



## IOP NEWSLETTER 44

MAY 1991

---

### CONTENTS

---

IOP NEWS.....	2
PFR DATABASE.....	2
REPORTS OF RECENT MEETINGS.....	2
NEWS OF FORTHCOMING MEETINGS.....	4
OBSERVATIONS.....	5
PALAEOFLORESTIC CHANGE.....	6
OBITUARIES.....	7
RECENT PUBLICATIONS.....	7
BOOK REVIEWS.....	8

---

PLEASE MAIL NEWS AND CORRESPONDENCE TO  
YOUR REGIONAL REPRESENTATIVE OR TO THE  
SECRETARY FOR THE NEXT NEWSLETTER 45.

The views expressed in the newsletter are those of its  
correspondents and do not necessarily reflect the policy of  
IOP.

## IOP NEWS

### REPORT OF ACTIVITIES 1988-91

The following report is being submitted to the September 1991 General Assembly of IUBS.

Our revised Constitution was formally approved at the Melbourne General Assembly in August 1988. This establishes an electoral role of members and makes clear how newsletter production and executive accountability can work internationally.

The new definition of membership means that IOP now has about 2,000 members. Each receive three newsletters a year and can attend IOP meetings such as those at International Botanical Congresses (Berlin 1987, Tokyo 1993) and associated with meetings of the International Federation of Palynological Societies and other groups (Melbourne 1988, Frankfurt 1990, Paris 1992).

The format of the newsletter was changed in early 1990 with the adoption of a new corporate identity and logo. The new style accommodates more content on each page and is cheaper to print and mail.

The first IOP project, the Plant Fossil Record database, began in 1989 and attracted funds from IUBS and Informix Software Ltd. It was the subject of a two day meeting of IOP at Frankfurt in May 1990 that established the format of the database as accepted by The Frankfurt Declaration. Version 1.0 of the database became available in April 1991 and contains 10,478 Records of type species of plant fossil genera.

IOP made available its first desk-top published Circular in late 1990: Catalogue of Plant Fossil Genera, by the late S.V. Meyen.

### PREPARATIONS FOR ELECTIONS 1993

The current IOP Constitution was circulated in IOP Newsletter 34 December 1987 and was accepted at a General Assembly in Melbourne August 1988. It demands the creation of an electoral role to register voters at General Assemblies. It is the responsibility of IOP Regional Representatives to collect membership names for this electoral role. In anticipation of the elections at the next International Botanical Congress IOP General Assembly in 1993 Regional Representatives should begin to compile their lists of members. [These lists should already be available to distribute the newsletter and to record payment of dues.]

### IOP REGIONAL REPRESENTATIVES 1991

**NORTH AMERICA** - T.N. Taylor, Botany Department, Ohio State University, 1735 Neil Avenue, Columbus, Ohio 43210, USA.

**SOUTH AMERICA** - O. Rosler, Inst. Geociencias, University of Sao Paulo, 20899, 01498 Sao Paulo, S.P. Brazil.

**INDIA** - B.S. Venkatachala, Birbal Sahni Institute of Palaeobotany, 53 University Road, Box 106, Lucknow 226 007, India.

**CHINA** - Zhou Zhiyan, Nanjing Institute of Geology & Palaeontology, Academia Sinica, Chi-Ming-Ssu, Nanjing, China.

**JAPAN** - T. Kimura, Institute of Natural History, 24-14-3 Takada, Toshima-ku, Tokyo, 171 Japan.

**AUSTRALASIA** - J.G. Douglas, Geological Survey of Victoria ITR, GPO Box 173, East Melbourne 3002, Australia.

**AFRICA** - H. Anderson, Botanical Research Institute, Private Bag X101, Pretoria 001, South Africa.

**USSR** - A. Gomankov, Geological Institute, Academy of Sciences, 109017 Moscow, Pyzhevsky per. 7, USSR.

**EUROPE** - J. Eder-Kovar, Geologisch-Palaeontologische Abteilung, Naturhistorisches Museum Wien, Burgring 7, Postfach 417, A-1014 Wien, Austria.

### PAYMENT OF DUES

Payment of membership fees can be made by using the attached form. Please check that your registered address is correct and return the form with payments to your Regional Representative or to the IOP office. Ignore this request if other arrangements apply in your region.

### MEYEN'S CATALOGUE

This publication was described in the last newsletter. It has 56 A4 size pages and is stapled in a glossy card cover which features a photograph of the author. Copies are free of charge to IOP members in the USSR, cost \$30.00 or £12.50 to other members and \$50 or £25 to non-members and institutions. Please use the attached form to order your copy.

### PFR DATABASE

Version 1.0 is now available and contains 10,478 Records of type species of plant fossil genera. It follows the format declared in the 1990 IOP Frankfurt Declaration and contains data from the Catalogues of Andrews, Blazer, Watt and Meyen as well as other genera only recorded in the Index Nominum Genericorum. The database is available together with a search and retrieval programme called Textmaster and requires about 27MB of dedicated hard disk. Please use the attached forms to order your copy.

### REPORTS OF RECENT MEETINGS

**INTERNATIONAL CONFERENCE ON LATE PALAEZOIC & MESOZOIC FLORISTIC CHANGE**  
April 16-20, 1990. Cordoba, Spain

This was an excellent meeting that was held at the Jardin Botanico de Cordoba, Cordoba, Spain. The participants met at the National Museum of Natural History (Museo Nacional de Ciencias Naturales) in Madrid and from there travelled by coach to Puertollano. The EN-

CASUR Coal Company opencast mine was the focal point of an excellent field excursion where the participants were able to collect a number of impression/compression specimens from the Stephanian of the Puertollano Basin, especially vegetative and reproductive material of *Sporangiostrabus*. In the afternoon the group stopped in Almagro, a lovely town which features a 16th century theatre.

The Jardín Botánico was the site of two full days of papers for this conference. The excellent facilities of the Garden, and the gracious hospitality of its staff contributed to the success of this small, but especially informative conference. More than 50 colleagues representing 16 countries contributed to a diverse and highly energetic program that included biostratigraphic, biogeographic, paleoclimatic and taxonomic contributions well suited to the conference theme. Of special importance were the large number of contributions that provided a synthesis of data and interpretation. One of many highlights in this conference was the opportunity to examine Bob Wagner's excellent collections of Paleozoic impression/compressions at the Botanical Garden. It was during this information portion of the program that some lively discussions took place.

On the evening of the official conference dinner the *piece de resistance* was a breath-taking performance of classical Andalusian dances by the Ziryab Danza, led by a former leading dancer from the National Ballet. For me this conference provided an excellent overview of the floristic change that took place in both the northern and southern hemisphere during the Late Paleozoic and well into the Mesozoic. The formal presentations, information discussion with colleagues, and superb collections of fossil plants made this conference both scientifically important, and at the same time personally satisfying. All of the activities of the conference underscore my belief that the discipline we call palaeobotany is populated by energetic, imaginative, bright, dedicated, colleagues from around the world. Each participant at this conference could not help but feel a genuine sense of appreciation for the exceptional hospitality afforded us in Cordoba, and especially at the Jardín Botánico de Cordoba. I salute Bob Wagner and the organizing committee for a truly outstanding conference.

T.N. TAYLOR, Columbus, Ohio, USA.

## IMPROVING THE STABILITY OF NAMES: NEEDS AND OPTIONS.

Royal Botanic Gardens, Kew, UK. 20-23rd February 1991.

In previous newsletters IOP members have been informed of the "Names in Current Use" (NCU) project, for which the IOP has been coordinating the assessment fossil plant names. This meeting was called to discuss the NCU proposal and other alternatives for the stabilisation of nomenclatural name changes. A range of issues were covered, the needs of various "user groups", histori-

cal reviews of past stabilisation attempts and changes to the code, alternative methods of stabilisation and the NCU proposal.

### Problems with the Code

The International Code of Botanical Nomenclature (ICBN) was cited by many speakers as both a source of problems and the answer to them. Critics of the code had two main lines of attack. The many code changes that have occurred over the years have been extremely aggravating and there were several calls for the cessation of tinkering (Gunn, Hughes, Brummitt amongst others). The code is also inconsistent with other nomenclatural codes (eg the International Code of Nomenclature for Cultivated Plants (ICNCP) and the ICZN (for Zoology)). In the case of the Protists this causes difficulties as many taxa could be named under either code and the individual author has to decide which to follow (Patterson). The ICBN is not worded in a strict enough fashion for some (eg. Brandenburg). The complexities of the code also hamper its use, Jeffrey pointed out that even the priority rule has 16 clauses of exceptions.

In defence Greuter was of the view that many of the problems were not the fault of the code but with the lack of a code when many names were introduced. Some speakers also pointed out that many problems were caused by misapplication of the code. The code may eventually stabilise itself according to Cronquist but he admitted to not knowing how long the wait would be.

### Causes of problems

The discovery of earlier homonyms is considered by many to be extremely disruptive (as pointed out by Gunn). This is a problem caused by primarily by the lack of availability of information, especially of older or obscure literature sources. The extent of this problem is exemplified by the PFR database, of the 10478 generic names listed, over 520 are homonyms of earlier names (both living and fossil). Barnett (paraphrasing Meyr) pointed out that a change of name results in confusion and a loss of information.

The difference between nomenclature and taxonomy was appreciated by all speakers but several noted that taxonomic changes could also have nomenclatural implications. Cronquist points out that we cannot even agree on a species or generic concept; boundaries of species are thus easily moved (Heppell). This also leads to a certain amount of taxonomic level changing (Heywood). A plant listed as a species in one regional floral monograph may be treated as a distinct genus or even family in another region.

### Methods of stabilisation

The meeting considered some of the methods being applied by specific user groups. Brandenburg introduced the idea of stabilised names on the International Seed Testing Association (ISTA) list. Names on the list were stabilised for six years after which they would be updated. This gave users a specified period of stability after which the list was updated to provide for nomenclatural and taxonomic changes that had occurred (Brandenburg). This idea is attractive to database managers (several of whom were present) who would then have their re-

quested date for upgrading their databases rather than making continual changes (Hine et al).

Bacteriologists overcame nomenclatural problems by effectively starting again (Ride). They rewrote their code and introduced a new set of principles including a set of minimum standards for the description of new taxa (an idea advocated by others for neobotanists (Heppell) and palaeobotanists (Hughes)). They reduced their list of names from over 30000 to near 2300 and reset the "priority clock" to 1980. All new names also had to be introduced in a single journal (Ride).

Two of the presenters suggested an answer that may well work for their own fields but do not solve the general problem facing botanists. Hughes reasoned that fossil plants (microfossils in particular) were a completely different case and should thus not be treated under the ICBN; he presented his Paleo-data handling code (PDHC) and "paleotaxa" as an alternative. This was challenged, as expected, by Chaloner. Similar reasoning was presented by Barnett for yeasts. Two further solutions were offered. Heppell's suggestion of assigning a reference number (similar to the ISBN number for books) received near universal condemnation (plants with bar codes?). The final solution, similar to the NCU proposal, was the creation of a complete list of names (Gaus, Hunt, Boulter et al, Parkhurst). This would work simply by providing a single reference against which to check new names. Problems with this include ensuring that the lists complete and making them accessible worldwide.

#### Names in Current Use

This meeting was organised to provide a forum of debate for many ideas but the NCU list in particular. As the article by Stace (1991) suggests, opinion was divided on this issue. Amongst the critics Gaus expressed concern that the extent of "protection" was unclear (what was to be protected?, the specific epithet, the binomial, the type?). Several speakers were worried that names excluded would then not be available for use. Many were also concerned that the list would hamper taxonomy by not allowing for alternative viewpoints. Andersen made a good point on the speed with which the advocates were trying to make the changes. He suggested that at the Tokyo Botanical Congress only the principle of the lists should be considered. Cronquist followed this theme pointing out that in the timescale provided it would not be possible to consider every name carefully. Mistakes were bound to occur and provision for correcting them should be made (Andersen). Cronquist and Boulter et al also worried about who should make the assessments and what should be done when opinions conflicted. Humphries summed up his feelings on the proposal by saying that it was "an attempt to group organisms by consensus to fulfil a nomenclatural need."

These charges were countered by the advocates of the NCU list, though not always satisfactorily. I shall not dwell on the arguments for the list here as these have been aired in the newsletter and by Hawksworth and Bisby elsewhere (in *Nature* and *Taxon*). Greuter complained about the amount of time that was wasted "digging up the past" (amusing from a palaeobotanical per-

spective!). Bisby summed up the arguments by saying that "taxonomy is of little interest but also of a little use to a lot of people" and that something must be done to help the users of the names we assign to organisms. Bisby also attempted to quell taxonomic fears. The NCU project is an attempt to stabilise nomenclatural change alone.

Stace (Naming names in botany. *Nature*, v.350, p.466, 1991) suggested that if the meeting had been held in America there may have been more resistance to the NCU proposals. This was partially based on some of Cronquist's comments in the main meeting. In the closed session (on the Saturday following the meeting) however Cronquist stated that he thought such lists were acceptable at the family level; he "could be persuaded" that generic lists were a good idea but refused to accept the notion of a species NCU list.

P.L. HOLMES, London, UK.

## NEWS OF FORTHCOMING MEETINGS

**OPEN WORKSHOP ON ORGANIC MATTER CLASSIFICATION,**  
Amsterdam, June 27-28th 1991.

The first circular is available from Prof T. van der Hammen, Hugo de Vries Laboratorium, Universiteit van Amsterdam, Netherlands or telephone 31.20.5257950 or fax 31.20.5257715.

**INTERNATIONAL UNION OF BIOLOGICAL SCIENCES, 23RD GENERAL ASSEMBLY,**  
Amsterdam, September 1-6th, 1991

This meeting will concentrate on Biological Diversity and Global Change and other sessions will consider biological education and nomenclature. A new Executive Committee for 1991-1994 will be elected. Write to IUBS Secretariat, 51 boulevard de Montmorency, 75016 Paris, France.

**PAN-EUROPEAN PALAEOBOTANICAL CONFERENCE,**  
Vienna, September 19-23, 1991.

Details were given in the last newsletter from the organiser, Dr Johanna Eder-Kovar, Naturhistorisches Museum Wien, Geol.-Palaont. Abt., Burggring 7, A-1014 Vienna, Austria.

**BIRBAL SAHNI CENTENARY,**  
Allahabad, November 14 - 16th 1991.

A meeting of some geologists, palaeobotanists and botanists, including a few old students of the late Professor Birbal Sahni, was held in the Botany Department of the University of Allahabad on 6th February 1991 and they decided to celebrate Birbal Sahni Centenary on 14th, 15th and 16th November, 1991 in the Botany Department of Allahabad University. The programme of the Centenary will include papers and lectures in Botany,

Palaeobotany and Geology as well as short lectures to highlight Professor Sahni's biography and work by those who were associated with him during his lifetime. The scientific programme will be followed by a two day excursion which will cover localities from the Precambrian to Lower Cretaceous in the South Rewa Gondwana Basin. All are cordially invited to attend. The first circular will be issued shortly.

#### BIRBAL SAHNI CENTENARY, Lucknow, November 1991.

The final dates will be communicated in the second circular from the Secretary, Palaeobotanical Society, 53 University Road, Lucknow 226 007, India. The two day programme will include aspects of palaeobotany, palynology, biostratigraphy, archaeobotany, biodiagenesis, palaeoenvironments, morphology, evolution and related subjects.

#### IGCP 216: INTERNATIONAL CONFERENCE ON GLOBAL BIO-EVENTS, Gottingen, February 16-19th 1992

This fifth and final meeting of the IGCP 216 group is to summarise the aims that have been reached, to begin to prepare them for publication and to plan a new programme concerning the 'Recovering of Ecosystems after Extinction Events'. Write to Prof O.H. Walliser, Inst. Geol. Palaeontol., Goldschmidt Str. 3, D-3400, Germany. The Annual Report 1990 of the IGCP Project 216 includes information of Professor Walliser on the 5th and Final International Conference on Global Bio-Events that will take place in Gottingen, February 16-19 1992. Professor Walliser reports as follows:

#### IGCP Project 216: Phanerozoic Bioevents and Event Stratigraphy.

Two volumes are planned:

(1) Bio-Events in Earth History: This volume will include the detailed description of selected key events, regarding not only the major extinction events but also events of a minor order as well as innovation events.

(2) Phanerozoic Event-Stratigraphy: For the first time a complete event-stratigraphy for the Phanerozoic will be presented.

Dr E. Knobloch has organised contributions to this project from palaeobotanists and writes about his final plans on page 6 of this newsletter.

#### PALAEOFLORESTIC AND PALAEOCLIMATIC CHANGES IN CRETACEOUS AND TERTIARY TIMES.

Bratislava, September 14 - 20th 1992.

The dates of this conference were announced wrongly in the last newsletter. To avoid clashes with meetings of IOP in Paris (September 1 - 3rd) and of IFPS in Aix en Provence (September 6 - 12th, 1992) this meeting is now scheduled for September 14-20th. The secretary is: Dr Eva Planderova, Geologicky ustav D. Stura, Mlynska dolina 1, 817 04 Bratislava, Czechoslovakia.

#### VISITORS IN MOSCOW

The palaeobotany laboratories of the USSR Academy of Sciences in Moscow continue to host more and more visitors. Recently Drs Z. Kvacek and E. Knobloch travelled from Czechoslovakia, Prof Li Xingrue went from China, and even Wales was represented, by Dr B.A. Thomas. The Head of the laboratory, Dr M. Akhmetiev, will visit London in September.

#### AN AMERICAN IN GERMANY

Walter Riegel nominated Robert A. Gastaldo, the Alumni Professor of Geology at Auburn University Alabama USA, to the Alexander von Humboldt Foundation for a Senior Scientist Research Award. This has now been granted and Bob plans to start work in Gottingen in August 1991. He plans to investigate the Early Palaeocene lignites in the Subhercynian Basin near Helmstedt with regard to taphofacies. The floristics are believed to be a homologue to those now inhabiting Asia and Indonesia and provide an opportunity to determine whether or not the macrofloral biofacies that Gastaldo has distinguished in Kalimantan Indonesia can be differentiated in the Palaeocene-Eocene.

#### OBSCURE FACTS FROM THE PLANT FOSSIL RECORD

The newly available IOP PFR database gives wonderful opportunities to determine hitherto unknown facts about the occurrence of type species of plant fossil genera. Some examples from the complete database of 10,478 Records are listed below:

##### regional occurrence:

North America	1,116	Japan	96
Europe	3,962	Australia	297
China	105	Germany	886
USSR	1,054	USA	857

##### allocation to era:

Cenozoic	2,878
Mesozoic	3,031
Palaeozoic	3,196
Proterozoic	257

##### Systematic representation:

Mycobionta	215
Bryophyta	49
Acritarchs	346
Algae	2,064
Tracheophyta	4,077

##### organs represented:

leaves	1,716
wood	627

Members may also be interested to know the state of the fossil NCU list. Of the 9243 generic names with which we were originally provided 1932 assessments were made on a total of 1753 names (some were duplicated). Of these 307 names have been rejected using the

NCU criteria given in IOP 42. When the lists are produced (from the Index Nomina Genericorum database) all junior homonyms will also be rejected automatically (there are at least 521 amongst the fossil names). The fate of unlisted names is yet to be decided, PFR already includes 1235 additions that are not on the ING list. Draft NCU lists will be made available to all who request them later this year, full details will appear in the IOP newsletter when they are known.

## SYSTEMATIC BIOLOGY RESEARCH

The Select Committee on Science and Technology at London's House of Lords have appointed a sub-committee, under the chairmanship of Lord Dainton, with terms of reference "to consider systematic biology research in the United Kingdom".

It seeks written evidence on ten issues, such as "What is the utility of systematic biology research". Those especially relevant to IOP are:

Do we have particular responsibilities to the world scientific community as a consequence of the historic circumstances of our holdings?

Is the availability of computerised databases to systematic research being adequately exploited?

What can we learn from abroad, especially the USA?

## PALYNOLOGY IN NORTH AMERICA

A correspondent from the USA, who wishes to remain anonymous, worries that too few young palynologists are working in American universities. Despite the enthusiasm of the American Association of Palynologists and their wonderful attempts to create a new chair in palynology at Louisiana State University, there does seem to be a trend towards maturity within the ranks.

## IOP AND IFPS

There was talk at the AASP meeting at Banff, in the Canadian Rockies, that the International Organisation of Palaeobotany and the International Federation of Palynological Societies should become one. Others suggested that at least this newsletter and *Palynos* should amalgamate. Given the interdependence of our work, members' reactions would be appreciated.

## IGCP PROJECTS 216 AND 245

### PALAEOFLORESTIC CHANGES IN THE TERTIARY & CRETACEOUS

Dr E. Knobloch writes:

"In 1986, I tried to set up a new subproject "Paleofloristic and paleoclimatic changes in the Cretaceous and Tertiary" and I suggested various topics to be studied. However, no working group has been initiated in

connection with these topics. The reason in my opinion is a limited number of participants working in palaeobotany. It is also difficult to identify a biological event in the sense of the palaeozoological record by means of palaeobotanical research (large areas of distribution, short range of some species).

"I still believe that the data submitted during the symposium "Paleofloristic and paleoclimatic changes in the Cretaceous and Tertiary", Prague 1989, are useful. They may contribute along with other data to the definition of the principal milestones in the study of Cretaceous and Tertiary floras during future research.

"The workshop at the 14th International Botanical Congress (Berlin 1988) and the Prague Symposium are the only meetings that took place within the IGCP Project 216 in the field of Tertiary and Cretaceous palaeobotany. The project will end in 1991.

"I intend to contribute to this Conference by a summary of the most essential ideas published in the Proceedings of the Prague Symposium.

"May I encourage you to attend this conference and to submit the papers in the sense of Professor Walliser's announcement. The enclosed registration form is to be mailed directly to Professor Walliser. I will ask him to supply you with any additional information that will follow. I am looking forward to meeting you at Göttingen, February 1992 or at Bratislava, at the Symposium "Paleofloristic and paleoclimatic changes in the Cretaceous and Tertiary" in September 1992."

## REPORT TO THE IGCP COMMITTEE ON IGCP PROJECT 245 MEETINGS AT BUCHAREST AND ALMA ATA

The first Conference was held in the old University of Bucharest buildings over 15-16th August. A dozen or so foreigners (Ian Raine of DSIR was the only other Australian apart from my son) gathered with 50 or 60 locals to present papers on various aspects of non-marine Cretaceous geology in a single session format. Although English was the official language of the Conference, absence of interpreters left some presentations difficult to follow, but otherwise facilities were quite adequate. I presented a paper entitled "Biostratigraphic mapping in the Early Cretaceous of southeastern Australia". The gathering under the non-marine Cretaceous banner resulted in exposure to ideas and ancillary information not available at Conferences based on a single discipline.

The field trip on the 17-19th August was well conceived and prepared, and certainly illustrated the extent and importance of Cretaceous sediments in Romania. The itinerary was Bucharest-Ploesti-Brasov-Sibiu-Hateg-Tirgu-Jiu-Bucharest. The rocks most thoroughly examined were a mid-Late Cretaceous component of the Hateg Basin section in the Transylvanian Alp (southern Carpathian Mountains) exposures. Visits to reptile beds (Sinpetru Formation, Maastrichtian, well known for dinosaurs), plant and shelly fossil localities and bauxitic deposits were supplemented by a most interesting cul-

tural and scenic component. The Ploesti oilfield was crossed on route, and mention was made of the contribution of studies here to the concept of diapir (salt dome) development. The organisers were certainly more disturbed by the non arrival of the bus on the first morning than the participants, but some were disappointed that the same problem prevented a visit to the Danube and Dobrogea County on the last day. A core of graduate students (we were told that there were 5,000 geologists in Romania, some out of work) provided an insight into the strength and enthusiasm of the younger brigade, and incidentally an interesting window into a society in the process of great change.

A dozen more foreign participants were in the larger contingent that conferred on the same non-marine Cretaceous theme at Alma Alta immediately following the Romanian Conference. Ian Raine was here too, with another local, Mike Plier-Malone from my Geological Survey. Paleobotanists and palynologists were in some strength with David Dilcher, Jim Doyle (and family) and Gil Brenner flying the US flag. Sessions ran from August 22-26th in the fine auditorium of the Kazak Academy of Sciences containing simultaneous translation facilities. Early sessions were however marred by the breakdown of this function and overhead projector equipment. Lectures included an assessment of non-marine Cretaceous from several continents, not the least of which I hope was that on Australia, namely "Australian Cretaceous terrestrial faunas and floras; biostratigraphic and biogeographic implications". This was largely the work of Mary Dettmann, with contributions from R Molnar, D Burger, C Fielding, H Clifford, J Francis, P Jell, T P Rich, M Wade, N Pledge, A Kemp, A Rozefelds and myself. It brings together a lot of scattered and isolated information, and I expect will be a well perused reference.

Other presentations, for example that by N Mateer, USA on the Cretaceous of Africa, gave a new perspective on relatively unknown sequences.

The field trip from August 27th to September 1st in the Chimkent area (Alma Ata-Turkestan-Kentau-Lenger-Kyslkum Desert-Bogonale-Darbaza-Tashkent) was run with the co-operation of several local geologists and authorities, including the army and left participants more aware of overall arid zone geomorphology than affinity with any particular locality, with one notable exception. This was the Kysylzhar locality (Kyslkum Desert) reached after an exciting helicopter ride. Fine Turonian plants were sampled in a section which has a famous insect assemblage displayed in many USSR museums, notably the Palaeontology Museum named after F.A. Orlov in Moscow.

We thank all those who worked to facilitate our visit, especially Dr Dan Grigorescu, Geology Department, University of Bucharest and Dr Val Krassilov, formerly of Far Eastern Academy of Sciences, Vladivostok.

Myson and I were able to continue on to Vladivostok and Dr Krassilov's laboratory and it was his magnificent hospitality, together with your most appreciated Grant which enabled me to materially extend my Creta-

ceous experience.

J. DOUGLAS, Melbourne, Australia.

## OBITUARIES

### BIRGER BOHLIN, 1922-1990

Prof B. Lundblad, Stockholm, has written to say that Bohlin passed away on November 28 1990. He spent his last year in a hospital at the town of Borlinge (Dalecarlia) where his son, a physician, is living with his family. An obituary on a scientific level will be published by Dr Lars Werdelin (Section of Palaeozoology, Swedish Museum of Natural History, Stockholm). The major part of his scientific production represents vertebrate palaeozoology. He took part in the excavations at Zhoukoudian in the twenties and found, among many mammalian fossils, the third tooth of Peking man. (Bohlin used to complain that many people chiefly knew him as a man who had found a tooth). Bohlin was the last living member of the last great expedition directed by Sven Hedin, viz the Sino-Swedish expedition of 1927 to 1935.

### ARTHUR RAISTRICK 1897-1991

London's April 18th *Guardian* newspaper has an obituary of this Yorkshire geologist. He studied geology at the university in Newcastle for thirty years and wrote the classic book "The Origin of Coal". We assume that the Carboniferous miospore *Raistrickia* Schopf, Wilson & Bentall 1944 is derived from his surname.

## RECENT PUBLICATIONS

### PROCEEDINGS OF THE 7TH INTERNATIONAL PALYNOLOGICAL CONGRESS,

edited by E. Truswell and J.A.K. Owen. Elsevier Science Press, Amsterdam, 1990, Price US\$337.25

This long awaited volume was published at the end of 1990, it comprises two special volumes of *Review of Palaeobotany and Palynology* and includes papers on most topics covered by the conference.

### BIRBAL SAHNI INSTITUTE OF PALAEOBOTANY ANNUAL REPORT 1989-1990.

This 104 page document, with many illustrations of fossils and people, some in colour, is available from University Road, Lucknow, India. As well as bibliographic information it summarises many of the research projects being undertaken at the institute.

### VISTAS IN INDIAN PALAEOBOTANY

The proceedings of this symposium have been published in the *Palaeobotanist* volume 38, 1989, 414pp. The volume contains 43 articles on various aspects of

palaeobotany and palynology and costs \$90.00 from the Registrar, Birbal Sahni Institute of Palaeobotany, 53 University Road, Lucknow 226 007, India.

## REGIONAL COMMITTEES ON NORTHERN NEOGENE & PALAEOGENE STRATIGRAPHY

Newsletter 5, January 1991.

This gives useful information on progress with the establishment of a formal stratotype and boundary stratotypes for the Rupelian and for the Palaeocene Eocene boundary. There is also a list of recent publications concerning the Tertiary of north-west Europe. Write to Dr A.W. Janssen, Nationaal Natuurhistorisch Museum, P O Box 9517, 2300 RA Leiden, Netherlands.

## BOOK REVIEWS

### FOSSIL CHAROPHYTES FROM THE TARIM BASIN, XINJIANG.

Lu Hui-nan and Luo Qi-xin, 1990. In Chinese (p.1-176) and English (p.177-236) with 48pls. and 5 text-figs. \$35 from Lu Hui-nan, Nanjing Institute of Geology and Palaeontology, Academia Sinica, Chi-Ming-Ssu, Nanjing 210008, China. Scientific and Technical Documents Publishing House, Beijing.

129 species of fossil charophytes belonging to 33 genera and 2 sub-genera, ranging from the Lower Carboniferous to the Quaternary have been fully described and discussed by Dr Lu and Luo from the Tarim Basin, Xinjiang, NW China, covering a vast area of 560,000 km<sup>2</sup>. A fossil zone and 13 assemblages have been recognised on the study of fossil charophytes, which have been proved to be effective in the correlation of stratigraphy within the basin and outside the basin as well, especially in China. Palaeobiogeographical provinces of charophytes and the classification of sinistral charophytes have also been studied from an evolutionary point of view which leads to a new interpretation for their evolutionary trends, and have been discussed in full length. The illustrations reproduced by offset plate are rather distinct and of good quality.

LU HUI-NAN, Nanjing, China.

### THE FAMILIES AND GENERA OF VASCULAR PLANTS VOLUME 1 PTERIDOPHYTES AND GYMNASPERMS.

K.U. Kramer & P.S. Green (eds.) 1990. 404pp. Springer-Verlag, Berlin. DM298.00.

After a little delay (as noted by its editors), volume 1 of this encyclopaedic work has now been published. The first volume, concerning pteridophytes and gymnosperms, may well be the most significant of the series from the palaeobotanical point of view since it deals with the living remnants of the big fossil plant groups, plants that serve as a guide to the way we interpret their predecessors.

The work is distinctly phenetic in its approach and as such (in this volume at least) is freed from the numerous 'links' between the current major plant groupings earlier in their history. This emphasis on independence from the plethora of phylogenies is strongly adhered to by the editors but seems in some instances to have been a cause for rebellion by some of the numerous contributors.

The book opens with a brief introduction, immediately after which, one finds oneself in at the deep end with 'A Chemosystematic Overview'. Without giving too much away, the conclusion reached is that pteridophytes and gymnosperms probably are distantly related but that similarities in advanced groups are the result of similar selective pressures. All in all, a useful section presenting current data clearly and concisely.

After this rather unusual overture the first act (pteridophytes) opens with an introduction, glossary, bibliography, key to families and a section that again is somewhat unusual covering 'Conservation of Pteridophytes'. Although a very minor aspect, these notes, and similar comments elsewhere in the book, are important and in part justify (to my mind) the work that goes into a volume such as this. Pteridophyte families are grouped within Psilotatae, Lycopodiatae, Equisetatae, and Filicatae. Gymnosperms (in act 2) are introduced in the same manner and are grouped into Coniferophytina (Ginkgoatae and Pinatae) and Cycadophytina (Cycadatae and Gnetatae).

The substance of this work is of course the family and genus descriptions. Here lies the bulk of the information and possibly the most innovative aspect of the book, its escape from the method of arranging families by traditional systems. Instead, families are arranged within their larger groupings in simple alphabetical order. Personally, I find this useful since for reference, this method involves less frequent need to consult the index (latin names only). Like a number of other aspects of this book, the system adopted will probably show its value in volume 2, pteridophytes and gymnosperms perhaps being less plagued by frequent changes of affinity than the angiosperms. Descriptions of family characteristics are full and detailed, being subdivided into enticing chunks of text for example 'Phytochemistry', 'Karyology and Hybridisation', 'Geography and Ecology', 'Palaeobotany', and for people like myself 'Spore Morphology'! A key to each genus is supplied which is a major bonus and although of perhaps limited significance here, will be of immense use in sections dealing with angiosperm families.

Genera are described with an orderly and methodical approach such that similar information appears in a similar place in each description. This facilitates the quick comparison of (for example) number of species or chromosome number. The generic name is followed by a complete synonymy with author citations and a selected bibliography is included at the end of each family.

The text is only part of any book such as this and without the illustrations, would probably be double the length and half the use. Line drawings of generally good



quality predominate although there is a fair sprinkling of black and white photographs, some employing macro-photography to good effect. Many illustrations form an essential adjunct to the generic descriptions. Others illustrate the habit of the plant where this is difficult to convey adequately by words alone. A number of striking SEM (and some TEM) micrographs are included, mainly of spores and pollen. These serve to typify the palynology of the groups in question and perhaps, by their presence, indicate the important role of characters other than morphology and anatomy in defining genus and family.

If I have any criticism of this smartly presented book, it must be that I should have liked even more illustration, particularly of the plants in their natural habitat. In addition, although I understand the editors hesitation regarding information on fossil forms, I feel that the book would have benefited from a cursory glance at the evolution of the major groups, also with ample illustration. Perhaps IOP should encourage a volume on plant macrofossils for which the PFR database would be the major source reference? As an aid to teaching this volume will be invaluable but as a book (and series) for personal interest alone, I think the price may make the trip to the library seem a little more attractive. Nonetheless, for its simple format, wealth of information and great detail, the volume is probably worth acquiring.

A. HEMSLEY, Montpellier, France

#### A GEOLOGIC TIMESCALE 1989.

Harland, W.B. et al. 1990. Cambridge University Press. Cambridge, U.K., 263pp.

This is a considerable revision of the earlier (1982) edition. The number of pages has also doubled to 263. The authors have attempted to be as up to date as possible but admit that, inevitably, improvements can already be made. Some of these are given in a postscript added in proof. In this review I shall try to avoid further comparisons with GTS 1982 and concentrate on the new volume.

The aim of the book is the creation of a standard geochronologic scale. The introduction explains that this is a mix of a chronometric scale (CMS - based on absolute time calibration) and a chronostratic scale (CSS - based on recognised geological events). The authors note that both of these are subject to change, the first is a scale that is measured and may therefore change as dating techniques improve. The CSS is also liable to change as researchers argue over which events should be used although this will become less problematical as stratotype sections are internationally agreed. The resulting timescale is compared to timescales from the preceding three decades. The change in Cenozoic boundary dates is relatively small, variability increasing in magnitude further back through the Mesozoic and Palaeozoic.

Chapters two and three describe the CMS and CSS respectively. The former is used predominantly for the Precambrian, the latter for the Phanerozoic with a chronostratic point used as the divide between the two. Throughout these chapters the authors explain the reasoning behind each name and the boundaries between all of the

units. In many cases the history behind the names is given, this makes an interesting aside to what could otherwise have been a somewhat tedious subject.

The authors have tried not to give a complete review of the theory and practice of isotopic dating, the summary given concentrates on the limitations of the techniques and possible errors associated with each isotope system (a similar philosophy is used for the magnetostratigraphy chapter). A database of isotopic dates for most of the Phanerozoic stages is given, complete with an appropriate measure of their error. This database was compiled from over 80 sources, the ages that are based upon it are, presumably, more accurate than others published to date. Where a published date had no error given with it the current authors have calculated an average error based on the errors given for other dates bracketing it. It is interesting that the authors have not allowed any error to be below 0.5% ("even if better precision is claimed"), I assume that this psychological "acceptability barrier" will be lowered in future editions as techniques improve!

The ideal of providing fixed chronometric dates for each stage boundary is still not reached, amongst the reasons cited by the authors are the lack of dates taken from boundaries themselves and the variability given from the use of different dating techniques on different geologic materials. It would appear that we are still some way from a fixed date scale for stage boundaries. Despite this the "the resulting Phanerozoic timescale [with the exception of the post-Miocene] is based entirely on isotopic dating and a palaeontological apportionment of stratigraphic time."

A brief explanation of magnetostratigraphic methodology is given along with notes on the accuracy of the method. Summaries of magnetic data are presented although the authors note that the nomenclature for the intervals is confusing.

In their summary when presenting the finalised time scale the authors attempt to emphasise the limitations of the scale. They have applied a chronometric scale to an "agreed" chronostratic scale (using the recommendations of the IUGS International Commission of Stratigraphy), dating the boundaries as accurately as possible. This scale, they write, should stand as an independent reference "through which to compare the relative ages of geologic events", to this I would add that it should be a global standard reference to be of maximum use.

This book is well endowed with data in an understandable format but here also lies my main criticism. There are two indexes, one general, the other stratigraphic. The stratigraphic index however does not send the reader direct to the page on which the name may be found. Instead you are given the figure/table number in which the term is used. This results in excessive flicking to and fro, from the index at the back to the list of figures near the front and finally to the page that you need. Perhaps I am being unfair, the book is extremely well priced for the volume of information contained within, making it a cheap and valuable addition to any library.

P.L. HOLMES, London, UK