

# IOP NEWSLETTER 10

## INTERNATIONAL ORGANIZATION OF PALAEOBOTANY

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES  
-SECTION FOR PALAEOBOTANY  
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NOVEMBER 1979

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PLEASE MAIL NEWS AND CORRESPONDENCE TO YOUR REGIONAL REPRESENTATIVE OR TO THE SECRETARY FOR THE NEXT (JANUARY) NEWSLETTER NUMBER 11. The views expressed in the newsletters are those of its correspondents and do not necessarily reflect the policy of IOP.

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### IOP NEWS

#### EXECUTIVE COMMITTEE RECOMMENDATIONS

The Executive Committee of IOP has agreed to adopt the following recommendations which were agreed at the business meeting held at Paris Tennessee during April 1979 (IOP Newsletter 9, page 2). Due to the fall in the international exchange rate of the US\$ and to substantial increases in the costs of postage and newsletter production the membership fee for IOP is increased to US\$6.00 from January 1980. This is the first increase for five years. Since IOP has a constitutional responsibility to encourage the production of bibliographies of palaeobotany, funds should be sought from IUBS to assist the finance of such projects which its members may have. In order to relate our membership numbers to those who receive the newsletter in countries with currency exchange problems a change in the constitutional definition of "membership" is to be recommended to our Assembly at Sydney in 1981. This is likely to increase the number of IOP members from the present 320 or so to more than 1,000 and will thus give a more realistic description of our importance. To discuss this and other matters, a General Assembly of IOP will be arranged to take place at the beginning of the Cambridge 1980 meeting of ICP.

# IOP-PALEOSERVICES PRIZE

Dr Vittorio Roveda is the managing director of Paleoservices Ltd in Watford, England, and has kindly agreed that his company will sponsor the award of \$100 each year to a member of IOP. The recipient of the award will be selected annually by the Executive Committee and the reasons for each choice will be announced in the newsletter. The first prize will be awarded for 1979 and the recipient will be announced in the next newsletter 11.

IOP is seeking other sponsors for additional awards and projects, and members with suitable contacts and ideas are asked to write to the secretary with details.

# INTERNATIONAL PALAEOBOTANICAL CONFERENCE, ENGLAND, JULY, 1980.

As announced in IOP Newsletter 9 page 1 IOP is sponsoring its first international conference next year, in England, from July 7 - 12th. The organizing committee has finalized the cost of the whole conference at £98 inclusive. This includes £38 for the costs of travel food and accomodation during the Yorkshire field trip and £60 for food, accomodation etc at Reading.

THERE ARE TWO IMPORTANT DEADLINES FOR ALL INTENDING PARTICIPANTS:

1. ALL THOSE WHO INTEND TO ATTEND THE MEETING MUST SEND THEIR REGISTRATION FORM TO REACH READING BY DECEMBER 7TH (These were attached to IOP Newsletter 9 and can still be obtained from regional representatives or from Peter Crane at Reading.)

2. ALL THOSE MAKING PRESENTATIONS AT THE MEETING MUST SUBMIT ABSTRACTS OF NO MORE THAN 200 WORDS TO PETER CRANE AT READING TO ARRIVE BEFORE MARCH 31ST 1980. These will be retyped and presented as a booklet to all participants, though contributions in excess of 200 words will not be included.

The £12 registration fee is non-returnable and is required with the return of the registration form not later than December 7th. Due to the limited accomodation available it will not be possible to accept further registrations after this date.

All correspondence should be sent to the organizing secretary:

PETER CRANE,  
PLANT SCIENCE LABORATORIES,  
UNIVERSITY OF READING,  
WHITEKNIGHTS,  
READING,  
BERKSHIRE, RG6 2AS, UK.

The programme of the conference includes a field trip to the Yorkshire Jurassic starting on Monday 7 July when participants will be met at London, Reading and Cambridge to travel by coach to Yorkshire.

Accommodation will be in the University of York, and there will be a short field excursion during the late afternoon and early evening. The next day will include excursions to some of the classic localities on the coast and in the moors. On July 9th the coach will travel to Reading through a number of fossil plant localities. Lectures, poster sessions, discussion groups and exhibits at the University of Reading will occupy July 10th and 11th, when there will also be business meetings of the IOP and IAAP. Other field trips will occupy July 12th. So far support for the conference has been encouraging and at October 31st 45 palaeobotanists had registered. Those from overseas include:

Achilles, Alvarez-Ramis, Barale, Boersma, Boersma-Broekmeyer, Brack-Hanes, Canright, Crepet, Eyde, Feist, Fernandez-Marron, Fisher, Francis Galtier, Gastaldo, Gregor, Holmes, Kimura, Konijnenburg-van-Cittert, Meyer Berthaud, Miller, Muller, Raine, Retallack, Romans, Rosler, Satchell, Schweitzer, Stockey, Tanai, Taylor, Tiffney, Uemura, van der Burg and Zang.

## REPORTS OF RECENT MEETINGS

### 9TH INTERNATIONAL CONGRESS OF CARBONIFEROUS STRATIGRAPHY & GEOLOGY

The technical sessions of this meeting were held in the University of Illinois at Urbana/Champaign during May 1979. The attraction for palaeobotanists visiting Urbana is that the Botany Department and the Illinois Survey have had long associations with palaeobotany and have produced successive generations of palaeobotanists. Tom Phillips put together a fine publication of the history of palaeobotany at the University of Illinois with photographs of nearly all the people who have been involved in the laboratory through the past 40 years.

Participants on the pre-congress day trip to Indiana visited a coal ball locality where interesting mixed plant and marine animal coal balls were seen, such as those made famous by Mamay and Yochelson. They also visited an opencast site to see compression floras and collected at a stream section for paper coal and other excellent compressions. The organisers had prepared packets of coal ball peels as well as paper coal. At the registration for the technical sessions a slice of coal ball in the form of a paperweight was given to every member of the congress (over 900 were made).

About 50 palaeobotanical papers were presented at the Congress and a significant number were presented by young workers. Discussion was often prolonged and occasionally heated. The key-note paper by Phillips and Peppers on "Upper Carboniferous coal swamp communities .." was of great interest to palaeoecologists. It was well received by others at the Congress and did a lot to foster general interest in palaeobotany. It soon became clear what a wide range of different approaches are being made to palaeoecology, and that many are complementary. Healthy controversy was also apparent after Ben Stidd's paper on the pollen organ Codonotheca when Millay and Taylor were involved in an interesting debate concerning the affinities of this plant.

A number of excellent demonstrations had been arranged in Phillip's laboratory, by him, his students and Judy Skog, Pat Gensel, John Holmes and Jean Galtier. Some of us took advantage of Richard Leary's invitation to visit the interesting palaeobotanical collections at the Illinois Museum at Springfield, where many Mazon Creek fossils are curated. Leary also led some of the participants on a post-congress field trip to western Illinois to visit localities containing his upland flora including Lesleya and Megalopteris.

Tom Phillips clearly spent a great deal of time and effort to make the palaeobotanical part of this truly international Congress such a successful and profitable meeting.

-from notes supplied by A.C. SCOTT and D. DILCHER.

### COMITÉ DES TRAVAUX HISTORIQUES ET SCIENTIFIQUES, BORDEAUX, APRIL 1979.

In France, each year, the "Ministère des Universités" organise a meeting in various towns of the country. Last year it was in Nancy, this year in Bordeaux and next year it will be in Caen. Various forms of science are presented and the Palaeobotanical Section is particularly important. Both French palaeobotanists and sometimes foreigners can find the opportunity to compare their conceptions. All the papers presented at these meetings are published in book form only about six months after each Congress. At the Nancy meeting in 1978 17 palaeobotanical papers were presented and published in the C.R.103e Congr.Nat.Soc.Sav., section Sciences, fasc.II, Paléobotanique. This book of 228 pages and 44 plates was published in 1978 and is sold by the Bibliothèque Nationale, 58 Rue de Richelieu, 75084 Cedex 02, Paris 906492. The same supplier will soon publish the papers presented at this year's meeting in Bordeaux:

- C.AZEMA The Classopollis pollen of the Brouillard stone pit.  
 J.BROUTIN New ideas about the Valdeinfierno Lower Carboniferous.  
 D.DESPLATS A new species of Dadoxylon (Araucarioxylon) from the  
 Wissant Albian (Boulonnais).  
 J.DUPÉRON Leguminosae fossil wood from the Stampian of Agenais.  
 M.DUPÉRON-LAUDOUENEIX A Tertiary Cupressus wood from Charente.  
 T.FERNANDEZ-MARRON On the Oligocene macroflora of Spain - similarities  
 with the French one.  
 C.FESSLER-VROLANT & M.G.STAROSTIN Paleoxylologic study of Sahara: a  
 new fossil wood of Guttiferae from In-Salah.  
 D.GOUJET & M.LOCQUIN Fungic spores in fish scales and Paleozoic  
 Agnathes.  
 J.C.KOENIGUER The silification of a coniferal fossil wood from the  
 "Continental intercalaire" of Mauritania.  
 A.LEJAL-NICOL On the fossil flora from the Unar Formation in the  
 Djebel Ben Ghnema (Libye).  
 A.LEJAL-NICOL & M.E.de OLIVEIRA On a new species of Cyclodendron  
 Krausel 1928, from the lower Permian of Santa Catarina,  
 Brazil.  
 M.LOCQUIN & J.C.KOENIGUER A fossil polypora with porae spores in the  
 Oligocene of Libya.  
 D.PONS On a fossil compression of Moraceae (Mesa Formation, Columbia).  
 E.BOUREAU On the origin and significance of the "black point" in  
 Precambrian organisms of the "Richât of Mauritania".  
 D.PONS & J.BROUTIN Fructifications of Frenelopsis alata (K.Feist)  
 Knobloch (Cenomanian of Anjou, France).  
 M.LOCQUIN Mathematic approach of systematics in fungal taxonomy.  
 B.ALPERN & M.LOCQUIN Studies on sexuality of Chitinomycetes or  
 Chitinozoaires of the Lower Paleozoic.  
 P.TAUGOURDEAU & M.LOCQUIN Particular structure of the Chitinozoaire  
 wall.  
 N.VAUDOIS-MIEJA On a fossil fruit of Hammamelidaceae in Sabal  
 sandstones of western France.  
 C.VOZENIN Study of Upper Paleozoic plants from Laos.  
 -from notes supplied by E. Boureau & A. Lejal-Nicol.

#### CANADIAN BOTANICAL SOCIETY, OTTAWA, JUNE 1979

The symposium entitled "Landmark events in the evolution of plants" contained six lectures which are of particular interest to palaeobotanists. The abstracts which were distributed at the meeting are reproduced below.

H.P. BANKS Time of appearance of biocharacters during Siluro-Devonian time. Megafossils of the first vascular plants permit the recognition of 7 generic assemblage zones during Late Silurian - Devonian time (Banks, in press). Plants in the time range 410 - 395 Ma were leafless, rootless, homosporous, dichotomous, probably centrarch and bore terminal sporangia. Between 395 - 380 Ma lateral sporangia and exarchy were added. Between 380 - 370 Ma profuse branching, over-topping, various enations, microphylls, adaxial sporangia, leaf traces, paracytic stomata, dehiscence mechanisms, complex fertile lateral branch systems and incipient heterospory were evolved. Subsequent time spans 370 - 365, 365 - 359, 359 - 349, 349 - 345 saw the evolution of successively more advanced characteristics eg cambium, arborescent habit, whorled appendages, megaphyllous leaves, complex fructifications root systems, certain heterospory, seed megaspores, seeds.

J.A. DOYLE Landmark events in early angiosperm evolution. The first definite records of angiosperms are monosulcate pollen grains with reticulate-columellar and granular exine structure from the probable Barremian of England and Africa, and simple leaves with a hierarchy of vein orders and both pinnate (dicot) and apically closed (monocot) venation patterns from correlative or slightly younger (Aptian) strata



of North America and Siberia. Tricolpate pollen, basic to modern dicot sub-classes except Magnoliidae, appears in the Aptian of Africa-South America and the early Albian of Laurasia. The expansion of tricolpates in the middle to late Albian of Laurasia coincides with the appearance of apparently aquatic peltate leaves (ancestral Rosidae?), and palmately lobed leaves (ancestral Hamamelidales?), and the first local dominance of angiosperms. The first members of the triangular triporate Normapolles complex, which includes probable ancestors of many Amentiferae, appear in the middle Cenomanian (early Late Cretaceous) of Europe and North America.

K.A. PIROZYNSKI Interactions between fungi and plants through the ages. 95% of present day plants are symbiotic partnerships with fungi. These partnerships involve different kinds of fungi, and were established in different geological times and in different geographical areas. Each appearance of a new partnership was a "milestone" event in the history of plants: each was a macroevolutionary leap brought about by the merging of different genomes, and each gave rise to physiologically and ecologically distinct groups of plants.

W.N. STEWART The Progymnospermopsida and the classification of gymnosperms. The concept of the gymnosperms (plants with "naked" seeds) as a natural group was first conceived more than 125 years ago. By 1948 fossil evidence was available indicating that the two major evolutionary lines, cycadophytes and coniferophytes, of the Gymnospermae were independent; that the class was not a natural group. The Progymnospermopsida established in 1960 provides a plexus of Devonian vascular plants, Aneurophytales and Archaeopteridales, from which cycadophytes and coniferophytes evolved. It is suggested that the time has come to reinstate the Gymnospermae as a natural unit in the classification of seed plants.

R.A. STOEKEY The origin and evolution of conifers. During the last few years there has been an increased emphasis on the study of conifer evolution including various aspects of their reproductive biology. The occurrence of various stelar features as well as trends in the evolution of reproductive structures still point to cordaitalean affinities for the Coniferales. The evolutionary history of such families as the Pinaceae, Araucariaceae and Taxodiaceae are beginning to be elucidated as well as that of certain extinct families including the Cheirolepidiaceae and the Voltziaceae. Systematic investigations of fossil cone vasculature and resin canal distribution, leaf cuticles, seed integuments, and embryo structure have not only increased our knowledge of conifer evolution but have also led to changes in our views on the systematics of extant conifer groups.

G.L. WILLIAMS & J.P. BUJAK The evolution of dinoflagellates. Two approaches can be taken to reconstruct the paths of dinoflagellate evolution. First, the physiology, biochemistry and morphology of modern dinoflagellates may be examined, but it is often difficult to distinguish morphologically primitive from advanced characters in the modern biosphere. The second approach concerns the fossil record, but one problem here is the incompleteness of this record since most recognizable fossil dinoflagellates belong to the Order Peridiniales which is only one of several orders that are widespread today. Many palynomorphs of uncertain origin (acritarchs) may also be dinoflagellates since it is known that some living dinoflagellates produce cysts similar to certain acritarch taxa. Despite these limitations progress is being made to reconstruct dinoflagellate evolution. The earliest recorded dinoflagellate is Silurian, but no recognizable dinoflagellate occurs again until the Late Triassic. Following this, dinoflagellates have an abundant fossil record and several lineages can be traced through the Mesozoic and Cenozoic.

## LANGUAGE IN PALAEOBOTANY

## WHY "NEUBERG" INSTEAD OF "NEUBURG"?

I realise that the Russian literature creates many problems for non-Russian speaking palaeobotanists. Still, many of them use Russian literature extensively. It is a pleasure to see many references to the literature in papers published outside the USSR. A popular Russian proverb explains that "this barrel of honey contains a spoon of tar" ("a fly in the ointment"). I mean that regular errors in spelling Russian family names, geographical and stratigraphical terms and even latin names of taxa first introduced in the Russian literature. I suspect that our eminent palaeobotanist M.F. Neuburg is well known to most IOP members. Being German in origin she spelled her family name in the latin alphabet as "Neuburg". For unknown reasons it is regularly transformed into "Neuberg" by many palaeobotanists. As just one example I mention the citation of Nucicarpus in the "Index of Generic Names of Fossil Plants, 1820 - 1965" by Andrews. The genus belongs to Neuburg and its type species N. piniformis to Neuberg. Examples of misspellings of her name are innumerable, though correct spellings also occur.

My surname is also unlucky. I never give another spelling than "Meyen", but some of my colleagues prefer "Meien" and "Mejen" or even "Mein". Krassilov's surname was misspelled as Krasilov in the English translation of his book on the palaeoecology of fossil plants. It is true that some Russian authors are not accurate themselves. For example, the late palaeobotanist from Leningrad N.A. Shvedov variously spelled his surname as Schwedow, Schvedov, etc. An invariable stumbling stone for non-Russian palaeobotanists is the Russian letter Ш. Its standard English transliteration is "shch", because its pronunciation combines sh + ch. But Kiev palaeobotanist A.K. Shchegolev (Correct spelling) may be cited, even by himself, as Stschegolev, Schtschegolev, Schegolev and may be otherwise.

It is needless to say that this diversity of spellings may be harmful for various indices, reference books, etc. Of course, Russian names may be difficult to transliterate. But why in one of the textbooks the latin name Vorcutannularia Neuburg has been transformed into Vodentannularia? I do not know. The reason may be the same as in the case of some Siberian geologists who included in fossil plant lists "Neoggerathiopsis" instead of "Noeggerathiopsis". They are geologists, not palaeobotanists though.....

S.V. MEYEN, MOSCOW.

## IOP NEWSLETTER LANGUAGE

Im IOP Newsletter 9 wurde die Verwendung von anderen Sprachen neben Englisch diskutiert. Es ist ohne Frage richtig, das Englisch heute die "Lingua franca" der Wissenschaft ist und das ein grosser Teil der wissenschaftlichen Literatur auf Englisch erscheint. Es ist ferner richtig, das ein grosser Teil der Wissenschaftler in englisch-sprechenden Ländern leben. Von einer bestimmten Gruppe von 104 Spezialisten, für die ich kürzlich eine Anschriftenliste zusammenstellte, leben 38 (36,5%) in englisch-sprachigen Ländern Jeweils 12

(11.5%) sprechen Russisch und Deutsch. Die anderen 9 Sprachen sind durch weniger als 10 Wissenschaftler vertreten. Andererseits kann man auf internationalen Kongressen immer wieder erleben, das mangelnde Kenntnis von Fremdsprachen (Und das ist ja in etwa 64% der Fälle auch Englisch) ein echtes Hindernis bei der Verständigung von Wissenschaftlern darstellt. Es ist ferner bekannt, das Bibliographien von wissenschaftlichen Arbeiten sich oft durch einen gewissen Sprach-Provinzialismus auszeichnen. Heute kann aber kaum jemand effektiv in der Paläontologie arbeiten, der nicht wenigstens drei Sprachen liest.

Diese Ansicht wird durch Kollegen bestätigt, die als etablierte Wissenschaftler noch eine weitere Sprache gelernt haben, um die Literatur in ihrem Feld verfolgen zu können. Ich möchte ferner aus der Ausschreibung für den Posten des Herausgebers der führenden amerikanischen botanischen Zeitschrift zitieren: "The editor should have .... competency in English and a working knowledge of German, French and Spanish."

Die Internationale Organisation für Paläobotanik ist geschaffen worden, um die internationalen Kontakte zwischen Wissenschaftlern zu verbessern. Es ist aus dem oben gesagten klar, das Wissenschaft mehrsprachig ist und eine internationale Organisation ihr Ziel nicht erreichen kann, wenn sie dieser Tatsache nicht gerecht wird. Ich würde es daher begrüßen, wenn Nachrichten oder Kommentare auch in anderen häufigen Sprachen erscheinen würden. Ich würde es auch begrüßen, wenn die Namen internationaler Organisationen in mehr als einer Sprache ausgedrückt würden.

H.W. PFEFFERKORN, PHILADELPHIA.

## NOMENCLATURE

I.U.B.S. XX GENERAL ASSEMBLY, HELSINKI, AUGUST 1979

Of the 15 resolutions which were adopted at this assembly the following two are of some significance to palaeobotanists:

### RESOLUTION 7: EXAMINATION OF DIVERSE SYSTEMS OF NOMENCLATURE AND THEIR NEEDS

NOTING the discussions and resolutions of previous General Assemblies on the fundamental and applied importance of taxonomy, and  
 CONSIDERING that the nomenclatures, which express the acquisitions of taxonomy, in fact constitute fundamental languages,  
 OBSERVING that due to the diversity of subjects within the field of biology, there are at the present at least four internationally established languages for plants, animals, bacteria and viruses,  
 RECOGNIZING the contribution made by each of these systems, but  
 FEARING that the diversity of the nomenclatural languages might constitute an obstacle to interdisciplinary understanding and to the desired progress of comparative taxonomy,  
 RESOLVES to invite the organizations responsible at an international level for promoting international consensus within each of the nomenclatural systems for plants, animals, bacteria and viruses  
 - to exchange amongst themselves and in cooperation with IUBS as much information as possible on their work, projects and results,  
 - to inform the next General Assembly of their views on the similarities and difference of the various systems and the compatibility of their methodology,  
 - to provide information to the Executive Committee of the Union on the organization and financial arrangements in the different organizations so that it can report to the General Assembly on their needs for support from the Union.

### RESOLUTION 8: NAMES OF ORGANISMS COMMON TO BOTANICAL AND ZOOLOGICAL NOMENCLATURE

RECOGNIZING that different codes of Nomenclature in different branches of biology stipulate different prerequisites for names used by botanists, zoologists and microbiologists, and  
 CONSIDERING that different names may be used for the same organisms when it is treated by different authors as being in more than one kingdom simultaneously,  
 RESOLVES that IUBS set up a committee of the representatives of interested Divisions to establish a uniform system of nomenclature for organisms that are variously considered as plants, animals and procaryotic organisms which may at present be known by different names in different branches of biology.

## NAMES OF FOSSIL FUNGI

While making arrangements for the review of The Whole Fungus which appears in the BOOK REVIEWS section of this newsletter the secretary of IOP entered into correspondence with one of the contributors to that volume: Dr K.A. Pirozynski, Paleobiology Division, Museum of Natural Sciences, Ottawa, Canada K1A 0M8. This extract will be of interest to some members of IOP.

"Luella Weresub and I would particularly welcome constructive criticisms of our paper from the IOP readers. Our decision on whether to formalize some of our conclusions as nomenclatural proposals or to drop them will largely depend on the kind of response we receive from palaeobotanists. My interest in nomenclature is marginal and my competence in that area minimal. But as a recent convert from mycology to palaeomycology I found myself very restricted in expressing any taxonomic opinions I have in a language comprehensible to all concerned. There is little incentive to pursue systematics under such circumstances. My interests have now shifted to neobotany (ecology and evolution) but I certainly hope to return to taxonomy of fossil fungi when some kind of international consensus is reached on how to go about classifying and naming them. It would, of course, be wonderful if palaeobotanists and palaeomycologists arrived at a compromise solution to their mutual problems."

## NOMENCLATURE OF LEAVES OF ARBORESCENT LYCOPODS

We need a standardized nomenclature for isolated leaves of arborescent lycopods. It is now well established that length of leaves can vary in one plant from a few millimeters to 60cm or more. In essence there is no character left to determine species of isolated leaves. There is not even a character left to distinguish between leaves of Lepidodendron and Sigillaria. Therefore, isolated leaves of arborescent lycopods should be called just that, ie "isolated leaves of arborescent lycopods". However, this designation is too long. Therefore, we should use the oldest available generic name. A specific name is superfluous due to the lack of characters but one should probably be used to satisfy the CODE.

The generally used names are: Lepidophyllum BRONGNIART 1828 (invalid because it is a junior homonym of a living plant genus), Cyperites LINDLEY & HUTTON 1832, Sigillariophyllum GRAND'EURY 1877 and Lepidophylloides SNIGIREVSKAYA 1958. We should use a name based on compression-impression material which was validly proposed. This would help to avoid further confusion. The isolated leaves should be clearly distinguished from the protective leaves of cones which are known as Lepidostrobophyllum HIRMER.

I would appreciate if you would let me know what your opinion is, especially if you have ever encountered or investigated the question. H.W. PFEFFERKORN, Department of Geology, University of Pennsylvania, Philadelphia, PA 19104, USA.

## BIBLIOGRAPHIES

### BIBLIOGRAPHY OF AMERICAN PALEOBOTANY FOR 1978

This annual publication is compiled under the auspices of the Paleobotanical Section of the Botanical Society of America by Arthur D. Watt, Paleontology and Stratigraphy Branch of the US Geological Survey, Washington DC. Copies are available from Dr Charles N. Miller, Botany Department, University of Montana, Missoula, MT 59812, USA. There are 97 pages containing the usual sections of data, and the four cover pages list the publications of the late IOP President James M. Schopf.



# **NORTH AMERICAN PALEOBOTANICAL DISSERTATIONS 1857-1977**

This 40 page document gives the bibliographic details of more than 300 theses, and lists them alphabetically by author. The publisher, compiler and distributor are the same as for the Bibliography of American Paleobotany for 1978 (see page 8).

# **LATINAMERICAN BIBLIOGRAPHY ON PALAEOBOTANY & PALYNOLOGY 1978-9**

The Asociacion Latinamericana de Paleobotanica y Palinologia (ALPP) Bulletin number 6 will soon be ready for distribution. It contains two short palaeobotanical papers on Permian plant impressions and the 1978-9 latinamerican Bibliography on Palaeobotany and Palynology. Contact the Editor, Dr W. Volkheimer, Division Paleobotanica, Museo de Ciencias Naturales de Buenos Aires, Av. Angel Gallardo 470, Buenos Aires, Argentina.

# **PALAEOBOTANY & PALYNOLOGY IN FRANCE, BELGIQUE & SUISSE**

The latest edition of the Report covers the years 1976-8 and was published in September 1979. This is the second volume and includes details of more than 446 papers published during this period and records the current research and addresses of more than 113 workers. The Report costs 35 F.F. and can be obtained by sending a cheque for this amount payable to "Laboratoire de Paleobotanique" - Dr A. Lejal-Nicol, Laboratoire de Paleobotanique, 12 Rue Cuvier, 75005 Paris. The first volume of the Report covers the years 1972-6 and is still available. The price of both volumes together is 50F.F.

# **BIBLIOGRAPHY OF ANGIOSPERM PALEOBOTANY**

This is the first Miscellaneous Publication of the International Association for Angiosperm Paleobotany (IAAP) and was compiled by Gary Dolph, Indiana University at Kokomo, 2300 S. Washington Street, Kokomo, Indiana 46901, USA. It is available from him for \$4.00, though IAAP members need only pay \$3.00, including postage. The bibliography lists "Work in Progress", "Work in Press" and "Publications" from data collected from the membership.

# **THE NORTH AMERICAN PERMIAN FLORA - AN ANGARA PALAEOBOTANIST'S FIRST IMPRESSIONS**

It so happens that no specialist in the Angara Permian flora has ever had a chance to look at the collections of the Permian North American plants. After the IX Carboniferous Congress held in Washington and Urbana earlier this year I spent two days with Dr S.H. Mamay of the US Geological Survey, and he showed me his collections from the most important American Permian localities. Possible links between the North America and Angara floras were suggested long ago by Zalesky who described Supaia from the Kuznetz basin, and regarded his Aipteris from the Lower Permian of the Fore-Urals as comparable with North American gigantopterids. On the other hand C.B. Read and S.H. Mamay referred with reservations some American plants to Angara genera and species: Compsopteris, Brongniartites, Callipteris adzvensis and Odontopteris fischeri. When comparing these floras, palaeobotanists (including myself) paid little attention to synchronicity of assemblages. The youngest American assemblages correspond to the Leonardian, which is correlated to the Kungurian by the latest conodont data. Among the Angara taxa only Aipteris occurs in the Kungurian, the remainder being Upper Permian. I think that the corresponding American fossil plants can be compared more satisfactorily with pteridosperms known from the Kungurian of the Fore-Urals. Some of them may be peltaspermeous

or corystospermaceous. Cuticular studies may provide a more reliable basis for comparison, and some of the specimens that I saw may yield a good cuticle.

The only Angara equivalents of these American plants should be searched in the Fore-Urals' Subangara area, because in coeval floras of Siberia and Pechora no comparable plants occur. In the latter floras conifers are absent whereas they are one of the dominating groups in America. Conifers are also characteristic of the Artinskian-Kungurian flora of the Fore-Urals, but further comparison is prevented by the absence of cuticular data. The only possible links between both floras relates to conifers and pteridosperms, and only the Subangara flora (particularly of the Fore-Urals) deserves further comparison with the North American one. But in the Fore-Urals taeniopterids and gigantopterids are absent (Aipteris is closer to Comia or Compsopteris than to gigantopterids). On the other hand such typical Fore-Uralian plants as Rufloria, ginkgophytes, etc are absent in the USA.

It was interesting to look at Sandrewia which was tentatively paralleled by Mamay with the Angaran Nephropsis. I would compare this peculiar plant with female fructifications of Peltaspermum type - I mean the peltaspermaceous discs which have bilateral symmetry. It is true that seed scars are not seen on the available specimens of Sandrewia, but they are rarely seen in true Peltaspermum imprints. I would not be surprised if Sandrewia proves to be the female fructification of the American gigantopterids.

Mamay kindly showed me his famous Phasmatocycas; its ovules contain pollen (saccate?) near the nucellus. Among the unpublished collections a most interesting one is that from the Alaska peninsula. It contains Cordaitea, Pecopteris unita (or P. niandensis), Neuropteris (comparable to Angara neuropterids usually placed into Cardioneura) and Zamipteris. The general outlook of the assemblage recalls those known from the upper Lower Permian and the lower Upper Permian of peripheral parts of Angarland - the Pechora basin in the Far East near Vladivostok.

I am very grateful to Dr Mamay and his wife for their hospitality and help in so many ways.

S.V. MEYEN, MOSCOW.

#### SHANWANG MIOCENE FLORA

The Shanwang village of Lingu (Linchi) is in the Shandong (Shantung) province of eastern China and is the site of one of the most abundant fossil localities in the world. In the early thirties the celebrated Professor Young Chung-chien was the first to make geological investigations and to collect fossils there. The locality is especially well known for the important studies on the Miocene plants made by Hu Hsen-hsu and Ralph Chaney in 1940. All the fossils are embedded in grey-white paper like layers of diatomite, known locally as "ten thousand volumes". More than 120 different kinds of plant and animal fossils have been described before 1949.

Since the founding of New China, these organic remains have been exposed in huge numbers due to the use of the diatom earth for industrial purposes. The Shanwang flora was known to be composed exclusively of angiosperms, and the dicotyledons are by far the most abundant plants, and represent 30 families and 84 more or less definitely determined species belonging to 61 genera. The monocotyledons were represented by just one form - Potamogeton sp. The age of the Shanwang flora was considered to be Late Miocene by Hu and Chaney. Recent work on the newly excavated material has increased the number of species known to be present to 126, 3 of which are monocotyledons, and single species of the Bryopsida, Filicales and Coniferales are identified for the first time. Deciduous broad-leaf dicotyledons are

particularly abundant. These new identifications together with some revisions and discussion of the original identifications are briefly summarised in a new book: "Cenozoic Plants from China", Science Press, Beijing, 1978.

The most abundant plant fossils are the diatom remains, and now 95 species within 15 genera are known. They are all freshwater types. The spore and pollen assemblage was first studied by Song Zhi-chen in 1959, and is represented by fern spores (Polypodiaceae, Salvinia?) amounting to 5% and by pollen grains of conifers (23%) and angiosperms (72%). Of the latter, woody dicotyledons account for 57%, herbaceous dicotyledons 0.6% and monocotyledons 13%. The coniferous pollen has been identified as Picea, Pinus, Tsuga, Larix and other forms of the Pinaceae. Through comparison of the Shanwang flora to the Daljima-type flora in Japan Li Hao-ming regards its age to be Middle Miocene rather than Late Miocene as was believed earlier. Both the megafossils and the pollen assemblages suggest that the climate in Shandong province was warmer and more humid than at present. It may have been similar to the present day climate in the Lower Yangtze River valley 450km to the south.

Among the animal fossils there are more than 20 species of insects, including wasp abdomens with black and yellow stripes and beetles. There are also extinct birds, rhinoceros, spiders, frogs, turtles and snakes.

All the available evidence from the fossils suggest that the Shanwang area was the site of a lake during the Middle Miocene. As the fossil occurrence and collecting in Shanwang is so attractive, with so many well preserved specimens, it is not surprising that the deposits are famous to the geologist, palaeontologist and the layman. An on the spot meeting was held at Shanwang in October 1978 under the sponsorship of the Palaeontological Society of China and with more than 200 participants. At the meeting, the responsible authorities of Shandong province solemnly declared the Shanwang fossil locality a natural history reserve under special protection. There is an outstanding collection of the fossils at the nearby Shandong Province Museum in Tsinan.

LI XING-XUE. NANKING, P.R.C.

## NEWS FROM AROUND THE WORLD

### SOUTH AMERICA

There will be a meeting of a working group of the Subcommittee on Carboniferous Stratigraphy of the IUGS, on continental deposits of the South America Gondwana area, in Sao Paulo, Brazil, from December 6 - 8 1979. The main purpose is to establish a correlation chart on the basis of plant and animal remains. A preliminary correlation chart has been established already and this will be developed further. All colleagues interested in participating in the group are welcome to attend. Contact the organiser, S. Archangelsky, CIRGEO, Velasco 847, Buenos Aires. 1414, Argentina.

Palaeobotanical and palynological contributions have been developed over the last 5 years as part of the IGCP Project 42, "The Upper Palaeozoic of South America". An evaluation of all the data obtained will be presented in early November 1979 in Sao Paulo University. This will be published in a special volume. Dr O. Rosler is the secretary to the project.

The second meeting of palaeobotanists and palynologists of Brazil will take place from December 6 - 8 1979 at Sao Paulo University, Brazil. Abstracts should be addressed to Dr O. Rosler who is organising the meeting.

## SOUTH AFRICA

Dr J.M. Anderson of the Botanical Research Institute in Pretoria has written to suggest that there be a single global palaeobotanical journal. Here are some of his suggestions that he admits may be an idealists pipedream:

"Ready access to all relevant literature in a single journal; editions in all major scientific languages; disappearance of the traditional referee system - trial by general exposure rather than minority viewpoint; final camera ready copy the responsibility of the author and his institute; rapid publication weekly...; IOP the publisher of the journal...; ..financed by all participating institutions...; IOP newsletters incorporated in the journal."

## AUSTRALIA

A new organization has recently been formed: "Palaeobotanical and Palynological Association of Australia" and its constitution is planned to be available for approval at the 1980 Gondwana Congress in New Zealand. The secretary is John Rigby, Geological Survey of Queensland, 2 Edwards Street, Brisbane 4000, Australia.

A Melbourne newspaper, "The Sun", illustrated specimens of Baragwanathia in its July 28th edition. This was in response to the excavation of the locality by road building equipment, and the implicit loss of important fossil material.

## PEOPLES' REPUBLIC OF CHINA

A Chinese Botanical Delegation paid a visit to the United States in May 1979. Two palaeobotanists were members of the group: Professor Hsu J. of the Institute of Botany, Academia Sinica and Professor Li Xing-xue (H.H.Lee) of the Nanking Institute of Geology and Palaeontology, Academia Sinica. They were invited by the Botanical Society of America to visit institutions in 12 cities: Washington DC, New Haven, Boston, New York, Miami, North Carolina (Chapel Hill), Michigan (East Lansing & Ann Arbor), Chicago, Saint Louis, Los Angeles and San Francisco. For three days they attended the 9th International Congress of Carboniferous Stratigraphy and Geology at Urbana Illinois. With this visit the long standing friendship between the scientists in the fields of botany which was at a standstill for several decades has again made headway.

## NORTH AMERICA

A new booklet has been published by the Oregon Museum of Science and Industry - an atlas of fossil fruits and seeds from the Eocene Clarno Formation of Oregon. The author is T.J. Bones and the forward (sic) is by S.R. Manchester. There are 70 photographs and the text is written in a non-technical fashion to provide the most complete and up to date listing of plant genera from the Clarno Formation. Thomas Bones began collecting the fruits and seeds in 1943 and has made a huge collection, much of which is now housed in the Smithsonian Institution. Send a cheque payable to "OMSI" for \$2,50 to OMSI Research Center, 4015 SW Canyon Road, Portland, Oregon 97221, USA.

## FRANCE

The 26th International Geological Congress will take place in Paris from the 8th - 16th July 1980 and will include a symposium on palaeobotany. This is being organised by one of the vice-presidents of IOP, Professor E. Boureau. The proceedings of the symposium will be published in a special issue of the journal Review of Palaeobotany and Palynology and contributors will receive copies of the guide to authors to help them prepare their manuscripts. For all details write to the "Secrétariat Général du 26e Congrès Géologique International, Maison de la Géologie, 77 rue Claude Bernard, 75005 Paris.



NEWS OF PALAEOBOTANISTS

- V.A. VAKHRAMEEV has been elected Corresponding Member of the Academy of Sciences of the USSR.
- W.A. DIMICHELE has been appointed Assistant Professor at the University of Washington in Seattle, Washington, USA.
- J. BASINGER is a Research Council of Canada postdoctoral fellow in D. Dilcher's laboratory at Indiana University.
- A. SCOTT of the Geology Department, Chelsea College, London, has been awarded the Geological Society of London's Daniel Pidgeon Fund for 1979. Recipients of this award are not more than 28 years of age.
- W.G. CHALONER has been appointed Professor of Botany and Head of Department at Bedford College, Regent's Park, London NW1 from October 1st 1979.

NEWS OF OTHER ORGANIZATIONS

**INTERNATIONAL WORKING GROUP ON UPPER PALEOZOIC COMPRESSION FLORAS**  
 There was an informal business meeting of this group at the Urbana Congress and more than 30 people were present. Already there is a list of active workers in the field and there are plans for an exchange of colour slides of types and other important specimens. Members of the group are also being asked to contribute to a bibliography to cover publications which appeared in 1977 and 1978. All details can be obtained from Dr H.W. Pfefferkorn, Department of Geology, University of Pennsylvania, Philadelphia, PA 19104, USA

**CANADIAN ASSOCIATION OF PALYNOLOGISTS (CAP)**

This newly formed organization has recently published its Summer 1979 newsletter. The editor is Jon Bujak, Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, N.S., Canada B2Y 4A2

**INTERNATIONAL ASSOCIATION OF ANGIOSPERM PALAEOBOTANY (IAAP)**

The latinamerican members of IAAP met in Buenos Aires during April 27 - 28 for a meeting organised by Dr E. Romero. Members from Brazil and Argentina gave brief accounts of their current work - 22 specialists were present. The next meeting will be held in Sao Paulo, Brazil during December 1979. For information write to Dr E. Romero, Ciencias Biologicas, Pabellon 2, piso 4, Ciudad Universitaria, Nunez, Buenos Aires, Argentina.  
 Details of the first IAAP bibliography are given on page 9 of this newsletter. There are plans for this to be produced annually.

**ASOCIACION LATINAMERICANA DE PALEOBOTANICA Y PALINOLOGIA (ALPP)**

The first edition of a new "Circular Informativa" for ALPP members was distributed in August 1979. Its six pages give details of the membership, meetings and desiderata, together with changes of address. It is hoped to produce this three times a year. For more details contact the President of ALPP, Dr O. Rosler, Instituto de Geociencias, Universidade de Sao Paulo, Cx. Postal 20899, Sao Paulo, SP, Brazil.

**PALEOBOTANICAL SECTION, BOTANICAL SOCIETY OF AMERICA**

The Plant Science Bulletin will continue to be published but in more of a newsletter format. It will be reproduced from camera-ready copy by offset and will be issued five or six times a year. The editor is Richard L. Klein, University of Vermont, and he will be pleased to consider including items from palaeobotanists throughout the world.

Contributions to the section's symposium entitled "Biostratigraphy of Fossil Plants: Successional and Paleoecological Analyses" is in the hands of the editor and should be published in book form during 1980. Membership of the section now stands at 360, which includes 283 regular members, 63 affiliates and 14 honorary members. In addition 42 libraries have standing orders for the publications.

**AMERICAN ASSOCIATION OF STRATIGRAPHIC PALYNOLOGISTS (AASP)**  
AASP Contribution 5B on Mesozoic Palynology was published in September 1979 - the volume is edited by W.W. Bideaux and includes articles by W. Cornell, A. Sweet, M. Fisher, G. Dorhofer, R. Davey and W. Sarjeant. Membership details and order forms for this volume can be obtained from R.T. Clarke, Treasurer AASP Foundation, Mobil Research & Development Corporation, Field Research Laboratory, P.O. Box 900, Dallas, Texas 75221, USA.

**COMMISSION INTERNATIONALE DE MICROFLORE DU PALEOZOIQUE (CIMP)**  
Newsletter 21 was distributed during August 1979 together with a Directory of Membership. Contact the secretary, Dr B. Owens, Institute of Geological Sciences, Ring Road, Halton, Leeds LS15 8TQ, England.

### BOOK REVIEWS

**THE WHOLE FUNGUS.** The sexual-asexual synthesis volumes 1 & 2. Ed. B. Kendrick, 1979. National Museums of Canada, Ottawa, 793pp. \$18. (send \$18 to include postage to: Dr W.B. Kendrick, Department of Biology, University of Waterloo, Waterloo, Canada N2L 3G1)  
Why should the general palynologist and palaeobotanist be interested in the proceedings of the 2nd International Mycological Conference? The reason is simple - mycologists have for long had to tackle and to live with a problem so close to that of palaeobotanists. Even the ICBN directs palaeobotanists to follow the mycologists' solutions. This is precisely why every palaeobotanist should be aware of these volumes, for they contain two contributions of considerable importance and interest to both palynologists and palaeobotanists. Both are by Pirozynski and Weresub (see correspondence on page 8 of this newsletter). One (chapter 8) deals with the biogeography and evolution of the Ascomycetes, and the other (chapter 26) concerns the nomenclature and taxonomy of fossil fungi. The latter chapter examines the problems of nomenclature and taxonomy of the fossil fungi in relation to, and their relevance to, those experienced in palaeopalynology generally as seen by two neo-mycologists well-versed in the intricate nomenclatural and taxonomic exercises of the Fungi Imperfecti. This fungal group is often cited (eg in the ICBN) as the model on which palaeopalynologists and others could base the handling of parataxa in palaeobotany generally. Pirozynski & Weresub review the evolution of palaeobotanical classification and nomenclature systems from Brongniart with his hopes for a natural classification, through the solely morphographic schemes of Potonié and Erdtman, to Pant, with the possibility of phyletic distinctions within a morphographic system, to the schemes of Norem, Bharadwaj & Venkatachala and that of Hughes & Moody-Stuart. The problem of using either an artificial system with no implicit evolutionary or taxonomic connotations or a formal taxonomic/evolutionary system is recognised, and although realising the utilitarian value of the purely artificial morphographic schemes, the conclusion is made that for meaningful communication between palynologist and neo-taxonomist, the system of most value must, if the

rules of the ICBN are strictly adhered to, include a phyletic implication regarding the organ or organisms under study. To this end the ICBN special provisions for fossil plants are based on the same criteria that govern the fungi. Article 36 and the latin diagnosis controversy is highlighted; the illustration of type material is looked upon with no small amount of jealousy by the neo-mycologists. On the more specific area of the fossil fungi, Pirozynski & Weresub show early palaeomycological work to have been generally carried out with a full awareness of the relationships of fossil and recent taxa. Fossil forms of fungi were generally either placed in fossil genera based on a living genus, modified by the suffix -ites (eg Stromiopeltites Alvin & Muir) or as "fossil-species" of living genera (eg Meliola anfracta Dlicher). With the rapid upsurge in palynology this happy state of affairs has, for the most part, lapsed, and the few palynologists interested in fossil fungal spores generally use the artificial system devised by van der Hammen in which the suffix -sporites is used (eg Pluricellaesporites) and restricted to spores of possible fungal affinity.

The incorporation of the fungal spores into such an artificial system means perforce that diagnostic features are described in the vocabulary of the palynologists. Terms with no meaning to the neo-mycologists cause them to tend to dismiss fossil fungi as being of little or no value. Pirozynski & Weresub reiterate the often repeated plea for unambiguous communication of information, and suggest a number of ways in which the nomenclature and classification of fossil fungi can be integrated with that of living ones. Most radical, and probably least acceptable to the palynologist, is the re-introduction of the latin diagnosis, retroactive to January 1st 1935. The other major suggestion is that all fossil fungi should be identified with a modern genus name wherever possible, and with the return to the -ites suffix. The fossil genus thereby becomes an antonym of the extant form. If assignation to anything but the highest taxonomic levels is regarded as impossible the utilisation of the Saccardoan spore groups to create "form-genera" as a holding exercise until further taxonomic deliberation can be attempted is recommended.

Although these suggestions may appear to be rather Draconian, with the benefits heavily weighted towards the neo-mycologists, the authors must be congratulated for their careful and balanced reappraisal of the problem. It is to be hoped that the suggestions and conclusions, although no doubt unpalatable to some, will be given the same careful consideration by palynologists and palaeobotanists as the authors have given to the problem.

The chapter concerned with the biogeography and evolution of the Ascomycetes is from a palaeobotanical point of view less satisfactory. Although a variety of Cretaceous fossil Ascomycetes are figured, little mention is made of those fossil fungi attributed to the Asterinaceae, Micropeltidaceae and Microthyriaceae, described by Alvin & Muir, Krassilov and Pons & Boureau. These are important because they are present during the Cretaceous, before the apparent burgeoning of the Ascomycetes during the Tertiary. This may be neo-mycological caution at work as few of these Cretaceous forms incorporate descriptions of the ascospores.

Mycologists have their jargon which is as confusing to the palynologist as they find that of palynology. To this end a perusal of Chapter 3 by Hennenbert & Weresub to clarify the terms "anamorph" and "teleomorph" etc is recommended prior to tackling the other chapters. Similarly with the plea for the return to the Saccardoan spore groups in treating dispersed fossil fungal spores, the reappraisal of these morphological groups by Kendrick & Naj (Chapter 5) is an additional bonus.

P.H. SMITH, BIRKBECK COLLEGE, LONDON.

THE CARBONIFEROUS OF THE USSR. Ed. R.H. Wagner, A.C. Higgins & S.V. Meyen. Yorkshire Geological Society, 245pp, 28 plates, £5.50. (available from J. Hartley, Department of Earth Sciences, The University Leeds 2, England - include more for postage abroad).

This large A4 volume contains English language versions of nine papers presented at the 1975 meeting of the IUGS Subcommittee on Carboniferous Stratigraphy, together with an introduction by the editors and a final commentary by A.P. Rotai. There are detailed papers by leading Russian experts on the Devonian/Carboniferous and Carboniferous/Permian boundaries, as well as on the "Stages" which have their stratotypes in the USSR. Thus there are chapters dealing with the Serpukhovian, Bashkirian and Moscovian, and on the Upper Carboniferous (in the Russian sense), but not the Tournaisian and Visean. The Russian philosophy on stratigraphical division is based on recognition of major faunal and floral changes, and thus the emphasis is heavily biostratigraphical, with views on, among other things, the base of the Carboniferous (taken at a lower horizon than in the rest of the world) and on the mid-Namurian faunal changes, discussed at length. The Russian opinion of what constitutes a Stage roughly equates with what in western Europe would be a Series, and one cannot help feeling it is a bit unambitious. The lack of major faunal changes at the top of the Visean is glossed over. In the light of the views expressed, Rotai presents some gratuitous advice on how the West European Carboniferous should be classified.

Much of the information is presented here for the first time in English and the editors and the Yorkshire Geological Society are to be congratulated on its publication (with the aid of a subsidy from the profits of the Carboniferous Congress held in Sheffield in 1967). These are not simply translations of the Russian papers, for there are 28 plates of fossils which were not in the original versions. These are mainly of foraminifera and conodonts though corals, miospores and megafossil plants are also included. It is good to see these printed on better paper than is commonly found in Russian publications. This volume is essential reading for all Carboniferous biostratigraphers and it seems to be the bargain of the year.

W.H.C. RAMSBOTTOM, INSTITUTE OF GEOLOGICAL SCIENCES, LEEDS.

TO THE PROBLEM OF PHYTOGEOGRAPHY IN THE CARBONIFEROUS. E.O. Novik & O.P. Fissunenکو, 1979. Akad. Nauk SSR, Inst. Geol. Nauk, preprint 79-1, Kiev, 54pp, 7 figs., 20 kopeks.

These two Ukrainian palaeobotanists are well known for their study of the Carboniferous of the Donets basin and the adjacent regions. Here they summarise Carboniferous phytogeography by using mobilistic reconstructions of the continents. They use the fits proposed by L.P. Zonenshain et al (1976: Global tectonics, magmatism and metallogeny Moscow, Nedra). The most important feature of these fits for palaeobotanists, unlike many other such reconstructions, is the separation of Kazakhstan continent in the Early Carboniferous and the Cathaysian continent throughout the Carboniferous. Novik & Fissunenکو have somewhat modified the model of Carboniferous phytogeography which was proposed by Chaloner & Meyen in 1973. For the Early Carboniferous Novik & Fissunenکو recognize the Gondwana-Euramerian area (with Gondwana and Kazakhstan provinces, and Westphalian, North American and Cathaysian districts) and the Angara area. In the Middle Carboniferous the Euramerian, Angaran and supposedly the Gondwanan areas are adopted. The former comprises, in the early Middle Carboniferous, the Westphalian, North American, Cathaysian and Kazakhstan provinces. The latter came into Angara in the late Middle Carboniferous. In the Late Carboniferous and independent Cathaysian area existed. This scheme agrees well with the previous mentioned mobilistic reconstructions.



The authors held that palaeobotanical data ascertain some geological events such as the junction of the Kazakhstan and Siberian continents in the Middle Carboniferous etc. It would be useful if this pamphlet were to be translated into English.

#### LEAFY MOSSES OF THE PERMIAN OF THE EUROPEAN NORTH OF THE USSR.

L.A. Fefilova, 1978. Leningrad, Nauka, 119pp., 22pls., 21 figs., 1 rouble 20 kopeks.

After the by now classical Neuburg monograph on Angara mosses this plant group has drawn more attention from soviet palaeobotanists. The major part of the new material comes from the North of the European part of the USSR (Pechora basin and adjacent regions), and was systematically studied by L.A. Fefilova (Syktyvkar). Her monograph covers 17 species of 8 genera (Syrjagia and Kosjunia are new genera within the Bryales, and there are also new species of Intea, Salairia and Uskatia, the latter genera are described in this area for the first time). Brief chapters summarize the stratigraphical and geographical setting of the material described. Unfortunately no new data on both sporangia and gametangia of the Angara Permian mosses is available. It is to be hoped that a systematic bulk maceration of the rocks may be helpful.

#### FLORA AND PHYTOSTRATIGRAPHY OF THE UPPER CARBONIFEROUS OF NORTH CAUCASUS. E.O. Novik, 1978. Kiev, Naukova Duma, 164 pp., 31 plates, 32 figs., 1 rouble 90 kopeks.

This flora has been known for many years but has never before been described systematically. It was studied first by Zalesky (1934) who described only four Upper Carboniferous, roughly Stephanian, species. A.K. Shchegolev listed 28 species in his paper submitted to the 7th Carboniferous Congress at Krefeld in 1971. The full list of taxa now described by Novik comprises 61 species and 3 formas. One species of Sphenophyllum is new, and all the remainder are known from the west European Stephanian. Detailed data is given on the geological situation, stratigraphical schemes, correlation with west Europe and the Donets basin, and on the phytogeography and palaeoecology. The author attempts to classify Euramerican Stephanian floras into major vegetational types, eg hygrophilic and mesophilic. A break in sedimentation between the Middle and Upper Carboniferous is recorded. It is unfortunate that some copies of the book were printed on paper of bad quality, thus preventing good reproductions of the plates.

#### FLORA AND STRATIGRAPHY OF THE MIDDLE CARBONIFEROUS OF THE NORTH CAUCASUS. O.I. Anisimova, 1979. Kiev, Naukova Dumka. 108pp., 47 pls., 4 charts. 1 rouble.

This book complements the one reviewed above. Anisimova has a vast collection of more than 3,000 hand specimens, and these have been described as 175 species, 52 of which are described here though the others are figured. The author provides a detailed stratigraphic setting and correlation with coeval beds in other regions. The flora is typically limnic. That is why it contains common elements with the limnic floras of Zwickau, Stradonitz, Saar etc. Some of the elements were previously regarded as endemics of these floras. The presence of Lonchopteris is interesting in view of its absence in the Donets basin.

#### THE APPLICATION OF AN INFORMATION RETREIVAL SYSTEM IN PALAEOPALYNOLOGY FOR THE SOLUTION OF SOME TAXONOMICAL AND STRATIGRAPHICAL PROBLEMS.

M.V. Oshurkova (ED.), 1978. Yakutsk, Yakutsk State University, 198pp., 67 kopeks.

This interinstitutional miscellany comprises 5 papers: N.G. Pashkevich-Compilation of polythomic charts for the Devonian miospore diagnostics,

N.G. Pashkevich, L.L. Dryagina, L.N. Peterson & L.G. Sukhareva - Miospores of the Late Palaeozoic plants from Middle Siberia. E.G. Petrova - Permian assemblages from the central part of Vilyui syncline and their stratigraphical significance. V.T. Kovalevskaya - Palynocomplexes of the argillite member penetrated by boreholes in the Kempendyal and Ust-Markha fields, Central Yakutiya. M.V. Oshurkova - The application of microfocals in palaeophytological studies. The miscellany is not a book to be read in a train, but mostly a synopsis of Devonian, Carboniferous and Permian miospores. The authors contribute much to the elimination of disagreement between palynologists dealing with Siberian Palaeozoic miospores. The diagnostics of characters and taxa are tabulated in extensive charts ready for computerization. Being an unprofessional palynologist I cannot judge on the advantages and disadvantages of the classification adopted by the authors. But one point, partly provoked by my personal ambition, invites my criticism. The authors totally neglect the data on miospores in situ in Cladostrobus (Maheshwari & Meyen, 1975, Lethaia, 8, 103 - 123), male fructifications of plants producing Rufioria leaves which dominate in the Angara Upper Palaeozoic. In the dispersed state these miospores belong to Cladaitina; they are monosaccate but often folded to become boat-like, as do their isolated sacci and bodies, thus simulating monocolpate pollen of Ginkgocycadophytus, Entylissa, etc. Multiple modes of preservation of Cladaitina are currently described as different genera and species. Nobody argued against this conclusion, which has simply been neglected in this book. Since the situation concerns a dominating plant group it seems to be an important omission.

THE UPPER PALAEOZOIC OF MIDDLE AND SOUTH TIEN-SHAN. A.S. Masumov, O.M. Borisov & F.R. Bensch, 1978. Tashkent, FAN Uzb SSR, 176 pp., 18 figs., 2 roubles 70 kopeks.

Although this book is not palaeobotanical it deserves attention here because it gives summarised lists of plant megafossils from a very interesting yet poorly known region. In the Late Palaeozoic the Tien-Shan range was amidst a vast territory which is still enigmatic from a phytogeographical point of view. The bulk of the work was performed by Masumov who is not only a geologist but also an ostracodologist. The authors revised the Upper Palaeozoic stratigraphy and established local chronostratigraphic subdivisions. For marine successions this was done earlier, but for continental ones (partly plant bearing) the proposed unified subdivision into five major units is presented for the first time. In previous publications some of the plant megafossil assemblages looked very unusual - in a single list of the alleged Upper Carboniferous assemblage the Middle Carboniferous Euramerican Neuropteris gigantea associated with Upper Permian Gondwana Sphenophyllum speciosum and the Angaran Cordaites aequalis. Now the situation is much clearer. The Carboniferous and lowermost Permian beds yield more or less typical Euramerican assemblages with an insignificant admixture of local elements. The middle part of the Permian (Kungurian-Ufimian?) contains Angara genera such as Rufioria, Vojnovskya and Nephropsis, and the general habit of the assemblage suggests that the region belonged to the Subangara area (cf "USSR Colloquium ..." - IOP Newsletter 9, 3-4). Undisputable Upper Permian floras are unknown from here. It must be remembered that the well known floras of Madygen and Khanaka attributed by some authors to the Upper Permian and Lower Triassic are currently placed in the Keuper (Madygen) or Lower Permian (Khanaka). The composition of this latter flora is also given in this book. Readers will find detailed descriptions of sections, lists of fossils and the palaeogeographical and tectonic setting. S.V. MEYEN, MOSCOW.

The six books reviewed above by S.V. Meyen can be obtained in western countries from bookshops with a distributing arrangement through the Soviet organization "Mezhdunarodnaya kniga" as explained on page 17 of IOP Newsletter 8.

CLIMATE AND EVOLUTION. R. Pearson, 1978. Academic Press, London. 274pp., £14 (US\$29.40).

Almost 15 years have passed since publication of the last major texts on palaeoclimatology: two edited by Nairn, 'Descriptive Palaeoclimatology' (1961) and 'Problems in Palaeoclimatology' (1964) and the other written by Schwarzbach, 'Climates of the Past' (1963). Pearson's book now brings us up to date with progress in this interesting field.

Although the book complements the others it cannot be considered to replace them as the problems are approached more from an evolutionary viewpoint. Pearson reviews the major changes which have been recorded (or postulated) in geology, climates, faunas and floras during both prehistoric and Recent time. Sections are devoted to Recent climatic changes, geomagnetism, vulcanicity, glaciations, continental drift and major theories such as that by Lagrange, Croll and Milanković which have been put forward to explain climatic change. Many of these topics are mentioned again in chapters devoted to the Palaeozoic, Mesozoic and Tertiary, where major faunal and floral changes are considered. The Quaternary and Recent occupy the last three chapters of the book. One chapter is devoted to changes following the last glaciation and another to the effect of changing climate on the spread of different cultures over the last 25 centuries.

In a book of this wide coverage it is inevitable that some will feel that their particular subject deserved a fuller treatment. It is hard to find quoted data that is not fully referenced, and frequently opposing theories are presented within a few paragraphs or pages. The Palaeozoic palaeobotanist will be saddened to see that the all important topic, the rise of the land plants, is dealt with in just over half a page.

Points of botanical interest are scattered through the text, including aspects of denrochronology, phytoplankton maxima, van der Hammen's Monocolpites periodicity and the palynological evidence for Angiosperm diversification. One of the most lengthy sections is devoted to Tertiary palaeobotany where more than four pages discuss such interpretations as Axelrod & Bailey's (1969) view of palaeoclimatology. Concepts such as the Geoflora are not mentioned - perhaps they should be, since they are still in frequent usage. The Antarctic Ross Sea palynological studies presumably refers to the work of Kemp & Barrett (Nature, 258, 507 - 8, 1975) though this is one of only a few important references omitted. A large part of the chapters on Quaternary factors are concerned with summaries of data from pollen sequences.

The book serves as an excellent review of trends and conclusions. The reader is left to follow up cited references using the text as a basic conceptual framework. Pearson quotes a number of fascinating statements, eg page 137: "...the distribution of Mesozoic and Tertiary cherts implies the existence of trade winds" which must entice all but the most uninterested reader away to discover why. But the book is a very useful and up to date review of established conclusions within palaeoclimatology and describes most current fields of advancement. As the dust cover claims it is essential reading for the undergraduate and research worker studying palaeobotany.

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# INTERNATIONAL ORGANIZATION OF PALAEOBOTANY

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