



IOP NEWSLETTER 62

DECEMBER 1997

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PLEASE MAIL NEWS AND CORRESPONDENCE
TO YOUR REGIONAL REPRESENTATIVE OR
TO THE SECRETARY FOR THE NEXT
NEWSLETTER 63.

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

EDITORIAL

Our organisation exists to help people interested in fossil plants communicate with one another internationally. In turn we are a Member of the International Union of Biological Sciences (IUBS) so that our subject can connect to other biological disciplines at the same level. Most of the organisations in the Union work through a regular newsletter, a web site and a meeting every few years. These arrangements are all very well-intentioned but they cost many millions of dollars a year, and so as tax payers and as scientists competing for funding, we are entitled to ask if the system is working at all effectively.

Firstly, the system appears to work smoothly administratively and politically. The bureaucrats and the democratically elected committees clearly and effectively represent the constituents. The rules are clear and the system is mature after more than fifty years within ICSU, the International Commission for Scientific Unions. Indeed, IUBS was founded in 1919 when global peace was bringing nations together. The excitement and goodwill are also there in high measure now.

However, for palaeobotanists, our subject itself, and most importantly to help us link in with other scientists, very little if anything is happening as a result of our Membership, and I think the same applies to Members representing other disciplines within the Union. I have heard IUBS described as "an exclusive club enabling old men to travel free around the world". So it was with some apprehension that I attended the 26th General Assembly in Taipei, Taiwan, last month. True, my fare was paid (by The Royal Society), the enthusiastic hosts were very hospitable and generous, the administration and governance were extremely efficient and constructive. But the science? "Palaeo- what?"

Something has to change to bring the attractive aims of IUBS up to date.

- General Assemblies could be smaller
- group seminars can bring different Members together actively
- explicit interdisciplinary contacts can be more active through newsletters and web sites
- it could become more of an introduction agency
- it could consider becoming less of a project organiser, and have more to do with monitoring.

Two projects that are active at present exemplify these points. One is the BioCode draft, considered at the Assembly (and sent back to the compilers for more thought). Although the machinery exists for us all to debate the issues and to include agreed recommendations for fossil plants, our problems are not understood by others. Secondly the latest IUBS project *Diversitas* could

gain from multidisciplinary discussion, planning work, creating liaisons, including palaeontologists, and pointing critically to global relevance.

The potentials of such new paradigms are enormous. IUBS is missing a great opportunity. And scientists including palaeobotanists are missing out.

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES 26th GENERAL ASSEMBLY 17 - 21 November 1997, Academia Sinica, Taipei, Taiwan.

The Congress was attended by approximately 450 scientific participants, from 43 countries. President Dr D. Hawksworth chaired the IUBS Executive Committee meetings and the General Assembly. The vast majority of delegates were from local places. The business of the Assembly took place on Monday and Friday, with three symposia by invited speakers, between.

The minutes of the General Assembly will outline formal details of the reports of the Ad Hoc committees. My informal notes give summaries in parentheses.

- Finances - (no compulsory rise in fees; long term planning urged)
- Resolutions - (rules for internal management of IUBS)
- Bionomenclature - (think more on the draft biocode)
- Programs - (*Diversitas*, Species 2000, Bionomenclature)
- Credentials - (26 national members, 24 scientific members)
- Statutes - (only minor changes)

Nominations - (the new President is Prof Jean-Claude Mounolou, France - cell biology and genetics)

M. BOULTER, London

NEWS OF FORTHCOMING MEETINGS

PLIOCENE PLANTS, ENVIRONMENTS AND CLIMATE OF NW ITALY INFORMAL EXCURSION. Mottalciata, Biella, Italy April 27-30th, 1998

Many NW-Italian fossil sites have a quite rich palaeobotanical record, but they are almost unknown to the European specialists due to the scarce number of publications. Since 1989 I have been studying Pliocene plant macrofossil assemblages in NW Italy. The first results, including biochronologic, palaeoenvironmental, and palaeoclimatic interpretations have been reported in my doctorate thesis (1995). New information is continuously collected, so I would like to show in the field the data and discuss them with the colleagues. In

addition my work largely relied on a single data set (fruits and seeds), and the sampling and analysis of woods, leaves and pollen in the same sites would be welcome and desirable.

27th April: Morning: Reception of participants in Mompolino Touristic Centre, introduction to the excursion, explanation of the five days program. Excursion to the Cervo River section near Candelo. Shallow marine sediments with mollusc shells, other shelly fossils, ichnofossils and mummified plant debris. Fruits and seed floras of the Ca' Viettone floristic complex, rich in "younger Mastixioidean" elements (*Rhododendron*, *Sapindoidea*, *Symplocos*) and *Cathaya*. The age is Early Pliocene or earliest Middle Pliocene (molluscs, foraminifers).

Afternoon: visit to younger layers of the Cervo River section, about 50m above those studied in the morning. Well exposed marginal-marine (intertidal?) sediments with mummified plant remains (to be studied) and leaf impressions (*Fagus*, 3-nerved acrodromous Lauraceae, *Populus*, *Salix* and laurophyllid leaves). Fruit and seed flora still rich in "younger Mastixioidean" elements. There are no reliable dating elements, but the floristic composition points to an Early or Middle Pliocene age.

Those who do not like to dig fossil leaves will be invited to visit the "Canyon" of the Cervo River: stratigraphy, sedimentary structures and ichnofossils.

28th April: Morning: Excursion to the youngest, lagoonal to continental part of the Cervo River section near Castelletto Cervo. Lagoonal muds and sands with abundant mummified plant remains. Allochthonous assemblages with *Fagus*, *Juglans*, *Stewartia*, *Styrax*, etc. Autochthonous assemblages with monocot rhizomes and stems, *Ruppia* fruits. These layers provided a fossil turtle (*Trionyx*) still to be studied. The floras are assigned to the Stura floristic complex, and their age is most probably Middle Pliocene.

About 5m above the succession is cut by a normal fault. A lenticular sand body in the footwall is very rich in mummified plant remains: *Magnolia* seeds, *Pterocarya* endocarps, *Picea* cones and needles. Is this a cooler phase or a taphonomical problem? Is the macroflora similar to the Tiglian one?

Afternoon: visit to the youngest portion of the Cervo River section near Giffenga. Fluvio-lacustrine sediments with mummified plant remains. Rich fruit and seed assemblages completely lacking "younger Mastixioidean" or other warm-temperate elements, but still including exotic genera (*Phellodendron*). Also fern rhizomes and megaspores (*Azolla*, *Salvinia*). No precise data about the age: Pliocene or Early Pleistocene?

29 April: Morning: The Sento succession near Ivrea (province of Torino): shallow marine to supratidal deposits with several fruit and seed assemblages from bottom to top, all assigned to the Ca' Viettone floristic

complex (Early Pliocene). Marine molluscs, stratigraphy. Difficult to collect plant macrofossil samples (too steep). Observations on the Glacial Amphitheatre of Ivrea.

Afternoon: Ca' Viettone near Levone Canavese. It yielded the rich type-flora of the Ca' Viettone floristic complex, with many "younger Mastixioidean" elements (*Rhododendron*, *Sapindoidea*, *Symplocos*). Easy to collect mummified cones, fruits and seeds. The leaves are common, but difficult to sample. Good site for plant taphonomical observations. Inferred age: Early Pliocene.

30th April: Morning: Stura di Lanzo near Ciriè. It yielded the rich type-flora of the Stura floristic complex, whose age is probably Middle Pliocene. The sediments contain a fossil swamp forest with taxodiaceous stumps. Easy to collect mummified cones, leaves, fruits and seeds. In the layers above the fossil forest we will see an oligotypic assemblage of leaf impressions (*Alnus*). Again a good site for plant taphonomical observations.

Afternoon: Villafranca d'Asti: the type-section of the Villafranchian "stage" exposed in the R.D.B. clay pit. Floras assigned to the Stura floristic complex. Leaf impressions, layer with mummified seeds and wood. Important Mammal assemblages (Middle Pliocene). Optional visit to the neighbouring Arboschio succession, with the vertical transition from shallow marine (Asti Sands, with abundant mollusc shells.) to continental sediments of the Middle Pliocene.

Informal excursion: "Pliocene plants, environments and climate of NW Italy"

E. MARTINETTO, Italy

THE EEMIAN - LOCAL SEQUENCES, GLOBAL PERSPECTIVES SEQS Symposium, September 6-11, 1998, Kerkrade (The Netherlands) The Netherlands Institute of Applied Geoscience TNO (NITG-TNO), The Netherlands INQUA-SEQS, INQUA - Commission on Stratigraphy, EQMal & EuroMam Faculty of Archaeology, Leiden University, and the INQUA-Committee of the Netherlands organise this meeting. The Organising Committee is

Dr. Th. van Kolfschoten¹ (coordinator), Ms. G. Kroon² (secretary), Drs. J.H.A. Bosch², Drs. P. Cleveringa², Mr. T. Meijer², Dr. Ph. Gibbard³.

(1 - Leiden University, The Netherlands; 2 - NITG-TNO, The Netherlands; 3 - Cambridge University, United Kingdom).

During the 1998 SEQS meeting the first results of the NITG-Eemian Project as well as those of other marine and continental Eemian research projects will be presented and discussed. The meeting will take place in the congress centre ROLDUC near Kerkrade, in the south of the Netherlands. The provisional cost will be approximately fl. 850.-- (to be specified and confirmed in the second circular).

Provisional programme:

- 6 Sept: arrival and registration
evening lecture - Historical introduction
7 Sept: lectures - presentation of regional data
8 Sept: Lectures - presentation of extra-regional data
9 Sept: excursion
10 Sept: lectures and posters - presentation of various topics related to the Last Interglacial
11 Sept: summarizing discussion and departure

For further information please contact:

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GEOLOGICAL TIME-SERIES FOR MODERN ANGIOSPERM GROUPS: a proposal for an XVI IBC Symposium

Palaeobotanists are starting to influence the way in which botanists are studying modern plants. This is due partly to substantial break-throughs by angiosperm palaeobotanists (in America and Scandinavia) to understand the reproductive structures of early flowers. The easy availability of large amounts of information is also having an effect. Previously, evolutionary biologists have had different attitudes and methodologies to make interpretations of the very different kinds of data. The two approaches, fossil and modern, comprise specialists who have been brought up to see evolution from quite different perspectives. One view is flat on the top surface of the evolutionary tree, the other vertical as a bifurcating time-series.

This proposal is for a symposium to bring people from these two backgrounds together. Contributors would be asked to communicate electronically with other participants to compare their fundamental assumptions, methodologies, arguments and conclusions. This would be done in some detail and common themes (names, migrations, key taxa, patterns etc.) would need to be highlighted. Perhaps a group discussion or a debate would be a better forum than the conventional clerical lecture. Examples of topics that may be included are:

- names (at what hierarchical level should modern names be used for which fossils? One fossil organ is different to a whole herbarium sheet)
- biogeography (compare known modern and fossil distributions)
- migrations patterns (geofloras, polar cooling and migration, the Eocene tropics)
- extinctions and modern relicts (eg. monocots and early angiosperms, *Clavatipollenites* cf. *Ascarina*, why are

there no extinct angiosperm families, triprojectate pollen and modern China, Normapolles)

Because the problems and the Congress are international I start with a geographical listing of those

Australasia

- Cretaceous angiosperm origins in s. hemisphere, naming, migration

- Large data-sets of modern taxa, naming, migration

Americas

- early angiosperm groups
- fossil angiosperms and modern floras of Caribbean and S. America

Europe

- evolution through the Tertiary, Arcto-Tertiary issues
- connections to Tertiary floras and the role of Pleistocene climate

Asia and Africa

- the use of modern taxa for Miocene floras
- early evolution of the flower

Views on two other sets of problems need to be included,

- The Quaternary Transition - the clash of names, the effect of climate, etc.
- Methodology and language to interpret data - cladistics, nomenclature, statistics
- and I will welcome suggestions of good people who would present something thoughtful.

This note is to invite you to take part in this proposal which will only be made (at the end of January 1998) if sufficient of you respond.

If you can join this please e-mail a detailed response before January 31st 1998 to boulter@uel.ac.uk

REMY & REMY

A NEW AWARD

At the Santa Barbara meeting the Paleobotany Section of the Botanical Society of America instituted an award to honour Winfried Remy, a honorary member of the Paleobotanical Section and Corresponding Member of the Botanical Society of America. Because his wife Renate Remy was also active in much of the research during his career the award is called the Remy & Remy Award. We have discussed the establishment of the award with Frau Renate Remy and it will begin this year in the following format.

Each year the Paleobotanical Section will nominate three members to serve on a committee with two other members selected by the IOP president. This five member committee will solicit nominations for the best paper published in a recognised journal dealing with any aspect of palaeobotany or palynology.

Nominations are to be received by 1 February are to include the name of the paper, complete citation and a brief statement as to the significance and impact of the work, and five copies of the paper. The award will be announced at the Paleobotanical Section meeting which typically takes place in the first week of August. The award will include a certificate and a cash prize.

Nomination for the first Remy & Remy Award can be submitted until February 1, 1998. Nominations can send the appropriate documentations to Thomas N. Taylor or Hans Kerp.

H. KERP, Münster, Germany

BACK ISSUES OF 'ARGUMENTA PALAEOBOTANICA'

Between 1966 and 1991 eight volumes of the 'Argumenta Palaeobotanica' were published by the late Prof. Dr. Winfried Remy. Most of the contributions are by the Münster palaeobotany group, but also papers by renown authors from other institutes were included. The first four issues each consist of a text volume with a separate atlas. The printing quality of these plates is simply superb. In the later volumes the plates are bound with the text. Several benchmark papers were published in the 'Argumenta Palaeobotanica'. Especially noteworthy are modern classics like the papers by Winfried Remy and his coworkers on the Lower Devonian Rhynie chert flora, including descriptions of the anatomically preserved gametophytes. A complete list of the contents of all eight volumes can soon be found on our homepage: <http://www.uni-muenster.de/GeoPalaeontologie/Palaeo/Palbot/arg.html>

These issues are now available for strongly reduced prices. A complete set of all eight volumes is offered for US \$ 50.- plus postage. We still have a reasonable number of copies of all volumes, though some of the 24 plates of Vol 1 are getting scarce; missing plates will be replaced by good quality xerox copies.

All the money raised by selling 'Argumenta Palaeobotanica' volumes will be used to strengthen the Remy & Remy Fund, a fund that was instituted last year at the Santa Barbara meeting by the Paleobotanical Section of the Botanical Society of America. This fund will be used for instituting the Remy & Remy award that will be given each year for the best palaeobotanical/palynological publication of the foregoing year. Further information on the Remy & Remy Fund can be found elsewhere in this newsletter.

'Argumenta Palaeobotanica' volumes can be ordered from:

H. KERP, Münster, **T.N. TAYLOR**, Kansas

A TEST AND TRIAL PHASE FOR THE REGISTRATION OF NEW PLANT NAMES (1998-1999)

From the 1st of January 2000, and subject to ratification by the XVI International Botanical Congress (St Louis, 1999) of a rule already included in the *International code of botanical nomenclature* (Art. 32.1-2 of the *Tokyo Code*), new names of plants and fungi will have to be registered in order to be validly published. To demonstrate feasibility of a registration system, the International Association for Plant Taxonomy (IAPT) undertakes a trial of registration, on a non-mandatory basis, for a two-years period starting 1 January 1998. The co-ordinating centre will be the Secretariat of IAPT, currently at the Botanic Garden and Botanical Museum Berlin-Dahlem, Germany. Co-ordination with present indexing centres for major groups of plants is being sought, in view of their possible active involvement at the implementation stage. The International Mycological Institute in Egham, U.K., has already accepted to act as associate registration centre for the whole of fungi, including fossil fungi.

Registration procedure

The co-ordinating registration centre (IAPT Secretariat), and any associated centre operating under its auspices, will register and make available all names of new taxa, all substitute names, new combinations or rank transfers that are brought to their attention in one of the following ways:

- by being published in an accredited journal or serial;
- by being submitted for registration (normally by the author or one of the authors), either directly or through a national registration office;
- or (for the non-mandatory trial phase only) as a result of scanning of other published information by the registration centres' own staff.

Registration by way of publication in accredited journals or serials

For a journal or serial to be accredited, its publishers must commit themselves, by a signed agreement with the IAPT, to:

- point out any nomenclatural novelties in each individual issue of their journal or serial, either by including a separate index of novelties or in another suitable, previously agreed way;
- submit each individual issue, as soon as published and by the most rapid way, to a pre-defined registration office or centre.

Accredited journals and serials will be entitled, and even encouraged, to mention that accreditation on their cover, title page or in their impression

A permanently updated list of accredited journals and serials is being placed on the World Wide Web (<http://www.bgbm.fu-berlin.de/iapt/registration/>). This list will be published annually in the journal *Taxon*.

Registration by way of submission to registration offices

Authors of botanical nomenclatural novelties that do not appear in an accredited journal or serial (but e.g. in a monograph, pamphlet, or non-accredited periodical publication) are strongly encouraged to submit their names for registration – and will be required to do so once registration becomes mandatory – in the following way:

- all names to be registered are to be listed on an appropriate registration form, using a separate form for each separate publication;
- the form (in triplicate) must be submitted together with two copies of the publication itself, either to a national registration office (see below) or, optionally, directly to the appropriate registration centre. Reprints of articles from books or non-accredited periodicals are acceptable, provided their source is stated accurately and in full;
- one dated copy of each form will be sent back to the submitting author in acknowledgement of effected registration.

Registration forms can be obtained free of charge (a) by sending a request to any registration office or centre, by letter, fax or e-mail, or (b), preferably, by printing and copying the form as available on the World Wide Web (see above).

Registration offices are presently being established in as many different countries as possible. They will serve (a) as mailboxes and forwarding agencies for registration submissions and (b) as national repositories for printed matter published locally in which new names appear.

A permanently updated address list of all functioning national registration offices is being placed on the World Wide Web (see above). This list will be published annually in the journal *Taxon*.

Registration date

The date of registration, as here defined, will be the date of receipt of the registration submission at any national registration office or appropriate registration centre. For accredited journals or serials (and, for the duration of the trial phase, for publications scanned at the registration centres), it will be the date of receipt of the publication at the location of the registration centre (or national office, if so agreed).

For the duration of the trial phase, i.e. as long as registration is non-mandatory, the date of a name will, just as before, be the date of effective publication of the printed matter in which it is validated, irrespective of the date of registration. Nevertheless, the registration date will be recorded, for the following reasons:

- to make clear that the name was published on or before that date, in cases when the date of effective publication is not specified in the printed matter;
- to assess the time difference between the (effective or stated) date of the printed matter and that of registration, since it is envisaged that the date of registration be accepted as the date of names published on or after 1 January 2000.

It is therefore in the interest of every author to submit nomenclatural novelties for registration without any delay, and by the most rapid means available.

Access to registration data

Information on registered names will be made publicly available as soon as feasible, (a) by placing it on the World Wide Web without delay in a searchable database, (b) by publishing non-cumulative lists biannually, and (c), hopefully, by issuing cumulative updates on a CD-ROM-type, fully searchable data medium at similar intervals.

A call to everyone: help testing the system so as to make it work. To make the test effective and significant, it is important that everyone publishing nomenclatural novelties on or after 1 January 1998 should participate by registering all new names and combinations on a voluntary basis. Please help (a) by doing so yourself and (b) by spreading the message to others! Do not be put off if shortcomings or errors occur in the initial months. Remember, this is a test phase. Let us know of any bug or crinkle in the system, and we will iron it out. What matters is that everything operates smoothly by the end of 1999, and that by the next Congress all have satisfied themselves that it will believe that registration of new names, once implemented in a functional way, will be a great benefit for all concerned with but little inconvenience for cost – and so did the Nomenclature Section at Yokohama in 1993 feel. Nomenclature must be fit for a good start into the next millennium.

L. Borgen, W. Greuter, D.L. Hawksworth, D.H. Nicolson & B. Zimmer. IAPT Secretariat, Botanischer Garten & Botanisches Museum-Dahlem, Konigin-Luise-Str. 6-8, D-14191, Berlin, Germany

THE EVOLUTION OF HOMINIDAE

We intend to organize a Workshop during the INQUA XV International Congress in Durban (3-11 August, 1999) with the following topic: "Migration of Asiatic (Turanian) arid ecosystems to East and South Africa during the Miocene-Pliocene and the environmental conditions contributing to evolution of Hominidae (Kovalev's hypothesis)". This problem might include the following issues.

1) The Messinian climatic crisis (6.7-5.3 Myr) and the formation of ecosystems involving C4 plants of the aspartate type in Southern Turan. Migration of riparian ecosystems (with *Tamarix*, *Phragmites*, *Caroxylon* and *Populus* as dominant elements) from Southern Turan to East and South Africa, where they replaced the climate-affected tropical rain forest. Comparison of such communities with their modern analogs (the South African relic communities and the North American saltcedars of the Asiatic origin).

2) Traces of the faunal migration accompanying the spreading of the Turanian plant assemblages and the possible Asiatic origin of the early hominoids (e.g., migration of *Sivapithecus*).

3) Developing of such communities in Africa during the Pliocene. The influence of these exotic (adventive) plant assemblages upon the African mammalian fauna, causing its essential pauperization and providing relatively safe conditions for the early hominid inhabiting (in contrast with the intensive predators' pressure in the savannahs).

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THE LIFE OF CARL HEDELIN

Carl Hedelin (1861-1894) was a palaeobotanical illustrator who worked for A.G. Nathorst in the Swedish Museum of Natural History. His activity has remained largely unknown because of his untimely death and the fact that his major project was not published until more than one hundred years later. The recent issue of 36 plates for an unfinished monograph by Nathorst (Kvacek and Manum, 1997) presents an opportunity to bring to light Hedelin's life history as well as highlighting significant events in European palaeobotany in the 1880s with which his activity as a palaeobotanical illustrator was associated.

Carl Hedelin became a natural science illustrator in the Swedish Museum of Natural History in 1885. A department of palaeobotany had then just been established with A. G. Nathorst as professor and head. The museum already housed extensive collections of fossil plants from the Arctic collected by Swedish expeditions. These collections had previously been shipped to Oswald Heer in Zürich for description in his magnum work "Flora Fossils Artica". However, following Heer's death in 1883 and the establishment of a palaeobotanical department in Stockholm, Nathorst

gradually became a leading figure in Arctic palaeobotany and geology. One of his major projects was the geology and flora of Spitsbergen's Tertiary formations. On his own expedition in 1882 he had made extensive field observations and collections. Soon after his appointment in 1885 he made a successful application to the Swedish Academy of Sciences for financial support towards an extensive project and he engaged Carl Hedelin as an illustrator. Hedelin was previously known for numerous drawings for weekly journals and magazines. One of his largest tasks for Nathorst was to make drawings of nearly 300 selected specimens of Tertiary plants from Spitsbergen which were assembled into 36 plates of quarto format. The plates were printed but the monograph for which they were intended was never finished. For this reason, the greatness of Hedelin's work, and for that matter of Nathorst's contribution to the knowledge of the Tertiary floras of Spitsbergen, were never duly recognized.

Why Nathorst failed to finish the monograph on Spitsbergen's Tertiary flora remains a puzzle. More than 25 years after he started to work on it he presented an extensive review of the flora and the stratigraphy of the collecting localities in a comprehensive treatise on Spitsbergen's geology which he wrote for the 11th International Geological Congress in Stockholm (Nathorst, 1910). He also mentioned the already printed plates and that work on the monograph had been put off owing to large new collections that had to be studied. After Nathorst's death in 1921 bound volumes of the plates were given to a few paleobotanists on their visits in the museum in Stockholm. Without text or explanations they still offered an impressive view of a temperate Tertiary flora at high Arctic latitudes. One such volume in Professor Høeg's reprint collection came to my attention in the 1950s when I was working on the Tertiary pollen flora of Spitsbergen. Eventually it became the starting point of a pursuit of the obscure history of the plates and of the specimens figured in them. Recently, nearly three hundred complete sets of these century-old plates were recovered from the stores of the Swedish Museum of Natural History and they have now been issued including explanations (Kvacek and Manum, 1997).

During identification of the figured specimens we were struck with admiration for the illustrator's great skill. The plates carry a footer identifying the illustrator as C. Hedelin and we felt that the story about the plates would be incomplete without some information about this person. The search for biographic information was initially diverted by the fact that six plates with Hedelin's name on them appeared in a paper on the late Tertiary flora of Japan published by Florin in 1920, which suggested that Hedelin was still active at that time. I am indebted to professor emeritus Britta Lundblad for tracing

the information on which the following account of Hedelin's life is based.

Carl Hedelin was an artist of great talent who for financial reasons was unable to realize his artistic ambitions and his mentors' expectations. Born in 1869 into a poor family, he was forced at the age of ten to support himself and his widowed and ailing mother by working in a carpenter's workshop. The course of his life changed, however, when his manager became aware of drawings which the young boy had made during a sick leave. The manager became so impressed by their artistic quality that he arranged a money collection so that Hedelin could join a manual labour school in Stockholm at the age of sixteen. He subsequently joined the Arts Academy where he soon gained a reputation as a very promising painter. However, given his background from a life in poverty he had a strong disposition for economic independence. This forced him to support himself by making illustrations for weekly journals and magazines and in 1885 he became a natural science illustrator in the Swedish Museum of Natural History. All this routine work, which kept him away from concluding his formal art studies and to fulfill his artistic ambitions, made him increasingly disillusioned and depressed. He nourished a dream to visit Paris which was eventually realized in 1894. He was then 33 years old, but in a poor mental and physical condition. He appears not even to have brought his painting kit with him to Paris. An incident in a Paris gallery led to an accusation of attempted theft of a precious piece of art, when he lifted its glass cover, apparently in order to inspect it more closely. Following a summary court trial he was sentenced to one year's imprisonment. He had only poor knowledge of French, refused to respond to questioning, offered no defence, and was given no assistance from Swedish representatives in France. After a few weeks in prison, in a state of deep depression, he hanged himself.

Most of Hedelin's illustrations of fossils appeared in publications long after his death. The plates of Tertiary plants from Spitzbergen which have appeared more than one hundred years later are the most extreme example. At the time of his death many projects were clearly unfinished. Thus the plates in several subsequent papers by Nathorst include illustrations by Hedelin which are supplemented by illustrations by his successor as illustrator in the museum (Therese Ekblom).

References

Kvacek, Z., and Manum, S.B. (1997): A.G. Nathorst's (1850-1921) unpublished plates of Tertiary plants from Spitzbergen. - Swedish Museum of Natural History, Department of Palaeobotany, Stockholm, 8 pp., 36 pls.

Nathorst, A. G. (1910): Beiträge zur Geologie der Bären-Insel, Spitzbergens und des König-Karl-Landes. - Bull. Geol. Inst. Upsala, 10: 261-416.

S. B. MANUM, Oslo, Norway

RECONSTRUCTION OF *Araucarioxylon arizonicum*

In August 1997, Geoff Creber worked with Sid Ash of Weber State University, Ogden, Utah in the Petrified Forest National Park, Arizona on a project to produce a reconstruction of a typical forest tree in the Park. In the latter, the desert surface is strewn with the silicified trunks, known locally as logs, of Upper Triassic conifers. Almost without exception the topmost parts of the trees are missing. Most of the logs consist of a fossil conifer wood assigned to *Araucarioxylon arizonicum* Knowlton. Only one specimen of bark is known.

In order to arrive at a reconstruction of what we are calling the "*Araucarioxylon arizonicum*-tree", a plan was made to measure as many intact logs of this type as possible. It was essential that each log chosen still retained its root system so that an estimate could be made of the position of the original soil level at the base of the trunk. Necessary measurements included the basal diameter at what the foresters call 'breast height' (dbh), the length of the log and the diameter at its upper end. In all about 29 logs were measured although not all of them yielded all of the measurements.

From the data obtained it was possible to project most of these logs to the heights that they probably attained when they were living trees. These projected heights were checked by using the formula for the critical height of a tree. This is the maximum possible height that a tree can attain to before collapse of the wood structure takes place. A common projected height of a log was found to be about 45m with a critical height of 97m. In this case the safety factor is 97/45, which is 2.16.

In his book, *Plant Biomechanics*, Niklas gives the details of trees of 18 extant conifer species. From the data given it is possible to calculate the safety factors of those trees. They range from 2.1 to 5.58 with a mean of 3.34. Therefore in our work only those projected and critical heights that fell within (or near) this range have been accepted as likely viable trees.

Having measured the logs, attention was switched to the branch scars. It was soon obvious that these are scattered haphazardly along the length of the logs in a fashion completely different from the pattern on an araucaria trunk. In the case of the latter they occur at nodes at distinct intervals down the trunk with none in any other positions. Not only are the scars scattered on the logs but they are not even graded according to size.

Instead, large and small ones occur randomly close together. The lengths and widths of many scars were measured and a consistent length-to-width ratio of about 0.4 was found in scars of all sizes. In some cases there were bases of branches still attached to the trunks. These emerged from the trunks at angles from 30 to 40°.

The roots on the logs were regarded as important as an indication of the original soil level. Additionally, they provided evidence of the texture of soil in which the trees may have originally grown. In the first place, the root bases are massive where they join the trunks whereas in the case of many extant conifers they are small, narrow and numerous. A fallen pine tree at the present day is seen to have pulled up a circular, flat plate of soil. Secondly, each log examined for roots had a substantial tap root. The inference from these observations on the roots is that the tree may well have grown in soft, moist soil. A tree about 50m tall obviously exerts considerable leverage on its roots and the latter would have to penetrate to a considerable depth to hold the tree upright in weak soil. This correlates well with their suggested growth in the tropical palaeolatitude of 18° N, very close to the banks of a river which is indicated by the local lithology. No foliage or reproductive structures have ever been found in direct connection to a log.

As a result of this work it is hoped to produce a drawing of a reconstructed tree.

G. CREBER, Royal Holloway, University of London

ETTINGSHAUSEN'S PLATES

(See illustration on page 12)

The natural printing-process was a method applied in the last century to print mainly plants. The plants were pressed in a plate of lead. In a process of several stages a copper plate was galvanized from which the prints were produced. This method offers the possibility to print the finest details as the trichomes, the stamen, and the areoles of the leaf venation (without the aid of drawing or engraving).

Constantin v.ETTINGSHAUSEN has applied this method to study mainly the leaf venation.

ETTINGSHAUSEN, C. & POKORNY, A. published in 1855 the famous "Physiotypia plantarum austriacarum" containing 500 plates of plants from the Austrian-Hungarian empire. In 1873 a second edition comprised already 1000 plates. Copper plates which were yet unpublished are part of ETTINGSHAUSEN's heritage.

In commemoration of the 100th anniversary of ETTINGSHAUSEN's death four of these plates have been printed now in limited edition:

- *Fagus sylvatica* - beech

- *Aconitum variegatum* - aconite
 - *Lupinus termis* - lupin
 - *Ranunculus cassubicus* - Cassubian ranuncule
- Format 65 x 50 cm, on hand-made paper 250/g

You can order prints for ATS 880.- (= US\$ 73) each or when you decide to take all four motives for ATS 3000.- (= US\$ 244) plus postage costs.

Please, send orders to **Johanna EDER**, Geol.Palaeont.Dept., Natural History Museum Vienna, Burgring 7, A-1014 Vienna, Austria.

METASEQUOIA CLASSIFICATION

Metasequoia, a living fossil, is naturally distributed only in the center of China. There are 21 species in the classification of this genus described in the last 50 years based on fragmentary preservation of fossils. It causes a possibility for palaeobotanists and botanists to re-study the classification of *Metasequoia* if they could find good collections of fossil specimens.

Fortunately, we have collected well preserved specimens of *Metasequoia* from the Late Cretaceous to Early Tertiary, including nearly all parts of the whole plant of *Metasequoia*, from Jiayin County, Heilongjiang Province, and Fushun, Liaoning Province, NE China in the last several years.

Studies on *Metasequoia* have been undertaken pertaining to the vegetative and reproductive features of the plant, shoots, leaves, female and male cones as well as the details of pollen and leaf cuticle. Comparison on fossil and living specimens of *Metasequoia* is believed to provide a possibility to reconsider the classification of the species in the genus. A conclusion is developed that there are three species. *M. glyptostrobooides* is a species for the living plant is distinct from fossils species. *M. occidentalis* is a fossil species and contains the most fossil specimens described and *M. milleri* is another fossil species and different from *M. occidentalis* on the morphology of its male cones and vegetative organs. The further investigation on the relationship of the distribution of *Metasequoia* in geological time and the palaeoclimate change is under way.

This work has been done by a post-graduate student, Yan-Ju Liu, for her Ph.D. thesis under the direction of Professor Cheng-Sen Li and Professor Yu-Fei Wang at the Young Scientists' Laboratory of Plant Origin, Evolution and Environmental Changes, Institute of Botany, Chinese Academy of Sciences.

Y.-J. LIU, P.R. China

A NEW RESEARCH CENTER AND MUSEUM IN MAFRA

With the collaboration of several Brazilian Universities, a new research center and museum has been proposed for construction in Mafra. Mafra is a small city surrounded by the best exposures of the South American Gondwana Upper Silurian to Cretaceous Succession. The Paleontological Center is already coordinating research activities and has an exposition room, the embryo of the "Museu da Terra da Vida" (Earth and Life Museum). This museum, planned to be in full capacity in 4 years, will emphasize the Gondwana evolution, but will also exhibit generalities of the Earth and Life through time.

Interesting samples or other relevant material would be welcomed as donation and/or exchange. Please contact: Oscar Rösler, Paleontological Center of Mafra, Cx. Postal: 111, CEP:89.300-000 - Mafra, S.C., Brazil. Phone/Fax: 00 55 47 642-3059.

OBITUARY

MARIA REYMANÓWNA (1920-1997)

Docent Dr. hab. Maria Reymanówna passed away on 15th March 1997 after a serious illness. She was one of those outstanding people whom one very seldom has the privilege to meet. She was a very learned, modest and kind-hearted woman.

She was born in Cracow on 14th October 1920, attending both primary and secondary school there.

She began botanical studies at the Jagiellonian University in 1938, these studies unfortunately being delayed by World War II. After the death of her father she worked as a gardener and gave private lessons in order to support herself and her mother throughout the war. When it ended she continued her studies graduating in 1948.

While still a student she began to work as an assistant at the Forestry Research Institute in Cracow, first in the Department of Forest Entomology and then in the Department of Pedology. She worked in that institute from 1947 to 1953.

At the beginning of 1954 she moved to the Botanical Institute of the Polish Academy of Sciences (now The W. Szafer Institute of Botany, Polish Academy of Sciences) in Cracow. She was active there until her retirement in 1991.

She spent five months carrying out the investigations for her doctoral thesis at the Professor Walton Palaeobotanical Laboratory at Glasgow University (Scotland) in 1957/58. Afterwards, she visited several different British palaeobotanical laboratories, among others in London and Manchester. The knowledge she

acquired there was used in her doctoral thesis, entitled "A Cycadeoidean stem from the Western Carpathians", under the supervision of Professor W. Szafer. She obtained a doctor's degree in natural sciences in 1960.

Her next important study trip to Great Britain was made in 1962. She spent 5 months at Reading University, in Professor T.M. Harris' laboratory, and in other British scientific centres, where she studied the methods of studying Mesozoic plants. Those plants became the main subject of her scientific research. She considered that Professor Harris was the best specialist and her master in Mesozoic palaeobotany. This opinion was expressed in the names which she gave to new fossil taxa, e.g., *Harrisiolepis*, *Caytonia harrisii*, *Frenelopsis harrisii*. They corresponded with each other exchanging their views.

Maria Reymanówna elaborated among others the Jurassic flora from the neighbourhood of Cracow. She found the new species of *Caytonia* there which she described in the paper "The Jurassic flora from Grojec near Cracow in Poland. Part II. Caytoniales and anatomy of *Caytonia*", published in 1973, in *Acta Palaeobotanica* 14 (2): 45-87. This work was her dissertation for the degree of docent, so-called "habilitacja" obtained by her in 1974.

In her scientific career she was interested particularly in fossil plant remains with a well - preserved anatomical structure. She elaborated Pleistocene, Miocene, and Cretaceous woods and also charcoals from the palaeolithic hearths and modern woods, in the first period of her work at the W. Szafer Institute of Botany. She published more than sixty scientific works. Her papers were a significant contribution to the progress of world palaeobotany and are cited in numerous scientific studies and palaeobotanical handbooks.

Her most important works referred to fructifications and reproduction biology of the Mesozoic plants and were based on the materials from Poland. The papers on the *Caytonia* fruits (1970, 1973, 1974) are the most often cited. The new species *Caytonia harrisii* and several tissues of it were described for the first time. Those tissues are inter alia: inner epidermis of the fruit, vascular system of the fruit, structure of tracheids. She found evidence of the anatomical structure of those plants in detail, on the basis of maceration and sectioning with the microtome. She discussed the probable functioning of the *Caytonia* fruit, especially its pollination and seed dispersal mechanisms. She was the third person in the world, after Hughes (1961) and Brenner (1966), to describe in 1968 seeds containing the pollen grains of *Eucommiidites troedssonii* in their pollen chambers and micropyles (*Journal of the Linnean Society of London, Botany* 61 (384): 147-152). Thus she gave the next proof that these pollen grains did not belong to Angiospermae. One of her great attainments was also the describing of

the Jurassic leafy shoots, cones, and cone-scales with a single seed belonging without doubt to the Podocarpaceae (Review of Palaeobotany and Palynology, 1987, 51: 133-143). This was the second finding of Mesozoic Podocarpaceae in Europe, and is contrary to R. Florin's view that Podocarpaceae came from the southern hemisphere to the northern one no earlier than Tertiary or Quaternary. Other of Reymanówna's works refer to different groups of plants: Cycadales, Bennettiales, Ginkgoales, Coniferales and others. She was elaborating the extinct family Cheirolepidiaceae in her last years.

She was a scientist with wide interests. She knew English, German, French, and Russian. She was concerned not only with plant anatomy and taxonomy but also plant geography, geology, pollination biology, palynology, ecology, palaeoclimatology and botanical nomenclature. She continuously added to her knowledge, observing and investigating living nature, studying scientific literature, taking part in numerous symposia, conferences and congresses, delivering lectures and presenting posters. She traveled to many countries, e.g., Great Britain, Canada, France, Germany, Denmark, Norway, Sweden, Austria. She was interested not only in botany but also in the history, monuments, and culture of the places she visited. She was able to present complicated problems in a simple and very fascinating way. Apart from her work at the W. Szafer Institute, she delivered lectures and had classes for students at the Jagiellonian University in Cracow.

A particular quality possessed by this remarkable woman was her determination to ensure that there would be no gap when she was no longer there and that her students and assistants would be able to continue her life's work and make their own contribution. She saw to it that they were invited to foreign meetings and symposia (sometimes even personally making up a financial shortfall to make sure they were able to travel). In this rather competitive world such devotion is not so common. To her it was of prime and obvious importance.

She took part intensively in scientific life, being a member of the Polish botanical and geological scientific societies and the following foreign organization: The Palaeontological Association (Great Britain), The Systematics Association (Great Britain), Freunde des Jura Museums Eichstätt (Germany), European Palaeontological Association (France), International Federation of Palynological Societies.

She was the most outstanding specialist in Mesozoic floras in Poland since the time of Professor Marian Raciborski (1863-1917), the pioneer of Polish palaeobotany. Her output became a lasting part of world botany. She explored the truth hidden in a fossil world of plants and won people's hearts owing to her personal charm and unusual personality.

J. ZIAJA, Polish Academy of Sciences, Cracow

BOOK REVIEW

ANGIOSPERM ORIGINS: Morphological and Ecological Aspects. 1997. V. Krassilov. Pensoft Publishers, Sofia-Moscow, 1997, 270 pp., 59 figs. and 47 plates.

The book is dedicated to one of the most topical problems in modern palaeobotany. Its author has dedicated his research work of long standing to the most ancient angiosperms and the main theoretical problems related to their origin.

In his new book V. Krassilov summarises the major results obtained in tracing out the history of the Mesozoic proangiosperms and angiosperms in the last 10-15 years. He has laid emphasis on two aspects in his work: the morpho-anatomic and the ecological. The author subjects to a morpho-anatomic analysis the available data on the fossil generative, reproductive and vegetative organs. They are investigated within the framework of the following morphological and systematic units: Chloranthoids, Laurids, Platanoids, Nymphaeids, Ranunculids, Hamamelids, Rosoids, Myricoids, Graminoids. A very important element in his analysis are some of the latest data obtained during the studies conducted by the author and his associates. Along these lines mention is made of the structural characteristics of the genera *Sarbaya*, *Caspiocarpus*, *Hyrantha*, *Evacarpa*, *Sarysna*, *Taldysaja*, *Gerofitia*, *Gurvanella* and *Meusel*.

It is important to note that most of these finds originate in the Lower Cretaceous of Kazakhstan, Mongolia and the Transbaicalian region and of Russia's Far East.

The author analyses from an ecological point of view the probable palaeocoenoses (taphoflores) in which the first angiosperms took part; the role of the ecotonal zones between the temperate summer-green and the subtropical evergreen vegetation in angiospermisation of the plant cover: the formative role of climate aridity.

The author also dwells in his book on the role of the so-called Gneta-bennettite line and Caytoniales in the origin of angiosperms and the appendant events of the Jurassic/Cretaceous transition.

All sections of the book impress with the original approach of the author to the analysed problems and his interpretation of the facts from the history of angiosperms and proangiosperms. He refers to an ample list of literary sources numbering 600 titles.

The good polygraphic layout of the work credited to the Pensoft Publishers contribute to the high merits of the book.

E. PALAMAREV, Bulgaria



ETTINGSHAUSEN'S PLATES

Aconitum variegatum - aconite (see page 9 for more details)