

IOP NEWSLETTER 29

INTERNATIONAL ORGANIZATION OF PALAEOBOTANY

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES

SECTION FOR PALAEOBOTANY

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PLEASE MAIL NEWS AND CORRESPONDENCE TO YOUR REGIONAL REPRESENTATIVE OR TO THE SECRETARY FOR THE NEXT NEWSLETTER 30. The views expressed in the newsletter are those of its correspondents and do not necessarily reflect the policy of IOP.

IOP NEWS

PAYMENT OF DUES

YOUR REGIONAL REPRESENTATIVE WILL ATTACH A PAYMENT FORM WITH THIS NEWSLETTER TO THOSE IN WESTERN COUNTRIES OWING MONEY FOR IOP MEMBERSHIP FOR 1986. Remember that IOP has no source of external funding and is in some financial debt, so please pay your representative or the IOP secretary as soon as possible. The annual fee for membership (giving 3 Newsletters a year & Circulars etc) is still 4 pounds or US\$8.

NEW MEMBERSHIP ADDRESS LIST

The IOP membership list includes names and addresses of most IOP members, whether paid-up in western countries (with no problems of currency exchange with London) or from countries with other methods of newsletter distribution. The list has just been revised and includes a new section of palaeobotanists in Eastern Europe and greatly extended lists of members from France and Japan. There are still few addresses of palaeobotanists in China, USSR and India - will Regional Representatives Drs Zhou, Meyen and Singh please help present the full details of their region's membership to improve future versions of the list.

To satisfy the requirements of the recent UK Data Protection Act please write to the IOP secretary before April 1st 1986 if you wish to have your name, address and membership payment date excluded from these computer files.

IOP REGIONAL REPRESENTATIVE IN JAPAN

Prof T. Tanai of the Hokkaido University at Sapporo has been the IOP regional representative in Japan for many years. The IOP Executive Committee thanks him for his labours in distributing the newsletter and collecting dues. The new representative to replace him is Dr T. Kimura, Tokyo, whose address is included on the back page of this newsletter.

REPORTS OF RECENT MEETINGS

HORNIBROOK SYMPOSIUM: Evolution, climate and tectonicism - the impact of climate and tectonism on evolution of the southwest Pacific biota. **ASSOCIATION OF AUSTRALASIAN PALAEOONTOLOGISTS** in association with the **GEOLOGICAL SOCIETY OF NEW ZEALAND**, 3-5 December 1985, Christchurch.

This, New Zealand's first specialist palaeontological conference, was named in honour of Norcott Hornibrook who retired as Chief Palaeontologist from the New Zealand Geological Survey in 1981. Norcott's speciality was micropalaeontology in which he was a dominant figure with a worldwide reputation.

The emphasis of the conference was on palaeontology and nearly all branches of palaeontology were represented. Out of the 45 or so papers presented 3 were on palaeobotany.

JACK DOUGLAS discussed Albian extinctions in the Great Australian-Antarctic trough with great gusto in spite of having lost his notes. He reported a remarkable and rapid decline in many floral elements at the end of the Early Cretaceous. A number of causes were discussed - volcanicity, reduction in topographic relief, climate change and a change in tree cover effecting understorey vegetation. No solitary event seems sufficient to cause the loss of so many different plant types - sphenopsids, ferns, lycopods, pteridosperms, ginkgos and conifers. The corresponding rise of the angiosperms is presumably in response to the decrease in competing plant cover.

JOHN RIGBY's topic also covered Antarctica. His talk on some Triassic (middle Gondwana) floras from South Victoria Land compared floras from Mt. Shapeless and Horseshoe Mountain with those of similar age elsewhere in Victoria Land and from New Zealand, Australia, South Africa and South America. The floras are small and are of middle Triassic age although a late Triassic age cannot be discounted.

ANDREW ROZEFELDS described the first record of fossil leaf mining from Australia. He illustrated examples from the late Triassic Ipswich Coal Measures and the Eocene Anglesea Coal Measures from Heidiphyllum elongatum (Morris) Retallack (Voltziaceae) and unidentified dicotyledonous leaves respectively. The mines are regarded as lepidopteran or dipteran in origin. Fossil leaf mines are probably more common than is indicated by the published literature and the presumed paucity of Mesozoic leaf mines may simply be a result of them not being recorded when found.

Extended abstracts of most papers presented are available from the New Zealand Geological Survey, Information Section.

D.C. MILDENHALL, Lower Hutt, New Zealand.

FORTHCOMING MEETINGS

3RD IOP CONFERENCE, Melbourne, Australia, 20-27 August 1988
The First Circular to this conference is now available and may be distributed to you with this newsletter 29 or the next one, number 30. Otherwise, write for a copy to Dr J.G. Douglas, Geological Survey of Victoria - ITR, GPO Box 173, East Melbourne 3002, Australia.

IT IS IMPORTANT THAT ALL IOP MEMBERS REPLY TO THIS CIRCULAR, EVEN IF IT SEEMS THAT THEY ARE UNABLE TO PLAN TO ATTEND THE MEETING. This will help plan the programme and will encourage Qantas (who are offering useful travel discounts to IOP members) to support us.

28TH INTERNATIONAL GEOLOGICAL CONGRESS, Washington DC 1989.
Interdisciplinary symposia will be featured at this Congress because so many problems in earth science today require a battery of disciplines for their successful solution. The importance of the geological sciences in solving societal problems is becoming increasingly obvious, accordingly great emphasis will be placed on symposia dealing with resources, pollution, geologic hazards and land use. Topics will be discussed both from a global viewpoint and by use of case histories. Poster symposia will be an innovation; many areas of the geological sciences are best illustrated by poster sessions.

In order to assemble the best and most interesting programme, the organisers of the Congress have asked IOP members to suggest symposium topics, both for oral and poster presentation. Topics should be of broad interest to a variety of geologists and interdisciplinary topics within the earth sciences are especially welcome.

Please write with your suggestions to: Dr R. Brett, Vice-President for Scientific Programs, Bureau of the 28th International Geological Congress, P.O. Box 1001, Herndon, VA 22070, USA.

NEWS OF OTHER INSTITUTIONS

NATURHISTORISKA RIKSMUSEET, STOCKHOLM: PALEOBOTANY SECTION
Professor Britta Lundblad, Section of Paleobotany, Swedish Museum of Natural History, Box 50007, S-104 05 Stockholm, Sweden, has recently written an essay to "try and analyse to what extent either botany or geology have dominated the activities of the Paleobotany Section at the Stockholm Naturhistoriska Riksmuseet". People who are interested in reading these "Reflections on a Century of Palaeobotany in Stockholm" should write for a copy, either to Professor Lundblad or to the IOP secretary.

PALEOBOTANICAL SECTION, BOTANICAL SOCIETY OF AMERICA
This group is highly active in promoting and co-ordinating matters pertaining to New World plant palaeontology. The Section publishes the "Bibliography of American Paleobotany", distributes several announcements each year, co-ordinates Paleobotanical

Section activities at the annual meetings of the BSA, participates in other meetings of paleontological interest, and supports several regional activities.

International members are welcomed to join.

Those who also belong to the BSA may join as "regular" members, and others may join as "associate" members. All members receive all of the Section mailings, including the bibliography. The annual fee for regular members is \$3.00 and for associate members \$5.00. To help diminish the nuisance of having cheques drawn in US\$, members may pay their fees for several years at a time. Present and past issues of the Bibliography of American Paleobotany, as well as other items, are available both to members and to non-members. For more information contact Gar W. Rothwell, Secretary/Treasurer Paleobotanical Section BSA, Department of Botany, Ohio University, Athens, Ohio 45701, USA.

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

The next annual meeting is to be held jointly with the Society of Economic Paleontologists & Mineralogists in Atlanta, Georgia, in June 1986. This will include a half day symposium entitled: "Plant Taphonomy: Organic Sedimentary Processes". Topics that will be discussed include volcanoclastic terrains, limnic systems, deltaic regimes, bays and nearshore systems.

For further details write to R.A. Gastaldo, Department of Geology, Auburn University, Alabama 36849-3501, USA

GEOLOGICAL SOCIETY OF AMERICA

During the 1986 National Meetings of the GSA, the Paleontology Society will be sponsoring a Short Course on "Fossil Land Plants". The schedule of presentations will be:

R.A. GASTALDO: Introductory remarks

W. FRITZ: Taphonomy of land plants in volcanoclastic terrains

R. SPICER: Taphonomy of land plants in fluvial/lacustrine systems

R.A. GASTALDO: Taphonomy of lowland assemblages in coastal/deltaic systems

A. KNOLL: Acquisition of land in the Middle Palaeozoic

P. GENSEL: Early land plants

S. SCHECKLER: Devonian/Carboniferous transition

W.A. DIMICHELE: Carboniferous peat accumulating environments

G. MAPES & R.A. GASTALDO: Late Paleozoic clastic inhibiting floras

S. ARCHANGELSKY: Southern hemisphere paleobiology

S. ASH: Mesozoic paleobiogeography

L. HICKEY: Cretaceous angiosperm diversification

J. WOLFE Trends in Tertiary paleobiogeography

The Short Course is free and open to anyone interested in fossil land plants. Course notes will be available at a nominal charge. Write to R.A. Gastaldo (address above) for more details.

GEOLOGICAL SURVEY OF ALABAMA

This institution has recently reprinted the field trip guidebook for the Pre-meeting Field Trip of the Paleobotanical Section, Botanical Society of America, that was held on 9-10 August 1985. "Plant accumulating deltaic depositional environments, Mobile Delta, Alabama" is available for \$2.00 from Geological Survey of

POLAR PALAEOBOTANY

1. THE ARCTIC

James Basinger (Saskatoon, Saskatchewan) and Sidney Ash (Ogden, Utah), accompanied by Elisabeth McIver and Henry Ash, spent the month of July 1985 collecting plant fossils from localities which are about 700 miles from the North Pole on Ellesmere and Axel Heiberg islands in the Canadian High Arctic. During the month Basinger concentrated his efforts of the fossils in the Early Tertiary Eureka Formation whilst Ash collected from the Late Triassic/Early Jurassic Heiberg Formation. Both were rewarded with ample collections for several papers which will greatly increase our knowledge of the high latitude fossil floras of this area. Their work was made possible by the logistical support of the Polar Continental Shelf Project of the Canadian Department of Energy, Mines and Mineral Resources.

The Early Tertiary fossils collected by Basinger include many representatives of what has become recognised as a "typical" borealtemperate zone flora of the time. His collection includes Metasequoia, Glyptostrobus, an unidentified birch-like plant, and at least two forms of Cercidiphyllum all of which dominated in lowland areas and swamps. Herbaceous plants such as Osmunda, Zingiberopsis, Trapa, and Equisetum are common associates. Cupressinocladus?, Ginkgo, and a few unidentified angiosperms are more rare and occurred only locally. Paleopole positions place Ellesmere Island a few degrees south of its present position during the Early Tertiary, but well within the Arctic Circle. The diversity and lushness of the flora (numerous thick woody coal are present) is remarkable considering its proximity to the pole. Close similarity exists between the Ellesmere flora and the floras of the Canadian Interior Basin, Northwest Territories, Yukon, and Spitzbergen, all considered Paleocene in age. This and sedimentological evidence indicate contemporaneity, and would appear to preclude appreciable "heterochroneity" between high and mid-latitude Early Tertiary floras.

Although a few plant fossils had been collected incidently from the Heiberg in the past, Ash is the first paleobotanist to make a systematic search for them. He found them to be much less common than in the Eureka Formation but most of those that were found are nicely preserved and some even have cuticle. A preliminary examination of the fossils he collected has shown that they include one or more species of the following taxa: Neocalamites, Marrattiopsis, Clathropteris, Cladophlebis, Sphenobaiera, Ginkgo (or Ginkgoites depending on your preference), Podozamites, and several unidentified forms. The fossils were obtained from the upper part of the Heiberg well above horizons containing marine invertebrates of Norian age. Thus the flora may be of latest Triassic age (Rhaetian) or more likely, Early Jurassic age. Not too unexpectedly the flora seems to be rather similar to the Late Triassic/Early Jurassic Scoresby Sound flora of southwest

Greenland. It also compares closely with some of the other Middle Mesozoic floras found in the Siberian floristic region as defined by Vakhrameev (1964). The Heiberg flora is of particular interest because it appears to be one of the most northerly floras of this age in terms of both its present location (about 80 degrees north) and its position near the end of the Triassic when paleopole positions place it about 60 degrees north. The composition of the flora and associated coal beds seem to indicate that a warm temperate to subtropical climate extended much closer to the pole as long ago as 200 million years than it does at present.

This was the second trip to the High Arctic for Basinger, so it was not as big a thrill for him as it was for Ash to see musk oxen, wolves, Arctic hares and Arctic vegetation. As interesting and as productive as the trip was it was still good to return to lower latitudes and leave behind such fascinating activities as sleeping on permafrost, eating mystery meat out of a can, holding the tents down in a 40 knot gale, and just trying to get warm.
S. ASH, Utah, USA.

2. THE ANTARCTIC

Thomas N. Taylor, Edith L. Smoot and Ruth A. Stockey have recently returned from a six week collecting trip to the Beardmore Glacier region of the central Transantarctic Mountains of Antarctica. After a week of loading food boxes and checking gear at the Naval support base in McMurdo, and completing the requirements at a three day snow survival school, we were air-lifted to a remote camp in the Walcott Neve in the general vicinity of the Beardmore Glacier, about 600 kms from the South Pole. The Beardmore remote camp consisted of sleeping accomodation, galley, radio operation, generator and snow melter, maintenance and science. Running water, including an occasional hot shower, superb food and video cassettes povided some normality to the 24 hours of bright sunshine. "Evening" hours were spent playing volleyball according to "Antarctic rules" (anything goes including reaching through and over the net, with missed points greeted by handfuls of snow) turned out to be a camp favourite. One of the helicopter crew brought some golf clubs so Taylor was able to get in a few holes. Stopping the orange coloured ball in the snow was no problem, but putting (again using Antarctic rules two putts counted as one) and swinging a golf club wearing a heavy coat and big gloves at -40 made it a challenging sport. Science teams spent various amounts of time at the Beardmore camp, in many cases only as a site for further support for the individual tent field camps. At any one time the remote camp usually numbered about 50, including the helicopter crews, maintenance and permanent camp personnel such as cooks, manager and support staff. Our team "roughed it" once when we tested our equipment and tents on an overnight stop at Cape Royds and Cape Evans, the site of a penguin rookery and Ernest Shackleton's over-wintering hut. But our collecting localities were within the 170km range of the Beardmore camp so that we could be taken out by helicopter and picked up each "night".

Antarctica is a breathtaking place of haunting beauty, pristine pure with almost unlimited visibility; peaceful, serene, uncompromising and damn cold. Sitting on top of Skaar Ridge looking to infinity at the featureless plane that extends to the South Pole, one is moved by this last great frontier.

Oh yes, and the fossils. Magnificent!! We collected at a number of localities, but the two principal ones were Fremouw Peak (early-middle Triassic) and Skaar Ridge near Mount Augusta (late Permian). Both these sites are within the Queen Alexandra Range of the central Transantarctic Mountains. Both sites especially important because it is from these localities that silicified peat was initially collected by J.M. Schopf in the late 1960's. We were able to obtain several tons of material that will be shipped to the United States in late February once the ice clears from McMurdo sound. The preservation is exceptional and compares to that from coal balls, and both floras appear to be quite diverse. In addition, we collected at a number of Triassic compression sites within the Falla Formation (middle-late Triassic) at about 10,000ft on Mount Falla. This material also proved to be very diverse and many specimens contain cuticle. Dicroidium fronds of several different types as well as reproductive organs were collected at several of the sites. Once the fossils are catalogued it is our intention to make some of the material available to other colleagues for study, thus more rapidly disseminating the information of these important fossil plants.

We are greatly appreciative of many who assisted us in this endeavour, but especially to our colleagues in the Institute of Polar Studies at The Ohio State University and members of the helicopter division of VXE-6 (Antarctic Development Squadron), United States Navy, and the financial support provided from the National Science Foundation Division of Polar Programs.

It is often said by seasoned Antacticians that there is no middle ground - you either can't wait to get back or never want to return. We know of one palaeobotanist who can't wait to play the Beardmore Glacier Golf Course one more time...

T.N. TAYLOR, Columbus, Ohio & E.L. SMOOT, Holland, Michigan.

A PLEA FOR UNIFORMITY IN BIBLIOGRAPHICAL REFERENCES

With the advent of computerized text editing facilities in the form of word processors, the preparation of papers for publication has become a much faster and less strenuous process. Recently we have been preparing articles for publication in two different languages for different journals and the difficulties encountered in reformatting references cause us to feel it is time to standardize their format. If you have your own personal bibliography on diskette and you wish to select the articles necessary for a paper being written, these will be printed out in the format you have chosen for storage. However each journal has its own style of reference, and while the computer can select the references quickly, you are still left with the tedious task of modifying positions of commas, full-

stops, capitals, brackets, underlined words and dates. Surely we should have a standard reference format agreed on by all journals and publishers.

We propose the following format which corresponds to a number of requirements which include being easy to type and easy to read.

HOLMES J.C.. REX G.M. & GALTIER J. 1999. On the life and times of a Carboniferous coal ball. J. GEOL. 5672. 122/123.

The authors' names, initials and the date contain no commas, colons or brackets and can be typed entirely with the upper case key held down on most personal computer keyboards. The title is typed according to standard grammatical and scientific requirements including the underlining of binomials. The name of the journal in its internationally abbreviated form is typed entirely upper case. Page numbers are therefore separated by a slash.

The most tedious parts to type, the author names and initials and the journal reference, are typed in the upper case key. We believe this is the fastest format for keyboard entry and the easiest to read since the title stands out in lower case between the authors names and the journal reference which are both in capitals.

More complicated references such as those to articles in edited books are set out with the same logic, for example:

PHILLIPS T.L. 1980. Stratigraphic and geographic occurrences of permineralized coal swamp plants - Upper Carboniferous of North America and Europe. In DILCHER D.L. & TAYLOR T.N. EDS. Biostratigraphy of fossil plants. DOWDEN, HUTCHINSON & ROSS. 25/92.

Even if publishers wish to maintain their own reference format it would be an immense time-saver to the scientist if they would accept reference lists in an internationally agreed computer storage format.

J.C. HOLMES, G.M. REX, Montpellier.

REQUESTS FOR BIBLIOGRAPHICAL DETAILS

AUGUST JOSEPH CORDA

A. Hlůstik, Geoindustria, Bienerova 1536, 274 80 Slany, Czechoslovakia, would be very grateful, especially to American palaeobotanists, for all available data concerning professional and personal activities of the Czech naturalist A.J. Corda (1809 - 1849). He is particularly interested in details of Corda's stay in Louisiana, Texas, from November 1848 to August 1849.

The information obtained will be considered for inclusion in an anniversary biography of Corda in 1989. He would welcome details of souvenirs, copies of documents, references to people, the archives or institutions involved, quotations of articles, reprints, biographical sketches, memoirs, portraits and

illustrations etc., as well as details of any others interested to cooperate in this biography.

If any such details are submitted, please explain the copyright obligations and the source from which permission to publish should be obtained.

THOMAS MAXWELL HARRIS

Harris was an enthusiastic correspondent and some of his letters contain the best in critical palaeobotany. For instance, he often responded to the receipt of a new reprint with a letter essaying the strengths and weaknesses as he saw them, on a variety of palaeobotanical topics. For some years M.C. Boulter has had it in mind to compile a collection of these and others of his letters, to record the debates they initiated, and so help to continue the discussions more publicly into future years. He discussed this proposal with Harris just before the latter's death and was told: "When I'm dead I won't mind what you do with my letters."

There are a number of problems with such a venture:

1. deciphering Harris's handwriting, especially from photocopies,
2. some of Harris's letters contain personal details that should not be revealed even to an editor, let alone the public,
3. many correspondents may be difficult to trace and others may not wish to share the confidences of private letters.

The plan is to transcribe the letters received, edit them, and to arrange them under such headings as "Comments on Published Work", "General Palaeobotanical Comments" and "Harris's Own Work". The resulting collection may be issued as an IOP Circular, or if the content so warrants, a more formal publication.

Please send legible copies or originals of appropriate correspondence to M.C. Boulter, N.E. London Polytechnic, Romford Road, London E15 4LZ. All contributions will be acknowledged and original documents will be returned. It may take several years to complete this work and any help with editing will be gratefully received.

OBITUARIES

ROBERT ASHLEY COUPER, 1923 - 1985

Ash Couper became a palaeopalynologist, not in the earliest German pioneering days, but in the next period when there was still very little literature and while even Robert Potonie was gathering material for his first "Synopsis". He started with some energetic and valuable work with the New Zealand Geological Survey, publishing on Tertiary and Late Cretaceous fossils in their Bulletins in the early 1950's. He studied pollen of extant plants and worked on this with W.F. Harris in New Zealand. He came to Cambridge as a research student in the Geology Department in 1954 and embarked enthusiastically on his review of British Jurassic and Early Cretaceous spores and pollen. This work, published in 1958 in Palaeontographica B, has been universally cited ever since. His standards of recording were very high for those days, and his interpretations benefited greatly from his

knowledge of living plants, albeit with a southern hemisphere bias. Some of his preparation methods appear with hindsight to have been a little vigorous, but his overall achievement was unusually effective.

He lived a very full life of working all hours in Cambridge during the week and enjoying London with his wife at the weekends; as with many other New Zealanders before and since he used every minute of his time in England. After taking a PhD in Cambridge he returned to New Zealand but soon went on to Royal Dutch Shell and for several years worked as a palynologist in their main research centre in The Hague, elaborating their systems and gaining wide experience. His work was mostly enshrined in company reports. Subsequently he became more of a general geologist and stratigrapher for Shell and ultimately took charge of some of their exploration in New Zealand. As recorded elsewhere, he suffered a heart attack in April 1985 at the early age of 61, while setting up a palynological consulting company in Australia.

Ash Couper had a widely beneficial effect on palaeopalynology through his early work, but he was not a conference-man nor a publicist and it is very sad that he was not so widely known in his more mature years.

N.F. HUGHES, Cambridge, UK.

HARRY GODWIN, 1901-1985

Professor Sir Harry Godwin was a palaeobotanist, Quaternary style; he was also a palynologist from the early days of pollen analysis. His best known work is a "History of the British Flora" (second edition 1975) from late Tertiary times onwards. He and his students worked wherever in Britain the appropriate fossils were to be found; in the Fens of East Anglia, in the Somerset levels, in interglacials and in sea-level change deposits. He entered Clare College, Cambridge, as a scholar in 1919, and worked in the University all his life, becoming Professor of Botany from 1960 to his retirement in 1968. Soon after the 1939-1945 war he set up in the Botany Department a new Sub-Department of Quaternary Research which formed a most successful bridge between botany, archaeology and geology; later he introduced radio-carbon dating in a special laboratory which now bears his name. He was followed in the Sub-Department by his own student Richard West, who has now also followed him into the chair of Botany.

Harry Godwin was not only a great enthusiast for all his own work, but he became able through his wide national and international influence to help and encourage many others working anywhere near his interests.

At the official level, he was a most successful President of the International Botanical Congress at Edinburgh in 1964. He was less happy but just as effective rallying many colleagues in one of the chief central hotels in Prague after the first day of the ill-fated International Geological Congress in August 1968. He was a man for whom it seemed most natural that he should be honoured by a knighthood in 1970, as a culmination of what was surely a most satisfyingly effective career.

N.F. HUGHES, Cambridge.

NEWS OF INDIVIDUALS

- JANE FRANCIS moved to the Department of Geology and Geophysics, University of Adelaide, Box 498 GPO, Adelaide, South Australia 5001, Australia, on January 3rd. She is working there with Professor L.A. Frakes on a project to study Early Cretaceous sediments from South Australia, of suspected glacial origin and therefore evidence of Cretaceous high-latitude cold climates. Analysis of fossil wood and growth rings will also be used to support palaeoclimatic interpretation. This work will also complement her earlier study of Antarctic fossil forests and palaeoclimates with the British Antarctic Survey.
- JACK DOUGLAS spent early December in Christchurch, New Zealand, where he attended the Hornibrook Symposium, in honour of the palaeontologist of that name. There were about 80 participants and six palaeobotanical papers. Douglas's was entitled: "The Albian extinctions in the great Australian-Antarctic Trough".
- CAROLE GEE has been awarded a full grant from the Fulbright-Hayes Commission to spend nine months in Sweden starting last September 1985, working on palaeobotanical research at the Naturhistoriska Riksmuseum with Britta Lundblad. In Stockholm she will continue her study of Jurassic plants from the Antarctic peninsula with a reinvestigation of Halle's material from Hope Bay.
- CHRIS. R. HILL will be working at Prof D.L. DILCHER's laboratory in Indiana State University from April to July inclusive.
- C.H. SHUTE & M. CRAWLEY of the British Museum (Natural History) are in charge of all enquiries, loans etc for Palaeozoic and Mesozoic fossil plants, respectively, while Hill is away.
- M.C. BOULTER plans to spend a long week-end in Praha, Czechoslovakia, late in February. He will talk about IOP business in East Europe and hopes to attend some Bach recitals and other entertainments.

BOOK REVIEWS

ANGIOSPERM FRUITS AND SEEDS FROM THE MIDDLE MIOCENE OF JUTLAND (DENMARK). E.M. Friis, 1985. Biol. Skr. Dan. Vid. Selsk., 24, 3. Munksgaard, Copenhagen. Dkr 160. (Obtainable from Munksgaard Export and Subscription Service, 35 Norre Sogade, DK-1370 Copenhagen K, Denmark.)

This 165 page monograph describes more than 150 species of megafossil plants from 2 quarries and 2 boreholes near Fæstervholt in central Jutland. 15 of the species are new ones. About 70 of the

pages contain systematic descriptions of the fossils, 30 have introductory, reviewing and concluding remarks and the remainder contain 30 plates and their explanations mostly of sem pictures. The systematic section is arranged by plant families after Takhtajan with new evidence from both modern and fossil specimens described either as modern genera or form genera. At the end three form genera are included in an Incertae sedis category with no family assignment: Aracispermum, Carpolithes and Rhamnospermum. Most of the megafossils included are fruits and seeds, though angiosperm anthers, pollen (Urticales), and twigs, conifer seeds, cones and twigs, fern sporangia and megaspores and fungal spore-bearing organs are also mentioned.

A misleading aspect of this content is explained in the introductory part of the text but not in the title which may cause some confusion to the cursory reader: the work only includes megafossils which are about 2mm in diameter or less in size (although the size variation tests on Myrica endocarps concern slightly larger fossils). The reason for this strange limitation is that other palaeobotanists (Koch and Freidrich) have their labours divided within the same project to the study of the larger specimens from these deposits. It is a pity it hasn't all been published together, although Friis makes a bold summary of the taxa her colleagues are still looking at.

The text includes a usefully updated review of fruit and seed floras from the Oligocene and Miocene of Europe and has a full bibliography. There are brilliant pictures, though there are few reflected light micrographs to compare with the many sem ones. This imbalance may mean it is difficult to compare these descriptions with earlier works on fruits and seeds which relied entirely on light microscopy. But the author has taken trouble to identify the fossils by routine light microscopy as well, so the synonymies with previously published species should be reliable. Other limitations are that there is no index, not even a taxonomic list with page numbers, and there is not a dichotomous key to help with identifications.

My main worry with this work concerns the nature of the surfaces of the Recent and fossil specimens observed by the sem, for the high resolution of the instrument highlights different kinds of surface debris which is present on both fossil and herbarium material (at least, I assume these Recent specimens are from such sources). Just what is it that we are looking at at the surface of these specimens? That question can be asked of nearly all the pictures here where the magnification is greater than x100. It needs more care and thought in both preparation and interpretation of this new detail. Many of the small seeds considered here have an outer layer of cells called an exotesta which in the living state has a thin outer wall and a much thicker inner one which is often covered with simple pits. Through the processes of fossilisation and sometimes through the processes of drying out in the herbarium, the thin outer wall is broken or removed, making the original internal surface of the pitted inner wall the exposed surface of the fossil or dried seed. Usually there is some debris from the original thin outer wall remaining and it is this variable feature which is seen by sem and which can cause confusion. Of course, preparation methods

of the fossil or Recent material can be an aid or a hindrance to understanding precisely what it is that is exposed at the surface.

Similar problems arise when other organs are being examined by sem. Alvin & Boulter (1974, A controlled method of comparative study for Taxodiaceous leaf cuticles. Bot. J. Linn. Soc., 69, 253-286) experimented on this problem with their investigations on fossil leaf cuticles and showed that the wide variation in the surface structure caused by preparation and fossilisation can be controlled. Similar experimentation is needed with fossil fruits and seeds; ultrasonic cleaning has much potential as a technique to be used.

These problems with the nature of the surface composition are well shown here in Friis's work on the Theaceae and the Actinidiaceae. Her Fig. 8 shows the deeply pitted inner walls of the exotesta in Recent Freziera, Adinandra, Eurya and Cleyera but no mention of the (missing!) thin outer wall is made. The sem pictures of the outer surfaces of specimens from these two families reveal a whole variety of surface structure, often at too low a magnification to be sure of the detailed structures of the debris at the surface. More experiment with preparation procedures is required on both modern and fossil material before the details that are revealed by the sem can be used as reliable and interpretable morphological features. Until that work has been included in studies of this kind we must be very careful not to take the new fine detail structure now available as important taxonomic features.

This work shows, once again, how palaeobotanists are discovering botanical features in their fossils ahead of the neobotanist progress with the living plants. So much is to be done with fine detail studies by sem on modern plant material reference collections before extinct plants can be completely understood. That challenge leaves us with a mammoth undertaking. Friis's fine work is but a start. Now let's have more experimentation with what we are seeing in sem at this initiating stage, more work on modern reference material and more complete information of this Danish flora to help make palaeoecological conclusions as well. M.C. BOULTER, London.

FOSSIL PLANTS OF THE LONDON CLAY. M.E. Collinson, 1983. 121pp. Palaeontological Association, London. 7.95. \$12.

The seed floras of the British Tertiary have been studied over the generations by some of the world's most distinguished palaeobotanists and some magnificent monographs have resulted. Now M.E. Collinson has produced a readily obtainable manual for the identification of plant seed material recovered from the Tertiary London Clay. Collinson's work on the palaeoflora can at the outset be recommended, being a valuable reference work which is well produced and easy to use.

For those people who have already collected from the wealth of plant macrofossils remains from such coastal localities as the Isle of Sheppey, the need of a key for identification of the seeds will already have been evident. This is especially so for many amateurs and perhaps younger enthusiasts who do not have

ready access to the classic texts of Reid and Chandler and others. In this respect, this book fulfills a useful niche. The contents comprise a number of sections which include data on localities from which material can be collected or which have been of importance in the past; introductions to palaeoenvironments, palaeoclimate and stratigraphical distributions; collection and preservation of the fossils; and two substantial sections forming the key and notes on the taxonomy and morphology of the principal groups described. A section dealing with collection and preservation is of particular interest to the reviewer, who has suffered the demise of a substantial number of pyritised seeds since their collection on Sheppey some 20 years ago. Throughout the text there are numerous references given to earlier researches which provide a very useful bibliography for those wishing to study more detailed aspects of the Eocene flora. The key to seed identification forms the central part of the book and is supported by a section providing more ecological (where known) and morphological criteria for the principal groups encountered. This key is straightforward and is a pleasure to use. After an initial decision placing fossils into one of nine groups, the key proceeds in a standard dichotomous manner. For the majority of the taxa delineated, a photograph is provided for confirmation of the identification. According to Collinson, those which have not been photographed were poorly preserved - her specimens did not illustrate clearly the necessary morphological criteria for identification. Perhaps sketch illustrations of these types could have been included. This would be of substantial value since one could be left in doubt as to whether a correct identification had been made. This is especially so where access to further reference collections, literature or expertise is difficult. Similarly, the initial identification of a fossil to one of the nine categories might benefit from such drawings and/or photographs in order to make this primary and important decision before referring to the dichotomous keys. Photographs are, however, numerous, of good quality and are a great attribute to the publication.

We have, therefore, a compact book which is extremely well produced. Its value will undoubtedly lie in its availability at a very reasonable price. It is authoritatively written and students of the subject should find the work invaluable both as an introduction to the lower Eocene flora and as a continued source of reference for identification of fossil seeds.

R.G. SCAIFE, Institute of Archaeology, London.

R.N.L.B. Hubbard, North East London Polytechnic, writes:

"One of the things that distinguishes the Arts from the Sciences is that the experiences with which art is essentially involved die at one's death and have to be learnt afresh in each generation - while scientific knowledge is cumulative. The transmission of accumulative wisdom is thus one of the most fundamental duties of a scientist (not that others are absolved from this obligation!). However galling it may be, it is right and proper that where one generation sweated and strained, subsequent generations should gallop at ever-increasing speeds.

"The seeds of the British basal Pleistocene and Tertiary have been studied over the generations by some of the world's most

distinguished geobotanists, and some magnificent monographs have resulted. Now Dr Collinson has produced a cheap manual containing dichotomous keys for the identification of the seeds to be found in the London Clay, illustrations with which the identifications can be checked, and - if that they were not enough - advice on collection of material, preparation and preserving the specimens, and how to document, interpret, and make the new information generally available.

"Is this small book the answer to the geobotanical maiden's (or batchelor's) prayer? Can a keen and intelligent amateur use this book -- and in particular its diagnostic keys - to produce accurate and reliable identifications? Is the book a safe foundation for 'bootleg research'? The answer to all these questions seems to be: Yes!

"Of course there are imperfections. Drawings are much better than photographs, and if one is to have photographs, then stereo-pairs would be desirable. There is a lot more that might be said about interpretation: even in the Quaternary, where the plants are extant and their associations can be observed, the study of macrobotanical fossils continues to yield interpretational problems.

"These, however, are councils of perfection. Dr Collinson's book fulfills its functions admirably. It is also inexpensive, attractively produced, and almost error free. It is therefore immensely welcome. One can only hope that Margaret Collinson will reap a rich reward in the form of floods of new information of a quality matching her book."

PALAEOBOTANY. Actes du 110 Congres National des Societes Savantes. Montpellier, 1985. Paris CTHS. 250pp. (Section sciences Fasc. V). Send 200FF, drawn on a Paris bank (add postage) to: La Documentation Francaise, 124 rue Henri Barbusse, 93308 Aubervilliers, Cedex, Paris.

This publication contains 19 papers presented during the "Congres National des Societes Savantes" held in Montpellier, and offers a wide variety of current topics in palaeobotany. The first section deals with the origin of life, Palaeozoic fungi and charophytes, as well as the arborescent and bushy plants from the Permo-Carboniferous of Spain, France and Sumatra.

The palaeobotanical and biological descriptions of Cretaceous floras follow, with studies of compression fossils from Spain and Russia, pollen and spores from the Congo and charophyte reproductive organs from France. The last section contains details of work on angiosperms and calcareous Chlorophyceae and includes fruits and vegetative structures from the Eocene of France and West Africa, compression fossils and Miocene wood from Nepal and Chile, and pollen from the Quaternary of Europe and from present-day savanna of the Cameroon.

This well illustrated book will be of great interest to all students of palaeoecology, palaeogeography and plant evolution. D. PONS, Paris

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