INTERNATIONAL UNION OF BIOLOGICAL SCIENCES SECTION FOR PALAEOBOTANY

INTERNATIONAL ORGANISATION OF PALAEOBOTANY

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REPORTS OF RECENT MEETINGS

DIVERSIFICATION AND EVOLUTION OF TERRESTRIAL PLANTS IN GEOLOGICAL TIME

Nanjing, China, September 4-8, 1995

This conference was organised by the Nanjing Institute of Geology and Palaeontology, Academia Sinica and Palaeobotanical Society of China. It provided a forum for the presentation of new data and discussions of a variety of topics of palaeobotanical research and its applications.

About 114 paleobotanists from 16 countries attended the conference. Participants came from Australia, Belgium, Chile, China, Germany, Hong Kong, India, Japan, Mongolia, The Netherlands, Poland, Republic of Korea, Russia, South Africa, United States of America and Vietnam. The Conference was chaired by Professor Li Xingxue (China); Vice-Chairmen were Professor D.L. Dilcher (USA), Professor Zhou Zhiyan (China), Dr. J M Anderson (South Africa), Professor T. Kimura (Japan) and Dr R S Tiwari (India). Professor Sun Ge (China) was the Secretary General and Liu Lujun (China) was the Deputy Secretary General.

106 abstracts were received and published in the Abstracts of the Conference. The abstracts were grouped into six topics:

- Origin, evolution and diversification of early terrestrial plants;
- Permo-Carboniferous plants;
- Mesozoic plants
- Early evolution, diversification and reproductive biology of angiosperms
- Phytostratigraphy, paleophytogeography and paleoenvironment
- Molecular palaeobotany.

This abstracts book is 106 pages and 5 plates and contains several floral lists, stratigraphic charts, maps and stratigraphic ranges as well as a diversity and a climatic graph for the Tertiary. It can be purchased by sending $6.00, (U.S.), postage included, to Mr. Li Gejun, Secretariat of the ICTPG, Department of Palaeobotany, Nanjing Institute of Geology & Paleontology, Academia Sinica, Chi-Ming-Ssu, Nanjing, 210008, P R China, E-mail: lixx@njnet.ihep.ac.cn and fax 86-25-3357026.

The conference had wide ranging topics presented in 3 plenary meeting scientific sessions and 2 poster sessions. The topics presented included all aspects of land plants from the Devonian to the Neogene with new data and ideas presented and discussed. There was ample time to continue discussions between sessions and at the beautifully arranged opening and closing banquets hosted by the organisers of the conference.

The conference was followed by 4 field excursions. These included:

- Route I, Yuxian-Yima (Cathaysian flora and Jurassic ginkgophyte flora);
- Route II. Shawang (Miocene flora);
- Route III, Qujng-Kuming (Devonian plants);
- Route IV Northeast China (Late Triassic flora, Early Cretaceous flora and angiosperms and Tertiary floras).

A Conference Guide Book, pages 1-41 was published which includes detailed field guides for each of these excursions. Those attending these excursion were able to experience a variety of life and sights in parts of China far removed from Nanjing. There were some excellent and interesting fossils. Localities visited for the first time by paleobotanists outside of China, while many of the foreign participants visited other research laboratories in China before returning home.

Dr R S Tiwari, Director of the Birbal Sahni Institute of Palaeobotany Lucknow, India kindly suggested to the secretariat of the ICTPG that he would accept manuscripts from the conference to be published in a special issue of *The Palaeobotanist*.

GEJUN LI, GE SUN & D.L. DILCHER

THE 23RD ARBEITSKREIS FUR PALAOBOTANIK & PALYNOLOGIE

Dresden, 4-7 May 1995

The 23rd annual meeting of the 'Arbeitskreis fur Palaobotanik und Palynologie' was held in the Staatliches Museum fur Mineralogie und Geologie in Dresden from 4 to 7 May 1995. The city of Dresden is famous because of its rich cultural heritage which includes a well known geological museum. The originals of the geological collection which was formerly displayed in the residence of the kings of Saxony can be traced back to the 17th Century. Unfortunately the museum and the collections are forced to move out of their present building which is very conveniently located right in the centre of town. The government originally intended to relocate the museum on the outskirts of the city. All attendants signed a petition requesting the government of the State of Saxony to reconsider their plans. This has had at least some result. It has been decided that the exhibits will move to a building in the city centre but unfortunately the collections will be housed somewhere else, some 14km away.

Several famous palaeobotanists have been active in the region and the museum houses a large number of type specimens, including material from the Upper Carboniferous and Permian described by pioneers like August von Gutbier and Hans-Bruno

Geinitz. In more recent years the museum collaborators research strongly focused on Tertiary palaeobotany. Therefore, the organisers, Dr Harald Walther and Dipl. Geol. Lutz Kunzmann, had chosen Permian and Tertiary floras as the two central themes for this year's meeting. For each theme a number of papers were invited and they were introduced by two keynote lectures. Prof J. Schneider (Freiberg) who discussed Rotliegend ecosystems and Prof. P Schmidt (Tharandt) who presented a review of modern forest ecosystems. A wide variety of other themes was addressed in a series of additional papers, ranging from Carboniferous palynology to the geochemistry of Tertiary plant megafossils. Altogether 28 papers were presented. The lively discussions were continued during the poster session and the social gatherings.

The meeting was attended by over 70 palaeobotanist from Germany, Austria, Switzerland, The Netherlands, Poland and the Czech Republic. On the excursion Dr. Harald Walther and Prof. Dieter H. Mai guided us to a number of classical Rotliegend and Tertiary localities in southeastern Germany e.g. Weibig, Seofhennersdorf and Wiesa.

The organisers have to be congratulated on this excellently organised, very successful meeting. Next year the Arbeitskreis will be held from 17-19 May 1996 in Bonn. The central theme will be Cenozoic palaeoecology and palaeoclimatology. Further information is available from Prof. Thomas Litt, Palaontologisches Institut, Nussallee 8, D-53115 Bonn.

HANS KERP, Munster

This year's APP was held from May 4th to 7th in the German city known as the "Florence of the North"--the beautiful Baroque city of Dresden. As the meeting site was located in the heart of the glorious old town, the meeting participants were able to enjoy the hustle and bustle of the city center, admire the centuries-old architecture, and even do some early (all right, very early) Christmas shopping at the wooden toy vendors featuring the famous nutcracker soldiers from the Erzgebirge region just outside the museum's doors.

This well-organized meeting was graciously hosted by (newly retired) Prof. Harald Walther at the State Museum of Mineralogy and Geology. Over 70 paleobotanists and palynologists were in attendance, the vast majority from Germany. Other participants made their way to Dresden from the Netherlands, Switzerland, Austria, the Czech Republic, Poland, and Greece.

The two days of lectures began with two keynote lectures, the first given by P. Schmidt on modern forest ecosystems and the second by J. Schneider on the paleoecology of the Permian Rotliegend in Central Europe. The latter lecture was especially appropriate as this year's meeting focused on two major topics: the Permian Rotliegend and the Tertiary, both of which crop out extensively in the state of Saxony. Indeed, more than half of the 28 or so lectures did deal with some aspect of the Permian or Tertiary floras and varied in subject from charophyte remains to angiosperm leaves, from paleoecology to taphonomy.

With such a great number of lectures on a variety of topics, one would expect that the best talks would be given by the most experienced speakers. To my surprise and delight, however, the best talks by far were given by doctoral students: Angelika Otto (Aachen) on the biogeochemistry of Oligocene leaves from Saxony, Lutz Kunzmann (State Museum of Mineralogy and Geology, Dresden) on the taphonomy of fluvial and limnic megafloras in the Tertiary of Central Germany, Juliane Kohler (Tübingen) on the Oligocene flora from the Westerwald, and Heike Blickwede (Göttingen) on the origin of the Eocene main lignite seam in Helmstedt. Their presentations were informative, smoothly delivered, chockful of good graphics, and their research interesting and innovative. They should serve as an inspiration and stimulus for us "older" folks!

The other highlight during the first two days was the cornucopia of posters, over 30 to choose from in all, which featured a tantalizing array of topics in paleobotany and palynology to feast upon. After the two year hiatus in the meeting schedule (in deference to the European Paleobotany-Palynology Conference in Heerlen last year), the 1995 APP meeting was a good opportunity to exchange information, discuss research results, and to come together once more in this splendid German city.

C. GEE, Bonn

In the course of the excursion, the field trip participants were guided through the geomorphology and history of the region east of Dresden. Almost none of the well known localities of the Permian Rotliegend and the Tertiary are accessible today which greatly limited collecting opportunities. This made the field trip leadership of Prof. Dr. H. Walther, who commented on the geological/paleontological and geographic features of the area with expertise and humor, all the more memorable and informative.

The Tertiary of Seifhennersdorf (upper Paleogene), Zittau (upper Oligocene/lower Miocene), and Wiesa (lower Miocene) were visited near the Rotliegend basin of Weissig, at which the plant-bearing beds were once accessible only through a mine shaft. Several people were able to make modest finds on the thickly overgrown mine dump of the former Seifhennersdorf mine which consisted of sediment from the diatom-rich lake. A viewing platform over the Olbersdorf lignite open pit mine which was recently closed was visited. Most of the

once exposed lignite deposits that were produced by a succession of mastixioidean swamps have already been completely grown over by reforestation efforts. The last stop of the excursion was in the lower Miocene of "Am Hasenburg" near Wiesa which has produced the best known mastixioidean flora in Europe. The strata, out of which thousands of carpological remains as well as wood and leaves were recovered, are no longer accessible. Nevertheless, after careful searching, it was still possible to collect a few seeds.

In all, one could say that it was a successful and well organized trip, which engaged not only the paleontological but also the cultural interests of the participants.

S. SCHULTKA, Berlin

NEWS OF A FORTHCOMING MEETING

CONTINENTAL JURASSIC SYMPOSIUM, October 21-23 1996, Museum of Northern Arizona, Flagstaff, USA.

In October of 1993, the international Nonmarine Triassic Symposium was held in Albuquerque, New Mexico. The talks, field trip, and symposium volume of that conference were very well received by attending geoscientists from throughout the World. Building on the success of that meeting, the Museum of Northern Arizona in Flagstaff will host a three-day international symposium on all aspects of Jurassic continental rocks and fossils worldwide. The symposium will be followed by a three day geological excursion through northern Arizona and southernmost Utah.

The symposium will be held in the auditorium of the Museum's new Branigar-Chase Discovery Centre, and the excursion will immediately follow on October 23-26. Thus the symposium will occur between the times of the Society of Vertebrate Paleontology annual meeting (October 16-19 in New York City) and the Geological Society of America national meeting (October 28-31 in Denver).

The Continental Jurassic Symposium will be an opportunity for the scientific and general public to learn what the global Jurassic (paleo) Park was really like. Topics to be covered in the symposium include stratigraphy, correlation, chronology, paleontology, sedimentology, paleo-climatology, paleoecology and paleogeography. Special sessions will be devoted to dinosaurs, the dominant form of terrestrial vertebrate life during the Jurassic Period.

The geological excursion will start in Flagstaff, go to the Grand Canyon, and then travel northeast through Mesozoic rocks of the southern Colorado Plateau, particularly the lower Jurassic Glen Canyon Group (Wingate Ss., Moenave Fm., Kayenta Fm., and Navajo Ss.) and the Middle-Upper Jurassic San Rafael Group (Page Ss., Carmel Fm., Entrada Ss., and Morrison Fm.). A guidebook will accompany the excursion.

Call for Papers A Symposium volume of papers from attendees and from those who cannot attend the meeting will be published and distributed at the symposium. We invite everyone working on topics related to the continental Jurassic to submit one or more papers for publication in the volume. In order to be published in time for the symposium, manuscripts will be due May, 1996. Write urgently to: Dr M. Morales, Museum of Northern Arizona, Route 4 Box 720, Flagstaff, Arizona 86001, USA.

GODWANA ALIVE: A NEW PROJECT

This international palaeobotanical project is organised under the aegis of IOP and the International Union of Geological Sciences. The scope and aims of the project are:

- to plot terrestrial plant biodiversity curves; Gondwana, Silurian to Present; with a focus on observed, preserved, and existed biodiversity; in the context of the evolving biosphere
- to coordinate with a parallel project on Laurasia
- to coordinate with a parallel project on insect and vertebrate faunas
- to elucidate causes and effects, process, the integrated picture
- to understand present biodiversity and project future biodiversity
- to help effect a paradigm shift in regard to our position in the biosphere.

The *Gondwana Alive* project coordination plan is organised by John & Heidi Anderson, who also represent Africa, Shaila Chandra: India, Keith Holmes: Australia, Thomas & Edie Taylor: Antarctica and Sergei Archangelsky: South America. Each continent coordinator will draw in and motivate those interested individuals whom he/she feels will make a serious scientific contribution to the project. Schedules and venues planned for 1995-2005 include:

5th IOP Symposium, Santa Barbara, California (30 June-5 July 1996)

a) Workshop: scope; aims, subprojects, participants; with particular focus on Gondwana Symposium, 1998; plans for publication of *"Gondwana Alive"* (1st edition).

10th Godwana Symposium, Cape Town (July, 1998)

a) *"Gondwana Alive"* (1st edition): launch of published book

b) Oral presentations: in context of "Event Stratigraphy"
c) Workshop: towards 6th IOP Symposium, 2000
6th IOP Symposium venue (mid 2000)
a) *"Gondwana Alive"* (2nd edition): launch of published book
b) Oral presentations: biodiversity trends, cause and effect
c) Workshop: towards Biodiversity Congress, 2005
Biodiversity Congress (2005)-to be planned
a) *"Global Terrestrial Biodiversity"* launch of published book. (Gondwana and Laurasia, plants and animals; a synthesis)
b) Biodiversity; past, present and future: Symposium The global imperative (one world; science, politics, business, religion.)

Plans for Research and Publication include numerous subprojects in the different Gondwana continents and geological periods to be published through the regular channels, but may be linked (motivation and funding) to the overall project. Two editions of *"Gondwana Alive"* (see below for proposed outline of the first edition) are planned for publication in mid 1998 and mid 2000. Companion projects and publications on the Laurasian plants and both northern and southern fossil-insect and vertebrate faunas are in planning. The overall synthesis, *"Global terrestrial biodiversity, plant and animal, Silurian to Present"* is planned for publication in 2005.

The project plans to publish a book, *Gondwana Alive*, concerning the biodiversity and the evolving terrestrial phytosphere. Each geological period will be treated under these heads:
Geological map (outcrop and subsurface)
- plant occurrences (by degree square, plotted and tabled)
Correlation charts (groups, formations, principal floras and faunas)
- standard marine stages and biozones
- magnetic reversals, radiometric dating
Gondwana reconstructions (topography, climate, vegetation, ecozones)
- plate tectonics, temperature curves, atmospheric-oxygen curves;
- dynamics, environmental change, chains of cause and effect
Biomes, habitats, associations (communities)
- dominant, common and rare genera and species;
- pioneer and climax taxa
Classification (based on female reproductive organs)
- to class, order and genus (all female genera in colour reconstruction);
- organ affiliations, cuticles;
- vegetative taxa, male-cone and seed taxa;
- traditional and cladistic classification
Palynology (in so far as it fills out the picture)
Dendrology (in so far as it fills out the picture)
Terrestrial fauna
- insects, terapods, phylogenic balloon diagrams,
- interactions and evolution with plants
Biodiversity (through the stages of the period; observed, preserved, existed).
- applying appropriate statistical projections;
- reproductive (female) orders; vegetative species.

NOMENCLATURAL NOTES

A PAN-BIOLOGICAL CODE BY THE YEAR 2000?

A milestone in biological nomenclature may be in the offing - perhaps potentially the most significant milestone since formal Codes were established. The first draft of a panbiological "International Code of Biological Nomenclature" (or perhaps less preferably, but more officially, the "International Code of Bionomenclature" - ICB for short), has already passed through the relevant committee, including ours - the International Association for Plant Taxonomy sponsored Committee for Fossil Plants (CFP) - in preparation for a redrafting meeting in March, 1996. The authors of the draft are hoping to have the ICB ready and ratified by the various congresses in order to come into effect by the year 2000. Before giving readers a sample of some of the reactions by our committee members to this first draft, some background to the ICB project is necessary (summarised partly from Hawksworth, 1995, which should be referred to for primary sources).

There are currently five different Codes of nomenclature within the biological sciences: those for bacteriology, botany, cultivated plants, virology and zoology. There has been some discussion in the past concerning the possibility of a unified Code, but the present interest has been stimulated largely by the recognition of similar problems facing the various Codes with respect to new technologies, and additionally by a greater emphasis on the unity of biology (*sensu lato* of course, including paleontology). In 1985 a committee drawn from all five international nomenclatural authorities was given a mandate from the International Union of Biological Sciences (IUBS) "to achieve maximum harmony between the different systems of nomenclature".

Emphasis in the early years seems to have been on working towards registration of new names and compiling lists of names and granting them protected status, neither of which have become fully operative yet. These directions, however, were endorsed by the 24th General Assembly of IUBS in 1991, which passed a resolution that "... encourages those concerned with biological nomenclature actively to seek ways of increasing harmonization in

the various Codes, for example, with regard to the protection of names in current use, the registration of newly proposed names, the treatment of protists, homonym between different groups, and where possible, the use of identical terms".

The 15th International Botanical Congress at Yokohama in 1993 established a Special Committee on Harmonization of Codes (on which one of us, RAF, sits) to address issues of harmonization within the context of the present Botanical Code - including for example uniform treatment of form/organ taxa and the study of problems related to intercode groups such as dinoflagellates. This Special Committee is thus independent of moves to merge the Codes and might be viewed as a sort of back-up for botanists if the ICB is not successfully promoted.

The first significant move to merge the Codes, directly resulting from the 1991 IUBS resolution, was the Exploratory Meeting on Harmonization between Codes of Nomenclature at Egham, England, in the Spring of 1994. The following highlights are excerpts from the "executive summary" of that meeting, which:

- Recognizes the crucial importance of scientific names of organisms in global communication to all concerned with the conservation, management, trade in, and use of the world's resources.
- Agrees that it would be highly advantageous to work towards a unified system of biological nomenclature.
- Recognizes that while there are differences in procedures between the current Codes, which could not be reconciled for the nomenclature of the past without an unacceptable disruption of names in use, there is considerable scope for harmonization which is to be actively pursued.
- Considers that the availability of lists of published names, and the registration of new names in bacteriology, botany, virology and zoology, will make possible the harmonisation of nomenclatural procedures in biology.
- Recommends that, considering divergent rules and traditions concerning author citations for scientific names, use of such author citations be made optional (and be recommended only in a strictly taxonomic context), as is already the case in zoology.

Hence, the tendency in 1993 seems to have been towards harmonization of existing Codes rather than formulation of a new panbiological Code. However, the latter direction was actively sought at another Egham meeting, earlier this year. An Ad Hoc Meeting on Stability and Harmonisation of Bionomenclature, chaired by the President of IUBS and attended by individuals from the five nomenclatural bodies, produced a first draft for the ICB, which is where we began this article.

So what was the general CFP reaction to the first draft of the ICB? Perhaps predictably, it was mixed. There was some excitement that such a project exists and some members could see little that need alarm paleobotanists and palynologists. However, some reaction was negative, primarily due to concerns over instability caused by changes. It was pointed out that there seemed to be little emphasis in this first draft to limiting retroactivity of the new Code despite the previously recognised importance of this aspect. There was a sense among committee members that the draft did not deal effectively with the question of whole organism versus partial organism nomenclature: debate among committee members centred on the question of whether there should be a name for the whole organism as well as, or rather than, names for individual parts. Thus, should a new Code prescribe a method to formally name a complete fossil, for example *Lepidodendron*, or should the procedure remain formal, as now, with use of the bark generic name for the whole plant and names for other individual parts being used in parallel, as appropriate? A related point of discussion was the confusion in the draft ICB over the concept of form genera: should we suggest some new term such as "fossil genus" to avoid future confusion, with more specific names such as pollen genus, bark genus, etc when possible? Perhaps readers would give us some feedback on these issues - some examples would be helpful of cases where there might be confusion if names referring to parts of fossil plants (including palynomorphs) were not clearly treated in a new code.

These are early days yet and the next draft, resulting from the March 1996 meeting, will be open to examination and feedback by biologists generally. The question can validly be asked "Do we really need a new panbiological Code?" But regardless of the answer, it would seem from the support at international meetings that the momentum is strong for formulating and applying a new nomenclature structure in biology. As paleobotanists and palynologists, we need to ensure that we are involved in the decision making processes. As David Hawskworth has aptly stated (Hawksworth, 1995, Taxon 44, p.448) "... if any unified Code is to ...become operative..., the biological community as a whole must be confident that it serves their best interest and that it will facilitate rather than inhibit their scientific endeavour."

We welcome input from everyone on this and any other nomenclatural matter. Contact either of us or any member of the Committee - see Palynos 17(2):9-10 or IOP Newsletter 51.

R.A. FENSOME, Dartmouth, Nova Scotia, Canada B2Y 4A2 fensome@agc.bio.ns.ca
J. SKOG, Fairfax, Virginia 22030-4444, USA jskog@gmu.edu

NEWS OF INDIVIDUALS

Dr Harald Walther officially retired on September 1st from the Museum fur Mineralogie und Geologie in Dresden but he will continue his research and he can still be reached at the same address.

Ronny Robler successfully defended his PhD thesis on litho and biofacies patterns in the continental Upper Carboniferous and Rotliegend of Northern Germany at the TU Bergakademie, Freiberg, on July 28th 1995. In this study special attention was given to the recognition of palaeosols and to vegetation development. On August 1st he was appointed Director of the Museum fur Naturkunde in Chemnitz which houses a large palaeobotanical collection including the famous Rotliegend petrified forest described by J. T. Sterzel. He is working on a new exhibit of the Sterzel material which is currently not on display.

Thomas N. Taylor spent several months in the second half of 1995 at the Forschungsstelle fur Palaobotanik in Munster to work on Rhynie Chert material. He was awarded the Alexander-von-Humboldt Prize.

Hans Kerp has been elected president of the Arbeitskreis fur Palaobotanik and Palynologie during its 23rd annual meeting in Dresden.

BIBLIOGRAPHY OF EUROPEAN PALAEOBOTANY AND PALYNOLOGY 1994-1995

If you would like to have your work included in the bibliography, would you please send full details to Prof. B.A. Thomas, National Museum of Wales, Cardiff before 1st February 1996. It is planned to get the bibliography out as soon as possible after this date; please help us achieve this with a prompt return of your information. The bibliography will follow the same format as the last two publications:

1 Publications during the two year period;
2 (a) Papers in press and 2(b) Current research;
3 News items;
4 PhD. thesis - title, date degree awarded and University

Please have your entries typed. For multiple authorship papers please show the author sequence (and all authors, in full) exactly as in the publications. Use the following three items as examples of format:

HOLLIDAY, D.W., NEVES, R and OWENS, B. 1979. Stratigraphy and palynology of early Dinantian (Carboniferous) strata in shallow boreholes near Ravenstonedale, Cumbria. Proc. Yorks. geol. Soc. 42(3), 343-356.

WARRINGTON, G and PATTISON, J. 1978. Appendix 3: Palaeontology of Permian deposits in the Forth Approaches. pp 48-50 in THOMPSON, Moira E. (ed) IGS studies of the Geology of the Firth of Forth and its Approaches. Rep. Inst. Geol. Sci. no. 77/17 HMSO, London.

HARRIS, T.M. 1979. The Yorkshire Jurassic Flora. V. Coniferales. British Museum (Natural History), 166pp.

THE GAMETOPHYTIC CHARACTER OF *Rhynia gwynne-vaughanii* FROM THE DEVONIAN OF RHYNIE

In a 1993 article titled "The Gameto- phyte generation of some early Devonian land plants" [sic], W. Remy, P G Gensel, and H Hass[1] completely ignored my publications dealing with the gametophyte of *Rhynia*, no doubt sharing the opinion of Anglo-saxon [sic] authors, such as D S Edwards, who hold that the archegonia I described in the axes of the *Rhynia gwynne-vaughanii* (holotypic material of Kidston and Lang) were not archegonia.

In 1910, Dr W Mackie discovered the remains of plants with conserved structures in the Muir Chert of the Devonian of Rhynie in Scotland (Great Britain). In 1917, Kidston and Lang [2] published a description of the material in which they distinguished two species: *Rhynia gwynne-vaughanii* and *Asteroxylon mackei*. Three years later, the same authors published an emendation of the genus *Rhynia*. They had, in fact, thought it wise to go back on the results of their first study and distinguish two different species of the *Rhynia* the first, *gwynne-vaughanii*, which they diagnosed as being characterised by numerous protuberances along the axes and smaller than the second, *R. major*.

Diagnosis of Rhynia gwynne-vaughani: aerial stems tapering upwards, probably about 20 cm high, and ranging in thickness from 3 mm to under 1 mm. Small hemispherical protuberances of superficial tissues of the stem occur, and sometimes, in place of them, adventitious branches, the stele of the branch not continuous with that of the main stem. Xylem strand of stele slender, only sometimes showing a distinction of smaller central and larger peripheral tracheids. Tracheids with broad annular thickening. Sporangial [sic] *about 3 mm long and 1.5 mm in diameter. Sporangial will [sic] about 40 um in diameter.*

I draw attention to the fact that in the description of the plant preceding this diagnosis. Kidston and Lang were clear as to the fact that although they had never before observed sporangia

connected by axes with *Rhynia gwynne-vaughanii* structure, they thought this species should have a morphology similar to that of *Rhynia major*.

In 1968, after examining the Lang Collection in the Museum of Manchester, I published a paper[3] in which I reported the observation of archegonia carried by the axes of *Rhynia gwynne-vaughanii* K. and L. Let me emphasize that the material was holotypic material of this species. In 1969, I published two other papers. The first one dealt with the protuberances carried by the axes and their mode of ramification[4]. The second concerned the observation of a formation assimilable to an antheridium carried by stomatiferous epidermal axes with *Rhynia gwynne-vaughanii* anatomy[5].

By 1973, I thought I could go ahead and consider that the *Rhynia gwynne-vaughanii* K. and L., and the *Rhynia major* K. and L. were, respectively, the gametophyte and the sporophyte of one and the same species. Applying the priority rule of the Nomenclature Code, I proposed the name *Rhynia gwynne-vaughani* for this unique species found only in Rhynie. Seven years later, that is in 1980[8] using new material collected at Rhynie, D.S. Edwards published new data which, he claimed, provided evidence that the *Rhynia gwynne-vaughanii* K and L. (holotype) was a sporophyte. He had, in fact, described sporangia which he interpreted as being most probably attached to axes "with typical *R. gwynne-vaughani* anatomy" and with numerous "protuberances". In a "discussion chapter" following the presentation of his observations, he writes: "Considering now Lemoigne's (1971) interpretation of the plant; in the present investigation I have demonstrated that at least some of the remains assigned to *Rhynia gwynne-vaughanii* Kidston and Lang are these those of a vascular sporophyte; Lemoigne's rediagnosis of the plant (and of R *major*) must be rejected. No evidence has been found to substantiate the type of branching he ascribed to *R gwynne-vaughanii* Kidston and Lang (type inegal Lemoigne 1969b) nor have any structures resembling archegonia on *Rhynia gwynne-vaughanii* sensu Kidston and Lang been confirmed, this itself does not rule out the possibility that some of the prostrate axes (rhizomes of Kidston and Lang) may have been gametophytic as Merker (1958, 1959) and Lemoigne (1971) have suggested. Further discussion of this possibility and the morphology of the prostrate axes will be presented in a future paper (p.185, 9-22)." Edwards has also told me verbally that he was convinced that the archegonial formations I described, carried by axes of *Rhynia gwynne-vaughanii* (holotypic specimen) type were no [sic] archegonia. In January (1981) I published a response (in French) in the *Comptes Rendus de l'Academie de Sciences de Paris* titled "Confirmation de l'existence de gametophytes vascularises dans le Devonien de Rhynie (Ecosse) et considerations sur leur nature" to D.S Edwards contentions in which I made the following remarks:

The axes described by D.S. Edwards, similar to most of the axes described by Kidston and Lang under the name *Rhynia gwynne-vaughani*, and the archegonial axes which I described are similar to the extent that they have a simple protostelytic structure (with an axial cord made of fine vascular elements). Are they therefore axes of the same species? Or, are there two different categories of axes in the material described by Kidston and Lang, axes forming the bases of their *Rhynia gwynne-vaughani?* Let me state, for the sake of clarity, that the two archegonia that I described were observed on two transversal axes whose lignified vascular elements I could not definitively identify as tracheids with annular thickening.

Going by what is presently known, there are two logical possibilities concerning the nature of the axes described by Kidston and Lang, on the one hand, and D.S. Edwards on the other:

- either we are dealing with axes belonging to one and the same species, in which case there would be two competing interpretations:
- pteridophytic interpretation: there would be one gametophyte, independent of a sporophyte; the latter might then be designed as *Rhynia gwynne-vaughani* but the filiation of *Rhynia major* with the genus *Rhynia* would then have to be revised.
- bryophytic interpretation: following this interpretation, there would be a system of gametophytic axes spread over the ground (rhizome axes) and that would bear sporangeneous sporophytic axes, with the whole constituting one single plant. Although in my 1970 publication (not 1971) I alluded to the possibility of such an organisation of the *Rhynia*, I never stated that that was my point of view, since I have always considered *Rhynia* as Pteridophytes.

Or there are two different categories of axes belonging to two distinct "species", in which case "my gametophyte" would be:

- either the gametophyte of *Rhynia major* K. and L., a position I still maintain. "Indeed the axis of the gametophytes (ex. *Rhynia gwynne-vaughani* K. and L) and sporophytes (ex. *Rhynia major* K. and L) of *Rhynia gwynne-vaughani* (K. and L.) Lemoigne harboured several fungi being different by their morphological and biological characters. One of them, common to the gametophytic and sporophytic phases of the *Rhynia*, elaborated respectively mycothallus and mycorhizomes, attesting the unity of the species *R. gwynne-vaughani*"
- or the gametophyte of another plant species of *Rhynia*.

The archegonia I described in the holotypic material of *Rhynia gwynne- vaughani* K. and L. have

been observed by eminent botanists considered authorities on the Pteridophyta, such as Prof. L. Emberger, Prof. O A Hoeg, Prof. D.D. Pant, and Prof. B. Boullard. They have all confirmed to me the archegonial character of the formations in question.

In 1971, D.W. Bierhorst stated that the "archegonial formations I described were secretory formations with hydathodes secretory structures of some kind" D.S. Edwards seems to share this interpretation. W. Remy, P.G. Gensel, and H. Hass seems also.

However, I want to reaffirm my conviction that what I described were archegonia. It is interesting to note that the organisation of "my archegonia" is remarkably similar to:

- the archegonium of *Psilotum* figured by Bierhorst
- the archegonium in the illustration by W. Remy *et al.*, page 37, figure 2C

I maintain the description and interpretation concerning the *Rhynia gwynne-vaughanii* in question.

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Y. LEMOIGNE, Universite Claude Bernard, Lyon 1, 43 Boulevard de 11 Novembre 1918, F69622 - Villeurbanne Cedex

[Editor's note: Following IOP policy this contribution has not been refereed: newsletters like this are certainly not part of the formal scientific literature. However, controversy stimulates public debate and responses to this piece are particularly welcome.]

RECENT PUBLICATION

J. Kovar-Eder, 1995, Kataloge der wissenschaftlichen Sammlungen des Naturhistorischen Museums in Wien, 8/2

The second part of the catalogue of type and other published plant fossils kept in the palaeobotanical collection at the Vienna Natural History Museum has appeared. It includes the material on which 13 publications - most of them by C.V. ETTINGSHAUSEN - were based. The published book is a printed version of the database installed at the Vienna museum. The book is available on request for 210 ATS. For orders contact B. Hermann, Schriftentausch, Naturhistorisches Museum Wien, Burgring 7, A-1014 Vienna, Austria.