INTERNATIONAL UNION OF BIOLOGICAL SCIENCES SECTION FOR PALAEOBOTANY

INTERNATIONAL ORGANISATION OF PALAEOBOTANY

IOP NEWSLETTER 54

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CONTENTS

PLEASE MAIL NEWS AND CORRESPONDENCE TO YOUR REGIONAL REPRESENTATIVE OR TO THE SECRETARY FOR THE NEXT NEWSLETTER 55.
The views expressed in the newsletter are those of it's correspondents and do not necessarily reflect the policy of IOP.

Edith L. Taylor
Department of Plant Biology
CAMPUS MAIL

IOP NEWS

REGIONAL REPRESENTATIVES

It has been some time since the newsletter drew attention to these important people, who serve IOP by distributing the newsletter and collecting news items and membership fees. Unfortunately they provide less and less news so please help them become more productive.

North America	-E.Taylor, Ohio
South America	-A.B.Zamuner, La Plata
Australasia	-J. Douglas, Melbourne
Japan	-K. Uemura, Tokyo
China	-Zhou Zhiyam, Nanjing
India	-S.Bande, Poona
Russia	-D.Gromyko, St.Petersberg
Eastern Europe	- J. Eder-Kovar, Vienna
Southern Europe	-Meyer-Berthaud, Montpellier
Northern Europe	-M.C. Boulter, London

AN ELECTRONIC JOURNAL?

Members report surprised acclaim for the small demonstration of graphic images and text on our IOP Home Page on the Internet. Your computer service can help you find it on the url: **http://sunrae.uel.ac.uk/palaeo/html** or through Mosaic or Netscape directories. These techniques might be extended to establish an IOP electronic journal. It might specialise in containing very large monographs or theses-like documents (increasingly expensive to print) and very short announcements of ideas and discoveries that need fast distribution. One problem, of course, is that few career appraisal systems recognise anything outside the citations index. Here is one way in which an electronic journal of palaeobotany might be organised.

1. Establish a formal Editorial Board. The IOP Executive would appoint a Chief Editor to whom electronic manuscripts would be submitted. We would apply for an ISSN number.
2. Instructions to Authors would standardise or describe preparation and layout, spellings, length, number of plates and figures etc.. Paragraphs would be numbered because there would be no pages. For the time being the diagnosis of new species had better not be included.
3. Other members of the Editorial Board would be experienced palaeobotanists with active e-mail and Internet facilities who support new IT applications.
4. The Chief Editor would select two referees, and send the ms, with a rigorous check list of requirements for a high standard, preferably by e-mail.
5. Once the author's responses satisfy the Chief Editor the article is put on a WWW server and put on the Internet with full connection to the IOP home page.
6. A **Reader Response** button at the end of each article would allow readers to make comments about the article and one another's comments. This would be like the **Palaeo Talk** button facility on the existing IOP Home Page (look there also at the *Nypa* and Jansonius & Hills demonstrations to see the quality of half tone pictures, line drawings and scanned text)

Please write your comments about this idea in the **PalaeoTalk** facility at our Home Page on Internet, or write something for the next newsletter.

NEWS OF FORTHCOMING MEETINGS

TRIASSIC BIOSTRATIGRAPHY Brisbane, Australia, 9-12 April 1996

It was decided at the 9th International Gondwana Symposium at Hyderbad, India, 1994, that the working groups on Gondwana floras and Mesozoic biostratigraphy would organise this conference together with IUGS project 359: Correlation of Tethyan, Circum-Pacific and marginal Gondwanan Permo-Triassic.

Brisbane is situated in the Triassic non-marine Moreton Basin, which is famous for its floras, insects and coal measure sequences. For a first circular and call for abstracts and papers write to Dr J. Rigby, School of Geology, Box 2434, GPO Brisbane, Queensland 4001, Australia.

EXTANT AND FOSSIL CHAROPHYTES, Wisconsin, USA, 7-13 July 1996

The second International Symposium on extant and fossil Charophytes, organized by the International Research Group of Charophyte Specialists (IRGC) and Dr. Linda Graham will be held on July 7-13th 1996 in Madison, Wisconsin (USA).

Themes of the symposium include:
- Recent: Reproductive biology, Population genetics, Ultrastructural studies, Physiology and Biogeography;
- Fossil: Evolution, Paleobiogeography, Biostratigraphy, Geochemistry, Crisis and recovery;
- Evolution and Molecular Phylogeny, Ecology-Paleoecology, Systematics.

There will be 2 excursions:
1. Devonian charophyte localities of northern Iowa
2. Freshwater lakes and ponds with extant species.

The organizing committee is Monique Feist and Ingeborg Soulie-Mersche, Laboratoire de

Paleobotanique, Universite Montpellier 2, Place E. Bataillon, 34095 Montpellier Cedex 5, France Phone: 33-67-14-32-88; fax: 33-67-04-20-32; E-mail: paleobot@crit.univ-montp2.fr and Linda E. Graham, Department of Botany, University of Wisconsin-Madison, 132 Birge Hall, 430 Lincoln Drive, Madison, Wisconsin 53706-1381, USA. Phone: 1-608-262-10-57; fax: 1-608-262-75-09; E-mail: Igraham@macc.wisc.edu

REPORTS OF RECENT MEETINGS

THE 8TH BRAZILIAN MEETING OF PALEOBOTANISTS AND PALYNOLOGISTS 5-9th December 1994, Sao Paulo, Brazil

During the week of 5-9 December 1994, the 8th Brazilian Meeting of Paleobotanists (VIII Reuniao de Paleobotanicos e Palinologos) was held at the Institute of Geosciences of the University of Sao Paulo (IG-USP), organised by a committee headed by palaeobotanist Oscar Rosler and sponsored by the Department of Paleontology and Stratigraphy of the IG-USP, with the support of the Associacao Latinoamericana de Paleobotanica e Palinologia (ALPP), the Sociedade Brasileira de Geologia (SBG) and the national and local chapters of the Sociedadae Brasileira de Paleontologia (SBP).

More than 70 registered participants from Brazil, Argentina, Chile, Venezuela, Peru, and France, as well as many graduate and undergraduate students and other interested observers, were treated to a broad spectrum of oral presentations (24) and posters (34). Most of these (46) dealt with Brazilian topics, but papers on Argentina, Venezuela, Bolivia, Uruguay and Mexico were also given. 34 papers discussed palynology or plant micropalaeontology and 22 papers megafossil palaeobotany, while the reminder were overviews or methods papers. The 1994 edition of this traditional series of meetings saw a very significant increase in Cenozoic subjects (31 papers), most of which focused on Quaternary and modern material, reflecting in large part the growing interest of actuopalynologists and botanists worldwide in the recent as well as more remote past of plant materials. Five papers touched on the Tertiary four on the Mesozoic, 12 on the Palaeozoic, and two on the Proterozoic.

In addition to these presentations, 21 invited papers were given as part of four different workshops: 1) "Identification of Biochronostratigraphic Markers for the Carboniferous - Permian Boundary in the State of Sao Paulo", organised by Mary E.C. Bernades de Oliveira and O.Rosler, IG-USP; 2) "Relationships between Actuo- and Paleopalynology", organised by Maria Luiza Lorscheitter, Federal University of Rio Grande do Sul, Porto Alegre; 3) "The Devonian of Brazil -- Progress and Perspectives" organised by Diana Mussa of the federal University of Rio de Jenerio and Rodolfo Dino of Petrobas, Rio de Jenerio; and 4) Morphologic and Taxonomic Potential of the Foliar Architecture of Past and Present Angiosperms, organised by Anna Flora Mandarim-de-Lacerda of the State University of Rio de Jeneiro.

Besides the increased focus on Quaternary and Tertiary palynology and palaeobotany alluded to above, growing interest was also revealed at the other end of the paleobotanical time scale, mainly regarding new occurrences of primitive land plants in the Brazilian Devonian. But perhaps the most important aspect of this meeting, reflected in the research tendencies just mentioned, was the participation of a new generation of young, avid researchers and students coming both from established centres of palaeobotanical and palynological study and from other, emerging institutions. This bodes well for the future of palaeobotany and palynology in Brazil.

T.R. FAIRCHILD, Sao Paulo, Brazil

CZECH - US WORKSHOP ON CARBONIFEROUS PALAEOBOTANY

A Czech-US Palaeobotany Workshop was held at the Illinois state Museum's Research and Collections Centre October 4 - 11, 1994, funded by the National Science Foundation, the workshop, organised by Dr Richard Leary, Curator of Palaeobotany, was arranged in cooperation with the Czech Geological Survey.

The workshop was attended by Zbynek Simunek (Co-PI) and Jana Drabkova (both of the Czech Geological Survey), Eva Purkynova (Silesian Museum, Ostrava, C.R.), Robert Gastaldo (Auburn University), Hermann Pfefferkorn (University of Pennsylvania), Tom Phillips (University of Illinois), Anne Raymond (Texas A&M University), Mary Louis Trivett (Ohio University), Julie Carlton (student, University of Pennsylvania), and Erwin Zodrow (University College of Cape Breton, Nova Scotia, Canada).

The Czechs presented papers on fossil assemblages from Czech coal basins and detailed work on specific fossil plant taza. US paleobotanists dealt with modern environments of deposition, paleoclimates, paleocology, and fossil plant distribution. In each case, the workshop participants gained knowledge of current research conducted by colleagues and the potential for future joint studies.

Taking advantage of the presence of Czech paleobotanists who knew the late Czech palaeobotanist Vaclav Havlena and were familiar

with his thinking related to the terms Floznah and Flozfern, we were able to probe his original interpretation. Other participants, notably Pfefferkorn and Gastaldo, are familiar with both current knowledge of Carboniferous stratigraphy; older, traditional interpretations; and modern environments of deposition. Combining this knowledge we were able to fit the terms Floznah and Flozfern into contemporary ideas of biostratigraphy.

While in Illinois, the Czech scientists conducted field studies with Leary in Rock Island Country and visited the Field Museum of Natural History in Chicago. Peter Crane and Patrick Herendeen hosted the group's visit to the Field Museum.

One goal of the meeting was to develop future cooperative research projects. The State Museum anticipates continued cooperation with paleobotanists in the Czech Republic, including exchanges of specimens.

The workshop was very successful, with participants returning home with a new knowledge of the similarities and differences between the Illinois and Czech fossil floras. Participants also left feeling that their fellow paleobotanists are friends as well as colleagues. The Czech paleobotanists returned home with new ideas and inspiration as well as a feeling that they had seen a cross section of the United States.

NEWS OF OTHER SOCIETIES

ASOCIACION LATINAMERICANA DE PALEOBOTANICA Y PALINOLOGIA

The ALPP have recently published a catalogue of "Investiaciones en desarrollo sobre Palinologia y Paleobotanica en America Latina". Explanations and details of projects operational or planned in 1994, and the name and addresses of the leaders, occupy 27 pages. It is available from the Division Paleobotanica, Facultad de Ciencias Naturales, Paseo del Bosque s/Nro 1900, La Plata Republica, Argentina.

CONSERVATION OF FOSSIL PLANT LOCALITIES

There are many approaches to the problem of the conservation of fossil plants we have in Russia and some other countries of the F.S.U. Authors, compilers and reviewers of the book "Fossil plants localities to be protected" Proc. Komarov Bot.Inst.1994. Vol.12., 1-99, reviewed below, have preferred the open solution to the problem. The experience from conservation of contemporary plants has shown that one of the most important aspects of the problem is the active popularization of the knowledge - what, why and how to conserve among non professionals. The local population willingly participate in the conservation of any native rarity. At the same time taking care of the fossil plants conservation paleobotanists have to try to influence the mentality of tradesmen of fossils. It would be naive to hope to stop them. It is necessary to explain to people the importance of fossils for scientific researches, to convince them in the necessity of exact documentation of fossils for the scientific study, for the private collection and therefore for selling. It would increase the true value of any fossils. There were the precedents in the past when palaeobotanical researches have been based on the beautiful materials collected by non paleobotanists and non geologists but people who were not connected with science. The fear of thieves had prevented some paleobotanists from publishing information on the fossil plants localities. These absent details in magazines or newspapers and many of localities have been lost forever because of the passivity of the researchers. The palaeobotanical fellowship does need the reasonable conception of the open cooperation between researchers, amateurs, officials connected with mining, and with tradesmen of fossils too. The responsibility of directions of the institutions for the protection of fossil plants collections is also an important problem. The fate of many of them depends on the political status of the country or of the change of the status of institutions and their leadership. But all efforts would be more effective if the International Commission on conservation of fossil plants under the protection of the International Organisation on Palaeobotany and the International Union of Biological Sciences control the problem. It is desirable to organise the Commission at the V Conference of IOP in Santa Barbara. The cooperation between botanical and geological institutions on the conservation of fossils in localities and in collections is very essential. The Commission would stimulate the listing of fossil plant localities and collections in the world, the publication of annotated lists and catalogues of fossil plants including types and collections (published and unpublished but not less important for science), the formulation of the general approaches and rules in relation to localities and collections particularly prohibiting throwing out of fossil plants remains and finally experts visits to localities or collections in imminent danger. The Conference held by UNESCO and by the International Council of the Scientific Unions, ICSU, in December, 1993, at the Komarov Botanical Institute, St.Petersburg, accented the attention on the importance of the extant and extinct plants collections. Recommendations of the Conference particularly reminded by D.S. Ingram, G.

Lucas and R. Huxley (Nature, 1994, 2 (9):19) are very important for the conservation of fossil plants remains as unique, unrestored (if lost) botanical documents of the evolution of the evolution of Plant Kingdom:

"The appropriate authorities should assume full responsibility for collections on their territories"

"The public", governments and international institutions should be made aware of the importance of the collections; they and donor agencies should develop programmes to support the collections. Both these recommendations are referred to all botanical and geological institutions of the F.S.U. and other countries of the World.

N.S.SNIGIREVSKAYA, St. Petersberg, Russia

ETTINGSHAUSEN LETTERS DISCOVERED

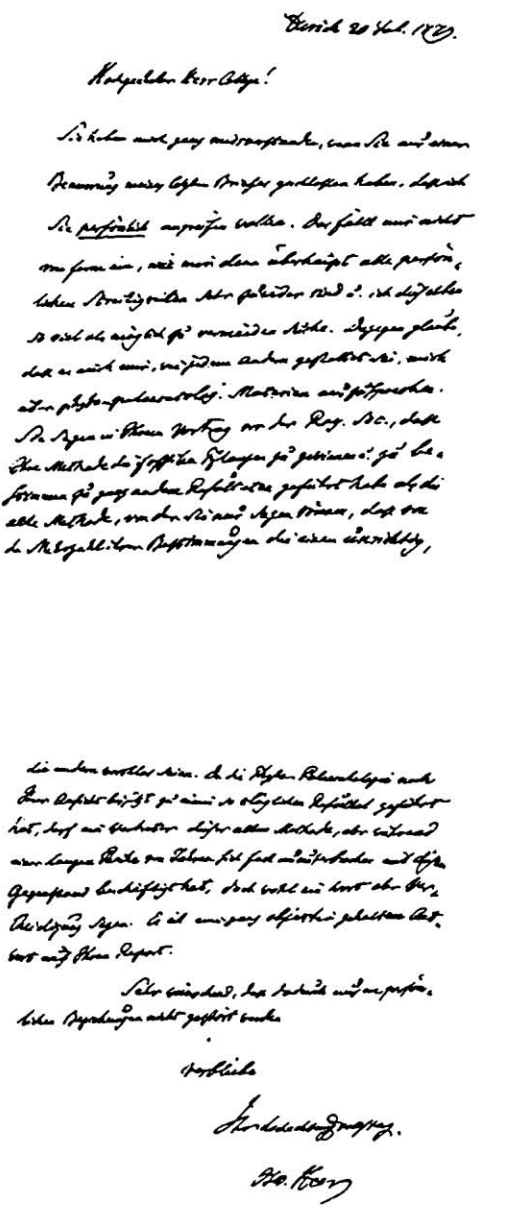
A few years ago my attention was drawn to big, old trunks at the Institute of Botany at the University of Graz (Austria). At that time I was viewing the palaeobotanical collection there, one of the collections gathered by Freiherr Constantin von Ettingshausen. Of course, I knew that Ettingshausen worked for many years at the Botanical Institute. Nevertheless, I was more than surprised about what I discovered - upon opening the first trunk: it was part of Ettingshausen's estate: letters, handwritings, manuscripts.

Ettingshausen died in 1897; the boxes had survived two world wars, and it took nearly 100 years until someone looked after parts of his life's work. And, this honour was reserved for me.

The correspondence comprises letters from the following contemporaries: Blaas, Braumueller, Brongniart, Candolle, Dodel, Eichler, Engelhardt, Engler, Frauenfels, Fuchs, Gardner, Haidinger, Hauer, Hazslinsky, Heer, Hochstetter, Hooker, Karsten, Krasan, Liebig, MacLeod, Martius, Mendel, Meneghini, Mitterer, Mueller, Muellner, Parlatore, Renault, Saporta, Schimper, Schultz-Bipontinus, Schwendener, Seward, Smirnow, Stur, Tschermak, Waehner, Ward, Wiesner, Wirtgen, Zahlbruckner, Zittel. Preserved are also handscripts of Ettingshausen such as petitions and requests to public authorities. It was exciting to find the concept for the first palaeobotanical exhibition in the Vienna Natural History Museum. All the documents are now housed in the Archive of the Karl-Franzens University in Graz.

Those interested in the history of science are encouraged to contact me for further details concerning the Ettingshausen scripts. I have already machine-typed most of the old handwritings. Also I would enjoy receiving any information about other places in which I could find letters from Ettingshausen to those scientists listed above. In 1997 an exhibition is planned in commemoration of the 100th anniversary of Ettingshausen's death.

To give you an impression about the scientific discussions of that time (as an example, the presence or absence of Protaceae in the European Tertiary), two letters from Heer are reproduced and translated here.



Esteemed colleague!

I would have liked to answer your last, friendly letter a long time ago, but I have been so overburdened with work that my response has had to wait until today. I was heartened to learn from your letter that you have completed your important work

on the Tertiary floras of Austria and am pleased about your intention to send me offprints of your new publications. These would be of great value to me and, in return, I am taking the liberty of sending you volume V of my Flora fossilis arctica; as soon as you have returned to Gratz, please indicate this to me in a few lines.

The task of working on the Eocene fauna of England that you have taken upon yourself will no doubt yield important results, since it is very rich in forms. I am very eager to learn whether your investigations will strengthen your conviction about the great importance of proteaceans in the Eocene floras. You are no doubt aware that Bentham, the justifiably highly regarded Nestor of English botanists, attempted in his inaugural address several years ago to convince the Linn. Society that not one of the fossil proteaceans described by you is actually a member of that family. Lyell was quite taken aback at this pronouncement. He requested more information from me on this matter. I informed him that certain plants described by you and Unger as proteaceans in fact did not belong to this family but to the myricaceans, yet that Bentham had gone too far in disclaiming all of them, since in all likelihood many can be attributed to the proteaceans, in particular a number of species from which the fruits and seeds are known.

Since you have the opportunity to examine a large number of Eocene plants, and because forms from your Dryandra acutiloba-group are not uncommon among them, you will no doubt be able to settle this question satisfactorily.

I was astounded to note that Mr. Gardner attributes the Flora of Aachen, which you began to work on with Debey, to the Eocene as well; since Mr. Gardner claims the entire Tertiary arctic fauna for the Eocene, this lumped flora leaves him confronted with a rather voluminous material. He will need a good stomach to digest this lump - mine is certainly not up to this task.

Wishing your important work much success
I remain, very respectfully yours,
Oswald Heer

Zurich, July 20, 1879
Esteemed colleague!

You have entirely misunderstood my intentions if you interpreted a comment in my last letter as meaning that I wish to attack you personally. This would never enter my mind, as I abhor all personal quarrels and seek to avoid these whenever possible. On the other hand, I do believe that I, like everyone else, am entitled to comment on phytopalaeontological matters. In your lecture before the Royal Society, you state that your method of obtaining and identifying fossil plants has led to completely different results compared with the old method, of which you only say that of the majority of its determinations, some are incorrect, the others worthless. Since, in your opinion, phytopalaeontology has delivered such pitiful results, is it not justified for a representative of this old method, who has concerned himself with this topic virtually without interruption over a long (?) stretch of years, to say a few words in its defence? It is an entirely objective response to your report.

With the sincere hope that this does not affect our personal relationship
I remain, very respectfully yours,
Osw. Heer

J. KOVAR-EDER, Vienna

WINFRIED REMY - FIRST RECIPIENT OF JONGMANS MEDAL

The first recipient of the W. J. Jongmans Medal is Professor Dr. Winfried Remy, Abteilung Palobotanik am Geologische-Paleontologischen Institut und Museum, Westflische Wilhelms-Universitedt Munster, Germany. The announcement of the Jongmans Medal was made during the 4th European Paleobotanical / Palynological Congress held in September in Heerlen.

Winfried Remy was born on March 21, 1924 in Breslau, Silesia, but grew up in East Berlin, and began studying geology at the Humboldt University. Among his teachers were Hans Stille and Walther Gothan. Because of the political climate at the time Remy obtained his doctorate in 1952 at the University of Tübingen, and three years later his "habilitation". After Gothan's death Remy became the leader of the research institute of paleobotany and coal science in East Berlin. During the 1950's and 60's he published numerous papers on Carboniferous and Permian plants, that included studies ranging from biostratigraphy to in-situ-pollen and spores. In addition, two richly illustrated books were published on the floras of the paralic and limnic basins. An updated version of these volumes was co-authored with his wife Renate in 1977. These three volumes are generally regarded as standard references for Paleozoic compression floras.

With the construction of the Berlin wall Remy left the city and moved to Munster where he became a lecturer in geology and initiated a program in paleobotany. In 1965 he was appointed Professor and three years later the head of the newly instituted "Forschungsstelle Paleobotanik", the institute where he is active today despite officially retiring in 1989.

In 1968 he and his wife published the first issue of the journal - Argumenta Palaeobotanica.

His publications from the late 1970's demonstrate a wide variety of research interests. It is at this time in his career that the first of a long series of papers on the Rhynie chert were initiated. In collaboration with Hagen Hass, Renate Remy, students and colleagues, Winfried Remy has greatly expanded our understanding of the structure and morphology of the Rhynie chert plants. Perhaps most notable was the discovery of free living gametophytes, some including sex organs containing flagellated gametes. In addition the Munster paleobotany group has continued to uncover new features and aspects of the life history biology of the Rhynie chert plants. Most recently these studies have been extended to fungi.

As a result of his work we have a far better understanding of Devonian, Carboniferous and Permian floras. Remy's studies demonstrate a broad interdisciplinary approach that incorporate both a geological and biological perspective to the work.

Winfried Remy was trained by Gothan, a close friend of Jongmans. One might say that he worked in Jongmans' tradition, but perhaps it is more accurate to state that he worked in Jongmans' spirit. Jongmans graduated in botany, but became famous as a paleobotanist and geologist. Remy was trained as a geologist, but his work has the most profound impact on botany. They both practiced the necessary interaction between these two disciplines.

As a result of his numerous scholarly contributions to the study of fossils plants the first Jongmans Medal is awarded to Winfried Remy.

T.N. TAYLOR & H. KERP

BOOK REVIEWS

SEDIMENTATION OF ORGANIC PARTICLES A. Traverse (editor). Cambridge University Press. (ISBN 0-521-38436-2) 1994, 544 pp., 255 figs., 70 tabs.;

When I heard of this book for the first time, during the editor's visit to Frankfurt, great expectations were raised. A comprehensive book on sedimentology and organic particles, something similar to his "Paleopalynology" was the general idea that excited me. A dictionary on "palynofacies", a general overview on the field of study was something that is needed for a variety of studies. But unfortunately, that is what the book is not, or at least not exactly. The original background for the book are lectures from a symposium held at the 6th International Palynological Congress in Brisbane, Australia 1988. So it is in fact a symposium volume published after nearly 6 long years of preparation. As that, the book is a collection of separate articles surrounding the main topic. It contains 24 studies, organized into 5 chapters and 6 subchapters, something which is in my opinion neither necessary nor useful. A slightly different arrangement could have provided a more "study-book-like" look. Some basic information on classification and problems, followed by recent studies and fossil examples would have easily done that.

Actually, as Traverse notes in the preface, the original idea was somewhat altered during the publication process, but the basic heterogeneity remains throughout the volume. Starting with the contents, some of the general problems can be immediately recognized. "Organic particles, palynodebris, phytoclasts, palynofacies, organic matter, maceral facies" are a lot of terms for one more or less identical field of study. Even after years of discussion, it seems to be impossible to apply a uniform terminology on an international scale. Traverse mentions the Amsterdam workshop on Palynological Organic Matter classification that was held in summer 1991, but nothing of the results achieved there are actually included into the papers of the book. This fact is also reflected by the references, where the last entries date from 1990 or 1991, except for the editors' papers (1992, 1993). That means, roughly four years of development have not been included.

In addition, there are some terms used that are new for me and which may be good for confusion or should have been clearly defined. For instance, what is the difference between palynofacies, palynodebris sedimentation and palynosedimentation? I believe, the terminology has to be exactly defined, as is shown in the next example. After reading over 30 pages of Hart's single and collaborative contributions, I wondered, why I could not find a single maceral mentioned in these articles. Despite the titles, the studies really do not deal with macerals at all. Maceral - as opposed to mineral in rocks - is internationally defined as a constituent of coal, represented by vitrinite, liptinite or inertinite, and nothing else (Stopes, 1935, ICCP; Crelling & Dutcher 1980; Bustin et al. 1989). This different usage only adds to the current confusion. As long as such a mixing of terms from various working directions occurs, no real consensus will be achieved. As a result, more confusion rises when one tries to compare or transform conclusions from one study area to another. This is especially critical for reconstructions and palaeoecological interpretations in the fossil environment, where a lot of necessary data existent in the present are unavailable. Again, an attempt on an international classification agreed upon by the participants of the symposium could have provided that.

This is my general criticism on the purpose of the book. The articles themselves are another matter, if viewed upon as single studies. A number of internationally well known specialists from the field of sedimentology and organic particles contributed to the volume. Most articles deal with environments or examples from selected geological times, ranging from the Devonian to the Quaternary, mainly from the American continent. They provide valuable data for those working in the same area or time. The figures are always very informative and of high quality, even if some scales for fossils are missing. The Palaeozoic seems to be underrepresented, as is often the case. The studies provide a good overview on the various sedimentary environments through geologic history and some correlations between recent and fossil environments. From the articles, it seems to become clear, that in most times the actual environment is the factor contributing most to the palynofacies. So, without understanding the exact surroundings of a deposition area, facies interpretation will be misled.

Only some selected papers shall be briefly mentioned as examples. An interesting study on experimental work on spores and pollen distribution by water is provided by Holmes. It shows, that there is much to be kept in mind about the distribution and physics of water transport. The one article that actually deals with an approach to a uniform classification is contributed by Boulter, although it seems to be a bit limited to marine conditions. From my personal work, I think, that especially the analysis of the lake environment is too much generalized in that case. But nevertheless, especially this presentation should have been dealt with more attention as a basis for further discussions. Fleming and Nichols deal with comparisons between palynofacies and coals, a field with its own difficulties. But it could lead to new environmental conclusions. The contribution by Sweet might be of greater interest for a broader field of readers. It adds results to the K/T boundary which again show, that there was more of a successional change, than a distinct gap in earth history.

The annotated bibliography in the appendix is doubtlessly of worth for anybody looking for comparable observations. As a source for case studies on transport of pollen and spores throughout geologic history it is of great value. But unfortunately it completely lacks entries of articles published after 1990. So, again the time between the symposium and the publication date was too long.

This book will doubtlessly attract anybody working with sedimentation of organic particles, sedimentologists and palaeontologists alike. Despite my criticism, it provides fundamental data from different regions of value to a lot of colleagues. It should become a volume on sedimentation of organic particles much referred to, but not directly comparable to Traverse' "Paleopalynology" as a true study book. It will be mainly purchased by libraries or interested professionals, because the high price may limit its distribution. A publication as a special issue of a journal could have been published much faster and the distribution would have probably been increased. This would have prevented the book from being not actually up to date. I personally believe, it is a good opportunity lost for setting a new standard that is really needed, but it is also the most valuable book on the topic published for many years.

Bustin, R.M., Cameron, A.R., Grieve, D.A. & Kalkreuth, W:D. (1989): Coal Petrology. Ist principles, methods, and applications. 2nd ed., Geol. Ass. Canada, Short Course Notes, 3, 230 pp.; Ottawa.

Crelling, J.C. & Dutcher, R.R. (1980): Principles and applications of coal petrology. SEPM Short Course, 8, 127 pp.; Tulsa.

Stopes, M.C. (1935): On the petrology of banded bituminous coals. Fuel in Science and Practice, 14: 4-13; London.

A.CLAUSING, Institut fnr Geologische Wissenschaften und Geiseltalmuseum, Domstr. 5, D-06108 Halle (Saale).

THE PALAEOBIOLOGY OF TRACE FOSSILS. Edited by S.K. Donovan. John Wiley & Sons, Chichester. 308 pp. (ISBN 0-471-94838)

The trace fossil record shows a somewhat different character compared with animal and plant fossils. The trace is a record of the activity of its producer. It is often very difficult to identify the tracemaker; but this fact need not reduce substantially the informative value of the trace. Most of the present-day ichnological research points to the study of physical parameters (e.g.,physical energy, oxygenation, substrate consistency). The real scope of ichnology is, however, much wider; trace fossils are important sources of biological data on extinct organisms. This book has been conceived to review the palaeobiology of fossil traces.

Trace fossils are, however, a considerably heterogeneous group, including tracks, trails, burrows, borings, eggs, plant root systems, and faecal remains, making it necessary to divide the topic to more-or-less strictly independent chapters, written by authorities in the given aspects of ichnology.

Chapter 1, Nomenclature and taxonomy of invertebrate trace fossils (R.K. Pickerill), provides a useful information on nomenclatorical rules and procedures in ichnology. It also suggests possible ways in future work in this sphere. Also some useful criteria for recognition of "ethologic" and "non-ethologic" traces are presented here.

The second chapter, Functional morphology of boring and burrowing invertebrates (E. Savazzi), is valuable, besides other information, by numerous data and quoted literary sources from Recent biology. A list of main groups of burrowing and boring invertebrates is given, numerous morphological adaptations as ribbing of mollusc shells or sculptures of crab carapaces are described.

Chapter 3, The palaeobiology of ichnocenoses in Quaternary Bahamian-style carbonate environments: the modern to fossil transition, is presented by H.A. Curran, deals with the concept how to solve the problem of fossilization barrier (that often causes a considerable "incompatibility" of fossil ichnoassemblages and Recent observations) by a complex study of modern tracemakers and corresponding ichnofossils of the Holocene and Pleistocene rock sequences. Important notices on characteristic features of trace fossils in carbonates etc. are given. The period of early evolutionary failure and the dawn of evolutionary success: the recoord of biotic changes across the Precambrian - Cambrian boundary (T.P. Crimes) is the fourth chapter. In addition to the theme given in the title, also the stratigraphical significance of trace fossils in the corresponding period is emphasized here.

Chapter 5, The palaeoecology of bioerosion (R.G. Bromley), summarizes the questions of this aspect of ichnology: purpose of boring (mostly produced as dwelling structures), statement of main borers, morphology of borings, possible environmental conclusions, cyclicity of cementation and bioerosion.

The history of Phanerozoic bioturbation (D.J. Bottjer, M.L. Droser) follows. It is a valuable contribution, new in its subject - matter; it shows some new possible directions of ichnological research. Notions of palaeoenvironmental trends of trace fossils, or of ichnological records during mass extinctions, are important.

The seventh chapter, Plant roots in core (J.F. Bockelie), is a simple contribution showing the affinity to palaeobotany. It appreciates the importance of root systems for the recognition of the sedimentary environments in marginal marine and nonmarine settings. Ways of preservation of root systems, "root facies", relations of individual "root groups" to "plant groups" are explained, the system of root ichnofossils is also presented.

Chapter 8, Insects and other arthropods as trace-makers in nonmarine environments and palaeoenvironments (S.K. Donovan), is valuable, a.o., by numerous information on the traces in nonmarine settings, which are so far less studied in comparison with marine environments. The palaeobiology of vertebrate coprolites (A.P. Hunt, K. Chin, M.G. Lockley) follows as the 9th chapter.

Chapter 10, Vertebrate tracks and the ichnofacies concept: implications for palaeoecology and palichnostratigraphy (M.G. Lockley, A.P. Hunt and C.A. Meyer, introduces a new conception of vertebrate ichnofacies, which contributes considerably to a nonmarine ichnofacies concept and recruites the usage of the term "ichnofacies" in general. The fossil record of vertebrate eggs (K.F. Hirsch) is a topic of the last chapter.

The fact that the authors of individual chapters are the authorities in given aspects of ichnology, is conclusive for the overall significance of the book. The work is a survey of the up-to-date state of knowledge including all the modern literary sources. Some chapters compile the already published information, others introduce new conceptions. One remark would concern a great breadth of discussed topics: it seems as if the content of the book was not defined positively by the title "The palaeobiology of trace fossils", but rather negatively: "All the aspects of traces, except for the Seilacherian ichnofacies and several others". This may be the reason why the nomenclature of trace fossils, the stratigraphical significance and various other notes and mentions not closely related with the palaeobiology are also included.

Although anybody will hardly read all the presented topics with the same interest, the book is certainly a great delight for a specialist in ichnology, and a source of valuable information for every palaeontologist.

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FOSSIL PLANT LOCALITIES TO BE PROTECTED. N. Snigirevskaya & S. Zhilin, Komarov Botanical Institute, St Petersburg 99pp., 1994.

This book starts a series devoted to the protection of localities of fossil plants as records of the plant world of the past. The end task of the series is to prepare the Red Data Book on Palaeobotany and to implement a system of measures on the protection of threatened fossil plant localities.

The book has emerged as a result of the joint efforts of the researchers of the former USSR (FSU). It was compiled on the basis of applications for the protection of fossil plant localities. These applications were received by the Palaeobotanical Section of the former All-Union Botanical Society from 43 researchers in response to the relevant publication in Botanichesky Zhournal (Russian) (Snigirevskaya, 1987a). The book was prepared under the auspices of the Russian Botanical Society and of the Scientific Council on Problems of Botany, and sponsored by the Komarov Botanical Institute.

The protection of fossil plants and their localities was first discussed within the framework of botanical organisations which have contributed significantly to the conservation of extant plants and to the establishment of botanical reservations. Fossil plants localities like fossil animals localities in contrast to botanical and zoological reservations have been traditionally regarded as objects of "inorganic" nature and therefore they entered the areas of interest of geological institutions. These organisations have undertaken some positive measures aimed at the protection of fossil plants localities in some rare and stratotypical sections only. Descriptions of the geological, stratigraphical and palaeontological reservations are confirmed to the indication of the presence of plant remains only. Fossil plant localities being part of these reservations are often threatened. It should be noted that the term "paleontological" has been applied only to paleozoological objects for the last decades. Therefore it would be essential to introduce the status of "palaeobotanical" reservation and monument.

The descriptions of 72 fossil plants localities are given from 9 countries of the FSU: Armenia, Azerbaijan, Belarus (Byelorussia), Georgia, Kazakhstan, Russia, Tajikistan, the Ukraine, Uzbekistan. The localities are usually named after geographical names such as towns, villages and rivers. The book gives data on the geography of fossil plants localities, the lithological composition and geological age of the horizons containing plant remains and the mode of their preservation. Short descriptions of palaeofloras from the Quaternary to the Silurian, lists of the most important species of plants and animals, the state of localities and measures on their protection are given. The list of already protected geological, stratigraphical and paleontological monuments and reservations including fossil plant localities, the map of the palaeobotanical objects to be protected, standard stratigraphy of the Phanerozoic, and some local and zonal schemes of the Neogene and Palaeogene are given too.

The knowledge of palaeofloras is important to understand plant cover development and the dynamics of biodiversity through time, and for stratigraphical correlations. The "standard floras" (palaeofloras that are dated on the basis of marine mollucs and other data except palaeobotanical evidence. Dorf, 1942; Zhilin, 1989) are particularly important for the stratigraphical correlation.

It is very desirable to establish the International Commission on the protection of the fossil plants localities under the auspice of IOP.

N.SNIGIREVSKAYA, St.Petersbrerg, Russia.

CHANGES OF ADDRESS

The Natural History Museum, London has changed it's Email address. The *ic* part has been dropped. Palaeobotany for example:
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T.Foster@nhm.ac.uk

Mark Crawley is now at:
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