IOP NEWSLETTER 28

INTERNATIONAL ORGANIZATION OF PALAEOBOTANY

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES
-SECTION FOR PALAEOBOTANY
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N. E. London Polytechnic,
Romford Road,
London, E15 4LZ, England.

DECEMBER 1985

PLEASE MAIL NEWS AND CORRESPONDENCE TO YOUR REGIONAL REPRESENTATIVE OR TO THE SECETARY FOR THE NEXT NEWLETTER 29. The view expressed in the newletter are those of its corespondents and do not necessarily reflect the policy of IOP.

IOP NEWS

NEWSLETTER PRODUCTION

This new PC produced format is fully operational and items can be accepted for future newsletters if you send them on floppy discs. The software required for compatibility is Wordstar, by Micropro, and is processed on an Olivetti M24 PC which is IBM-compatible.

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES

IOP is a Section within this organisation and your secretary is sent copies of many IUBS documents. The latest to arrive is the "Follow-up of the IUBS XXIInd General Assembly, Budapest (Hungary) 1985" and copies are available to IOP members on request to the IOP secretary.
We have been notified by the IUBS Executive Secretary that "the Union would like to offer US$3,500,in the form of a loan to aid" in the organisation of the 3rd IOP Conference, Melbourne, Australia, in August 1988.

IOP MEMBERSHIP

A new computer print-out address list of all paid-up IOP members will be prepared early in 1986. Will all regional representatives please send the secretary full revisions and additions as soon as possible, so that the new list will be up to date. Already we have details of 59 palaeobotanists from France and 45 from East Europe.

It would be very useful to be able to include full details of IOP newsletter readers' addresses from regions that are not included in the present list - India, USSR, China and North America. Will the appropriate regional representatives please help? Many members ask for printouts of these lists and find them useful if they are guaranteed to be up to date and complete.

IOP SECRETARY

M.C. Boulter became IOP secretary (and newsletter editor) in 1977 and was elected to continue in that position at the last Botanical Congress. That term of office expires after the Berlin International Botanical Congress in 1987. Ten years in such a role is a long time for one person and encourages a stale approach to develop. It is time for the injection of some fresh ideas and new energies. So the present IOP secretary does not intend to offer himself for nomination in the next election at Berlin in 1987.

Although there is a year to go before we are obliged by the Constitution to seek nominations for the Berlin elections, there may be some advantage in considering nominations for the job now. This might allow a new secretary to gain some experience of the work involved before the summer of 1987. It might also help find the right person for the job. Will those with ideas of possible nominees please send names to the IOP President, Prof W.G. Chaloner, Botany Department, Royal Holloway & Bedford New College, Huntersdale, Callow Hill, Virginia Water, Surrey GU25 4LN, UK.

REPORTS OF RECENT MEETINGS

PALAEOBOTANY IN THE USSR

In November 1983 the Palaeobotanical Section of the All-Union Botanical Society was reorganised. Natalia S. Snigirevskaya was elected Chairwoman of the Section, Margarita A. Baranova, the Scientific Secretary and Elena V. Zheleskova the Secetary of the Section. During the first year of its operation twelve meetings were organised, two of which commemorated the memory of deceased palaeobotanists - one marked the 30th anniversary of Prof. A.N. Kryshtofovich's death and the other marked the recent death of Prof. T.M. Harris. Both these scientists were members of their respective national academies.

At the latter meeting, two lectures were read by French guests at the Komorov Botanical Institute - J. Doubinger: "Problems connected with the study of Permian Floras of Western Europe" and L. Grauvogel-Stamm: "The flora of the Triassic Formation of the Voltzia Sandstone of Eastern France."

Problems of preservation of palaeobotanical objects were discussed at two meetings of the Palaeobotanical Section. Also, the following contributions were presented: I.A. Iljinskaja: "On the Turgay Flora of the USSR"; G.V. Delle: "T.M. Harris, an eminent student of Mesozoic floras"; N.S. Snigirevskaya: "The importance of palaeobotanical studies of coal-balls for an understanding of the Middle Carboniferous Donets Flora"; S.G. Zhilin: "On methods of palaeofloristics"; N.G. Gohtuni:

"Palaeobotanical studies in Armenia"; P.I. Dorofeev: "Pliocene floras of the European part of the USSR"; E.N. Ananova: "The main features of the phytogeography of the extratropical latitudes of the northern hemisphere during the Miocene climatic optimum"; N.V. Guryev: "Principal species of the Middle Sarmatian Flora from the town of Krymsk, Northern Caucaus"; N.S. Snigirevskaya: "A report of the activity of the Palaeobotanical Section in 1983-1984".
The Presidium of the All-Union Botanical Society recommended the establishment of "The Kryshtofovich Memorial Readings" to take place once every three years. The first of these will be held in November 1985 and will celebrate the 100th aniversary of Kryshtofovich's birth.
N.S. SNIGIREVSKAYA

COLLOQUE DE PALEOBOTANIQUE, Montpellier, France, April 1985
This meeting was under the auspices of the 110th "Congrès national des Sociétés Savantes" and was attended by French and Spanish palaeobotanists.
Various interesting topics were discussed, including: Precambrian micro-organisms from Mauritania (E. Boureau & P. Taugourdeau); Fossil fungi (L. Locquin); Carboniferous pteridosperms (J. Galtier & B. Meyer-Berthaud); Sphenophytes (C. Alvarez Ramis & J. Doubinger); Charophytes (M. Feist, N. Grambast-Fessard & M. Massieux); A Cretaceous flora from Spain (C. Alvarez Ramis, T. Fernandez Marron, P. Clement Belmonte & Gomez Porter); Permian wood from Spain (J. Broutin) and Sumatra (C. Vozenin-Serra); a new Albian Cheirolepidiaceae from the USSR (G. Barale); Tertiary floras from Nepal (P. Roiron), France (C. Blanc-Louvel) and Chile (D. Pons); fossil pollen of the Ephedrales (J. Dejax); Green algae (P. Genot); a Tertiary palm tree (J.C. Koeniguer); Palynology of savannah (M. Salard-Cheboldaeff) and a comparison between the recent and ancient (13,000 years) distribution of Betula and Pinus sylvestris (M. Van Campo).
J. Galtier spoke on the vegetative morphology of a Stephanian pteridosperm from Graissessac (Hérault). This plant had been seen two years ago during a palaeobotanical field trip of the European Palaeobotanical Conference which met at Montpellier in July 1983. The contributions will be published in the review: "Comptes Rendus du Congrès National des Sociétés Savantes".
During this meeting the First Annual General Meeting of the newly formed "Organisation Française de Paléobotanique" (O.F.P.) was held.
L. GRAUVOGEL-STAMM

3RD INTERNATIONAL CONGRESS OF SYSTEMATIC & EVOLUTIONARY BIOLOGY, Brighton, Sussex, England, July 1985
Several hundred scientists attended this conference, which was spread over 6 days and which had up to 8 concurrent sessions. Two of the seminars were of special interest to palaeobotanists.
E.M.Friis convened the one on "Angiosperm origins and biological consequences":
J.A. DOYLE & M.J. DONOGHUE Seed plant phylogeny and the origin of angiosperms

P.R. CRANE Origin and diversification of flowering plants: vegetational consequences

E.M. FRIIS & W.L. CREPET Floral evidence of pollination mechanisms in fossil angiosperms

W.L. CREPET & E.M. FRIIS Insect pollination mechanisms: an analysis of the fossil data

M. COE, P. CRANE, D. DILCHER, F. FARLOW, D. JARZEN & D.A. RUSSELL Impact of vegetation on dinosaurs: impact of dinosaurs on vegetation

M.E. COLLINSON & J.J. HOOKER Vegetational succession and related mammalian faunal changes in the early Tertiary

S.L. WING & B.H. TIFFNEY Evolution of angiosperms and terrestrial herbivores

A. Hallam & J.S. Jones convened "Random and directed events in evolution". This included a presentation by K.J. NIKLAS on "Patterns in vascular plant evolution" and an open forum discussion on "Palaeontology: geology or biology" which was chaired by Prof W.G. Chaloner. A summary of this debate appears on pages 7-8 of Palaeontological Association Circular number 122 and is available on request to the IOP Secretary. The discussion concerned the problems being encountered in financing research in the palaeontological sciences in the UK and attempted to relate these difficulties within an international setting. Another commentary on the same proceedings has recently appeared in the American Scientist (volume 73, November-December 1985, pages 570-572), written by K.S. Thomson and entitled: "Is paleontology going extinct?". This article includes the controversial report from the discussion that in Britain "the future of paleobotany is in jeopardy, and even invertebrate paleontology, with its important practical stratigraphic/economic connections, is declining."
Please send your comments on this issue to the IOP secetary so that we can continue this debate within the IOP Newsletter.

NEWS OF FORTHCOMING MEETINGS

NEOGENE DINOFLAGELLATE CYST BIOSTRATIGRAPHY SYMPOSIUM, New York 1986
This will be held during next year's AASP meeting, and a call for papers has recently been made by John Wrenn, Amoco Production Co, P.O. Box 3385, Tulsa, OK 74102, USA.

VII SIMPOSIO ARGENTINO DE PALEOBOTANICA Y PALINOLOGIA, Buenos Aires, 1987
The first circular for this meeting is now available from M.A. Caccavari, Museo Argentino de Ciencias, Naturales "Bernardino Rivadavia", Av Angel Gallardo 470, 1405 Buenos Aires.

O.F.P. COLLOQUE DE PALEOBOTANIQUE, Strasbourg, 1986
This meeting is planned for the middle of May next year, and is the second annual meeting of this new group. There will be one or two days of lectures, poster sessions, and a visit to the Gres a Voltzia (Triassic) des Vosges. Write for the first circular to: Lea Grauvogel-Stamm or Monique Schuler, Centre de Sedimentologie

et Geochemie de la Surface, Institut de Géologie, 1 rue Blessig, 67084 Strasbourg Cedex, France.

THE EVOLUTION OF GYMNOSPERMS, biological and palaeobiological approaches, Montpellier, September 1986
This is the third conference organised by the L. Emberger - C. Sauvage Foundation and is for botanists, palaeobotanists and palynologists. The 3 day meeting will include lectures, discussions and excursions, and it is planned to publish the proceedings.
Write for the first circular to the Secretary of the Organising Committee, Dr J. Galtier, Laboratoire de Paléobotanique, Université des Sciences et Techniques, 34060 Montpellier Cedex, France.

VEGETATIONAL HISTORY OF SOUTH AMERICA, Medellin, Colombia, June 1986
This symposium will take place during the IV Latin American Congress of Botany, from June 29 - July 5 1986. It will consist of a sequence of invited review papers on the available paleobotanical evidence of floristic development on this continent from the Precambrian to the Cenozoic. Forinformation write to Oscar Rosler, Rua Nossa Sra. Fatima 45, Capao da Imbuia, 80.000 Curitiba, PR. Brazil.

XIV INTERNATIONAL BOTANICAL CONGRESS, Berlin, July 1987
The Second Circular and preliminary programme are now available from The Secretariat, XIV International Botanical Congress, Konigin-Luise-Str. 6-8, D-1000 Berlin (West) 33.
The following events have been planned at the Congress to be of special interest to palaeobotanists:
GENERAL LECTURE
Early land plants - the saga of a great conquest (W.G. Chaloner)
SYMPOSIA (write to the organisers for details)
How to correlate the systematics of fossil and recent Pteridophytes (C.R. Hill, K.U. Kramer)
Systematics, evolution and ecology of early land plants (D. Edwards, H.-J. Schweitzer)
Evolution of early seed plants (S.E. Scheckler, H. Pfefferkorn)
Early fossil Angiosperms: reproductive structures and evolution (D.L. Dilcher, F. Schaaschmidt)
Evolution and the fossil plant record (W.G. Chaloner, H. Walther)
South hemispheric fossil flora (T.N. Taylor, K.U. Leistikow)
Forests of the mesophytic period (H. Visscher, W. Riegel)
Changes of plant cover and environment during the Tertiary (G. Dolph, D. Mai)
Quaternary vegetation history (Y. Vasari, G. Lang).
CONGRESS EXCURSIONS (write to the organiser for details)
Fossil floras of the Tertiary (FRG & Netherlands) 7 days, pre-congress, 17 July - 23 July. H.-J. GREGOR, Grobenzell, FG
The ecology and evolution of fossil flora in W. Germany (FRG) 5 days, post congress, 3 August - 8 August. V. MOSBRUGGER, Institute of Palaeontology, Bonn.
From the Jurassic to the Holocene: the palaeoflora and palaeoecology of west and south Poland. 8 days post congress, 3

August - 11 August. L. STUCHLIK, Polish Academy of Sciences, Krakow & M. REYMANOWNA, Palaeobotanical Section of the Polish Botanical Society, Krakow.

NOMENCLATURE

The following suggestions have been forwarded to the nomenclature committee for fossil plants by N.S. Snigirevskaya who has also asked that they be given wider circulation here. Comments are invited for inclusion in future newsletters.

"As a type is a standard for any genus or species I suggest to introduce the following Latin abbreviations after each genus or species name:

ENGLISH	LATIN	ABBREVIATION
living genus type	typus generis hodiernus	tgh
fossil genus type	typus generis fossilis	tgf
living species type	typus speciei hodiernus	tsh
fossil species type	typus speciei fossilis	tsf

EXAMPLES Nelumbo Adans. tgh Lepidodendron Sternb. tgf
Nelumbo nucifera Gaertn. tsh N. protospeciosa Sap. tsf

"The useof "L" and "F" as the first letters of English words "living" and "fossil" contradicts the traditions - Latin firmly confirmed itself in Botanical Nomenclature. These letters can be mixed up with the first letters of the author's names of taxa, for example, "L" with the first letter of Linnaeus.

"One must not abuse the suggested abbreviations and not use them for any situation, for example, in 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. For fossil specimens of the living species it is possible to write "if" (or "ind. f." = "individuum fossile") but not "specimen" as that may be confused for "species"."

BIBLIOGRAPHY

RAPPORT SUR LA PALEOBOTANIQUE ET LA PALYNOLOGIE (FRANCE, BELGIQUES, ESPAGNE) 1984

This bibliography is the second produced under the auspices of the "Organisation Française de Paléobotanique" and it is now available. It has been compiled by B. Meyer-Berthaud and contains 17 pages with 130 references of papers published or in press during 1984.There is an up to date list of the addresses of the contributing authors.

Send 10FF to the OFP Treasurer, John Holmes, Laboratoire de Paléobotanique, U.S.T.L., Place E. Bataillon, 34060 Montpellier Cedex, France.

JUBILEE VOLUME FOR PROFESSOR E. BOUREAU

NEW RESEARCH ON PLANT EVOLUTION.
Tradition and renewal are the keynotes of this work which shows an excellent panorama of some of the latest developments of botany and palaeobotany.
In the first part, miscellaneous articles include historical and methodological studies of the Myrmecophylie, a study of the phylogeny of wood and of angiosperms of para-pteridophytic origin.
The second part is devoted to Palaeozoic plant evolution within the fungi, the first African vascular plants, acritarchs, gondwanan conifers, and the Ginkgophyta. The coevolution of insects and plants shows that the rise of the pteridosperms follows the diversification of insect lineages.
The third part deals with various Mesozoic and Tertiary themes. These include: the evolution of the Corallinaceae from the Cretaceous, the evolution of angiosperms, especially in the western Mediterranean. The relationships between climatic changes and vegetation from the Lower Cretaceous to the Pliocene in equatorial Africa are demonstrated by palynological methods. Also, the relationship between foliar biological types and palaeoenvironments are described through work on several Miocene/Pliocene deposits in Colombia.
The book is illustrated with 79 figures and plates and is intended for naturalists as well as botanists and palaeontologists.
The book costs FF150 (add extra for packing and postage) from: Commité de Travaux Historiques et Scientifiques, Ministère de l'Éducation Nationale, 3-5 boulevard Pasteur, 75015 Paris.

DIRECTORY OF PALAEONTOLOGISTS OF THE WORLD

Plans are being prepared for the 5th edition of this directory, to be published by the International Palaeontological Association in time for distribution at the 27th International Geological Congress in Washington DC in 1989. Formal requests for information will be made later, but individuals may like to check the style required from the 4th edition. This is available for US$7 from R.A. Doescher, Department of Palaeobiology, E-207 Museum of Natural History, Smithsonian Institution, Washington DC 20560, USA.

NEWS OF INDIVIDUALS

A. TAKHTAJAN, whose major contribution to palaeobotany has been his work on the phylogeny of the angiosperms, celebrated his 75th birthday this year. He has been Director of the Komarov Botanical Institute in Leningrad for the last 8 years.

J. PETRESCU & O. DRAGASTAN, Laboratory of Palaeontology, University of Bucharest, Bd N Balcescu 1, 70111 Bucharest, Rumania, have been awarded the Grigore

Cobalcescu Prize for 1981 by the Romanian Academy. They have recently edited an anniversary volume to celebrate "75 years of the laboratory of Palaeontology".

O. DRAGASTAN has recently published in: "Palaeoalgology: contemporary research and applications" edited by Toomey and Nitecki, a paper entitled: Review of Tethyan Mesozoic algae of Romania" which deals with the Porostromata and the Codiaceae.

B.S. VENKATACHALA has recently been appointed Director of the Birbal Sahni Institute of Palaeobotany, Lucknow, India.

S. ARCHANGELSKY was a Distinguished Visiting Professor at Ohio State University from June - December 1984. He worked with T.N. Taylor on South American Palaeozoic conifers and their cuticles.

T.N. TAYLOR & E. SMOOT visited Argentina in February 1985 to collaborate with the Conicet project, working on classical Cretaceous and Permian localities.

O. ROSLER is active in Antarctic research, under the patonage of the Programa Antartico Brasileiro. He visited the peninsula and several islands during January 1985

E.J. ROMERO worked at the New Zealand Geological Survey, the Australian Museum and the Missouri Botanical Garden with a fellowship of the Guggenheim Foundation.

A.E.E. ARTABE of the La Plata Museum, Argentina, has been awarded a PhD on "The Triassic flora of Los Menucos, Rio Negro, and the relationships with other coeval fossil floras."

R. VANHOORNE retired in October 1985. He will continue research on Cenozoic palynology and megafossil plants at the Royal Belgian Institute of Natural Sciences, Vautierstr 29, 1040 Bruxelles, Belgique.

J. GALTIER, Montpellier, spent 2 enjoyable weeks working on the wonderful material of the Humboldt-Naturkunde Museum in East Berlin. He also visited the Museum fur Naturkunde at Karl Marx Stadt, with the most impressive collection of Permian arborescent plants collected by Sterzel.

J.E. CANRIGHT & A.T. CROSS both recieved Distinguished Service Awards of the Paleobotanical Section of the Botanical Society of America. Each has a brass plaque engraved:"For distinguished service to the Paleobotanical Section and outstanding contributions to American paleobotany".

OBITUARIES

T.B. PETRIELLA 1942-1984
died on December 29 1984 after a car crash. He had been active in the study of wood anatomy and was well known for several papers on petrified cycads. Lately he published on Mesozoic compressions and proposed reconstructions and new ideas on the Corystospermales. He was a good friend and an excellent man, and is survived by a wife and two children.
E.J.ROMERO

R. MELVILLE 1903-1985
With the death of Ronald Melville on August 16th British botany has lost one of its familiar characters.It may not be known that his first studies were in pharmaceutics and after qualifying he held several pharmaceutical posts. Concurrently with this employment he studied for a degree in Botany at Birkbeck College London where he later lectured and served as a Demonstrator. He then gained a scholarship to study for a PhD in Plant Physiology at Imperial College London. In 1934 he joined the staff of the Royal Botanic Gardens at Kew and transferred to the Herbariumin 1950 where he was in charge of the Australasian Section until his retirement as a Senior Pincipal Scientific Officer in 1968. In the same year Dr Melville was made a Companion of the Imperial Service Order in the New Year's Honours list.
Few palaeobotanists will be aware that Melville was responsible for recommending rose-hips as an excellent source of vitamin C to the Ministry of Health during the 1939-1945 war, amnd was deeply involved in directing the development of rose-hip syrup production.
But to palaeobotanists especially he was well known for his original ideas on the evolution of the angiosperm flower and, in particular, for his Gonophyll Theory. Starting with dichotomously-branched sporangium-bearing structures, such as are found in many Early Devonian plants, and passing through theoretical stages where first megaporangia, then ovules, were borne superficially on leaf-like appendages still showing basically dichotomous venation patterns (gonophylls) his theory outlined stages leading to the Bennettitalean type of gymnospermous reproductive structure and to primitive follicle-bearing angiosperms. Stamens were derived along similar lines, via theoretical structures called androphylls. Melville believed that his various intermediate stages in the evolution of both female and male organs were supported by the existence of primitive structures in many extant angiosperms, of which he had an unrivalled knowledge. In developing his ideas he also took into account the reproductive structures in extinct plants. The descriptions by Plumstead, from 1952 onwards, of the reproductive organs of Late Palaeozoic Glossopteridales (sensu lato) were grist tohis mill and he assigned the alleged bisexual structure of Glossopteris a key, early position in his theories. Indeed, he came to believe that the ancestral source material for the angiosperms was to be found in such plants as the open dichotomous-veined Palaeovittaria and the net-veined Gangamopteris and Glossopteris. Latterly Melville bravely ventured into the realms of Continental

Drift and Plate Tectonics, postulating the existence, based largely on botanical evidence, of a former south-eastern land mass, which he called 'Pacifica'.
Melville was interested in leaf,sepal, petal and tepal venation patterns of extant angiosperms for about 16 years, and endeavoured to relate these to those of the Glossopteridae, finally formulating his Remoration Theory (evolutionary retrogression). Although not a few palaeobotanists crossed swords with him on occasion, believing that he attached too much significance to what were probably parallel developments in leaf venation patterns and that he accepted too uncritically Plumstead's descriptions of glossopterid fructifications - still not completely known - Melville will be remembered with affection by those who knew him as a prolific thinker whose ideas played an important part in stimulating argument and debate on one of the as yet unsolved questions of botany, the origin of angiosperms.
W.S. LACEY & H.P. WILKINSON
(with help on personal details from M. Sands)

BOOK REVIEWS

PALAEOFLORA OF SOUTHERN AFRICA: Prodromus of South African Megafloras, Devonian to Lower Cretaceous. J.M. & H.M. Anderson, 1985. 423pp, 233 plates, 54 maps, 22 tables. A.A. Balkema, P.O. Box 1675, 3000 BR Rotterdam, Netherlands: or P.O. Box 230. Accord, MA 02018, USA. US$30 for IOP members ($55 for non-members).

(Of the two reviews that follow, the first was solicited and the second was volunteered. They provide an interesting contrast that may serve as a useful basis for further discussion.)

With this handsome volume the husband and wife team of the Anderson's has created another work destined to become a standard reference. Their title of Prodromus is a charming reminder of the encyclopedic ambitions of Victorian naturalists. The style of this work, however, is very much the Andersons' own. Tables and charts abound as usual, and there is a huge section of photographic plates, 233 of them. Fossil localities are documented, as well as the relative abundance of various taxa. Plant diversity trends are charted. Even personal sketches of the various collectors of South African plants are included. The whole work is laid out like a set of notes, with numerous headings and shorthand devices, such as omitted verbs, abbreviations and acronyms. Although not always good reading, it is nevertheless easy to navigate within it. Their presentation would be easily adapted to videodisc and microcomputer.
The main theme of the book is the succession of fossil floras in southern Africa from Devonian to Early Cretaceous. It is an epic journey: a palaeobotanical equivalent of James Mitchener's "The Covenant". The Middle and Late Devonian flora of the Wittenberg and Bokkeveld Groups contain largely lycopods, with a variety of

rhyniophytes and enigmatic plants. The diverse glossopterid floras of the Ecca Group and Waterford and Estcourt Formations occupy a large part of the book. The Early Triassic flora of the Burgersdorp Formation is described comprehensively for the first time. Among the new taxa recognised is a Pleuromeia-like lycopod. The flora of the late Triassic Molteno Formation is treated briefly, considering the Andersons' prior and planned publications, but there are notable photographs of newly-discovered and almost miraculously complete fructifications. The fossil floras of the Early Jurrasic Drakensburg Group and various Early Cretaceous formations are described comprehensively for the first time, with considerable assistance in the latter case from Gary Gianinny and Paula Weins.

The Andersons have achieved a great deal with this volume, effectively illustrating an enormous number of items. Many of their names invite comment, and in part, this is an avowed aim of their work. Their Early Permian Podozamites hlobanenensis, for example, has rather broader leaf bases than found in this Mesozoic cycadocarpidiacean genus. Their Early Permian Lepidodendron whitehilleanum is a branching terminal twig with minute short leaves, rather than elongate ones usual for this genus. Similarly, their Early Permian Leptophloem sanctae-helenae has small lateral flanges on either side of the leaf trace, unusual for this Devonian genus. Finally, the fructifications Jongmansensis transvaalensis and Lerouxia transvaalanesis are attributed to the same plant as fern-like leaves of Botrychiopsis valida, and thought to be of bennetite (or cycadeoid of American usage) affinities. It is a credit to the way in which their evidence of association is so clearly laid out that these fructifications can be seen to be equally like those of Neoggerathiopi hislopi, an enigmatic Gondwanan leaf long thought to have cordaite affinities. The stout, shoot-like construction of the ultimate branches of each fructification are very similarto those of vojnovskyan and ruflorian cordaites of Angaraland, which I recently inspected for myself in the field near Novokutznesk and in the Moscow laboratory of Sergei Meyen. This is not the occasion to argue such reassignments in detail. I mention them to emphasise that the data-rich nature of this book lends itself well to analysis and testing of new ideas.

To me, the most important single contribution of this work is the novel way of treating glossopterid taxonomy. Since most of these have fructifications attached to leaves, it is proposed to name taxa by their ovulate fructifications. The various other parts of the plant are also characterised, but separate names for them are eschewed. These "natural taxa" account for most of the glossopterid remains, leaving only a few unassigned scale leaves, seeds, or leaves referred to the form genus Glossopteris. For some of the glossopterid plants, fructifications are notyet known attached, sotheseare assembled from evidence of association. These taxa are less reliably understood, because association may be a fickle guide to botanical affinities. As they point out though, many of the individual localities in question have yielded only low diversity assemblages: a fact that I was able to observe with them at the Bulwer locality. This unconventional taxonomic treatment will no doubt attract considerable

controversy. One cannot, however, deny the utility of their procedure. The genus Glossopteris continues to be untamed despite the recent overflow of printers' ink devoted to it. The Andersons' procedure, on the other hand, clearly documents the biostratigraphic utility and evolutionary trends of glossopterids in one of the most important Gondwanan successions. At the lowest stratigraphic levels (Dwyka Tillite) glossopterid diversity is limited to multiovular fructifications (Ottokaria) attributed to leaves lacking a midrib (Gangamopteris), and other leaves with a combination of cordaite and glossopterid features (Palaeovittaria). At higher stratigraphic levels (Ecca Group) there are common and diverse multivulate glossopterids (Scutum, Plumsteadia, Estcourtia and others, perhaps too many), as well as some with few ovules per head (Lidgettonia and Rigbya) predominate, and some of these Late Permian fructifications (Lidgettonia elegans) appear to have only one per head. These findings give considerable backing to the hypothesis of glossopterid evolution which Dilcher and I proposed in a recent issue of Paleobiology (7, 54-67). Whether or not similar trends emerge in other Gondwana regions, survey and coalfield geologists need now be warned that glossopteris fossils are biostratigraphically useful.

Although I have expressed some reservations concerning details of interpretation, the emphasis on documentation in this volume makes it an indispensable reference. Among palaeobotanists, only those completely and irrevocably entranced by fossil angiosperms can afford to be without it.

G. RETALLACK, Eugene, Oregon.

The following comments on the same book were received from E. KOVACS-ENDRODY, Pretoria, South Africa:

"The title of the book implies a grandiose task completed bythe authors in three years (page 7). Although the available material is not yet sufficient (page 54) for the knowledge of the floristic and evolutionary trends in South Africa in 300 million years, the collections in the country are too big for a "comprehensive standardised taxonomic revision" (page 6) in such a short period of time.

"Readingthe book I was bewildered,until I realised that I had entered a unique world, where everything is possible. Then I found the book entertaining, and was not surprised that it could have been completed in three years. The authors combined two antagonistic approaches. They "deviated from traditional taxonomy" (page 84), introducing a new kind of classification. Nevertheless, there are conclusions concerning Gondwana, or even global correlations. How could the authors compare South African assemblages and palaeodemes with floras of traditional genera and species? The general synopsis of megafloralsuccession reflects the authors' "preferred interpretation of the available", and also of selected facts (page 52). The same kind of"preferred interpretation" is especially conspicuous in the range of certain Permian fossils, in their diagnostic characters, and in the quoted, and also selected literature. For example, the diagnostic characters of Palaeovittaria Feistm. 1876 are based now on "SAf" material. Feistmantel could not recognise a Palaeovittaria in P.

goedehoopensis And. & And. for it is not congeneric with P. kurzii.P. kurzii Feistm. is restricted in India to the Upper Permian Raniganj Stage, from where it was described, without prefered interpretation. According to the Andersons' preference it is primarily a Lower Permian species. By the way, is P. kurzii a species, and is it considered here according to traditional or to the new taxonomy? The Indian literature on the genus Scutum, referring to Upper Permian age, is omitted. And so on.

"The authors consider the leaf of Palaeovittaria (in the Ginkgoopsida) an intermediate between Noeggerathiopsis (in Pinopsida) and Gangamopteris, showing "generic relationships" (page 109), though, according to the authors' taxonomic revision Gangamopteris McCoy 1875 is a synonym genus of Ottokaria Zeiller 1902 (page 111). The authors retained the generic name Glossopteris only for those leaves, which in the absence of female fruit could not be included in any of the genera described here, or in the genus Gangamopteris (page 137). Obviously, synonymization here means something else than it does in traditional taxonomy. The authors don the countenance of traditional taxonomy, though they deviate from it. They apply its method in a personal manner. This method without the essential, theoretical principles of systematics is meaningless, even when one tries hard to follow the way of thinking of the authors. By the way, the female fruits of Ottokaria species are unknown, or the species (?) are based on uncertain or hypothetical affiliations of leaves and fructifications. The rest of the classification is not less amusing. I also like the "balloons" flying independently from one another in time, showing the "evolution" of South African megaplants (page 55).

The authors consider the method followed by the majority of palaeobotanists, who have ever worked on Glossopteris leaves as "evidently folly ... leading to false phylogenetic and phytogeographic conclusions" (page 107). According to them, the South African glossopterid leaves and "female fruit species" are specifically different from those of other continents. They acknowledge that the Glossopteridales are the most significant group in Permian Gondwana. Although, there are no common leaf and "female fruit species", the biostratigraphic age is based on the correlation of South African and Australian microfloral zones (page 24). "Where have all the males gone" (page 107) with their pollens? This enigma is not less disturbing when the position of recent continents is studied on the Permian globe (page 11).

"The combination of the old and new geological classifications of South African horizons, or of lithological units and zones of vertebrates (pages 24, 94), and such age determinations as "circa U. Wordian", L. Arpin (pages 28, 29) make the book even more interesting.

"I recommend the book as a unique enterprise, but not as astudy of the palaeofloras of South Africa. You will find tables with the chronological list of collectors, chronological histograms, etc. From the biostratigraphical sketches, among other details we also learn that the majority of South African palaeobotanists were and are not plant systematists.

"I would not mind being involved in the debate, opened by the authors, on their clasifications of these interesting fossils."

LAKE SEDIMENTS AND ENVIRONMENTAL HISTORY. Edited by E.Y. Haworth & J.W.G. Lund, 1984. 412pp. Leicester University Press, University Road, Leicester LE1 7RH. 39.00.

This splendid volume marks the "retirement" of Winifred Tutin from the Freshwater Biological Association's laboratory in the English Lake District. There, and at Leicester University she has spent many decades researching palaeobotanical aspects of Late Quaternary lake sediments. The introductory "personal note" shows how this began from the influences of Pearsall and later "in the wings" Harry Godwin and Tom Harris.

The 14 chapters include geochemistry and geophysics as well as discussions of algal deposits. For palaeobotanists there is a chapter on "Pollen recruitment to the sediments of an enclosed lake in Shropshire, England" by A.P. Bonny & P.V. Allen (with the anticipated accuracy of the pollen diagrams); "Pollen diagrams from Cross Fell and their implication for former tree-lines" by J. Turner; "The Holocene vegetation of the Burren, western Ireland" by W.A. Watts and "Late-Quaternary pollen and plant macrofossil stratigraphy at Lochanan Druim, northwest Scotland" by H.H. Birks.

M.C. BOULTER, London.