

IOP NEWSLETTER 12

INTERNATIONAL ORGANIZATION OF PALAEOBOTANY

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES

-SECTION FOR PALAEOBOTANY

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PLEASE MAIL NEWS AND CORRESPONDENCE TO YOUR REGIONAL REPRESENTATIVE OR TO THE SECRETARY FOR THE NEXT NEWSLETTER 13. 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

Article III 2 of the IOP constitution (newsletter 3) states that "officers elected at one General Assembly shall serve from the end of that Assembly to the next assembly (sic)". Since vice-presidents may serve 2 terms in that office, and since the present president and secretary have not been elected, the following nominations are now sought:

- 1 president
- 1 secretary
- 3 members at large
- 1 congress member.

Nominations may be made in writing, by any member of IOP, and must be received by the secretary BEFORE DECEMBER 1ST 1980. The constitutionally valid nominees who are prepared to stand for election will be candidates in the ballot to be conducted through the newsletter and at Sydney next year.

IOP BUSINESS MEETINGS: CAMBRIDGE JULY 2, READING JULY 10

The same agenda was discussed at the 5IPC Cambridge (28 participants) and at the First International Palaeobotanical Conference Reading (63 participants).

1. Progress in the operation of IOP's 1977 constitution. This invited participants' comments on the progress with the objectives of three newsletters a year, informal literature being available on demand, and meetings being held at International Botanical Congresses and in between. No complaints were expressed at either meeting and the Reading participants approved the concept of inter congress International Palaeobotanical Conferences, of which that at Reading was the first. Invitations are being sought to associate the Second International Palaeobotanical Conference with the Calgary Canada 6IPC.

2. Relationship of IOP with other international organizations. Both business meetings expressed overwhelming support for a continuation in the operation of our present constitution. There was no support for any amalgamation in whole or part with any other body. The present good relations with ICP and IAAP were encouraged.

3. XIII International Botanical Congress. Details of the palaeobotanical content of this congress were presented. They are included on page 3 of this IOP newsletter.

4. International Bibliography of Palaeobotany. Though views were expressed to support the present system of national bibliographies (N.America, S.America, Australasia, France Belgium & Switzerland, Arbeitskreis and Britain publish these regularly as announced in this newsletter) it was agreed that a computerised data retrieval system serving all these regions and elsewhere would be an improvement. Results of investigations into the financial and human resource implications of such a system will be announced in a future IOP newsletter.

5. Palaeobotanical publication by IOP. At the Reading business meeting proposals for an international IOP sponsored journal (see IOP newsletters 10 page 12 and 11 page 7) were made by Anderson and Wagner. There was a strong feeling at the meeting that IOP should not become involved in this work.

BENEFITS OF IOP MEMBERSHIP

Two new informal publications are now added to the list of material available on demand to paid up members of IOP. This is possible through contributions from IOP funds (\$200 to IAAP and \$40 to the Reading meeting budget) for their production.

IAAP Bibliography of Angiosperm Paleobotany for 1979 (described in this newsletter) Write to D. Dilcher, Department of Biology, Indiana University, Bloomington, Indiana 47405, USA for a free copy to be sent by surface mail.

IOP First International Palaeobotanical Conference Abstracts This 64 page booklet contains that number of abstracts from presentations made at the Reading meeting, July 1980. Write to the IOP secretary for a free copy to be sent by surface mail.

Members with suggestions for other informal literature that might be added to this growing list of items available on demand should write to the secretary. A very small amount of money may be available to help finance printing and distribution.

FORTHCOMING MEETINGS

2ND SYMPOSIUM ON MESOZOIC TERRESTRIAL ECOSYSTEMS, POLAND 1981

This symposium is being organised by the Institute of Paleobiology (Zakład Paleobiologii) and the Museum of the Earth (Muzeum Ziemi) both of the Polish Academy of Sciences. It will be held in Jadwisin 40km north east of Warsaw, and is the second in the series, the first having been in Paris in 1978. The symposium will deal with all aspects of Mesozoic land fauna and flora, including problems of anatomy, functional morphology, evolution, origin and extinction of major groups, palaeophysiology, palaeoecology, palaeogeography and stratigraphy. It will cost about 150 - 170US\$. The first circular was available in February 1980 and can be obtained from: Dr H. Osmólska, Zakład Paleobiologii P.A.N., 02-089 Warszawa, al. Zwirki i Wigury 93, Poland. Zofia Kielan-Jaworowska is chairman of the organizing committee and another member is Maria Reymanówna.

XIII INTERNATIONAL BOTANICAL CONGRESS

W.J. Cram is the Executive Secretary of this congress and writes to ask potential participants to send their names and addresses together with the sections and field trips of chief interest to: 13th I.B.C., Australian Academy of Science, P.O. Box 783, Canberra A.C.T., 2601, Australia. If this information is sent it will not be necessary to return a preliminary reply form and the names will be added to the list of those who will receive the second circular.

The following symposia are planned for Section 11 on Historical Botany: (names of convenors in brackets)

Physiological problems in evolution	(J.A. Raven)
Man's influences on the ranges of plants	(N.M. Wace)
Gymnosperms: Palaeozoic and Mesozoic	(Taylor & Delevoryas)
Origins and evolution of angiosperms	(Dilcher & Crepet)
Applications of tree ring studies to ecology and climatology	(J. Ogden)
Development of regional vegetation types in pre-Quaternary time	(E. Truswell)
Plant geographical results of changing Cenozoic barriers	(P. Raven)
Persistence & change in vegetation	(Walker & Anderson)
Development of the plant geographical pattern of Australasia	(J.M.B. Smith)
Advances in palaeobotany & palynology	(D. Christophel)

The IOP Executive Congress Member is Jack Douglas and John Rigby is an IOP member on the Congress Organising Committee. Please write to either with any palaeobotanical questions relevant to the congress. IOP will have its General Assembly one evening during the meeting.

REPORTS OF RECENT MEETINGS

SYSTEMATIC & STRATIGRAPHICAL SIGNIFICANCE OF Phylladoderma, USSR

This colloquium was held from April 22 - 25 1980 in Kazan, and the participants were A.V. Bogov ('Tatneftegazrazvedka' Kazan), N.K. Esaulova (Kazan University), L.A. Fefilova (Institute of Geology, Syktyvkar), S.V. Meyen (Geological Institute, Moscow) and H.G. Smoller (Geological Survey, Ukhta).

The leaves of the genus Phylladoderma are very common in the Upper Permian of the Pechora basin (where they occasionally form paper coals) and the eastern part of the Russian platform. The genus was

successively placed into the Cordaitales (by Zalesky), Ginkgoales (by Neuburg), Coniferales (by Meyen) and finally into the pteridosperms closely related to the Peltaspermales and Cardiolipidales (by Meyen & Smoller - see IOP newsletter 9 page 11). According to cuticular studies made by the colloquium participants Phylladoderma may be classified into a number of species to be used for the subdivision of the Upper Permian coal-bearing beds of the Pechora basin. Until now the Upper Permian of the basin could not be reliably subdivided on biostratigraphic criteria. Preliminary examination of Phylladoderma from different sections has shown that there are at least three successive assemblages of its species. After joint inspection of many cuticular preparations the participants of the colloquium compiled a list of taxonomically significant characters and outlined preliminary diagnoses for 12 species of the genus. The stratigraphic range of these species has proved to be roughly similar in different parts of the Pechora basin and the Russian platform thus providing the basis for both regional and inter-regional correlations. For instance, Bogov showed that in the stratotype area of the Upper Permian standard stages Phylladoderma appears in the middle of the Ufimian stage. Some species with comparable cuticles were recorded by Fefilova, Meyen and Smoller in the Pechora basin in beds controversially dated from the Kungurian to Tatarian by previous workers. On the other hand some Pechora sites yield leaves of the subgenus Aequistomia similar to those hitherto known from the Upper Tatarian of the Russian platform. In the Pechora basin the succession of the Phylladoderma assemblages can be complemented with that of the cordaites leaves (particularly of Rufloia) if the latter are classified on the basis of their microstructure. Hence a subdivision of the Pechora Upper Permian into some 4 to 5 zones may well be achieved. Some of them may hopefully be traced into coal-bearing beds of Siberia by cordaites assemblages. Thus, microstructural studies acquire a very important role. The colloquium was organized under the umbrella of the IGCP project 'Correlation of Coal Bearing Formations', and the participants formed 'The Club of Phyllophiles' whose secretary is H.G. Smoller. S.V. Meyen, Moscow, USSR.

COLLOQUIUM ON CHITINOZOA & PALEOMYCOLOGY, PARIS JULY 1980. The final circular of this meeting listed 16 lecture topics on this subject, which are to be published in the forthcoming edition of Cahiers de Micropaleontologie. 60 participants were expected. The colloquium was organised by M. Locquin at the Laboratoire de Micropaleontologie, 8 rue Buffon, 75005 Paris, France.

2ND REUNIAO DE PALEOBOTANICOS E PALINOLOGOS, ALPP, SAO PAULO 1979. From 6 - 8 December 1979 27 papers were presented at this second reunion meeting of ALPP. The abstracts are contained in the November newsletter of that organization, volume 1, number 3, obtainable from the co-ordinator Prof O. Rösler, Instituto de Geociencias, Universidade de Sao Paulo, Cx Postal 20.899, Cep 01.000, Sao Paulo, Brazil.

INDEX OF FIGURED PLANT MEGAFOSSILS

This index is a product of the Laboratory of Palaeobotany and Palynology, University of Utrecht, Netherlands, and aims to give a survey of plant megafossils from the Devonian to the Jurassic as illustrated from 1971 onwards. This second volume deals with the

Triassic from 1971 to 1975 and the data has been compiled by Dr M. Boersma and Mrs L.M. Boersma-Broekmeyer (of the Institute of the History of Science, University of Utrecht). Illustrations are quoted from 435 species belonging to 199 genera. The taxa are arranged alphabetically. For each figure, the relevant publication, the age of the source strata and the country or province of origin are indicated. In separate chapters, the taxa are arranged according to the major plant groups, the chronostratigraphical units and the countries of origin. A list of 174 new taxa has been added and a reference list of the 110 publications from which the figures have been quoted is appended. The cloth bound book has 75 pages and costs 30 Dutch guilders. Send an international money order to: A.J. Goslinga, Laboratory of Palaeobotany & Palynology, University of Utrecht, Heidelberglaan 2, Utrecht, The Netherlands. Add an extra Dfl.5 for currency exchange charges. Copies of volume 1, 'Carboniferous 1971 - 1975' are also available for Dfl.40.

FOSSIL SOILS - a new way of understanding ancient vegetation

This is an unrefereed essay by G. Retallack, Department of Biology, University of Indiana, Bloomington, Indiana 47405, USA. To avoid the assumption that this is a formally published article, and to save space, all references have been edited out. A full list of references can be obtained from Retallack or from the IOP secretary.

Are you tired of finding those fossil plants in streamside swales, lakes and lagoons? Do crevasse splays, epsilon cross-beds and hummocky bedding turn you off? Once there was only the Mississippi Delta, now there are river-dominated, wave dominated, tide-dominated and even ice-dominated deltas. Are you fed up with all these complicated depositional sedimentary environments? Take heart. Non-depositional ancient environments are not lost and gone forever. Fossil soils, in which all these prehistoric plants actually grew, are turning up all over, and will soon be appearing in terrestrial sedimentary rocks near you.

The most diagnostic features of a fossil soil are that there are remains of fossil roots in place and that a variety of reddened nodular or concretionary layers are characteristic of fossil soils. Here I wish to briefly discuss the interpretation of fossil soils and their use in reconstructing vegetation and environments of the past. Fossil soils may provide evidence for the size and structure of vegetation, for its location with respect to sedimentary environments and topography, for depth to the water table and its chemistry, and for rates of sedimentation and uplift. Most importantly, they are in place, where the plants actually grew.

Fossil soils are the only aspects of the geology of many areas remaining unstudied. They can easily be integrated with existing geological and palaeontological studies to make a detailed reconstruction of ancient ecosystems. My own study of Triassic soils and plants north of Sydney Australia complemented existing and additional studies on the sedimentology, sedimentary petrography, palaeocurrents and palaeontology of the area. Many of the fossil soils had leaf litter preserved in their upper horizons. On this basis, it is apparent that a seed fern heath (dominated by Dicroidium zuberi) vegetated gleyed podzolic soils, monodominant stands of Pleuromeia grew in alluvial soils of lagoon margins, and humic gley soils of lagoon margin swamps were forested by mixed conifer (Voltziopsis) and seed fern (Dicroidium) woodland. Plant material was poorly preserved in the leaf litter of levee-top grey clay soils, but this and associated megafossils indicate that Taeniopteris

lenticuliformis was prominent in this scrubby vegetation. No megafossil plants were preserved with well differentiated grey-brown podzolic fossil soils, which evidently formed in rolling, forested land, with the water table mostly 1m or more below the surface. However, poor palynofloras from these redbeds are dominated by conifer pollen, like that better known in older Triassic rocks in the same region, rather than seed fern pollen. As well as their vegetation, both water table and subsidence rates could be interpreted from these Triassic fossil soils.

Fossil soils are also a promising additional way of understanding major events in the evolution of terrestrial ecosystems, such as the evolution of the atmosphere, the origin of terrestrial organisms, the emergence of rooted plants, the development of forests, the expansion of grasslands and the impact of man on the land surfaces of the world.

A 2.45 billion year old fossil soil developed on pre-Huronian granites and greenstone north of Lake Huron, Canada, shows anomalous loss of iron (with greater loss of Fe_2O_3 than FeO) and an extreme loss of MnO_2 compared to modern weathering.^{2,3} This is evidently an extinct kind of fossil soil formed in an anoxic atmosphere. One billion year old paleosols described by Williams and also by Kalliokosi indicate weathering more like modern conditions. Intermediate atmospheric conditions may be revealed by further study of Precambrian soils of intermediate age. Fossil soils may also reveal much about the earliest land plants. Did they appear during the late Ordovician or the late Silurian? The holdfasts, rhizoids, rhizomes and roots of primitive plants may be well preserved in aquatic shales and cherts. In more oxidizing environments these organs may promote the obliteration of sedimentary relicts in the parent material of a soil and enhance the development of soil microfabric (such as sepic plasmic fabric), as well as special structures. In the Arisaig area of Nova Scotia there are several Paleozoic redbed units relevant to this problem. In the late Ordovician Dunn Point Formation, there are 1.3m thick red fossil soils developed on andesite flows. Particularly intriguing are the superficial reduction mottles and erosion scours, interpreted by Dewey as evidence of non-vascular land vegetation. The late Silurian Moydart Formation and Devonian Knoydart Formation, also in the Arisaig area, contain caliche-bearing paleosols like those widely reported from the Catskill and Old Red facies of the northern hemisphere. These were probably sparsely vegetated and formed in warm to hot regions of limited rainfall. Man's effect on land surfaces of the world has become more and more dramatic. Where did it all begin? Spectacular new finds of Miocene, Pliocene and Pleistocene hominoid fossils are changing concepts of man's evolution as a species. How was man's evolution related to forest, savanna and prairie environments? To what extent can the spread of grasslands be attributed to the use of fire by man and other hominids? Did the giant beasts of the Pleistocene become extinct because of overkill by man, by man's effect on ancient environments or by other environmental changes? There are already reports of fossil soils associated with hominoid remains. Detailed study of these could provide much needed evidence for the ancient environments of early man. Although widely overlooked, fossil soils are now being discovered in badlands, variegated beds and redbeds everywhere. They can be invaluable indicators of ancient environments and their vegetation.

CORRELATION OF COAL BEARING FORMATIONS

- I.G.C.P. Project 166: Global Correlation of Geological Processes of Accumulation and Transformation of Coal-Bearing Formations and Recent Peat Accumulation in the Earth's Crust Continental Basins and their Oceanic Margins (1979-1980) - CCF project.

The present state of the world energy resources necessitates the coal geologists to join their efforts for global investigations aimed at the profound study and correlation of peat deposits and coal bearing formations, maintaining the principal reserves of solid fuel and metallurgic raw material. Of primary importance is the fact that due to decrease of oil and gas output and exhaustion of their reserves the share of coal will increase in the fuel energy balance of most countries.

The coal bearing formations are most variable in their stratigraphy, structural-tectonic location, thickness, facial composition, rank of coal etc. Our knowledge of coal bearing formations, especially of their detailed stratigraphical subdivisions, genesis and distribution as well as their modern counterparts are insufficient. To meet these needs and to improve our knowledge this CCF project sponsored by UNESCO was organised within the IGCP. The project covers the following topics:

1. stratigraphy of coal bearing formations,
2. sedimentogenesis and classification of processes of accumulation of coal, oil shales, and peat bearing formations,
3. tectonic evolution of coal bearing formations,
4. processes of transformation of organic matter,
5. processes of transformation of embedding rocks,
6. criteria of prospecting of solid fuel, its global distribution,
7. geochemical characteristics of coal bearing formations,
8. geophysical characteristics of solid fuel and its global distribution.

The main aim of the stratigraphical part of the project is to establish zonal subdivisions of major coal basins according to different organic groups, integration of the subdivisions with those of palaeoclimatic, palaeomagnetic and other criteria, and to correlate between zonal schemes of different basins. The work should result in detailed unified schemes of zonal sub-division for major palaeogeographic areas such as Angaraland, the Equatorial Belt and Gondwanaland of the Upper Palaeozoic. A good example of such a sub-division for one region has been provided by the CIMP working group on stratigraphic palynology (G. Clayton et al 1979 - Carboniferous miospores of Western Europe. Meded. Rijks. Geol. Dienst. 29). Comparable work can be done in other areas and for other fossil groups.

The work of the project proceeds in national working groups. As an example, the activities of the Soviet stratigraphers participating in CCF is briefly outlined below:

Within the Soviet working group of CCF, regional stratigraphic subgroups have been organised. Each one is responsible for a certain basin and unites specialists of different organisations working in each basin. The subgroups follow a standard programme which may be modified depending on local conditions. The programme stipulates selection and detailed study of several key sections in each basin. Key sections should be measured according to certain standards with all possible kinds of sampling. Additional sections when necessary can also be measured. All the materials collected will be analysed, identified, described or otherwise treated by a team of competent specialists working in different organizations. To achieve agreement between specialists all the results (including lists of fossils coming from key sections) are to be approved by a group of

competent specialists at an annual colloquium. Divergences in opinions are carefully recorded and recommendations on necessary further studies are given accordingly.

At the next step correlation charts between key sections are to be prepared. The charts will be discussed on a permanent basis at annual regional stratigraphic colloquia, and these will recommend the direction of further studies. Interbasinal correlation charts and their related zonal schemes will be discussed at interregional stratigraphic colloquia. The final stage of the work will be the correlation between the zonal units of each basin and the international chronostratigraphic units. Besides colloquia, regular field excursions to the most important sections are planned - without them, no formal decisions on the nature of the units and the boundaries should be made.

The results of the work are planned to be issued regularly as reports containing the descriptions of the key sections. Illustrations and descriptions of the guide fossils will be included, as well as correlation charts. Comprehensive monographs on the stratigraphy of the major basins are planned as final results to be published.

The stratigraphic work is to be performed jointly by commissions of the interdepartmental stratigraphic committee of the USSR. The field work will begin in 1980 and some colloquia of specialists have already met in 1979 and 1980. Others are being organised.

Stratigraphical investigations will be accompanied by monographical study of the more important fossil taxa. To this end, a regular exchange of material between specialists will be stimulated.

The stratigraphical studies within this IGCP project must not be a mere compilation of old data. The project should serve as the basis for a much more detailed study of coal measure stratigraphy than any that is presently available. IOP members are invited to join the project. Details can be obtained from Dr S.V. Meyen, USSR 109017 Moscow 17, Pyzhevsky per. 7, Geological Institute of the USSR Acad. Sci., or from Dr P.P. Timofeev (leader of the project) and Dr B.V. Polyansky (secretary of the project) at the same address. S.V. Meyen, Moscow.

"cf" - THE GOBLIN OF TAXONOMY

É. Kovács-Endrödy, Geological Survey, Private Bag X112, Pretoria, Republic of South Africa has written:

cf "appears in the middle of names - but not in the Code. There is no rule to discipline it. Then it disappears again leaving the data with the serenity of concepts of specific names. Reality, phenomenon, delusiveness? Which is behind which name in which report?

"cf - do we really need it? If we do, can we regulate it by a rule? If we can, why don't we do it?

"But if it serves only the convenience of the writer and the inconvenience of the reader, then it will be difficult to agree in the definition of 'cf'."

PALAEOBOTANICAL PUBLICATION

Dr J. Rigby, Geological Survey of Queensland, Mineral House, 41 George Street, Brisbane 4000, Australia has written a long letter to follow on from earlier correspondence printed in the newsletter from Drs Anderson and Wagner. As described on page 2 above the matter was also discussed at the recent IOP business meeting in Reading when there was a total lack of support for any immediate action.

"It is interesting to see that Dr Wagner is suggesting publication of some form of IOP journal as he is one of the most copious of palaeobotanical authors.....

"I am the secretary of the new society, Palynological and Palaeobotanical Association of Australia (PPAA), with about 40 members. We have rejected the idea of publication partly because we feel we are too small to set up the necessary editorial body, and partly because of expense. If IOP had its own journal, not all members of PPAA would support it because of cost - from their reaction to joining PPAA. There is a definite feeling that enough is enough for publications at present.

"Another problem came to light recently.the Group wanted me to circulate a newsletter. When it came to 'who to?' and 'how do I get the data?' ideas were not prolific."

The letter was written on 3rd March 1980: it is a good summary of the later discussion at Reading.

PALAEOBOTANICAL VERSE

Jack Douglas writes from his sabbatical home in Paris:
A Colleague at IPC or IGC?

Pushy chap, pushy chap, where have you been?

I've been to Cambridge to take in the scene.

Pushy chap, pushy chap, what did you there?

I schemed and conived to get me a Chair.

Little Bo Peepies

Little bo peepies at too many species

Is no way to define them.

But leave them alone and detractors will moan

Carrying wild tales behind them.

NEWS OF INDIVIDUALS

ACAD. A.L. TAKHTAJAN, Komarov Botanical Institute, Leningrad was given a formal 70th jubilee celebration by his Institute on June 10th 1980. Professor Takhtajan was one of the first members of the IOP executive committee. IOP offers its own good wishes.

DR A.G. LONG, The Hancock Museum, Newcastle upon Tyne, England retires in August 1980. From then his address for academic correspondence is: 33 Windsor Crescent, Berwick-upon-Tweed. This is now part of England.

OBITUARIES

LEV IGOREVICH BYSTRITSKY May 28th 1932 - March 13th 1980, the senior lecturer in geology at Tomsk State University, died after a heart attack. In spite of a limited number of published works he was well known among Soviet palaeobotanists as a good specialist in Devonian plants and the phytogeography of southern Siberia. He left a wife, L.I. Bystritskaya and a daughter, Natalia. Sympathies are extended to them and his colleagues.

MORAG JONES It is with great sadness that we record the death of Morag Jones on 26th January 1980 while on a collecting trip in Mali, West Africa. Morag was a young palaeobotanist who had worked at the University of Reading on the Jurassic floras of Iran and Yorkshire. Over the last five years she had been very active in British palaeobotany, guiding visiting palaeobotanists around the classic Yorkshire localities which centre on her home town of Scarborough. She collected a great deal of invaluable material and organized several very well attended Linnean Society palaeobotany meetings. Morag's tragic and untimely death is a sad loss to our subject; her refreshing and cheerful energy will be missed by all who knew her.

WALTER ZIMMERMANN 1892 - 1980 died on June 30th at Tübingen, Germany. He retired in 1960, but he never really did, thus spending 55 years of his life as an active professor of botany at the Eberhard-Karls-Universität at Tübingen. His name will remain connected to his telome theory - his concept of the phylogeny of plants. Theories are approximations of thoughts to things: and we appreciate the merits of such men of science. Under the circumstances of his time his mind theorised the position of the best view.

SOME RECENT RUSSIAN LITERATURE

DINOCYSTS AND THEIR STRATIGRAPHICAL SIGNIFICANCE

T.F. Vozzhennikova, 1979. Trudy Inst. Geol. i Geofiz. Sibirsk. Otdel. Akad. Nauk SSSR, No. 422, 223pp., 27 pls., 8 tables, 19 figs., 3 roubles 50 kopeks.

The book consists of the following chapters: Introduction. History of studies of Dinocysts. Modern and fossil cysts of dinoflagellates. Morphology and terminology of dinocysts. Classification of dinocysts. Stratigraphical and geographical distribution of dinocysts. Description of hystrichosphaeroid dinocysts (67 genera of 25 families, 10 families are new). All illustrations are line drawings.

THE UPPER CARBONIFEROUS OF THE NORTH CAUCASUS IN THE ZELENCHUK-TEBERDA INTERFLUVE - flora, vegetation, stratigraphy and palaeogeography. A.K. Shchegolev, 1979. Kiev, Naukova Dumka. 196pp., 64 plates, 21 figs., 1 rouble 70 kopeks.

The Upper Carboniferous (roughly Stephanian) flora of the North Caucasus was recently described by E.O. Novik in 1978 (see IOP newsletter 10 page 17). Shchegolev's book was prepared independently. The author worked in the Zelenchuk-Teberda interfluvium for some 10 years. He collected in more than 150 localities which yielded about 10,000 specimens. The author provides a detailed stratigraphic setting accompanied by taphonomic observations. He attempts to reconstruct the past vegetation and the types of landscapes in the area. The general palaeogeography is outlined. The following ecological communities ('ecofloras') are reconstructed: late Carboniferous hygrophilic ecoflora of deluvial slopes, late Carboniferous mesophilic ecoflora of deluvial slopes, late Carboniferous xerophilic ecoflora of uplands, early Autunian hygro-mesophilic ecoflora, middle Autunian meso-xerophilic ecoflora of lowlands. A detailed comparison with other Euramerican floras is given, along with a correlation of plant bearing beds. 108 species are described and figured, 28 of them being new (belonging to the genera Syringodendron, Subsigillaria, Stigmaria, Calamites, Annularia, Corynepteris, Sphenopteris, Pecopteris, Sphenoneuropteris n.g., Neuropteris, ?Cyclopteris). Line drawings of the venation of many species are provided. Most of the plates are well produced.

MAIN LOCALITIES OF FLORAS OF THE BEGINNING OF THE EARLY CARBONIFEROUS IN THE NORTH MINUSSA DEPRESSION V.A. Ananiev, 1979. Tomsk University Press, 85 pp., 31 pls., 16 figs., 1 rouble.

The earliest Carboniferous (Tournasian) flora of South Siberia is best represented in the North Minussa depression. This book describes the major localities, lists the megafossils found in them and gives the stratigraphical range of each species. There is also a comparison with coeval floras of Eurasia.

In spite of the intensive collecting that has been done within these localities over the last few years there are only 15 species in the flora. Ananiev believes that 10 of them are found elsewhere in Eurameria: Cyclostigma kiltorkense, Pseudolepidodendropsis carnegg-ianum, Lepidodendropsis hirmeri, Archeopteris halliana, Aneimites acadica, Adiantites ungeri, A. cardiopteroides, A. spectabilis, Triphylopteris rarineris and Sphenophyllum tenerimum. Nearly all of these identifications are doubtful. Cyclostigma seems to be represented by an endemic species. Specimens referred to P. carneggianum show well developed infrafoliar bladders to be absent in the genus, and those referred to L. hirmeri are ligulate unlike the true Lepidodendropsis. The other species are described on solitary and very fragmentary specimens and only the identification of A. spectabilis is reliable. Other species of the flora are Pseudolepidodendron igryschense (the difference of this genus from Eskdalia is unclear), Ursodendron distans and Sublepidodendron alternans (this species has nothing in common with Sublepidodendron and is much closer to Angarophloios; the difference between the species and Sublepidodendron is evident when one looks at stem casts with crowded persistent fleshy leaves; such casts are usually erroneously treated as Knorria type of preservation). Thus unlike Ananiev's conclusion I would hold that the Tournasian flora of Minussa is basically different from coeval Euramerican floras, although some common genera are present.

THE CRETACEOUS FLORA OF SAKHALIN V.A. Krassilov, 1979. (Project 58 'Mid-Cretaceous Events' of the International Geological Correlation Programme) Nauka Publishing House, Moscow, 183 pp., 48 pls., 8 tables, 8 figs., 2 roubles 20 kopeks.

The published English summary reads: "The discovery of the Cretaceous flora of Sakhalin - the first large flora of this age in Asia - was among the major achievements of the Soviet palaeobotanical school and its leader A.N. Kryshstofovich. Taxonomic revision of this flora is based on the new material from 40 localities and comprehensive studies with the sem. A classification of the angiosperm leaf morphotypes is proposed. The early evolutionary history of the ferns, cycads, conifers and angiosperms first appeared in the Late Cretaceous epoch, is discussed as well as the last appearances of Caytoniales, Nilssoniales and Bennettitales. The major Late Cretaceous biomes are conceived as the coniferous-laurophyllous and coniferous-platanophyllous forests. New phytogeographical classification is suggested reflecting phytosociological and floristic differentiation of the Cretaceous vegetation. It is shown that stratigraphically significant parallel succession of regional floras in the circum Pacific belt was triggered by tectonic and climatic events."

ENGLISH LANGUAGE ARTICLES FROM CHINA

English language text was specially written for the following 14 papers to be presented at either the Cambridge or Reading meetings during July 1980. Each is available as a separately bound reprint and can be obtained, price US\$2 each, from the publisher - Institute of Geology and Palaeontology, Academia Sinica, Nanking, China. Write to the IOP representative for China, Prof Li Xing-xue at that address.

An outline of recent researches on the Cathaysia flora in Asia:

Li Xingxue & Yao Zhaoqi

Notes on the ecological significance of some Cathaysia floral elements: Zhang Shanzen

Early Liassic plants from southwest Hunan, China: Zhou Zhiyan

Succession of Jurassic plant assemblages and stratigraphic correlation of China: Ye Meina & Li Baoxian

Microfloral areas of Early Cretaceous in China: Li Wen-ben

Middle - Late Early Cretaceous flora from Jilin, N.E. China: Li Xingxue & Ye Meina

Cretaceous - Tertiary spore pollen assemblages of northern Jiangsu: Song Zhichen et al.

General aspects of the floristic regions on Late Cretaceous and Early Tertiary of China: Song Zhi-chen

Late Cretaceous and Eocene floral provinces: Guo Shuangxing

Spores and pollen grains from the Fushun group: Song Zhi-chen & Cao Liu

Eocene spores and pollen assemblage from northeastern Zhejiang: Li Manying

Tertiary spore-pollen assemblages in northern Shandong: Zhou Heyi

Some fossil catkins and a male cone with their pollen in situ from Shanwang flora: Li Haomin & Zheng Yahui

Pollen analysis of the Nihewan Formation: Liu Jingling & Tang Lingyu.

BIBLIOGRAPHIESIAAP BIBLIOGRAPHY OF ANGIOSPERM BIBLIOGRAPHY FOR 1979

Gary Dolph has again edited this IAAP miscellaneous publication (number 2) with the following sections: work in progress, work in press, publications, and membership list. There are 45 pages. Copies are free for paid up members of IAAP and IOP and can be obtained from Dr D. Dilcher, Department of Biology, Indiana University, Bloomington, Indiana 47405, USA.

BIBLIOGRAPHY OF AMERICAN PALEOBOTANY FOR 1979

This 86 page edition has been compiled by A.D. Watt in the usual format. It is published by the Paleobotanical Section of the Botanical Society of America and costs US\$4.50. Write to the new secretary Bill Crepet, Biological Sciences Group, U-42, University of Connecticut, Storrs, CT 06268, USA.

REPORT ON BRITISH PALAEOBOTANY & PALYNOLOGY, 1978-9

This 45 page edition has been edited by W.G. Chaloner & A.M. Sheerin. As well as a stratigraphically organised bibliography it contains details of current research, visits, fieldwork, grants and addresses. Send £1 to Prof W.G. Chaloner, Botany Department, Bedford College, Regent's Park, London NW1 for a copy by surface mail.

BIBLIOGRAPHY OF AUSTRALASIAN PALYNOLOGY & PALAEOBOTANY 1977-8

The Palynological and Palaeobotanical Association of Australasia was founded in 1978 and this bibliography is the first that they have produced. The 36 page document also includes details of work in press, personal news, work in progress and addresses. Send \$4 Australian to the senior compiler J.F. Rigby, Geological Survey of Queensland, P.O. Box 194, Brisbane 4001, Australia.

BIBLIOGRAPHIES OF PALAEOBOTANY

Dr Reinhard Weber, Instituto de Geologia, U.N.A.M., Ciudad Universitaria, Mexico 20 D.F., Mexico has recently been working on the preparation of this bibliography. The first preliminary edition of his compilation is now available, though there is an informal agreement that the Geological Institute of the University of Mexico will publish the work in the near future. The 68 page manuscript is fully indexed.

BIBLIOGRAPHY & INDEX TO PALAEOBOTANY & PALYNOLOGY, 1971 - 5

Professor B. Lundblad, Naturhistoriska Riksmuseet, Sektionen for Paleobotanik, 104 05 Stockholm 50, Sweden has recently written to report on the progress with the preparation of the 1971 - 5 bibliography and index. It is to be made available through a computerised system following the initial work of Hans Tralau. "Miss Rita Baechler ... has continued her work up till now, when it is quite finished. The material obtained from the USSR is very large, being sent from more than 60 scientific institutions or private persons. Some of the Russians sent abstracts in English or Russian, too." Printing will start shortly.

BOOK REVIEWS

THE YORKSHIRE JURASSIC FLORA, V. CONIFERALES. T.M. Harris, 1979. British Museum (Natural History), London. 166pp., 8 pls., £22.50. The appearance of volume 5, Coniferales, of the Yorkshire Jurassic Flora by Professor Harris is a momentous event. It represents the culmination of almost a lifetime of work by a true "giant" in the field. The Yorkshire Jurassic Flora is Harris's. Others came before, and others will come in the future, but it is safe to say that no one will have "adopted" the flora as did Harris. Yorkshire conifer remains are represented by three types of preservation. The poorest known are in the form of leaf fragments. Better preserved material occurs as sterile leafy shoots, and the best known taxa are leafy shoots with ovulate cones connected or closely associated, as well as occasional pollen cones. The reviewer is pleased to note that Harris considers the Taxaceae as a family of the Coniferopsida and not as a separate class, the Taxopsida. It is always exciting to see fertile material associated with sterile fragments. A number of conifers from Yorkshire are known now from both vegetative shoots and cone fragments. For example, Brachyphyllum mamillare and its related cone, Araucarites phillipsii, Pagiophyllum kurrii and the related Hirmerella estonensis, a seed cone, P. maculosum and H. kendalliae, Elatides williamsonii that includes vegetative material and pollen and ovulate cones, Cyparissidium blackii and Pityanthus scalbiensis (pollen cone) and Scarburgia hillii (ovulate cone and seed). Marskea jurassica, a taxaceous plant, is well known from sterile and fertile material and may include what have previously been considered to be other taxa.

While much of this work is revisionary in nature, a number of new genera are presented. Scarburgia is the name proposed for a seed cone; Poteridion is a taxaceous ovuliferous dwarf shoot; Trulla includes seed cone fragments probably related to Bilsdalea; and Lindleycladus, conifershoots that were earlier included in Podozamites. This volume brings to a conclusion the series on Yorkshire Jurassic plants. Volume I was devoted to the thallophytes and pteridophytes; volume II involved Caytoniales, Cycadales, and pteridosperms; volume III covered only the Bennettitales; the first part of volume IV on the Ginkgoales was co-authored by Wendy Millington and part 2 on the Czekanowskiales had the assistance of Jose Miller. It was natural on the part of many of Professor Harris's colleagues to assume that the Yorkshire Jurassic Flora would be his "swan song", but fortunately, Professor Harris is still vigorous and active, and we can look forward to more of his work in palaeobotany.
T. Delevoryas, Austin, Texas.

THE EQUATORIAL RAIN FOREST: A GEOLOGICAL HISTORY. J. Flenley, 1979. 162pp. Butterworths. £25.

The sequence of post-glacial vegetational history of north west Europe as first expounded in the pollen diagrams of Von Post is familiar to all palynologists interested in the underlying relationship between vegetation and climate. The very different story of the response of plants to Quaternary climatic fluctuations in equatorial latitudes is much less familiar to most of us; indeed it has only been reconnoitred in the last twenty years. It is this reconnaissance of the Quaternary history of equatorial vegetation which forms the subject of Dr Flenley's review. The book opens with a summary of the present vegetation of the tropics, followed by a brief chapter dealing with the pre-Quaternary palaeobotanical story. This is followed by chapters summarising research in the vegetational history of each of the three major equatorial regions - Africa, Central and South America and Indo-Malaysia (the latter being that to which Flenley has made important contributions in his own work). There are then chapters dealing with vegetational succession in the tropics, and the evidence of man's impact on equatorial forest. One of many surprises in this area of the subject is the discovery of 9,000 year old drainage channels in a New Guinea peat bog, believed to be associated with the agricultural exploitation. Evidence is emerging that man has engaged in forest clearance since at least 3,000 years B.P. in Africa, 7,000 B.P. in South and Central America, and since 9,000 years B.P. in India and New Guinea.

The title of this book is a little misleading in its implied time-span, -for the bulk of evidence presented relates only to the last 10 - 20 thousand years, but it is over modest in a different respect, for it deals with a wide range of equatorial vegetational history, and not only that covered now by tropical rain forest.

Several of the 'maxims' of tropical ecology are challenged by Flenley's analysis. Firstly, the supposed stability of rain forest does not stand up to the palynological evidence of post-glacial events. There is growing evidence that it has suffered major vicissitudes of distribution and in lesser degree, of composition, during this period. Unlike the predominantly 'latitudinal' migration evident in the changing vegetation of northern Europe, the most striking changes in the tropics are seen in proximity to major mountains, with vertical movements of 1,000 - 1,500m in the vegetational belts. The old concept of pluvial periods coinciding with high latitude glacials is also called to question by Flenley, as the evidence now suggests rather that there was increased aridity in tropical latitudes at the times of

maximum glaciation. But he has no illusions about the still rather fragile nature of climatic interpretation of pollen sequences. As he remarks, "it is necessary to bear constantly in mind that our interpretations of former vegetation in terms of climate depend absolutely on our understanding of the present relationship between vegetation and climate. Near the equator this understanding is unfortunately all too uncertain."

The book as a whole is most pleasingly set out, with much use of a range of pictograms, annotated maps and all those embellishments dear to the heart of biogeographers. However a few of the diagrams (cf 1.8, 2.12) have their legends abbreviated to the point of total obscurity, leaving at least one reader groping for the diagrams' lost meaning.

But this is only a plaintive murmur in parenthesis to warm praise for a scholarly and challenging book. It would be an overstatement to claim "that it should be on the bookshelf of every palynologist". Nevertheless it certainly should be read by any palaeobiologist (from any latitude) who tries to construe his results in terms of palaeogeography and palaeoclimate.

W.G. Chaloner, London.

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BOOKS RECEIVED

LA FLORE DU GRÈS A VOLTZIA (BUNTSANDSTEIN SUPERIEUR) DES VOSGES DU NORD (FRANCE) MORPHOLOGIE, ANATOMIE, INTERPRETATIONS PHYLOGENIQUE ET PALEOGEOGRAPHIQUE. L. Grauvogel-Stamm. 1978. 225 pp., 52 figs., 12 tables, 54 pls., 100F from Bibliotheque de l'Institut de Géologie, Université Louis Pasteur de Strasbourg, 1 rue Blessig, 67084 Strasbourg Cedex, France.

The publisher's description states: Research on a new and abundant palaeobotanical material allows the presentation of a complete inventory of an Anisian flora: the flora of the Voltzia Sandstone. Plants particularly representative of that period, some new ones (Cycadocarpidium pilosum, Darneya dentata), others only badly known before (Schizoneura paradoxa and Aethophyllum, an herbaceous conifer) are matter of detailed descriptions. The study of numerous isolated male cones of conifers show, in this group, the coexistence of two distinct structural models, thus suggesting different issues. The phylogeny of the conifers and that of the Schizoneura are discussed in the light of the new facts. The record of the distribution of the new genera Cycadocarpidium and Swedenborgia leads to interesting palaeogeographical data. The conclusion brings a discussion about ecology and climates of Triassic times.

MICROFOSSILS M.D. Brasier, 1980. 193pp., £6.50 paperback, George Allen & Unwin, London.

The publisher's description includes: This is a fully illustrated introduction to microfossils ... which has been conceived, designed and written to serve the needs of students. Its directness of style, comprehensive scope, helpful treatment of terms, abundance of specially prepared drawings, carefully chosen references, and useful discussion of preparatory techniques should make it a serious candidate for the attention of all earth scientists and life scientists studying micropalaeontology.

The book concentrates on all the groups of microfossils whose study requires the use of a microscope throughout: cyanophytes, bacteria, protists, spores and pollen, chitinozoans, ostracods and conodonts. Within most groups the author covers life history, ecology, morphology, classification, general history and evolution, geological applications, hints for study and collection and further reading. With a full discussion of plant microfossils and the recent findings of Precambrian and deep sea research, the balance and style of the book should provide a reliable basis for introductory studies at advanced undergraduate and post-graduate levels.

LATE NEWS - received August 1st 1980

PALEOBOTANICAL SECTION: BOTANICAL SOCIETY OF AMERICA

The Paleobotanical Section presented Distinguished Service Awards to Harlan Banks and Wilson Stewart at the traditional Luncheon during the recent meetings in Vancouver, British Columbia. Sara Stubblefield of Ohio University won the Isabel Cookson Paleobotanical Award for the best paper by a graduate student for her report on 'Embryogeny in a Carboniferous Lycopod'. The Section decided to have its official meeting next year at the Botanical Congress in Sydney. Bill Crepet replaces Charles Miller as secretary-treasurer and Doug Grierson of the State University of New York at Binghamton is the new chairman.