

## Note of the Secretary-general

This newsletter comes to you with a month delay, but still in time to give you the New Years greetings of the CIMP.

You will find on the last page, the group photograph of the CIMP Symposium in Sheffield, which was a very successful meeting (see report of Ken Dorning). The intensive work in the subcommissions and the lively discussions during the oral and poster sessions show the need amongst younger and older scientists for such symposia. The eloquent "discours" at the excellent symposium dinner in the Taptan Hall of Residence by one of the co-organizers Ted Spinner, evoking the history and possible future ways of the CIMP, will well be remembered by all those present.

One of the older CIMP members remarked later on, that the group photographs of the past CIMP symposia, show through the years an always decreasing number of participants. Does this reflect a decreasing interest in the CIMP activities or a decreasing number of palynologists working in Palaeozoic to Triassic rocks? Is this trend the same in all palynological societies? This is an important evolution that should be analyzed carefully and discussed at the future meetings. The enthusiasm after the Sheffield meeting however pointed to a need to continue even if we are a smaller group.

On the business meeting a proposal was accepted to raise the CIMP contribution and to urge members to pay up their contributions as much as they can (see report on the CIMP business meeting).

We would like to announce that next year we will do some tests to distribute the CIMP Newsletter also by Email, to those giving us their Email-addresses.

## Short News:

Reed Wicander reports that the AASP book **Palynology: principles and applications** edited by J. Jansonius and D.C. McGregor will be in two volumes: volume 1: Principles and volume 2: Applications. The book is in the final stages of page proofing and indexing and should be out next year (1995). The two volumes will be sold as a single package. The book contains over 80 (sub)chapters and 98 authors-coauthors; see also CIMP Newsletter 46 p. 7 for a provisional list of content.

He also reports that CIMP will also sponsor a half-day symposium at the IPC 9 in Houston, Texas in 1996. Reed Wicander has submitted to John Wrenn, the CIMP's desire to sponsor a half-day symposium at the IPC 9 in Texas. The exact topic has not yet been decided. It should be something about advances in Palaeozoic to Triassic palynology. It will be organized by Reed and he will send out information to all CIMP members requesting participation. If we get a large enough response, perhaps it could be an all day symposium, but that might be very optimistic. If anyone has some ideas or interest they can contact him by fax, email, or regular mail: Reed Wicander, Central Michigan University, Geology Department, Mount Pleasant MI 48859, USA. fax: 1-517 774.2142; email: 3YJWEXP@CMUVM.BITNET



# Commission Internationale de Microflore du Paléozoïque

## NEWSLETTER 47 15 December 94

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- 3 Report of CIMP business meeting at the CIMP Symposium in Sheffield 8/9/94.
- 4-5 Financial report CIMP accounts 1991-1994.
- 6-11 Selection of abstracts related to Precambrian to Triassic Palynology presented at the 27th Annual Meeting of the American Association of Stratigraphic Palynologists, 1-5 November 1994, Texas A & M University, College Station, Texas, U.S.A.
- 12 Announcement Second Symposium of African Palynology, Tervuren, Brussels, 6 to 10/03/95
- 13-14 Second Circular XIII International Congress on the Carboniferous-Permian, 28/08 to 2/09/1995, Krakow, Poland.
- 15-16 First Circular Ninth International Palynological Congress, 22-29/06/1996, Houston, Texas, USA.
- 17 Obituary notice Norman Hughes, Cambridge, U.K.
- 18 C.I.M.P. Working groups and subcommissions, Executive Committee. C.I.M.P. annual subscription 1994.
- 19 Agenda of palynological conferences, symposia, workshops in 1995-1996.
- 20 Confirmation of C.I.M.P. membership form.
- 20 Group photograph of the CIMP Symposium Sheffield 1994.

**This is the LAST call for returning the form (p. 20) confirming your wish (to continue) to be a C.I.M.P. member! At the business meeting last september it was agreed that those who had not returned the form, will no more receive the CIMP Newsletter next year.**

On behalf of the organizing committee, Ken Dorning would like to thank the participants for making the meeting a successful symposium. More than 66 delegates attended. During the four days 48 lectures and poster presentations were contributed, together with a field excursion to Carboniferous stratotypes. During the time the Acritarch and the Chitinozoa Subcommissions had workshop and discussion sessions. The abstract volume of the papers was published for CIMP by Larix Books, Sheffield (ISBN 0 85146 000 4). It will be sent to all paying CIMP members who did not attend. Others can purchase it from Ken Dorning for the price of 3 £.

Ken Dorning

### List of abstracts

Lower Devonian Chitinozoans in carbonate outer shelf settings of the Upper Gaspe limestones, Gaspésie Peninsula, Quebec Appalachians, Eastern Canada. ACHAB, A., ASSELIN, E. & LAVOIE, D.

The palynomorphs, indicators of palaeoenvironment and of eustatic variations in the early Devonian of the Armorican Massif (France). BAUDU, V.

Response of palynomorphs to palaeoenvironmental variations in the middle and late Devonian of South-East Algeria. BLINEAU, B.

Biostratigraphy of Silurian and Lower Devonian of Djoffra structure in Oued Namous Basin (Central Algerian Sahara). BOUMENDJEL, K. & AZZOUNE, N.

Application of the Dempster-Shafer theory of evidence in a blackboard expert system for the identification of microfossils of the 'phylum' Acritarcha. BROWN, G.J. & DORNING, K.J.

Palynology of Tertiary sediments from a palaeochannel in Namaqualand, South Africa. DEVILLIERS, S.

Palynological record from the Westphalian B/C boundary of Doubrudja coal basin, Northeast Bulgaria. DIMITROVA, T.

Microfossil and palynomorph distribution across a key Ludlow/Pridoli boundary (Silurian) at Nantyrhynau Quarry, Clun, Shropshire in the Welsh Basin. DORNING, K.J., MILLER, C.G. & SUTHERLAND, S.J.E.

Ludlow chitinozoan biozonation of the Welsh Basin. SUTHERLAND, S.J.E. & DORNING, K.J.

Acritarch and chitinozoan distribution in Palaeozoic depositional sequences. DORNING, K.J.

*Dactylofusa*, *Eupoikilofusa*, *Leiofusa* and *Poikilofusa*: four fusiform acritarch. DORNING, K.J.

An investigation into the palynology of the Silurian marine rocks of Gullet Quarry, Malvern Hills. EVANS, A.

Preliminary palynological studies on the Lower Carboniferous Curmacsherry Formation of the South Munster Basin, Republic of Ireland. FORSYTHE, E.

Event stratigraphy. GRAHN, Y.

"Chitinos" A personal image and data-acquisition system for the micropaleontologist. VAN GROOTEL, G., HAMEL, J. & ACHAB, A.

Characterisation and classification of chitinozoa using Euclidean shape factors and Fourier transforms. VAN GROOTEL, G. & VERRECHIA, E.P.

Palynological correlation of the Devonian-Carboniferous Boundary in the auxiliary global stratotype at Hasselbachtal in Germany with other sections in Belgium, Southern Ireland and Southwest England. HIGGS, K.T.

The principles of pollen biostratigraphy in the late Pliocene and Pleistocene: a reappraisal. HUNT, C.O. & HALL, S.A.V.

Lower Paleozoic acritarchs from the north-eastern margin of the Upper Silesian Coal Basin. JACHOWICZ, M.

Palaeoenvironmental interpretation of the Kiltorcan Formation, Co. Kilkenny. JARVIS, D.E.

Further Application of Microwave Technology in Palynological Preparation. JONES, R.A.

A New System for Palynological Preparation. JONES, R.A. & ELLIN, S.J.

Chitinozoans and other organic-walled microfossils from the Pridolian Series of Bulgaria. LAKOVA, I.

Miospores from the Langsettian-Duckmantian (Westphalian A-B) of the Murdoch Gas Field, southern North Sea Carboniferous Basin, Offshore U.K.. McLEAN, D.

The miospore genus *Fragilipollenites* Konyali emend. from the Silesian of Great Britain. McLEAN, D.

Subsurface correlation of carboniferous coal seams and inter-seam sediments using palynology: applications to exploration for coalbed methane. McLEAN, D. & MURRAY, I.

Experience of chitinozoan correlation and stratigraphic gaps in the Silurian sequence of Estonia. NESTOR, V.

Facies control of the distribution of Silurian chitinozoans in East Baltic. NESTOR, V.

Palynology and selected palynofacies of the Westphalian A of southern Ireland. O'CONNOR, G.

Biostratigraphical value of the acritarch assemblages of the metamorphic formations of the East Carpathians of Rumania. OLARU, L.

An investigation of the palynology of some Late Namurian and Early Langsettian strata from the Central Pennines, England; comparison with the Southern North Sea. OSTERLOFF, P.L.

The palynology of the Lower Westphalian A in the Goyt Valley, Peak District, U.K.. PARAMOR, K.R.

"Photochitino", an image-incorporated electronic database for chitinozoan identification. PARIS, F. & BERNARD, D.

Anomalous chitinozoan abundance in the lowermost Famennian of La Serre section (Montagne Noire, Southern France): relationships with the Frasnian-Famennian bio-event. PARIS, F., GIRARD, C. & FEIST, R.

Proposal for a revised chitinozoan classification. PARIS, F., GRAHN, Y., NESTOR, V. & LAKOVA, I.

Palynostratigraphy of the Devonian-Carboniferous Boundary in SW Portugal. PEREIRA, Z., CLAYTON, G. & OLIVEIRA, J.T.

A preliminary dinoflagellate biochronology for the astronomically dated Late Miocene in the Mediterranean. SANTARELLI, A.

Biometrics of the *Dicrodiacrodium ancoriforme-normale* group. SERVAIS, Th., BROCKE, R. & FATKA, O.

The Lower Palaeozoic 'galeate' acritarch plexus : a discussion. SERVAIS, Th., EISERHARDT, K.-H., FATKA, O. & PAALITS, I.

A Quantitative Palynofacies Analysis of a Namurian A delta complex, NW Ireland. SMITH, J.

Devonian miospore stratigraphy and correlation with the recently defined Stage Stratotypes. STREEL, M., LOBOZIAK, S. & STEEMANS, Ph.

Remarks on *Peteinosphaeridium* and related genera. TONGIORGI, M.

A global chitinozoa biozonation for the Silurian. VERNIERS, J., NESTOR, V., PARIS, F., DUFKA, P., SUTHERLAND, S. & VAN GROOTEL, G.

Tectonostratigraphic subdivisions of the Rotliegend and their age. VISSCHER, H. & VAN HOUTE, M.

Palynology of a candidate GSSP for the base of the Jurassic: Somerset, England. WARRINGTON, G.

Palynomorphs from the Middle Devonian (Givetian) Arkona, Hungry Hollow, and Widder Formations. Hungry Hollow, Ontario, Canada, and their biostratigraphic significance. WICANDER, R.

Chitinozoa from the Devonian of Australia. WINCHESTER-SEETO, Th.

Chitinozoalike microfossils from the Cambrian of South Israel. ZASLAVSKAYA, N.

## Report of CIMP business meeting at the Symposium in Sheffield, 8/9/94.

Geoff Clayton, president of the CIMP, opened the meeting. The accounts 1991-1994 were presented by the Jacques Verniers (see p. 4-5), together with a strategy for its amelioration. He remarked that the bank costs for transferring the money via cheques, etc., take up to 61% of the money (see two examples on the accounts of 1994), resulting in even lower contribution. If local legislation allows, sending banknotes by letter could be a solution.

To solve the problem for the chronic negative balance of the accounts, two motions were presented to be voted by the CIMP members at the business meeting. The proposal **to raise the contributions**, unchanged since the seventies, **from 3£ to 5£, 175BF to 250BF, 6 US\$ to 8 US\$ and 10 to 12 DM or another equivalent currency and effective from 1/1/95**, was accepted by 28 votes with no votes against or abstentions. Another proposal **to send the newsletter only to persons who are CIMP members** (it means persons who returned the confirmation form with their wish to be CIMP member) and **also to all participants of the CIMP symposia for one year after that symposium** was also accepted by unanimity with the same votes.

CIMP members, from countries which can afford it, are urged to pay their contribution (and many participants have done this during the Symposium: thank you).

It was announced that the CIMP is affiliated with the IFPS (International Federation of Palynological Societies), but that the contribution to the IFPS of 100 US\$ last year and 150 US\$ this year is also weighing on our weak budget. CIMP members wanting to receive, via the CIMP, the excellent IFPS newsletter *Palynos* (twice a year, in June and December), should contact the secretary-general.

As future CIMP activities are proposed:

\* aug-sept. 1995, Krakow, Poland: XIII International Congress on the Carboniferous-Permian in Poland (see calendar for details).

\* June 1996, Houston, Texas, USA: CIMP symposium (half or full day) at the 9th International Palynological Congress of the I.F.P.S. (Reed Wicander would approach the organizers) (see note of the secretary-general and the calendar for details).

\*1998: possibly a CIMP symposium in Canada.

\*1997 or 1998: the Algerian delegates maintain their wish to organize a CIMP symposium in Algeria, as was proposed for this or next year, as soon as the political situation will allow.

## Financial report CIMP accounts 1991-1994:

Following the rules of the CIMP constitution the secretary-general has presented the CIMP accounts at the business meeting of our Symposium in Sheffield last september (see below). The financial situation is slightly ameliorating this year, mostly because more CIMP members are paying their contribution, but we are still in the red figures with a deficit of about 200 £.

The accounts were controled and approved by Maurice Streef and by Bernard Owens, who remarked that: *"the CIMP is more or less surviving, but mainly by using the reserves from Brugman (the previous secretary-general) and Bob Turner (responsible for North America). Without them we have a major long term problem which we need to take action on. We have to cut out the expenditure of maintaining non-member around the world, what would save some money. More members should pay their contribution. The proposal to raise the contribution to 5 £, accepted at the CIMP business meeting at Sheffield, is a good step, but we might need to look for other ways of income."* Possible steps will be discussed in the near future.

Jacques Verniers

1991 <sup>1)</sup>

## RECEIVED

03/09/.. Bernard Owens 300£	17.730,-
09/09/.. Bernard Owens	5.600,-
13/11/91 Vanguetaine Belgian contribution	4.935,-
17/12/91 French contribution Loboziak	2.100,-

## TOTAL RECEIVED 1991

28.265,-

## SPENT

Newsletter N° 41 march 1991 (532 copies/14 pages)	
(1) enveloppes	890,-A
(2) etiquettes	312,-A
(3) photocopies	7.222,-A
(4) etiquettes France	142,-A
(5) postages France	223,-A
(6) postages Belgium (Streef)	10.311,-A

SUBTOTAL : 19.100,-

Newsletter N° 42 december 1991 (550 copies/22 pages)

(7) postages	9.230,-A
(8) photocopies	10.262,-B
(9) cost account bank	161,-A

SUBTOTAL : 19.653,-

## TOTAL SPENT 1991

38.753,-

## BALANCE 1991

-10.488,-

(10.262,- advanced by the secretary-general and paid back in dec. '94)

1992

## RECEIVED

06/03/92 Bernard Owens contribution U.K. (75£)	4.112,-
17/03/92 Contribution F. Martin/M. Del Rio	1.395,-
12/05/92 Contribution M. Vanguetaine	200,-
18/10/92 Contribution AGIP	152,-

## TOTAL RECEIVED 1992

5.859,-

## SPENT

Newsletter N° 43 15 december 1992	
(11) 3/12 postages (preparation)	216,-A
(12) 13/03/92 Membership list (preparation directory of member)	183,-A
(13) 04/06/92 postages express mail Bob Turner	352,-A
(14) 15/12/92 photocopies	14.560,-A+B

## TOTAL SPENT 1992

15.311,-

## BALANCE 1992

-9.452,-

(7.281,- advanced by the secretary-general and paid back in dec. '94)

<sup>1)</sup>A : paid by CIMP bank account; B : paid by J. Verniers

1993

## RECEIVED

10/04/93 Contribution Hartkopf-Fröder	200,-
21/04/93 Contribution Winchester Seeto (6 US\$)	78,-
21/04/93 Contribution Glen Fechner (10 DM)	205,-
05/05/93 Contribution Bernard Owens (U.K.)	
David Batten 93 3£, Fenton 93-95 9£, Surie 93-95 9£, Jaleman 93-95 91; Owens 93 3£; advancement	
Pim Brugman 311£; total : 350£ :	17.061,-
10/06/93 Contribution Belgium (M. Vanguetaine, F. Martin, M. Fairon-De Maret; Streei; Steemans	725,-
10/06/93 Vanguetaine,	
? Contribution Lund (Wietze) 93-97	875,-
? Contribution F. Martin 94-95	350,-
? CIMP contribution paid by the Univ. of Liège	5.945,-

## TOTAL RECEIVED 1993

24.786,-

## SPENT

Newsletter N° 44 15 may 1993	
(16) cost account bank	200,-A
(17) postages	5.365,-A
(18) enveloppes	2.683,-A
(19) photocopies	3.050,-A
Newsletter N° 45 nov. 1993	
(20) photocopies	10.334,-B
(21) postages	10.494,-B
(22) enveloppes	1.249,-B
(23) IFPS contribution (original invoice given to Prof. Streei)	5.945,-A

## TOTAL SPENT 1993

39.230,-

## BALANCE 1993

-14.534,-

(22.077,- advanced by the secretary-general; partly paid back in dec. 94 = 17.923,-; still advanced 4.154,-)

1994 (partly)

5

## RECEIVED

./01/94 Contribution Hartkopf-Fröder (10 DM)	210,-
11/04/94 Grahm (180 FF = 1081BF - 530BF: 49% bankcosts)	551,-
./1.4/94 Contribution Owens	300,-
15/03/94 Contribution USA Bob Turner (560 US \$) see below	
22/03/94 200 US \$ (= 6.890 BF)	6.890,-
22/03/94 Contribution Canada Achab/Asselin/Soufiane	525,-
15/04/94 Contribution Hartkopf-Grahm-Owens	1.625,-
15/04/94 360 US \$ (= 12.402 BF)	12.402,-
04/05/94 Contribution Argentina Azcuy+Mercedes (36 US \$)	705,-
10/05/94 Contribution AGIP, Milano, Italy (6 US \$)	204,-
14/06/94 Contribution M. Fairon-Demaret	175,-
02/09/94 Contributions Denmark Dybklaer/Poulsen/Stouge	525,-
02/09/94 Contributions Canada Achab/Asselin/Soufiane (18 US \$ = 576 BF - 354 BF: 61% bankcosts)	222,-
02/09/94 Contribution Karl-Heinz Kirsch	175,-
02/09/94 Contribution Owens (10 £)	525,-
./08/94 Contributions via Owens	11.201,-
./09/94 Contributions via Clayton (100£)	5.045,-
./09/94 Contributions Sheffield	6.372,-
./10/94 Contribution Said Al Hajri (30£)	1.514,-
./10/94 Contribution Priewalder 92-97	1.100,-
14/10/94 (not on account yet: 18 US\$ E.G. Ottone, Argentina: about 250 BF)	
./12/94 (not on account yet: 39£ Owens + Hill about 1.968 BF)	

## TOTAL RECEIVED 1994

50.266,-

## SPENT (without Newsletter N° 47 dec. 1994)

Newsletter N° 46 april 1994	
(24) photocopies	8.197,-B
(25) postages	13.983,-A
(26) cost account bank	200,-A
(27) CIMP contribution IFPS (150 US \$)	5.763,-A

## TOTAL SPENT 1994

28.143,-

## BALANCE 1994

+22.123,-

(8.197,- advanced by secretary-general)

BALANCE 1991	-10.488,-
BALANCE 1992	-9.452,-
BALANCE 1993	-14.534,-
BALANCE 1994	+22.123,-
TOTAL DEFICIT 1991-1994	-12.351,-

(advanced by Secretary general)

-12.351,-

LOWER (IBEXIAN) AND MIDDLE (WHITEROCKIAN AND MOHAWKIAN) ORDOVICIAN PALYNOMORPHS AND CONODONTS FROM THE MICHIGAN BASIN: EXPLORATION ASPECTS OF BIOSTRATIGRAPHY, THERMAL MATURITY, AND PALEOENVIRONMENTAL ANALYSES

Stig M. Bergström<sup>1</sup>, Merrell A. Miller<sup>2</sup>, Gordon D. Wood<sup>2</sup>, Gary W. Barker<sup>2</sup>, H. R. Lane<sup>2</sup>, Sheree Thompson<sup>2</sup> and Holly Benson<sup>2</sup>

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Samples from fifty-one Michigan Basin wells (cores and cuttings) and one outcrop (682 samples total) were investigated to support Amoco's central Michigan exploration and southern Michigan stratigraphic play. The study required integration of conodont and palynomorph data because these microfossils are essentially confined in the carbonate and siliciclastic facies, respectively.

A complete or nearly complete Lower Ordovician (Ibexian, conodont faunas C through E) and Middle Ordovician (Whiterockian) succession is present in the Michigan Basin. In the central part of the Michigan Basin, the Sauk-Tippecanoe cratonic sequence boundary occurs before the *Archeognathus* and *Multioistodus* faunas. At the southern margin of the Michigan Basin, this sequence boundary occurs at an unconformity between the Lower Ordovician (conodont faunas C or D) and the uppermost Whiterockian or lower Mohawkian. This significant sequence boundary (probably eustatically controlled) has correlation potential throughout the area of the warm-water faunal province and may be useful for correlating with the cold-water faunal province (Gondwana).

Two palynomorph assemblages have been recovered. The youngest was isolated from the Glenwood Formation (Middle Ordovician) and equivalents and is identified by new species of *Conochitina* and *Villosacapsula*. An older assemblage was also recovered from the Whiterockian consisting of new genera. A similar assemblage has been recovered from the Simpson Group (Oil Creek and McLish) of Oklahoma. Both assemblages have been recognized in most of the wells studied, and allowed reinterpretation of lithological correlations.

Conodonts (e.g., *Leptochirognathus*, *Multioistodus*, *Parapriodontus*) and palynomorphs (e.g., abundant spheromorphs) indicate that the Whiterockian and Ibexian rocks were deposited in very shallow marine water (e.g., intertidal to subtidal) settings. The diversity of the Mohawkian assemblages from the Glenwood Formation indicates a normal marine depositional environment.

CAI and/or TAI indicate that the Middle Ordovician sediments in the basin center and western margins are peak to past peak for gas and past peak for liquids. The southernmost wells indicate peak generation for liquids.

A PRELIMINARY REPORT OF SELECTED SHARED MIOSPORES FROM THE PERMIAN AND EARLY TRIASSIC OF RUSSIA AND AUSTRALIA

C.B. Foster<sup>1</sup>, A.V. Gomankov<sup>2</sup>, O.P. Yaroshenko<sup>2</sup>, G.V. Dyupina<sup>2</sup>, and I.Z. Faddeeva<sup>4</sup>

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Spores and pollen which appear to be the same have been reported from both Russian and Australian Permian and Early Triassic assemblages. Plant megafossils, however, suggest that each country belonged to distinctly different floral provinces: Gondwanan (Australia) and Euramerian/Angaran (Russia). Therefore, do the shared taxa reflect migration of the parent plants, or parallel evolution?

Plant megafossil evidence suggests that at least four distinct phytogeographic provinces existed during the Late Paleozoic: Angaran, Euramerian (both recognized in Russia and the former Soviet Union), Cathaysian, and Gondwanan (Australia and other Gondwanan countries). Despite the megafloral differences, the palynofloral record from each of these areas contains some apparently similar taxa. Most obvious of these are the striate pollen of presumed gymnospermous origin. Such grains have been produced by at least three distinct parent plant groups, thus fueling the argument for parallel evolution, and downgrading the use of spores and pollen for intercontinental correlation.

Pollen which appears common to Permian palynofloras of the Salt Range, Pakistan, Australia (and other Gondwanan countries), and Russia, for example, include members of *Weylandites* Bharadwaj & Srivastava 1969 (as *Vittatina* pars), *Lueckisporites* Potonié & Klaus 1954, *Schweinipollenites* Tiwari 1973, *Protohaploxylinus* Samoilovich 1952, and monosaccate pollen. We are able to confirm, however, that Gondwana *Weylandites* is structurally distinct from Russian taxa assigned to *Vittatina*. Similarly, more detailed observations on certain members of *Protohaploxylinus* and *Sriatopodocarpites* Sedova 1956 from the Tatarian (Late Permian) of the Russian Platform show differences with Gondwanan forms assigned to these genera.

We have reexamined other Russian Permian taxa from the Urals and Siberian Platform which have been assigned to either Gondwana species or genera, and identified other conspecific Gondwanan forms, such as *Microbaculispora tentula* Tiwari 1965 [= *Turrisporites trimodius* (Andreeva) Drjagina 1988] from the Late Permian of the Kuznetsk and Tungus Basins. *Turrisporites resistens* Luber, which from published illustrations seemed similar to the Australian index form *Pseudoreticulatispora pseudoreticulata* (Balme & Hennelly) Bharadwaj & Srivastava 1969, is morphologically distinct, and unrelated to *P. pseudoreticulata*.

The early Triassic palynofloras appear more cosmopolitan, with the almost universal appearance of lycopod spores (*Aratrisporites* spp., and *Densoisporites* spp.) and of spores of the *Limnatisporites* complex. Plant migration, particularly in the Early Triassic would account for the widespread occurrences of shared taxa.

The questions of either reflected plant migration or of parallel evolution, from the appearance of shared taxa, and the subsequent use of palynology for interregional correlation, will only be answered through continuing joint studies through interchange of samples and specimens, and studies of *in situ* spores and pollen.

## FURTHER APPLICATION OF MICROWAVE TECHNOLOGY IN PALYNOLOGICAL PREPARATION

Rae Anthony Jones

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Prior to the application of microwave heating, rapid digestion of rock samples for palynological analysis was extremely hazardous, involving open vessel heating of 60% hydrofluoric acid. In the case of bituminous samples (e.g. North Sea Kimmeridge Clay), adequate rapid oxidation of kerogen prior to analysis was impossible using existing techniques.

Although pressurized microwave digestion systems have helped in solving the problems associated with rapid silicate digestion and rapid oxidation, they have not been well received commercially due to concerns about safety, sample quality and user-friendliness.

Preliminary investigations of a non-pressurized microwave digestion system have shown it to be more applicable to palynological processing than traditional pressurized systems. The system is particularly attractive for well site work where safe, rapid digestion, and oxidation of samples are required, especially during monitoring of directional drilling.

Other preliminary work suggests possible future benefits from the system will be automated sample digestion and oxidation, and the use of alternative and milder, less concentrated, reagents.

## PALYNOSTRATIGRAPHY IN THE FORMER SOVIET UNION

Judith K. Lentin

Lentin International Biostratigraphic, Suite 700, 665 8th Street SW, Calgary,  
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Palynostratigraphy and the study of palynomorphs has been a popular scientific pursuit in the Former Soviet Union (FSU) for decades. Oddly, when compared to the rest of the world, most of the palynologists in the FSU are women. In the past there has been a strong concentration on knowing all there is to know about a single type section, with little extension of this information into a coherent correlation framework. This is partly due to the fact that many palynologists in the FSU have little or no background in geology. Indeed many of the palynologists were trained as sociologists before becoming magically transformed into "scientists" by transfer to a geology department for graduate research. Graduate research in the FSU is not accompanied by classroom training, which has perpetuated the "palynology as an independent science" attitude which restricts real application. A poor understanding of geological processes results in zonation schemes which are impossibly complex with floral zones based on a single outcrop.

Many western oil company palynologists now find themselves examining samples from the Tynen Pechora, West Siberian Basin, Moscow Basin, Pericaspian Basin, etc., and need a correlation framework with which to work. In the Tynen Pechora, Moscow Basins and the Pericaspian Basin, the dinoflagellate correlation frameworks from the North Sea have worked very well for the Mesozoic and Cenozoic. In the Paleozoic, the spore zonations of Britain and France are extremely useful. The North Sea correlations are not so viable in the West Siberian Basin (WSB) where the sediments are more related to those found in western and Arctic Canada. Although Paleozoic rocks form the basement complexes, particularly around the margins of the WSB, most of the reservoirs are Mesozoic, which results in an emphasis on Mesozoic and Cenozoic stratigraphic correlations.

Using a combination of Russian literature and Canadian literature on palynology, a framework for correlation has been created for the West Siberian Basin. Paleogeography plays an important role in understanding the changes seen across the Basin. However, a major challenge to the western palynologist is combating the preconceived notions of the Russian joint-venture partners "that real men don't do palynology."

# THE PERMIAN - EARLY TRIASSIC HISTORY OF THE FINNMARK PLATFORM, BARENTS SEA: PALYNOSTRATIGRAPHY & PALEOENVIRONMENT

Gunn Mangerud

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From late Paleozoic time, sediments have been deposited over most of today's Barents Shelf. Along the northern margin of the Fennoscandian Shield, on the inner part of the Finnmark Platform, close to the present coast of Norway, condensed sections of the Upper Paleozoic - lowermost Triassic succession occur in a relative shallow position. During 1987 and 1988 IKU Petroleum Research cored most of this succession revealing excellent material for a.o. biostratigraphic studies. Exploration wells aiming at Paleozoic play models are later drilled further north on this platform.

The present study demonstrates diverse palynological assemblages ranging from Kungurian to earliest Triassic (Griesbachian) in age. Based on comparison with assemblages elsewhere in the present Arctic region, palynological correlations and ages are given for the following 3 palynozones: a *Dyupetalum* sp. - *Hamiapollenites bullaeformis* Assemblage Zone of ?Kungurian - Ufimian age, a *Scutasporites* sp. cf. *S. unicus* - *Lunatisporites* sp. Assemblage Zone of Kazanian - Tatarian age and a *Lundbladispota obsoleta* - *Tympanicysta stoschiana* Assemblage Zone of earliest Triassic (Griesbachian) age. The documentation of these datings and correlations will be discussed, followed by general outlines of the paleoenvironment in this area during the same period.

# ELECTRONIC COLOR ANALYSIS OF STAPLIN'S TAI STANDARDS

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Integrated Color Analysis (ICA) and Spectral Power Distribution (SPD) analysis are two new techniques which have been developed and designed to electronically measure the color of organic matter in transmitted illumination. Organic petrographers and palynologists now have the capability of producing highly accurate, reliable, and objective thermal maturity measurements from spores, pollen, and associated plant tissue fragments.

Using the ICA and SPD methods, Staplin's (1969) initial set of TAI Standards, slide series 1.2 through 4.8, have been analyzed, mathematically calibrated, and corrected into a "true" 1.0 to 5.0 scale. ICA and SPD thermal maturity values, based on hue and intensity readings, can be generated for organic constituents from all geologic ages, Precambrian to Recent. The data, produced in histogram and/or table format, is easily cross-correlated with estimated vitrinite reflectance (%Roc) values.

A comparison of ICA and SPD data with previously published information indicates that the technique is applicable over the entire range of thermal maturity from immature through metamorphosed (i.e., 1.0 to 5.0 TAI and/or 0.30 to 5.00% Roc.)



# ELECTRONIC TAI MEASUREMENTS USING THE ICA/SPD TECHNIQUE: A BETTER METHOD FOR DEFINING THERMAL MATURITY THAN VITRINITE REFLECTANCE

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Problems associated with the vitrinite reflectance (%R<sub>v</sub>) technique, including suppression, anisotropy, calibration of the microscope system, preparation, and particle identification, make it increasingly clear that alternative methods that can accurately define thermal maturation levels throughout a basin are needed. Two new systems for measuring thermal maturity, based on the examination of trilete spores, pollen, and associated plant tissue fragments (including some algal debris) in transmitted illumination, are presented. Integrated Color Analysis (ICA) uses an advanced imaging system and a microscope with high-resolution optics. In Spectral Power Distribution (SPD) analysis, a spectral photometer is used in conjunction with high-resolution microscope in a manner similar to that of van Gijzel (1990). Both methods are calibrated with known standards. Hue and intensity values, based upon the percentages of red, green, and blue light components as detected by the spectral photometer, are used to define the thermal maturity index (TAI) and calculate estimated percent reflectance (%R<sub>v</sub>). Thermal maturity values can be accurately calculated and reproduced according to several different scales including Staplin (1969), GeoChem Laboratories, Inc. (1976), Batten (1976), Robertson Research Spore Coloration Index (SCI), and Geo-Strat (1976).

ICA and SPD measurements are considerably more accurate than the visual TAI estimates based on the spore coloration method and can be used to define the level of maturity for organic material from all ages, Precambrian to Recent. The ICA/SPD technique also avoids the numerous problems found to be associated with vitrinite suppression and/or anisotropy as well as other difficulties associated with instrumentation and interpretation (e.g., see Dembicki, 1984; Wenger and Baker, 1987; and Lo, 1993). Because trilete spores, pollen, and plant tissue fragments are used in making ICA and SPD measurements, problems associated with particle identification, age, and derivation (*in situ* versus recycled debris) are generally not encountered. In the vitrinite reflectance technique few organic petrographers give any consideration to the origin and definition of vitrinite or to what material should be included or excluded among the macerals to be measured. However, explorationists continue to put their faith in vitrinite reflectance data for several reasons. First, vitrinite reflectivity is measured directly and has been fairly accurate, especially compared to indirect indicators such as Rock-Eval pyrolysis. Second, until now there has not been another method for electronically assessing the level of thermal maturation of organic matter. Finally, the computer hardware and software needed for ICA/SPD analysis did not even exist until a few years ago. Today, a new era is opening in the examination and assessment of kerogen. It is our considered opinion that once the ICA/SPD method has been used by and the resulting data tested by industry, it will be found to be more reliable and to have fewer problems than measurements based on vitrinite reflectance.

Poster Display

# MIDDLE ORDOVICIAN CRYPTOSPORES FROM SAUDI ARABIA: NEW EVIDENCE FOR A TRANSITIONAL TERRESTRIAL FLORA

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<sup>3</sup>Department of Geosciences, The Pennsylvania State University, University Park, Pennsylvania 16802, U.S.A.

Macerations of Middle Ordovician (Llanvirnian) shales from Saudi Arabia yield an assemblage of spores of probable land plants (cryptospores), acritarchs and chitinozoa in addition to scolecodonts, tissue fragments, cuticles and cell clusters. The age of the Hanadir ranges from early Llanvirn to early Llandeila based on trilobite and graptolite correlation (*Didymograptus murchisoni* zone), chitinozoans and age-restricted acritarchs. We consider cryptospore tetrads and dyads in conjunction with cuticle-like fragments to be the remains of non-marine plants which were more further evolved than the algae and probably at a bryophytic grade of evolution. No trilete spores were found at this horizon, establishing unequivocally that obligate miospore tetrads occur stratigraphically before the earliest trilete spores.

Tetrad configuration varies considerably and the closeness of attachment varies from tightly pressed to loosely attached. Equatorial diameters of individual sporomorphs range from 15 to 34 µm; overall tetrad diameters extend to 48 µm. Membrane-enclosed tetrads are rare, but both *Stegambiquadrella contenta* and enclosed specimens of the dominant tetrad form occur. Numerous simple dyads, including *Dyadospora* spp., and other less tightly bound forms, occur. The presence of dyads in these earliest assemblages reinforces heterochronous miospore development as a possible evolutionary mechanism for the invasion of terrestrial habitats.

We propose that embryophytes evolved by Early Ordovician time, establishing, in conjunction with the nematophytes, a pre-vascular land flora, transitional between the earlier microbial communities and a Paleozoic plant biota, was eventually replaced by tracheophytes during later Silurian and Devonian time.

## PHANEROZOIC PHYTOPLANKTON DIVERSITY IS DECOUPLED FROM MARINE INVERTEBRATE DIVERSITY

Paul K. Strother<sup>1</sup>, R.A. MacRae<sup>2</sup>, A. Fricker<sup>3</sup>, R.A. Fensome<sup>3</sup>, and G.L. Williams<sup>3</sup>

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Four separately constructed curves of Phanerozoic acritarch/prasinophyte generic diversity show a similar pattern of a mid-Paleozoic peak followed by severe depletion at the end of the Devonian with only moderate numbers remaining throughout the Phanerozoic. These data were combined with a dinoflagellate diversity curve to obtain an overall picture of organic-walled phytoplankton diversity over Phanerozoic time. The composite curve reveals a diversity low from the terminal Devonian decline to the rise in dinoflagellates during the Jurassic. This general pattern is unlike that of coeval benthic marine invertebrate who maintained elevated diversity through the remainder of the Paleozoic. At this scale of resolution, benthic invertebrate diversity appears to be decoupled from that of organic-walled phytoplankton.

Studies of modern suspension feeders indicate a moderate degree of food selectivity, implying that trophic partitioning is an important speciation mechanism in shallow marine habitats and, consequently, that there should be a correlation between phytoplankton and invertebrate diversity. Indeed, extinction scenarios commonly call for the demise of phytoplankton as a precursor to invertebrate decline. If benthic marine suspension feeders and phytoplankton are trophically coupled, this might indicate that a major phytoplankton group is missing from the fossil record during the lower Carboniferous through Permian interval.

Alternatively, the ability of typical suspension/filter feeders to survive on heterogeneous food sources implies only a very weak trophic link to primary producers and we should not expect a relation between phytoplankton diversity and marine invertebrate diversity. The trophic links between phytoplankton, zooplankton and nekton are more direct and may translate into a stronger diversity correlation. Thus, the decline in acritarch/prasinophyte diversity at the end of the Devonian may have been an important factor in the demise of agnathans and placoderms.

## THE IMPORTANCE OF PALYNOLOGIC PROCESSING TO THE EXPLORATIONIST

John H. Wrenn

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(Current Address: Center For Excellence in Palynology, Department of Geology and Geophysics, Louisiana State University, Baton Rouge, LA 70803)

It is self-evident that high-quality palynologic analyses cannot be derived from poorly processed samples. And yet, poor quality processing is surprisingly common. The quality control of sample processing has never been more important to the oil industry than it is today. This is because many companies have eliminated palynologists from their staff and now require explorationists to oversee palynostratigraphic projects conducted outside the company.

The exploration experience of Amoco Production Company in Myanmar provides a good example of the importance of sample processing to the explorationist. The deposits in Amoco's Block B consist of Late Cretaceous through Cenozoic continental and near shore marine sediments. Studies of outcrop samples showed that palynomorphs were the only abundant, widely distributed fossils present. Only palynology could provide the biostratigraphic control for the exploration program.

One option considered for providing this control was contracting with a consulting company in Southeast Asia. The first step in selecting such a company was evaluating their palynologic sample processing. Duplicate cuts of 27 outcrop samples that had been previously prepared and studied by Amoco were submitted to three laboratories for processing and analysis. Two companies sent Amoco the microscope slides that they prepared and analyzed. All three companies provided photographic documentation of their results.

The preparations of all three companies were very poor compared to the cleaner preparations of Amoco, which contained abundant palynomorphs and were much easier to study. Even more important, poor sample processing resulted in erroneous and/or overly broad age determinations. Consequently, none of the consulting companies was selected to provide well control in Myanmar for Amoco.

Poor recovery may have been due to excessive oxidation, inadvertent disposal of palynomorphs, and/or poor sieving or heavy liquid separation techniques. The samples were apparently processed in an assembly-line fashion that overlooked differences in lithology, organic content, diagenetic history, etc.

This study demonstrates that: 1) high-quality processing is a prerequisite to high-quality palynologic analyses; 2) it is imperative to consider the quality of sample processing when assessing palynologic analyses; 3) in the long run, it is cheaper to spend more time and money producing clean, palynomorph rich slides, than it is to pay a palynologist to spend a long time studying dirty, palynomorph poor residues; and 4) it is necessary to assess consultant sample processing capabilities before contracting for biostratigraphic support of exploration efforts.

These points cannot be overemphasized. It is in the self-interest of consultants that sample processing be given the same attention to detail as is the palynologic evaluation of a sample.

# THE IMPORTANCE OF REWORKED PALYNOMORPHS IN INTERPRETING DEPOSITIONAL AND THERMAL HISTORY: EXAMPLES FROM ARGENTINA, PAKISTAN AND SOUTH EAST ASIA

Gordon D. Wood<sup>1</sup>, John H. Wrenn<sup>2</sup>, Donald W. Engelhardt<sup>2</sup>, Brenda L. Claxton<sup>1</sup>,  
Jeffrey A. Stein<sup>1</sup> and Gary W. Barker<sup>1</sup>

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Recognition of reworking offers a unique perspective not accessible using vitrinite reflectance (%Ro) and traditional geochemical analyses (e.g., Rock-Eval, Biomarkers, Elemental Analyses). Bundled, these techniques can provide critical information germane to depositional and thermal history and hydrocarbon convertibility. Case history examples illustrating the importance of palynological reworking are discussed from studies in South America, Pakistan and Myanmar.

Core/cuttings samples were used to evaluate prospective hydrocarbon areas from the Permian of Chaco Basin, Argentina. Vitrinite reflectance measurements of several samples recorded bimodal organic populations indicative of massive reworking. Palynological analyses indicated recycled Devonian palynomorphs (e.g., *Navifusa bacilla*, *Stellinium micropolygonale*, *Emphaniaporites rotatus*) were a major component of the assemblage. This reworked assemblage necessitated reassessment of exploration potential because the Devonian forms were not convertible to liquid hydrocarbons, a facet not identifiable using only source rock (wt%) analyses.

Samples from an approximately 4.5 foot thick outcrop of the Eocene Jatta Formation, of the Robat area, Pakistan were examined for palynology, vitrinite reflectance and a variety of geochemical parameters. Samples with high total organic carbon (TOC) values (up to 30%) possessed elevated hydrogen indices and were predominately amorphous kerogen. Samples with the lowest TOC had low hydrogen indices and were dominated by structures of mixed kerogen. Vitrinite reflectance measurements indicated a significant amount of reworking evident in the low TOC samples and this is corroborated by palynological analysis. Indigenous forms (e.g., *Tiliapollenites* spp., *Retitricolpites* sp., *Muratodinium fimbriatum*, *Polysphaeridium zoharyi*, *Homotryblum tenuispinosum*) are minor components in comparison to recycled Jurassic palynomorphs (e.g., *Callialasporites dampieri*, *Gonyaulacysta jurassica*, *Scriodinium crystallinum*, *Nannoceratopsis pellucida*, *Omatia montgomeryi*). This impacts the commonly held position that a single sample is adequate for characterizing a source rock.

The Upper Cretaceous through Plio-Pleistocene from the Chindwin Basin, Myanmar, was also afforded a multidisciplinary approach. Palynological examination indicates that the oldest rocks in the Chindwin contained abundant reworked Permian-Triassic. The oldest Tertiary included both recycled Cretaceous and Permian-Triassic organic microfossils. The youngest Tertiary yielded recycled Paleogene forms. These data were used to postulate prospective hydrocarbon area and provenance of the reservoir units.

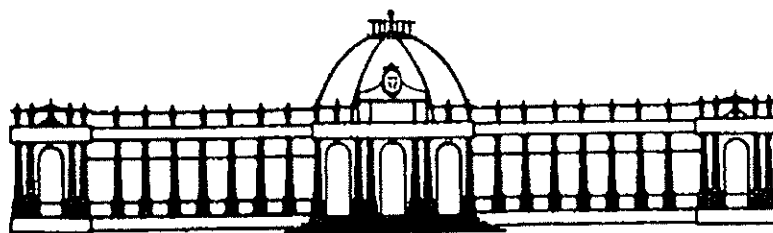
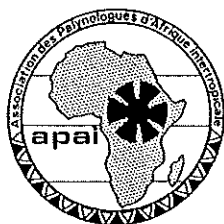
# POLLEN-DOMINATED ASSEMBLAGES FROM THE LATE CARBONIFEROUS PALEOSUBTROPICS: PALEOPHYTOGEOGRAPHY AND EARLY CONIFER COMMUNITIES

Yu-Xing Zhou and Anne Raymond

Department of Geology and Geophysics, Texas A&M University, College Station, TX 77843

Distinct climatic zones existed in the Late Carboniferous. The tropical rainy zone is represented by the belt of coal extending from the midwestern United States through Europe. The temperate rainy zones are indicated by the Siberian and Gondwana coals. The subtropical arid belts, located between the tropical rainy belt and the temperate belts, are represented by the evaporites and rise in latitude from west to east. With the known sensitivity of recent plants to climate, we should expect similar phytoprovincialism associated with climatic zonations in the Late Carboniferous. However, the generally accepted phytogeographic model for the Late Carboniferous based on plant macrofossils shows that the Euramerian province, characterized by arborescent lycopods in the early Late Carboniferous and pteridosperms, tree ferns and Cordaites in the late, Late Carboniferous, covers the tropical rainy zone and the northern subtropical arid zone. However, this situation reflects the lack of macrofloral information from the subtropical arid zone. Palynomorphs can play a key role in the recognition of the phytogeographic area which corresponds to the subtropical arid zone. A new phytogeographic province, the Tianrui province, which is located along the 30°N paleolatitude, has been proposed based on pollen-dominated assemblage from the early-middle Late Carboniferous of Tian Shan, NW China, the Urals, and Arctic and NW Canada. Our recent study suggests that the Rocky Mountains also have pollen-dominated assemblages at least from the middle Late Carboniferous. The distribution of these pollen-dominated assemblages indicates that the paleosubtropical arid area had different plant communities from the paleotropical rainy area. In the latter, zonate spores like *Lycospora* dominate assemblages. In the paleosubtropical arid zone, the plant communities were most likely composed of conifers or conifer-like plants.

# 2ème Symposium de Palynologie Africaine <sup>12</sup>



KONINKLIJK MUSEUM  
VOOR  
MIDDEN-AFRIKA

MUSEE ROYAL  
DE  
L'AFRIQUE CENTRALE

## 2d Symposium of African Palynology

06/03/1995 - 10/03/1995

### PROGRAM

#### MONDAY 6/03:

- \_ 10.00 h.: arrival of participants
- \_ 12.00 h.: drink - lunch; Welcome by Mr. D. THYS van den AUDENAERDE  
director of the Museum
- \_ 14.00 h. - 17.00 h.: communications.

#### Tuesday 7/03: Pré - Quaternary Palynology

- \_ 09.00 h. - 10.30 h.: communications.
- \_ 11.00 h. - 12.30 h.: visite of MRAC & photography.
- \_ 14.00 h. - 17.30 h.: communications.

#### Wednesday 8/03: Quaternary Palynology

- \_ 09.00 - 12.30 h.: communications.
- \_ 14.00 - 18.00 h.: communications.

#### Thursdays 9/03: Pollen Morphology - Aéropalynology - Méliissopalynology

- 08.30 h. - 12.00 h.: communications.
- 12.00 h. - 12.30 h.: meeting APAI.
- 14.00 h. - 17.00 h.: visit of the State Botanic Garden (by car from MRAC to Meise)

#### Friday 10/03:

- 09.00 h. - 12.00 h.: visit of the section FORESTRY ECOLOGY of MRAC & closure of  
the symposium

#### Registration fees

##### I.a) Participation at the symposium with visit of the Botanic Garden:

- Attending member: 4.400 Fb.
- Accompanying member: 3.500 Fb.
- Student: 3.200 Fb.

##### I. b) Participation without visit of the Botanic Garden.

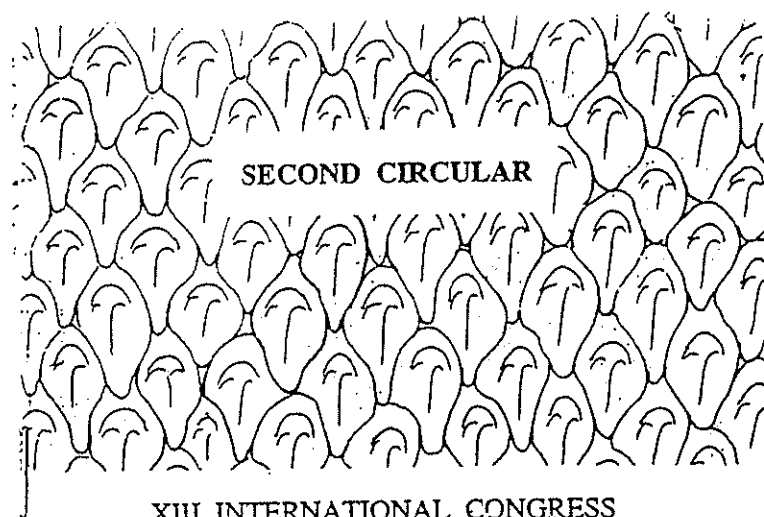
- Attending member: 3.900 Fb.
- Accompanying member: 3.000 Fb.
- Student: 2.800 Fb.

##### II. Other possibilities:

- a) Participation at the quaternary session of 8.03.95 (meal and drinks included). For all: 1.000 Fb.
- b) For each day added (meal and drinks included). For all: 800 Fb.
- c) Visit of the Botanic Garden. For all: 500 Fb.

#### Organisation:

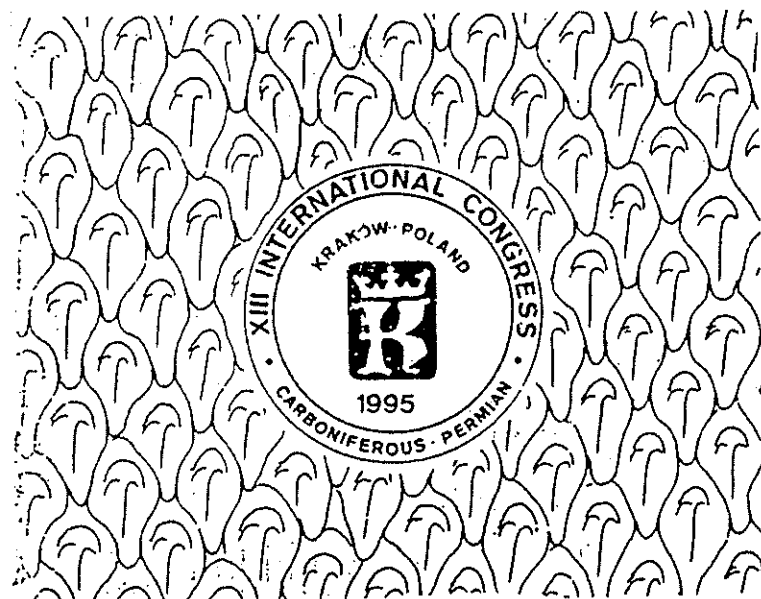
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## SECOND CIRCULAR

### XIII INTERNATIONAL CONGRESS ON CARBONIFEROUS-PERMIAN (XIII ICC-P)

August 28 – September 2, 1995  
Kraków, POLAND



## INVITATION

The Permanent Committee and the Polish Organizing Committee extend to you the second cordial invitation to attend the XIII International Congress on Carboniferous-Permian Stratigraphy and Geology which will be held in Kraków, Poland from 28 August to 2 September, 1995. It is a pleasure to inform you that more than 400 participants from over 30 countries have announced so far their intention to participate in the Congress.

## ORGANIZERS

Państwowy Instytut Geologiczny  
(Polish Geological Institute)

Polish Organizing Committee of the XIII ICC-P:

President:

Prof. dr. hab. Krzysztof JAWOROWSKI

Vice-President:

Dr. Maciej PODEMSKI

Secretary-General:

Prof. dr. hab. Sonia DYBOVA-JACHOWICZ

## CONGRESS TOPICS

1. Global Syntheses: Palaeogeography, Plate Tectonics, Palaeoclimate.
2. Stratigraphy and Palaeontology; Biostratigraphic Global Correlations.
3. Sedimentology, Analysis and Reconstruction of Sedimentary Basins.
4. Tectonics and Magmatism.
5. Post-Depositional Transformations of Organic Substances; Coal Petrology and Geochemistry.
6. Economic Geology (with special reference to coal, coalbed methane and hydrocarbons).
7. Ecological Impact of Coal Mining and Activities of Attached Industries.

## LANGUAGE

The official language of the Congress is English.

## FIELD EXCURSIONS

13

The beneath specified excursions will be organized, depending on the interest shown by the potential participants.

## PRE-CONGRESS EXCURSIONS

### A1 CARBONIFEROUS-PERMIAN SEQUENCES IN THE WESTERN CARPATHIANS (SLOVAK REPUBLIC)

Duration: 6 days

Begins and ends: Koszyce, Slovak Republic — Kraków

### A2 DEVELOPMENT OF VARISCAN BASIN AND EPI- VARISCAN COVER AT THE MARGIN OF THE EAST-EUROPEAN PLATFORM (POMERANIA, HOLY CROSS Mts., CRACOW UPLAND)

Duration: 4 days

Begins and ends: Warszawa — Kraków

### A3 THE EAST-EUROPEAN ROTLIEGENDES SE- DIMENTARY SUCCESSION

Duration: 3 days

Begins and ends: Poznań — Kraków

### A4 PALAEONTOLOGY OF CARBONIFEROUS AND PERMIAN OF UPPER SILESIAN COAL BASIN AND LUBLIN COAL BASIN

Duration: 3 days

Begins and ends: Kraków – Ostrava – Kraków

### A5 STRATIGRAPHY AND FACIES OF THE MIDDLE EUROPEAN CONTINENTAL CARBONIFEROUS AND PERMIAN

Duration: 5 days

Begins and ends: Freiberg near Dresden, FRG — Kraków

## POST-CONGRESS EXCURSIONS

**B1, B2** CARBONIFEROUS AND PERMIAN OF SUDETY  
Mts, POLAND AND CZECH REPUBLIC

The Participants can choose excursions B1 (Unit I) or B2 (Unit II and III and partly Unit I), separate or both.

B1 duration: 4 days

B2 duration: 4 days

B1 + B2 duration: 7 days

Begins and ends: Kraków — Wrocław

**B3** COAL-BEARING CARBONIFEROUS DEPOSITS OF  
THE LUBLIN AND UPPER SILESIA COAL BASINS

Duration: 5 days

Begins and ends: Kraków — Ostrava (Czech Republic)

**B4** EVOLUTION OF THE POLISH-MORAVIAN CARBONATE  
PLATFORM IN THE LATE DEVONIAN AND  
EARLY CARBONIFEROUS: HOLY CROSS Mts., CRAW-  
COW UPLAND, MORAVIAN KARST

Duration: 5 days

Begins and ends: Kraków — Brno (Czech Republic)

**B5** TRANSITION OF THE EARLY CARBONIFEROUS  
PELAGIC SEDIMENTATION TO SYNOROGENIC  
FLYSCH — AN EXAMPLE FROM THE SILESIA-  
MORAVIAN ZONE AND ADJACENT AREAS.

Duration: 5 days

Begins and ends: Kraków — Ostrava (Czech Republic)

**B6** EAST-EUROPEAN ZECHSTEIN BASIN

Duration: 4 (7) days

Begins and ends: B 6a Kraków — Warszawa

B 6b Warszawa — Vilnius (Lithuania)

## INTRA-CONGRESS EXCURSION

**I 1.** ECOLOGICAL IMPACT OF UNDERGROUND COAL  
MINING AND ACTIVITIES OF ATTACHED INDUSTRIES.

Duration: 1 day

Begins and ends: Kraków — Kraków.

## PUBLICATIONS AND POSTERS

ABSTRACTS of the presented papers and posters should be received by the Organizers not later than 30th September, 1994. All abstracts should be submitted for review and typed as follows: a) title (using bold), b) author(s), c) address, d) text of maximum 300 words (using the Times 10 points regular font, single spaced). The abstracts should be sent on 3.5" IBM compatible disks using common word processing software (Word Perfect or ASCII format) together with printed copy. Please print on laser printer. A volume of Abstracts will be available at the Congress.

FINAL PUBLICATIONS: Papers presented at the Congress and accepted by the Polish Organizing Committee will be published in the Compte Rendu after the Congress. Manuscripts must be submitted to the Congress Secretariat before or during the Congress. Manuscripts sent after the Congress will not be accepted. The length of the text should not exceed 5 000 words (including illustrations, figures, photos, etc and bibliography). The text of the final publication should be on floppy disk in Word Perfect or ASCII format.

POSTERS: Special poster sessions are envisaged. Maximum space for one poster — 2 m<sup>2</sup>.

## OTHER MEETINGS

During the Congress, general meetings of the I.U.G.S. Subcommittee on Carboniferous Stratigraphy and I.U.G.S. Subcommittee on Permian Stratigraphy are planned. Meetings of the Congress Permanent Committee will also be held.

If any other international scientific organization would like to arrange its special meeting during the Congress, a notice should be sent to the Polish Organizing Committee as soon as possible.

## EXHIBITION

Interested institutions are invited to take part in a comprehensive trade exhibition which would be conducted in tandem with the Congress. Manufacturers and suppliers of scientific instruments, computer hard- and software, environmentally friendly appliances for coal, coalbed methane, oil and natural gas mining and attached industries as well as services to the profession will be welcome. The notification of the company's interest should be sent to the Organizers not later than 31st August, 1994.

## ACCOMPANYING PERSONS

Accompanying persons will have an opportunity for short sight-seeing excursions, cultural events, and/or longer tours during the Congress.

## REGISTRATION FEE

US\$ 300 /subject to change/

## CORRESPONDENCE

Further inquiries relating to the second circular of the Congress should be addressed to:

XIII ICC-P Secretary-General

Prof. dr. hab. Sonia DYBOVA-JACHOWICZ

Państwowy Instytut Geologiczny

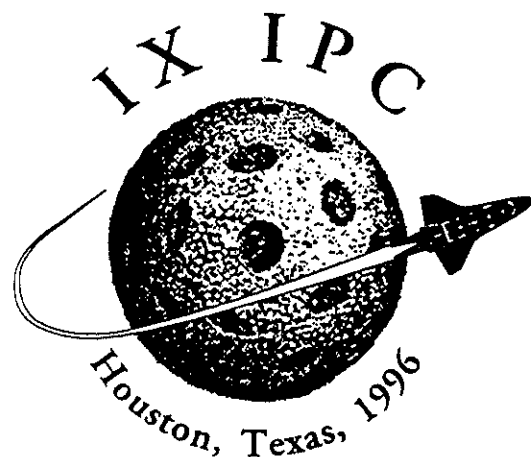
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The Ninth  
International Palynological Congress



22-29 June 1996

International Federation of  
Palynological Societies

American Association of  
Stratigraphic Palynologists

### Meetings

Technical sessions and symposia will be held over five days, Monday through Friday (24-28 June). Opening ceremonies and pre-congress meetings will be held on Sunday, 23 June. The official language for all presentations is English.

Symposia topics and field trips for the 9th IPC are in the planning stage. We are planning to hold up to seven concurrent sessions during each of the five days of meetings. This will provide for a maximum of 700 oral presentations. We will also arrange space for 250-300 posters, for those who wish to exhibit them at the meeting.

We encourage individuals to consider organizing a symposium, and/or presenting a technical paper on a research topic covered by one of the fields listed below.

Aerobiology & Medical Palynology  
Computers, Data Storage, & Statistical Methods  
Ecology & Paleoenvironmental Reconstruction  
Entomopalynology & Archaeological Palynology  
Marine Palynology  
Melissopalynology & Forensic Palynology  
Morphology & Genetics  
New Frontiers & Applications in Palynology  
Palynomorph Preparation Techniques  
Palynomorph Sampling  
Palynostratigraphy & Sequence Stratigraphy  
Pre-Quaternary & Quaternary Studies  
Systematics, Ontogeny, & Evolution  
TEM & SEM Applications in Palynology  
Teaching & Professional Training

Individuals wishing to organize symposia should contact either Vaughn Brvant or John Wrenn.

### Proceedings Volume & IFPS World Directory

We encourage those who plan to participate in the 9th IPC to publish their original research as book chapters or articles. We anticipate that some of the symposia will want to publish their papers in book or monograph form.

In addition, the American Association of Stratigraphic Palynologists Foundation plans to publish a *9th IPC Proceedings Volume* that will contain brief summaries of many papers presented at the congress. The proposed format will be similar to the proceedings volume published as part of the 7th IPC (Brisbane, Australia). The 9th IPC proceedings volume will be sent to all registered participants.

Each registered participant at the 9th IPC will also receive the second edition of *World Directory of Palynologists* scheduled for printing in May 1996.

### Estimated Registration fee:

\$325 (students \$150)

Fee includes meeting registration, copies of the *9th IPC Proceedings Volume* and *World Directory of Palynologists*, 2nd edition. Lodging, short courses, & field trips are additional.

### *Other Events*

A number of field trips will be held in conjunction with the 9th IPC. More details, estimated registration costs, and specific dates of each field trip will be outlined in the *9th IPC Second Circular*, to be sent in May 1995.

Immediately following the 9th IPC, the Fifth International Organization of Paleobotany Conference will be held 30 June - 5 July 1996 in Santa Barbara, California.

## 16 *Location and Climate*

Houston, Texas, is the fourth largest city in the United States. It has a metropolitan population of more than 3.5 million residents and consular corps representing 57 nations.

Geographically, Houston has an average elevation of 50 feet (15 m), and an average temperature from 72-93°F (22-34°C) in summer. Houston is also known as the "Air-Conditioned City" because virtually all businesses, hotels, buses, and rental cars are air-conditioned. Summer is the dry season, so IPC participants can expect daily sunshine.

Houston has two major international airports served by 9 domestic and 11 international carriers, with more than 1,000 flights daily. Within the city a large system of four to six-lane limited-access and interstate highways crisscross all areas and help to speed car and bus travelers across town.

### *Hotel and Meeting Facility*

The JW Marriott Hotel located on Westheimer Street by the Galleria Center is designated the official hotel and meeting location for the 9th IPC. The hotel is 30-40 minutes from either international airport, and there is 24-hour bus and taxi service from both airports to the hotel. Hotel room rates for the 9th IPC have been confirmed at \$100 (US) for a single or double room (two beds). We will also have triple and quadruple rooms available. These larger rooms will be restricted to students and will be offered to them at a rate of \$30-35 per person, per night. The Marriott Hotel has 500 guest rooms, three racquetball courts, four tennis courts, and a complete fitness and workout complex containing a weight room, sauna, Jacuzzi, and a large outdoor swimming pool.

### *Organizing Committee:*

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Return this form by **December 1, 1994.**

***Second Circulars will be sent only to those returning this form!***

Name \_\_\_\_\_

Address \_\_\_\_\_

I am hoping to present  
an oral presentation ☐ or poster ☐  
(tentative subject or title)

## RETURN THIS FORM

### **by regular mail to:**

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3 Ridge Street  
Winchester, MA 01890 USA

### **by fax or e-mail to:**

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Internet: dnichols@greenwood.cr.usgs.gov



# Norman Hughes

NORMAN HUGHES was known internationally for his contribution in the field of palynology, the study of plant microfossils — mainly pollen and spores.

Hughes took the rare opportunity afforded by the Natural Sciences Tripos in Cambridge to become a geologist with a thorough biological training and wide interests in the life sciences. In his chosen field his rigorous work led to original methods and insights. Focusing on Mesozoic stratigraphy and the origins of flowering plants or angiosperms he developed methods for recording data and was early in employing the electron microscope, which yielded a new wealth of information beyond what could previously be seen.

The electron microscope's much greater magnification allowed a higher level of discrimination between different kinds of fossils, revealing small evolutionary changes which had previously been undetectable. Hughes argued the advantages of microfossils, which are sampled in their thousands, as compared with megafossils from which species are erected often from few or even only one specimen.

His "biorecords" related individual characters to their stratigraphic context showing how

much critical information is lost when only species descriptions are employed for purposes of comparison. Many traditional palaeontologists mistakenly perceived this as a threat to the time-hallowed Linnaean system of nomenclature in which so much had been invested. Hughes advocated his biorecords as a supplement rather than a replacement to this system, whose bands of classification are far less detailed. Regrettably his rigorous reasoning was too often ridiculed rather than countered. Hence he suffered, not by his own choosing, as an anti-establishment figure.

He argued against the common neontologists' practice of deducing evolutionary lineages from living material, on the basis that only the fossil record can provide reliable evidence. After authoring (and editing) more than 70 scientific papers and books, his last work, *The Enigma of Angiosperm Origins* (1994), throws down a methodological challenge to the biological community, with the possibility of no explanation in a single lineage. It remains to be seen how far this challenge will be met.

Hughes was born in 1918 and educated at King's College School, Wimbledon, and Queens' College, Cambridge, where he won the

Wiltshire Prize on Part I of the Natural Sciences Tripos before serving in Field and Survey Regiments of the Royal Artillery in North Africa and Italy. He completed his Part II in 1947 with First Class Honours and won the Harkness Scholarship. His military service continued, however, till 1970 in the Royal Engineers Specialist Pool of Geologists of the Territorial Army, rising to the rank of Colonel and advising on terrains in many parts of the world.

On graduating he became lecturer in Geology at Bedford College, London, and in 1952 he moved to a University Lectureship in Cambridge, where he remained until his retirement in 1985. During this period, entirely on his own initiative and working with a succession of some 25 research students, he developed an internationally recognised school in palynology. He served as President of the International Commission for Palynology in the early Seventies and on many other international organisations, including two subcommissions of the Commission of Stratigraphy of the International Union of Geological Sciences, and he led projects in the International Geological Correlation Programme.



Hughes: heavyweight

Hughes was one of the founding members of the Palaeontological Association and served it many years in various capacities. He was active in other bodies, notably the Geological Society of London, especially chairing the Stratigraphy Committee. He was awarded an ScD degree on his research in 1977.

Hughes was elected to a Fellowship at Queens' College, Cambridge, in 1963, and continued till his death serving in several college offices, not least as an expert on wine. As Steward he figured in the BBC television series on the college in 1984.

Not long before his death he and his wife Pamela, who survives him, celebrated their golden wedding. They had no children. Together they enjoyed the countryside, especially bird-watching, and he actively supported her career as an artist.

As a person Norman Hughes was heavyweight, not easily ignored. Perhaps in the eyes of some he could appear outrageously authoritarian. But in personal contacts he was exceptionally unselfish and generous with his time, especially to students. He belonged to a diminishing university tradition where teaching is primary, requiring hours of meticulous preparation of materials.

Conscientious in all he undertook and expressing himself with economy and precision, he was one of the rocks on which the excellence of a university system is built.

W. B. Harland

*Norman Francis Hughes, geologist: born 4 August 1918; Lecturer in Geology, Bedford College London 1947-52; Lecturer in Earth Sciences, Cambridge University 1952-85; Fellow, Queens' College, Cambridge 1963-94; married 1944 Pamela Le Bouillier; died Cambridge 18 September 1994.*

## C.I.M.P. WORKING GROUPS AND SUBCOMMISSIONS

### **Vallatisporites Working Group**

Contact person: Bernard Owens, British Geological Survey,  
Keyworth, Nottinghamshire, NG12 5GG, U.K.

### **"Lycospora" First Occurrence Working Group**

Contact person: Elzbieta Turneau, Instytut Nauk Geologicznych,  
Polska Akademia Nauk, Ul. Senacka 1/3, 31-002 Krakow, Poland.

### **Upper Devonian "Grandispora" Working Group**

Contact person: Ken Higgs, Department of Geology,  
University College Cork, Cork, Ireland.

### **Reworked Palynomorphs Working Group**

Contact person: Philippe Steemans, Lab. ass. de Paléontologie,  
Université de Liège, 7 Place du Vingt-Aôut, B-4000 Liège, Belgium

### **Acritarch Subcommittee**

Chairman: Stuart Molyneux, British Geological Survey,  
Keyworth, Nottinghamshire, NG12 5GG, U.K.  
Secretary: Thomas Servais, Lab. ass. de Paléontologie,  
Université de Liège, 7 Place du Vingt-Aôut, B-4000 Liège, Belgium

### **Chitinozoa Subcommittee**

Chairman: Florentin Paris, CNRS - URA 1364, Université de Rennes 1, Campus de  
Beaulieu F35042 RENNES Cedex France.  
Secretary: Stuart Sutherland, Centre for Palynological Studies, University of Sheffield,  
Mappin Street, Sheffield S1 3JD, U.K.

### **The Executive Committee of the C.I.M.P.**

(since the last CIMP General Assembly, North Sea 1990 Symposium, Nottingham, U.K.)

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From the C.I.M.P. constitution: "members of C.I.M.P. shall be all palynologists who desire to belong to C.I.M.P."

The C.I.M.P. Newsletter is open for all members for announcements for symposia or conferences, abstracts of previous ones, news from the working groups and subcommissions, changes of address of members or other messages. These should reach the secretary the end of march and of october.

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**U.K./Ireland:** Dr. P.J. Hill, Dept. of Geology, Derbyshire College of Higher Education, Kedleston Road, Derby, England, U.K.  
**Belgium:** Dr. M. Vanguestaine, Lab. ass. Palaeontologie, Université de Liège, 7 Place du Vingt Aout, B-4000 Liège, Belgium.  
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Rates for 1995: 5£, 40FF, 250BF, 12DM, 13fl, 8 US\$.

**Make sure that the amount of the contribution reaches the secretary.**

**Agenda of palynological conferences, symposia, workshops 1994-1996:**

1995 6-10 march, Tervuren near Brussels, Belgium, **II Symposium of African Palynology** (see newsletter 44 and p. 12)

1995 Aug. 28- Sept. 2, Krakow, Poland, **XIII International Congress on the Carboniferous-Permian**, Details: Sonia Dybova-Jachowicz, Panstwowy Instytut Geologiczny, Oddział Górnoslaski, 1 Królowej Jadwigi, 41-200 Sosnowiez, Poland. Phone: 48 32 66 20 36; Fax.: 48 32 66 55 22.

1995 Oct. 10-14, Ottawa, Ontario, Canada, **28th Annual Meeting of the American Association of Stratigraphic Palynologists**. Symposia, Technical Sessions, Posters, Field Trip. Details: Ms. Susan A. Jarzen, Canadian Museum of Nature, P.O. Box 3443, Station "D", Ottawa, Canada K1P 6P4, Fax: 1-613-954 4724.

1996 June 22-29, Houston, Texas, Ninth International Palynological Congress of the I.F.P.S., Symposia, Technical Sessions, Posters, Field trips. Details: Vaughn M. Bryant, Jr., Dep. Anthropology, Texas A. & M. University, College Station, Texas 77843-4352, Phone: 1-409- 845 5242; Fax.: 1-409- 845 4070. or John H. Wrenn, Center for Excellence in Palynology, Dep. Geology & Geophysics, Louisiana State University, Baton Rouge, LA 70803, U.S.A. Phone: 1- 504- 388 4683; Fax.: 1- 504- 388 2302.

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