete and up to date References section for each of the areas covered.

Reed Wicander
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Central Michigan University
Mt. Pleasant, MI 48859

Eugene Dubois and the Ape-Man from Java by Bert Theunissen. 1988. Kluwer Academic Publishers Group. PO Box 332, 3300 AH Dordrecht, The Netherlands. \$49.00 hardbound. 216 pages.

Everyone who is interested in human origins and evolution knows who Eugene Dubois is and that he discovered Pithecanthropus erectus, the 'upright-walking ape-man', also known as "Java Man". The story of his discovery of Pithecanthropus has been told in numerous popular works and textbooks on human evolution. Interestingly, very little attention has been devoted to Dubois himself or an interpretation of Dubois' paleoanthropological research.

This book, originally published in Dutch in 1985, admirably fills that gap. It is not a biography although Theunissen does give a brief sketch of Dubois' life in the Introduction. Rather it is an analysis of the way in which Dubois's discovery and interpretation of Pithecanthropus erectus was received in scientific circles, as well as an examination of the significance of his work in the development of paleoanthropology.

The book is divided into five chapters, following in broad outline, the chronology of Dubois' life and work.

Chapter 1: The Nineteenth-Century Background surveys the state of affairs in paleoanthropology at the time Dubois entered the research field. It is important that the reader know what the prevailing opinion of the theory of evolution was at that time, and particularly where humans and human fossil remains fit in to the evolutionary scheme in order to appreciate Dubois' role and the significance of his discovery.

Chapter 2: The Road to Trinil covers Dubois' background and training in order to reveal his motives for going in search of Homo sapiens fossil ancestors. Dubois believed that evolution should be documented on the basis of fossil evidence rather than on the study of modern primates, which had predominated up to that time. As we now know, this decision would alter the science of paleoanthropology dramatically. This chapter then discusses his government hospital posting to Sumatra and subsequent transfer to Java where he discovered Pithecanthropus erectus.

Chapter 3: Pithecanthropus erectus chronicles Dubois' discovery and first description of "Java Man". Particular attention is devoted to the theoretical concepts underlying Dubois' view of his missing link between ape and human, and the way he conceptualized his 'upright-walking ape-man' on the basis of very scanty fossil material.

Chapter 4: The Debate presents the way that Dubois' discovery and account of his fossils was received in scientific circles at the time. Theunissen does not try to give a comprehensive account of the reactions to

Dubois' discovery and conclusions, but rather a representative picture of the response of researchers who published their opinions in scientific books and journals. He also does not discuss the response in popular articles or exclusively reference works as this has been covered in great detail in other books about Dubois and "Java Man".

Theunissen concludes this chapter with an excellent discussion on the significance of Dubois' find to the development of research into human evolution.

Chapter 5: Cephalisation, Pithecanthropus, and Evolution deals with the development of Dubois' ideas on "Java Man" over time. The chapter begins with a discussion on Dubois' research into cephalisation and shows how Dubois' later views of Pithecanthropus derived from the results of his research on the brain. Theunissen also discusses Dubois' reaction to the new finds of Pithecanthropus erectus and Sinanthropus pekinensis made in Java and China in the 1930's.

I found this book an interesting and fascinating study of one of the earliest personalities in human evolution studies. It brought to life the personality of Dubois and his research. It was sufficiently illustrated and contained a good bibliography for those wanting to delve into the field in more detail. I would strongly recommend it to anyone interested in human evolution.

Reed Wicander

From Mineralogy to Geology the Foundation of a Science, 1650-1830 by Rachel Laudan. 1987. The University of Chicago Press, 5801 S. Ellis Ave., Chicago, IL 60637. \$27.50 hardbound. 278 pages.

This interesting book is an attempt by the author to answer some basic questions that puzzled her when she was an undergraduate studying geology in the 1960's. According to Laudan, "...foundational issues were crowded out by the mass of material to be covered. What were the conceptual foundations of geology? When and how had they been established? What aims should geologists pursue? What methods should they use to achieve these aims? What were the most appropriate entities for constructing theories about the earth?" With those basic questions in mind, Rachel Laudan sets about answering them in this book.

According to most geology historians, geology emerged as a separate scientific speciality during the period of 1780 to 1830. It was during this time that its practitioners attempted to understand the geology of the earth's crust and free geology from the Biblical account of creation. By examining the earlier scientific traditions in continental Europe, Rachel Laudan traces the intellectual roots of geology back to mineralogy and chemical cosmogony, thereby presenting an alternative view to the conceptual foundations of geology.

While the British remained for the most part gentlemen-amateurs in the study of the earth, technical schools and state bureaucracies were formed on the Continent to encourage the mining industries and give mineralogists systematic training. Continental chemist-mineralogists provided causal explanations for the development of the earth based on their studies of the behavior of heat and water. They gradually began to consider rocks, rather than minerals, as the basic unit for understanding the structure of the earth. By the time that Lyell published Principles of Geology in 1830, Abraham Gottlob Werner and his "School of Freiberg" had formulated the presuppositions for the origin and history of the earth. In fact, his approach, although later proved by Hutton to be wrong, was the conventional geologic wisdom for nearly half a century.

Laudan divides her book into nine chapters, setting forth the conceptual foundations of geology and her thesis in chapter one. The aims of geology: causal and historical, the methods of geology, the theories of geology, and the aims of history of science are the major points and themes she covers and develops through the rest of the book.

Mineralogy and Cosmogony in the Late Seventeenth Century, The Becher-Stahl School of Mineralogy and Cosmogony, 1700-1780, The Botanical Model Rejected, Werner and the "School of Freiberg", The Huttonian Alternative, Historical Geology, Wernerian Causal Geology, and Lyell's Geological Logic are the topics she covers to elucidate her thesis on the conceptual foundations of geology.

This is a very interesting and thought provoking book for anyone who is interested in the history of geology, particularly its early foundations and development as a separate scientific discipline.

Reed Wicander

Fire Mountains of the West: The Cascade and Mono Lake Volcanoes By Stephen L. Harris. 1988. Mountain Press Publishing Company, 2016 Strand Avenue, PO Box 2399, Missoula, Montana 59806. \$15.95 paperback. 379 pages.

Fire Mountains of the West: The Cascade and Mono Lake Volcanoes is a complete revision of Steve Harris' classic Fire and Ice, and includes a full account of the eruption of Mt. St. Helens and its latest activity, as well as an up-to-date history of the rest of the Cascade Ranges. It is written in a nontechnical style and is intended for the general reader who wants to know more about the geologic forces that shaped our western mountainscape.

Fire Mountains of the West: The Cascade and Mono Lake Volcanoes contains 148 illustrations including photographs, 2-color maps, cross sections, and schematic diagrams, an extensive bibliography,

glossary, and index. The book is loosely organized into three parts.

The four introductory chapters describe the interaction between the volcanic and glacial activity in the Cascade Mountain Range. This section includes an introduction to the Cascades, an introduction to the relationship between plate tectonics and the Cascades, how a volcano works, and how a glacier works.

The following 16 chapters cover each of the major Cascade volcanoes as well as those in California's Mono-Mammoth Lake area. Steve Harris presents a carefully researched biography of each volcano, reviews its geologic history, and appraises its prospects for future eruptions. Excellent two-color maps and diagrams as well as historical and recent black and white photographs help illustrate the history of each volcano. Nearly each one of these 16 chapters ends with directions on how one can enjoy the particular mountain by car, foot, or by climbing to its summit.

The third section, comprised of two chapters, presents an overview of the future of the Cascade Ranges. Included are the likely histories of the glaciers as well as the potential for future Cascade eruptions and the hazards and consequences of such eruptions. The final chapter presents a fictional account of what might happen should Mt. Shasta become the third Cascade volcano to erupt in this century. This account is based on the volcano's history over the past 10,000 years and includes both the scientific and social responses to the announcement that Mt. Shasta is due to erupt any time.

This is an excellent book about the Cascade Ranges and contains an abundance of information written in an interesting manner. It should appeal to anyone interested in the Cascades, and in particular to those who have either visited or are planning a trip to the area. In addition, it will serve as an excellent source book for those teaching courses in environmental geology, natural catastrophes, or general geology. It contains the type of material students find interesting and want to learn more about and is an excellent case study in the interrelationship between geology and human activity.

Reed Wicander

Marine Geology by Roger N. Anderson. 1989. John Wiley & Sons, Inc., 1 Wiley Drive, Somerset, NJ 08875-1272. \$39.95 paperback. 328 pages.

Marine Geology, as the title of the book states, is a marine geology textbook. It is also an attempt to ask questions about how the Earth works from a marine geology perspective, rather than just presenting the facts about marine geology to students.

Unlike many marine geology textbooks, this one starts off with a discussion on the origin of the solar system and a brief synopsis of some of the planets and their moons.

Chapter 2 covers the history of geology under the sea and the various ways marine geologists accumulate information about the sea floor.

Chapter 3 covers the theory of plate tectonics which sets the stage for more detailed discussions of the ocean lithosphere, ophiolites, and ridge axes which appear in the following three chapters.

The remaining eight chapters cover the usual array of topics such as black smokers and the organisms associated with them, metal deposits and marine geology, the interchange between ocean and crust, marine stratigraphy and sedimentation, subduction zones, continental formation and deformation, rifting of continents, sedimentary basins, and the formation of oil and gas, and the driving force of the lithospheric plates.

Marine Geology is a good introduction to the subject of marine geology and is written from the perspective of plate tectonics. It goes into more depth than many books on marine geology on the role of plate tectonics in the study of ocean basins, and covers such topics as the formation of metal deposits and the relationship between rifting continents, sedimentary basins, and the formation of petroleum and gas. I was glad to see this kind of coverage.

In the rush for publishers to provide all color textbooks, this book may suffer since it only has eight color plates inserted in the center of the book. Nonetheless, it is well written, adequately illustrated, and provides a good introduction to what we know about the world's ocean basins and their relationship to the rest of the Earth.

Reed Wicander

Nannofossils and their Applications Edited by Jason A. Crux and Shirley E. van Heck. 1989. John Wiley & Sons Inc., 1 Wiley Dr., Somerset, New Jersey 08875-1272. \$125.00 hardbound. 356 pages.

Nannofossils and Their Applications is part of the British Micropalaeontological Society Series. Their aim is to gather together the knowledge of a particular faunal group for specialist and non-specialist geologists alike.

The present volume presents the proceedings of the International Nannofossil Association Conference, London Meeting 1987. The book is divided into three parts and 14 chapters, written by 21 contributors.

Part I contains five chapters on morphology, systematics and evolution of various nannofossil groups.

The individual chapters deal with coccolith structure and growth (J.R. Young), phylogenetically based taxonomy (M. Aubry), taxonomy, structure and evolution of Reticulofenestra (L. Gallagher), crystallography and optical properties (S. Moshkovitz & K. Osmond), and conical nannofossils in the Mesozoic (P. R. Bown & M. K. E. Cooper).

Part II deals with paleoenvironmental and paleogeographical applications of nannofossils and covers such topics as variation in assemblages during the last glacial cycle (G. Gard), temperature-controlled migration in the Aptian (J. Mutterloso), paleogeography and biostratigraphy in the Lower Cretaceous (J. A. Crux), a comparison of North Atlantic assemblages in the Lower Cretaceous (J. L. Applegate *et. al.*), and nannofossil provincialism in the Late Jurassic-Early Cretaceous (M. K. E. Cooper).

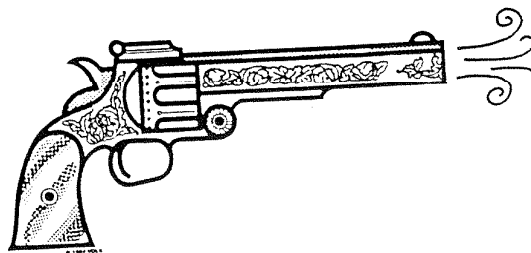
Part III contains papers that show the stratigraphical application of nannofossils such as Tortonian-Messinian stratigraphy (J. Flores & F. Sierro), Paleocene stratigraphy (O. Varol), Paleocene-Eocene stratigraphy of Turkey (V. Toker), and the stratigraphical and paleoenvironmental importance of Arkhangelskiella (M. G. Girgis).

The editors have restricted the number of references for each paper in this volume and refer the reader to the contributions of Perch-Nielsen in Plankton Stratigraphy, by Bolli *et. al.*, 1985, among others. The other item the editors have done to avoid lengthy and cumbersome citations in the text and save space in the book is to have a taxonomic index containing the full citation for the taxa at the end of the book.

The book has excellent illustrations and photographic plates, including some beautiful color photographs showing the use of the gypsum plate in analysing the structure of nannofossils. Photographs such as these have never appeared before in book form.

While the aim of the books in this series are to appeal to specialists as well as non-specialists, the price (\$125.00) will probably prohibit most non-nannofossil workers from purchasing it. However, it certainly should be purchased by academic, industrial, and governmental libraries for the wealth of up-to-date information it contains on nannofossils.

Reed Wicander



PARTING SHOTS

I had hoped for a chance to level a shot at someone in particular eventually. At the risk of rousing someone's ire I refrained. Virgil Wiggins sent the following item to me, though, and its too good to pass up. This originally appeared in the Chevron Oil Field Research Company (COFRC) News. They must assume responsibility for any character assassinations. Here's to you Warren, with warmest regards!

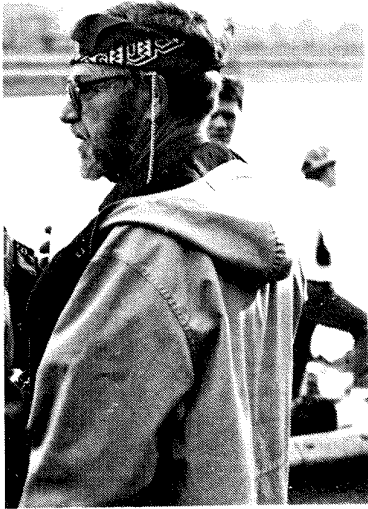
A COFRC Researcher Faces Facts! by Art Taylor

Some time ago a representative of the Gulf of Suez Petroleum Company (GUPCO) in Cairo, Egypt, asked Warren Drugg of the Geology Division for his publications on nannoplankton. In what we believe to be Warren's pursuit of disinterested scientific objectivity, he graciously gave permission to publish his response in a letter dated April 10, 1989, which we quote in part:

*"...Actually I am a palynologist and have never published on nannoplankton. There is, of course, the nannoplankton **Discoaster druggii** zone. This came about because I was a colleague of Jim Wilcox, the well-known calcareous nannoplankton worker. He later told me that he was trying to find an appropriate name for this fossil, which he said was not very good looking and was totally lacking in character. Just then, I strolled by and he made an immediate connection, and thus was born the taxon **D. druggii**. In fact, I am generally regarded as being very good looking, although people never tell me this presumably because they know I am modest. Unfortunately, the "totally lacking in character" may have some validity but I prefer not to dwell on this aspect of my personality.*

With best regards...."

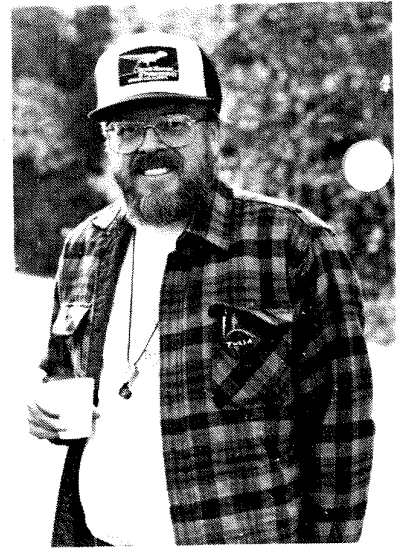
As everyone knows, Warren always tells it as it is!



A



B



C



D



E

Adventurers on the fieldtrip
to
Oklahoma
Territory, 1989



F





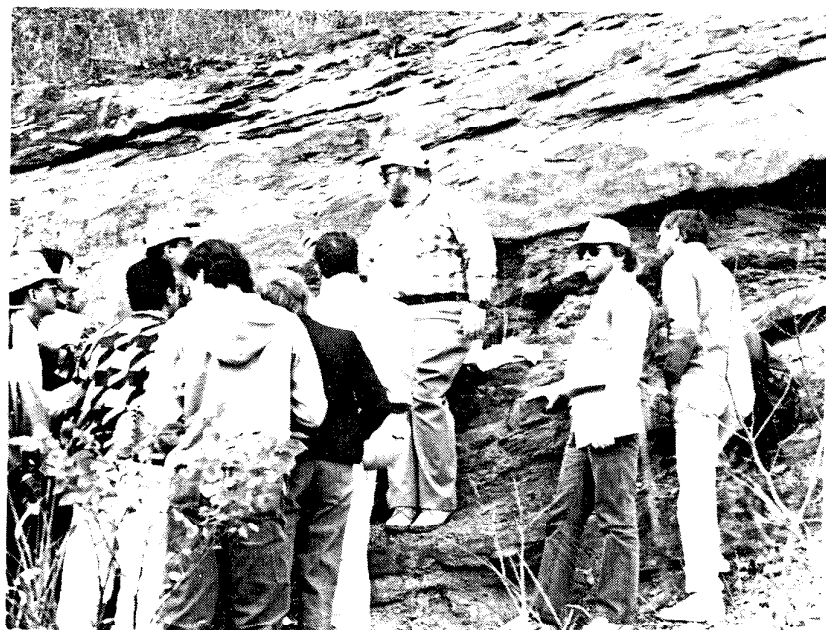
G



H



I



J

legend for these intrepid
folk is on page 14 ➡

- A. Virgil Wiggins, San Ramon, California
- B. Roger Witmer, Brea, California
Annie Skarby, Danderyd, Sweden
- C. Leonard Eames, Amoco palynologist, co-leader,
and local authority on territorial post offices (!)
- D. Judith Lentin (L) President of AASP, Calgary,
Alberta
Estela Di Giacomo, Caracas, Venezuela
- E. Michael Whitaker, Chester, England
Estela Di Giacomo (again!)
- F. Curtis Klug (L), Iowa City, Iowa
John Wrenn, former Newsletter editor, Pumpkin
Junction, Oklahoma
Robert Ravn, former Newsletter editor, Sunbury,
England
Loretta Satchell, Director-at-large, Houston, Texas
- G. Gary Barker (L), Houston, Texas
Reed Wicander, Book Review editor, Mount Pleasant,
Michigan (loitering near the women's privy!)
- H. Sedley Barss (L), Halifax, Nova Scotia
Evan Kidson, Tulsa, Oklahoma
- I. Barb Whitney and egad! it's a spider! She's our
President-elect (Barb, not the tarrantula)
- J. Merrell Miller, center, co-leader, and bevy of
admirers.

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