



AASP NEWSLETTER

N. O. FREDERIKSEN, EDITOR

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MEETING ANNOUNCEMENT

The Department of Paleontology and Stratigraphy of the Institute of Geosciences, University of Sao Paulo (DPE-IGUSP), and the Associacao Latinoamericana de Paleobotanica e Palinologia (ALPP) proudly announce the IV REUNIAO DE PALEOBOTANICOS E PALINOLOGOS (IV Meeting of Paleobotanists and Palynologists - Brazil, 7-10 December 1983, IGUSP, Sao Paulo, Brazil).

As in previous Meetings, the primary objective of the IV RPP is to promote the exchange of ideas among specialists in the fields of Paleobotany and Recent and Fossil Palynology, with emphasis on South American examples as well as general topics. The Meeting will consist of technical sessions for the presentation of original research, round-table discussions, invited lectures, and a one-day field trip to a fossil plant locality in the Permo-Carboniferous Itarare Subgroup. A paleobotanical display entitled "Two Billion Years of Paleobotanical Evolution" is also being planned.

The registration fee of US \$15.00 (until 31 July 1983) covers the cost of the Program with Abstracts, the Special Publication with the papers presented at the Meeting, as well as the Banquet Dinner. Accompanying guests wishing to attend the Banquet Dinner should pay US \$10.00. Payment should be made in the name of Fernando Cilento Fittipaldi, preferably by check in US dollars, and sent to the address below.

Those interested in presenting papers should send a neatly typed double-spaced abstract of 25 lines or less in any of the common Western languages to the address below prior to 15 October 1983. For further details, contact: Thomas R. Fairchild, Coordinator, Comissao Organizadora - IV RPP, Instituto de Geociencias, USP, Caixa Postal 20899, Sao Paulo, SP, Brasil CEP 01498.

CONSULTANT AVAILABLE

Please note that as from 5th May 1983 I will be leaving Britoil and returning to Australia. My address will be: Box 161, Maitland, South Australia 5573. Telephone (088) 332 795. I will be available for work as a consulting palynologist/stratigrapher at that address from June 1st 1983.

Roger P. Morgan

SPECIAL SESSION FOR VI IPC

Jerome V. Ward is organizing a special session for VI IPC, Calgary, 1984, entitled "Quaternary Palynology of Tropical Areas". Prospective speakers should contact him at the address below as soon as possible with the tentative title of their paper. Abstracts are to be submitted on the standard IPC form prior to November 30, 1983. Ward's address is: School of Geology & Geophysics, University of Oklahoma, Norman, OK 73019 U.S.A.

Comment, by Satish K. Srivastava

The International Code of Botanical Nomenclature (ICBN, 1978) treats taxonomic groups of any rank as taxa (singular: taxon). Thus, a taxon is a unit in the Systematic Classification. Erdtman's (1947, p. 107) term sporomorph is a unit within the morphological classification of spores and pollen. As fossil plant classification is based on morphology (ICBN, 1978, Art. 3.2), "sporomorph" and "taxon" are more or less equivalent in fossil spores and pollen classification and can be used interchangeably.

Whereas the term sporomorph refers exclusively to spores and pollen morphological types, the term palynomorph, as originally proposed, encompasses the assembly of all the microfossils found in a palynological preparation. Thus "palynomorph" cannot be substituted for the terms sporomorph or taxon. It is confusing to use the term palynomorph where only one or two types of microfossils have been discussed; the terms sporomorph, dinocyst taxa or aritarchs will be self explanatory.

Erdtman, G., 1947, Suggestions for classification of fossil and recent pollen grains and spores. *Svensk Bot. Tidskr.*, 41(1):104-114.
Stafleu, F.A., et al., 1978, International Code of Botanical Nomenclature. Bohn, Schetema & Holkema, Utrecht.

AASP Newsletter is published quarterly by American Association of Stratigraphic Palynologists, Inc.

PALYNOLOGISTS WANTED

- Senior Palynologists/Palynologists with
- 1) Far East/Tropical Experience
 - 2) North Sea/European/Mediterranean Experience

Gearhart Geodata, a subsidiary of Gearhart Industries Inc., is entering a further phase of expansion of their Stratigraphic Services division. This development will create vacancies for palynologists who preferably are graduate geologists with experience of tropical Tertiary or boreal Mesozoic/Tertiary palynofloras.

These challenging career positions offer a unique chance to join young, dynamic stratigraphic consulting teams and share in the opportunities of growth within a successful expanding major oil-field consultancy company.

Salary and benefits package are negotiable, and will be appropriate to qualifications and experience. Send Curriculum Vitae or write for application form to: Dr. L.A. Riley, Gearhart Geodata Services Limited, Howe Moss Drive, Kirkhill Industrial Estate, Dyce, Aberdeen AB2 OGL, U.K.

POSITIONS AVAILABLE

A research position in Mesozoic palynology and stratigraphy is available in the U.S. Geological Survey's Eastern Region. The position involves work on the Triassic-Jurassic nonmarine basins of the Eastern States; however, research on other Mesozoic projects in addition is also possible. A doctoral degree and U.S. citizenship are required. If you are interested, send information on your background and research interests, including a detailed vitae, to: Michael E. Taylor, Chief, Branch of Paleontology and Stratigraphy, U.S. Geological Survey, Mail Stop 919, Box 25046, Denver Federal Center, Denver, CO 80225.

Marathon Oil Company's Denver Research Center is seeking to replace G. K. "Joe" Guennel, who has taken early retirement. A position is available for a palynologist-source rock specialist. The Ph.D. degree and 5 years experience are preferred. Inquiries should be directed to Joe at 835 Front Range Road, Littleton, Colorado 80120; telephone (303) 794-7080.

POSITION WANTED

Khalilur R. Chowdhury is looking for a position as palynologist. He received a Ph.D. in geology with specialization in palynology and sedimentology from the University of Cologne, West Germany, early last year. He has more than twelve years of experience in geological investigation, research and teaching, and has a strong background in the fields of palynology, stratigraphy and sedimentology. He wishes to offer his sincere services to any academic and/or research institutes and industry in the field of Cenozoic (or older) palynology. Dr. Chowdhury has a very good knowledge of English and German, and a fair knowledge of French, Urdu and Hindi. A detailed resume would gladly be sent to anyone who may be interested. Please contact: Dr. Khalilur R. Chowdhury, 165-B Tejkunipara (1st Floor), Tejgaon, Dhaka-15, Bangladesh.

Comment, by Jerome V. Ward

A taxon is "defined in the Code as a taxonomic group of any rank. The term taxon is of recent origin having been proposed in its present meaning in 1948, and having first appeared as part of the Code in 1952."¹ This useful term can be applied to all taxonomic levels, so that a taxon of a lower level may be included within a taxon of a higher level. Following this definition, the terms sporomorph or palynomorph cannot in themselves be considered taxa because the rank is not specified. To obtain a rank at some appropriate level a name would have to be proposed - uninomial at the generic level and above, and binomial for species. Similarly, one would not consider the terms phytoplankton, pollen grains, or microfossils to be taxa - these are terms for forms with some similar morphologic character but nevertheless remain rankless. The term sporomorph then requires a descriptor; to be perfectly clear one should say sporomorph specimen when considering an individual, and sporomorph species (or other taxon) if treating the fossils systematically.

Regarding your future use of the term sporomorph, I agree with Judi Lentin that it implies forms with a spore morphology and that palynomorph is a preferable term since it is more encompassing.

¹McVaugh, R. Ross, R. & Stafleu, F.A., 1968, An Annotated Glossary of Botanical Nomenclature. Int. Assoc. Plant Taxon., Utrecht, 31 p.

GLYCERIN JELLY MOUNTS

One man's recipe for re-mounting glycerine jelly mounts

Many of the plant megafossil cuticle slides in the British Museum collections have dried out over years of storage. The method I use for re-mounting is to immerse the slides individually in petri-dishes of approx. 5% HCl, enough to cover the slide. Warming the petri-dish at 45°C, over a period of 1 to 48 hours, generally results in hydrolysis of the jelly without damage to labels or material. Stubborn slides need longer; and sometimes the jelly remains as a coherent film. (This can be useful when re-mounting pollen but provides problems for SEM work.) It may or may not be necessary to gently lift the cover slip with a needle; sometimes it just floats off the slide.

When re-mounting it is, of course, essential to wash out all traces of acid.

One man's recipe may be another man's poison. I too would like to hear of other approaches. Enzymatic hydrolysis, for example, may be more effective.

Since re-mounting represents a sheer bloody waste of time, readers may like to consider possible prevention. Please read on!

Preventing glycerin jelly mounts from drying out

Unlike James E. King (AASP Newsletter 16 (1)) my slide collection - several thousand Jurassic plant cuticle preparations - has none that have dried out. Although their maximum age is only 13 years I have seen in my curatorial work many examples of dried out glycerin jelly slides that are only a few months or years old.

Prevention, I believe, consists mainly of driving off excess water before adding the cover-glass to a slide preparation. I do this by routinely leaving slides on a hot plate at 45°C for at least one hour (often up to four hours) after mounting. During this "cooking" period the glycerin jelly film darkens slightly in colour. It becomes more viscous and visibly thinner when the slide is looked at sideways. Obviously the slides have to be covered (e.g. with a petri-dish lid) to minimise airborne contamination. It may also be significant that I make up my own glycerin jelly: the bought product seems thinner. (If this is the only difference it may simply need more baking.) The recipe I use is gelatine granules 10g, distilled water 60 ml, warm and stir, leave 2 hours. Add 70 ml glycerol and 1g crystalline thymol. Warm and stir until thymol dissolves.

A problem when first using the "cooking" method is how much glycerin jelly to use for an optimal mount. It will be necessary for the user to experiment a bit. I tend to use too much, which (for cuticles) can simply be squeezed out and trimmed off afterwards, but cuticles do not of course get squeezed out or size-sorted like a strew prep. of miospores! Subsequent to adding the cover-slip, warm for a further 6 hours.

After trimming off excess jelly when cold, and generally cleaning up a slide, the cover-glass is wiped with ethanol to remove grease. I then seal with "Glyceal", from BDH Chemicals Ltd., Freshwater Road, Chadwell Heath, Dagenham, Essex RM8 1RX, UK. This is the nearest equivalent to Gold Size, which has been a tried and tested sealant over many decades but is no longer available in the UK. "Japan" Gold Size and nail varnish are useless.

Please note that "cooking" does not seem to alter the properties of cuticles or optical qualities of the jelly from my palaeobotanical viewpoint. This of course may not be the case for more optically critical miospore work, and needs to be borne in mind by palynologists.

Chris R. Hill, British Museum (Natural History), London.

BOOK REVIEWS

Les Champignons Fossiles, Vol. 1, by Marcel V. Locquin. Published by the author, 54 Bd. de la Liberation, 94300 Vincennes, France. Microfiches, Fr. 55; paper, Fr. 185. 178 p.

This is a collection of papers written either by the author alone, or on occasion, in collaboration with others, on the general subject of fossil fungi. There is an introduction, two chapters, one plate, and the conclusion which are original to this book. The already presented papers date from 1978 to 1981. It is presented as being volume 1 of a work (series?) called "Les Champignons Fossiles" (transl. "Fossil Fungi"), and is itself titled, in translation, "Research on some fungal organisms and some organisms of probably fungal affinities from the Paleozoic". It was presented as a thesis for the degree of "Doctorat d'Etat" at L'Universite Pierre et Marie Curie, in Paris.

This is truly a cross-disciplinary work, falling mainly in the domain of the mycologist, and partly in that of the paleopalynologist working on Chitinozoa, and on Precambrian fossils. The author makes a point of disproving the apparently oft-repeated dictum of mycologists that fungi do not fossilize well.

Of particular interest to applied palynologists is his theory that the Chitinozoa are fungi. He transfers them to the Chitinomycetes, a fungal group specially erected to accommodate the Chitinozoa only. He goes further and suggests that the well-known Chitinomycetes are the female phialosporangia and then proceeds to propose a scenario for the complete ontogeny of the organism. At first sight, this scenario seems somewhat far-fetched, but indeed, compared to some of the known ontogenies of living fungi, it seems relatively tame. He does not however explain the apparent lack of fossilized forms at various stages of growth, nor does he tackle satisfactorily the chains-vs.-cocoon mode of aggregation. I do not propose this as an indictment of the theory, but rather as a caution that all has not been resolved. This theory which pertains to the biological affinities of the chitinozoa has not yet been widely considered, nor enthusiastically accepted. However, it warrants careful consideration and bears witness to the wide variety of interesting possibilities available to scrutiny.

The rest of the book is best approached with at least rudimentary knowledge of mycology. The author deals with methods of study such as polarized light, reswelling to original shape, and cytochemical methods. He considers Precambrian and Devonian fossils. There is a paper on the possibly fungal borings in the scales of Devonian Agnatha, and he describes some fungal forms recovered from the Rhynie Chert.

This book therefore covers a very wide swath of topics. It should be looked at as a collection of papers rather than as a book with a unified theme. Because the chapters are not from the same printing source, there is a heterogeneity of presentation which shows up in the style and size of print, and tone of the papers. As a collection of papers, it is a valuable reference work that research and academic libraries should most certainly own. It is a work that should be read by paleomycologists and chitinozoa workers, in particular, and by palynologists in general who will discover a whole range of topics which are oft-ignored.

I cannot comment on the quality of the plates as I read this 178-page book in microfiche and found it difficult to judge plate quality.

In summary, I read this book with eager curiosity because I thought it would clarify and expand upon M. Locquin's contention that Chitinozoa are fungi, and also open up new vistas on fossil fungi. The book certainly whetted my appetite, and showed up interesting fields of study, but it did not convince me entirely. However, given the state-of-the-art now, I doubt that a truly convincing case can be made so soon, and one can but be grateful for these tentative inroads.

Jocelyne A. Legault

Prevailing views on the meaning and use of the terms palynomorph and sporomorph, including my own, were presented in the last issue of AASP Newsletter. Because Norm Frederiksen invited comment, I offer some background data, for the record. To restate and summarize: Palynomorph refers to all kinds of acid-resistant microfossils. It is a useful word, clearly defined. Sporomorph, which sounds like a similar word but is not, was originally defined to designate a taxonomic group. The term has fallen into disuse in that sense. It is still used by some, including Norm, as a synonym for palynomorph. In that sense, sporomorph is at best superfluous, and at worst confusing. The term should be suppressed for these reasons.

Palynomorph fulfills the need for a single term that comprehensively refers to any or all acid-resistant microfossils studied (or at least encountered) by palynologists. The term was proposed and defined by Tschudy (1961, p. 53), who attributed it to R. A. Scott. The term is etymologically sound and utilitarian. It has been widely accepted, although there seems to be a recent, unfortunate trend to restrict its meaning. You can find it used in such constructions as "dinoflagellates and palynomorphs," which erroneously suggest that palynomorph means pollen and spores. For the record then, the term was defined to include pollen, spores, dinoflagellates, "... and other kinds of organisms encountered on slides examined by palynologists," e.g., acritarchs, chitinozoans, fungal spores and fruiting bodies, algal cysts and coenobia, and even microforams.

The need for comprehensive terms labeling what palynologists concern themselves with was long recognized, of course, and several other words had been suggested earlier. Miospore was proposed by Guennel (1952, p. 9-10) for "all spores and spore-like bodies" smaller than 200 micrometers. This term found acceptance especially among Paleozoic palynologists and is still in use. Polospore is an early invention proposed by Grayson (1956, p. 71) "to designate pollen and/or spores." It was broader in concept than miospore but somehow it had an Edsel-like quality and ultimately failed to be accepted. Spore/pollen is used by some as a group term referring to both spores and pollen. It is an ugly-looking compound, however, and hardly more concise than the phrase spores and pollen. Some palynologists use the word spore to refer to both spores and pollen grains. They defend this by appeal to the botanical origin of the reproductive bodies of all tracheophytes. But spore has so many possible meanings in botany, both general and precise, that its use in this way is likely to lead to ambiguity. Note that none of these terms are synonyms of palynomorph. They are all considerably more narrow in definition.

Although several words have been proposed as single terms referring to more than one kind of palynological fossil, the list does not include sporomorph. That disputed term was not intended to be synonymous with any of the group terms. Erdtman (1947) coined it to designate a taxon based on morphology--a shape group, in his own words. It was intended for application to fossil spores and pollen, and conceptually it is equivalent to form-species (i.e., a taxon lower in rank than form-genus). With relation to the modern genera and species of tracheophytes, sporomorphs are of uncertain rank. Erdtman noted that "they may just as well be the product of several species or...genera or... families;" alternatively, "...several sporomorphs may represent only one species" (Erdtman, 1947, p. 107). Thus a sporomorph is a taxon, which is a taxonomic group of any rank (Stafleu et al., 1978). It was used in this sense by Cookson for Southern Hemisphere Tertiary fossils (Cookson, 1947; Cookson and Pike, 1954). The concept and the term also were embraced by Potonie (1952). Most subsequent authors found the concepts of form-taxa that are familiar in paleobotany to be appropriate and adequate to handle plant microfossils, and the concept of the sporomorph fell into disuse. The word itself was found in palynology's attic, dusted off, and put into use again--but with a new and superfluous meaning. Let's put it back in the attic, where it belongs. It is a word we don't need (perhaps one of many).

And speaking of taxon, I want to take this opportunity to clarify some confusion about that term. First, it designates a group concept, one undefined in rank. It is properly used when one does not wish to indicate rank, and only where a word like species, genus, family, etc., could be substituted. I may have seen many palynomorphs through my microscope, but I have never seen a taxon. Second, the plural of taxon is taxa. The only credible sources for the spelling, definition, and usage of taxon and taxa are the international codes of botanical and zoological nomenclature (see Stafleu et al., 1978; Stoll et al., 1961). The International Stratigraphic Guide (Hedberg, 1976) carries a curious footnote asserting that taxa is not the proper plural form. The opinion presented there is irrelevant, because although the Guide may be a source for stratigraphic terminology, it is no authority on biological terms.

Similarly, I would not necessarily rely on the AGI Glossary (Bates and Jackson, 1980) as a reliable reference for the definition of palynological terms (although it is fine for geological terms). For example, on palynomorph and sporomorph, AGI is right about the former, but wrong about the latter. In general, I recommend the primary sources to anyone who wants to use our "palynojargon" correctly.

Bates, R. L., and Jackson, J. A., 1980, Glossary of Geology. American Geological Institute, Falls Church, Virginia, 749 p.

- Cookson, I. C., 1947, Plant microfossils from the lignites of Kerguelen Archipelago. British, Australian and New Zealand Antarctic Research Expedition Reports, Ser. A, 2: 127-142.
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- Erdtman, G., 1947, Suggestions for the classification of fossil and recent pollen grains and spores. Svensk Botanisk Tidskrift, 41: 104-114.
- Grayson, J. F., 1956, The conversion of calcite to fluorite. Micropaleontology, 2: 71-78.
- Guennel, G. K., 1952, Fossil spores of the Alleghenian coals in Indiana. Indiana Geological Survey, Reports of Progress, No. 4, 40 p.
- Hedberg, H. D., 1976, International Stratigraphic Guide. John Wiley & Sons, New York, 200 p.
- Potonie, R., 1952, Zur Morphologie und morphologischen Nomenklatur der Sporites H. Potonie 1893. Palaontologisches Zeitschrift, 25: 143-154.
- Stafleu, F. A., et al., 1978, International code of botanical nomenclature. Regnum Vegetabile, 97: 1-457.
- Stoll, N. R., et al., 1961, International Code of Zoological Nomenclature. International Trust for Zoological Nomenclature, London, 176 p.
- Tschudy, R. H., 1961, Palynomorphs as indicators of facies environments in Upper Cretaceous and lower Tertiary strata, Colorado and Wyoming. Wyoming Geological Society Guidebook, Sixteenth Annual Field Conference, p. 53-59.

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