

IOP NEWSLETTER 30

INTERNATIONAL ORGANIZATION OF PALAEOBOTANY

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES
-SECTION FOR PALAEOBOTANY
President: Prof. W.G. CHALONER, UK
Vice Presidents: Prof. E. BOUREAU, FRANCE
Dr. S. ARCHANGELSKY, ARGENTINA
Dr. S.V. MEYEN, USSR

Secretary: Dr. M. C. BOULTER
N. E. London Polytechnic,
Romford Road,
London, E15 4LZ, England.

JULY 1986

IOP NEWS.....	1
REPORT OF A RECENT MEETING.....	2
NEWS OF FORTHCOMING MEETINGS.....	3
NEW SPECIALIST WORKING GROUPS.....	4
NOMENCLATURE.....	5
THE ANDERSON'S PRODROMUS: continuing discussion.....	7
IS PALAEOONTOLOGY GOING EXTINCT? continuing discussion...	8
HAVE ECOLOGICAL TOLERANCES CHANGED THROUGH THE TERTIARY?	8
A NEW CATALOGUE OF HIGHER PLANT MEGAFOSSIL GENERA.....	9
INDEX OF FIGURED PLANT MEGAFOSSILS.....	12
PALYNODATA INC.:ANNOTATED REFERENCES NOW AVAILABLE.....	12
W.S. LACEY COLLECTION OF FOSSIL PLANTS.....	12
COAL BALL ROT.....	13
EARLY MEMORIES OF THE SEDGWICK.....	14
MRS SAHNI MEMORIAL.....	15
A PALAEOBOTANIST'S ANALYSES OF PSYCHIC COMMUNICATIONS..	15
NEWS OF INDIVIDUALS.....	16
BOOK REVIEWS.....	16

PLEASE MAIL NEWS AND CORRESPONDENCE TO YOUR REGIONAL
REPRESENTATIVE OR TO THE SECRETARY FOR THE NEXT NEWSLETTER 31.
The views expressed in the newsletter are those of its
correspondents and do not necessarily reflect the policy of IOP

IOP NEWS

ELECTION OF OFFICERS TO IOP EXECUTIVE COMMITTEE

According to the IOP Constitution (IOP Newsletter 3, 1977) it is now time to seek nominations for the election of officers at the Berlin General Assembly next year.

The relevant parts of the Constitution are in Article V:

Part 2 b - "Officers elected at one General Assembly shall serve from the end of that Assembly to the end of the next Assembly."

Part 2 e - "A President can not be re-elected; a Vice-President may serve no more than two terms."

Part 2 f - "A Secretary may be re-elected."

Part 2 g - "...Nominations may be made in writing by any member of IOP." They must be "received by the Secretary no later than

six months before the Congress." "All candidates must be from current paid-up members of IOP."

Part 3 b - "The three members-at-large must be from different countries; they may not serve more than two consecutive terms."

The Congress Member serves for one term and works in the country hosting the Congress and must serve on the national organising committee.

This means that the following members of the IOP Executive must retire at the end of the Berlin General Assembly:

Chaloner, Boureau, Archangelsky, Meyen, Schaarschmidt.

An item on page 2 of IOP Newsletter 28 explains that the Secretary wishes to retire at the Berlin Congress.

Nominations are sought for candidates to be elected to the following posts: one President

three Vice-Presidents

one Secretary

one Congress Member

Send your nominations in writing to the Secretary before February 1st 1987.

More details of the progress with the election will appear in the forthcoming three newsletters. Copies of the IOP Constitution can be obtained from the Secretary.

INTERNATIONAL ASSOCIATION OF BOTANICAL & MYCOLOGICAL SOCIETIES

The I.A.B.M.S. is the newly formed ad hoc association of the Sections and Commissions of IUBS. It has replaced the more formal Division of Botany within IUBS which was recently dis-established.

It was announced in April 1986 that Professor W. Greuter, Botanischer Garten und Museum, Berlin, is elected as chairman and that Professor J. McNeill, University of Ottawa, is elected as secretary.

It remains to be seen whether the added strand of I.A.B.M.S. in the web of international biology adds strength to the fabric, or is merely another layer in a rather thick cake. It would be useful if IOP members write to this newsletter with their ideas of what we might contribute to the new system.

REPORT OF A RECENT MEETING

SEMINAIRE DE PALEOBOTANIQUE, Strasbourg, 15-16 May 1986

This was the first seminar held by the "Organisation Francaise de Paleobotanique" (OFP). The meeting was attended by about 30 palaeobotanists from France and the rest of Europe and one (J.Lorch) from Israel. The meeting was opened by Prof Lucas, Director of the Geological Institute at Strasbourg and was followed by the presidential address of Prof Boureau, read by Lea Grauvogel-Stamm. There were 13 papers on diverse palaeobotanical subjects and the session was begun by Prof Lemoigne (Lyon) who reviewed land plant evolution and examined climatic and geological controls on floral changes. This was then followed by papers on: permineralization in Carboniferous coal swamps (Rex, Montpellier); a new histological technique for examining

permineralized plant tissues (Holmes, Montpellier); a well preserved Zosterophyllum from Belgium (Gerrienne, Liege); new information on the vegetative structure of the first pteridosperms (Galtier, Montpellier); pollen organs from the Lower Carboniferous of Scotland (Meyer-Berthaud, Montpellier); several Permian plants discovered in Belgium (Fairon-Demart, Liege); palaeoclimatic and palaeogeographic implications from fossil gymnosperm wood from the L. Permian of Spain (Vozenin-Serra & Broutin, Paris); an in-situ flora from the Bunter Sandstone of Eifel, West Germany (Fuchs, Grauvogel-Stamm & Mader, Strasbourg); a female Araucarian cone discovered in the Oxfordian of Madagascar (Barale, Lyon); the palynology of the Bunter Sandstone from the Catalanian Pyrennees (Broutin, Paris; Doubinger, Strasbourg; Gisbert, Paris); palaeogeographical approach on the flora from Guadilax de la Sierra, Spain (Medus, Marseilles; Alvarez-Ramez, Madrid); quantitative analysis of the palynofloras from the Campanian of Sedano, Spain (Medus, Marseille).

The communications were followed by the General Assembly of OFP during which it was decided that the next seminar will be held at Lyon in 1987 concomitantly with the "Societes Savantes". It was also proposed that the next "European Palaeobotanical Conference" may be held at Madrid in 1989.

The second day of the seminar involved an excursion led by Prof Gall (Strasbourg) to two quarries, the first at Soultz-les-Bains (the type locality of Voltzia) and the second at Petersburg where Voltzia was collected. A very enjoyable lunch of "Choucroute" was then followed by a visit to the magnificent private collections of Grauvogel-Gall where the flora, fauna and sedimentary features of the Permian were examined, aided by the colourful explanations of Lea Grauvogel-Stamm, Grauvogel and Gall.

In all, this was a very enjoyable and productive meeting and the organisers (Lea Grauvogel-Stamm, J. Doubinger, Monique Schuler and colleagues) must be congratulated not only on efficient organisation but also on arranging for us to sample the wonderful cuisine and wine of the Strasbourg region. Special mention must be made of Prof Lorch's hilarious account in the opening session of how archaeologists of the future may judge the level of our culture from the design of toilet ceramics. On the board were longitudinal section drawings of Gallic and Germanic water closets.

G. REX, Montpellier, France.

NEWS OF FORTHCOMING MEETINGS

4TH INTERNATIONAL SYMPOSIUM ON FOSSIL ALGAE, 6-11 July 1987

This is the successor to the Erlangen, Paris and Denver meetings and will be held at University College, Cardiff, Wales. Those with interests in algae and algal carbonates will review and discuss all aspects of the biomineralization, palaeobiology, geological history, sedimentology and ultrastructure of modern and ancient calcareous algae, cyanobacteria and stromatolites. Contributed talks in any of these field are welcome. Details can

be obtained from Dr R. Riding, Department of Geology, University College, Cardiff CF1 1XL, Wales, UK.

THE EVOLUTION OF GYMNOSPERMS, Montpellier, September 23-25 1986
80 people from 14 countries returned the first circular and about 30 abstracts of contributed papers have been received dealing with biological and palaeontological approaches. Last minute registration and poster contributions can still be sent to Dr J. Galtier, Laboratoire de Paleobotanique, USTL, 34060 Montpellier, France.

VII SIMPOSIO ARGENTINO PALEOBOTANICA Y PALINOLOGIA, Buenos Aires, April 13-15, 1987

The second circular for this meeting is now available from the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Avenida Angel Gallardo 470, 1405 Buenos Aires, Argentina.

NEW SPECIALIST WORKING GROUPS

GLOBAL BIOLOGICAL EVENTS IN EARTH HISTORY

Dr E. Knobloch, Geological Survey, Malostranske nam. 19, 118 21 Praha 1, Czechoslovakia writes:

"Last summer Professor O.H. Walliser (Gottingen), the leader of IGCP Project 216 encouraged a number of institutions to propose new subjects for the project Global Biological Events in Earth History. I suggested two new topics:

- 1, Evolution of angiosperms in the Cretaceous,
- 2, Palaeofloristical and palaeoclimatological changes in the Tertiary of the northern hemisphere.

"My proposals have been accepted by Project 216 and work will continue until 1990 and perhaps longer. The programme will be based on the study of fossil leaves, fruits, wood and pollen."

Dr Knobloch has prepared a questionnaire which seeks details of contributions that likely participants might make. If you are able to join his group please write for a copy or with details of your interests.

A NEW DINOFLAGELLATE NEWSLETTER

At the DIN03 meeting in Egham in 1985 there was encouragement to produce an international newsletter. Dr J. Lentin, L.I.B. Consultants, Suite 2110, 505 4th Avenue S.W., Calgary, Alberta, Canada T2P 0J8 is the temporary (she hopes) editor and has produced the first edition of what she calls the "Round Brown Newsletter" ("Round Browns" are the nick-name for certain cryptic microfossils dear to the hearts of dinocyst workers.)

MEETINGS AND NEWSLETTER FOR SCANDANAVIAN PALYNOLOGISTS

There are to be regular contacts between the Scandanavian-languages-speaking palynologists. The next meeting is planned to be at the Institutt for Geologi, Oslo, on July 20th 1986 and there will be poster sessions and a "Paneldebatt." followed by an excursion in the evening (until 23.00hrs!) on the Oslofjorden. Contact Professor S.B. Manum at the Institutt for details, and for information about the newsletter (called "Palyno-nytt").

GERMAN PALAEOBOTANISTS' PALAEOECOLOGICAL WORKING GROUP

The first meeting was in late 1985 for a one-day brain storming session in Göttingen, at the invitation of Professor Riegel. Four groups who are working on palaeoecological problems were represented by professors and graduate students (Riegel, Göttingen; Pfefferkorn, Heidelberg; Schaarschmidt, Frankfurt; Schweitzer, Mosbrügger, Bonn). Each group presented a short summary of its current activities, and position-papers and manuscripts were circulated. The exchange of ideas and facts was free and inspiring and it was decided to continue the meetings and try to achieve formal recognition as a working group with loosely coordinated research plans.

Since then two further meetings have taken place. One in Frankfurt served to formulate concepts and another in Unna to discuss plans and joint field trips. The meetings had an encouraging effect on everybody in attendance and are one of the obvious signs of increased activities among German palaeobotanists.

H.W. PFEFFERKORN, Heidelberg, West Germany.

NOMENCLATURE

LATIN ABBREVIATIONS FOR TYPE SPECIMENS

This note is in response to the nomenclatural suggestions of N.S. Snigirevskaya in IOP Newsletter 28, December 1985, page 6. As we understand it (we have not seen a formal proposal), the idea is to use Latin abbreviations to designate four categories of types: 1 "living genus type", 2 "fossil genus type", 3 "living species type", and 4 "fossil species type". Under current concepts in the code, the first two would be "living" and "fossil" species, the latter two "living" and "fossil" specimens respectively, but everything ultimately reduces to designations for type specimens. Although the specific Latin abbreviations suggested seem eminently reasonable, it is unclear from Snigirevskaya's brief explanation precisely what circumstances are envisioned for their use. Snigirevskaya states only that:

"One must not abuse the suggested abbreviations and not use them for [just] any situation, for example, in the studies of the living plants. Rather, they should be used only to mark fossil and living plants after their names in the lists, instead of explanations in the text."

Interpreted as a recommendation rather than a requirement, such a formalization might be viewed as doing little harm. It is important to note, however, that "living" versus "fossil" represents only one of a large number of meaningful comparisons that might be drawn among types, species, or higher taxa. We wonder what purpose is served in emphasizing this comparison above all others? In our opinion, the most sensible comparison along these lines is only obliquely related to the "living" or "fossil" condition (however defined) of the type specimen: deciding whether the biological concept to which a name is applied should be regarded as "extinct" versus "extant".

In addition to these concerns, in order to follow Snigirevskaya's proposal, the terms "living" and "fossil" will have to be defined

in an unambiguous and mutually exclusive way. How might such a definition be attempted? Possible criteria include: Completeness-By itself, completeness is certainly not an acceptable criterion. Information for some taxa, clearly "fossils" by nearly everyone's estimation, approaches or even exceeds in completeness information known from herbaria, or even in toto, on many equally agreed upon "non-fossil" taxa. Chemistry-Specifying a criterion based on chemical composition of the type specimen might be a reasonably absolute, but complicated, solution to the problem. However, even here it is possible to conceive of situations, especially in the near-recent where chemical evidence available to the researcher (mummified plant remains versus dried herbarium sheet) might be substantially the same. Living or Dead-Perhaps the most clear-cut criterion for distinguishing "fossils" is whether the type specimen as "dead" versus "living" at the time it was collected. However even with this, there are problems. Many collections of "living" plants involve dead material and many taxa, whose type might be judged "dead", might also include "living" representatives and vice versa. What kind of distinction does Snigirevskaya actually intend?

The foregoing might be considered mere quibbling about words. We don't think so. Snigirevskaya's proposal touches upon the fundamental issue of what paleobotany is all about: are we entitled, as scientists, to use paleobotanical evidence for biological inference, or not? If we are entitled, then let us be biologists, and like them, subject only to differences in amount or degree of available evidence. If we are not entitled, then any arbitrary system of reference for fossils will do, and paleobotany is biologically irrelevant. Paleobotanists are biologists!

We note with alarm suggestions by some paleobotanists (Snigirevskaya not necessarily among them) that the solution to our difficult taxonomic problems lies in adopting an artificial system for some or all paleobotanically derived taxa, much like that currently in use for the Fungi Imperfecti (ICBN Article 59, 1983). In such a system, only those fossil taxa containing positive evidence of certain code-legislated features (usually some aspect of reproductive structures are suggested) would be accorded a biological meaning. All other taxa would be considered strictly artificial, and by strong inference, unsuitable for phylogenetic, systematic or other biological purposes. This two-part division of taxa and evidence represents an intrusion by the code into substantive biological issues, and is certainly wrong. Paleobotanists should decide for themselves which features constitute reasonable evidence for biological taxa, and which taxa, based on all available evidence, are more or less (never totally) artificial. We should not allow the code to legislate away the complex range of reasonable biological inferences about taxa that are routinely derived from fossil material, nor allow it to hamper the search for new ways to conceptualize available evidence. It seems to us that the same concerns apply to fossil fungi, and despite the reputed "simple" morphology of fungal anamorphs, we fail to understand why mycologists, as biologists, have seen fit to adopt such a system. In our opinion, paleobotanists should not desire the mycologists' nomenclatural

straight-jacket.

W.E. STEIN, Ann Arbor, Michigan, USA

D.C. WIGHT, Athens, Ohio, USA.

REPORT OF THE AD HOC COMMITTEE OF BIOLOGICAL NOMENCLATURE

The December 1985 issue 12 of the IUBS News Magazine Biology International (ISSN 02532069) contains a two page report of this meeting held in July 1985 during the 3rd ICSEB meeting. For the taxonomy and nomenclature of Protists, the committee recommends that, in order to facilitate the use of the two codes [ICBN & ICZN], "the IUBS Commission on the Nomenclature of Plants.... and the Section on Zoological Nomenclature.... be requested to commence a study of the Codes with the aim of harmonizing them as far as possible, both in essential terminology and in such features as would lead to different names for to (sic) the same taxon."

The report also encourages those involved in this study to consult, among other international organizations, the International Palaeontological Association.

On another matter concerning developments in Information Technology, the report requests bodies responsible for Botanical and Zoological Nomenclature to establish registers of new names, and to make registration a necessary condition for the establishment of a new name in zoology or botany.

THE ANDERSONS'S "PRODROMUS": continuing discussion

I agree with the editorial remark (IOP Newsletter 28, page 10) that the two contrasting reviews of the "Prodromus" invite further discussion. My attitude to the "Prodromus" is largely the same as that of Retallack, but I should like to underline some other points. Apart from purely scientific information (that is sometimes too short for comparisons in a monographic work, and in this I agree with Kovacs-Endrody) the book gives a comprehensive panorama of the whole South African palaeobotanical world; not only plants, but also people, outcrops, etc.. The book reminded me of a very complete guidebook through an inaccessible country. Many details have been omitted, and some items may even be erroneous, but the general habit of the country is vivid and attractive. I feel that now I understand the South African palaeobotany (not only plant remains) much better than previously. The comments of Kovacs-Endrody, although she may be quite right in some concrete statements, have not shaken this general impression. Still, I hope that some of the taxa briefly treated in the book, particularly the new ones, will be described elsewhere in more detail and with fuller comparisons.

I diverge with Kovacs-Endrody on another issue as well. I think we all should be much less rigid in evaluating works made by our colleagues. If a work has been made by enthusiastic people we should support that enthusiasm, at least. When possible, we should support those positive things that have been done or attempted, and the negative things should be exposed to the public only if they are really very harmful. For instance, I fully agree with Andrew Scott (IOP Newsletter 26, page 12) when

he severely criticizes biologists and particularly cladists for ignoring the fossil record. This cladistic fashion is really harmful not only for palaeobotany. But the shortcomings that can be found in the "Prodromus" are of quite a different nature. They are not harmful for professionals who easily discover them and will extract only useful and reliable things for which they will be grateful.

S.V. MEYEN, Moscow, USSR.

IS PALAEONTOLOGY GOING EXTINCT?: continuing discussion

I would like to comment on the observation in IOP Newsletter 28, page 4, that the lack of finance of palaeontological research is become a difficult problem. In Australia, palaeontology is losing ground in university Geology Departments, once strongholds of palaeontological and biostratigraphic endeavour. They are shedding workers by retirement and by the changing emphasis of research which re-employ experts in other fields.

However, palaeobotany has undoubtedly strengthened in Botany Departments, with Dave Christophel's group in Adelaide probably the best example. Several other departments have young PhD students working on interesting programmes. By and large palaeobotany has also strengthened over the past decade in industry and the Geological Surveys.

IOP membership has increased to nearly 50, there are several people one way or another actively researching, although very rarely under the actual title of palaeobotanist - I couldn't nominate one position of "palaeobotanist" in the country.

One or two small books on palaeobotany, for example Mary White's, have helped with the public image, along with a little television and other media exposure in connection with new fossil finds. Australia is host to the 3rd IOP Conference in 1988, and although the organization is not on the grand scale necessary for some conferences, a considerable amount of input and support is necessary, which would not be available if palaeobotany were "extinct".

J.G. DOUGLAS, Melbourne, Australia.

ps things in the cricket field are considerably worse: we have just lost the third Test against New Zealand.

[This note was written in March, before England lost all cricket Test matches in the series against the West Indies and India. (Ed.)]

HAVE ECOLOGICAL TOLERANCES CHANGED THROUGH THE TERTIARY?

In the reconstruction of the palaeovegetation and palaeoclimate from the fossil assemblage, the ecological tolerances of living taxa are assumed to be those of the fossil taxa. This assumption is largely a matter of faith, for there is little evidence which has a bearing on this problem.

Recent work by Martin & Gadek highlights this question of ecological tolerance. Eucalyptus spathulata has a very distinctive pollen grain and cannot be confused with any other

species in the family Myrtaceae. A very similar fossil has been described as Myrtaceidites oceanicus (Kemp & Harris, 1977, Sp. Paps. Palaeontology, 19, 1-70) from the Late Oligocene of the Ninetyeast Ridge in the mid Indian Ocean. The fossil is found at various localities on the Australian mainland, including southeastern Australia, through the latter part of the Tertiary. The assemblage in which the fossil occurs on the Ninetyeast Ridge includes rainforest taxa. The climate must have been reasonably wet. In western New South Wales, there is an Early Miocene or possibly Late Oligocene occurrence and the assemblage contains Nothofagus and other rainforest taxa. The environment of the fossil must have been in stark contrast to that where E. pathulata grows today. The living species is endemic to the south west of Western Australia, with a maximum rainfall of 500mm per annum. It grows in woodland or mallee scrub communities in a landscape totally incapable of supporting rainforest today. E. spathulata is drought resistant and salt tolerant. It seems a strange bedfellow for Nothofagus and other rainforest taxa which would require a minimum rainfall of at least 1,500mm per annum. I presented this story to the local botanists at a seminar, but they simply do not believe the fossil evidence.

This evidence strongly suggests that the ecological tolerances of the M. oceanicus - E. spathulata lineage have changed. When M. oceanicus first appears in the Late Oligocene, there were no arid or dry environments in Australia and it was a mesic taxon. The development of aridity over millions of years would have selected for those individuals which could best tolerate the drier environment. In any case, all of the taxa in arid and semi-arid regions must have evolved, ultimately, from more mesic taxa. Any taxa intolerant of a dry environment would have been eliminated and they are now restricted to the well-watered areas, for example, the present rainforest taxa. The selection pressures of developing aridity would act upon the plant and not upon the pollen which may remain virtually unchanged. Thus the answer appears to be that some taxa have changed and some have not.

H.A. MARTIN, New South Wales, Australia.

(This note appeared in Newsletter 12, January 1986, of the Palynological & Palaeobotanical Association of Australasia. It is reproduced with permission and by request, for it makes an interesting comparison to the note by STEIN & WIGHT on pages 5-6.)

A NEW CATALOGUE OF HIGHER PLANT MEGAFOSSIL GENERA: help needed

The IOP Vice President Professor S.V. Meyen (Geological Institute, Academy of Sciences of USSR, 109017 Moscow, Pyzhevsky per 7, USSR) is compiling a new catalogue of genera established for higher plant megafossils (including mosses). The catalogue will consist of three parts:

1. an alphabetic index of all generic names since 1820 (more than 4,600 genera)
2. grouping of genera into natural suprageneric units (families, orders etc.) when the affinity is known or can be suggested.

3. arrangement of genera into form-groups according to outwards appearance (eg "leaves with a single vein", or "permineralized detached petioles".).

These three parts will be linked by cross-references with the aid of special symbols.

Meyen is using the generic indexes issued by Andrews (1970), Blazer (1975) and Watt (1982) and has added genera recorded after 1978 in his own files. Below is the list of genera absent from these three published indexes. He is sure that he has omitted many other genera published after 1978 and so is now asking IOP Newsletter readers to go through the list below and check whether genera established by them after 1978 are included. If not, please write with full citations of the missing genera. A relevant copy of descriptions and illustrations will be highly appreciated.

Meyen and his colleagues hope to finish the compilation in 1986 and the final technical work in 1987. They are all anxious to make the catalogue as complete as possible and that is why they are asking for your help in this way.

Achenia, Abacanidium, Achlamydocarpon, Adenopteris, Adrophyllum, Aerophyllites, Aggericutis, Aglaioxylon, Alchemia, Aksarina, Alapaia, Alismophyllum, Alloioxylon, Allophyton, Amplectotremas, Anabarella, Andrychia, Aneuletes, Angariella, Antarcticycas, Antiquocarya, Araucarioxylon, Archaeoleersia, Archaeomnium, Archaeophyton, Arganioxylon, Artschaliphyton, Aspidicutis, Asteropetalum, Azaniodendron, Baikalophyllum, Belonopteris, Bensoniotheca, Berhamniphyllum, Bertrandia, Bicameria, Bjertdagia, Blasiites, Boehmeria, Borysthenostrobus, Bothrodendrostrobus, Boulayatheca, Brasiloides, Brasilodendron, Breytenia, Brjanslaekuria, Budvaricarpus, Bumbudendron, Burgersia, Calamitopsis, Calophyllites, Candalepiella, Carallioxylon, Caryanthus, Caspiocarpus, Caudatocarpus, Ceratostriatoites, Chaloneria, Chapchalia, Chiaonella, Chinlinia, Chiuzbata, Cliabornicutis, Clonites, Compstegas, Concholepis, Cordioxylon, Coreanophyllum, Cormophyton, Crangeioxylon, Culmitzschia, Cupulopsis, Curvospermum, Cuticulatopteris, Cycadospermum, Cycalacis, Cylomeia, Czatkaloostrobus, Dejerseya, Dicranopteridium, Dictyodendron (Chachlov), Dilatata, Discrepoparicutis, Dreshocarpus, Dysoxydendron, Dwykea, Edraxylon, Encacyoxylon, Engelhardioxylon, Eorhynia, Eretmoglossa, Estcourtia, Eulimnocarpus, Euphorbiocarpon, Euria, Evenkiella, Fedekurtzia, Ferganopteris, Filicoamyelon, Filicosphenopteris, Flabellopholium, Fundicutis, Gansucladus, Geperapteris, Gigantonomia, Gigantotheca, Giridia, Gleichenioamyelon, Glenrosa, Gondwanophyton, Gossettia, Gregicaulis, Guptiocarpus, Gurvanella, Guzanina, Haidingera, Hallistrobus, Harrisiophyllum, Haskinsia, Heidiphyllum, Heyeneoxylon, Hissarophyllum, Hoegia (Stockmans), Howisonia, Huihuipua, Hircantha, Imania, Irania, Irvingiaceoxylon, Irvingioxylon, Jaganovia, Jongmansensis, Kaesodendron, Kahleria, Katangiella, Kerryoxylon, Klikovispermum, Kobalostrobus, Konioria, Kosjunia, Kossoviella, Kozykorpeshia, Kungurodendron, Kuznetskia, Laceya, Lacunoradix, Lanceola, Laramisemen, Lecythidospermum, Leleopteris, Leptotoma, Liknopetalon, Limnocarpella, Limnoniobe, Limnothetis, Lindleycladus, Loishoglia, Longicicatrix, Longostachys, Lugania, Lycomeia, Lycophyllum, Lycopodolica, Lyonophyton, MacLaja, Madravalva,

Madygenoanthus, *Malanzania*, *Manchoriotheca*, *Manningia*, *Margitheca*,
Margophyton, *Maria*, *Maslinia*, *Maubasia*, *Mauritsia*, *Medardus*, *Medullo-*
pteris, *Memorialis*, *Mengrammia*, *Metacacioxylon*, *Metreophyllum*, *Metzgeriothallus*,
Microcarpolithes, *Midraivalva*, *Millaya*, *Mironeura*, *Monotheca*,
Mudgea, *Munquaria*, *Musgraveinanthus*, *Mytraginaxylon*, *Nanpiaophyllum*,
Nehvizdya, *Neolepidodendron*, *Neuburgiella*, *Nikitia*, *Noeggerathianthus*,
Nothorhacopteris, *Notoangaridium*, *Oruraxylon*, *Oleoxylon*, *Oricilla*,
Oxroadopteris, *Pachycordaite*s, *Palaeorobinioxylon*, *Palaeorubiaceo-*
phyllum, *Palaeoruppia*, *Palaeoschima*, *Palaeospiroxylon*, *Palaeothyrsos-*
pteris, *Pallavicinites*, *Pangioxylon*, *Paraburiadia*, *Paracallipteris*,
Paradoxisporangium, *Paradreoanozamites*, *Parafatsia*, *Parajacutiella*,
Paraprotophyllum, *Paratatarina*, *Pechorostrobus*, *Pelletixia*, *Pentacmeo-*
xylon, *Perculticutis*, *Phillipopteris*, *Phyllanthiodeoxylon*, *Physocar-*
pites, *Pistaceoxylon*, *Platanoxylon*, *Polysaccus*, *Ponsotheca*, *Poteri-*
dion, *Praeramunculus*, *Prehepaticites*, *Prelepidodendron*, *Prisca*,
Protoarthrophyton, *Protophyton*, *Protopityospermum*, *Protosawdonia*,
Protovisnea, *Pseudolepidodendron*, *Pseudotychtopteris*, *Pseudowalchia*,
Pteridiopsis, *Pterostoma*, *Quasistrobus*, *Radczenkoella*, *Raulia*, *Ravatia*,
Reinitsia, *Reticulopteris* (*Kirichkova*), *Rhizoxylon*, *Ricciellopsis*,
Rusavia, *Sabrenia*, *Sarysua*, *Sauraula*, *Scapulella*, *Scarburgia*, *Schopfi-*
caulia, *Sciadopityoides*, *Sclerocaryoxylon*, *Selseycarpus*, *Sendersonia*,
Sennicaulis, *Sentistrobus*, *Sewardiostrobus*, *Simaroubaceoxylon*, *Sinara*,
Sinozamites, *Soberheimia*, *Spermosphenopteris*, *Sphenarion*, *Sphenoneuropteris*,
Spirellea, *Sporangioceros*, *Sporophyllites*, *Stachyophyton*, *Stalayma*,
Steirophyllum, *Stellatophyton*, *Stephanophyllites*, *Stewartiotheca*, *Stiphorus*,
Stockmansia (*Bohlin*), *Stockmansia* (*Fairon-Demaret*), *Strigicutis*,
Swillingtonia, *Symopteris*, *Syrjagia*, *Taeniocladopsis*, *Taeniopteridium*,
Takhtajanodoxa, *Taldysaja*, *Tambovskia*, *Tarbagataica*, *Tauriana*, *Taxodi-*
astrum, *Taxodiophyllum*, *Temiloba*, *Tetrafolia*, *Thyrsopterorachis*,
Tikioxylon, *Timanostrobus*, *Tinca*, *Tomioostrobus*, *Townrowia*, *Trochophyl-*
lum, *Trulla*, *Tunguskadendron*, *Typhaera*, *Tyrgania*, *Ulangangia*, *Uralo-*
stachya, *Ussuria*, *Vallitheca*, *Valvaecarpus*, *Velisia*, *Viniklaira*,
Virgulatosaccus, *Viscoxylon*, *Weylandia*, *Wingospermocarpon*, *Xingan-*
phyllum, *Zavaljella*.

INDEX OF FIGURED PLANT MEGAFOSSILS

We are compiling information for the series "Index of Figured Plant Megafossils" which has already been published in four volumes in the series Special Publication of the Laboratory of Palaeobotany and Palynology by the University of Utrecht, The Netherlands.

From the fifth volume (Triassic 1976-80) onwards this Index will appear in the Review of Palaeobotany and Palynology. The volume on Triassic plants is in the press and we are now busy preparing the sixth volume describing Permian fossils figured from 1976-80. Our work involves us in spending much of our private time and money visiting Dutch and foreign libraries, and we would welcome help from palaeobotanists working on Upper Palaeozoic and Mesozoic plant megafossils and spores/pollen in situ. Will they please send us the results of their work to help us create a reliable and complete Index. All help will be acknowledged in a list of contributors to be included in the new presentation.

M. BOERSMA, Laboratory of Palaeobotany & Palynology

Heidelberglaan 2, 3584 CS Utrecht

L.M. BOERSMA-BROEKMEYER, Institute for the History of Science

Janskerkhof 30, 3512 BN Utrecht.

PALYNODATA INC.: ANNOTATED REFERENCES NOW AVAILABLE

Pertinent information from some 11,000 published palynological documents concerning Early Pre-Cambrian to Pliocene ages is contained in these tapes, and users require a personal computer, a modem and a modular telephone to gain access to the system in the Market Compilation Research Bureau (MCRB), North Hollywood, California. For detailed information, a user's manual, terms of conditions and copies of contract, write or call Ralph A. Morgan, Palynodata Inc., Chevron USA Inc, 935 Gravier Street, New Orleans, Louisiana 70112, USA ('phone: 504 521 6928).

Students working on their dissertations need pay no more than the cost of the telephone call to MCRB and the machine operating charge.

All new publications not included in the file should now be sent to Sedley Barss, Atlantic Geoscience Center, P.O. Box 1006, Dartmouth, Nova Scotia, Canada B2Y 4A2, with a copy of a reprint.

The enterprise has been devised and coordinated over many years by Professor G.O.W. Kremp of the University of Arizona, Tucson. He is now retired and sends his heartfelt thanks to all those who have contributed their part in the realization of his dream.

W.S. LACEY COLLECTION OF FOSSIL PLANTS

Following the recent retirement of Professor W.S. Lacey from the University College of North Wales, Bangor, the collector has presented these fossils to the National Museum of Wales. There

are more than 1,600 specimens from North Wales and other parts of Britain, southern Africa and Antarctica, and their ages range from the Carboniferous to the Triassic. There are smaller comparative specimens from Europe, North America, Greenland and Australia, of various ages.

All the material is registered in the Museum under the Accession Number 84.27G. There is also a collection of Professor Lacey's offprints available at the Museum.

Contact The Keeper, Department of Geology, National Museum of Wales, Cardiff, CF1 3NP, Wales.

COAL BALL ROT

In the basement of the Geology building at Montpellier I have about two tons of coal balls collected in the Lancashire (England) coalfield between 1973 and 1977. These were cut and examined in the field, retained for their interesting contents, and therefore represent a collection of high scientific value. When they were collected at the surface of the coal tip, they had been there for some 70 years, and during collecting I saw none that showed signs of decay.

Our Geology basement is so constructed as to be subject to fluctuations of atmospheric humidity and since their storage in these premises a large number of the coal balls have started decaying. The changes are of two types; the coal ball decomposes into a grey powder from the outside in, and cracks occur along the bedding plane. These cracks have the appearance of decompression phenomena because they are wider in the middle than at the edges, therefore, when a complete split occurs the two halves cannot be glued back together again.

Our first attempt at stopping these processes was to coat the coal balls with "Rustol" manufactured by Owatrol International. This is an anti-oxidant designed to stop rust, which leaves a waterproof varnish-like finish. Further, a cellulose acetate peel was left on the cut faces of the coal balls. Despite this treatment some coal balls have continued to decay. A second experiment involved sealing some rotting coal balls in plastic bags with anhydrous copper sulphate to maintain a dry atmosphere. Insufficient time has elapsed since to be able to judge the success of this technique.

I would like to appeal to my colleagues to provide me with any knowledge they may have of the decay process of coal balls and any possible remedies. Pyrite oxidation is presumably part of the problem but does not explain the cracking. I am struck by the absence of decay when they are left on the coal tips. The only process that occurs here is that they are often etched clean by many decades of rain. Presumably rainfall contributes to maintaining a low pH on the coal tip surface and I wonder, therefore, if storage in acidic conditions might be a solution to the problem. I am aware that pyritic fossils from the Isle of Sheppey have to be stored in jars of glycerine - an impracticable solution with several hundred coal balls.

J.C. HOLMES, Montpellier, France

EARLY MEMORIES OF THE SEDGWICK

The following extracts are from Fossum, the magazine of the Friends of the Sedgwick Museum, University of Cambridge, December 1984, pages 13-22. They are written by the still lively lady Muriel A. Arber, whose parents were E.A. Newell Arber (1870-1918) and Agnes Arber (1879-1960).

"In the Michaelmas Term of 1899 Newell Arber was appointed Demonstrator in Palaeobotany, a post which he held all his life [IOP editor's italics - see below for his annual salary!]. In the Long Vacation of 1903 the Woodwardian Museum was moved to its present building and became the Sedgwick Museum; this was formally opened by Edward VII on March 1st 1904, Newell Arber being in charge of the organisation and stewardship inside the building.

"My father's Palaeobotany Lab was ... next to his own room, a small one looking down onto Downing Place. He hung the walls of the lab with a collection that he had made of portraits of palaeobotanists; these were presented to the Sedgwick Museum after his death, but later on Prof W.B.R. King gave them to the British Museum (Natural History).

"Newell Arber published six monographs and books on geological, palaeobotanical and botanical subjects, as well as some ninety papers and articles. Between 1904 and 1918 a succession of research students published palaeobotanical work done in his lab: Bernard Smith, H. Hamshaw Thomas, L.J. Wills, W.T. Gordon, D.G. Lillie, R.D. Vernon, A.W.R. Don, R.H. Goode, and F. Lawfield. My mother, Agnes Arber, had also published palaeobotanical papers, and after my father's death in 1918 she was allowed the use of his room for another two years to complete the work that he had left unpublished. Besides research workers, students who attended his courses included K.K. Hallows, Miss I.L. Slater, Miss E.M. Delf, D. Thoday, T. Griffith Taylor, W.N. Edwards, T.C. Nicholas, W. Campbell Smith, J.M. Wordie, M.C. Burkitt, W.B.R. King, S. Smith, V.C. Illing, W.H. Wilcockson, Miss A.B. Dale, B. Sahni, Miss E. Gardner and J. Challinor.

"In the Museum, my father had charge of the palaeobotanical collections to which he added about 5,000 specimens. He did all the labelling, mounting and arranging in drawers himself. He specialised for his own research on Coal Measure plants, in the days when they were used as stratigraphical indices in the coalfields, and he did consulting work in this connection. When he was first appointed Demonstrator his salary was 60 pounds sterling a year, and though it had risen to about £120 a year in 1909 it was only the consulting fees that made marriage possible. I owe my existence to the Kent Coalfield later on.

"There was some rivalry between Newell Arber's palaeobotanical department at the Sedgwick and the work of Professor A.C. Seward (later Sir Albert Seward) at the Botany School. Professor J.E. Marr, who succeeded McKenny Hughes in 1917, was not sympathetic to Palaeobotany, and after Newell Arber's death his post was discontinued as it was felt that it duplicated some of the work being done in the Botany School.

"The basic furniture for each research student was a trestle table and a chair and a fossil cabinet; I gradually acquired

another table and chair and some shelves that nobody else seemed to want. We each had a table-lamp with what was known as a "daylight bulb"; I do not know what this was but it gave a very effective light. The only heating, however, was one large pipe which ran along the walls; I kept a thermometer in my pew and whenever the temperature dropped below 50°F I retreated to the library. There were always powerful draughts in the attic so that one's papers constantly blew away; I brought a number of beach pebbles home to use as paper-weights.

"When war broke out in the Long Vacation of 1939, I went to the Museum to see if there was anything I could do to help, and was set to take part in numbering the label of each type or figured specimen so that it could be packed away and eventually replaced in its rightful position in the cabinets.

"It was on March 6th 1941 when the siren sounded just at the end of the morning. I waited to collect things before going down from the attic and as I was picking up my coat I heard a plane pass very low overhead and I looked at it out of the window. Next moment came the "Imminent Danger" buzzer. I had not known how quickly it was possible to go down those stairs. It turned out that the aeroplane at which I had been looking was German and it was said to have been machine-gunning outside.

"..much of what one was taught as a student fifty years ago has now been superseded, impressing one with the fact that all theories are scientific hypotheses."

MRS SAHNI MEMORIAL

The TOP President has received the following communication from Dr Shyam C. Srivastava, Lucknow, India on February 21st 1986:

"I feel greatly painful while apprising you that Padamsri Mrs. Savitri Sahni, Co-Founder, Life-Member Governing Body Birbal Sahni Institute, Lucknow and wife of Late Professor Birbal Sahni F.R.S. is no more with us." She died on 26th April 1985 at her residence at 686, Birbal Sahni Marg, Lucknow after a brief illness. Dr Srivastava is one of the Executors and Trustees of the "Birbal-Savitri Sahi Foundation" created through her will. She has donated her entire estate, nearly 4-5 Million in Indian currency, to the nation, and the Foundation, whose Chairman is the Prime Minister of India, will carry out all her wishes regarding International Programmes embodied in her will. A fitting memorial in the form of a Plant-Fossil Park is being planned at her residence - a sunken garden at the site where the mortal remains of this great citizen of India were consigned to flames.

A PALAEOBOTANIST'S ANALYSES OF PSYCHIC COMMUNICATIONS

Robert Crookall (1890-1981) is best known to palaeobotanists for his very substantial monograph Fossil Plants of the Carboniferous Rocks of Great Britain (1955-70) and his earlier and contrastingly concise Coal Measure Plants (1929). When he retired from the Geological Survey in 1952 he devoted the rest of his life to psychical research and published 17 books on that topic.

They are now highly regarded within that field, not least because they were written by "an eminent scientist". His testimonies give "evidence on a topic where opinion is frequently expressed but evidence seldom considered". Many of his books contain diagrams and sketches, drafted by the hand and mind all too familiar to the palaeobotanist reading his 1929 Coal Measure Plants.

Crookall's first book on psychic mysticism was published in 1961, and is entitled "The Supreme Adventure: analyses of psychic communications". The book was so successful that a second edition was published in 1974 and copies of this are still available. The quotations above are from the flyleaf of that edition.

Send £7.50 with money for postage to: J. Clarke & Co Ltd., 7 All Saints Passage, Cambridge, England.

Barry Thomas wrote an obituary to Crookall for IOP Newsletter 14 and a brief review of The Supreme Adventure appears at the end of this newsletter.

NEWS OF INDIVIDUALS

NICK ROWE from Bristol University, UK, has begun a one year post-doctoral fellowship (CNRS/The Royal Society) at the Laboratoire de Paleobotanique, Montpellier, on the comparison of Lower Carboniferous plants and their mode of preservation. His material is from France and Britain.

GENE MAPES from Ohio University, USA, spent October 1985 working with several colleagues in Europe. She visited laboratories at Heerlen, Utrecht, Frankfurt, Berlin and Strasbourg.

BOOK REVIEWS

EVOLUTIONARY CLADISTICS OF MARATTIALEAN FERNS. C.R. Hill & J.M. Camus, 1986. Bull. Br. Mus. nat. Hist. (Bot.) 14 (4), 219-300, £14.50.

Having an interest in ferns and evolution I eagerly looked forward to reading this paper. The observations are interesting and the illustrations informative and well presented. The erect Danaea which was very reminiscent of fossil Psaronius was particularly exciting.

Unfortunately it was not an easy paper to read, being at times much more an exhortation of cladistics than a study of the Marattiales. The text is generally too lengthy, too verbose and the arguments often circular. If cladistics is so straightforward and "of outstanding value for circumscribing taxa above generic rank", then why is the accompanying text so obtuse?

Even though this paper does nothing to convince me of the value of cladistics, it may permit me (or you) to sleep more easily at night. After 53 pages, "the remarkable resolving power of cladistics" tells us that the only characters which exclusively unite the extant Marattiales with Hill & Camus's perception of the Psaroniaceae are the synangia (or closely packed sporangia), endarc protophloem and mucilage canals in the frond axes. We seem

to have been right in using the closely packed sporangia (or are they really synagia?) to define our fossil ferns as Marattiales. Dare I put my usual thought on paper? Simply it is: how long did the cladistic analysis take and would the effort have been better spent doing something else?
B.A. THOMAS, Cardiff, Wales.

IN SEARCH OF FOSSIL PLANTS: THE LIFE AND WORK OF DAVID DAVIES (GILFACH GOCH). B.A. Thomas, 1986. National Museum of Wales, Cardiff. Geological Series, 8. 54pp. £2.35 includes postage. ISBN 0 7200 0305 9.

I first became aware of the palaeobotanical work of David Davies of Gilfach Goch in 1945 when the late Prof T.M. Harris lent me copies of two of Davies' major papers (1921, 1927) as background reading to my commencing research on British Carboniferous Floras. I remember being greatly impressed by the prodigious amount of information that Davies had collected and even more by his pioneering studies of fossil plant communities. I wondered what manner of man he was, writing ahead of his time, in the then comparatively new field of palaeoecology. Some years later I had the opportunity to see the reference collection of 16,000 specimens of fossil plants which Davies had presented to the National Museum of Wales and my interest in the man was renewed. I knew, of course, that Davies had been a colliery official, that his scientific work had been recognised in 1921 by the conferment by the University of Wales of the degree of MSc honoris causa, and that the late Dr F.J. North had written a brief appraisal of certain aspects of Davies's work in 1935, but the character of the man himself remained elusive. I have had to wait for the publication of this excellent book by Barry Thomas for my curiosity to be fully satisfied. His account of the life and achievements of David Davies presents a really comprehensive picture of the man and his times and meets a long-felt need for full recognition of the many aspects of his work. Davies was, indeed, a hard worker. We learn that he had no formal education, but that, starting work as a "door-boy" at the age of twelve, he "rose through the ranks" of collier, deputy and overman to become a mine manager in his early twenties. An idea of his innate ability and diligence is conveyed by the fact that, by studying in evening classes, he obtained both a First Class Mine Manager's Certificate and a First Class Diploma in Electrical Engineering by the age of twenty-one. We are given further insight into the character of the man with the description of his part in 1905, at a time when training and breathing apparatus were not yet available, in rescue work after a disastrous explosion in the Cambrian Colliery, Clydach Vale. Davies eventually became a Colliery Agent, lived comfortably, was able to afford servants, and with his wife Jane raised a family of ten children. The book conveys a vivid picture of the contemporary scene. Nearly seventy illustrations are provided in a wide range of subjects, including colliery installations, family photographs, newspaper reports, line drawings from Davies's manuscript papers, and a selection of fossils from the Davies Collection. Extensive references are made to the palaeobotanists of the day who helped Davies with his studies, most notably Robert Kidston

and Marie Stopes. As a result, the book serves almost as a mini-survey of the early days of British Carboniferous palaeobotany. Inevitably, reference is made also to the early history of the National Museum of Wales in Cardiff and particularly to its Department of Geology, where problems arising from the curating and identification of the huge Davies Collection involved the services of a whole succession of professional palaeobotanists, included among them Robert Crookall, Emily Dix and Leslie R. Moore.

The book is written in a clear, entertaining, narrative style, which makes for easy reading, although it is not without an occasional unfortunate turn of phrase (as, for example, in a reference on pages 23-24 to Marie Stopes's pioneering work in family planning). The text is amplified with an extensive bibliography of 114 annotated references. Production is to a high standard that we come to expect of the National Museum of Wales. To sum up, this is a particularly interesting book which can be added to a palaeobotanical library at a very modest cost. Thanks are due to Barry Thomas for providing such a fascinating biographical account of the life and times of "Dafydd Ffossil" - David Davies of Gilfach Goch.

W.S. LACEY, Bangor, Wales.

THE SUPREME ADVENTURE: an analysis of psychic communications. R. Crookall, 1961. J. Clarke & Co., 255pp. (see page 16 above.)

My initial response to this book was studied with horror. The format is that of a text-book and was formidable to my untutored eye. Dr Crookall has applied a scientific approach to a subject which relates to the probability of Life after Death. It is well tabulated and contains several diagrams summarising foregoing information. The research appears to be extremely thorough and an extensive bibliography is appended.

The contents are in three parts. The Succession of Experience describes the sequence of events arising from Total-Death experience. The others describe statements of Near- and Post-Death Experience (and Post-Death Communications), and then scrutinises and tests them.

The author has collated information from a wide variety of sources. Although Total- and Post-Death Experience may be dismissed as "a pseudo-scientific system of untestable beliefs steeped in illusion, error and fraud" (D.F. Marks, 1986. Nature 320, 123) the statements of Near-Death Experience can be verified. Taken individually they could appear suspect, but such is the volume of information that has been recorded (pages 102-111) one is inclined towards consideration of the phenomena described, if not towards complete acceptance.

On page 186 Dr Crookall states that he has advanced no new evidence, cited no new startling cases ... "on the contrary we have merely subjected it (our evidence) to systematic analysis". My second and subsequent readings of this book have provided me with a wealth of information and has confirmed certain beliefs of my own. For example, that psychic communications are not necessarily more elevating than conversations between mortals. I recommend this book as being informative and well researched.

K. HARRISON, 1st year undergraduate, N.E. London Polytechnic.