



IOP NEWSLETTER 55

SEPTEMBER 1995

CONTENTS

| | |
|---|----|
| IOP NEWS..... | 2 |
| NEWS OF OTHER SOCIETIES..... | 3 |
| REPORTS OF RECENT MEETINGS..... | 3 |
| NEWS OF A FORTHCOMING PRESENTATION..... | 5 |
| BIODIVERSITY AND FOSSIL PLANTS..... | 5 |
| NOMENCLATURAL NOTES..... | 5 |
| PALAEOBOTANICAL AND PALYNOLOGICAL RESEARCH..... | 7 |
| NEWS OF INDIVIDUALS..... | 8 |
| OBITUARIES..... | 10 |
| RECENT PUBLICATIONS..... | 12 |

PLEASE MAIL NEWS AND CORRESPONDENCE TO
YOUR REGIONAL REPRESENTATIVE OR TO THE
SECRETARY FOR THE NEXT NEWSLETTER 56.

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

IOP NEWS

IOP EXECUTIVE ELECTIONS

The last General Assembly, at the Japan International Botanical Congress 1993, agreed unanimously to change the Constitution Article 7 for elections of Executive Officers to happen at IOP Conferences rather than IBCs. At Japan 1993 the following were elected for two terms of office:

Vice Presidents: Anderson, Herman, Uemura

Members at Large: Bande, Eder-Kovar, Truswell

The President, Secretary and Congress Member must be elected at Santa Barbara. Of these posts, the Constitution allows that only the Secretary is eligible for re-election: M.C. Boulter offers himself for re-election.

So, nominations for President and Secretary must be made to the Secretary, in writing, before December 1st 1995.

IOP GENERAL ASSEMBLY

This is the formal statutory announcement that the next IOP General Assembly will take place in Santa Barbara during the IOPC-V. The agenda will include the following items:

President's Statement

Secretary's Report on Correspondence and Finance

Election of Officers

Plant Fossil Record database committee

Critical Comments of the Executive Committee from Members

Send additional items for the agenda to the Secretary before July 1st 1996.

FIFTH IOP CONFERENCE, Santa Barbara, June 30 - July 5 1996

The Fifth International Organisation of Palaeobotany Conference (IOPC-V) will convene in Santa Barbara, California, USA, June 30-July 5th, 1996 at the University Centre of the University of California, Santa Barbara. The conference is open to all people interested in the plant fossil record. The scientific program will consist of symposia, contributed papers, poster sessions and meetings of working groups followed by two optional field trips. The conference will open with a mixer/dinner on Sunday evening June, 30 and will continue with the presentation of papers through noon on Friday, July 5th.

The second circular, with applications for registration and accommodations, abstract forms, and financial aid information, will be distributed in October, 1995. The final date for

submission of registration materials and abstracts will be March 1, 1996.

Contributed papers may be presented in the form of an oral 15-minute presentation, typically accompanied by projected slides, or as a poster. Each participant is invited to present a paper of his/her choosing. Any theme relevant to paleobotany is eligible for inclusion. Papers may present original new research or summary reviews on particular topics. The official language for the conference is English.

In addition to the contributed paper sessions, eight symposia are planned with invited speakers. The symposium topics and organizers are indicated below:

- "Early land plants and their environments" P. Gensel, D. Edwards
- "Evolution of plant form and function." N. Rowe, T. Speck
- "The Permo-Carboniferous floristic transition" G. Mapes, H. Kerp
- "Global correlation of Mesozoic floras" S. Ash, S. Archangelsky
- "Vegetation, phytogeography and climate during the Eocene 'greenhouse 33' interval" S. Wing, R. Burnham
- "Evolution of angiosperms from the perspective of fossil reproductive organs" E.M. Friis, R.A. Stockey
- "Evolution of angiosperms from the perspective of fossil vegetative organs" P. Herendeen, E. Wheeler
- "Neogene of the Northern Hemisphere" L. Hably, Z. Kvacek

Registration fees for the IOPC-V will be \$300 for Professional Participants and \$200 for students. This fee covers the cost of the facilities and equipment (rented from the University), the abstract book, the Sunday night reception/dinner and the Thursday night conference banquet/barbecue. Payment must be in US dollars (credit cards will be accepted). There will be provisions for financial aid (see second circular).

An accommodation package including all meals will be available at the University for approximately \$340 (single occupancy) or \$270 (double occupancy). Multiple resident apartments (not including a meal plan) will be available at a lower cost. Hotel references will be provided in the second circular, but are not recommended both because of higher cost and their distance from the conference site. Note that the meeting will be held over the US Independence Holiday and non-university lodging may be difficult to obtain.

There will be four local field trips in the Santa Barbara area on Wednesday afternoon to cultural and neobotanical sites. Two optional field trips, each one week in length, will be held immediately following the conference:

One trip covering the Pennsylvanian to Tertiary (Paleogene) floras of the Rocky Mountains (approximately \$550), and the other to the University of California Berkeley, the Californian Sierra Nevada and Tertiary (Neogene) localities in Nevada (cost to be determined).

If you have not received the second circular by November 1, 1995, please contact Bruce Tiffney, Department of Geological Sciences, University of California, Santa Barbara, CA 93106, fax 805 893-2314; e-mail: tiffney@magic.geol.ucsb.edu
S.R. MANCHESTER, Florida, USA

NEWS OF OTHER SOCIETIES

JAPANESE ASSOCIATION OF HISTORICAL BOTANY

The Association was established in 1986 under the leadership of Dr. Seiichiro Tsuji (Osaka City University, Osaka; recently moved to National Museum of Japanese History, Sakura) and his colleagues. More than 350 members includes students in interdisciplinary fields of research, such as palaeobotany, palaeopalynology, archaeology, palaeo- and modern plant ecology and forestry. Our IOP members, Drs. Mitsuo Suzuki, Mutsuhiko Minaki and Arata Momohara, are very active in this Association.

Japanese Journal of Historical Botany is a journal of the Association since its establishment, and has been published biannually since 1992. Although the articles are written in Japanese and the major focus of interest is on later Quaternary plants and vegetation, the journal is the only palaeobotanical serial in Japan. For many IOP members a bibliography on Japanese Cenozoic megafossils by Dr. Toshimasa Tanai may be important, which appeared in this journal and was written in English: Bibliography of Cenozoic palaeobotany in Japan through 1992 (exclusive of the Holocene and palynological articles), vol. 2, no. 2, pp 63-92 (1994). Those who are interested in Tanai's bibliography, write to T. Tanai 23-546, Dailand, Kannami-cho, Shizuoka Pref., 419-01 Japan.

REPORTS OF RECENT MEETINGS

THE 8TH BRAZILIAN MEETING OF PALEOBOTANISTS AND PALYNOLOGIST HELD ON 5-9 DECEMBER 1994, AT SAO PAULO, BRAZIL

During the week of 5-9 December 1994, the 8th Brazilian Meeting of Paleobotanists (VIII REUNIAO

DE PALEOBOTANICOS E PALINOLOGOS) was held at the Institute of Geosciences of the University of Sao Paulo (IG-USP), organised by a committee headed by palaeobotanist Oscar Rosler and sponsored by the Department of Paleontology and Stratigraphy of the IG-USP, with the support of the Associacao Latino americana de Paleobotanica e Palinologia (ALPP), the Sociedade Brasileira de Geologia (SBG) and the national and local chapters of the Sociedade Brasileira de Paleontologia (SBP).

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

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

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

established centres of palaeobotanical and palynological study and from other, emerging institutions. This bodes well for the future of palaeobotany and palynology in Brazil.

T.R. FAIRCHILD, Sao Paulo, Brazil

FIRST WALTER A. BELL MEMORIAL SYMPOSIUM, Nova Scotia, Canada, May 1995

This international symposium on Carboniferous paleobotany and coal geology was held in Sydney, Nova Scotia, in the heart of Nova Scotian coal country. The symposium honoured the late Dr Walter A. Bell, pioneering Carboniferous coal geologist and paleobotanist, who spent his entire career with the Canadian Geological Survey. He was the Director of the Canadian Survey from 1949-1953.

The first Walter A. Bell Symposium, which was organised by Drs Erwin L. Zodrow (University College of Cape Breton) and Paul C. Lyons (U.S. Geological Survey), was attended by paleobotanists, palynologists, botanists, and coal geologists from Canada, USA, UK, Germany, France, Spain and the Czech Republic. The keynote speakers were Drs P. A. Hacquebard (Canada), R.H. Wagner (Spain), and J. Galtier (France). The invited speakers were Drs. M. Barthel (Germany), P.H. von Bitter (Canada), W.G. Chaloner (UK), C.J. Cleal (UK), Mr W.H. Gillespie (USA), Drs J.P. Laveine (France), M.A. Millay (USA), A. Lesnikowska (USA), Gar W. Rothwell (USA), B. Thomas (UK), and H.W.J. van Ameron (Germany). Dr. Stephen Manley, Dean of the School of Science and Technology, University College of Cape Breton, gave an insightful and stimulating opening address.

The focus of the symposium was Euramerican Carboniferous paleobotany and coal geology and an attempt at the resolution of coal-stratigraphic correlations across the Atlantic. Twenty-five papers were delivered on a wide range of subjects including Canadian palynology, paleobotany, and coal geology, systematic work on major groups of fossil plants (herbaceous lycophytes, walcchian conifers, tree ferns, and seed ferns); coal geology of the Cladno coalfield, Bohemia; whole-plant associations and *in situ* spores in permineralized plant fossils; historical aspects of Canadian Carboniferous geology; new finds of coal-ball plants and lycophyte and conifer forests in Atlantic Maritime Canada; biostratigraphic studies of Euramerican micro- and megaflores; the range of plant megafossils from the Mississippian and Pennsylvanian Systems of the Appalachian region; modern phylogenies and plant homologies; the significance of Bell's Fundy Basin; the morphological aspects of the lycophyte, *Omphalophloios* David White 1898; and the fossil plant record and global climatic change. The

interrelationships among these diverse topics by international experts provided unusual breadth and depth to the Bell Symposium.

A display of plant and animal fossils from the World famous Joggins Carboniferous section by Professor Laing Ferguson (Mount Allison University, New Brunswick) added to the focus of the symposium. Also, workshops on coal-ball plants (Paul Lyons and Michael Millay, and compression-impression fossils of the Carboniferous of Canada (Erwin Zodrow) extended the oral presentations, as did a field trip to Point Aconi, the highest part of the on-land Carboniferous section in Nova Scotia. Participants were given an opportunity to collect plant megafossils from the roof shales of the Point Aconi seam, one of the richest collecting sites in Euramerica.

A parallel session on Euramerican stage boundaries chaired by C.J. Cleal (National Museum of Wales) led to progress on the recognition of the Bolsovian-Westphalian D and Westphalian D-Cantabrian stage boundaries in Canada, the United States, and Europe. Collections at Point Aconi also revealed the relative age of Cantabrian Nova Scotia and central Appalachian coal beds.

The symposium included an optional trip to historic Fortress Louisbourg, a partially restored French settlement in Cape Breton. This early 1700's settlement was one of the gateways to the New World and the site of battles between the French and the New Englanders.

The first Walter A. Bell Medal was presented to Dr. Peter A. Hacquebard, Scientist Emeritus of the Canadian Geological Survey. Hacquebard is a pioneering coal petrologist and palynologist whose leadership led to the formation of a microfloral scheme for the Carboniferous Systems of Canada. This pioneering work, which was done with M.S. Barss of the Canadian Geological Survey, extended Bell's megafloreal and faunal zonation schemes. The handcrafted silver Walter A. Bell medal was presented to Hacquebard by Dr Aureal T. Cross, Michigan State University, who is a friend and contemporary of Hacquebard.

The Symposium banquet was attended by Dr Jacquelyn Scott, President of the University College of Cape Breton, and Mr Donald Downe, Minister of the Nova Scotia Department of Natural Resources. The "*Men of the Deeps*", an internationally renowned choral group of about 24 present and former Cape Breton coal miners, provided original songs and music focusing on coal mining. The *Men of the Deeps* sang a traditional American song to honour Dr. Aureal T. Cross on his 79th birthday on June 4th.

P.A. LYONS & E.L. ZODROW

NEWS OF A FORTHCOMING PRESENTATION

KEUPER PLANTS EXHIBITION, Heilbronn, Germany, October 1995 - January 1996.

During the keuper period of Triassic from 230 to 205 Ma in Central Europe an extended continental deposition area existed: the Germanic Basin. Only temporarily flooded by the Tethys-Sea, the geographic picture was characterised by huge fluvial systems and shallow, partly saline lakes and playa-sedimentation. A vegetation developed in this amphibian environment for the timespan of almost 25 million years.

As early as the 19th century, in the early days of palaeobotany, fossil plants from the Keuper of the Germanic Triassic Basin constituted a significant part of the evolving palaeobotanical research. Unfortunately, as apparent from many modern textbooks, this floral succession appears to be nearly forgotten nowadays or at least out of fashion.

In contrast to the relatively well known fauna of the keuper, including the spectacular finds of dinosaurs, many problems concerning the fossil plants are still unresolved. Despite this deficiency, the Heilbronn exhibition depicts the "state of the art" for the first time. The exhibition documents comprehensive selections of fossil plants from different keuper beds, ranging from the Upper Ladinian to the Thaetian Triassic stage. Also present are unique evidence of plant-insect interactions.

The Keuper flora of the Germanic Basin might be envisaged as an important reference area for the compilation of global Triassic palaeofloras. As regards its completeness and diversity, the Keuper flora of South Germany is one of the richest in the entire World.

The exhibition is dedicated to the 200 birthday of Friedrich August v. Alberti. The eminent German geologist and founder of the Triassic system was born on 4 September 1775 in Stuttgart and died on 12 September 1878 in Heilbronn.

The exhibition is a result of the co-operation in this field between the Stadtischen Museen Heilbronn (Museum of Natural History) and the Faculty of Geoscience, University of Wurzburg, Germany. Various private collectors and geological institution have supported the exhibition by the loan of material.

A richly illustrated catalogue is published.

Kelber, K.P. & Hansch, W. (1995): *Keuperflanzen. Die Entartung einer über 200 Millionen Jahre alten Flora* - musco 10, ca. 120 pp, approx. 60 plates (some in colour), Heilbronn (ca. 25,-DM). The exhibition catalogue can be ordered from: Stadtische Museen, Heilbronn Deutschhofstr 6 D-74074 Heilbronn, Germany

Hours of business of the Museum:

10.00am - 5.00pm Wednesday and Friday to Sunday
10.00am - 7.00pm Tuesday, Thursday

Duration of exhibition: 13 October 1995 - 7 January, 1996 (a prolongation is scheduled)

For further information phone 07131/56-2302, fax: 07131/56-3194

BIODIVERSITY AND FOSSIL PLANTS

The IOP Vice-President John Anderson writes from Pretoria: "I would like to make a little noise in the newsletter by laying down some kind of challenge concerning a reassessment of biodiversity trends through geological time. This will involve something like palaeodemes or biorecords [now called palaeotaxa] to resolve taxa around species level; the affiliation of organs; far greater stress on collecting and collections enabling the application of statistical projections etc.. I am still passionate about man's mishandling of Mother Earth, the terrible depletion of her diverse and wonderful biospheric garment. We palaeobotanists, no less than botanists and biologists in general, must make more clatter. For one we must offer a more realistic view of biodiversity at time previous to now."

NOMENCLATURAL NOTES

WHAT'S IN A DATE ?

When describing and identifying fossil plants (palynomorphs included), geological age is not the only date to consider. In order to establish the correct name of a fossil, a number of dates hidden away in the *International Code of Botanical Nomenclature* (ICBN; Greuter et al., 1994) may need to be considered. These are the dates dealing with conditions for valid publication of names. For example, the name of any new species or other taxon proposed after 1957 but not given a type is not validly published - Article 37.1. These dates seem to be added to with the passing of each Botanical Congress and the appearance of each new *Code*; the present round is no exception. Indeed, the current addition to the list of dates will probably have more practical impact on working palaeobotanists and palynologists throughout the world than most of the dates already on the list. It is this: formal diagnoses or descriptions of fossil plants (palynomorphs included) will have to be in Latin or English as of January 1st 1996 (Article 36.3). We ask readers to stay aware of the new language requirement when writing and

reviewing for publication and communicate it, where appropriate, to journal editors.

Originally, all names of plants except fossils and algae published after 1934 had to be accompanied by a Latin diagnosis or description or reference to one (Article 36.1). The algae gained this requirement 23 years later, on January 1st, 1958 (Article 36.2). Now, as highlighted above, the diagnoses and descriptions for fossil plants will have a similar language requirement. This change is a result of actions by the previous Fossil Plant Committee, which endorsed a recommendation promoting the use of English for all plants. When this general proposal was defeated at the Congress, Bill Chaloner, on behalf of our Committee of which he was then chair, proposed that the language provision be made for fossil plants only. The proposal was accepted. Hence, beginning with the names of new taxa published next January, for most of us English will be the language for fossil plant descriptions. Limitation of descriptions to two languages will, it is hoped, make it easier to communicate between the wide variety of researchers working on fossil plants and palynomorphs across the world. With the current situation, in which fossil plants can be described in any language, communication is often hampered as a consequence, and synonyms and poorly understood taxa result.

Returning to the subject of dates in general, the following may be a handy list to keep beside your microscope. On January 1st:

- 1912 -- Illustration, or reference to one, required for fossils (Article 38.1).
- 1953 -- Clear indication of rank of a new taxon required (Article 35.1).
- 1953 -- Proposal of alternative names in same rank became a cause for all of them to be rejected (Article 34.2).
- 1953 -- New names and new combinations require direct and full reference to basionym (Article 33.2).
- 1958 -- Designation of type required at family rank or below (Article 37.1).
- 1973 -- Full and direct reference to all validating information required (Article 45.1).
- 1990 -- Place in which the type is lodged must be specified (Article 37.5) (see below).
- 1996 -- Descriptions and diagnoses for fossils must be in English or Latin (Article 36.3).

The penultimate item on the list has been a great problem for dinoflagellate workers. Tens of species described since 1990 have names not validly published because they fail to comply with Article 37.5, in spite of the fact that most are excellently described and otherwise fulfill all legal requirements. Whether one likes it or not, Article 37.5 specifies that the institute or

herbarium in which the type is lodged must be specified. However, Werner Greuter (in a letter to Jan Jansonius: Greuter is Chairman of the Editorial Committee for the *ICBN*) considered that "... the intent of [Article 37.5] is not to make deposition of types in a public herbarium mandatory, but to force authors to make the whereabouts of their types publicly known." He continued by noting that "Article 37.5 [specifies] 'herbarium', not 'public herbarium' (nor, unfortunately, 'collection', which is what is meant)" The present writers are of the belief that the *Code* should be read as literally as possible, otherwise we will end up in a morasse of interpretations and counter-interpretations. Nevertheless, anyone with a collection of specimens can claim to have a "herbarium" (which, according to the Oxford English Dictionary, is a "collection of dried plants scientifically arranged"). Moreover, Recommendation 7A implies that a herbarium does not have to be a public facility. Hence, as long as an author fully specifies a location, public or private, for her or his types (not just slide numbers with or without abbreviations suggesting place of storage), we suggest unofficially, in the spirit of Werner Greuter's remarks, that Article 37.5 is satisfied. While making this suggestion, however, we also feel that authors have a moral - even if not a "legal" - obligation to officially lodge their types in a responsible public institution.

There is another date which may be important in the future. On or after January 1st 2000, new names may have to be registered if a registration proposal is ratified by the next Botanical Congress. There has been much debate about this procedure and, since it will come up for vote again, your committee would appreciate views on the matter.

Indeed your input on any nomenclatural subject is welcome any time. Please give us some feedback. Contact either of us or any member of the International Association for Plant Taxonomy sponsored Fossil Plant Committee (FPC) - see *Palynos* 17(2):9-10 or *IOP Newsletter* 51. Thanks to Jan Jansonius, Dan Nicolson and Graham Williams for discussion pertaining to this note.

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Dartmouth, Nova Submitted by Judy Skog (Secretary,
FPC) and Rob Fensome (Chair, FPC).

PALAEOBOTANICAL AND PALYNOLOGICAL RESEARCH

Solely because it appears to be an urgent matter for the future development and funding of our subject, I present what may appear to some more senior members as an unpalatable and unnecessary suggestion for change.

Hitherto we have (myself included) moved along very easily producing publications, illustrating new and interesting plant fossil organs and dispersed palynomorphs, but all subject to the chance order of discovery. Moreover the requirement of such work is to be or to appear to be new, thus steering past possible Editor or Referee criticisms claiming repetition. Much of the work done has been to high standards, entirely satisfactory to ourselves. All this however, has led to funding organisations labelling this as mere 'stamp-collecting' not worthy of any priority. The criticism applies throughout all palaeontology but is less evident in much of palaeozoology in which many animal fossils appear individually to be more complete and thus more justifiable as whole taxa than leaves or pollen. Deflection of some of our results into palaeo-environment and palaeoclimatic studies has often been very successful but does not change the main accusation that it is all essentially enhanced 'stamp-collecting' and opportunistic, haphazard rather than targeted as science. The past to present situation can even be defended as a necessary first exploration of the field in a generally understaffed subject, but ultimately a more clearly defined purpose is certain to be needed both for public esteem (hence funding) and for morale internally.

The first priority requirement for palaeobotany - palynology is for a taxonomic regime in which all occurrences of plant fossils are treated equally for description, discrimination and retrieval. This may sound simple to arrange and indeed it could be so, but complete changes of procedure would be involved. The current nomenclature-driven taxonomy involves considering single organs (e.g. leaves) as taxa, treating them as sacrosanct entities with descriptive priorities, arranging emendations, and submerging as many fossil records as possible within such of these taxa as have been already erected. No record of fossils other than the holotype plus topotypes is separately described or is retrievable independently in detail with any discrimination. To achieve, however, equal independent handling of all fossil records, it is necessary to use unamendable taxa and a scheme of graded comparison with such taxa so that 'lumping' is entirely avoidable. This can be done and a scheme is

available in Hughes (1989). The scheme naturally falls outside the scope of ICBN because most of the elaborate provisions of that code are no longer needed, but it has been kept as closely compatible with existing practice as possible. Other schemes could well address the problem more directly and perhaps more economically, if compatibility with older records was not attempted. It is of no use to pretend that such change could be made painlessly or imperceptibly; the required change is fundamental.

The second requirement is a complete emphasis change from exploration to exploitation. What is now needed is to take a single plant fossil assembly such as *Caytonia-Sagnopetris-Caytonipollenites* and re-examine and reassess its every manifestation from say Bajocian to Berriasian time. This would ultimately provide, not a stray intermittent guessing evolution-scenario as now, but the most robust record that the whole integrated fossil could provide. It would involve recollecting, new cuticle studies, grading of association of organs (see Anderson and Anderson 1985, p.85) and new palynological search (probably by SEM as the pollen in this case is so small).

Inevitably as a result of such activity we would require an entirely new classification of plant fossils in their geological periods, (e.g. Hughes 1994, p.240) but the necessity of that would progressively become apparent. It also embraces complete re-integration of palaeobotany and palynology but as the current resistance is mainly political, time and good practice should eventually prevail.

Regrettably it is not now practical or realistic for me to undertake personally such new work, and thus is it only open to exhort others to try to turn our subject round to a new more hopeful direction and to make proper use of the new computer power for data-handling. This makes feasible a suggestion which was perhaps out of range ten years ago.

Anderson, J.M., and Anderson, H. M. 1985. *Prodromus of South African megaflores. Devonian to Lower Cretaceous*. Balkema, Rotterdam, 423pp.

Hughes, N.F. 1989. *Fossils as information*. Cambridge University Press, 303pp.

Hughes N.F. 1994. *Enigma of angiosperm origins*. Cambridge University Press, 303 pp.
N.F. HUGHES, Cambridge, UK.

[note: This article appears posthumously. It was edited by Ian Harding and Simon Conway Morris. An obituary to NFH is in IOP Newsletter 53.

NEWS OF INDIVIDUALS

AN HONOUR TO D. D. PANT

The first Birbal Sahni Centenary Gold Medal for the year 1994/95, instituted by the Indian Science Congress Association was awarded to Professor Dr. Divya Darshan Pant of the Botany Department of the Allahabad University during the Inaugural Session of the 82nd Indian Science Congress held in Calcutta on January 3rd, 1995 by India's Prime Minister, Mr. P. V. Narsimha Rao.

Divya Darshan Pant was born on the 18th October 1919 at Ranikhet, in the Kumaon Himalaya. After his early school education in Ranikhet and Nainital he moved to Lucknow from where he graduated and later received his post-graduate and research training under Professor Birbal Sahni. Subsequently he migrated to the Botany Department of Allahabad University as Lecturer and initiated a number of students in the field of Palaeobotany and plant morphology. He had also worked with Professors John Walton, T.M. Harris and Richard Krausel.

Under his leadership a flourishing school of Palaeobotany and Morphology was established in Allahabad University. He headed the Department of Botany at Allahabad University for about 16 years and was also Dean of the Science Faculty. Internationally renowned for his researches in palaeobotany and morphology Professor Pant has been an inspiring preceptor for generations of students and research workers like his mentor, Birbal Sahni. He has been a gallant fighter for the cause and uplifting of scientific researches.

He is a recognized authority on *Glossopteris* flora on account of his important contributions on the reconstruction of the plants of glossopterids and their biology. His interpretation of the compressed organs of *Glossopteris* and related genera, particularly their fertilizers have been vividly confirmed by later finds of permineralized fossils. He was the first person to propose the existence of mycorrhizic gametophytes in the Rhynie chert by his interpretation of gametophytic and mycorrhizic nature of *Rhynia gwynnevaughanii*. His contributions in palaeobotany include work on *Dicroidium* flora of India where he showed that the members of the *Glossopteris* flora had very diverse woods, megaspores, fructifications and seeds. His work on Gondwana conifers particularly *Buriadia* and *Birsinghia* suggested that these could either be regarded as prepinophytes or may be altogether assignable to a new group of plants. His work also shed light on Lower Gondwana structurally preserved ferns and has provided new concepts about phyletic slide of annulus.

He extended his studies to Lower Gondwana and Pre-Lower Gondwana (Lower Carboniferous) floras of Panjab-Kashmir Himalaya and found an admixture of Cathaysian and Gondwana elements along with evidences of insect-plant interaction. Like his teacher from the Cambridge Botany School, Prof. Albert Charles Seward and Sahni, he has combined his studies of palaeobotany with those of living plants and like them he has in addition combined his findings of facts with interpretative ideas about their structure, evolution, function and relationship.

His researches extend into morphotaxonomy, reproductive biology, pollination ecology, anatomy, palynology of living and fossil plants. Horizontally his work extends from algae through bryophytes, pteridophytes, gymnosperms to the angiosperms. His classification of living and fossil plant stomata on the basis of their ontogeny, is now classic. He has contributed also to the classification of fossil spores and pollen and the gymnosperms. He has contributed ideas on the evolution of nodal anatomy, conduplicate carpel, gametophytes of Ophioglossaceae, anisospory in bryophytes and the function of obligate unions of spores and angiospermous pollen. His comprehensive and authoritative work on living and fossil cycads has earned him widespread reknown, so much so that K.J. Norstog regards him as the "foremost student of living and fossil cycads". He has distinguished himself as a renowned cycadologist. His comprehensive monograph "Cycas and Cycadales", has now been revised and entitled, "Introduction to Gymnosperms, Cycads and Cycadales". It is presently with the Palm and Cycad Society of Australia for publication. R.W. Read & M.L. Solt (1986) commented on the first edition of his monograph as "most comprehensive study of any cycad yet, covering anatomy, morphology, life history, relationship to past economic importance and distribution. He has more than 250 original research papers, reviews and monographs published in reputed international journals.

The excellent blending of interests in fossil and living plants is Professor Pant's main distinction and the award of the First Birbal Sahni Centenary Gold Medal of ISCA to Professor Pant is the most appropriate recognition of his contributions. Indeed it is no exaggeration to say that by bestowing this prestigious Gold Medal to Professor Pant the award itself has been honoured.

P.C. SRIVASTAVA Allahabad, India.

LIDIA FOTJANOVA

of the Palaeontological Institute, Moscow, stayed in Japan from May 5th until June 5th for the occasion of the special exhibition held at the National Science Museum, Tokyo. Whilst there she discussed with K. Uemura and other Japanese palaeontologists on Palaeogene floras in Kamchatka, Sakhalin, Primoroye and Japan, together with phytogeographic problems in the ancient Beringia and eastern Eurasia.

MITSUO SUZUKI

moved from Kanzawa University, Kanzawa to the Institute of Biology, Faculty of Science, Tohoku University, Sendai, Japan. He has been active in fossil and extant wood morphology and recently awarded by the Japan Association for Quaternary Research for the paper "Dendrochronology of forest buried in Hachinohe Tephra on the eastern slope of Towada Volcano, northern Japan" by Suzuki and his colleagues. He has been elected as the president of Japan Society of Plant Taxonomists for the next two years.

KAZUHIKO UEMURA

has been awarded by the Palaeontological Society of Japan for his studies on the Cenozoic floras in Japan.

ANDREW DRINNAN

University of Melbourne, continues work on Cretaceous and angiosperm evolution. A major component involves collaboration with Dr Peter Crane (Field Museum, Chicago) studying Cenomanian/Campanian fossils from, the eastern United States. Andrew's other major project, Permo-Triassic floras of East Antarctica, has been extended to include Australian Permian floras. Andrew also has substantial projects on floral ontogeny and phyllotaxy in extant taxa. The families currently being treated are Myrtaceae (with **DAVID ORLOVICH**), Winteraceae (with **ANDREW DOUST**) and Buxaceae. Andrew has also recently completed a study of the Cenomanian impression floras from the Winton Formation, central Queensland containing a range of Mesozoic gymnosperms mixed with the earliest diverse angiosperm suite recorded from Australia. A Middle Jurassic flora characterized by an abundance of the enigmatic fructification *Palissya* has also recently been completed.

STEPHEN MCLOUGHLIN

joined the University of Melbourne School of Botany palaeobotanical research group in 1994, and spent two months (January-February 1995) completing geological mapping, collecting about 600kg of macrofossil and palynological samples and compiling measured sections

of the entire Permo-Triassic succession in the Prince Charles Mountains, east Antarctica. The Permian coal measures in the Prince Charles Mountains contain siliceous permineralized peats similar to those of the Transantarctic Mountains and Eastern Australia. Initial studies of the petrified remains are focusing on anatomical studies of *Noeggeragthiopsis* and glossopterid leaves and various fructifications. Stephen is also finishing off a few projects on the Cretaceous and Tertiary floras of Western Australia with various Western Australia and Tasmania colleagues.

SOFIE LINDSTROM

(University of Lund) will be joining the University of Melbourne to work on the palynostratigraphy of the East Antarctic Permo-Triassic (Amery Group) succession later in 1995.

ANDREW ROZEFLEDS

has moved to Hobart to take up a new position at the Tasmanian herbarium and is finalizing his PhD thesis on floral development in the extant southern beeches (*Nothofagus*).

ANTHONY BADALA

is continuing his postgraduate work with Andrew Drinnan on a study of Palaeocene-early Miocene floras of Victoria and southern New South Wales.

JOLYON BLAZEY

completed a Melbourne University Honours thesis in 1994 on a Miocene clay flora from Bacchus Marsh, Victoria, which yielded a wealth of well preserved *Eucalyptus* capsules, *Casuarina* twigs and numerous small fusainized flowers and seeds.

LYDIA WEAVER

completed a Melbourne University Honours project on the anatomy and systematics of Permian wood from the Prince Charles Mountains, east Antarctica. These woods have pronounced but highly variable growth patterns detracting from their use in palaeoclimatic analyses.

OBITUARIES

WOLFGANG HARTUNG (1907-1995)

On June 3rd, 1995 Prof Dr Habil Wolfgang Hartung peacefully passed away at the age of 88. He studied geology and mining in his hometown Berlin and in Marburg. In Berlin he was the first student and later assistant of Prof Walther Gothan. In 1933 he received his PhD on a thesis on *in situ* spores of the Calamitales. With this paper he was the first who demonstrated heterospory within this group. From 1932 to 1935 he was appointed as a palaeobotanist at the 'Museum für Naturkunde', Berlin. His 'Habilitationsschrift', a second thesis, dealing with the Upper Visean flora of Hainichen-Ebersdorf (Saxony) was published in 1938. From 1935 to 1945 he was a geologist for the Prussian Geological Survey. During these years he worked on the biostratigraphy of important coal basins like the Ruhr and Silesia. He published a series of important papers on Carboniferous floras and stratigraphy also including accounts on the Lower Carboniferous flora of Spain and the Carboniferous flora of Bulgaria.

After the war he moved to Oldenburg in northwestern Germany where he served as director of the State Museum of Natural history and Archaeology from 1945 until his formal retirement in 1972. Having moved to the North German lowlands, he became interested in Quaternary geology. In these later years he also became deeply involved in nature conservation and education, scientifically as well as politically. However, he also remained active as a palaeobotanist. In 1966 he published a large monograph on the floral biostratigraphy of the Aachen coal field. For him retirement meant having time for concentrating on things he liked, e.g palaeobotany. For many years he was an active member of the German 'Commission' on Carboniferous Stratigraphy' and the 'Arbeitskreis für Paläobotanik und Palynologie'. Only a few days before his death he asked to be informed about the annual Arbeitskreis meeting in Dresden, a meeting that he could not attend due to his poor health. One of his last great wishes was to return to Heerlen, a city he had learnt to know during his stays with Jongmans in the 1930s and from his participation in the 2nd and 3rd Carboniferous congress. This wish was fulfilled in September 1994 when he attended the 4th European Palaeobotanical and Palynological Conference.

Prof. Hartung was a gifted and inspiring teacher who lectured palaeobotany and Quaternary geology for more than four decades at the Universities of Hamburg (1954-1994) and Munster (1955-1955). In 1963 he received an honorary professorship from the University of Munster. He continued teaching until he

was 87; also in later years always with a loud and clear voice and with great enthusiasm, in the class room as well as in the field. He introduced several generations of students into the field of palaeobotany. He was beloved among his students and colleagues with whom he liked to share his impressive knowledge and enormous experience.

With the death of Prof. Wolfgang Hartung the palaeobotanical community has lost an outstanding personality. Those who had the privilege to know him personally will vividly remember him as a warm-hearted colleague and an excellent teacher.

H. KERP and W. REMY, Munster

PROF. DR. F.P. JONKER (1912-1995)

On April 2nd 1995 Prof. Dr. Fredrick Pieter Jonker, Frits as he was known among his friends, peacefully passed away at the age of 82. He studied Botany in Utrecht under Profs. Pulle and Went and received his PhD. in 1939 on a thesis entitled "A monograph of the Burmanniaceae". In the late 1930s and 1940s he also became involved in pollen analysis through Frans Florschütz with whom he published a number of papers. In 1950 Jonker was appointed as lecturer ('privaat docent') in historical plant geography at the University of Utrecht. The next important step in his career was his appointment as full professor in special botany in 1960. He then started teaching palaeobotany for both biology and geology students. One year later he founded the Laboratory of Palaeobotany and Palynology, an institute where all possible aspects were combined, varying from Quaternary pollen analysis, pollen morphology, pre-Quaternary palynology to macropalaeobotany. The small palaeobotanical collection rapidly expanded. In 1977 the collections had become so varied that a permanent palaeobotanical display could be opened.

From 1962 to 1977 he was a member of the International Commission of Palynology and he was president between 1966 and 1971. In 1966 he organised the 2nd International Palynological Conference at Utrecht. Resulting from this conference the Review of Palaeobotany and Palynology was established. The first five volumes of this journal contained the proceedings of the conference. For his life's work he was appointed a distinguished Founder Fellow of the Palynological Society of India in 1973, and the following year he received the Gunnar Erdtman International Medal for Palynology, handed to him at the first Indian Palynological Congress.

Apart from teaching palaeobotany, he also was engaged in teaching systematic botany and floristics for biologists and pharmacists. He had an excellent knowledge of the flora of northwest Europe. His

palaeobotanical and floristic excursions were greatly appreciated by the students. When Jonker retired in 1978 he had supervised a number of PhD thesis in palaeobotany and palynology.

Prof. Jonker is survived by his wife Anneke, a life long companion who is well known in palaeobotanical and palynological circles around the World.

The international palaeobotanical and palynological community has lost a prominent scientist, an inspiring teacher and excellent organiser. He will be remembered by his many friends and colleagues with affection and respect.

H. van KONIJNENBURG-van CITTERT, Utrecht
H. KERP, Munster

PROFESSOR W. S. LACEY,

Professor Bill Lacey led a very full and active life. He was a distinguished academic throughout the whole of his working life who successfully divided his attention between fossil and living plants.

He graduated from the University of Reading with an Honours Degree in Botany which was followed a year later by a Diploma in Education. By this time the second world war had started and Bill took up employment as an Analytical Chemist at the Royal Ordnance Factory at Chorley, in Lancashire. His employment did not distract him from his first love and in a time he had published a short book entitled the "Flora of Chorley and District" and had begun his interest in palaeobotany of the Millstone Grit at a quarry just on the outskirts of Chorley. The distinguished geologist, E. D. Lacy, was also in the ROF at the same time and he was responsible for encouraging in Bill an interest in Carboniferous palaeobotany that was to stay with him for the rest of his life.

His first teaching job was in the Wigan and District Mining and Technical College where he was appointed Lecturer in 1944, in 1946 he was appointed Assistant Lecturer in Botany at the University of North Wales Bangor, where he was to stay for the remainder of his working life. He was made lecturer in 1949, Senior Lecturer in 1956, Reader in 1968 and was awarded a Personal Chair in 1976. He was considerably influenced by many of the leading paleobotanists and geologists who, in the 1950's, provided for him both a stimulus and lead. Amongst these were Professor Tom Harris, who was supervising his part-time PhD Research Degree, Professor T. Neville George, Doctor Ernest Neaverson and Professor John Walton.

His earliest publications were divided between the Millstone Grit of the Western outlier of the Pennines and the Lower Carboniferous of North Wales. The later provided some interesting correlations not only within

the United Kingdom but also with similar deposits in Europe.

In 1958 Bill Lacey spent several months at the University College of Rhodesia and Nyasaland where with the assistance of Professor Geoffrey Bond, an investigation into the Karroo flora began. Following further trips to the southern hemisphere he established himself as a leading authority in Gondwana paleobotany, many publications followed over the next twenty five years with many collaborators. Of great interest was the way in which fossil remains brought back by the British Antarctic Survey were able to correlate with those of the Gondwana Flora and South Africa.

In 1956, together with Doctor A. J. Willis and Doctor Ken Joy he developed the rapid cellulose peel technique which quite revolutionised the speed at which a three dimensional model of a fossil could be determined. The previous peel technique had only enabled researcher to produce one thin section a day whereas the rapid peel technique could produce one every half an hour.

Towards the end of his full time academic career Bill Lacey developed an interest in Devonian Floras and particularly those of Ireland. Throughout the whole of this work he had shown a keen eye, patience and diligence which had resulted in many papers that were to become paramount in the understanding of Lower Carboniferous and Permian Palaeobotany.

In 1963 he went on sabbatical leave as visiting Professor to the university of Southern Illinois where teaming up with researchers in America, he published many papers. He also discovered that the cricket sized coal balls that he had grown familiar with from the coal measures of West Lancashire were dwarfed by the immensely huge coal balls that he found in the strip mines of Southern Illinois.

Throughout all this time Bill had continued to publish papers on the living flora and in 1962 he was instrumental in establishing the North Wales Naturalist Trust and became its first secretary. He was elected Chairman in 1974 and President in 1988. In the Jubilee Year, 1977, Queen Elizabeth awarded him the Queens Silver Jubilee Medal for services to Nature Conservation in Wales. In 1991 the Cadbury Medal was given to Professor Bill Lacey for "Services to the Advancement of Nature Conservation in the British Islands". He served on the Council of the Royal Society for Nature Conservation for more than twenty years and was on its Executive Committee from 1975 to 1984. He played a central part in establishing the Association of Trusts for Nature Conservation in Wales, acting as its Chairman from 1974 to 1988.

It will be for this dual interest in both fossil and living plants and his commitment to nature conservation that

Bill Lacey will be remembered. He had a sense of deep commitment and seemingly boundless energy to these broad areas of interests. His legacy is a range of publications in learned journals, books and other articles which have contributed greatly towards our better understanding of both the living and the fossil flora. He was a natural teacher of Botany with an almost inexhaustible knowledge of plants in the field. Generations of graduates from Bangor will remember him for having imbued in them a sense of his enthusiasm. He had a deep concern for other people and was completely unselfish in his regard for their development. It is this concern for people as well as for plants that Bill Lacey will be cherished and remembered by many people from many walks of life.
F.A.HIBBERT, London, UK

ISBN 81-204-0942-6. Oxford & IBH Publishing Co.Pvt. Ltd., 66 Janpath, New Delhi 110 001.

The chapter topics in the book are well selected to cover the broad spectrum of plant life through the ages. These include basic geological data, as account of the earliest evidences of plant life, plants as related to fossil fuels, and contributions to paleoecology and paleogeography.

RECENT PUBLICATIONS

Pteridophytes and Gymnosperms: Current Concept of Structure, Evolutionary History, and Phylogeny.

Edited by Gar W.Rothwell and Ruth A.Stockey.

Fruitful results of the two symposia at the fifteenth International Botanical Congress held at Yokohama, Japan in 1993, were published collectively in vol. 107 (no. 1088), Journal of Plant Research of the Botanical Society of Japan. Included are seven papers with the introductory note by Rothwell and Stockey: Rothwell, R.W., Phylogenetic relationships among ferns and gymnosperms - an overview; Tidwell, W.D. and Ash, S.R., A review of selected Triassic to Early Cretaceous ferns; Speck, T. and Rowe, N.P. Biomechanical analysis of *Pituaia dayi* - early seed plant vegetative morphology and its implications on growth habit; Pigg, K.B. and Trivett, M.L., Evolution of the glossopterid gymnosperms from Permian Gondwana; Nishida, H., Morphology and Evolution of Cycadeoidales; Stockey, R.A., Mesozoic Araucariaceae - morphology and systematic relationships of petrified seed cones of the Cupressaceae, Taxodiaceae and Sciadopityaceae.

JPR volumes are distributed only for the BSJ members and not for commercial sale. However, some 25 extra volumes are available at cost US\$ 25.00 (including air mail cost): write or fax (in printed letter) to Dr. Harufumi Nishida (International Budo University, 841 Shinkan, Katsura, Chiba Pref., 299-52 Japan; fax: 81-470-73-4148). Pay by mail *after* you have received the issue.

Paleobotany: Plants of the Past, their evolution paleo-environment and application to exploration of fossil fuels. S.N. Agashe, 1995. 350pp. Rs 150.00.

IOP STATUTES AND BY LAWS

This December 1987 version supercedes all previous versions.

Article 1. NAME

The name of the organisation is INTERNATIONAL ORGANISATION OF PALEOBOTANY (IOP).

Article 2. AFFILIATION

The IOP shall be affiliated to the International Union of the Biological Sciences.

Article 3. AIM

The aim of IOP is to promote international cooperation in the study of palaeobotany including palaeo-palynology. This includes:

3.1 Publication of an informative newsletter that will announce all palaeobotanical meetings, report on their proceedings, describe regional bibliographies and how to obtain them, as well as other pertinent information of wide interest. Some articles of topical interest will also be included from time to time. These will not be refereed and will not have any formal status, either nomenclaturally or as a formal publication.

3.2 Collaboration with officers responsible for programmes of International Botanical Congresses to ensure the inclusion therein of items of palaeobotanical interest. To organise and sponsor other Conference from time to time at the discretion of the Executive Committee.

3.3 The encouragement of the work of regional groups of palaeobotanists and of groups of specialists within the broader field of palaeobotany.

3.4 Cooperation with other international organisations having interest allied to palaeobotany, such as the International Palaeontological Association, the International Association for Plant Taxonomy, the Commission International de Microflore du Paléozoïque and the International Federation of Palynological Societies.

3.5 Any other activities considered appropriate by the Executive Committee or warranted by interest shown by the membership. When financial support is available, publications such as a world bibliography of palaeobotany and palaeopalynology should be encouraged.

Article 4. OFFICERS

The officers of IOP form the Executive Committee

4.1 The officers of IOP shall be: President; three Vice-Presidents; Secretary; three Members at Large; Conference/Congress Member.

4.2.1 The President shall chair meetings of the Executive Committee and the General Assembly.

4.2.2 If the Office of President becomes vacant, one of the Vice-Presidents shall be elected by the Executive Committee to succeed to the office for the remainder of the term.

4.3.1 The Secretary is the driving force behind the Organisation. He/she shall transmit suggestions from the membership to the President and Executive Committee, maintain contact with regional and local groups of palaeobotanists, maintain contact with IUBS by the assistance of one of the Vice Presidents, control the income and expenditure of IOP, transmit decisions of the Executive Committee and President to the membership. The newsletter shall be the secretary's chief medium of communication.

4.3.2 The Secretary may be re-elected.

4.4 The Conference/Congress Member is chosen by the Executive Committee. He/She shall be responsible for coordinating with the appropriate authorities concerning the palaeobotanical programme at the next IOP conference or International Botanical Congress. He/she shall normally be a resident of the country in which that conference or congress is to be held.

4.5 One of the three Vice Presidents is selected by the Executive Committee to take special responsibility for the Committee with IUBS affairs. He/she will instigate creative projects, in consultation with the Executive Committee, which will be part of the activities of IUBS relevant to the aims of IOP.

4.6 The three Members at Large must be from different countries; they may not serve more than two consecutive terms of office.

4.7 One term of office is from the end of one International Botanical Congress (or its equivalent as defined by the Executive Committee) to the end of the next.

4.8 If any office other than that of President becomes vacant, the Executive Committee, is empowered to select a replacement.

Article 5. REGIONS, INDEPENDENT REGIONS AND REGIONAL REPRESENTATIVES

5.1 To help produce the newsletter, the Secretary is empowered to select, invite, and appoint as many and as diverse Regional Representatives and Correspondents as are required to ensure effective coverage of world palaeobotany. The Correspondents may include the persons who are responsible for such regional or topical newsletters or bibliographies as currently exist or that are initiated in the future. Regional representatives and Correspondents will serve at the pleasure of the Secretary, and their appointment is open to review on a regular basis.

5.2 The role of each Regional Representative is to:

5.2.1 Maintain a full list of names and addresses of members in that region, and to transmit these to the Secretary each year.

5.2.2 Collect membership dues from each member, and after deduction of postal and duplication expenses, to transfer the surplus to the Secretary (except for Representatives of Independent Regions - see Article 5.3 below).

5.2.3 Stimulate contributions to the newsletter from members in the region. Contributions should include announcements and reports of national meetings, news of individuals and their projects, obituaries, and articles of general interest. Books for review should be solicited from publishers in the region and their reviewers appointed in consultation with the Secretary.

5.2.4 Receive one master copy (or several copies, if the regional membership is small or if difficult) of each IOP newsletter from the Secretary, and arrange for duplication and distribution to members in the region.

5.3 Some regions have difficulties in exchanging currency internationally. For the purposes of this constitution, such regions are called "Independent Regions". These are determined by the Executive Committee and named in the By-Laws. Their Regional Representatives are not required to send surplus funds to the Secretary.

Article 6. MEMBERSHIP

6.1 Any palaeobotanist who subscribes to the aims of IOP is eligible for membership.

6.2 The Secretary shall maintain a roll of members' names and institutional addresses. This will comprise information received from all Regional Representatives, including those of Independent Regions. It will be revised at least once each year. It will serve as an electoral roll for the election of officers to the Executive Committee, as well as a useful world list of palaeobotanists.

6.3 Membership takes effect immediately upon receipt of membership dues by the appropriate Regional Representative, except for Independent Regions where membership takes effect upon registration of the names and addresses by the Regional Representative with the Secretary.

6.4 Membership gives voting rights, the privilege of holding office, and one copy of each newsletter.

6.5 Institutions such as libraries and publishers may receive the newsletter by paying the annual dues set out in the By-Laws. They may not vote at elections or nominate candidates for election to office, and shall not be regarded as members.

6.6 The amount to be paid for annual dues shall be laid down from time to time by the Executive Committee and incorporated in the By-Laws. The amount of dues so specified shall not apply to members in Independent Regions whose Representative may determine the level of annual dues, if any, to be collected.

6.7 Membership may be terminated for non-payment of dues extending over two years. In Independent Regions continuity of membership is maintained by annual registration of the members names with the Secretary by the Regional Representative.

Article 7. ELECTIONS

Article 7. ELECTIONS

The election of officers should take place at each General Assembly during the International Botanical Congress (or its equivalent as determined by the Executive Committee).

7.1 The Executive Committee shall seek nominations for eight of its places (see Article 4) by advertising in the newsletter.

7.2 Nominations may be made in writing, by any member of IOP. These must be received by the Secretary no later than six months before the Congress at which the election shall take place.

7.3 All candidates must be current members of IOP, defined by their inclusion on the membership/election roll (see Article 6.2 above).

7.4. The Executive Committee shall determine the status of the nominees, ascertain that they are prepared to stand for election, and shall publish a list, in the form of a ballot, in the newsletter at least one month before the start of the Congress.

7.5 Each member whose name appears on the electoral roll (Articles 6.2 and 6.3) may vote. Member voting must have paid their membership dues to their Regional Representative for the year of the election. Voters from Independent Regions must have been validated as active IOP Members for the year of the election by the appropriate Regional Representative. Thus, all voting members must be individually registered on the Electoral Roll with the Secretary.

7.6 Any member who wishes to vote by mail may send their ballot to the Secretary, to be received before the time of the meeting of the General Assembly at the Congress. Each ballot paper should be enclosed in a sealed envelope with the voter's name clearly written on the reverse side of the envelope. Members who plan to attend the Congress may prefer to vote in person at the General Assembly.

7.7 Election of the President and of the Secretary shall be declared for the respective candidate who receive a simple majority of the votes cast.

7.8 Election of the three Vice-Presidents and of the three Members at Large of the Executive Committee shall be awarded to the candidates in each category who receive the largest number of votes.

Article 8. ADMINISTRATION

8.1.1 The General Assembly consists of all individual members, meetings of the General Assembly shall be held at each meeting of the International Botanical Congress and at such other International Conferences as may be designated, with adequate prior notice, by the Executive Committee.

8.1.2 Meetings will be conducted in accordance with the customary Rules of Order (Encyclopaedia Britannica 19: 721, 1970).

8.1.3 The agenda of a General Assembly shall be determined by the Secretary and the Executive Committee and published in a newsletter in advance of the meeting.

8.2.1. The Executive Committee undertakes such business as may be delegated to it by the Constitution and By-Laws or by decisions of the General Assembly, or by requests of the President or Secretary.

8.2.2 The Executive Committee should meet at least once at each International Botanical Congress, prior to the meeting of the General Assembly. Otherwise, much of its business will be conducted by mail.

Article 9 FINANCES

Membership dues shall be determined by the Executive's Committee and laid down in the By-Laws. Dues are payable to the appropriate Regional Representative on January 1st each year. Any surplus money, after payment of postal and duplication costs should be forwarded to the Secretary by the Regional Representatives. (See 5.2.2 and 6.6 for special provisions for members in Independent Regions.)

Article 10. AMENDMENTS

10.1 These statutes of the IOP may be amended only at a meeting of the General Assembly.

10.2 Amendments may be proposed by the Executive Committee or may be submitted to that Committee by any member.

10.3 The Secretary will cause the proposed amendments to be published in the newsletter at least six months before the next General Assembly together with any comments the Executive Committee offers.

10.4 Amendments shall be effective if ratified by a two-thirds majority of members present at a General Assembly.

Article 11. LANGUAGE

The Official Languages of IOP will be those of IUBS. The use of English is advocated.

BY-LAWS

1. Membership dues - Dues for Individual and Corporate members are US \$10.00 or UK£ 5.00 per year, payable on 1 January.

2. Dues are payable to the appropriate Regional Representative and thence to the Secretary, who will use them in the production of the newsletter and for the business of the organisation.

3. A computer print-out of members names and addresses is available to members from the Secretary, upon payment of a fee to cover costs determined by the Secretary.

4. A series of informati leaflets, named IOP Circulars, may be produced from time to time, with the authority of the Executive Committee. Production costs shall be paid by the author, from whom members may obtain free copies, though postal charges are discretionary.

5. The Executive Committee has agreed that from 1994/88 the following regions have the status of "Independent Regions" for the purposes of Article 5.3:

India, Russia, China.

6. These By-Laws may be amended by a two-thirds majority of the Executive Committee provided that the proposed amendments have been circulated to the Committee at least three months before a vote is taken.