



# AASP NEWSLETTER

N. O. FREDERIKSEN, EDITOR

ISSN 0192-7299

VOLUME 15, NUMBER 1

JANUARY 1982

IN MEMORIAM  
HUON SEWARD WALTON  
1920 - 1981

Who among the more veteran palynologists does not recall one or more pleasant encounters with Huon Walton in the past, be it socially or on subjects of technical matters?

Born in Downing College, Cambridge on January 20, 1920, he graduated with distinction from Glasgow University with a B.Sc., First Class Honors in Geology in 1948, after having served with the Royal Corps of Signals in World War II in Africa and Europe.

After having worked for the Geological Survey of Great Britain as a field geologist, involved in coal studies, he immigrated to Canada with his family in 1957, where he joined the California Standard Company (now Chevron Standard Limited).

Possibly the legacy of his father, Professor John Walton, an expert on Palaeozoic palaeobotany, or perhaps his own keen interest and experience in Palaeozoic plantlife induced a change in his scientific career: in the early 60's Huon was given the challenge to set up a palynology laboratory for Cal Stan in Calgary as an aid to the exploration geologists in correlation and age dating of, sometimes poorly understood, Palaeozoic formations in Alberta. A period of two years at the Corporation's Research Laboratory in La Habra, California, provided Huon with sufficient knowledge to undertake these duties and over the past twenty years he became an expert on Palaeozoic palynology, acknowledged as such by many professionals inside and outside the Corporation. Chevron Standard Limited recognized his achievements by appointing him to the position of Staff Palynologist.

His latest and last publication, as a junior author with C. van der Zwan on "The *Cyrtospora cristifer* morphon: inclusion of *Cornispora varicornata* and *C. monocornata*" (Review of Palaeobotany and Palynology v. 33, pp. 139-152, 1981), will by now have been received by many colleagues.

It was quite an experience to observe Huon, being a lover of nature, transform

from the "dusty office scientist" to the brilliant and energetic field geologist on the many field parties organized by the Company in the 60's and early 70's: in the Foothills of Alberta, the Northwest Territories and Arctic Islands.

Huon was also very actively involved in several sports programs: he was a member of the Calgary Fencing Club, the Stanco and Armed Forces Curling Clubs, and the Calgary Men's Field Hockey Association, of which he became elected president and treasurer. In field hockey he acted as an official umpire (Class B).

But besides and above all these achievements, Huon Walton had reached that level of human existence where his fellow creatures could see him as a gentleman in the true sense of the word: gentle towards everyone, he was easy in address, interested in all human beings and always searching for all the good that can be found in the hearts of people: he enjoyed life!

His love for contemporary music, be it Dixieland, Rock, Disco or a Spanish Flamenco was one of his great youthful charms which earned him the loving hypocorism of "the Oldest Hippie in Cal Stan."

Huon just recently attained that status in living comfort which he had longed for all his life: a rustic, romantic, comfortable loghouse in the vast woods of the foothills of the Rocky Mountains, near Cochrane, Alberta, when fate struck hard....

After a brief but terrible illness, quickly spending his strong body, during which period he suffered bravely and patiently, he died on November 17, 1981, leaving behind in deepest sadness his wife Ruth, his sister Camilla, his daughter Francesca, his son Mark and his grandson Abraham.

All friends and colleagues, saddened and shocked by his all too soon passing away, will miss him dearly and wish to express their feelings of deepest sympathy to his mourning family. May the Creator of all things, beautiful and good, be with them.

Submitted in sadness,

B.G.T. van Helden

## AMENDMENTS TO AASP BYLAWS

The Board of Directors of AASP Inc. proposes six changes to the Bylaws of the Association and unanimously endorses these amendments. The proposed changes reflect the studied efforts of Jack Burgess and John Clendening with the suggestions and recommendations of Paul Nygreen and Jocelyne Legault. The proposed changes are primarily to clean up wording as opposed to substantive revision. These changes cover the current Bylaws approved by the Board of Directors in October 1978 and by a membership vote in 1979.

On the last page of this Newsletter is a ballot with which members are to vote on the proposed changes. The Bylaws (Art. 14) state that the "closing date for voting... (shall) be forty-five (45) days after ballots are mailed." I assume this Newsletter will be mailed out January 31; therefore, the closing date for ballots to be received is March 17, 1982. Mail your ballot to the Ballot Committee Chairperson, Carol Chmura Meyer, Chevron Oil Field Research Co., P.O. Box 446, La Habra, Cal. 90631.

Art. 14 of the Bylaws also states that a majority vote of at least one-half of the membership is necessary for approval of amendments. Therefore, the Board of Directors would appreciate it if you would vote (whether for or against is of course your decision).

In the following, I have underlined (with dashes) the new wording in each of the affected articles. You should have a copy of the present Bylaws. If you don't, write Vaughn Bryant for one.

Proposed Bylaws Changes - American Association Of Stratigraphic Palynologists, Inc.:

### 1. Article Three, Section 3.01

Proposed revision:

3.01 An annual meeting of the members shall be held each year for the purpose of holding scientific sessions, for the transaction of other business as may come before the meeting, for installing the new Board of Directors, and to report to the membership the state of affairs of the corporation. An Annual Business Meeting shall be an integral part of the annual meeting, and shall be scheduled between scientific sessions. The agenda for the Annual Business Meeting shall be listed in an official publication of the corporation prior to the annual meeting.

### 2. Article Four, Section 4.02

Proposed revision:

4.02 The number of Directors shall be eight. Each Director shall hold office until the close of the next annual meeting

of members and until his/her successor shall have been appointed.

### 3. Article Five, Section 5.02

Proposed revision:

5.02 The officers of the corporation shall be appointed annually by the Board of Directors after the annual election of the Board of Directors. The newly constituted Board of Directors shall take office at the end of the annual meeting. Further, the Board of Directors shall appoint officers to each office of the corporation as determined by the vote of the membership. Each officer shall hold office until his/her successor shall have been duly appointed. The President, President-elect, and Directors-at-Large shall not succeed themselves. The Secretary-Treasurer and Managing Editor may succeed themselves in office. \_ \_ \_ \_ \_

### 4. Article Six, Section 6.06 a, 3, c

Proposed revision:

6.06 a, 3, c That they will be able to attend all Board of Directors meetings during the tenure of their office.

### 5. Article Eight, Section 8.02

Proposed revision:

8.02 All checks, drafts, or orders for the payment of money, notes, or other evidence of indebtedness issued in the name of the corporation shall be signed by such officer or officers, agent or agents of the corporation and in such manner as shall from time to time be determined by resolution of the Board of Directors. In the absence of such determination by the Board of Directors, such checks or drafts instruments shall be signed by the Secretary-Treasurer for the amounts of \$50.00 or less, and countersigned by the President or President-elect of the corporation, when the monetary amount exceeds \$50.00.

### 6. Article 9, Section 9.01

Proposed revision:

9.01 All books and records of the corporation may be inspected by any member or his agent or attorney for any proper purpose at any reasonable time. All historical books and records are housed at the Hunt Institute for Botanical Documentation, Pittsburgh, Pennsylvania.

## AASP MEMBERSHIP

John Clendening is retiring as Secretary-Treasurer of AASP this fall, after four years in office. One of his interests has been to increase the membership of our organization. The figures on paid-up members (as of December, or September in the case of 1981) speak for themselves:

1978	529
1979	674
1980	724
1981	731

Good work, John!

## FUTURE MEETINGS (1982)

- April 22-23. AASP midyear Board of Directors meeting, Sheraton International Hotel, Reston, Virginia.
- May 7-8. Coévolución symposium, Chicago. Write: Matthew H. Nitecki, Dept. of Geology, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago IL 60605.
- June 28-30. American Quaternary Assoc. meeting, Seattle, on the theme: Character and timing of rapid climatic and environmental changes. For program, write: Vera Markgraf, Institute of Arctic and Alpine Research, Univ. of Colorado, Boulder CO 80309. For registration and field trips, write: Estella Leopold, Quaternary Research Center, AK-60, Univ. of Washington, Seattle WA 98195.
- July 21-26. 4th Colloquium on Paleobotany and Palynology, Mexico. Write: Eloy Salas, Inst. Mexicano del Petrol., Apartado Postal 14-805, Mexico 14 D.F.
- August 1-9. 11th International Quaternary Association (INQUA) Congress, Moscow. Write: I.P. Kartashov, Secretary-General of the XI INQUA Congress, Geological Institute, USSR Academy of Sciences, Pyzhevsky 7, Moscow 109017, USSR.
- August 4-6. Second International Conference on Aerobiology, Seattle. Write: Reid Kenady, Univ. of Washington, Division of Continuing Education, College of Forest Resources, AR-10, Seattle, WA 98195.
- August 5-11. North American Paleontological Convention, Montreal. Write: Colin Stearn, Dept. of Geological Sciences, McGill Univ., Montreal, H3A 2A7.
- August 8-12. Paleobotanical Section, Botanical Society of America, meeting in University Park, Pa. Write: William Crepet, Biological Sciences Group U-42, Univ. of Connecticut, Storrs, Conn. 06268.
- September 13-15. Joint meeting, AASP and CIMP, in Dublin, Ireland. For details, see the October 1981 AASP Newsletter.
- October 7-9. 4th Symposium and General Meeting of the Asociacion de Palinologos de Lengua Española (APLE), Barcelona. Write: Nuria Solé de Porta, Dept. de Paleontología, Facultad de Geología, Univ. de Barcelona, Gran Vía, 585, Barcelona-7, Spain.

## REQUEST FROM FRITZ CRÁMER-DÍEZ

Fritz Crámer-Díez has asked us to request the following of AASP members: if you received a letter dated 27 August 1980, from the Acting Director of the Instituto de Investigaciones Palinológicas, signed by Dr. Maria Amor Fombella Blanco, and if you still have the letter in your files, could you please send it to Fritz (address is Apartado 543, Leon, Spain).

## POSITION WANTED

Ph.D. palynologist, 18 years experience with The National Academy of Sciences in Bratislava, Czechoslovakia. Experience includes research and teaching. Main topics of research: Mesozoic and Paleozoic stratigraphy. Can speak and work fluently in English, Russian and Slovakian. Would like a position in a research laboratory or consulting.

Home address: Dr. Olga Corna Eldridge  
3207 B Eanes Circle  
Austin, Texas 78746  
Telephone 512-327-5764

## SIXTH IPC - CALGARY 1984

The First Circular of this meeting was distributed together with the ICP Newsletter at the end of 1981.

Anyone who did not receive, or wants an additional copy of this Circular, please write to:

Central Secretariat 6.IPC  
c/o Lois Kokoski - Conference Office  
Faculty of Continuing Education  
University of Calgary  
Calgary, AB, T2N 1N4  
CANADA

## FLORISTICS-VEGETATION VOLUMES

Alan Graham writes:

I have obtained the last few remaining publishers copies of the books listed below. At the time of close-out they were selling for U.S. \$70 and U.S. \$80, respectively. They are now available at the original publication prices of U.S. \$25 and U.S. \$30, or both for U.S. \$50. If you, or your institution or library, are interested in purchasing these, please send payment of the appropriate amount and the books will be sent by return mail.

Graham, Alan (editor). 1972. Floristics and Paleofloristics of Asia and Eastern North America. Elsevier Publishing Company, Amsterdam. 278 pp.

Graham, Alan (editor). 1973. Vegetation and Vegetational History of Northern Latin America. Elsevier Publishing Company, Amsterdam. 393 pp.

Write to: Alan Graham, Dept. of Biological Sciences, Kent State University, Kent, Ohio 44242.

AASP Newsletter is published quarterly by American Association of Stratigraphic Palynologists, Inc.
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GENERA FILE OF FOSSIL SPORES  
(1976 - 1981)

After an initial flurry of publicity, a large number of sets were sold; subsequently, sales have been slower, but steady, with a definite increase in interest in the last 12-18 months.

Supplements have been produced in 1977, 1978, 1979, 1980, 1981; they were sent to each of the purchaser-subscribers of the initial set. However, some 10% of the last issue have been returned, as "addressee not known at this address". Obviously, many subscribers have moved, without directly informing the University of Calgary of the change in their address.

This note intends to alert those owners of the Genera File who have not received all updates, yet want to keep their File current. The 1981 Supplement (cards 3801-3932) contains alphabetic listings of all Supplements issued through 1981, as well as descriptions for 52 new (+4 emended) angiosperms, 7 (+1) gymnosperms, 13 (+1) fungal spores, 15 (+10) spores, 1 megaspore, as well as a number of incertae sedis, including an important updated account of Tetraporina. The new name incrotonipollis Baksi is proposed for Crotonipollis Baksi, Deb & Siddhanta (non Crotonipollis di Lima). The descriptions include a number of translations from Chinese and Russian literature.

An evaluation of the Genera File was published in Review of Palaeobotany and Palynology, v. 30, p. 159-164.

Enquiries should be directed to :

Genera File of Fossil Spores  
c/o Dr. L.V. Hills (attn. Lena Sunaby)  
Department Geology - University  
Calgary, Alberta T2N 1N4  
CANADA

Jan Jansonius

MEYEN'S ANGARALAND PAPER

We received a letter from International Publishers, Lucknow, India, stating that there has been a delay in publishing S.V. Meyen's "Carboniferous and Permian Floras of Angaraland (A Synthesis)". This paper will now appear in Biological Memoirs, vol. 7, no. 1, due to be released in May 1982. Pre-publication orders may be sent until March 31, 1982. The address we have is:  
International Publishers  
C-131, Sector A-4  
Mahanagar  
Lucknow-226006, India  
No cost was specified in the letter we got.

PROJECT ECOSTRATIGRAPHY

Project Ecostratigraphy is part of the International Geological Correlation Program funded at least in part by UNESCO. The goal of this project is "biochron correlation at the ecosystem level, using the Wenlockian-Gedinnian as a test sequence." A plenary meeting of Project Ecostratigraphy met in Visby, Gotland, Sweden, on 22-28 August, 1981. A number of papers were read, of which the following seem to have the most relevance to AASP:

C.H. Holland - The State of Silurian Stratigraphy

Jane Gray - Status of Pre-Devonian Spore Work

Alain Le Herisse - The Lower Devonian Spores of the Armorican Massif:

Biostratigraphy and Evolutionary Trends

Ph. Steemans and Maurice Streel - Gedinnian Spores from the Type-Region

J.B. Richardson, S.M. Rasul, and Tamer Al-Ameri - Acritarchs, Miospores and Correlation of the Ludlovian-Downtonian and Silurian-Devonian Boundaries

Claes Bergman - Dispersed Polychaete Jaws and Clusters in the Högklint Beds, Gotland

Abstracts were published in Laufeld, S. (ed.), Proceedings of Project

Ecostratigraphy Plenary Meeting, Gotland, 1981. Sveriges Geologiska Undersökning

Rapporter och Meddelanden nr 25. In connection with this meeting, an article has appeared by Sven Laufeld and M.G. Bassett - Gotland: The anatomy of a Silurian Carbonate Platform: Episodes, v. 1981, no. 2.

OTHER SOCIETIES

The Associação Latinoamericana de Paleobotânica e Palinologia (ALPP) has published a "Bibliografia Paleobotânica e Palinológica Latino-americana 1979/1980" in ALPP Boletim no. 8. Write the ALPP Editor, Wolfgang Volkheimer (address in the AASP Directory).

ANOTHER FATAL HF ACCIDENT

The Newsletter of July 1980 (vol. 13, no. 3) reported an industrial accident in which a worker died after spilling HF on himself and then breathing the vapor. The October 1980 issue of the Journal of Occupational Medicine reported a case in which a worker in a petroleum refinery got splashed with HF over 2.5% of the body surface, apparently became disoriented, and was not found for 10 minutes. The worker died about 10 hours later, in this case from acute fluoride poisoning following HF absorption through the skin.

Working with HF is the most disagreeable and dangerous aspect of palynology, and we have to remind our technicians from time to time how dangerous the stuff is.

## THE "HEXROSE" DINOFLAGELLATE CONFERENCE

Three years ago scientists working on living and on fossil dinoflagellates met, mingled and exchanged ideas for the first time at a meeting in Colorado Springs. This was one of the Geological Society of America's excellent Penrose Conference series and followed the format of that series -- attendance by invitation only, presentation followed by discussion and not to be published, and informal, after-session get-togethers encouraged. The meeting was a great success and two German scientists -- one a palynologist, the other a marine biologist -- offered to host a similar meeting, to be called "HEXROSE" for no better reason than that it would follow the Penrose meeting!

In the intervening years these two scientists, Hans Gocht and Harald Netzel, worked energetically to make the arrangements and obtain the financial support that would enable them to fulfill their promise. That they triumphantly succeeded, all who attended the "Hexrose" Conference on Modern and Fossil Dinoflagellates will avow! Maybe it should have been called "Tuberoze" rather than "Hexrose", for it was held in Tübingen, Germany -- a charming university town on the River Neckar in Württemberg -- between 31st August and 4th September 1981. Some 65 scientists from fourteen different countries attended. Most participants had the pleasure of staying in the town and enjoying its mediaeval architecture and excellent restaurants; a few of us stayed in the village of Breitenholz where Harald Netzel lived and had the equal pleasure of walking in the Schönbuch forest nearby.

On the first morning, after the usual welcoming addresses, F.J.R. "Max" Taylor opened the meeting fittingly with a stimulating account of the great and fascinating variability in the morphology and mode of life of living dinoflagellates. There followed a controversial presentation by Gerald Boalch, who wishes to see a unified nomenclature for all stages in the dinoflagellate life cycle; this concept did not appeal to the palynologists present and provoked some spirited argument. The morning session closed with a presentation by John Dodge, whose splendid SEM photomicrographs of the apical pores in dinoflagellates attracted much admiration.

Present at the morning session, but unrecognized by many participants, was Alfred Eisenack, the Nestor of micropalaeontologists, now past his ninetieth year but in admirable intellectual fettle. His discovery of the chitinozoans and melanosclerites and his major contributions, not only to the study of acritarchs and dinoflagellate cysts but also

of several other groups of microfossils, have earned for him a position among the greatest pioneers of micropalaeontology. It was sad that, living as he now does at Reutlingen, Professor Eisenack was not able to be present on subsequent days, for many of us would have enjoyed talking further with him.

On this day and throughout the rest of the meeting, participants were able to visit between sessions the fine geological museum of the University of Tübingen, with its outstanding display of fossils. Among these, the superb vertebrate collection assembled by the late Friedrich von Huene and the fascinating palaeoecological interpretative displays of Adolf Seilacher especially commanded our attention. In addition, a whole series of poster displays on living and fossil dinoflagellates had been set up. These not only added greatly to the interest of the meeting but also stimulated much discussion, and even argument on occasion!

The weather for the first afternoon session was so very hot and humid that the audience settled into a passivity which bore no relation to the quality of the talks. These were all on modern dinoflagellates; by Karen Steidinger on the taxonomy of certain Prorocentrales and Gymnodiniales, by Christine Happach-Kasan on the life cycle of Ceratium hirundinella and John Dodge on the encystment process in that genus, and by H.A. von Stosch on the occurrence of ordered tetrads in the freshwater Ceratium cornutum.

Tuesday was wholly devoted to living dinoflagellates. Dr. U. Pollinger aroused considerable interest by her demonstration that dinoflagellate cysts in Israeli lakes were formed as a means for aestivation, not hibernation, i.e. to survive the hot, nutrient-poor summer months rather than the winter. The two subsequent addresses were both expressions of personal views on the systematics and taxonomy of living dinoflagellates, by Dr. L. Pfeister and M. Elbrachter; inevitably they provoked much comment, favourable or adverse according to the views of the speaker! Next Dr. C.A. Beam reported on genetic studies of Cryptocodinium cohnii, and Don Anderson talked on the distribution of cysts of toxic dinoflagellates on the New England coast around Massachusetts. Gregory Morey-Gaines gave an interesting but complex account of predation on dinoflagellate blooms, and Paul Zubkoff described blooms in the estuary of the York River, Virginia. The outstanding talk of this day, however, from the viewpoint of the biostratigrapher, was that by Barrie Dale, in which it was revealed that sediment-trap studies in the open Atlantic showed that, while organic-walled dinoflagellate cysts were rare, calcareous cysts were in contrast extremely abundant. His talk foreshadowed the revelations of the last day of the meeting.

The third morning session was full of interest. Rex Harland gave a meaty account of cyst distribution in the Recent sediments of the North Atlantic Ocean and Lucy Costa speculated on water depth and salinity as controls on cyst distribution in the Cenozoic of north-west Europe. Then came a spirited confrontation of theorists. First, Geoffrey Eaton set forth his ideas on plate pattern geometry in dinoflagellates and their cysts, using this as a basis for interpreting the course of evolution in this group; and next, Max Taylor summarized his own, very different interpretation of the probable paths of dinoflagellate evolution. These presentations aroused such interest that it was a pity there was not longer time for argument afterwards. Instead, the afternoon was spent on an excursion into the pleasant countryside of the Swabian Alps, including visits to the Bärenhöhle caves with their remains of Ursus spelaeus, to the hilltop chapel of Salmondlingen near Kornbühl and to a restaurant within sight of the castle of Hohenzollern.

On Thursday, the last full day of the meeting, Wolfgang Wille described his own work on Jurassic dinoflagellates and attacked the conclusions of Günther Dörhöfer and his associates on the phylogeny of early Mesozoic dinoflagellates, again provoking much argument. Dave Goodman gave a much less controversial, but lucid and well illustrated, account of the Wetzeliellaceae; and Jon Bujak talked in detail on archaeopyle patterns in peridinioid dinoflagellate cysts. Then came more controversy as Jens-Morten Hansen presented good evidence for deriving Deflandrea diebelii, not from the peridinioid lineage as hitherto supposed, but from ancestral forms with a very different, perhaps rhaetogonyaulacoid paratabulation.

After lunch, Bill Evitt again demonstrated his beautiful preparation techniques and clear thinking in a very precise interpretation of the chorate cyst genera Oligosphaeridium and Hystrichosphaeridium; and I followed with a tribute to the work of Maria Lejeune-Carpentier, in which new interpretations of some of her Upper Cretaceous cyst taxa were presented. The sessions ended with a second demonstration of exquisite and detailed work on cysts, as Hans Gocht described morphogenesis in species of the Tertiary genus Thalassiphora. We all gathered again in the evening for a reception given by the University President, during which it was made evident that, in Germany as in North America, these are not happy times for academic institutions. However, an abundance of wine soon cheered us up again!

The last morning was, in its earlier phases, the most exciting of the whole meeting as, in successive papers by Dr. K.

Tangen, Helmut Weiler and Helmut Keupp, the great richness and variety of the fossil record of calcareous dinoflagellate cysts (many of them dismissed until recently as "calcispheres" or misinterpreted as coccospheres) was demonstrated and their potential value as stratigraphical indices in the Mesozoic and Tertiary made evident. Here is a group, hitherto almost unstudied, which represents a "break-through" area sure to engage the attention of very many palynologists, both in the academic and the commercial fields, during the next few years. All three talks were well illustrated, but the SEM photomicrographs of Keupp merit especial mention, for they are among the very finest that I have ever seen of microfossils. It was unfortunate that the morning session ended on a much lower note, with my own account of morphological variation in Gonyaulacysta jurassica and allied species and its relevance to the taxonomy of Jurassic and Cretaceous proximate cysts.

At the last session, on the afternoon of Friday 4th September, the problems of trying to classify dinoflagellate cysts under the existing International Code of Botanical Nomenclature, and the greater problems likely to be encountered when that Code is revised by taxonomists with little appreciation of the problems either of planktologists or of palynologists, were discussed. A subcommittee was set up to formulate proposals that might counter these problems. More important, though, was the setting of a date for the next meeting ("Heptrose"?) of modern and fossil dinoflagellate workers. On the invitation of John Dodge, it is to be held at the Royal Holloway College, near London, England, in the summer of 1985; so here's to the next time!

William A.S. Sarjeant

### XIII INTERNATIONAL BOTANICAL CONGRESS

#### About IBC

International Botanical Congresses are a phenomenon of the last century, occurring more or less every six years. (World War II caused a 15 year hiatus.) When the XIII IBC convened in Sydney, Australia, August, 1981, the Governor General of Australia welcomed thousands of delegates and others in the impressive and famous Sydney Opera House. In his speech he said that the IBC was the largest such occasion to occur "down-under". A huge translucent rendition in color of a flowering branch of a shrubby Acacia, the Congress symbol, hanging above the stage, was spotlighted from several angles, and a detachment of scarlet-uniformed personnel blew fanfares on ceremonial

trumpets. The symphony concert that followed the governor-general's speech was probably a cut below the ballet performance at Leningrad in 1975 for artistic quality (I must depend on the opinions of others!). Doesn't matter...the point is that IBC is still one of the best shows in science! Since World War II, IBC has been on paper a production of the International Union of Biological Sciences (IUBS), and this organization works hard to cement their technical responsibility! Actually, however, IBC has considerable momentum of its own, and once a site is chosen, the local committee seems always to produce a great meeting with so much to do that it's mind-and-pocketbook-boggling. (The next Congress, XIV IBC, will be in Berlin, by the way.) The nomenclature sessions always adopt a "lifeboat" resolution about what to do "...if there never is another Congress...", but it seems hardly necessary.

#### Before, during and after XIII IBC

There was a tremendous list of field trips before, after and even during the Sydney Congress, mostly costing a lot of cash: "10/1 & 10/2--Temperate forests and shrublands of south-western Australia" (4500 km., cost ca. \$600), and many more of that sort, as well as the IOP paleobotany field trip, pre-Congress, led by John Rigby, to Permian, Triassic and Jurassic sites, Brisbane-Sydney (cost ca. \$500). Another paleobotany field trip was led post-Congress by J. Douglas, working out from Melbourne, to Paleozoic, Mesozoic and Tertiary localities (cost ca. \$700). I was prevented from taking part in any of these excursions, not only by poverty, but also because the post-Congress trips were at the time of the opening of Fall Term at Penn State, and the pre-Congress trips conflicted with the sessions of the Nomenclature Section, which took up, as usual, most of a week, 16 August to 21 August, the opening day of the Congress-proper (which ran until 28 August). There were, however, one-day excursions on Sunday, 23 August. I went to the Blue Mountains west of Sydney to see rain forest with huge Cyathea and Dicksonia tree ferns, other areas with Banksia, Eucalyptus, Kooka Burra birds and all that. Other paleobotanists/paleopalynologists went to Botany Bay, near Sydney, to see the coastal vegetation, or to the Northern Beaches to see and collect Dicroidium, Taeniopteris, and Pleuromeia in Lower Triassic rocks. All during the Congress there were exciting things to do and see and very little spare time in which to do them. Every day there were noontime lectures attended by large throngs in the well-equipped and plush University of Sydney theater building. Leo Hickey's semi-popular lecture on the fact and fiction of the terminal Cretaceous event was one of these, and L.D. Pryor's lecture on the fascinating genus Eucalyptus was another that sticks out

in my mind--both listened to while eating smuggled sandwiches--food was forbidden in the luxuriously appointed theaters. (The lecture facilities at the University of Sydney, where the Congress met, were terrific! Every room in which I spoke, was a chairman, or attended sessions, was better appointed than its nearest equivalent at Penn State.)

All of the many museums and libraries in Sydney had special exhibitions, and it was frustrating to miss any, though as a regular member of the Congress attending sessions ever day, it was next to impossible to take them all in. The exhibition at the New South Wales Library, of materials relating in one way or another to Sir Joseph Banks' 18th Century botanical explorations in the Sydney area, was outstanding--Friedemann Schaarschmidt and I spent part of an afternoon together there. Mary White, the paleobotanist at the Australian Museum, had a public exhibition of Australian fossil plants, literally crowded with fascinating things--Glossopteris, Dicroidium, Baragwanathia, etc., etc. She also had a more secluded exhibit of type specimens and the like from Baragwanathia up, "backstage" in the collections and workrooms. She invited me to a showing of such, and I thought that the invitation was unique, but when I got there, Bill Chaloner, Diane Edwards, Harlan Banks (who sat next to me on the Pan Am flight from LA to Sydney), Tom Taylor and others were already viewing fossils, sipping tea and loading up on reprints, samples, fossil pictures and cookies (sorry, "biscuits"). Harlan Banks and I arrived a day early in Sydney (I intended to arrive 2 days early, but the air-controllers' strike squelched that) and spent the day of arrival together, mostly at the Royal Botanic Gardens, which go back to the earliest days of the settlement of Sydney and are very interesting and beautiful, at least to the Northern Hemisphere newcomer. The myrtaceous and proteaceous shrubs and trees, huge Cyatheas and araucarians were alone worth the visit.

#### Scientific sessions

The sessions-proper were divided into twelve sections (e.g., "molecular botany...3. cellular and structural botany..."). Each section was subdivided, to as many as 17 symposia! Section 11 ("Historical Botany") included the symposia of major interest to paleobotanists/paleopalynologists: 11.1, "Physiological evolution of a land flora: invasion of the land", organized by J.A. Raven and D.E. Edwards, United Kingdom; 11.3, "Gymnosperms: Paleozoic and Mesozoic", organized by T.N. Taylor and T. Delevoryas, of the U.S.A.; 11.5, "Origins and evolution of the angiosperms: fossil evidence", organized by D.L. Dilcher and W.L. Crepet, of the U.S.A.; 11.8, "The development of regional vegetation types in

pre-Quaternary time", organized by E. Truswell (alias E. Kemp), of Australia; 11.9, "The plant geographical results of changing Cenozoic barriers", organized by P.H. Raven, of the U.S.A.; 11.10, "Persistence and change in vegetation", organized by D. Walker and D.J. Anderson, of Australia; 11.11, "The development of the plant-geographical pattern of Australia", organized by J.M.B. Smith, of Australia; 11.12, "Advances in paleobotany", organized by D. Christophel, of Australia; 11.13, "Gondwana plants", organized by D.D. Pant of India and J.F. Rigby of Australia.

Obviously, there were often papers of much interest to a particular person that occurred simultaneously in different symposia, to say nothing of the fact that there were individual papers in sections other than Section 11 which one would like to have heard. There were also synchronous poster sessions for Section 11 and for other sections, held in a building a bit remote from most of the rest of Section 11 sessions. The program of titles is 260 pages long, and the abstract volume 351 pages! My own notebook on the papers is about 150 pages (I always take voluminous notes, partly to combat a damnable tendency to go to sleep.) Obviously I cannot summarize the various contributions in any significant way here, and what I considered high points reflect my own interests more than they are evaluations: the papers by Banks, Chaloner, Edwards and Raven on the earliest land plants in 11.1 and 11.8; the various papers on Glossopteris fructifications at the Gondwana session (11.13); the papers on fossil angiosperm flowers by Skarby, Friis and Schaarschmidt in the angiosperm origin and evolution session (11.5); the lecture on the structure and paleoecology of the Cheirolepidiaceae by Alvin in 11.3...

There were many satellite meetings at Sydney: "The Australian Seagrass Workshop", "Orchid Symposium", etc. One formal satellite session of interest to paleopalynologists was the IOP (International Organization of Paleobotany) business meeting, at which there was, among other things, much discussion of Hermann Pfefferkorn's (University of Pennsylvania) effort to reestablish a genuinely international bibliography of paleobotany/paleopalynology (nothing formal was done about this, but a large majority favored encouraging Pfefferkorn's effort in some way). There was a marvellous dinner at "Mr. Fogg's Restaurant" for paleobotanists/paleopalynologists (co-sponsored by IOP and ICP, organized by Jack Douglas) at which I found myself proposing the toast to our Australian hosts, because silver-tongued W.G. Chaloner, who had been selected for the role, had laryngitis. I would guess the attendance at the dinner at about 100, from all over, even from the

People's Republic of China, but not from any of the Soviet Bloc countries--they weren't at the Congress. The International Association for Angiosperm Paleobotany (IAAP) had an informal, but interesting, meeting attended by Leo Hickey, Jan Muller, Norman Hughes and other luminaries in that field.

#### Nomenclatural matters

I do hope some are still reading! This important subject is regarded unfairly as soporific by some! The International Code of Botanical Nomenclature ("ICBN") is produced by the Bureau of Nomenclature through the actions of the Nomenclature Section, which meets in conjunction with each International Botanical Congress. The Code is then published later by the International Association for Plant Taxonomy (IAPT). The exact mechanism by which this occurs appears byzantine to casual observers, but actually is very straightforward. I have summarized what happens a while back in the IOP Newsletter 9 (May 1979:7-10), and will not repeat it here. The Code now in effect is the one produced by XIII IBC at Leningrad in 1975, published by IAPT in 1978. Curiously, the Leningrad Code only became "official" with its adoption at Sydney in August, 1981, just when it was de facto about to become passé! The "Sydney Code" will be published in a couple of years and adopted (D.V.) at XIV IBC in Berlin in 1987.

It is very clear to me that because botanical nomenclature depends almost entirely on the Code and not, as zoology, on nomenclatural commissions, the work of revising the Code is disturbingly never-ending. There is no sign of a let-up in this process, though it has frequently been predicted that such would eventually occur. There were 213 proposals to amend the Code, published in Taxon as required, and considered at Sydney. This is about an average number for the last five Congresses or so. As a result, the Botanical Code keeps forever changing and expanding--especially expanding by adding to the lists of conserved names. In practice, in botany, nomenclatural problems can only be cleared up by:

1. Amending the Code to care for a perceived problem
2. Conserving names that are, or might be, otherwise illegitimate (i.e., contrary to the rules)
3. Convincing people in the botanical marketplace that a name (or names) thought illegitimate by some, really is legitimate--this actually works in many cases, because the illegitimacy is a question of opinion: e.g., did Pollenites have a legitimate description or not? (Zoology would instead use a once-for-all commission decision. I



sometimes envy zoologists, who can get a permanent, binding opinion from their Commission, and that's it.)

In any case, there were 213 proposals for consideration at the pre-Congress Nomenclature Section at Sydney, which occupied practically one whole week (including a delightful banquet one evening--but it wasn't worth the \$30 it cost me!). Many of the proposals were rejected with little or no debate at Sydney, because they had been rejected overwhelmingly by the preliminary mail vote. Others were rejected because they did not receive a 60% yes vote on the floor of the Nomenclature Section, as required by long-standing practice. Accepted were 61 proposals, or about 28%. In addition, 33 proposals, another 15%, were "referred to the Editorial Committee". This has the effect of directing the powerful Editorial Committee to change the wording of the Code along the lines of the proposal, if and as they see fit. (Paleobotany's representative on the current Editorial Committee, which will prepare the "Sydney Code", is W.G. Chaloner.)

As usual, most of the changes affect basic matters rather little. However, a few of the changes seem to be of considerable potential significance to paleobotany/paleopalynology:

Art. 6.4:

A statement will be added: "a name illegitimate when published remains illegitimate forever, unless conserved".

Art. 10:

Here is the blockbuster of these sessions! The article is to be completely rewritten to make the type of a genus be henceforth the type-specimen of an included species, instead of an included species itself, as heretofore. This is very jarring. (Family names will also be typified by specimens!) The wording will be something like this after the Editorial Committee does its work:

"The type of a name of a genus or of any taxon between genus and species is the type of a name of an included species. For purposes of designation or citation of a type, the species name alone suffices, i.e., it is considered as the full equivalent of its type. The type of a name of a family, or of any taxon between family and genus is the same as that of the generic name on which it is based. For purposes of designation or citation of a type, the generic name alone suffices...."

The statement that in citations one need only give the species name saves this new provision from creating a disaster--wherever in our literature the type species is listed, e.g., in transfers, we are o.k., even if the type specimen is not cited as

such. (However, I would advise everybody in the future to go "all out" and identify the type-specimen of the type species, anticipating a possible future extension of this philosophy!) The avowed purpose of the change was to prevent problems where genera are accidentally typified by species that don't belong in the genera, because of a misidentification by authors of the specimens before them. The specimen proviso thus makes the name-bearer of the genus a tangible object, not a possibly mistaken concept.

Art. 11:

This was slightly revised to emphasize that form-taxa of fossils (and of certain fungi) are an exception to the rule that a single taxon can have only one correct name. That is, fossil spores can be called by a form-generic name, even if known to come from a megafossil plant with a different name.

Art. 14:

Another potentially big change here. This article was revised to permit conservation in the future of specific names, albeit only those "...of major economic importance". Heretofore only generic names, and names of taxa of higher rank, could be conserved. The limitation to species names of "economically important" plants (Densosporites? Aquilapollenites?) was added from the floor--and will be hard to judge. It seems to me probable that now that the concept of specific conservation has been approved in principle, and a new section for a list of conserved species set up in the Code, the procedure will be extended at later Congresses. There have always been those who favored this, and their camel now has his nose under the tent.

Art. 42:

This article about combined generic-specific descriptions or diagnoses has been changed again, in the same direction as at Leningrad, but a bit further, to make it very clear that for a monotypic genus, one description suffices, whether it is of the genus or the species. Also made clear by the new wording is that a genus is monotypic when published if only one species is formally included, even if other species are informally mentioned by the author as belonging to it.

Art. 45:

Wording is introduced to prevent accidental validation of names--mere reference to a name will not validate it. An author who validates must explicitly state that he/she is validating.

Art. 75:

One proposal adopted much expands the present footnote (bottom of p. 64, Leningrad Code) to explain how rulings are to be obtained from a committee on questions

of homonymy (for example, are Laevigatosporites and Laevigatisporites technically homonyms? A proposal that specifically would have made names differing only by a connecting vowel, such as these, homonyms, was defeated, however.) A possible trend to expand this sort of committee-business is interesting, as it moves in the direction of zoology-like commission-work, which botany has traditionally resisted, depending instead on acceptance or rejection "in the marketplace".

Some nomenclatural things that did not happen need to be mentioned:

Art. 3:

a. All of the paleobotanical proposals to amend this article vis-a-vis form-taxa were rejected. Most of them were rejected by large majorities of the Fossil Plant Committee before the Sydney Congress (cf. Traverse, "Report of the Committee for Fossil Plants", Taxon 30:2:May 1981:473-475.) It was felt by the Committee in its Sydney deliberations that elimination of organ-genera at Leningrad is enough change for now.

b. The attempt made at many Congresses to introduce "Phylum" here, in place of "Division", came very close to acceptance--it failed only because of the 60% rule. I went to Sydney prepared to vote "yes", thinking botanical practice should be in line with what I thought was zoological practice. On the way to Sydney I read on the plane the Zoological Code again and discovered that "Phylum" isn't in it!--so I voted "no"! Perhaps we should omit "Division", as the Zoological Code omits "Phylum", and let it be dealer's choice?

Art. 13:

Storch's proposal to change the starting point for fossil plants did not come in in time to be adequately considered by the Committee for Fossil Plants, pre-Sydney. Storch proposes to change the starting-point for fossil plants from the present Sternberg, Flora der Vorwelt (1820) to Schlotheim, Petrefaktenkunde (1820). The proposal was formally rejected at Sydney, but actually was referred back to the Committee for more consideration before the Berlin Congress. It is a matter on which feeling runs high in some quarters. The Committee would appreciate comments (send to AT).

Art. 29:

A step of potential importance to us was taken, though nothing was enacted: a committee was formed to study the acceptability of publication by non-traditional methods (computer-printout?) and by printed matter of restricted circulation such as theses, "handouts", etc. (The Fossil Plant Committee would appreciate

comments on this, if you have any, as this will very likely come up at the next Congress, and we should have a "party line".)

Art. 34:

An additional section was added here to stress that form-taxa of certain fungi are not "alternative names" and hence are not covered by the prohibition against such. Perhaps one of us should now propose for Berlin that the statement be expanded to include explicitly form-taxa of fossils?

General:

Norman F. Hughes' proposal for a new Paleobotanical Appendix was given careful consideration, including several conferences at Sydney of Dr. Hughes and the Fossil Plant Committee (of whom 7 were in attendance at Sydney). On advice of the Committee, the proposals were rejected. It is clear at the present that paleobotanists/paleopalynologists do not desire nomenclatural provisions greatly at variance with those for botany generally.

Constitution of Committee for Berlin Congress

The Nomenclature Section elected the following Committee for Fossil Plants (of the International Association for Plant Taxonomy--therefore "IAPT-CFP"). (cf. Traverse, in press)  
Chairman: W.G. Chaloner, U.K.  
Secretary: A. Traverse, U.S.A.  
Members:  
S. Archangelsky, Argentina  
H.P. Banks, U.S.A.  
W.R. Evitt, U.S.A.  
K. Faegri, Norway  
J. Galtier, France  
J. Jansonius, Canada  
V. Krassilov, U.S.S.R.  
Li Xingxue, P.R.C.  
H.K. Maheshwari, India  
S.V. Meyen, U.S.S.R.  
J. Muller, Netherlands  
F. Schaarschmidt, W. Germany

Literature Cited

International Code of Botanical Nomenclature, adopted by XII IBC, Leningrad, July, 1975. Pub. 1978, IAPT Regnum Vegetabile 97: 1-457.

Traverse, A., 1979. All you probably want to know about amendments to the International Code of Botanical Nomenclature ("ICBN"), and more: IOP Newsletter 9:7-10.

\_\_\_\_\_, 1981. Report of the Committee for Fossil Plants: Taxon 30:2:473-475.

\_\_\_\_\_, (in press, Taxon). Post-Sydney report of the Committee for Fossil Plants.

Alfred Traverse

### The Applied Geology Unit, Trinity College Dublin

Celebrating its first birthday in Trinity College Dublin (TCD) is the Applied Geology Unit. This was set up early in 1980 as a joint venture between the Department of Geology in TCD, the Geological Survey of Ireland and the Petroleum Affairs Division of the Department of Energy. The Unit is currently undertaking a four-year project on the detailed biostratigraphy of selected intervals from a number of wells and boreholes both offshore and onshore Ireland. While the Unit operates from its own laboratories in the College, it works in close co-operation with the Department of Geology. The Unit reports its progress back to an advisory team headed by Professor C.H. Holland and comprising Drs. D. Naylor (Geological Survey), P. Shannon (Department of Energy) and G. Sevastopulo and G. Clayton, both of TCD.

The Applied Geology Unit is made up of five specialists.

Syed M. Rasul, who heads the Unit, has worked previously at Birmingham, Sheffield and King's College, London and has conducted research in areas of Tertiary and Palaeozoic palynology with special reference to biostratigraphy and systematics. He is now undertaking an examination of post-Palaeozoic palynomorph assemblages (dinocysts, spores, pollen and acritarchs). Colin R. Harris, from Birkbeck College, London has been developing Flandrian ostracod and foraminiferal research and sediment pollution studies at TCD. He is concentrating at present on Cretaceous and Jurassic ostracods.

Randall A. Penney is a TCD graduate who has worked on the palynology of Holocene lacustrine sediments at Toronto University and is now specialising in Mesozoic spore and early angiosperm pollen work.

Nicola F. Horton is from Exeter and Aberystwyth where she has been working on Miocene benthonic foraminifera. She is now investigating Tertiary and Mesozoic foraminiferal faunas.

The onshore boreholes are being examined by Gareth Ll. Jones, from Queen's University in Belfast, who is continuing his work on Carboniferous conodonts and thin-section foraminifera. He is currently engaged in refining the upper Palaeozoic palaeoenvironmental picture.

Until the members of the Applied Geology Unit are in a position to publish and exchange their data, at present subject to governmental confidentiality restrictions, they would appreciate hearing from other workers in similar fields and also receiving their publications.

S.M. Rasul

This past summer I had the opportunity to meet with the palynology group at the Geological Institute, ul. "Akad. G. Bonchev", 1113 Sofia, Bulgaria. The Geological Institute, a division of the Bulgarian Academy of Sciences, is comprised of a variety of groups with specialists actively engaged in research on all aspects of geology. The Institute is headed by the mineralogist Dr. Ivan Kostov, and six people are presently engaged in paleobotanical/palynological research at the Institute. All of their work centers around stratigraphic applications of paleobotany and palynology, while most of the biological problems concern the palynologists at the Botanical Institute (headed by the Quaternary palynologist Dr. Clavko Petrov) which is located next to the Geological Institute in Sofia.

Much of the Paleozoic research concentrates on Carboniferous sediments primarily because of the economically important coal deposits of this age. Jullietta Lacheva has been studying the spores and pollen from the two major Carboniferous basins of Bulgaria, which complements well the megaflores studies of Dr. Yanaki Tenchov. Dr. Tenchov plans to publish a comprehensive study of the Carboniferous megaflores of Bulgaria with emphasis on its stratigraphic importance (to be published by the Bulgarian Academy of Sciences in the Fossils of Bulgaria series). Rossitza Kalvacheva rounds out the research on the Paleozoic with her investigations of acritarchs from Ordovician and Silurian deposits of Bulgaria.

A few researchers are engaged in studies of Mesozoic deposits. Dr. Svetlana Cernjavaska (research leader of the palynology group) is interested in the spores and pollen of Upper Triassic and Jurassic sediments of Bulgaria; in addition, she has worked on some Paleogene deposits. Lilia Dodekova is primarily concerned with the dinoflagellates and acritarchs from Jurassic and Lower Cretaceous sediments of Bulgaria, and Deshka Bakalova adds another dimension to their research program with her interest in fossil algae.

Although this is a relatively small group of palynologists, they are enthusiastic and would be happy to supply reprints of their recent work, and would also appreciate receiving reprints from their American counterparts.

### Some Recent Publications

Bakalova, D. 1973. Calcareous algae from the Lower Cretaceous in Northern Bulgaria. Bull. of the Geol. Instit., Ser. Paleont. 22: 81-90. (In Bulgarian with English summary)

- \_\_\_\_\_. 1975. Algues calcaires des sediments urgoniens dans la montagne de Prebalkan central (Bulgarie centrale). *Palaeont., Stratigraph. and Lithol., Bulgar. Acad. Sci.*, 2: 49-56. (In French)
- \_\_\_\_\_. 1980. Calcareous algae of the family Corallinaceae. *Palaeont., Stratigraph. and Lithol., Bulgar. Acad. Sci.*, 12: 13-24. (In Bulgarian with English summary)
- \_\_\_\_\_, L. Dodekova, T. Kovatcheva, I.G. Sapunov. 1976. New data on the stratigraphy of the Brestnica Formation (N.W. Bulgaria). *Dokl. Akad. Nauk, Bulgar.*, 29(9): 1321-1324. (In English)
- Dodekova, L. 1971. Dinoflagellates and acritarchs from the Tithonian in North Central Bulgaria. *Bull. Geol. Inst., Ser. Palaeont.* 20: 5-22. (In Bulgarian)
- \_\_\_\_\_. 1974. *Compositosphaeridium* Gen. N. - A new genus dinoflagellate cyst. *Bull. Geol. Inst., Bulgar. Acad. Sci., Ser. Palaeont.* 23: 25-30. (In English)
- Kalvacheva, R.K. 1979. Palynological evidence (Acritarcha) for the age of the Lower Palaeozoic rocks in the Vakarel Hill, Bulgaria. *Dokl. Bulgar. Akad. Nauk*, 32(10): 1397-1400. (In English)
- Latcheva, J.T. 1979. Donneés palynologiques sur l'age Stephanien d'une serie Terrigene dans la partie orientale de la montagne de Lozen (So de la Bulgarie). *Dokl. Akad. Nauk*, 32(12): 1687-1690. (In French)

Michael Zavada

#### BOOK REVIEW

Phanerozoic Stromatolites: Case Histories, C. Monty (Ed.), Springer-Verlag, Berlin; 1981, 249p., \$46.80.

It is, perhaps, somewhat unusual in fossil studies, that the efforts of workers investigating Precambrian organisms should provide the framework for the interpretation of Phanerozoic fossils. The paucity of other megascopic fossils in the Precambrian has necessitated the study of stromatolites, and researchers who work on Phanerozoic carbonates are beginning to reap the benefits of stromatolite research. Many of the puzzling properties of stromatolite formation have been deciphered (for both Precambrian and Recent examples), and these solutions are being applied to the study of Phanerozoic stromatolites. The study of extant microbial mat-forming communities in both carbonate and clastic environments has greatly improved our ability to interpret the biotic effects of algal paleocommunities in the fossil record. Thus, an understanding of stromatolite formation (and the microbial ecology of benthic

communities) is often essential in the reconstruction of carbonate environments. This is in contrast to the study of palyniferous facies, which are governed more by the ecology and distribution of plankton and allochthonous biotic elements.

The value of Phanerozoic Stromatolites for palynologists may be in providing examples of how the detailed study of stromatolitic facies can be used to reconstruct past environments. The subtitle, "case histories," accurately reflects the symposium volume format which consists of descriptions of facies and conclusions based on the interpretations of stromatolite composition and structure. Thus, while individual cases may be interesting, the articles present very little new information that can be applied toward the analysis of stromatolite origin and formation. Exceptions to this are the articles describing Recent and Pleistocene occurrences of stromatolites. Golubic and Campbell, for example, provide an important discussion of biologically mediated aragonite precipitation in two marine species of Rivularia. Likewise, the discussions of Dead Sea stromatolites by Buchbinder and also, Druckman, yield insight to inorganic aragonite precipitation and manganese formation. Kazmierczak argues that stromatoporoids are formed by cyanobacteria by demonstrating the presence of coccoid blue-green algae in stromatoporoid lumens, but I must agree with the editor, Claude Monty, that the mere presence of these organisms does not confirm their causal role in skeletal formation. The remaining thirteen articles demonstrate the function of stromatolites in resolving problems of dating, paleoecological reconstruction and carbonate diagenesis. J. Poncet does an excellent job of demonstrating the synchronous heterogeneity of environments in the Devonian of the Armorican Massif by using paleoenvironmental interpretations gleaned from stromatolite morphology and structure. Wright and Mayall discuss the stromatolites from the Upper Triassic Cotham Beds (Wales) and conclude that their form is a complex interaction of biological and sedimentological processes. The contributions by Cross and Klosterman include good discussions of stromatolite control over carbonate precipitation and diagenesis.

It is interesting that stromatolites have now been documented in carbonate environments throughout the entire geologic column. In fact, descriptions of the oldest sedimentary sequences on the earth often include lengthy discussions on the possible stromatolitic nature of certain laminated rocks (see, for example, Buick, Dunlop and Groves. 1981. Alcheringa 5(3): 161-181.). The ability of cyanobacteria to tolerate freshwater to hypersaline conditions means that the mere presence of stromatolites

gives no key to the salinity of a depositional basin. A familiarity with stromatolites is desirable, however, because they are widespread and they do provide a mechanism for the interpretation of shallow-water carbonate environments. Combined with Walter's Stromatolites, Phanerozoic

Stromatolites serves a role in documenting stromatolite diversity throughout the entire geologic column and calls to our attention the need for further investigative research on modern algal mat environments.

Paul K. Strother

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