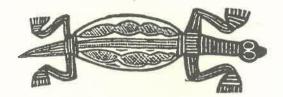


NEWSLETTER of the INTERNATIONAL FEDERATION of PALYNOLOGICAL SOCIETIES

AFRICAN POLLEN DATABASE (APD) IS NOW AVAILABLE



The African Pollen DataBase was created in 1996 during a special workshop organized at Paris-Bierville (France) by A. M. Lezine (France), L. Scott (South Africa), and D. Jolly (Sweden). Forty scientists from Africa, Europe, and North America attended the workshop, which was organized with the support of MIDIAS-FRANCE, IGBP-DIS, and PAGES, the French Ministries of Cooperation and Foreign Affairs, the French Centre Nationale de la Recherche Scientifique, and the CEE research program (PMIP). The goals of the workshop were as follows:

- 1. To present an overview of pollen research in Africa and Madagascar via oral presentations and poster sessions,
- 2. To discuss the need of extensive pollen databases for research carried out in the general context of global changes,
- 3. To train the participants to use TILIA and TILIA-GRAPH for storing, analyzing, and presenting pollen data,
- 4. To discuss the implications of cooperatives in the context of Africa and Madagascar, and
- 5. To elaborate on the administrative structure and functions of the database

The first newsletter has been published; it contains details of the APD structure as well as instructions for data submission, the list of participants, and a site inventory and related publication list. It is available from the data manager, as follows:

Hilaire Elenga LGQ-CEREGE BP 80 13545 Aix-en-Provence CEDEX France e-mail elenga@cerege.fr

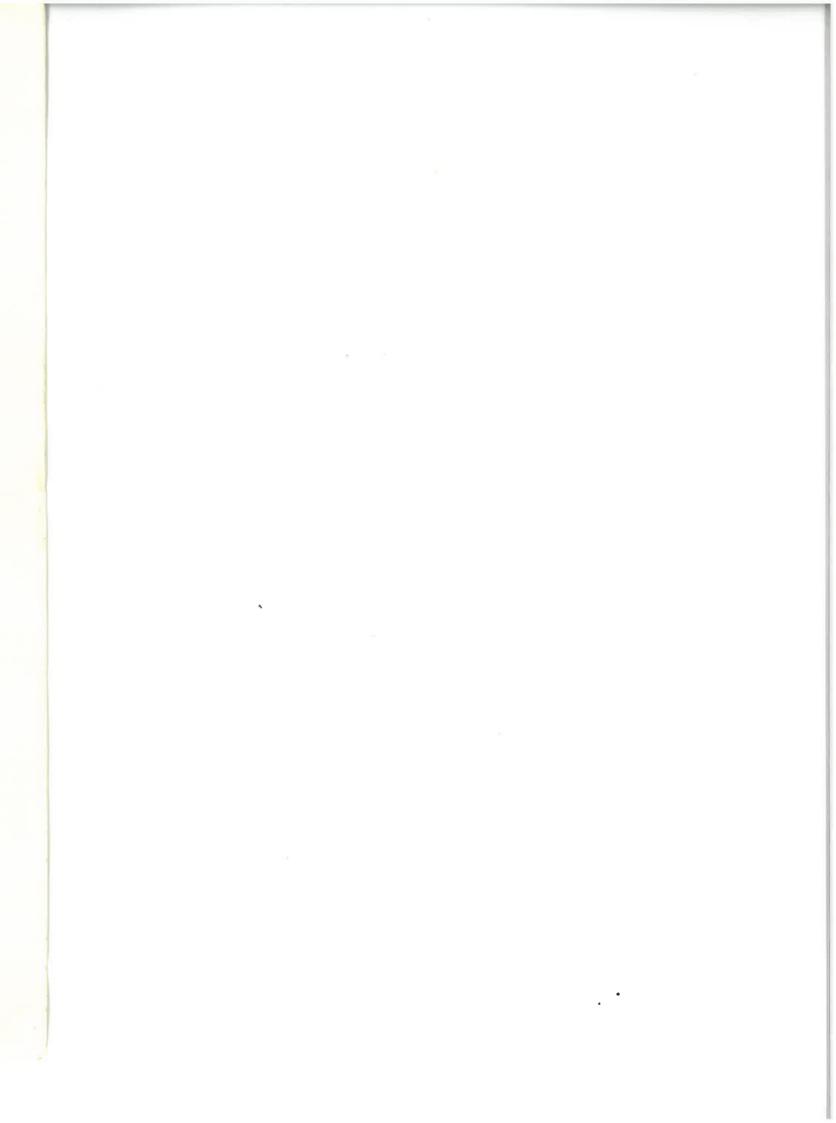
The next APD workshop is planned to be held in Johannesburg during the Third symposium on African Palynology, to be held 15-19 September, 1997.

INFORMATION SYSTEM FOR LATE PALEOZOIC MIOSPORE NOMENCLATURE (DATABASE LPMN)

The Division of Stratigraphy and Paleontology of the A.P. Karpinsky All Russian Geological Research Institute (VSEGEI) is conducting development of an automatic system for comprehensive processing of paleontological and stratigraphic information. The system will allow for storage, retreaval, and processing of data of many types; one of the modules has the working name "Paleopalynology".

Palynological research is widely used to ensure the accuracy of detailed stratigraphic interpretations during the course of conducting geological surveys. It should be clear to each geologist/stratigrapher that detailed interpretations, and the reliability of stratigraphic reconstructions depend upon the accuracy of fossil species definitions. The system named "Paleopalynology" is based upon a standardized

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classification of dispersed miospores and a refined system of terminology of the morphological features of miospores.

With regard to Late Paleozoic palynology, Russian specialists have, until recently, used the classification of miospores proposed by S.N. Naumova during the period 1937-39. For foreign palynological studies, the classification of R. Potonie and G. Kremp, as developed between 1854-56 was used. During recent years the morphological classification of Potonie and Kremp has been modified by other researchers, and it is widely used for the systematic study of dispersed miospores not only for the Paleozoic, but for the Mesozoic as well. In 1966, A.A. Luber proposed a slightly modified version of this classification. However, up until now there have been no publications of generic diagnoses of the Late Paleozoic miospores in Russian. At the same time, we note that the palynological publications in English seem to have unlimited growth in the number of new genera of dispersed miospores, many of which are, apparently, synonyms. The work of some palynologists has been hampered by the lack of a clearly and logically structured scheme for the identification of dispersed miospore taxa. In this connection, the primary task in the development of the system called "Paleopalynology" was to produce a computer database on Late Paleozoic Miospore Nomenclature (LPMN). The data base contains a glossary of standard terms used for describing morphological features of dispersed miospores. There is also a model for diagnostic morphological classification, and a synopsis of generic diagnoses of Late Paleozoic miospores. This task required revisions of the terminology used and the diagnoses of dispersed miospore genera from Devonian, Carboniferous, and Permian deposits, as known from the literature. The LPMN is composed of a number of different informational units. The first unit is a glossary of standardized definitions of terms used in the morphological descriptions of miospores, mentioned above. The second unit is comprised of generic diagnoses. A set of morphological features, which are necessary and sufficient for determination of form-genera was established for data input. The third unit contains the file with descriptions of diagnoses of form-genera of the Devonian, Carbniferous, and Permian. The following information is indicated for each form-genus:

- 1. Name
- 2. Author(s)
- 3. Year of publication
- 4. Taxa which are younger synonyms
- 5. Place of publication
- 6. Type species, with an indication of the year of

publication

- 7. Description of the genus
- 8. Remarks, containing information concerning the causes for inclusion of the taxon into synonomy, changes made in the course of redescribing the given genus, as well as the grounds for distinguishing the genus (if a new genus is being described)
- 9. Comparison with taxa which display simillar morphological features
- 10. Stratigraphic range
- 11. Geographic distribution
- 12. Possible natural affinities, with an indication of the place of publication of the given interpretation
- 13. Species composition of the genus, including the following: name, author(s), year of publication, locality of holotype, stratigraphic position, size. The description of each genus is accompanied by a schematic representation which reflects the combination of features of a given taxon.

The fourth unit of this database consists of a diagnostic key for Late Paleozoic dispersed miospores. The final unit of the LPMN, a bibliographic file, includes a list of publications used in the compilation of the database.

There are six basic operational modes in the LPMN system- data input, reference information on taxa, glossaries, diagnostic information, retrieval, and general information on the system itself. The system can be supplemented and the database corrected to accomodate current ideas concerning the nomenclature of Late Paleozoic miospores. Currently, there are 72 supergeneric taxa in LPMN, with 12 of them being new. There are 240 genera, of which 13 are new and 16 are emended;148 genera have been entered as synonyms. Information appears on 2112 species, and the comb. nov. for 502 species is presented.

Maya Oshurkova and Anna Suvorova The A.P. Karpinskiy All Russian Geological Research Institute

St. Petersburg 197061, Russia

NEW COUNCILLOR

The constituent societies of IFPS elect new councillors from time to time. We like to publish the names and, if possible, photographs of these people. This helps members of the entire palynological community to become better acquainted with the people who make the decisions. Here is the biography of one of our new councillors, Oscar Abbink. Anyone else who has

biographical information they would like to submit is encouraged to do so; the next issue of PALYNOS is scheduled for printing in December, 1997, and the information can be included if the editor receives it by the end of November.

Oscar Abbink has been appointed a councillor for the Palynological Circle (PK) in The Netherlands. Oscar received his M.Sc. in 1990 at the Laboratory of Palaeobotany and Palynology in Utrecht. During his studies, and for two years following graduation he worked within the LPP Foundation, the industrial consultancy unit of the Laboratory of Palaeobotany and Palynology. In 1992 Oscar started Ph.D. research on the palynology of Upper Jurassic and lowermost Cretaceous sediments of The Netherlands' offshore and Middle Jurassic Brent sediments of the northern North Sea. The study is sponsored by the oil industry and has focused on both palynostratigraphy and palynological characterization of depositional sequences. Oscar also serves as a computer network supervisor for the institute.



MEETING PROCEEDINGS

The 11th Symposium of the Association of Spanish-speaking Palynologists (APLE) was held in the historic city of Alcala de Henares, in the province of Madrid from 18-20 September, 1996.

Although less well-attended than on previous occasions (there were 60 participants), this was generally felt to have been one of the best meetings ever held by APLE, owing to the extremely high quality of discussions held during all the sessions. The Symposium, which was organised quite splendidly by members of the University of Alcala de Henares, lead by Dr. B. Ruiz Zapata, was structured into sessions on Mellisopalynology (6 oral communications and 6 posters), Palaeopalynology (28 oral communications and 4 posters), and Pollen Biology and Aeropalynology (11 oral communications and 9 posters). The closing leture, entitled " Pollen analysis in arid areas", was given by the IFPS President, Dr. Owen

At APLE's Biannual General Meeting, following the committee's reports, officers positions were renewed and it was agreed that the venue for the 12th Symposium would be held in the attractive city of Leon.

New officers:

President: Dr. M. Suarez Cervera

Secretary: Dr.M.F. Valle Hernandez

Treasurer: Dr. D.Fernandez Gonzalez Members: Dr. M.A.Fombella Blanco

Dr. B.Ruiz Zapata

Dr. A.T.Romero Garcia (Councillor)

On behalf of the Organising Committee, we invite all IFPS members to participate in the 12th APLE Symposium, to be held in Leon next year. As 1998 also marks the 20th anniversary of APLE, we have high hopes that the event will be very well attended. Leon, which lies on the Camino de Santiago in northwestern Spain, was founded two thousand years ago by the 7th Gemina Roman legion, and is a town of great historical and artistic interest.

submitted by:

Ana T. Romero (APLE councillor) ATROMERO@GOLIAT.UGR.ES

The VIIIth Russian Palynological Conference was held in Moscow from 30 September to 5 October, 1996. Its designated theme was "Palynology in biostratigraphy, palaeoecology and palaeogeography"; 132 specialists gathered from 26 cities of Russia, Belorus, Kazakhstan and Ukraina. The following sections and subsections were organized during the conference:

- I. Morphology of higher plants and pollen grains and changes caused by environmental pollution (convenors V.
- A. Krasilov, N. R. Meyer-Melikian, V. F. Tarasevich,
- O. F. Dziuba).
- II. Precambrian and Lower Palaeozoic palynostratigraphy (convenors N. A. Volkova and M. B.
- III. Devonian and Carboniferous palynostratigraphy (convenors M. V. Oshurkova and V. V. Menner).
- IV. Permian and Triassic palynostratigraphy (convenors
- A. V. Gomankov and O. P. Yaroshenko).
- V. Jurassic and Cretaceous palynostratigraphy

(convenors L. V. Rovnina and S. B. Smirnova). VI. Caenozoic palynostratigraphy

- A. Palaeogene (convenor G. M. Bratseva).
- B. Neogene Pleistocene (convenors N. P. Bolikhovskaya, I. A. Karevskaya, E. S. Pleshivtseva).
- C. Holocene (convenors G. A. Elina, Ya. K. Yelovicheva, V. V. Pisareva, V. I. Khomutova). VII. Algology
- A. Diatoms (convenor Z. I. Glezer).
- B. Precambrian and Lower Palaeozoic phytoplankton (convenors N. A. Volkova and M. B. Burzin).
- C. Mesozoic and Cenozoic phytoplankton (convenor M. A. Akhmetiev).

The following special topics in palynology were discussed in oral presentations:

- 1. Sporoderm ultrastructure of fossil spores and pollen grains.
- 2. Modern classification and nomenclatural problems in palynology.
- 3. The main criteria for validation of palynological data. Palynostratigraphical principles in subdivision of rocks; regional and inter-regional stratigraphic correlations.
- 4. Phytoplankton in biostratigraphy.
- 5. Palynology in ecological and palaeogeographical studies.
- 6. Palynology in studies of plant history.
- 7. New methods and improved information recovery in palynology The modern state of computer treatment of palynological data.

A total of 75 reports were presented and discussed. Also of great interest was the intersectional seminar on computer analysis of palynological data, held by M. V. Oshurkova and P. E. Tarasov. In addition to the technical sessions, the organizing committee of the conference held four most interesting excursions, 1) to the Laboratory of Electronic Microscopy of the Moscow State University (Prof. N. R. Meyer-Melikian), 2) to the greenhouse of the Main Botanical Garden (Prof. N. R. Meyer-Melikian), 3) to the Palaeontological Museum of the Russian Academy of Sciences (M. B. Burzin) and, 4) an historical excursion to ancient nooks of Moscow (Profs. A. A. Lukashov and I. A. Karevskaya).

In view of the scientific significance of the presentations, and considering the value of the stratigraphic and palaeogeographic data presented at the conference, it was decided to publish 40 reports in the chief Russian journals as well as a collection of papers

focusing on "Neogene-Pleistocene and Holocene Palynology".

The participants of the conference approved the report by L. V. Rovnina for the activity of the Russian Palynological Commission (RPC) in 1993 - 1996, and elected her as the chairwoman of the Commission for a new four-year period. The new staff of RPC was elected as well, including associate members from the Commonwealth of Independant States (CIS). It was decided to hold the IXth Russian Palynological Conference in Moscow in 1999.

Submitted by:

N. S. Bolikhovskaya Department of Geography Moscow State University Leninskie Gory 117234 Moscow Russia,

A. V. Gomankov Geological Institute Russian Academy of Sciences 7, Pyzhevsky 109017 Moscow Russia,

L. V. Rovnina
Institute of Geology & Develoment of Fossil Fuels
50, Fersmana
117312 Moscow Russia

MEETING NOTICES

CIMP SYMPOSIUM 1998, PRELIMINARY CIRCULAR

Date and place:

The next general Symposium of the Commission Internationale de Microflore Paleozoique (CIMP) will be held in Pisa, Italy, from September 11 to September 15, 1998.

Scientific program:

The provisional program includes plenary lectures, two Subcommission symposia (running concurrently), short workshops of CIMP working groups, and a microscope session. Contributed oral and poster communications will be accepted; no concurrent scientific activities will take place during the poster session. Business meetings also are foreseen.

Exhibitions of scientific equipment and books might

possibly be arranged. Potential exhibitors should contact the Organizing Committee.

Publications:

All registered participants will receive a copy of the book of abstracts at the Symposium. A proceedings volume will be published, probably as a special volume of the Bollettino della Societa Paleontologica Italiana (SPI).

Language:

The official language of the CIMP Symposium will be English.

Social program:

Social events will include guided visits to the medieval towns of Pisa and Lucca and a gala dinner. Special guided visits to archaeological and medieval sites and/or museums might be organized for accompanying persons.

Field excursion:

The Palaeozoic sequence and palynology of Southern and Central Sardinia are being considered as fieldtrip topics. More information will be given in the First Circular, which is scheduled for distribution this summer.

Estimated costs and accomodations:

Costs will depend upon the number of participants, as well as financial help from possible sponsors. Our major objective is to bring CIMP members together by keeping the accomodation costs down. The provisionally estimated registration fee does not exceed \$100 US. Inexpensive accomodation (full day board for one person, about \$38 to \$48 US) is possible, as well as more expensive options in hotels. Camping also is available not far from the Symposium site. More precise information about costs will be given in the First Circular.

Address for correspondence:
Organizing Committee CIMP '98
Universita di Pisa
Dipartimento di Scienze della Terra
Via S. Maria 53 - I 56126 - Pisa (Italy) Email:
albani@dst.unipi.it - Fax: +39 50 500932

Organizing Committee: General Chairman: Marco Tongiorgi Field excursion Chairman: Paola Pittau Secretary: Roberto Albani

submitted by: prof. Marco Tongiorgi Universita' di Pisa Via S.Maria 53 - 56126 PISA - Italia tel.+39 50 847268 - Fax +39 50 500932 E-Mail tong@dst.unipi.it

THE NINTH BRAZILIAN MEETING OF
PALEOBOTANISTS AND PALYNOLOGISTS
(IX REUNIÃO DE PALEOBOTÂNICOS E
PALINÓLOGOS), organized in memory of Prof. Dr.
Murilo Rodolfo de Lima

Date and place:

9-12 December, 1997, to be held at the Universidade Guarulhos - UnG Geoscience Department, Guarulhos, Sao Paulo, Brazil

Scientific Program:

The Ninth Brazilian Meeting of Paleobotanists and Palynologists (IX Reunião de Paleobotânicos e Palinólogos - IX RPP) will be held on December 9-12, 1997, at the Universidade Guarulhos in the Greater São Paulo metropolitan area. After being held for nearly 20 years at the Universidade of São Paulo (I-VIII RPPs), this meeting will mark the beginning of what we hope will be a scientifically stimulating rotation of this traditional scientific meeting among the major Brazilian centers of research in paleobotany and palynology. As in all previous meetings in this series, this year's program offers a broad spectrum of activities, divided approximately equally between technical sessions (oral and poster presentations) and special events, which will include the following:

- 1. Lectures on "Biochemistry in the Classification of Plants" and "Statistical Methods Applicable to Palynology and Paleobotany"
- 2. Keynote presentations followed by round-table discussions on Carboniferous Basins of South America, the Origin and Evolution of Angiosperms, and Late Quaternary Climatic Changes in Brasilian Vegetation
- 3. A 4-hour short course on the computer program "TILIA", popular among palynologists.

Estimated costs and accomodations:

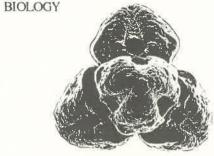
The registration fee is \$80 US, payable by check to Antônio Roberto Saad. Information on accommodations and how to get to the meeting site will be furnished in a Second Circular to be sent out in July, but it is also avaliable by e-mail.

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For further information, contact:
Profa. Dra. Maria Judite Garcia (President, Organizing
Committee) Universidade de Guarulhos, Departamento de
Geociências Praça Tereza Cristina, 01
Guarulhos, SP, Brazil - 07023-070
Telephone: 55 (11) 6464-1708
Fax. 55 (11) 6464-1702, 6464-1708 or 6440-2030 email: geo@server.ung.br
www.ung.br

POLLEN AND SPORES: MORPHOLOGY AND



London 6 - 9th July, 1998

Date and place:

6-9 July, 1998, to be held at the Royal Botanic Gardens, Kew, Richmond, Surrey, England

Scientific Program:

This is the fourth in an occasional series of palynological conferences organized by the Linnean Society Palynology Specialist Group (LSPSG) in collaboration with the Royal Botanic Gardens, Kew, and the Natural History Museum, London. The previous conferences were as follows:

The Evolutionary Significance of the Exine (1974) Pollen and Spores: Form and Function (1985) Pollen and Spores: Patterns of Diversification (1990)

The conference is timed to coincide with the retirement from Kew of Keith Ferguson, founder and first secretary of LSPSG (1974-87). The program will be a selection of both invited and contributed papers and posters on the following topics:

- 1. Pollen development
- 2. Anther and tapetum
- 3. Pollen-pollinator interactions
- 4. Pollen-stigma interactions
- 5. Pollen morphology in systematics and evolution

- 6. Ultrastructure (fossil and living groups)
- 7. Pre-Cretaceous palynology
- 8. Cretaceous palynology
- 9. Tertiary palynology
- 10. Quaternary palynology
- 11. Palynology and archaeology
- 12. Preparation and techniques

Official language:

The official language will be English.

Estimated costs:

The proposed registration fee will be about 130 pounds sterling, with reduced rates for students. Registration forms will be included in a second circular.

For further information, contact: Lisa von Schlippe, Conference Administrator, Royal Botanic Gardens, Kew, Surrey, TW9 3AB FAX +44(0)181 332 5176/5278 e-mail l.von.schlippe@rbgkew.org.uk



BOOK REVIEWS

Nickel, B., 1996, <u>Die mitteleozaene Mikroflora von Eckfeld bei Manderscheid/Eifel</u>, Mainzer naturwissenschaftliches Archiv Beiheft, 18: 148 pp, 5 fig., 13 pl.; Mainz (Naturhistorisches Museum). ISSN 0174-6626

The late Middle Eocene (Geiseltalian) sedimentary filling of a maar-lake at Eckfeld near Manderscheid (Eifel, Germany) recently became well known as a Fossillagerstaette. The Eckfeld-maar is of special interest if compared to other famous nearby Middle Eocene localities such as Messel and the Geiseltal area. Due to its origin and palaeogeographic position, it was an exceptional trap preserving biota from outside of peatforming coastal lowlands. The enormous number of plant remains represents the zonal flora of late Middle

Eocene Europe, and possibly is even better than Messel. The microflora (spores and pollen) of Eckfeld was studied systematically and 190 "species" (7 of them new) could be distinguished. They are described and discussed in the present volume. Most of them are documented by photographs on plates of high quality. The stratigraphic resolution of pollen and spore taxa/assemblages throughout the Middle Eocene of Europe is critically discussed. Incongruencies of pollen/spore floras may obviously be due to different facies of the respective deposits whereas slight differences in age are not clearly reflected.

Reviewed by:

Volker Wilde, Frankfurt am Main (Germany)

Die mitteleozaene Mikroflora von Eckfeld bei Manderscheid/Eifel may be obtained from Naturhistorisches Museum Mainz, Reichklarastr. 10, D-55116 Mainz, Germany. Please make cheques payable to the above address (\$ 25,-- including postage via surface mail).

Carling, P.A. and Dawson, M.R., editors, 1996, Advances in Fluvial Dynamics and Stratigraphy, 530 pp. John Wiley & Sons, West Sussex, England, ISBN-471-95330-X.

This book is an edited compilation of 13 papers solicited in 1993 for the purposes of both disseminating new ideas and advances in research in fluvial dynamics and stratigraphy to a wider audience, and to generate dialogue among people working in the disciplines of fluvial geomorphology, sedimentary geology, and hydrodynamics.

The material presented is the result of good research employing many of the latest technological tools. Nonetheless, the vogue nowadays (see Ashworth et al. 1996, Coherent Flow Structures in Open Channels) is to forego a truly insightful and detailed explanatory preface, a preface that describes in detail the focus of the whole book (their preface does this in part), and place it within the context of our present physical understanding of the relationships among the various scales of coherent flow structure, sediment dynamics and fluxes, and the subsequent nature of the deposits themselves (this they do not attempt). In other words, rather than jump straight in, I believe the editors of such compilations should attempt as a beginning chapter a true general

review of the state of affairs of their subject area(s) (see Rhoads and Thorn 1996, The Scientific Nature of Geomorphology as an excellent example of what I would want to typically see). Given that Carling and Dawson state that Advances in Fluvial Dynamics and Stratigraphy should be accessible to the 'non-specialist...' then such a preface should have been written -- their token attempt undercuts their stated aims. In addition, the papers presented here seem to fall into topic clusters. A separate, thorough, introductory overview of previous work, and concise explanation of the aim of these papers before each cluster would have been very helpful (once again see Rhoads and Thorn for their excellent editing).

At times I feel very confused by the need, desire or necessity of editors in this arena to include such microscale work as is presented in the first chapter, Turbulent Flow in Rivers. Although the research presented "...clearly implicates geophysical turbulent bursting as being fundamental forcing agent in sediment transport dynamics in fluvial situations." -- does this work generate information at a scale that is appropriate to help explain the formation of sedimentary units? The author notes "What remains less clear, however, is the method by which this knowledge can usefully be applied to the practical problem of estimating sediment flux."...let alone stratigraphy units. This is particularly interesting given that, although, Jackson's (1976) paper of sediment/boil vortexes at the scale of a cross-section is mentioned, little has followed this classic paper in attempting to associate micro bursts with macro size vortices that might affect the development of large, cross-sectional size sedimentary structures. Although, Babakaiff and Hickin (1996) explore surface boils they found them to be transitory in nature and were unable to conclude whether such features could effectively alter the form of open channels. I am left thinking "Will this work go anywhere?"

Given the nature of this audience, for the second paper, (Three-dimensional Flow in Straight and Curved Reaches) to be of practical use or interest it should have been more exploratory -- the authors admit in their second to last paragraph that "The next major step as far as numerical models go is in the area of mobile-bed simulations." Their attempt to illustrate one possible methodology to implement such a cause of action was, however, a good start. But, as they themselves note "...as sedimentary processes occur over a much greater time-scale than flow processes.... 2-D let alone 3-D numerical modeling of these processes is still some way

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off." Honest -- yes, helpful -- I'm not so sure.

Chapters 3 (The Fluid Dynamics of Small-scale Alluvial Bedforms), 4 (Entrainment of Sediments from Deposits of Mixed Grain Sizes and Densities) and 6 (Sediment Sorting over Bed Topography) are certainly worth reading -- I believe these papers will provide some useful information to the readers of this newsletter. However, Chapters 5 (Unsteady Transport of Sand and Gravel Mixtures) and 7 (Modelling the Sediment Transport Process) do not initially excite me nor do they really appear applicable to palynologists.

Lastly, the final six chapters, which deal with such topics as facies modelling, reconstructing channel morphology, and modelling of subsurface fluvial stratigraphy, are excellent, well written, and I think very useful and thought provoking. All of these chapters are worth reading by palynologists interested in increasing their understanding of the fluvial processes operating at the scale of the channel cross-section, and bedforms that sort, deposit and render sedimentary forms. I particularly enjoyed reading Chapter 9 (Process Deduction from Fluvial Sedimentary Structures) written by Simon Todd. In contrast to the initial chapters in this book, he discusses the advances in the deduction of depositional process from preserved sedimentary rock structures in the rock record. Although qualitative in interpretation, his review of the previous 10-15 years work is excellent. In addition, although a short chapter, Bristow's Chapter 10 (Reconstructing Fluvial Channel Morphology from Sedimentary Sequences) is similarly well-written and deserves your attention.

Given the number of criticisms I level at this book I can hardly recommend this book to all palynologists -- but I can suggest that many of you might borrow it to read a number of the relevant chapters, particularly those written by Todd and Bristow.

Reviewed by:

Mark R. Welford Assistant Professor of Geography Department of Geology and Geography Georgia Southern University Statesboro, GA 30458 USA

References:

Coherent Flow Structures in Open Channels (1996) edited by Ashworth, P.J., Bennett, S.J., Best, J.L. and McLelland, S.J. John Wiley & Sons

Babakaiff, C.S. and Hickin, E.J. 1996. Coherent flow structures in Squamish River Estuary, British Colombia, Canada. Coherent Flow Structures in Open Channels edited by Ashworth, P.J., Bennett, S.J., Best, J.L. and McLelland, S.J. John Wiley & Sons

Jackson, R.G. 1976. Sedimentological and fluid-dynamic implications of turbulent bursting phenomena in geophysical flows. J. Fluid Mechanics, 77, 531-560.

The Scientific Nature of Geomorphology (1996) edited by Rhoads, B.L. and Thorn, C.E. John Wiley & Sons

PALEO LIBRARY DISPOSAL

Please make note of this offer from Dr. Jim Canright:

"Now that my administrative duties with IFPS have ended, I am in the process of moving out of my departmental office. Accordingly, I am now disposing of my professional library, mainly titles in paleobotany and palynology, including a complete set of the journal Palynology.

Anyone with specific interests should contact me for further details of the titles I have available."

James E. Canright Professor Emeritus Pepartment of Botany E

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