

# IOP NEWSLETTER 26

## INTERNATIONAL ORGANIZATION OF PALAEOBOTANY

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES

-SECTION FOR PALAEOBOTANY

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FEBRUARY 1985

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### IOP NEWS

#### NEW ADDRESS LIST

This print-out is available free on request to all paid-up members of IOP, by writing to the secretary. It is based on information available in London during January and lacks the latest details of addresses and members in France and North America, particularly.

#### MEMBERSHIP PAYMENTS

The address label on the envelope which transmitted this newsletter has a year code at the bottom right hand corner. This shows the last year for which your payment of IOP dues payment is recorded (North American members are billed differently) according to London records. If you owe money please pay your Regional Representative or the IOP secretary. Membership dues are £4 or US\$8 (an exchange rate established realistically in 1978). Members within North America should pay in \$ to T.N.Taylor; those elsewhere should pay in national currency to their Regional Representative or in £ to the secretary by cheque drawn on a London bank. This avoids IOP paying heavy (£5 for each transaction) bank charges. A simple form to help payments is enclosed with this newsletter.

#### CONFUSION AT HARVARD

J.E. Canright has written to the IOP office with a copy of the Harvard University Gazette dated November 30, 1984. Its front page has an item entitled "IOP To Hold Election Review, Program for New Congressmen". This concerns the Institute of Politics ... at the Kennedy School. Canright has recently been appointed editor of the IFPS (International Federation of Palynological Societies) newsletter, which was the ICP newsletter. He says: "since IOP is so widely recognized in this political connotation, quite obviously it's time for a name change. I suggest the 'International Association of Precambrian, Palaeozoic, Mesozoic and Cenozoic Paleobotanists' (IAPPMCP)". Merry Christmas to you, too, Jim!

# REPORTS OF RECENT MEETINGS

7TH NORTH EAST PALEOBOTANICAL CONFERENCE, Massachusetts, November 2-4, 1984.

25 participants joined this meeting at the Harvard University Forest in Petersham on the Friday night, which was open for general discussion. The next day the first contributed paper was by Ronald Litwin, Pennsylvania State University, who spoke on "Cynepteris lasiophora, a Late Triassic tropical fern from the Petrified Forest, Arizona." This fern is represented by sterile and fertile compressions and petrifications; the characters suggest affinity with the Schizeaceae. The associated flora contains both boreal and austral elements, and the sediments suggest a fairly dry environment. Litwin interpreted Cynepteris as growing in damp micro-sites within a generally dry tropical environment. Henry Andrews, Laconia, New Hampshire, addressed the history and use of the Compendium Index, a fairly complete file of the published occurrences of all fossil plants. This file was maintained by the U.S. Geological Survey in the Smithsonian Institution, and is an important resource. Alfred Traverse, Pennsylvania State University, and Paul Strother, Boston University, described some plant-like fossils from the Upper Ordovician and Lower Silurian of Pennsylvania. Some of this material was associated with Nematothallus, and consisted of masses of spore tetrads. The most interesting morphology was a small, dichotomously-branched structure from the Upper Ordovician Reedsville Shale. While it was clearly organic and while its morphology (but not its size) was reminiscent of the blue-green alga Scytonema, its exact affinities were not clear.

Karl Niklas (Cornell University) presented two papers concerning xylem structure of early land plants. In the first, co-authored by Harlan Banks, he demonstrated the presence of constrictions in tracheid diameter at points of branching in Psilophyton dawsonii. Similar constrictions have been observed in a wide range of modern plants; they are assumed to restrict the formation of embolisms to lateral organs, thereby salvaging the main axis during periods of water stress or injury. The discovery of this anatomy in Psilophyton indicates that the structure is an ancient feature of vascular plants. In his second paper, Niklas reviewed the efficiency of the primary vascular system over time. Bower assumed that the surface area of the primary stele was the limiting factor in the passage of solutes from the xylem to the plant body. He suggested that as plant size increased in both ontogeny and phylogeny, the surface area to volume ratio of the stele had to be maintained through modification of stelar geometry. Karl examined a range of Devonian plants and found that the surface area to volume ratio of the stele decreased from Early Devonian land plants to their larger descendants of the later Devonian. Geometric modification of the stele did not compensate for phylogenetic increase in stele size. However, Niklas made two other observations on the stelar structure of Devonian plants. First, the cross-sectional area of individual tracheids, and thus their efficiency, increased from the Early to Late Devonian. Second, the amount of primary xylem increased over time relative to the amount of ground tissue - the stele occupied proportionately more of the stem in Late Devonian plants than in Early Devonian ones. On this basis, Niklas suggested that volume of conduction, rather than stele surface area, was the limiting factor in the evolution of larger plants, and that the best measure of stelar evolution would be the "Huber value", a measure of the ratio of xylem to plant surface area.

Charles Daghljan (Dartmouth College) described two pollen types of the Onagraceae from the Tertiary of New Zealand. The first approaches the morphology of the modern Epilobium, but is not a perfect match, and probably represents an extinct genus. This demonstrates that an Epilobium-like plant was in New Zealand by the Miocene, a far older date than some have hypothesised. A second grain morphology was clearly assignable to Fuschia and had characters associated with bird pollinated species of the genus in the modern day. Bruce Tiffney and Jim McClammer Jr (Yale University) described a fossil fruit of the Anonaceae from the Paleocene of Pakistan. While seed morphology in the family is almost never diagnostic at the generic level, this find suggests the presence of tropical forests along the shores of the Tethys seaway in the Early Tertiary.

William Crepet and David Taylor (University of Connecticut) presented two papers on fossil flowers. Crepet described Mimosoid and Papilionoid flowers from a

Paleocene-Eocene locality in Tennessee. While some among the audience had heard this paper at the IOP meeting in Edmonton, it was a delight to see this marvelously preserved material again. The Papilionoid flower extends the record of the subfamily of the Leguminosae back from the Pliocene. David Taylor then described fossil flowers which he and Crepet have provisionally assigned to the Malpighiaceae. These flowers possessed five clawed petals, paired glands on the sepals, possible "T"-shaped hairs, and other characters found in the Malpighiaceae. If this identification is correct, it is the oldest record of the family, and it implies the presence of very specialised pollinating bees, dependent on the oil secreted by the sepaly glands. Leo Hickey (Yale University) closed the formal presentations with a report on his research in the Arctic. Floras from Ellesmere Island are species poor, involve only deciduous angiosperms, but are associated with warmth-loving animals such as alligators. This makes sense if one postulates a warm polar climate in which the seasonality of light is the limiting factor for plants. What is less expected is that this flora appears consistently to have a younger aspect than is indicated by other independent sources of dating, a condition lasting until the Eocene - thus Tertiary plants occur with later Cretaceous invertebrates. Hickey suggested that the resolution of this anomaly lay in the fact that many deciduous taxa first evolved in warm polar environments, and moved to lower latitudes only with the cooler and drier climates of the earliest Tertiary.

The meeting ended with demonstrations involving the use of microcomputers in paleobotany. Anthony LaPasha (North Carolina State University) demonstrated a version of Elizabeth Wheeler & Ronald Pearson's computer key for the identification of hardwoods (based on the Oxford/PRL punched margin cards) which is designed for the IBM Personal Computer. We were all impressed with the power and speed of the program, and look forward to the day when Pearson & Wheeler have the program generally available. James Walker (University of Massachusetts) demonstrated several commercially-available data management programs, reviewing their use in paleobotanical research. Karl Niklas and Vincent Kirchner (Cornell University) closed the workshop with demonstrations of three programs which they have written. The first permits the visualisation and calculation of pollen flow about cones or flowers. The second permits the modelling of the evolution of branching patterns in vascular plants. The third program measures the cross-sectional areas of stems and steles, and was developed in the research described earlier.

All the participants agreed that this was the best North East conference to date. The smaller number of papers gave increased time for discussion, the computer session widened the horizons of everyone, the slide exchange was a great success, and the fact that we finally got the fireplace working added a special sense of community to the evening discussions. Several suggestions and plans emerged from these, and we look forward to them developing.

BRUCE H. TIFFNEY, Yale University.

POLLEN & SPORE BIOSTRATIGRAPHY OF THE PHANEROZOIC IN N.W. EUROPE, Cambridge, December 1984.

This was a two day meeting of the Palynology Section of the British Micropalaeontological Society, and more than 85 palynologists attended from ten countries. There were six main talks covering the geological Periods, and invited discussants encouraged much lengthy debate. The intention was to have a small number of talks over the two days, with more time for formal and informal discussion than is the fashion at contemporary scientific meetings. No abstracts were requested, instead a series of range charts submitted by the contributors were compiled to form a conference hand-out.

John Richardson (London) gave a preview of a shortly to be published biozonation for the Silurian and Devonian. The 19 megazones described in the paper are not only applicable to N.W. Europe but enable comparison with the Silurian and Devonian of North America and China. He spoke of the need for greater collaboration between the various specialist palaeontological groups in the definition of stratotypes, and that palynology has much more to offer in the selection of appropriate stratotypes than it is at present contributing. This comment was reiterated many times by other contributors.

Geoff Clayton (Dublin), Mavis Butterworth (Birmingham) and Geoff Warrington (Nottingham) provided comprehensive reviews of miospore biostratigraphy in N.W. Europe for the Lower Carboniferous, Upper Carboniferous and Permo/Trias respectively. They each highlighted recent advances and refinements in establishing zonations, pointing out the intervals over which further work is currently being undertaken. Dorothy Guy-Ohlson (Stockholm) described Hettangian to Bathonian miospore distributions in Sweden and showed how ranges of selected taxa, together with assemblage characteristics could be used to define broad palynological zones. James Riding (Nottingham) noted that the British ranges of certain Hettangian/Sinemurian taxa were different to the Swedish ranges, but in broad terms were similar. The problems of miospore biostratigraphy in the Upper Jurassic and Cretaceous were outlined by David Batten (Aberdeen) and the potential stratigraphic use of selected miospore groups including Trilobosporites, Classopollis and normapollens was discussed. Mike Boulter (London) described some of the problems of stratigraphy in the Tertiary, including the identification and correlation of climatic and eustatic events.

N.P. HOOKER, Britoil, Glasgow

(adapted, with thanks, from the BMS Newsletter)

PALAEONTOLOGICAL ASSOCIATION Annual Conference, Cambridge, December 1984.

Seven of the 37 papers listed in the Abstracts are of particular interest to palaeobotanists:

K.C. Allen & J.E.A. Marshall Svalbardia and the corduroy plants - reconstruction of a Devonian Progymnosperm

K. Logan & B.A. Thomas The preservation and biochemical identification of lignin residues in fossil plants and coal

G.M. Rex The formation of plant compression fossils

R.A. Spicer Plant taphonomy in volcanic terrains: studies at Mount St Helens and El Chichon

I.I. Aslam The pollen Classopollis from the Early Cretaceous: sem study and phytogeography

K.M. Bertram Reconstructing the palaeoecology of a coal swamp

H.L. Pearson Carboniferous lycopsid trees; identifying the "same plant" between different states of preservation

#### NEWS OF FORTHCOMING MEETINGS

EXTRAORDINARY FOSSIL BIOTAS: their ecological and evolutionary significance

The Royal Society, London, February 20 - 21, 1985.

Three palaeobotanists are announced to speak at the meeting on February 21st:

Dr A.H. Knoll (Harvard) Exceptional preservation in silicified peats

Dr A.C. Scott (London) The formation and significance of Carboniferous coal balls

Prof W.G. Chaloner (Egham) -discussant on these two papers

ARBEITSKREIS FÜR PALAEOBOTANIK UND PALYNOLOGIE, Antwerpen, Belgium, March 19-22 1985

There will be one day of lectures at the university and two days of field trips to Carboniferous, Tertiary and Quaternary localities.

The local convenor is Dr D.K. Ferguson, Dienst Alg. Plantkunde, Rijksuniversitair Centrum, Groenenborgerlaan 171, B-2020 Antwerpen, Belgium.

SYSTEMATIC & TAXONOMIC APPROACHES IN PALAEOBOTANY, London, March 31 - April 3 1985

This meeting is jointly organised by The Systematics Association and the Linnean Society of London. The convenors are B.A. Thomas & R.A. Spicer, Life Sciences Department, Goldsmiths' College, Rachel McMillan Building, Creek Road, London SE8 3BU. (See IOP Newsletter 25, page 2)

The five lecture sessions are entitled: taxonomic problems due to preservation; levels of available information; approaches above the generic level; taxonomy & plant classification in a dynamic evolutionary context & the cases for alternative taxonomic approaches; palaeobotany and the code.



8TH REGIONAL COMMITTEE ON MEDITERRANEAN NEOGENE STRATIGRAPHY CONGRESS, Budapest, Hungary, August 1985.

The second circular is now available and contains details of a topic to be discussed that is of interest to palaeobotanists:

Topic C: Palaeoecology and Ecostratigraphy

- palaeoecology of Neogene marine, brackish water, fresh water and terrestrial organisms
- general patterns of the development of continental brackish-water, fresh water and terrestrial paleoenvironments
- reconstructions of Neogene marine and non-marine ecosystems and comparisons with Recent systems
- establishing ecostratigraphic models
- interrelation of faunal and floral time-space distribution patterns and the palaeogeographic-geodynamic and palaeoenvironmental evolution of the Mediterranean and the Paratethys
- palaeobiogeography

One of the convenors is the palaeobotanist J.P. Suc (Montpellier). For details write to Prof G. Hámor, Hungarian Geological Survey, Népstadion ut 14, H-1442 Budapest, Pf 106, Hungary. The telex is 22 5220 mafi h.

3RD INTERNATIONAL CONGRESS OF SYSTEMATIC & EVOLUTIONARY BIOLOGY, Brighton, UK, July 4-10th 1985.

Details from: Prof B. Cox, ICSEB III, Conference Services Ltd., 130 Queen's Road, Brighton, Sussex, BN1 3WE, UK.

Three symposia are of particular interest to palaeobotanists:

"Evolution in the Chlorophyta & the Origin of Higher Plants", July 6th am.

Convenor J. Raven; speakers include: K. Niklas, D. Edwards, J. Raven & M. Melkonian.

"Angiosperm Origins & the Biological Consequences", July 7th all day

Convenor E.M. Friis; speakers include: J. Doyle, P. Crane, B. Tiffney, M. Collinson.

"Random & Directed Events in Evolution", July 9th all day

Convenor A. Hallam; speakers include: R. Lande, B. Simberloff, K. Niklas, S.M. Stanley and D. Jibonski.

There are other useful symposia and field trips.

#### MIOCENE LEAVES FROM NEPAL

Récoltes d'empreintes de feuilles dans de nouveaux gisements miocène des Siwaliks (Népal).

A la suite de la découverte de plusieurs gisements miocènes de feuilles fossiles par une équipe de géographes de l'Université de Toulouse, j'ai effectué avec deux d'entre eux une mission d'un mois (mars 1984) dans le Sud-Est du Népal.

Il s'agit d'une région de basses montagnes (Siwaliks, entre 300 et 1,500 m d'altitude) située au Nord de la plaine du Terai. Elle est recouverte par une forêt claire subtropicale dominée par *Shorea robusta* ("Sal") et *Terminalia tomentosa*.

Nous l'avons parcouru à pied, avec 7 porteurs népalais chargés des tentes et des vivres. Nous avons suivi des rivières pour observer des affleurements. De nombreux villages, anciens ou récents, sont implantés le long des cours d'eaux de cette région qui sont les seules voies de pénétration. Les conditions de vie sont très dures et archaïques. Les habitants vivent dans des maisons en bois, souvent sur pilotis, au toit de chaume. La plupart sont pieds-nus et hommes et femmes portent de lourdes charges sur leurs dos dans des paniers coniques. La population défriche en brûlant la forêt et installe des rizières. Elle élève des zébus, des buffles, des chèvres, quelques poules et parfois des cochons. La forêt est également dégradée par le pâturage et par la récolte du feuillage des arbres fourragers (fodder trees) et du bois utilisé pour la construction ou pour la cuisine.

Cette mission a eu lieu en pleine saison sèche et beaucoup d'arbres étaient en train de perdre leurs feuilles. Certaines rivières étaient à sec, ce qui nous a posé quelques problèmes d'approvisionnement en eau. La chaleur était forte pendant la journée (35°) alors que les nuits étaient fraîches (10°). Le thé et les repas à base

de riz et de légumes préparés par les porteurs étaient excellents. Nous avons découverts et échantillonnés cinq nouveaux gisements à empreintes foliaires. Elles sont contenues dans des sables, des limons à ripple-marks ou à lamines, ou des grès. Ces sédiments sont attribués aux Siwaliks inférieurs et moyens (Miocène moyen et supérieur). Les empreintes sont nombreuses et variées mais les bords et la nervation sont souvent peu nets. Cependant, pour deux des cinq gisements, les spécimens ont conservé de la matière organique. Notre échantillonnage a été limité par le poids des fossiles qui ont été répartis après emballage dans les charges des porteurs.

J'ai également récolté des feuilles d'une centaine d'espèces ligneuses actuelles qui serviront de référence pour déterminer les échantillons fossiles. La plupart de ces feuilles actuelles ont été identifiées à mon retour à Kathmandu par le Docteur Shakyu du Department of Medicinal Plants (Thapathail, Kathmandu).

Jusqu'à présent, seules quelques macroflores tertiaires du nord de l'Inde ont été étudiées (Sahni, 1921-64; Lakhanpal, 1952-82). Le nombre de taxons est faible et les échantillons mal conservés ce qui rend impossible toute synthèse sur la végétation de cette région au Néogène. Récemment, MM. Prosad et Prakash (Lucknow, voir IOP Newsletter 23) ont également cité un gisement de feuilles fossiles du Siwalik inférieur au Népal. L'étude de ces flores de la bordure sud de l'Himalaya pourrait apporter des données nouvelles sur la végétation tertiaire de cette région. L'identification des échantillons est difficile mais on peut déjà moter que les espèces fossiles sont différentes des espèces néogènes d'Europe ainsi que de celles de Chine ou du Japon. Elles se rapprochent sans doute des flores tropicales indiennes.

P. ROIRON, Montpellier, France.

#### Sphenobaiera IS UNDER FIRE AGAIN

In 1972 Knobloch (Taxon, 545-546) provided convincing arguments that Sphenobaiera is a younger heterotypic synonym of Sclerophyllina Heer. The latter name has not been widely used in the literature, and the conservation of Sphenobaiera against Sclerophyllum is reasonable. However, there is another, more dangerous synonym of Sphenobaiera. I mean Ginkgophyllum, which is widely used in the literature.

During my work at the Museum National des Sciences Naturelle, in Paris, I unexpectedly found that a specimen erroneously labelled as Trichopitys heteromorpha is the holotype of Ginkgophyllum grassetii Sap. coming from the Lower Permian of Lodève. Saporta (1877-1884, plate 152, Figure 2) depicted only its upper half and his figure is not quite accurate. The preservation of the holotype is good enough to observe the helical arrangement of palmately dissected leaves, dichotomous venation with several veins entering distal lobes, a wedge-shaped leaf base and numerous resin bodies embedded in the compression. All these characters fit the diagnosis of Sphenobaiera as outlined by Harris et al in 1974. Harris suggested that we should classify ginkgoalean leaves into the genera Baiera, Sphenobaiera, Eretmophyllum, etc on the basis of their gross morphology alone. His approach has been followed by others. But Sphenobaiera and Ginkgophyllum are now obviously synonyms and their separation on gross morphological features is impossible. We can try to discriminate them by using epidermal characters, and then these characters can be applied to distinguish other ginkgoalean genera, a practice reasonably rejected by Harris. I do not congratulate those who often deal with Sphenobaiera in practical work. We are all accustomed to the generic name Sphenobaiera, and dropping it would be very difficult to accept.

The synonymy of the genera Ginkgophyllum and Sphenobaiera does not imply the ginkgoalean affinity of the former genus. Sphenobaiera is commonly treated as a member of the Ginkgoales, although some of its species may belong to the Peltaspermales (Meyen, 1984, Bot. Rev.). The same can be said for Ginkgophyllum.

The species composition of Ginkgophyllum now needs a total revision, and the generic name should be conserved against Sclerophyllina.

S.V. MEYEN, Moscow, USSR.

## FISSION TRACK DATING

Fission track (F-T) dating methods were introduced by Fleischer, Price and Walker in 1965 as a simple a versatile technique in comparison to other radiometric methods. The Department of Radiometric Dating at the Birbal Sahni Institute of Paleobotany has established the F-T dating technique to date different rocks and minerals with special reference to fossiliferous strata. The F-T dating has been applied widely to date igneous and metamorphic rocks using various minerals, but the application of the technique to sedimentary rocks is much more rare, and even then only by using phenocrysts of apatite, zircon and the glasses from volcanic ashes and the metamorphic intrusions. The F-T age data obtained for the sediments by this method do not give the actual age of the sediments, but only some limits. In order to have more reliable direct dating of sedimentary rocks, F-T dating on the most common authigenic mineral of sedimentary deposits, glauconite, has been attempted successfully for the first time, in our laboratory.

The radiation damage created in the mineral due to spontaneous fission of  $U^{238}$  nuclei get annealed as the temperature of the mineral rises in the geologic past, and hence annealing corrections on the F-T age are required to get the true age of the mineral. Our laboratory studies indicate that no such annealing correction is required for the F-T ages of glauconite from unmetamorphosed sediments. F-T measurements on eight glauconite samples of known geological age (within the range 33Ma - 1,278Ma) have been carried out. Their F-T ages show excellent agreement with the ages of the strata from which the samples have been obtained. A glauconite sample, GL-0(g), widely used as an inter-laboratory standard by most K-Ar workers, has been supplied to us by G.S. Odin (France) and its F-T age also agrees well with the measured K-Ar ages from fourteen K-Ar labs all over the world. F-T dating techniques using glauconite for dating unmetamorphosed sedimentary rocks have been applied to date unfossiliferous Precambrian deposits of the Vindhyan sediments at the Son Valley, Mirzapur district, and at Chitrakut, Banda district. Four profiles of more than 50 samples have been dated giving ages ranging from 1.030Ma to 1,380Ma, agreeing with the earlier known K-Ar dating. Dating of petrified wood samples by F-T dating methods on in-situ apatite grains has also been attempted. The F-T ages obtained on three samples whose ages range from 45Ma to 283Ma, agree well with ages from other sources. These are the first results from petrified wood samples, and the work is being continued on samples from other strata.

G. RAJAGOPALAN & A.P. SRIVASTAVA, Lucknow, India.

## PALEO-MANGROVES ET PALEO-ENVIRONMENTS

Dans IOP Newsletter 23 A Hlustik a proposé d'intéressantes réflexions sur les éventuelles mangroves à conifères du Crétacé inférieur et du Jurassique. La dénomination de mangrove ne peut se justifier que comme un ensemble d'arbres ou d'arbustes vivant sur un sol salé intertidal, et donc possédant une architecture adaptée à ces milieux submergés par la marée et soumis à la dynamique littorale. Que des végétaux se soient installés sur des espaces salés supratidaux ou même intertidaux, peut être même dès le Paléozoïque supérieur, cela ne fait aucun doute, mais ces peuplements étaient-ils fréquents, denses, ou plutôt exceptionnels (?) et des arbres y vivaient-ils? Des végétations actuelles halophytes, herbacées, et même localement arbustives, ne constituent pas pour autant des mangroves, mais des végétations de marais maritimes, que l'on observe sous les climats les plus variés. Pourquoi les milieux meubles intertidaux n'auraient-ils été véritablement occupés par une végétation arborescente, dans les régions inter-tropicales et extra-tropicales à climat subtropical, qu'au cours du Crétacé supérieur? Cela peut être considéré comme l'une des conséquences de l'extraordinaire expansion des angiospermes sur le globe à cette époque. C'est en tous cas le point de vue que l'on peut formuler, à la suite d'une série d'analyses critiques (J.C. Plaziat, IXème Congr. intern. de

sedimentologie, Nice, 1975; J.C. Plaziat et J.C. Koeniguer, Mém. géol. de l'Université de Dijon, 1983; J.C. Plaziat, J.C. Koeniguer et F. Baltzer, Bull. Soc. géol. de France, 1983).

Les "paléomangroves" du Trias et du Jurassique évoquées par plusieurs auteurs, apparemment dépourvues de vrais palétuviers, ne semblent pas devoir être considérées comme des mangroves mais comme des végétations littorales (de marais salés, de cordons ou de flèches littorales) ou riveraines de distributaires deltaïques, espaces submergés seulement aux plus hautes mers ou lors de tempêtes. Qu'il y ait eu des paléomangroves à conifères au Crétacé inférieur et au Jurassique, a priori pourquoi pas, mais encore faudrait-il démontrer quelle était la morphologie de ces "conifères-palétuviers" de mangroves et quels étaient, avec précision, les caractères de ces peuplements! Seules des découvertes en milieu intertidal sûr, de fossiles in situ, autochtones, identifiables, à la morphologie au moins en partie préservée, et associés à des animaux marins spécifiques apporteront des éléments de réponse à ces questions. La belle étude de J. Francis (1983, *Palaeontology*, 26) par exemple, sur la forêt littorale à Chéiropélidiacées de Purbeck (Dorset, Grande-Bretagne, Purbeckien) ne permet pas, semble-t-il, de soupçonner l'existence d'une mangrove proche.

Autre point soulevé par A. Hlustik, les végétaux des milieux arides ou subarides se fossilisent-ils? Certes tout phénomène de fossilisation est exceptionnel. Sous de tels climats, comme le souligne A. Hlustik, la plupart des restes végétaux se fragmentent rapidement et disparaissent. Cela dit, de nombreux fossiles de ces milieux ont été recueillis par des explorateurs, voyageurs ou géologues depuis plusieurs dizaines d'années; on connaît ainsi en Afrique saharienne au moins une centaine de gisements à végétaux xéromorphes depuis la Mauritanie jusqu'en Afar et du Tchad au Sahara septentrional (Ed. Boureau, 1958, *Paléobotanique africaine*, Bull. sc. du C. T.H.S.; J.C. Koeniguer, C.R. Acad. Sc., 278, 1974): bois silicifiés ou calcifiés de *Tamaris* (cf. *Tamarix articulata*), d'*Acacia*, de *Retama*, rhizomes et tiges silicifiées de Légumineuses (Mauritanie), tiges silicifiées de Graminées de milieux hyperarides (Afar), empreintes et débris carbonisés (Soudan, G.E. Wickens, 1975, *Palaeogeogr.*, *Palaeoclim.*, *Palaeoecol.*). Certains de ces fossiles sont même connus depuis le Miocène inférieur (*Retama* dans le Sud-Tunisien) et le Pliocène (*Tamaricoxylon* et *Retama* au Tchad). Ces fossiles, il est vrai, n'ont jamais été découverts dans des formations littorales, ils sont surtout fréquents dans ou à proximité de dépôts évaporitiques, de sebkhas, de diatomites; toutefois, en Mauritanie, des gisements holocènes se situent à quelques dizaines de kilomètres du littoral.

Ces données ne permettent en aucun cas de considérer les Frénélopsides comme des végétaux de milieux arides, mais démontrent que des arguments étayés par l'observation de réalités actuelles (en l'occurrence la non-fossilisation des végétations sahariennes) peuvent être infirmés par des faits d'un passé relativement récent, survenus dans des milieux pourtant analogues. Les interprétations paléoécologiques sont d'autant plus délicates à formuler que les époques considérées sont plus anciennes.

Qui plus est enfin, les deux types de milieux discutés peuvent, rarement il est vrai, coexister tel qu'en Mer Rouge où mangroves dégradées et végétations arides se juxtaposent. De tels environnements peuvent d'ailleurs être fossilisés: on en connaît un exemple dans le Miocène de l'est de la péninsule arabique (P.J. Whybrow et H.A. McClure, 1980, *Palaeogeogr.*, *Palaeoclim.*, *Palaeoecol.*, 32).

J.C. KOENIGUER, Paris.

### THREE WEEKS IN PALAEOBOTANICAL LABORATORIES IN FRANCE

In December 1984 I visited the palaeobotanical laboratory in Paris, as well as those in Montpellier, Lyon and Strasbourg.

Dr Blanc at the Museum in Paris showed me the holotypes of *Trichopitys heteromorpha* Sap. and *Ginkgophyllum grassetii* Sap. The former has proved to be fertile, but unlike the fertile specimens described by Florin in 1949 its seed bearing axillary appendages are simple, and not pinnate. The planated nature of both the fertile frond and the



seed-bearing appendages is quite evident. The holotype of G. grassetii is indistinguishable from Sphenobaiera (see page 6, above). Dr Grauvogel-Stamm showed me an intriguing specimen of Yuccites vogesiacus with leaves still attached to the stem. The specimen has been fractured in such a way that the Tylodendron-like pith cast is exposed showing coaly strands of the primary vasculature. No traces of the secondary wood are observed which suggests that the plant may have had a succulent habit. A succulent conifer - how about that?

I did meet with one or two difficulties in France. Figured specimens are often not separated from other specimens. Others are not listed or even labelled. They can be recognised only by those familiar with the pictures. Another problem arises from the figured specimens of Grand'Eury. Many of his figures do not depict particular specimens, but rather illustrate his general notions on the relevant taxa. For instance, in Lyon I found a specimen labelled as the type specimen of Acanthophyllites noeli Grand'Eury. This specimen bears only slight resemblance to the only drawing that is published (Grand'Eury, 1890), but the drawing is undoubtedly a reconstruction. I suspect the same for the well known drawings of Cordaitea, Cordaitanthus and other taxa. Many of them cannot be treated reliably as documenting actual specimens. This means that the taxa established by Grand'Eury in his monographs of 1877 and 1890 need revision, and their typification should be checked.

The help of all my hosts and hostesses in France is gratefully acknowledged.

S.V. MEYEN, Moscow, USSR.

## OBITUARY

### PETER DAVID WEISTE BARNARD 1932-1984

Peter Barnard who died on 12th July 1984 was born on 3rd June 1932 at Nyaungghla, Upper Burma, where his father, Richard Barnard, was employed by the Burmah Oil Company. At the outbreak of the war in Europe, Peter was at boarding school in England but in July 1940 by which time life in England was becoming increasingly hazardous, he rejoined his parents in Burma where the family remained until the Japanese invasion in 1942. Then Peter and his mother were evacuated by the R.A.F. to India, leaving his father to trek out of Burma later at considerable cost to his health. The family spent some four years in India during which time his mother ran an army rest centre at Ootacamund. Peter had at that stage apparently already acquired some interest in natural history which expressed itself chiefly in the keeping of a variety of pet animals. His mother, herself a botany graduate, no doubt had an influence in developing Peter's early awareness of the natural environment.

On returning to England after the end of the war Peter attended Caterham School as a weekly boarder until, in 1947, he became paralysed in both legs. In spite of rumours to the contrary this was almost certainly not due to poliomyelitis but rather to an accident which occurred during gymnastics.

Inevitable disruption of his education followed but, remarkably, through private tuition and characteristic determination on Peter's part he succeeded in gaining General School Certificate in 1949 and after two further years as a day boy at Whitgift School, G.C.E. Advanced Level in Physics, Chemistry, Botany and Zoology. He was then 19. In October of the same year he entered Birkbeck College and in 1956 took an Honours degree in Botany with Zoology and Geology as subsidiary subjects.

Having already, as an undergraduate, acquired a special interest in fossil plants he chose palaeobotany for his postgraduate work. It was with keen anticipation and delight that I, as a young lecturer at Birkbeck, accepted Peter as my first research student.

His PhD work was carried out on a collection of fossil plants from the Calceiferous Sandstone at Oxroad Bay, Scotland, material which Professor W.T. Gordon had been

studying at the time of his death a few years previously. Among the plants which Gordon had described was the seed Salpingostoma dasu and it was for Peter to describe the cupule (Calathospermum fimbriatum) to which this seed belonged. Several papers emanated from his thesis.

It was his involvement at this stage with the Oxroad Bay flora that led him to seek information about some of the other, then almost forgotten, localities in south-east Scotland which had yielded Lower Carboniferous plants. From a list of British palaeobotanists he discovered that one A.G. Long who, a number of years previously, had worked on some Coal Measure petrifications, was then living at Duns in Berwickshire. Accordingly, Peter wrote to Albert Long: "I have been generally reading through the literature describing Calciferous Sandstone plants. Two localities from which material is recorded are near your address which I have just come across in the Palaeobotanical Report 1954-6". As a result of this letter an interest in fossil plants was re-awakened in Albert Long, who at the time had left palaeobotany feeling somewhat disillusioned with its apparent neglect in Britain and had directed his energies towards lepidoptery and bee-keeping. Palaeobotanists the world over are aware of the results of this re-awakening.

Peter gained his PhD in 1960 and continued in palaeobotanical research, at first on a part-time basis while holding appointments at Croydon Technical College and The County School, East Grinstead, and then as a full-time member of the academic staff of the Botany Department, University of Reading, where he was appointed by the late Professor Tom Harris in 1964.

Peter's whole life from his childhood when his early education had been interrupted by events of the war to his adult and academic life which was so severely affected by his paralysis and frequent periods in hospital, was a triumph over extreme adversity. Peter was never contented to restrict his activities to those which did not demand physical effort. He truly conquered his disability. I myself had the privilege of working with him in the field on two occasions. There were many others. Outstanding among these was his expedition to Northern Iran in 1970 when he travelled overland with David and Elly Ferguson and a nurse, Patrick Jones. Although through the effects of physical strain he had to fly home, the expedition which was supported by the Royal Society and which was part of a collaborative research programme with the late Karl Kilpper, was highly successful.

Subsequent research on the large amount of material collected was carried out with the assistance of Jose Miller and culminated in one of his most important papers, the third part of his flora of the Shamshak Formation, published in Palaeontographica in 1976. Peter also went twice to Trinidad, where he collected fossil and extant plant material and lectured at the University of the West Indies.

Other areas of Peter's academic life were equally fulfilled. Not only was he a conscientious teacher giving patiently of his time to students, but he played a full part as a member of the national and international scientific community. He became a Fellow of the Linnean Society in 1963 and served the Society as Convenor of the Palaeobotany Group, as an associate editor of the Botanical Journal and as a member of the Programme Committee. He was also an active member of the Palaeontological Association. He attended many conferences including the Carboniferous Stratigraphy meeting in Luxembourg and the International Botanical Congresses at Edinburgh and Leningrad.

Peter's publications, although not numerous, have contributed significantly to palaeobotanical knowledge. But what is perhaps more important, they reflect, through the meticulous care with which the work they describe was carried out, Peter's resolute thoroughness which, with his practical courage and faith, should be an inspiration to many.

After he retired from Reading University in 1982 he continued to take an interest in palaeobotany and especially in the progress of his student Peter Crane. He was able also to devote time to his active interest in cooking which, during the summer months took the form of barbecuing. The last fourteen years of his life had the sure support of his wife, Margaret (nee Hallet), who survives him.

K.L. ALVIN, London, UK.

## PROF. T.M. HARRIS PRIZE

The late Professor T.M. Harris donated Rs1,800 to the Birbal Sahni Institute of Palaeobotany, Lucknow, India. His friends and well-wishers there made a collection of Rs3,200 to make it a sum of Rs5,000. The Governing Body of the Institute has decided that the interest from this endowment will be used as a prize to be given to scientists under 30 years of age for the best article published in the Palaeobotanist or the Journal of the Indian Botanical Society on alternate years. The prize will be known as the "Professor Thomas Maxwell Harris Prize" and the first one will be awarded in November 1985 for the best paper published in the Palaeobotanist.

Further donations towards the prize may still be sent to the Director, Birbal Sahni Institute of Palaeobotany, Lucknow, India.

## NEWS OF INDIVIDUALS

T. KIMURA, Tokyo, Japan, is in charge of the 50th anniversary of the Palaeontological Society of Japan. IOP has sent a message of congratulation which was presented at the celebrations on February 1st 1985.

R.N. LAKHANPAL & Dr VISHNU-MITRE have both received appointments as Emeritus Scientist for a period of two years after their recent retirements. They have been provided with full facilities to carry out their research work at the Birbal Sahni Institute at Lucknow.

SUNA-JA CHOI from Seoul, South Korea, was awarded her Doctorat de Troisième Cycle at the University of Montpellier, recently. Her thesis was entitled "Les charophytes du bassin potassique Catalan (nord-Est de l'Espagne) à la limite Eocène-Oligocène".

G. REX began work on her European overseas post-doctoral fellowship (supported by a British research council) at the Laboratoire de Paléobotanique, Montpellier, France, in October 1984. She is studying the mechanisms of permineralisation, and is concentrating on silicified plant material.

## BIBLIOGRAPHY

RAPPORT SUR LA PALÉOBOTANIQUE ET LA PALÉOPALYNOLOGIE (France et Belgique, 1981-1983) This bibliography has recently been published and contains 69 pages with a total of 361 references. There is also a list of work in progress, addresses of laboratories and various details of the work and progress of active palaeobotanists.

For the first time, it has been produced under the auspices of the new "Organisation Française de Paléobotanique". It is the work of the usual editor, Dr A. Lejal-Nical, Laboratoire de Paléobotanique fondamentale et appliquée, Université P. et M. Curie, 12 rue Cuvier, 75005 Paris, France.

Overseas subscribers should send her a cheque drawn on a Paris bank for FF50.

## RECENT PUBLICATIONS

### FAUNA OCH FLORA

To commemorate the founding of the Department of Palaeobotany one hundred years ago (1884) the popular science magazine, Fauna och Flora, which is given out by the Swedish Museum of Natural History, devoted one complete issue to the subject of palaeobotany (September 1984, Argang 79, nummer 4). Most of the articles are in Swedish and there are English summaries and half-tone and colour pictures.

There are eleven articles:

B. LUNDBLAD Stenherbarier i norr - om grundandet av Riksmuseets paleobotaniska avdelning för hundra år sedan

S.B. MANUM Et blikk fra norsk side på Riksmuseets paleobotaniske seksjon og samlinger.  
 K.R. PEDERSEN Den fossile flora fra Scoresby Sund, Østgrønland  
 E.M. FRIIS Daekfrøede planter fra Øvre Kridt  
 U. MILLER Något om diatoméer och diatoméanalys  
 E. W. ADAMCZAK Solenoporaceae - fossila kalkalger  
 D. GUY-OHLSON Vad leran i Vallåkra berättar  
 E. NORLING Drag ur Skånes geologi från kambrium t.o.m. tertiär  
 D. GUY-OHLSON, Y. ARREMO & L. IMBRY Glimtar från mesozoiskt fältarbete av idag  
 G.M. REX Användning av experimentella och numeriska metoder i studiet av växtfossil  
 G. GARD Åldersbestämning av sedimentära bergarter med hjälp av kokkolitalger

THE EVOLUTION-CREATION CONTROVERSY Perspectives on religion, philosophy, science and education - a handbook. Walker, K.R. (Ed.) 1984. The Paleontological Society. Special publication 1, 155pp. \$8.50

Available from: Department of Geological Sciences, University of Tennessee-knoxville, Knoxville, TN 37916, USA.

The contents include the following items of specifically palaeobotanical interest:

R.A. GASTALDO Preface to volume

D.R. SCHWIMMER Is there scientific method in creationist madness?

W.J. FRAZIER Partial catastrophism and pick and choose empiricism: the science of "creationist" geology

R.A. GASTALDO A case against pelagochthony: the untenability of Carboniferous arborescent lycopod-dominated floating peat mats.

## BOOK REVIEWS

FUNGUS - INSECT RELATIONSHIPS: PERSPECTIVES IN ECOLOGY AND EVOLUTION. Q. Wheeler & M. Blackwell (Eds.) 1984. Columbia University Press, 514pp. \$78.

CLADISTICS: PERSPECTIVES ON THE RECONSTRUCTION OF EVOLUTIONARY HISTORY. T. Duncan & T.F. Stuessy (Eds.) 1984. Columbia University Press, 312pp. \$45.50

On receiving these two volumes I was excited at the prospect of finding out about the evolution of fungus-insect relationships and about how to reconstruct evolutionary history. As a palaeobotanist I was, however, sadly disappointed. No room here for data from the fossil record. In the Wheeler & Blackwell volume, fossils are mentioned only on 5 pages (out of 514!) In the Duncan & Stuessy volume the words fossil and palaeontology do not even figure in the index. The former volume is a strange mix. The first part on theoretical contributions unashamedly plugs cladistics for the analysis of relationships. Indeed, the introduction states: "A consensus is emerging in favour of phylogenetic systematics", but among whom, I ask? My own feeling is that many authors are so busy developing methodology that data, especially fossil, is a nuisance. In their chapter Brooks and Mitter state: "The study of coevolution can thus be viewed as the study of the degree to which breadth of colonization is constrained by history, and its starting point as the differentiation of instances of association by descent from those of association by colonization". The answers can, it is maintained, be derived from cladistics. The second part of the book on mycological contributions and the third part as entomological contributions is a little more straightforward although many utilize cladistics. The volume edited by Duncan & Stuessy attempts to cover the wide use and methodology of cladistic analysis. Those interested in the techniques may find it useful, but palaeontology is not given a look in. As far as I can judge the fossil record only causes problems in evolutionary study for most authors and hence is left alone entirely. Stuessy & Cris in their chapter do utilise some fossil data but only to illustrate problems.

It is becoming increasingly apparent from these and numerous other texts that many biologists feel that they can unravel evolutionary history without recourse to the fossil record. It is up to palaeobotanists in particular to respond to these attacks on their discipline or else be cold shouldered out of any serious discussions.

A.C. SCOTT, London, UK.



SMALL WORLD An Academic Romance. David Lodge, 1984. Secker & Warburg, London. 339pp.

This is not a review but a quotation from the first pages of this novel, which was short-listed for last year's Booker prize:

"Prologue

"When April with its sweet showers has pierced the drought of March to the root, and bathed every vein of earth with that liquid by whose power the flowers are engendered; when the zephyr, too, with its dulcet breath, has breathed life into the tender new shoots in every copse and on every heath, and the young sun has run half his course in the sign of the Ram, and the little birds that sleep all night with their eyes open give song (so Nature prompts them in their hearts), then, as the poet Geoffrey Chaucer observed many years ago, folk long to go on pilgrimages. Only, these days, professional people call them conferences.

"The modern conference resembles the pilgrimage of medieval Christendom in that it allows the participants to indulge themselves in all the pleasures and diversions of travel while appearing to be austere bent on self-improvement. To be sure, there are certain penitential exercises to be performed - the presentation of a paper, perhaps, and certainly listening to the papers of others. But with this excuse you journey to new and interesting places, meet new and interesting people, and form new and interesting relationships with them; exchange gossip and confidences (for your well-worn stories are fresh to them, and vice versa); eat, drink and make merry in their company every evening; and yet, at the end of it all, return home with an enhanced reputation for seriousness of mind. Today's conferees have an additional advantage over the pilgrims of old in that their expenses are usually paid, or at least subsidised, by the institution to which they belong, be it a government department, a commercial firm, or, most commonly perhaps, a university.

"There are conferences on almost everything these days, including the works of Geoffrey Chaucer. If, like his hero Troilus at the end of Troilus and Criseyde, he looks down from the eighth sphere of heaven on

This little spot of erthe, that with the se  
Embraced is

and observes all the frantic traffic around the globe that he and the other great writers have set in motion - the jet trails that criss-cross the oceans, marking the passage of scholars from one continent to another, their paths converging and intersecting and passing, as they hasten to hotel, country house or ancient seat of learning, there to confer and carouse, so that English and other academic subjects may be kept up - what does Geoffrey Chaucer think?

"Probably, like the spirit of Troilus, that chivalrous knight and disillusioned lover, he laughs heartily at the spectacle, and considers himself well out of it. For not all conferences are happy, hedonistic occasions; not all conference venues are luxurious and picturesque; not all Aprils, for that matter, are marked by sweet showers and dulcet breezes."

M.C.B.

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