



NEWS AND VIEWS

"How do pollen morphologists select the next groups to be investigated? - A response from some systematic pollen morphologists"

We enjoyed reading Henry Hooghiemstra's article in PALYNOS 24/1 because it is both challenging and thought-provoking. The proposal for a more structured collaboration between various groups of palynologists is a welcome initiative, and would be a great step towards intergrading basic and applied pollen and spore morphological research.

To begin with, Henry is possibly labouring under the delusion that there are as many pollen morphologists out there as there are palynologists/paleo-ecologists. Sadly this is not the case, if it were no doubt pollen morphologists could be much more helpful. We perceive that Henry's answer to this would be: "no wonder they are a rare breed, they don't work with the palynologists/paleo-ecologists!" Of course this isn't true, many pollen morphologists do work with the perceived "other side", because, there is no real dividing line, only in our minds. Pollen morphologists historically have sprung from both geology and botany, probably more from geology in fact. It is the nature of the research investigation that drives the way in which pollen morphologists or palynologists set about a task, and decide the sort of data they want to collect.

As systematic pollen morphologists we are very aware of the problems of interpretation encountered by palynologists/paleo-ecologists working with dispersed fossil spores and pollen - it is an almost insoluble problem for some plant groups where the pollen is highly stenopalynous. Certainly we have sometimes been puzzled by published assemblages of fossil pollen, which as Henry says, appear to represent far too wide a range of ecological conditions to be conclusive for a particular palaeo site. Many of us have provided valuable monographs with the needs of our palynologist/paleo-ecologist colleagues in mind. The World Pollen and Spore Flora (WPSF), for example, is evidence of a continuously serving commodity in this context. It is a high quality publication, providing full details of the range of pollen characteristics within a family, and identification keys to narrow down the possibilities. Some of the families Henry lists have already been published - Bombacaceae and Combretaceae. The problem is finding enough pollen morphologists with time to spend writing them (see article in this edition of PALYNOS - pp. 7-8). Regional pollen floras are very variable in quality, but some are superb, even the poorer ones have much valuable information, and provide starting points for more detailed research within a defined geographic area.

There is a basic conflict of interest between pollen morphology for (A) -purposes

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of comparison/identification, which fits the needs of palaeopalynology, archaeology, forensics, melissopalynology etc. and (B) - phylogeny, where botanists are looking for answers to evolutionary relationships between groups of plants. (A) users want pollen types with keys; while (B) users want pollen characters and

plants because, as we all know, pollen morphology is a highly informative part of this process. Good pollen morphologists work not only with scanning electron microscopy which, on its own, is probably the least informative method but also, very importantly, with light microscopy and transmission electron

character states defined for use in cladistic analyses. As the palynological sciences of climate and ecological reconstruction versus plant phylogeny become ever more exacting, so the differences in the way pollen morphology is analysed widen. It is important, and fundamental, to understand that, "...a pollen type is not a character, and cannot be recognised as a synapomorphy since its uniqueness relies on a combination of characters. Each pollen character comprising a pollen type must be teased apart and used objectively, as a character in its own right, for inclusion in the cladistic data matrix. While the pollen type is upheld for comparative applications it is inappropriate for phylogenetic analysis." Harley & Zavada (2000).

For the most part it is the pollen morphologists who have built up the wonderful data bank of angiosperm pollen that exists, although it is far from complete, and will probably never be complete to everybody's taste. Pollen morphology enjoyed a "short life, and a merry one" going solo, in terms of research funding within institutions and universities. Currently the survival of much pollen morphological study is because it is part of the work of collaborative teams. Where, although advantageous, an encyclopaedic knowledge of pollen morphology is not necessarily needed to fulfil the terms of the project. In fact it is predictable that pollen morphologists with a rich and broad knowledge of angiosperm pollen and its published literature will probably become much less common, as short term employment contracts become ever more frequent.

So, what are pollen morphologists doing? How do we select the groups to work on? - unsurprisingly not with a pin! - although future planned research objectives may well include elements arrived at by intuitive, knowledge-based accident - that is how science progresses. Pollen morphologists work in all the areas outlined in the (A) category, but clearly there are not enough of us to go round. In the (B) category, we contribute pollen data to phylogenetic analyses of selected groups of

microscopy. In order to build highly informative descriptions of the pollen grain. How are the groups of plants identified and agreed upon, what are the applied criteria? Groups of economic importance (for example, *Arecaceae*, *Leguminosae*, *Solanaceae*) tend to attract research funding and, consequently, researchers. Large families with unresolved infrafamilial relationships such as *Euphorbiaceae*. Major groups such as the monocotyledons and primitive (basal) dicotyledons, where pollen is making a dynamic contribution to our understanding of angiosperm evolution. Research in these groups continues to be very active, especially where there are gaps in the knowledge of the pollen morphology, and the developmental influences on the form of the mature pollen. Many of the families and groups of families studied are large, and the phylogenies within the family are critical, as well as their wider relationships.

Another great contribution of the pollen morphologists has been the stabilisation of pollen terminology, from a veritable "minefield" of synonymous or even erroneous terms, sometimes applied in "Babel"-like fashion throughout the world pollen literature (Punt et al. 1994). Furthermore, we should not forget that seemingly simple trivial questions, for example, "Pollen grains: why so many?" (Cruden, 2000) remain scientifically unresolved. Our research is very exacting, and usually time bound. It is rooted in the vast accumulation of knowledge of pollen and spore morphology amassed during the 20th century, and the well-equipped laboratories established during the latter half of that century across the world. The scope for a systematic pollen morphologist working primarily in the (B) market to also produce for (A) market consumers is limited by lack of personnel and/or funding.

To end we would like to pose a question, and a possible way forward: "How do palynologists/paleo-ecologists select their teams of investigators?". Maybe they should budget for a pollen morphologist,

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or collaborate in studentships with experienced pollen morphologists to work, for example, on some of the smaller families of interest to the palaeoecologists, as remarked by Henry. We would welcome the palaeoecologists defining the plant families of value to them, but for which there are no published, comprehensive pollen morphological accounts. It would certainly help in the forward planning of, for example, the WPSF. If this highly relevant publication is to survive it needs to be further and faster developed, strictly

Highly Polleniferous, Insect Coprolites: A POLPAL-I Discussion

The level of incredulity needed to assess the monthly tsunami of relevant scientific reports is so high that the critical impulse is difficult to curb even at one's leisure. It was thus with voyeuristic pleasure, and also a mild sense of incredulity, that I read the Friis et al. (2001) report "Fossil evidence of water lilies (*Nymphaeales*) in the Early Cretaceous". It is here that I first heard of

planned and more frequently issued, to serve its purpose in the scientific community. It is more than probable that part of pollen morphology's future, as its past, will involve more students and qualified palynologists being encouraged to spend time working on pollen morphological projects, relevant to the elucidation of their wider research, and this could be written into BIOME project proposals.

This is an important topic as it affects most of us reading PALYNOS in one way or another. We thank Henry for inviting discussion. It would be good to have more comment in the next issue from others at the "cutting edge" of pollen morphological, and palaeo-ecological studies, especially younger researchers who hope to stay in the business!

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Michael Hesse

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Siwert Nilsson

(Palynological Laboratory, Swedish Museum of Natural History, Stockholm, Sweden)

Cruden, R.W. 2000. Pollen grains: why so many? In: Pollen and Pollination. (A. Dafni, M. Hesse and E. Pacini (Eds)), pp. 143-165. Springer, Wien & New York.

Harley, M.M. & Zavada, M.S. 2000. Pollen of the monocotyledons: selecting characters for cladistic analysis. In: Monocots 2 Proceedings (K. Wilson and D. Morrison (eds)). Pp. 191-210. CSIRO.

Punt, W., Blackmore, S., Nilsson, S. & Le Thomas, A. 1994. Glossary of Pollen and Spore Terminology. LPP Contributions Series 1. LPP Foundation, Utrecht. 71pp.

the elusive, highly polleniferous, insect coprolite (HPIC), a recent subject of discussion amongst the international palynological community.

The Friis et al. paper details a fossil water lily flower that, because of its age, taxonomic affinities, size and membership in a highly diverse fossil community, is of great interest. The flower lived approximately 125-115 million years ago, and saw its demise in the ancient mud of Vale de Agua, Portugal. The deposit is unique because the Early Cretaceous is about as deep as we can see in the fossil record of angiosperms. Also, in contrast to most modern water lilies, the specimen described here is just 3mm x 2mm. Not only is the water lily small, the Vale de Agua stratum is replete with diverse, minute, floral parts. Despite the fascinating features of the water lily, it is not what I found so astonishing about this paper.

In the report the authors describe tiny, insect coprolites (fossil pooh), composed exclusively of pollen and found in the Portuguese deposit. The coprolites are considered evidence of intense insect utilization, and thus pollination, of flowers at the time of the fossil water lily. Though the subject of fossil pollen pooh has just enough obscurantism to be mildly hilarious, these remains are much like the proverbial smoking gun to pollination biologists and certainly aroused some serious questions in my mind. Where are these remains being found and who is finding them? When one finds an HPIC, how does one know what one has found? When I think of an HPIC, I think of a small ball of pollen or a splat. Would such a thing be readily identified after eons and could we be sure that this ball or splat truly came out of an insect? In essence, I wanted to assess the acceptability of HPICs to palynologists and to gauge standards of rigor in the business of identifying an HPIC. Sensing both my incredulity and lack of professional experience

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with fossil insect droppings, I decided to instigate a discussion of HPICs in POLPAL-1, an e-mail discussion group comprised mostly of pollination biologists.

The first response came from Alwynne B. Beaudoin at the Provincial Museum of Alberta, Canada. She invited me to visit her "Dung File" - <http://www.ualberta.ca/~abeadoi/stuff/dung.htm> a list of articles about things one might find in coprolites, such as parasites, seeds, pollen and other plant remains. The file contains information on ancient diets, parasitism, paleo-environments and pollen in ancient dung, but there was no specific

Nymphaeales and also seems probable for the fossil water lily described here".

I hoped that the text would stimulate a more focussed debate. After some semantic insight from Wrenn and James Cane, USDA Bee Biology Lab, concerning the best way to discuss HPICs, the discussion concluded and I was no closer to a clear vision of the HPIC.

Undeterred, I contacted Else Marie Friis of the Department of Paleobotany, Swedish Museum of Natural History. I asked her about the HPIC evidence and she sent me a report entitled,

reference to insect coprolites made entirely of pollen.

John Wrenn, of the Louisiana State University, Geology and Geophysics Department, submitted a terse assurance of the value of coprolite studies in gathering data about ancient plant assemblages and paleo-environments. To support this statement, Wrenn cited the presence of "sparse-to-rare" pollen assemblages in Oligocene coprolites of the U.S. Great Plains. These remains, he stated, provide a unique perspective of this ancient environment, untenable in other types of sediment and provide evidence of ancient animal diets, a statement I do not dispute. Subsequent responses made me realize my original letter lacked clarity. The first responses referred only to coprolites with pollen in them but not to the more rarefied insect coprolite, composed only of pollen and over-flowing with meaning to the early history of angiosperms. Linda Scott Cummings, the Director of the Paleo Research Institute, wanted me to clarify the type of coprolite I wished to discuss. She said she had never known "lumps of old pollen" (as I called the fossil, pollen balls) to be called coprolites. I felt that if the director the Paleo-Institute had never heard of these coprolites, then they must be very rare or worse.

To clarify, I transcribed the paragraph that cites the HPIC discovery. *"Insect pollination has been inferred for most of the early angiosperms described to date on the basis of features such as an abundant connective tissue, ethereal oil cells and valvate anther dehiscence in the stamens of Early Cretaceous Flowers, as well as the presence in the Portuguese floras of insect coprolites consisting exclusively of angiosperm pollen. Insect pollination is predominant in the*

"Fossil floral structures of a basal angiosperm with monocolpate, reticulate-acolumellate pollen from the Early Cretaceous of Portugal" (2000), which contains pictures of the HPIC. The specimen looks much like insect poo. If this specimen was on my plate at a restaurant, I might send the food back, although this surely can not be considered a scientific criterion. Pollen seems to be the major component and the pollen looks rather digested. Some grains are divested of their loose reticulum and are squeezed together in a decidedly unnatural way, arguing against the possibility that this is a degraded anther. The specimen is composed of a single pollen type, suggesting that an organism, likely an insect, made the pollen of one species its exclusive fare, possibly indicating advanced specialisation. The evidence is quite intriguing.

Beyond the implications of the HPIC to pollination biologists, a perusal of the research associated with these deposits is edifying on a basic level to any student of Botany. For those who wish to pursue the subject further, I gather from a reliable source that we may be soon hearing more about HPICs.

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Friis, E. M., K. Raunsgaard Pedersen, PR. Crane. 2001. *Nature*. 410: 357-360.
Friis, E. M., K. Raunsgaard Pedersen, PR. Crane. 2000. *Grana*. 39: 226-239.

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The Millennium Ecosystem Assessment

The Millennium Ecosystem Assessment (MA) is seeking nominations of social and natural scientists to participate as experts or reviewers in the MA process. The MA is a pathbreaking international assessment that will meet decision-makers' needs for scientific information on the consequences of ecosystem change for human wellbeing and on the response options available to address undesired changes. As a 'multi-scale' assessment, the MA will seek to inform the global findings with information and perspectives from the local, national and regional scale, and inform local findings with a global context. The MA is designed to meet a portion of the assessment needs of the Convention on Biological Diversity, Convention to Combat Desertification, Wetlands Convention and other users including the Private sector, civil

With many thanks for your help in disseminating this call to a wide an audience as possible.

New Secretary for International Commission for Plant-Bee Relations (ICPBR)

Juliet Osborne replaces Jean Noel Tasei as Secretary of ICPBR, a post that Jean Noel has held for 15 years. Juliet's current research is on the behaviour and movement of bees, and associated pollen flow between plants with Prof. Ingrid Williams. She is based at the Institute of Arable Crop Research, Rothamsted, Harpenden, UK.
Website address:
<http://www.iacr.bbsrc.ac.uk/iacr/tiacrhome.html>

Dr. Stanislas Loboziak (Lille, France) retires

Dr Stanislas Loboziak retires in January 2002 as research associate of the CNRS of the department

society, and indigenous peoples. The deadline for receipt of author nominations is December 15, 2001.

Nominations for reviewers will be accepted through August 1, 2002. The MA Board, and Assessment Panel will review Author nominations. Coordinating Lead Authors will be notified between February and March 2002 and Lead Authors by July 2002. This call for nominations is being sent to the government focal points of the above conventions and to networks of academic, private sector and non-governmental experts around the world. We hope that you will distribute this call for nominations to colleagues, who may know of qualified and interested individuals, and to any distribution lists or Internet listservers that could reach qualified experts.

As with other international assessments, including the Intergovernmental Panel on Climate Change and the Ozone Assessment, the salary of experts involved in the MA generally must be covered by their home institutions and governments. The technical work of the Assessment will be conducted in English and all nominated experts must be fluent in spoken and written English. For information on the nomination requirements and on the roles of the experts and reviewers in the MA process, please see the detailed documentation available at www.millenniumassessment.org.

of Palaeozoic Palaeontology and Palaeogeography (UPRESA 8014 du CNRS) at the University of Sciences and Technologies of Lille. Stan played an essential role in Palaeozoic palynology in the last decades, in particular in Upper Devonian and Lower Carboniferous miospore research. In the early 1960's, Stan joined, at the University of Lille, the laboratory of a famous paleobotanist, Paul Corsin, who suggested to him successive research topics in coal-mine palynology. Stan obtained a MSc (Doctorat de 3^{ème} cycle) in 1962, and a Ph.D (Doctorat d'Etat des Sciences naturelles) in 1969. Since 1962 he has worked in the same university as a researcher of the French National Centre of Scientific Research (CNRS). After investigations on megaspores and their application in biostratigraphy, he soon came to miospore stratigraphy of the Westphalian, demonstrating, for instance, the occurrence of Westphalian D in the northern France coal-basin. Subsequently he worked on spore stratigraphy in different coal basins in France but also in Spain, Turkey, USA, and USSR., in collaboration with almost all palynological laboratories of Europe. In the late seventies, he extended his studies stratigraphically to the Lower Carboniferous of Niger and Libya, and to the Devonian-Carboniferous transition of Canada and Iran. He came to the Middle and Late Devonian in

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1980, in the type Ardenne-Rhine regions first, then since the late eighties in Algeria, Libya, Saudi Arabia and Brazil. Ten years ago, he started a fruitful collaboration with Petrobras palynologists, since then, participating in an updating of the biostratigraphy of the Devonian and Lower Carboniferous of Brazil, which made him the undisputable Middle Devonian to Carboniferous expert in Gondwanan miospore stratigraphy. In January 2002, Stan will retire from his position at Lille. Some of his colleagues came together at Lille, December 11th for a special jubilee session, co-organized by the CIMP (Commission de Microflore du Paléozoïque), the PPMB (Palynologists and Plant Micropalaeontologists of Belgium), and the UPRESA 8014 (CNRS). This jubilee session included a list of scientific talks presented to an international audience by French (F. Paris, T. Servais), Belgian (M. Streel, J. Verniers), British (J. Marshall, B. Owens) and Irish (K. Higgs) scientists and the presentation of the special issue on Palaeozoic Palynology to be printed in the Review of Palaeobotany and Palynology. This special issue was edited in honour of Stan

Printing and distribution of PALYNOS

PALYNOS has been around for a long time, since 1978 in fact. During the intervening years methods of communication have been revolutionised. The cost of printing and distributing PALYNOS is currently very high, to say nothing of the burden placed on the Secretary Treasurer in packing and mailing copies to the National Councillors to distribute. Naturally, to save costs and time, our IFPS Councillors often distribute PALYNOS to their members with their own society newsletter. As a result some members do not see PALYNOS for a long time after it has been printed and mailed. The good news is that, for those of you who remain unaware of it, PALYNOS is available in electronic form on the IFPS website:

www.geo.arizona.edu/palynology/ifps.html

We are seeking comment on the proposal that we try to reduce, or even cease, to print hard copy of PALYNOS. Instead, National Councillors could take responsibility for downloading and photocopying PALYNOS for any members who

Loboziak and we hope that it may serve as a way of saying "thank you" to Stan for all he has done for the palynological community.

Thomas Servais (Villeneuve d'Ascq)
Philippe Steemans and Maurice Streeflinger

Abteilung für Ultrastrukturforschung und Palynologie: Institut für Botanik und Botanischer Garten der Universität Wien

Have you visited the website for the Department of Ultrastructure and Palynology at the Botanical Institute and Botanic Gardens of Vienna University? try it!
<http://www.botanik.univie.ac.at/>

Shared acronyms - shared confusion?

No doubt some of us have already noticed that The International Palaeontological Association (IPA) are using the acronym "IPC" for their first international congress, in Sydney next year. So, be careful not to confuse IPC I (2002) with the International Palynology Congress - **IPC XI (2004)!**

do not have access to the internet. Probably a very limited number of people nowadays. Annual dues from affiliated societies of IFPS are for printing and distributing PALYNOS, and for running the international congress every four years. Currently the cost of two issues of PALYNOS per year is just about covered by the annual dues from affiliated societies, provided all the dues are received, which sadly is not always the case. We propose that this money could be put to much better use by offering a few small IFPS bursaries to promising young palynologists to assist them in attending a conference (the next IPC congress for example!), or towards a study visit etc.

Madeline Harley (Secretary-Treasurer IFPS)

Send your responses to me at:
m.harley@rbgkew.org.uk

WARNING - no comment will be counted as a "yes" vote for PALYNOS by electronic access only

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ANNOUNCEMENTS

GRANA - An international journal of PALYNOLOGY and AEROBIOLOGY

GRANA, originally published as Grana Palynologica, was founded in 1954 by Professor Gunnar Erdtman. GRANA publishes original papers on all aspects of palynology, including the morphology and biochemistry of eukaryotic pollen and spores, as well as relevant laboratory and numerical techniques. Papers discussing the implications of these topics in relation to plant taxonomy and phylogeny, palaeobotany, aerobiology, phytogeography, ecology and medicine are particularly welcome.

GRANA is one of only a few well-established, and much-respected international palynological journals with particular focus on modern palynology.

One volume in six numbers, is currently published per year. Occasionally a part, or parts of, a volume, are dedicated to a particular theme, or to a symposium, for example Volume 40:1-2(2001) contains articles from the pollen symposium: The Role of Palynology in Phylogeny and Systematics (XVI International Botanical Congress, St. Louis, U.S.A., 1999). Most issues, however, are representative of the wider scope and profile of

For further information see the GRANA web-site at: www.nrm.se/pl

WORLD POLLEN AND SPORE FLORA (WPSF)

The World Pollen and Spore Flora project was initiated in 1973. It is published as an occasional monographic series. Unlike regional pollen floras, each monograph addresses the pollen or spore morphology of a complete family or, where pertinent, smaller taxonomic units. General and detailed descriptions of the pollen and spore morphology of recent taxa, based on quantitative and qualitative data from light, scanning electron and transmission electron microscopy, are given. Pollen types are described, and pollen keys are also provided. For each family treatment summaries of current taxonomic and systematic opinions are included. The contribution of palynological data to extant taxonomy and phylogeny are discussed. The high quality illustrations include a comprehensive assemblage of LM, SEM, and TEM pictures to show the full range of variation in the pollen grains and spores within the family.

These pollen accounts are unique in their comprehensive coverage of pollen morphology at family level. They are an indispensable guide to pollen and spore morphology, both for students and for professional palynologists.

Grana, such as the next four issues.

Please note, that from volume 41 onwards, GRANA will be published with four numbers per year.

Siwert Nilsson Chief Editor

Correspondence concerning manuscripts and editorial matters should be addressed to: Siwert Nilsson, GRANA, Palynological laboratory, Swedish Museum of Natural History, SE-104 05 Stockholm, Sweden. Tel.: 46-8-5195 4200; Fax: 46-8-5195 4266; E-mail: siwert.nilsson@nrm.se

Correspondence concerning subscriptions and prices should be sent to: Taylor & Francis, GRANA, attn. Marie Larsson, Box 3255, Se-03 65 Stockholm, Sweden. E-mail: marie.larsson@se.tandf.no
WEB-site: www.tandf.no/grana

Since 1973 22 issues have been published : Bombacaceae, Burseraceae, Combretaceae, Cornaceae, Fagaceae (2 parts), Fouquieriaceae, Humiriaceae, Juglandaceae, Magnoliaceae, Menyanthaceae, Onagraceae (4 parts), Rhamnaceae, Schisandraceae, Umbelliferae, Winteraceae, and also Entolomataceae, and Russulaceae.

The WPSF is published at irregular intervals because it is dependant on available contributions. For the future long-term planning it is necessary to ensure a more frequent and regular appearance of WPSF. A close collaboration between palynologists and

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taxonomists is strongly encouraged in order to maintain an ongoing high standard.

If you are currently working on pollen or spore morphology of families (or parts of families) of Angiosperms, Gymnosperms, Pteridophytes, Bryophytes, or Fungi, and would consider preparing a WPSF account please contact me at the address below for further planning and discussion.

Siwert Nilsson
Chief Editor

Correspondence concerning manuscripts and editorial matters should be addressed to: Siwert Nilsson, WPSF, Palynological laboratory, Swedish Museum of Natural history, SE-104 05 Stockholm, Sweden. Tel.: 46-8-5195 4200 ; Fax: 46-8-5195 4266, E-mail: siwert.nilsson@nrm.se

Correspondence concerning subscriptions/standing orders and prices should be sent to: Taylor & Francis, WPSF, attn. Marie Larsson, Box 3255, SE-10365 Stockholm, Sweden. E-mail: marie.larsson@se.tandf.no

Also see the WPSF web-site at: www.nrm.se/pl

Call for applications for Miki foundation memberships of the Palynological Society of Japan (PSJ)

This year PSJ has set up a limited number of new memberships to enable communication with Asian palynologists. Memberships are managed by The Dr. Miki Foundation and are funded for

We look forward to receiving your application to join our society. Please send your curriculum vitae, including your academic background, your major field and your present position. If you have a friend among our regular members, please ask him or her to add a recommendation for you. We shall be accepting applications until April 2002. Thank you, sincerely

Dr. Takashi Uchiyama and Dr. Shinya Sugita
IFPS Concillors for PSJ

E-mail: uchiyama@chiba-kc.ac.jp Chiba Keizai College Todoroki-cho, Inage-ku, Chiba 263-0021 Japan

Palynodata

Palynodata has developed a Demo Version of the Palynodata DataFile in order to make viewing the DataFile possible. A copy of this Demo CD will be mailed out to you upon request. Simply return this message with your mailing address, and a copy will be forwarded. Version 6.0 of this Palynology DataFile, due late January, will contain abstracted information from over 22,000 research papers.

Blair Parsons, PalyEast, Database Manager, 16A Armada Drive, Halifax, Nova Scotia, Canada.

FUTURE MEETINGS

2002

3rd - 8th March - Environmental and Cultural

ten years without membership fee. Twice a year all members receive the Society's journal, Japanese Journal of Palynology, which was established in 1965. The current issue is volume 47. PSJ covers six fields of pollen science: Apiculture, Cell Biology, Morphology, Aero-Palynology, Pollen Analysis and Ontogeny.

So far, six memberships have been granted to scientists from China, Korea, Russia, Mongolia and the Philippines. Four more members can still be accepted from other countries.

Dynamics in the West African Savanna

International Conference at the University of Maiduguri, Nigeria P.M.B. 1069, Maiduguri, Borno State, Nigeria, jointly organised by Universities of Frankfurt and Maiduguri. For further information contact: Gisela Seidensticker-Brikay Centre for Trans-Saharan Studies University of Maiduguri, P.M.B. 1069, Maiduguri, Borno State, Nigeria
Tel : country code - 76 - 236 530 E-mail: gila@unimaid.edu.ng

or

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6 - 10th of July - 1st International Palaeontological Congress

The first International Palaeontological Congress, sponsored by the International Palaeontological Association, will be held from 6 - 10th of July, 2002, in Sydney. Formal sessions will take place principally at Macquarie University. It will be hosted by the Australasian Association of Palaeontologists, and the Macquarie University Centre for Ecostratigraphy and Palaeobiology. It is programmed to follow on from the Australian Geological Congress, 30th June - 5th July. Fax: +61 2 9859 6053 E-mail: IPC2002@mq.edu.au

To receive the second circular and further details about the Conference you can download a copy of the reply form at:
www.es.mq.edu.au/MUCEP/ipc2002/firstcircular.htm

Postal address: MUCEP, Earth and Planetary Sciences Macquarie University, NSW 2109 Australia.

15-18th July - Quaternary Climatic Changes and Environmental crises in the Mediterranean region.

Universidad de Alcalá, Alcalá de Henares, Madrid, Spain. For further information or a copy of the 2nd circular contact:
Ma Blanca Ruiz Zapata, Scientific Secretary
Departamento de Geología, Edificio de Ciencias,
Campus Universitario, Universidad de Alcalá, 28871
Alcalá de Henares, Madrid, Spain.
Tel: +34 91 8854955
Fax: +34 91 8855090
E-mail: blanca.ruiz@uah.es

5th - 9th August - 7th International Congress on Aerobiology

The 7th Quadrennial congress of the IAA, will be held in Chateau Montebello, Quebec, Canada. More information available either at: sevenICA@netscape.net; or geog.umontreal.ca/aerobiol/ [Updated information from Autumn 2001]. Pre-registration forms available at: aerobiologists@netscape.net

August 29th - September 2nd - 6th European Palaeobotany - Palynology Conference

The second circular for this conference should have been distributed by the time you read this. If you have not got a second circular, and would like to obtain a copy, contact: Prof. D. Evangelos Velitzelos, Organising Committee, 6th European Palaeobotany - Palynology Conference, Dept of Historical Geology-Palaeontology, Faculty of Geology, University of Athens, Panepistimioupolis, Zografou, 157 84 Athens, Greece. Tel./Fax: +30 1 7274162 E-mail: velitzel@geol.uoa.gr

1 - 6th September, 2002 - 3rd International Congress of Environmental Micropalaeontology, Microbiology and Meiobenthology

Further details of this meeting in Vienna, Austria, can be found at:
E-mail: congress@isemmm.org
Website: www.isemmm.org

2 - 7th September - Environmental catastrophes and recovery in the Holocene

For further information of this meeting at Brunel University, London, UK visit the website at:

For further information visit the website at:
www.brunel.ac.uk/depts/geo/catastrophes/

5 - 7th September - CIMP Meeting: Palaeozoic Palynology in the Third Millennium: new directions in acritarch, chitinozoan and miospore research, Lille (France) September 5-7, 2002.

The next general meeting of the CIMP, which will include technical sessions, as well as workshops and geological excursions will take place at the MACC congress centre, Villeneuve d'Ascq, Lille, northern France, in September 2002. Two excursions will be organized together with the congress. We have made arrangements with the BMS, the AASP, and the NAMS, who will organize their joint-meeting in London (2 hours by train from Lille) just after the CIMP conference.

Note also that the 6th European Palaeobotany-Palynology conference in Athens, Greece, finishes just before the CIMP meeting at Lille.

Programme: Saturday, August 31 : Arrival at Brest (for the excursion in Brittany) Sunday to Tuesday, September 1 to 3: pre-symposium excursion in Brittany Wednesday, September 4 : transfer Brest-Lille (high speed train - TGV), Arrival at Lille

Thursday to Saturday, September 5 to 7 : CIMP meeting and workshops at Lille Sunday to Tuesday, September 8 to 10 : post-symposium excursion in Belgium Tuesday, September 10 : transfer to London (by high speed train - TGV) for those who wish to take part in the AASP-BMS-NAMS meeting.

Costs: Conference: (3 days) : 100 EURO (for CIMP members), 120 EURO (for non members),

50 EURO (for students); after May 1st (150, 175, 100 EURO respectively).

Pre-conference excursion: (3 days) Palaeozoic of Brittany: September 1-3, 2002 (Ordovician to Devonian of Crozon) ESTIMATED COSTS (according to the number of participants): □275 EURO, including accomodation (4 nights) and all meals from Saturday, August 31, to Wednesday, September 4, transport from and to Brest, and field-guide book.

Post-conference excursion: (3 days) Palaeozoic of Belgium: September 8-10, 2002 (Cambrian to Carboniferous, including Brabant Massif, Meuse Valley and East of Belgium)

ESTIMATED COSTS (according to the number of participants): □200 EURO, including accomodation (2 nights) and all meals from Sunday, September 8, to Tuesday, September 10, transport from and to Lille, and field-guide book.

Organizers:

Thomas Servais, Villeneuve d'Ascq, and Ludovic Stricanne, Villeneuve d'Ascq

Pre-conference field trip organization:

Alain Le Hérissé, Brest, and Florentin Paris, Rennes

Post-conference field trip organization:

Thomas Servais, Lille; and Philippe Steemans, Liège; Jacques Verniers, Ghent

Scientific committee:

Alain Le Hérissé, Brest; Florentin Paris, Rennes; Thomas Servais, Lille; Philippe Steemans, Liège; Jacques Verniers, Ghent

Organizing institutions:

Université des Sciences et Technologies de Lille (USTL) Centre National de Recherche Scientifique (CNRS): UPRESA 8014

Conference proceedings:

Review of Palaeobotany and Palynology

Important Dates:

December 2001: call for papers; May 2002: deadline for Abstracts and registration ; July 2002: third circular, programme and final arrangements

Information/correspondence:

Thomas Servais or Ludovic Stricanne

USTL - Sciences de la Terre
UPRESA 8014 CNRS
Cit^é Scientifique SN5
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Ludovic.Stricanne@ed.univ-lille1.fr

Web-site: www.univ-lille1.fr/geosciences/

11-13 th September - Joint Meeting of AASP, BMS and NAMS

The American Association of Stratigraphic Palynologists, the British Micropalaeontological Society, and the North American Micropaleontology Section of SEPM, will be holding at joint meeting at University College London, England, UK. Details: James Powell, Dinosystems, 105 Albert Road, Richmond, Surrey TW10 6DJ, England, UK
Tel: +44 20 8948 6443
Fax: +44 20 8940 5917
E-mail: ajp@dinosystems.co.uk

25 - 27th September - XIV Simposio de Palinologia

The Biennial Symposium of the Spanish Association of Palynologists (APLE) will take place in Salamanca.
For further details contact:
Rosario Rivas Carballo, Departamento de Geología, Área de Paleontología, Facultad de Ciencias, Universidad de Salamanca, 37008 Salamanca, Spain.
Fax: + 34 923294514
E-mail: crivas@usal.es
Or visit the website at:
<http://aple.usal.es>

20-28th August - 32nd International Geological Congress - 2004

To be held in Florence, Italy in collaboration with, and under the sponsorship of, the International Union of Geology (IUGS). The theme will be "From the Mediterranean toward a global Renaissance: geology, natural hazards and cultural heritage." A first circular will be distributed by early Spring, 2002. For further information contact: Ms Chiara Manetti, Università degli Studi di Firenze, Dipartimento

27-30th October - Geological Society of America, Annual Meeting.

To be held in Denver, Colorado, U.S.A.

Details: GSA HQ, Box 9140, 3300 Penrose Place, Boulder, Colorado 80301, U.S.A. Tel: (303) 447-2020, X133, E-mail: meetings@geosociety.org

2003**March 29th - April 2nd- International Limnology Congress**

To be held in Tucson Arizona, USA.

Contacts: Andrew Cohen (theme session proposals), general Chair of the Congress, Dept of Geosciences, University of Arizona, Tucson, AZ 85721 Tel: 1 520 621 4691 Fax: 1 520 621 2672
E-mail: acohen@geo.arizona.edu
David Dettman (Congress field trip co-ordinator)
E-mail: dettman@geo.arizona.edu
Noah Lopez (accomodation and registration)
E-mail: noahl@u.arizona.edu

2 - 5th November - Geological Society of America, Annual Meeting

To be held in Seattle, Washington, USA.

For further details contact:
GSA Headquarters, Box 9140, 3300 Penrose Place, Boulder, Colorado 80301, USA Tel: + 303 447 2020 ext. 133
E-mail: meetings@geosociety.org

2004**4 - 9th July - 11th International Palynological Conference Granada, Spain.**

For further information visit the regularly updated website at:
www.ugr.es/local/bioveg

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Chapter 1. General information on megaspores and their systematisation

- 1.1. Procedure for extraction of dispersed fossil megaspores
- 1.2. Morphological features of megaspores
- 1.3. Classification of Carboniferous megaspores

Chapter 2. Description of megaspores from the coal-bearing Carboniferous strata of Central Kazakhstan

Part two: Carboniferous megaspores:

di Scienze della Terra, Via La Pira, 4-50121
Firenze, Italy Tel./Fax +39 055 2382146 E-mail:
cmanetti@geo.unifi.it Or visit the website
at: <http://www.32igc.org/>

NEW BOOKS

"Carboniferous Megaspores. Systematics, Biostratigraphic Significance. Handbook for paleontologists and geologists."

Oshurkova M.V.
SPb.: VSEGEI Press, 2001, 112 p., 14 plates.
ISBN 5-93761-028-8. Price: US \$ 30

Basic principles of the study of fossil megaspores are described for the purpose of their usage in subdivision, correlation and dating of deposits. Rationalisation of the complex of methods for dispersed fossil megaspore extraction from rocks is discussed. The main morphological features of megaspore structure are described, as well as the terminology used in their description. Existing classifications of fossil megaspores are discussed. A key for determination of form genera for Carboniferous megaspores is proposed. Descriptions and plates of 35 megaspore species from the coal-bearing Carboniferous of Central Kazakhstan are given as examples. The possibility of using megaspores as a palaeophylogenetic tool in biostratigraphy is demonstrated.

This monograph consists of two parts:

Part one: Carboniferous megaspores: systematics.

polyfacial deposits over vast territories. The numerous spore and pollen micrographs are of great significance for the subdivision of Permian-Triassic deposits

To order the book, or for further information contact: V. Krugovykh at: kgs@online.ru

And three new publications from Poland:

Atlas of Pollen and Spores of the Polish Neogene, Volume 1 - Spores, edited by L.

biostratigraphic significance

Chapter 3. Megaspore assemblages of the coal-bearing Carboniferous strata in Central Kazakhstan

- 3.1. Brief review of geological structure
- 3.2. Distribution of dispersed megaspores in the section, and distinguishing megaspore assemblages
- 3.3. Dating of deposits using a megaspore assemblage

Chapter 4. Megaspore assemblages and problems of biostratigraphy in the coal-bearing Carboniferous strata in Central Kazakhstan

To order the book, or for further information contact M.V. Oshurkova at:
vsegei@mail.wplus.net

"Atlas of palynomorphs of the Tunguska syncline Permian-Triassic volcanogenous formation"

Krugovykh V.V.
Krasnoyarsk: FGUGP "Krasnoyarskgeols'emka" Press, 2001, 232 p., 68 plates, comprising 347 spore and pollen micrographs

The book provides a palynological grounding for the Permian-Triassic volcanous formation of the Tunguska syncline (Siberian Platform). Miospore assemblages with index taxa have been identified for five Permian levels and four Lower Triassic levels. The contribution also contains monographic descriptions of 67 species of the main miospores composition. The work also permits the unification of palynological data concerning different subdivisions of Permian-Triassic for the purpose of stratification and correlation of

There were 95 contributions were on subjects ranging from Palaepalynology, Melissopalynology, Aeropalynology, Actuopalynology, Paleoclimatology, Phylogeny. Countries represented were: Romania, Morocco, Algeria, Ivory Coast, Togo, Russia, Mexico, Belgium, Spain, Hungary, Italy, England, Austria, France. The 3 plenary lectures were presented by: Prof. Dr Denis Charpin (Univ. Aix-Marseille 2): "Allergologie", Prof. Dr John Lowe Paleocology, London University): "Were climate changes during the last termination synchronous throughout the North Atlantic region?" and Prof. Dr Remy Petit (INRA, Bordeaux): "Phylogénographie intraspécifique: une approche complémentaire de la palynologie pour reconstituer l'histoire des arbres forestiers".

Stuchlik. ISBN: 83-85444-79-3. \$US40.00

The Origin and Early Evolution of Diatoms:
Fossil, Molecular and Biogeographical
Approaches, edited by A. Witkowski and J.
Sieminska. ISBN: 83-85444-73-4. \$US30.00

**Proceedings of the fifth European
Palaeobotanical and Palynological Conference,**
June 26-30, 1998, Kraków, edited by L. Stuchlik.
\$US48.00

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Kraków, Poland. Fax: +48 (12) 421 97 90
Email: ed-office@ib-pan.krakow.pl

MEETING PROCEEDINGS

APLF

The XVIIth Symposium of the Association des
Palynologues de Langue Française (APLF) was
held in the city of Arles from September 24 to
26th, 2001 and was organized by IMEP -
Université d'Aix-Marseille III: Valérie Andrieu,
Rachid Cheddadi, J.-L. de Beaulieu, ISEM -
Université de Montpellier II, Dominique Jolly,
CEREGE - Université d'Aix-Marseille III: Annie
Vincens.

In addition to the Symposium, a general assembly
was held on September 24th, during which the
new council was voted in. The new APLF
councillors are:

President: Jean-Louis TURON Dpt. Géol. &
Océanographie Univ. Bordeaux I

Vice-President: Nathalie Nebout CNRS, Paris

Vice-President: Suzanne Feist-Burkhardt Dpt of
Paleontology The Natural History Museum
London, UK

Treasurer: Sylvie Fauquette
Paléoenvironnements et Paléobiosphère CNRS -
Univ. Claude Bernard Lyon 1

Secretary: Marie-Pierre LEDRU IRD -
Universidade de São Paulo Brazil

Ordinary Members: Valérie Andrieu-Ponel,
Didier Galop, Dominique Jolly, Thomas Servais,
Maria Suarez-Cervera.

The next Symposium will be in 2003. The venue
will be decided before the end of 2001.

Marie-Pierre Ledru (APLF Secretary) Institut de
Recherche pour le Développement Universidade
de São Paulo Instituto de Geociências/GSA
Caixa Postal 11348 05422-970 São Paulo SP
Brazil
E-mail : ledru@usp.br

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The African Pollen Database (APD) / SEARCH Workshop, Nairobi (Kenya) 22nd - 26th October 2001

Following the completion of an EU (INCO-DC) /
UNESCO-sponsored programme to develop the
African Pollen Database (APD) a 4-day meeting
took place. The aim of the meeting was to present
some of the research that has either been directly
sponsored by the APD / SEARCH initiative, has
been aided by the database, or may have a
bearing on the future development of the APD
and its link to other sources of environmental
information. The meeting, held at the Nairobi
Safari Club, Kenya was arranged by Anne-Marie
Lezine (scientific co-ordinator), Michel
Hoepffner (technical co-ordinator), Eric Odada,
Dan Olago (Pan African START secretariat
(PASS)) and Danielle Barrere (secretarial
support). The first afternoon of the workshop was
dedicated to background setting from the Nairobi
Data Centre (Daniel Olago), INCO Programme

Lakes and Groundwaters (chaired by Françoise
Gasse), the session again presented excellent
individual insights and demonstrated the potential
of linking the data within the APD to other proxy
sources of information, particularly when these
data are organised in an interchangeable way. The
third day gave a series of presentations on
Modelling and Databases (chaired by Joel Guiot);
these provided information on a series of
vegetation, pollen transport / source and climate
models. The sessions stressed the additional
insights that can be imparted to studies of
vegetation change and pollen deposition within a
sedimentary environment by embracing
modelling techniques. There followed an open
discussion chaired by Eric Odada in which the
future development of the APD and, more
broadly, African palynology and African
palynologists, completed the afternoon.

The meeting was extremely informative and
highlighted the APD's numerous facets: a well-

of the European Commission (Dirk Pottier), PICG programme of UNESCO (Thomas Schluetter), APD (Anne-Marie Lezine) and the SEARCH initiative (Michel Hoepffner). Following the opening presentations there was a poster session, many of the presentations concentrating on the use of the pollen data within the APD to investigate regional to continental scale vegetation response to environmental change. The second day was dedicated to presenting work from numerous individual studies that have been carried out in different parts of Africa within a session chaired by Hilaire Elenga (APD manager in Africa) entitled 'Vegetation history'. The series of presentations was incredibly varied including some site-specific studies, personal perspectives and possibilities to link with the APD with other databases of marine records and the Latin American Pollen Database. It was refreshing to see the range researchers giving presentations, from well-established pioneers of African Palynology such as Dan Livingstone and Raymonde Bonnefille, to newly qualified PhDs such as Immaculate Ssemmanda, who have all contributed to the development of the APD. This full participation stems largely from the EU-support of the APD and the scientific steering that has provided a catalyst for the free exchange of data, ideas and funding opportunities. The third day was dedicated to

managed depository for data, a useable resource for checking background climate, vegetation and environmental data, and an excellent photo-database that is searchable on palynomorph criteria such as number of colpi, types of sculpturing etc. Moreover, the APD / SEARCH programme has produced a database at the centre of which is a community that is vibrant, willing to exchange ideas and allow for the continued development of African palynology and palynosites. This development places the palynological community in an excellent position to investigate the response of African vegetation to environment and cultural change. Given the multidisciplinary research background of people contributing to, and developing, the APD, the community has linked openly with other areas of research to enhance understanding of control on the vegetation in their area of interest, and the forcing mechanisms that may be responsible in driving vegetation change. This positive present situation, and the future developmental planning have been engendered by all the contributors and, particularly, by the energies of Anne-Marie Lezine, Michel Hoepffner and Hilaire Elenga under the financial support of EU and UNESCO.

Rob Marchant, University of Amsterdam
APD web site: medias.obs-mip.fr:8000/apd/

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The Linnean Society Palynology Specialist Group (LSPSG) annual meeting

The Linnean Society Palynology Specialist Group (LSPSG) held their annual meeting in London, at the Linnean Society's rooms in Piccadilly on Thursday November 8th.

The speakers represented not only England and Scotland (UK) but also China, The Netherlands and The Philippines. This breadth of participants was matched by the presentations. Eight talks were presented on a remarkably varied range of subjects that reflect the core values of the LSPSG, the diversity of palynological research. Subjects included ranged pollen morphology in plant systematics to forensic palynology:

Pollen vs vegetation models: Neotropical vegetation dynamics (Robert Marchant - University of Amsterdam), *Modern pollen in sediments from a Scottish Sea Loch* (Peter Cundill - St Andrews University, Scotland), *Pollen of Hoplestigmataceae, its "traditional" association with the fossil genus Fupingopollenites: investigations into the validity of this association* (Wei-Ming Wang -Nanjing Institute of Geology and Palaeontology), *One to*

For further information on the work of the LSPSG and details of forthcoming meetings contact Rob Marchant, Institute of Biodiversity and Ecosystem Dynamics, Faculty of Science, University of Amsterdam, Postbus 94062, 1090 GB Amsterdam, The Netherlands.

E-mail: marchant@science.uva.nl

THESES

Teresa Castells i Soler "Immunochemical localisation of allergenic proteins in pollen grains of *Zygophyllum fabago* L."

Key words: liberation mechanism, hypersensitivity, Mediterranean region, germination, pollinosis, ultrastructure, pollen tube, hydration, activation, cell organelles, lipids, atmospheric, immunoglobulin E (IgE), antibodies (Universidad de Barcelona, Spain , July, 2000)

Carole Bogeot "Histoire de la végétation et du Climat au cours du Tardiglaciaire et du début de l'Holocène sur le massif jurassien central à partir de l'analyse pollinique et des macrorestes végétaux" "Vegetation and Climate History of

three: monosulcy and triaperture in angiosperm pollen (Madeline Harley - Royal Botanic Gardens, Kew), *Pollen and the systematics of the Fabales* (Hannah Banks and Frances Claxton - Royal Botanic Gardens Kew), *Pollen morphology and evolution of the Alyxieae (Apocynaceae)* (Raymond van der Ham - Nationaal Herbarium Nederland-Leiden Branch), *Pollen morphology of the subtribe Flueggeinae (Euphorbiaceae)* (Vernie G. Sagun - Nationaal Herbarium Nederland-Leiden Branch) and, lastly, *Palynological contribution to forensic science* (Eric Caulton - Napier University, Scotland).

The meeting ended at about 5.15 after which some of us decided to beat the rush hour by taking refuge in a nearby pub - a good British custom! This also allowed for continued discussions about possible links between palaeoecology and systematic pollen morphology.

the Central Jura Massif during the Tardiglacial and the Holocene from pollen and vegetal macro remains" (Laboratoire de Chrono-Ecologie, Besançon, France, 26th September 2000)

Key words: Quaternaire, Paléoenvironnement, Paléoclimatologie, Palynologie, Macrorestes, Tardiglaciaire, Jura Quaternary, Palaeoenvironment, Palaeoclimate, Palynology, Macro-remains, Tardiglacial, Jura

Craig Harvey "Palynology and coal analysis of the Devonian Campo Chico Formation, western Venezuela" (November, 2001 - Centre for Palynology, University of Sheffield, UK)

Key words: Devonian, palynology, spores, acritarchs, chitinozoans, Campo Chico Formation, coal, Gondwana, Euramerica, isotopes.

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E-mail: harvey@ichron.com

Miguel de los Angeles Dopazo Martínez
"Stational variation and predictive models of aeroallergenic pollen and spores in Santiago de Compostela" (Universidad de Santiago de Compostela, Spain, October, 2001)

Key words: aerobiological stations, clinical study, pollinosis, Iberian Peninsula, spore trap, anemophilous pollination, daily pollen concentrations, grass pollen, spore levels, skin sensitization, respiratory symptoms, symptomatology, meteorological parameters

E-mail: bvdopazo@usc.es

Vincent Lebreton "Paysages et climats contemporains des premiers Hominidés en Italie. Analyse pollinique des sites du Pléistocène inférieur et moyen de Ca'Belvedere di Monte Poggiolo (Forlì, Emilie Romagne) et de la Pineta (Isernia, Molise)". "Landscapes and climate at the time of the first hominids in Italy. Pollen analysis of Late- and Middle-Pleistocene sediments from Ca'Belvedere di Monte Poggiolo (Forlì, Emilie Romagne) and from the Pineta (Isernia, Molise)". (Museum National d'Histoire Naturelle, Paris - 23rd April 2001)

Key words: Palynologie, Paléoenvironnement, Paléoclimat, Préhistoire, Pléistocène inférieur et moyen, Paléolithique inférieur, Italie, Apennins. Palynology, Palaeoenvironments, Palaeoclimate, Prehistory, Late- and Middle Pleistocene, Late Paleolithic, Italy, Apennines

Professor Valentina Khomutova died unexpectedly on July 8, 2001. Prof. Khomutova was a well-known specialist in Quaternary palynology, palaeogeography and palaeolimnology of North-Western Russia. For many years Prof. Khomutova was a leading Scientist at the Limnology Institute, St.Petersburg, Russia. She is the author of more than 150 papers.

Valentina (Ivanovna) Khomutova was born on June 30, 1935 in Leningrad where, as a very small girl, she lived during the hard days of the military blockade. She entered the Geography faculty of the State University in 1953, and graduated from there in 1958. During the next 10 years (from 1958 to 1968) she worked in the Geography and Economics Institute of the State University, Leningrad. First as an assistant, and then as a scientific researcher.

During the early years of her scientific activity Prof. Khomutova specialised in pollen and spore analysis of Quaternary deposits. From 1958 to 1959 she studied the pollen and spores of Quaternary deposits in the Bolshesemelskoi tundra. From 1960 she developed the palynological substantiation for Quaternary Stratigraphy of the Vologda region. Later, in the 1970s, these empirical data were used in her Master's dissertation, "Palaeobotanical substantiation of the stratigraphical sequences of the Middle and Upper Pleistocene deposits in the Vologda region (the Kubeno-Sukhonskya depression and the Vologodskaya Upland)."

IN MEMORIUM

**Professor
Valentina I.
Khomutova**



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After 1968, she worked at the Limnology Institute, in St. Petersburg, where she studied pollen and spores of many of the large lakes of the North Western part of European Russia, such as Ladoga, Onega, Lacha, Vozhe, Il'men', Beloe, Kubenskoe, as well as many smaller lakes in Latvia, Karelia and South Ural. These experimental data (pollen and spore diagrams) were used for the palaeogeographical and palaeoecological reconstructions of the evolution of these lakes during the Late Glacial to Holocene.

Prof. Khomutova carried out the first investigations of ten bottom cores from the deeper part of the Baltic Sea and the Finnish Gulf (near St. Petersburg). These data permitted specific analysis of the palaeohistory in a different part of the Baltic Sea during the Late Pleistocene and Holocene. Prof. Khomutova also made the first investigation of the bottom deposits of Lake Taimyr. Using her accumulated collection of experimental data she was able to make a significant contribution to the development of limnopalynological methods in the reconstruction of the main stages in the evolution of Lake Taimyr. In 1959 Prof. Khomutova received a doctorate for her thesis "Palaeogeography and biostratigraphy of lake deposits of the forest (taiga) zone in the European part of the Former Soviet Union". This investigation was based on the vast amount of empirical pollen data collected from lake deposition in different parts of Russia.

From 1986 Prof. Khomutova played an active role in the preparation of a monographic series, "History of Lakes", which comprises eight volumes. She made 15 contributions to the series, as well as being Editor of the eighth and last volume which was concerned with the evolution of the lakes of the Russian Plain during the Pleistocene. In 1994 the Russian Geographical Society bestowed on her, and the others authors of "History of Lakes", an Honorary Diploma for their significant contribution to geographical science. Prof. Khomutova took part in a number of international, as well as many Russian conferences and symposia. She was as a leader and executive of many research projects. She took part in international projects such as, "The Global Palaeo Vegetation Project - Biome 6000"; "Holocene, and Temporal Patterns of Environmental Change in the Arctic -CAPE"; as well as Russian-based projects including, "Lake Status Records from the Former Soviet Union and Mongolia: Data Base Documentation". She was a

Prof. Khomutova was a member of the Palaeontological Society of Russia, The International Palynological Association (IFPS), The Russian Botanical Society, and the Russian Geographical Society. At the IX All-Russian Palynological Conference, in 1999, she was elected to be one of two Councillors representing the Russian Palynological Commission on the IFPS Council. Three candidature dissertations were carried out under her supervision. During her last year she completed the monograph "Lake bottom sedimentation of North Western Russia chronicles palaeogeographic events of the Late Pleistocene and Holocene". This book is the result of her long-standing scientific interest, and its publication is a fitting tribute to her memory. Valentina Khomutova was a brilliant and complex person, there were many facets to her personality. Her inexhaustible vitality helped her overcome any difficulties that might prevent her achieving her objectives. Not only was she persuasive, she was also ready to lead the way in scientific projects. Within her family circle she was also natural leader, always ready to support elderly relatives, and those who were sick. She also took care of the education of her beloved granddaughter. Valentina (Ivanovna) Khomutova was in the prime of life, when she died. She still had many projects to complete. Her premature death is a great loss. Her relations, friends and colleagues mourn her death, but her memory will live on.

Dr. Irina Ju. Neustrueva
Institute of Limnology, Russian Academy of
Sciences
St.-Petersburg, Russia

Prof. Irena I. Borzenkova
State Hydrological Institute, Russian Academy of
Sciences
St.-Petersburg, Russia

co-ordinator of joint investigations with the Institute of Geography (Moscow), the Pedagogical University (Chelyabinsk), and the Geological Institute (Minsk, White Russia).

Dr. Valentina A.Fedorova
VNIGRI St.-Petersburg, Russia

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SOME INTERNET DIRECTORIES FOR BOTANY, PALEOBOTANY, PALYNOLOGY and POLLEN

Internet Directory for Botany: Paleobotany, Palynology, Pollen

<http://botany.net/IDB/subject/botpale.html>

LYCOS Palynology Top Rated Websites

http://lycos.com/wguide/wire/wire_94046130_82695_3_1.html

The Laboratory of Palaeobotany and Palynology Links

<http://www.bio.uu.nl/~palaeo/Verwijzingen/verwijs.html#Palaeobotanical/palynological%20organizations>

INTERNET DIRECTORIES FOR PALYNOLOGICAL SOCIETIES

AASP American Association of Stratigraphic Palynologists

www.palynology.org/

APLE Asociacion de Palinologos de Lengua Espanol

aple.usal.es/

APLF Association de Palynologues de Langue Francaise

medias.meteo.fr/epd/1998/aplf.html

APP Arbeitskreis für Palaobotanik und Palynologie

www.uni-muenster.de/GeoPalaeontologie/Palaeo/Palbot/apptext.htm

BMS British Micropalaeontological Society: Palynology section

www.nhm.ac.uk/hosted_sites/bms/

CAP Canadian Association of Palynologists

www.scirpus.ca/cap/cap.shtml

CIMP Commission Internationale de la Microflore du Paléozoïque

www.Shef.ac.uk/~cidmdp/

CPS Collegium Palynologicum Scandinavicum

www.Palyno.net

GPSBI Gruppo di Lavoro per la Palinologia della Società Botanica Italiana

www.unifi.it/unifi/bioveg/sb/palinologia.htm

IAA International Association for Aerobiology

www.isao.bo.cnr.it/aerobio/iaa/index.html

IFPS International Federation of Palynological Societies

<http://www.geo.arizona.edu/palynology/ifps.html>

PSJ Palynological Society of Japan

<http://uf.kpu.ac.jp/~psj/>

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lezine@ccr.jussieu.fr

and visit our website at:

<http://www.geo.arizona.edu/palynology/ifps.html>