

# IOP NEWSLETTER 4

## INTERNATIONAL ORGANIZATION OF PALAEOBOTANY

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES

—SUBSECTION FOR PALAEOBOTANY

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The NEXT NEWSLETTER is expected to be compiled late in December 1977. Please send all items to be included to the secretary before then.

IOP gratefully acknowledges the help of Ms Brigitte Glock, from Professor W. Klaus's laboratory in Vienna, who has typed the manuscript of Newsletter 4 and given help in organising the London office of IOP. The membership address list has been computerised by the Management Information Service of North East London Polytechnic.

## IOP NEWS

Due to the transfer of the secretary's office to London as well as to the increasing experience of distributing the newsletter to a world-wide membership several new methods of organisation are being implemented. This fourth newsletter is being distributed to all those who replied to last year's questionnaire, a total of about 250 individuals and 20 institutions, although only 35 have paid their membership dues for 1977. Future newsletters will only be distributed to paid up members, according to the system outlined below.

The Executive Committee of IOP have approved a system of membership accounting and newsletter distribution on a regional basis. The following regional representatives will collect dues and distribute newsletters by their own system for their respective regions:

NORTH AMERICA: Dr. D. Dilcher, Department of Plant Sciences, Indiana University, Bloomington, Indiana 47401, USA.

FRANCE, BELGIUM & SWITZERLAND: Prof. E. Boureau, Université de Paris VI, 12 rue Cuvier, 75005-Paris, France.

OTHER WEST EUROPEAN COUNTRIES (including Scandinavia): Dr. B. Thomas, Biology Department, Goldsmith's College, Lewisham Way, London SE14, UK.

EAST EUROPEAN COUNTRIES:\* Dr. Z. Kvaček, Geologický Ústav, Spálená 49, Praha 1, Czechoslovakia.

USSR:\* Dr. S.V. Meyen, Geological Institute of the Academy of Sciences of the USSR, 109017 Moscow, Pyzhevsky per. 7, USSR.

AUSTRALASIA: Dr. J.G. Douglas, Mines Department, East Tower, Princes Gate, 151 Flinders Street, Melbourne, Victoria 3000, Australia.

SOUTHERN AFRICA: Dr. H. Anderson, Bernard Price Institute for Palaeontological Research, 1 Jan Smuts Avenue, Johannesburg 2001, South Africa.

SOUTH AMERICA:\* Dr. S. Archangelsky, Av. Santa Fe 3344, P.12 Dto. 27, Buenos Aires, Argentina.

ALL OTHER COUNTRIES: Dr. M.C. Boulter, N.E. London Polytechnic, Romford Road, London E15 4LZ, UK.

Due to problems of currency exchange those regions marked \* will have quite separate and independent membership systems, and will arrange their own duplication of the newsletter from a single master copy supplied from the secretary's office.

In future then, PLEASE SEND YOUR ANNUAL DUES TO YOUR REGIONAL REPRESENTATIVE, MAKING CHEQUES PAYABLE TO: INTERNATIONAL ORGANIZATION OF PALAEOBOTANY. The representative will inform you by the inclusion of a separate sheet with the newsletter of any special arrangements for your region, such as any variation in the standard \$ 4.00 annual dues, if this is necessary.

We hope to issue at least two newsletters each year, with an increasing number of book reviews, conference reports and correspondence. Of course, the success of the venture depends mainly on the enthusiasm of the membership in presenting lively and controversial items. Please send material which you would like to be included in the next newsletter to the secretary.

## FORTHCOMING MEETINGS

COLOQUIO INTERNATIONAL DE PALINOLOGIA 5 - 10 September 1977, Leon, Spain.

Abstracts of more than 90 contributions to this meeting are now available, and consist of work on Mesozoic and Palaeozoic palynology. There will also be a formal presentation by the CIMP Carboniferous Atlas working group which plans to publish 30 pages of text and 24 plates on Carboniferous Miospores in Western Europe before the end of 1977. Details can be obtained from the Secretaire General de Commission Internationale de Microflore du Paleozoique, Dr. M. Streel, Paleobotanique et Paleopalynologie, Universite, 7 Place du XX Aout, 4000 Liege, Belgique.

ASOCIACION PALEONTOLOGICA ARGENTINA 2 - 6 April 1978, Buenos Aires, Argentina.

The second circular for the second Argentine Congress of Palaeontology and Biostratigraphy and the first Latinamerican Congress of Palaeontology was published in June 1977. It can be obtained from Dr. E.J. Romero, Maipu 645, 1 Piso, Buenos Aires 1006, Argentina.

INTERNATIONAL SYMPOSIUM ON THE DEVONIAN SYSTEM 10 - 12 September 1978, Bristol, England.

The Palaeontological Association is sponsoring this International meeting, which will consist of formal sessions and a full programme of field excursions. Pre-symposium excursions will visit Devonshire (A1) and Scotland (A2), whilst post-symposium excursions will visit south Devonshire and north Cornwall (B1) and south Wales and the borderlands. The second circular is now available from The PADS Symposium Secretary, Department of Geology, The University, Bristol BS8 1TR, England. The following contributions are of particular interest to palaeobotanists:

Archangelskaya Dr. A.	The Lower boundary of Frasnian of the Russian Platform
Alvarez-Ramis Dr. C.	Note on a Devonian Flora from Badajoz, Spain
Banks Prof. H.P.	The role of <u>Psilophyton</u> in the evolution of vascular plants
Cramer-Diez Prof. F.	Palynology of tidal flat sediments (Wenlockian-Gedinnian) of the Cantabrian Mountains
Chibrikova Dr. E.V.	Stratification of Eifelian deposits on plant miospores in the European part of the USSR
Dorning Dr. K.	Downtonian microplankton, palynostratigraphy and palaeoecology
Edwards Dr. D.	Lower Devonian Floras of Britain
Edwards D.S.	Rhynie Chert Flora
Forbes Prof. W.H.	Early Middle Devonian vascular plant paleogeography
Gensel Prof. P.	Details to come
Hueber Dr. F.M.	Devonian Megafloras of Australia; their place in world distribution
Kremp Prof. G.O.W.	Palyno Data in Formations concerning the Devonian

Lejal-Nicol Dr. A.	Sur la flore devonienne de Libye
Naylor Dr. D.	Devonian stratigraphy and palynology in Ireland
Petrosyan Dr. Nina	Correlation of Lower Devonian deposits in USSR and England on plant assemblages
Riegel Dr. W.	Microflora of the Emsian-Eifelian type region
Richardson, Dr. J.B.	Miospore zonation of the Upper Silurian and Devonian
Riding Dr. R.	Devonian Calcareous Algae
Streel Prof. M.	Palynology of Gedinian and Siegenian stages in Belgium
Senkevich Myrra	Stratigraphical significance of Devonian Lycopsida and some views on type terminology
Schweitzer Prof. Dr. H.J.	The Lower Devonian megaflora of the Rhineland
Tims Ms. J.D.	Recent Findings and Re-assessment of the Lower Devonian Flora of Victoria
Turnau Elzbieta	Middle Devonian spore assemblages of NW Poland and their dependence on facies development
Keynote papers of special interest will be:	
Chaloner Prof. W.	Devonian Megafloras
McGregor Dr. C.	Devonian palynology

INTERNATIONAL BOTANICAL CONGRESS, 1981, Sydney, Australia.

The Austrians are starting work on preliminary organization for Excursions connected with the scheduled Sydney International Botanical Congress of 1981. It is probable that there will be choice of 2 major palaeobotanical excursions of 5 - 7 days duration.

The first will be in NSW-Queensland, the second in Victoria and perhaps Tasmania. It is hoped to present enjoyable botany and geology in combination with visits to scenic areas.

Areas of palaeobotanical interest outside the scope of these two excursions may be included in others.

#### REPORTS OF RECENT MEETINGS

INTERNATIONAL ASSOCIATION OF ANGIOSPERM PALAEOBOTANY June 1977,  
Liblice, Czechoslovakia.

Dr. Z. Kvacek, Praha, has provided the following report of the meeting:  
The recent increasing activity of scientists working on fossil angiosperms called for action towards better mutual communication and cooperation. The first steps in this direction were taken in 1974 when the organization of the International Association for Angiosperm Palaeobotany was agreed upon in Mexico. On the suggestion of the secretary of I.A.A.P. Dr. R. Weber, the National Geological Committee of Czechoslovakia organized the next meeting of the I.A.A.P. In 1976 the Organization Committee set the preparation of the programme (Dr. Z. Kvacek - organization secretary, Dr. F. Holy - exhibition, excursion,

Dr. C. Buzek - excursion, Dr. M. Konzalova - excursion, advances in Czechoslovak palaeobotany, Dr. E. Knobloch - excursion, advances in Czechoslovak palaeobotany, Mrs. J. Bohmova and J. Cadkova - administrative work).

The symposium took place under the title "Advances in Angiosperm Palaeobotany" in the House of Scientists of the Czechoslovak Academy of Sciences, Liblice Castle, on 13 - 17 June 1977. 42 registered participants from Belgium, Bulgaria, Czechoslovakia, Denmark, F.R.G., G.D.R., Great Britain, Hungary, Mexico, Poland, Roumania, U.S.A. and U.S.S.R. took part in the meeting.

The symposium convened on June 13 1977 in the evening. The first session was presided over by:

Assist. Prof. B. Pacltova, president (Prague, CSSR)

Assist. Prof. D. L. Dilcher (Bloomington, U.S.A.)

Dr. N. F. Hughes (Cambridge, U.K.)

Dr. I. A. Iljinskaja (Leningrad, U.S.S.R.)

Prof. B. E. Koch (Aarhus, Denmark)

Prof. H. J. Schweitzer (Bonn, F.R.G.)

B. Pacltova gave the opening address in which she characterized the historical background of palaeobotanical research in Czechoslovakia and emphasized the need of close international cooperation.

Prof. V. Pokorný, the corresponding member of the Academy welcomed the participants on behalf of the Czechoslovak Academy of Sciences.

A short introduction presented by Z. Kvacek opened the discussion concerning the objectives and purposes of the I.A.A.P., its position towards the I.O.P., I.P.A. and its statutes. N. F. Hughes characterized the present international organizations of palaeobotanists namely the I.O.P., I.C.P., I.P.A. and their affiliation to the I.U.G.S. and/or I.U.B.S. D. L. Dilcher suggested the main objectives of the I.A.A.P. and its role in international coordination of angiosperm research. L. J. Hickey emphasized the need of such an organization in view of complex problems connected with the research in fossil angiosperms. R. Weber gave main ideas of the Statutes and distributed the first draft for further consideration. To the discussion contributed: M. Sturm, D. L. Dilcher, R. Weber, N. F. Hughes, H. J. Schweitzer, Z. Kvacek.

Four sessions were devoted to the lectures:

D. L. Dilcher, F. W. Potter, H. Reynolds: Cretaceous angiosperm remains from the interior of North America. (Discussion: H. J. Schweitzer, H. Jähnichen, Z. Kvacek, B. Pacltova, L. Rüffle)

H. J. Schweitzer: The derivation of the hermaphroditic flower of the angiosperm by consideration of new fossils from the Rhaetic of Iran (Discussion: J. A. Doyle, L. J. Hickey, D. L. Dilcher)

L. J. Hickey: Sequence of origin of major dicotyledonous leaf features on the fossil record and their adaptive and systematic significance (Discussion: J. L. Roth, P. R. Crane)

E. Knobloch: Primitive angiosperm leaves from the Upper Cretaceous and their significance to the concepts of original leaf form in angiosperms.

R. Weber: Some aspects of the Upper Cretaceous angiosperm flora of Coahuila, Mexico (Discussion: D. L. Dilcher, H. J. Schweitzer)

B. E. Koch: Some fossil angiospermous fruits from the Danian and Paleocene of West Greenland (Discussion: N. F. Hughes, D. L. Dilcher)

J. A. Doyle: Significance of exine structure in studies of pre-Cenomanian angiosperm evolution (Discussion: G. Kremp, N. F. Hughes, L. J. Hickey)



- N. F. Hughes: Barremian tectate pollen from southern England (Discussion: G. Kremp, B. Pacltova, J. A. Doyle)
- B. Pacltova: Evolutionary trends of palatanaceoid pollen in Europe during the Cenophytic (Discussion: N. F. Hughes, J. A. Doyle)
- L. Ruffle: Evolutionary and ecological trends in Cretaceous floras particularly in some Fagaceae (Discussion: L. J. Hickey, Z. Kvacek, D. L. Dilcher)
- G. Kremp: Palyno-Data, a new tool for Palaeobotany (Discussion: M. Sturm, J. L. Roth)
- G. E. Dolph: A proposal data banking leaf information (Discussion: R. Weber, L. J. Hickey, P. R. Crane)
- J. L. Roth: Some consideration in leaf size and leaf margin analysis in palaeoclimatology (Discussion: L. J. Hickey, Z. Kvacek, B. E. Koch)
- H. Walther, Z. Kvacek: Anisophylly and leaf momomorphism in some Tertiary plants (Discussion: D. L. Dilcher, M. Sturm)
- K. Juchniewicz: The classification and chance of identification of angiospermae-epidermis from Miocene deposits (Discussion: B. Pacltova)
- F. Holy: An interpretation of the short multifacies section on the basis of palaeocarpology
- H. J. Gregor: The leaf- and fruit-floras in the Schwandorf area (Eastern Bavaria) in ecological and stratigraphical correlation with other Miocene European deposits (Discussion: D. K. Ferguson, L. J. Hickey, B. Pacltova, B. E. Koch)
- E. Palamarev: Some aspects of the evolution of Stratiotes in Eurasia
- M. Sturm: The food of Palaeotherium of Messel (Discussion: L. Ruffle, Z. Kvacek, D. L. Dilcher, K. Juchniewicz)
- H. Jahnichen, H. Walther, D. H. Mai: Leaves and fruits of Engelhardia Lesch ex D. C. (Juglandaceae) from the European Tertiary
- I. A. Iljinskaja: On the validity of types of the names of species of the fossil angiosperms (Discussion: N. F. Hughes, H. J. Schweitzer, D. K. Ferguson, L. J. Hickey)
- P. R. Crane: Angiosperm leaves from the Eocene of southern England (Discussion: Z. Kvacek, D. K. Ferguson, D. L. Dilcher)
- N. Ticleanu, R. Givulescu: Contributions to the knowledge of the Upper Eggerian palaeoflora. Fossil flora from Corus II-Cluj.

On June 15, an afternoon excursion took the participants to the locality of the Cenomanian flora at Vysehorovice. In the evening after the excursion an informal meeting of the participants took place in the Music Salon, where F. Holy gave explanations of the exhibited collections of the Cretaceous and Tertiary plants of the Bohemian Massif.

On June 16, the excursion visited the localities of the Tertiary floras: Kundratice in the Volcanogenic Complex in the Ceske Stredohori Mts. (Eggerian), Maxim Gorkij Mine, Biline and porcelanite quarry at Zelenky in the North Bohemian brown-coal basin (Eggenburgian).

The closing session on June 17 presided over by B. Pacltova dealt with the affairs of the I. A. A. P. D. L. Dilcher proposed the final draft of the Statutes reworked by D. L. Dilcher, N. F. Hughes, B. E. Koch, R. Weber, Z. Kvacek, L. Stuchlik and B. Pacltova. After slight corrections suggested by D. L. Dilcher, Z. Kvacek and N. F. Hughes the Statutes were unanimously accepted.

The following members of the Executive Committee were proposed:

President	D. L. Dilcher (U.S.A.)
Secretary-Treasurer	R. Weber (Mexico)
Editor	G. E. Dolph (U.S.A.)
Members at large	Z. Kvacek (C.S.S.R.)
	B. Pacltova (C.S.S.R.)

F. Schaarschmidt (F.R.G.)

L. Stuchlik (Poland)

All proposed members of the Executive Committee were elected by the majority of votes.

After this action B. Pacltova closed the symposium.

4th INTERNATIONAL GONDWANA SYMPOSIUM January 1977, Calcutta, India.

Dr. W. Lacey, Bangor, has provided the following report of the meeting:

The meetings in Calcutta included two half-day Sessions of contributed papers on the Gondwana Flora and one half-day Working Group in Gondwana Palaeobotany and Palynology.

The first Gondwana Flora Session, chaired by Prof. W.S. Lacey and Prof. K.R. Surange, included papers on the Relation of Angara and Gondwana Floras; the Relation between Lower Gondwana Floras of Brazil and abroad; Mesozoic Gondwana Flora of Peninsular India; the genus Ottokaria Zeiller; and palynology of the Panchet Hills, India.

The second Session, chaired by Dr. H. Visscher and Dr. S.C.D. Sah, included papers on the Triassic Flora of Nidpur, India; Lower Beaufort (Upper Permian) Floras from Western Natal, South Africa; the Lower Gandwanas of the Western Garo Hills, India; Mesozoic palaeogeography of Dipteridaceae and Matoniaceae; seed-bearing glossopteridean organs; and the genus Belemnopteris Feistmantel. The Working Group discussed (1) taxonomic problems in palaeobotany and palynology peculiar to Gondwana, and (2) floristic time-transgressions in Gondwanaland. Those present agreed on a number of procedures which it would be desirable to adopt to facilitate the study of Gondwana palaeobotany. These included the decision to establish a News-Letter giving information of interest to all workers in Gondwana palaeobotany and palynology. Further details about this and other matters discussed in the Working Group can be obtained from: Prof. K.R. Surange, Convenor of Working Group No. 7 of the Sub-Commission on Gondwana Stratigraphy, at the Birbal Sahni Institute of Palaeobotany, 53 University Road, Lucknow - 7, India.

#### DR. HANS TRALAU'S SCIENTIFIC PROJECTS

At the time of his death in March 1977, Dr. Hans Tralau was in charge of some long-range palaeobotanical, palynological and phytogeographical projects of more or less bibliographical nature. They were all started during the period when he was an Assistant Keeper to the Section of Palaeobotany of the Swedish Museum of Natural History but they were carried out under Tralau's own name, and he took not only the whole scientific but also the economic responsibility for them. All the projects were to a greater or lesser extent supported by contributions from the Swedish Natural Science Research Council.

##### 1) Index Holmensis (more correctly, Index Holmiensis)

Since the majority of the bibliographic material included in this "world index of plant distribution maps" represents the areas of modern plants, this project is now being continued under the scientific auspices of the Section of Botany of the Swedish Museum of Natural History (Head: Professor Rolf Santesson). It is still housed in the Section of Palaeobotany, however, and the number of employees

attached to the project is at present six. From July 1, 1978, a new post has been created in the "Riksmuseum" for Dr Magnus Fries, now Assistant Professor to the Royal College of Forestry, Stockholm, and one of his principal tasks will be the scientific leadership of the "Index Holmensis". In the meantime, Mr. Wilhelm von Eckermann is chiefly responsible for the management of the "Index". The manuscript to "Index Holmensis V" (Dicotyledoneae C) was ready for printing in December, 1976. Its publication has been delayed since the copyright of the work must be transferred to another publisher.

2) Computer system on palaeogeographical trans- and regression patterns including vegetational history of vascular plants during the Late Mesozoic and the Cainozoic.

The last grant for this project obtained by Dr Tralau from the Swedish Natural Science Research Council covers the salary of a computer specialist, Mr. Ulf Andersson, B.Sc., during one year, i.e. up to July 1, 1977. In January 1977, Professor Lundblad and Assistant Professor Lars-König Königsson, Department of Quaternary Geology, University of Uppsala, deemed it necessary to send in an application for money to make it possible to continue this project, at least with regard to material of Quaternary plant remains from Scandinavia. Thus, a grant was obtained for Mr Andersson's work for another year (till July 1, 1978), and he will be expected to devote most of his time to the registration and computerization of megascopic remains. Expert assistance in the interpretation of botanical and geological data has been obtained from Professor Königsson's institution during 1977 but Lundblad & Königsson applied in vain to the Council for a special contribution for this purpose.

Dr Tralau's attempt to establish a data bank for plant remains from the Quaternary of Scandinavia received considerable attention at a colloquium on the storage and retrieval of data on Quaternary botany on the Nordic countries arranged between May 23 - 25, 1977, at the Laboratory of Quaternary Biology of the University of Lund (Head: Assistant Professor Bjorn Berglund). A series of lectures by Dr John Birks, Cambridge, on "Applications of numerical methods to Quaternary paleoecology" formed a suitable background to the rather informal discussions of the meeting. According to information recently obtained from the Swedish Natural Science Research Council, Dr Tralau's project on "palaeogeographical trans- and regression patterns" will be terminated by the grant now obtained by Lundblad & Königsson, however. It is hoped that the idea of the establishment of a data bank for plant remains from the Quaternary of Scandinavia will be realized in one form or another in the near future, in spite of these initial difficulties.

No Swedish palaeobotanist is at present interested in the continuation of the pre-Quaternary part of Dr Tralau's original project, and there is no information available which may elucidate how the recording and computerization of the material was planned to be organized.

3) Bibliography and Index to Palaeobotany and Palynology.

A continuation of the "Bibliography and Index to Palaeobotany and Palynology 1950 - 1970", comprising bibliographical items published during the period 1971 - 1975, was planned by Dr Tralau. Preparations for it were rather advanced at the time of his death, and the work is still going on in the Section of Palaeobotany. Some 12.000 cards have been prepared in all. The two highly qualified collaborators assisting Dr Tralau are still attached to the enterprise. It was hoped that the collecting of bibliographical references might be finished at the end of the year but this will be impossible.



Computerization of the bibliographical references from the period 1971 - 1975 may hardly be started unless there is some kind of economic guarantee for the printing. Attempts to find a solution of the economic difficulties raised by the high publication costs will first be made in Sweden, however, and thereafter we will turn abroad in search for financial assistance. It may be of some interest in this connection to know that Dr. Tralau was able to get about half the cost for the printing of the "Bibliography and Index to Palaeobotany and Palynology 1950 - 1970" from Swedish scientific institutions, in particular the Swedish Natural Science Research Council.

During several years, Dr. Tralau received financial contributions from the Swedish Natural Science Research Council for a project named "Stratigraphical-palynological investigations in Mesozoic sediments in Southern Sweden". A direct continuation of Dr. Tralau's project is not foreseen by the Section of Palaeobotany, but his successor as Assistant Keeper to the said institution, Dr. Dorothy Guy-Ohlson, has a specialization within this field of research, and may be expected to continue her studies in progress on microfloras from borings in the Mesozoic of Sweden.

Britta Lundblad, Swedish Museum of Natural  
History.

#### OBITUARY - PROFESSOR LOUIS GRAMBAST

Born in Paris in the 23rd January 1927, Louis Grambast, Professor of Botany at the University of Montpellier, died after a short illness on the 13th December 1976.

His first works concerned the reconstruction of a Stampian (Oligocene) flora from the Paris Basin, based on impressions and structurally preserved material from the "meulière de Montmorency". He subsequently became interested in fossil woods and problems of comparative anatomy, particularly those of gymnosperms and the evolution of their woody structures. However it is primarily in the field of the Charophyta that paleobotany saw his greatest efforts and that he became internationally recognized as the undisputed specialist of the group. While taking up these previously neglected and often misinterpreted fossils, he foresaw the immense value of studying the whole group from a new perspective. His work was carried out from three main aspects: systematics, phylogeny and biostratigraphy. Besides the description of numerous new genera and species, Louis Grambast sought to create a classification of the Charophyta based on hierarchical characters of natural significance. Furthermore the reconstruction of lineages linking apparently distinct genera and of the evolutionary chart of charophyte groups which have followed each other throughout geological time, allowed him to establish some of the best known examples of evolution in the plant kingdom. It is this that probably represents the most original part of his work.

Besides his personal research which covered more especially the Paris Basin, the South of France, Spain and Portugal, he was able to supply precious stratigraphical information to those numerous geologists who sent him material for identification. Louis Grambast created and animated a multidisciplinary research team whose members are continuing their work under the impulse he imparted to them.

Laboratoire de Paléobotanique et Evolution des Végétaux, Montpellier, France.

## NEWS OF INDIVIDUAL MEMBERS

KEITH HOLMES, Wellington, New South Wales, Australia, has been made an Honourary Research Fellow in the Department of Geology, University of New England. Keith, a very competent palaeobotanist and collector, is a full-time wheat and cattle farmer.

DOROTHY GUY-OHLSON has been appointed Assistant Keeper to the Section of Palaeobotany, Swedish Museum of Natural History, Stockholm, and will start her work there on September 1st 1977. Dr. Guy-Ohlson is succeeding Dr. Hans Tralau, the last secretary of IOP.

NORMAN F. HUGHES has recently been awarded the degree of Doctor of Science (Sc.D.) by the University of Cambridge. This high and well-earned honour is made by examination of published work. Dr. Hughes is still on the staff of the Department of Geology at Cambridge.

MARJORIE D. MUIR has resigned from the staff of the Department of Geology at Imperial College London. She now works for the Bureau of Mineral Resources, P.O. Box 378, Canberra A.C.T. 2601, Australia.

BILL SCHOPF has recently been selected as the second outstanding scientist under the age of 35 to receive the Alan T. Waterman award. The award was authorised by the U.S. Congress and carries with it a medal and a grant of up to \$ 50,000 a year for each of three years for research and advanced study. It was presented at a special ceremony at the Department of State for 'capability and exceptional promise for significant future achievement'.

BILL LACEY. The University of Wales has awarded Dr. William Springthorpe Lacey a Personal Chair, tenable in the School of Plant Biology, University College of North Wales, Bangor, in recognition of his contributions to palaeobotany over a period of thirty years. Professor Lacey is continuing his research at Bangor in two main fields, Late Palaeozoic floras of the United Kingdom and Eire, and Gondwana floras of Southern Africa.

SHYAM C. SRIVASTAVA, a scientist at the Birbal Sahni Institute of Palaeobotany, Lucknow, U.P., India, has been spending the year 1976-1977 at the University of Texas at Austin, USA, under the National Program of the Government of India. He has been appointed Visiting Scholar in the Department of Botany and is collaborating with T. Delevoryas, Professor and Chairman, on various projects involving Mesozoic plants. Among the works nearing completion are a comprehensive monograph on the cycadophytes of the Mesozoic and a study of Jurassic plants from central Honduras. While in the United States, Dr. Srivastava

has had the opportunity to visit various laboratories and fossil plant sites throughout the country. Among the places visited are: Arizona State University, Northern Arizona University, Northern Arizona Museum, Brigham Young University, and Ohio State University.

## NEWS OF INSTITUTIONS

### BRITISH MUSEUM (NATURAL HISTORY)

The new Palaeontology building of the British Museum (Natural History) was opened officially on May 24th 1977 by the Secretary of State for Education and Science, Mrs Shirley Williams. The accommodation gives new space for staff as well as the collections and library; all fossil plant collections in the museum have been moved to their new positions and the curating system has thus been overhauled.

The Palaeobotany Section has recently acquired an exquisitely preserved araucarian cone from Osmington Mills in Dorset. The specimen was found in a block lying loose on the beach and its exact age is therefore difficult to determine, possibly Cretaceous (Albian).

Anatomical study is needed as a matter of some urgency since the fossil substance is of a kind which may well deteriorate with time. Anyone wishing to make such a study of this interesting fossil is invited to write to Dr. C.R. Hill, Palaeontology Department, British Museum (Natural History), Cromwell Road, London SW7 5BD.

## BIBLIOGRAPHIES

### PALEOBOTANIQUE EN FRANCE 1972-6

On annonce la parution du Rapport sur la Paléobotanique et la Paléopalynologie de France, Belgique et Suisse (1972-1976) par A. Lejal-Nicol.

Ce mémoire comprend 90 pages et plus de 600 références bibliographiques concernant le Précambrien, la Paléobotanique du Paléozoïque, Mésozoïque et Tertiaire, la Palynologie du Paléozoïque, Mésozoïque et Tertiaire, la Paléobotanique et la Paléopalynologie du Quaternaire, la liste des publications sous- presse et les travaux en cours, l'adresse des auteurs et la liste des laboratoires où s'effectuent ces recherches.

Pour recevoir ce fascicule, il faut écrire à A. Lejal-Nicol, Laboratoire de Paléobotanique, 12 rue Cuvier, 75005-Paris, France, et envoyer 30 FF ou 6 US \$ à virer au compte-chèque postal no 15 378 75 J Paris, libellé au nom du Laboratoire de Paléobotanique de la Faculté, 12 rue Cuvier, 75005-Paris, France, CCP no 15 378 75 J PARIS.

### BIBLIOGRAPHY OF AMERICAN PALEOBOTANY 1976

This was ready for distribution in July 1977 and has been sent to members of the Paleobotanical Section of the Botanical Society of America. Other palaeobotanists can purchase a copy for \$ 4.00 from Dr. D. Dilcher, Department of Botany, Indiana University, Bloomington, Indiana 47401, USA.

#### ARBEITSKREIS FÜR PALAEOBOTANIK UND PALYNOLOGIE 1976

Volume 24 of the Courier Forschungsinstitut Senckenberg was published in June 1977 and contains a 1976 bibliography of palaeobotanical articles, prepared by Martin Sturm. There is also an address list with individuals' specialist interests, prepared by Friedemann Schaarschmidt. Details can be obtained from Dr. F. Schaarschmidt, Forschungsinstitut Senckenberg, Senckenberganlage 25, D-6000 Frankfurt am Main, West Germany, and from Dr. M. Sturm, Geologisch-Paläontologisches Institut, Senckenbergstrasse 3, D-6300 Giessen, West Germany.

#### BRITISH REPORT ON PALAEOBOTANY AND PALYNOLOGY 1972-5

Details of this bibliography, prepared by W.G. Chaloner and A.J. Hill in 1976 were announced in IOP Newsletter 2. Copies are still available, price \$ 2.00 from Professor W.G. Chaloner, Botany Department, Birkbeck College, Malet Street, London WC1 7HX, Great Britain.

#### CONTROVERSIA

(Though the IOP newsletter must never serve as a formal publication it can help as a source for the exchange of ideas on questionable and disputed topics. Please let us have details of any topics such as the one outlined below upon which you wish to correspond with other interested palaeobotanists.)

SOME COMMENTS ON 'MORPHOLOGIC INTERPRETATION OF FERTILE STRUCTURES IN GLOSSOPTERID GYMNOSPERMS' BY J.M.SCHOPF (Rev. Palaeobot.Palynol., 21, 25-64) - NOTES COMPILED BY PROF. W.S.LACEY  
After the 4th International Gondwana Symposium in Calcutta during January 1977 an opportunity occurred for some delegates interested in problems of Gondwana palaeobotany to meet at the Birbal Sahni Institute of Palaeobotany in Lucknow. Professor W.S. Lacey (Department of Botany, University College of North Wales, Bangor, Great Britain) has prepared a 5 page note summarising the main points emerging from a critical consideration of Schopf's stimulating paper. It has been circulated to a wide range of palaeobotanists not present at the Calcutta meeting to invite their opinions and suggestions: copies can still be obtained from Professor Lacey.

The comments follow the sectional headings used by Schopf, and consider the use of the term 'fertiliger', rates of evolution, nomenclatural problems and many other matters.



## BOOK REVIEWS

TRAITÉ DE PALÉOBOTANIQUE. Éd. E. Boureau and J. Doubinger, 1975. Vol. 4, Fasc. 2, Pteridophylla (Première partie). Masson et Cie, Paris. 768 pp., \$ 221,00.

This volume, the second fascicle of Vol. 4 Filicophyta, describes genera based on foliage of pectopterids, alethopterids, gigantopterids and sphenopterids. Many fertile structures and spores are noted for pectopterids. A later fascicle volume will include other genera based chiefly on features of foliage, to conclude what must be one of the most formidable of the systematics tasks imposed by compilation of a Traité. Most of the genera are accompanied by attractive line drawings showing venation, and these are supplemented by many excellent half tone illustrations. Abbreviated synonyms and descriptions are included for many species. Some selection has been practiced and I believe it will prove helpful to use the volume in conjunction with the more detailed species listing and literature cited in the Fossilium Catalogus. Naturally, there are many systematic problems left unanswered. Among the gigantopterids much use has been made of parallel series proposed by Asama for which, so far as I know, there is as yet no stratigraphic confirmation. Several "series" of more or less miscellaneous genera are included under each of the principal groups. Only time and the additional volume needed to complete the treatment of genera based on similar material will tell which of these arrangements is most helpful. The book has an extensive index and bibliography, much of which will serve equally for the succeeding fascicle volume and not be repeated. This is a handsome book, like the others in this series, and the authors should be congratulated. My chief criticism is the price which is likely to prohibit purchase by many paleobotanists and general libraries in the United States. I hope elsewhere it may be obtained at a more favorable rate of exchange.

J.M. Schopf, Ohio State University, Columbus, U.S.A.

GEOBOTANY. Ed. R.C. Romans, 1977. Plenum Press, New York. 308 pp., \$ 29,50.

I do not regard this as a book, rather a volume of unrelated papers presented at the Geobotany Conference held at Bowling Green State University in February 1976. Geobotany broadly encompasses not only botanists and geologists, but also archaeologists and anthropologists.

The Editor himself refers to this volume as "a melange of papers" and if one regards it as such, and not as a book that can be read with some real linking theme from beginning to end, then it is perfectly acceptable.

The volume is printed by off-set lithography which has the advantage of speed in publication. However, different typewriters are used for different papers, with varying letter spacing and density, giving the volume a rather messy appearance. Latin names are underlined in some articles and in italics in others. The production of the photographs is variable; those in Taylor's paper "Towards an understanding of the reproductive biology of fossil plants" are good, whilst those in Gastaldo's paper on "A middle Pennsylvanian nodule flora from Carterville, Illinois", lack sharpness of detail.

Sixteen papers are bound within this volume, ranging from Carboniferous palynology and palaeobotany, to modern sediments and planktonic relationships and the place of the Amerindian in the origin of the southern Appalachian Grass Balds; over half being concerned with Tertiary or later research. The papers can be divided into three groups; namely those which are of more general interest, those which are of interest primarily to the researcher in a particular field but have some wider appeal, and those which are more specific. In the first category I would include only three papers of which I found Taylor's paper demonstrating several examples by which the reproductive parameters of fossil plants may be investigated a stimulating contribution. Miller's geobotanical overview of the Bryophyta is very speculative and gives nothing of substance on the liverworts. In the second category Smothers and Yarnell's paper on "An agricultural revolution in the Lower Great Lakes" gives an insight into early plant husbandry. Kapp's paper on late Pleistocene and postglacial plant communities has some interesting information on postglacial migrational pathways. Ogden's contribution on limiting factors in palaeoenvironmental reconstruction though relying predominantly on pollen analysis, has wider appeal. The third category includes papers on a middle Pennsylvanian Nodule Flora, an investigation of two late Triassic conifers and a depositional and floristic interpretation of a middle Eocene Pollen Diagram. This volume will be of interest mainly to the Quaternary Palynologist and the North American botanist or palaeobotanist. For the rest it should be in the library.

K. C. Allen, Bristol University, England

THE ARCHAEOAN-SEARCH FOR THE BEGINNING. Ed. G. J. H. McCall, 1977. Dowden, Hutchinson and Ross. 505 pp.

This is an area of very active interest to most geologists and palaeontologists. The evolution of the study of stratigraphic geology has proceeded via the passing of a series of boundaries. For example, the base of the Cambrian was for many years regarded as marking a sudden, dramatic change in conditions with the appearance of the oldest fossils. Similarly, in this volume, G. J. H. McCall points out that the difference between the Archaeozoic and Proterozoic may not be as abrupt as it presently seems, and that the major thermal event postulated by many authors in the early Archeozoic (as a variety of dates from  $4.6 - 3.5 \times 10^9$  years ago) may never have happened, or at least not as a unique event. Thirtyeight relevant papers on planetary sciences, stratigraphic and sedimentary studies of lowgrade greenstone belts, and structured studies on high grade terrains, crustal evolution, and sedimentology are linked together by the editor's pertinent commentaries. The volume is indeed a useful compilation, containing many important references. It can be recommended to all those interested in early earth history.

M. D. Muir, Bureau of Mineral Resources, Canberra,  
Australia.

EOZANE FLOREN DES GEISELTALES. Abhandlungen des Zentralen Geologischen Institut s. Berlin 1976. Palaeontologische Abhandlungen, 26, 507 pp. + 91 pls., in supplement.

This long awaited major work on the Eocene Geiseltal flora consists of eleven contributions by various authors covering the major aspects of the palaeobotany of this deposit. With the exception of a short paper dealing with fossil woods from the Middle East (Prakash), which is misplaced in this volume, the text is in German throughout, although all of the papers are provided with brief English and Russian summaries. The quality of the plates is generally good and there are clear line drawings in the text.

In addition to lengthy considerations of the fossil leaves by Ruffle, Jahnichen, Barthel and Litke, especially those forms assigned to the families Schisandraceae, Illicaceae, Lauraceae, Fagaceae and Myrtaceae, there are also specific papers dealing with ferns and cycads (Barthel), palynology (Krutzsch), and fruits and seeds (Mai). There is a short paper on one species of fossil wood (Gottwald), and a general discussion of the Geiseltal deposits by Krumbiegel, Schwarzenholz, Ruffle and Barthel.

The problems encountered in the determination of Paleogene angiosperm leaves are considerable, and even where information on the gross morphology, venation, and cuticular structure is unusually complete as it is for example in the Geiseltal Symplocos hallensis, a convincing assignment to a modern genus may be difficult or impossible to obtain. It is inevitable therefore in this type of large floristic work that some of the determinations will be in doubt. However, the relatively detailed description of most of the leaf types does at least permit a critical appraisal of the proposed affinities, and also allows effective comparisons to be made with recent and other fossil material.

This work draws together much of the available information on the Eocene Geiseltal flora and as such constitutes an important reference for those interested in the early Tertiary palaeobotany of Europe.

P. Crane, Reading University, England.

STRATIGRAPHIC MICROPALAEONTOLOGY OF ATLANTIC BASIN AND BORDERLANDS. Ed. F.M. Swain, 1977. Developments in palaeontology and stratigraphy, 6. Elsevier. 608 pp., \$ 49.95.

This symposium volume publishes most of the papers presented at a meeting 14 - 16 June 1976 at the University of Delaware, together with taped discussion on each paper which at times gives more information on the contestants than on the topics. Out of 26 papers, 8 concern ostracodes and 5 foraminifera; the remainder deal with radiolaria, miospores, dinoflagellates, acritarchs, conodonts, chitinozoa and silicoflagellates. The reproduction is by photographic offset directly from the typescript; thus, the publishers claim not to be responsible for errors. The preface says that a planned summary chapter was not included because of the length of the book (600 pages). This restriction is somewhat difficult to understand because the first 200 pages (10 papers) are on Palaeozoic matters before the Atlantic basin existed and thus cannot be related to the title of this volume; one of these papers, on a very small but unstated number of

samples referred to as 'palynoflorules', even asserts that comparison of the author's material confirms a well-known reconstruction of Pangaea.

Four papers, three by Bertels and one by van den Bold, deal with South Atlantic ostracodes and foraminifera of the Cretaceous and Cenozoic; the editor has permitted greater length in these, and a fair amount of factual detail of distribution is given.

The majority of other papers are brief surveys or reviews without much detail although many are very clearly and efficiently presented. Readily noted were: W.W. Berggren - Cenozoic Foraminifera; J.E. and B.M. Conkin - Paleozoic smaller foraminifera; B.K. Holdsworth - Paleozoic Radiolaria; R.K. Olsson - Mesozoic foraminifera; S.M. Bergstrom - Paleozoic conodonts; J.W. Neale - Cretaceous ostracodes; R.H. Bate - Jurassic ostracodes; M.C. Keen - Cenozoic ostracodes.

Three papers on dinoflagellates give diagnoses of Jurassic (Bujak and Williams) and Cretaceous (Habib) Zones with some useful charts based on offshore Eastern Canada and Western North Atlantic.

Towards the end of the volume R.E. Casey on Cenozoic radiolaria advances the opinion that faecal pellets may be an important mode of sedimentation for good preservation of radiolaria. B.P. Glass and M.J. Zwart provide interesting information on distribution of Eocene microtektites (100 - 1000 um) in the Caribbean area; their comments however on radiolarian extinction and stratigraphic boundaries were less useful.

The whole volume is well produced and will certainly serve for a while as a useful source especially for the non-specialist interest in micropalaeontology. It is not clear though whether publication in volumes of this kind, rather than in regular journals, is in the long-run a better service to the profession. The papers herein on topics other than ostracodes and foraminifera may, however good they are, receive less circulation and less notice through this method of publication.

N.F. Hughes, University of Cambridge, England.

FOSSIL ALGAE: RECENT RESULTS AND DEVELOPMENTS. Ed. E. Flügel, 1977. Springer Verlag Berlin-Heidelberg-New York. 375 pp., \$ 36.10.

Fossil algae are not the most attractive of fossils. Microscopic examination of prepared material is needed for most of them, diagenesis has modified many of them due to the nature of the original calcification, and whole classes only exceptionally or inconsistently yield fossil records, due to the absence of suitable hard parts for normal fossilization.

In spite of these drawbacks, algae play and have played a very important role in the formation of sediments and sedimentary structures. When, in October 1975, the first-ever International Symposium on Fossil Algae was held at Erlangen-Nürnberg, Germany, some 130 workers attended, and the present volume contains a selection, 37 in number, of the lectures given. We owe this book to the careful editing of Professor Erik Flügel, of the University of Erlangen-Nürnberg, and both he and the publisher, Springer-Verlag, are to be congratulated on the result. A volume such as this represents, more or less, the current state of interest in the different aspects of fossil algae. It is therefore of interest to note that the papers selected fall into three divisions of about equal number: Blue-green Algae and Stromatolites (14); Algae and Sedimentary Environments (12); and a mis-



cellaneous group (11), composed of Green Algae (2), Red Algae (4), Problems of Affinities (3), Biometry (1) and Ultrastructure (1). Of these, Algae and sedimentary environments is a naturally important field for investigation, in view of the very great importance of algae as rockformers (relative to many other fossil groups) and of extensive attempts to utilise fossil algae and algal associations as evidence of former ecologies and environmental conditions. Blue-green algae and stromatolites, on the other hand, represent a current phase of intense interest following on long neglect. The nature of these microscopic organisms, occasioning extensive and conspicuous rock-structures, and the realisation of their value for the pre-Phanerozoic history of life covering its early development on this earth, fully accounts for this being the largest section of the book at the present time. The miscellaneous section, whilst the smallest, contains some fascinating papers of review and re-consideration impart, and if certain types of algae (e.g. Codiaceae) are not discussed at all as papers directly on that subject, that is better than their inclusion as the "commissioned" review contributions with nothing original, which so often bulk large in published symposial results.

All those with an interest in fossil algae, whether general geologists and palaeontologists or algal specialists, should find something of interest in this book. The very first paper, by St. Golubic and E.S. Barghoorn "Interpretation of Microbial Fossils with Special References to the Precambrian", attempts with some success to analyse the degeneration of microscopic coccoid and filamentous cyanophytes during diagenesis, a study of much value for the attempted understanding of the primitive and very ancient organisms. Cl. Monty's "Evolving Concepts on the Nature and the Ecological Significance of Stromatolites: a Review" is a useful historical study of the development of our ideas on the problems involved; to know the origin of a dogma is to understand much. W.E. Krumbein and Y. Cohen's paper on the environments of modern algal mat types gives potentially useful data for the palaeontologist's task of reconstructing some fossil remains back to their living origins. The two papers on Dasyclad Algae, by groups of Yugoslav and French workers respectively, deal essentially with the assessment of the relative importance of structures preserved and the phylogenetic interpretations possible. The study of Dasyclad algae is in an active phase of reconsideration of the profusion of described genera and species: these two papers ably show much of this, and reflect the evolving current climate of opinion.

Something similar for the red algae is revealed by the studies of J.L. Wray "Late Paleozoic Calcareous Red Algae" and A.-F. Poignant "The Mesozoic Red Algae: a general survey", while M. Massieux's detailed comparison of the anatomical structures of a recent and fossil species of *Hydrolithon* (Corallinaceae) is one of those invaluable tie-ins between the present and past. These are not always possible, not always attempted, because of the very real differences both in nature of materials and attitudes of botanists and palaeobotanists.

S. Rietschel restates his view succinctly on a problematic fossil group in "Receptaculids are Calcareous Algae but no Dasyclads"; a useful English-language summary, while certain Upper Paleozoic genera described as algae are claimed for the sponges by the Termiers and D. Vachard. Finally twelve papers deal with various aspects of past and present algae, from Cambrian onwards, and their relationship with the environment, contribution to its sediments, and relevant algal diagenesis. This is a wide field of perennial interest, and the contributions are varied and well chosen.

The volume is completed by an index of generic and species names, and a short but serviceable subject index.

This book should be perused by all those interested in fossil algae. If there are to be publications arising from future algal symposia, this volume sets a very high standard to be followed.

G.F. Elliot, British Museum (Natural History),  
England.

ORIGIN AND EARLY EVOLUTION OF ANGIOSPERMS. Ed. C.B. Beck, 1976.  
Columbia University Press. 341 pp., \$ 21.90.

The last decade has seen the publication of several books of varying importance on the problem of angiosperm evolution, reflecting the re-awakening of interest consequent upon the development of new research approaches to this area of evolutionary botany. This symposium volume comprising in the main papers initially presented at the First International Congress of Systematic and Evolutionary Biology at Boulder, Colorado in 1973, is one of the most valuable contributions to this literature. Not only does it provide an effective, reasonably well-balanced summary of modern thought on the subject, but also, and more importantly, contains some major articles written by research leaders in fields in which developments of special significance have taken place recently. Of these perhaps the three of outstanding worth are James Doyle & Leo Hickey's review of pollen and leaves from the Mid-Cretaceous Potomac Group, James Walker's lucid and well-illustrated account of comparative pollen morphology and phylogeny in the Ranalean complex and Rudolf Schuster's discussion of plate tectonics and angiosperm origin.

Palaeobotanical literature on Cretaceous and Early Tertiary angiosperms is a veritable wilderness, choked with inadequate descriptions and cursory identifications (based mainly on crude 'matching' of fossil and modern forms), and it is largely on this insecure ground that the long held 'prior diversification' theory has been rooted. The new and more critical research on Cretaceous megafossils, well exemplified by Hickey's own contribution on the Potomac leaf fossils and, on the palynological side, the emergence of a picture of steady and rapid diversification of pollen morphologies during the mid-Cretaceous, have all but exploded this old theory.

The employment of modern electron microscope techniques in the intensive palynological studies of primitive angiosperms has enabled James Walker to point convincingly to the nature of the primitive angiosperm pollen and the kind of evolution that this probably underwent.

Rudolph Schuster, in presenting his timely and critical discussion of the significance of plate tectonics, draws extensively on his own experience in the study of bryophyte distributions and on evidence from the study of land mammals, especially marsupials. He points to the important role played by Gondwanaland and its break-up in the dispersal of early angiosperms and tentatively suggests that the warmer, northern part of the Early Cretaceous Southern continent may have been their site of origin.

These three chapters, together with Ehrendorfer's on the significance of chromosomal differentiation patterns in gymnosperms and angiosperms, make up a worthy three-quarters of the volume. Other, perhaps in a sense more predictable, contributions have less to offer in comparison. However, Kenneth Sporne's final chapter on his own character-correlation technique in which he attempts to place his results in the context of the fossil record is of considerable interest. So too is Takhtajan's

discussion of the concept of neotony, the idea that evolution may proceed by the extension of early developmental stages into the adult phase with the disappearance of former adult characters. Gilbert Brenner traces the spread of early angiosperms on the basis of palaeopalynology and G. Ledyard Stebbins writes rather speculatively on the possible origin and significance of selected seed characters. Norman Hughes's ostensibly scene-setting chapter entitled 'Cretaceous palaeobotanic problems' which follows the Editor's own concise introduction, serves at least to demonstrate to the reader the necessity of a fresh and critical approach. In spite of these widely differing approaches to the general problem, the book leaves the reader with an encouragingly clear indication that there is at last emerging a plausible picture of angiosperm origin. He is firmly led to the view that angiosperms evolved monophyletically from a pteridospermous ancestor, perhaps as late as the Lower Cretaceous, and that they then diversified and dispersed relatively rapidly from their tropical home. He is also given a view of at least some of the important morphological characters of the primitive angiosperm. It would be optimistic to hope that all the essential evolutionary steps will eventually be discovered in the fossil record, but it is cheering to be left with the feeling that much refinement of this general picture can confidently be expected to take place.

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