

Commission Internationale de Microflore du Paléozoïque.

(6) - C.I.M.P. NEWSLETTER - DECEMBER, 1973.

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(texte français au verso)



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C.I.M.P. met on 12th to 15th September, 1973 at Boussens (Haute Garonne) in France, invited by Dr. S. JARDINE and the ELF Oil Company. Sixty attending members allowed these meetings to be a real great success. Indeed, we had 3 symposia, two of which were concurrently held on the thema "Acritarcha" (Convenor : S. JARDINE) on one hand, on the thema "Permian-Triassic" (Convenor : H. VISSCHER) on the other hand. These papers are in print by the "Review of Paleobotany and Palynology". The third thema concerned the general Paleozoic Palynology and cover merely Devonian and Carboniferous spore stratigraphy (Convenor : B. OWENS).

For the first time since CIMP past activities, the palynology of most Stages from Precambrian to Triassic were involved in these meetings.

The General Assembly held on the last day has accepted two modification of the CIMP Executive Committee : the Chitinozoa Subcommittee will be in hand of Dr. S. LAUFELD (Sweden) replacing Dr. A. COMBAZ (France); the Acritarcha Subcommittee will be in hand of Dr. VARVDOVA (Czechoslovakia) replacing Dr. S. JARDINE (France).

After the meeting two successful field trips were realised one in the Pyrénées and the other one at the "Montagne Noire near Béziers.

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Our next activities are scheduled as follow :

- Megaspore working group meeting (Taxonomical revision of Zonalesporites) in April 1974 at SOSNOWIEC in Poland.
- Stratigraphical palynology working group meeting on Dinantian/Namurian/Westphalian on one hand and Permian on the other hand in September 1974 at SOSNOWIEC in Poland.

These meetings due to special invitation by Dr. JACHOWICZ will accept a very small number of specialists - CIMP will be represented there by Drs. K. GUEINN (Dinantian), LACHKAR (Megaspores), LOBOZIAK (Megaspores, Westphalian), OWENS (Namurian), PIERART (Megaspores) and VISSCHER (Permian).

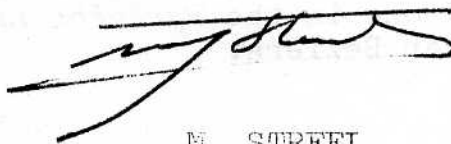
Dr. S. LOBOZIAK and Dr. B. OWENS are respectively in charge to maintain contacts with Dr. A. JACHOWICZ concerning the Megaspore meeting and the Dinantian to Permian stratigraphical meeting and should be directly contacted for any information on these meetings.

- Symposium on Ordovician and Silurian Chitinozoa, 17th-24th August, 1974 at VISBY (Gotland, Sweden), organized by Dr. S. LAUFELD.
- A Devonian Stratigraphical meeting in December 1974, at LEEDS (United Kingdom) to be organized by Dr. B. OWENS.

All these meetings intend to prepare our next General Assembly to be held at Moscow from 6 to 9 August 1975, just before the 8th International Congress on Carboniferous Geology and Stratigraphy.

12.12.1973

The Secretary General ,



M. STREEL

La C.I.M.P. s'est réunie du 12 au 15 septembre 1973 à Boussens (Haute Garonne) dans les locaux de la Compagnie ELF à l'initiative de M. S. JARDINE. Une soixantaine de participants ont fait de ces réunions un très grand succès. Il y eut, en fait, trois symposiums distincts dont deux se sont tenus en parallèle, d'une part sur le thème "Acritarches" (organisateur : S. JARDINE), d'autre part sur le thème "Permo-Trias" (organisateur : H. VISSCHER). Leur publication est assurée par la "Review of Palaeobotany and Palynology". Le 3ème thème concernait la stratigraphie du Paléozoïque (organisateur : B. OWENS).

On peut considérer que, pour la première fois dans les annales de la CIMP, la palynologie de chaque étage du Précambrien au Trias a été évoquée lors de ces réunions.

L'assemblée générale qui s'est tenue le dernier jour a consacré deux changements dans l'équipe d'animation de la CIMP : M. A COMBAZ (France) remplacé par M. S. LAUFELD (Suède) en ce qui concerne la sous-commission CHITINOZOAIRE, M. S. JARDINE (France) remplacé par Mme VARVDOVA (Tchécoslovaquie) en ce qui concerne la sous-commission ACRI-TARCHE.

Les réunions ont été suivies de 2 excursions très réussies, l'une dans les Pyrénées, l'autre à la Montagne Noire.



Nos prochaines activités sont prévues comme suit :

- Réunion du groupe de travail megaspore (Révision taxonomique du genre Zonalesporites) en avril 1974 à SOSNOWIEC (Pologne).
- Réunion du groupe de travail sur la palynologie stratigraphique du Dinantien/Namurien/Westphalien, et
- Réunion du groupe de travail sur la palynologie stratigraphique du Permien,

les 2 réunions en septembre 1974 à Sosnowiec (Pologne).

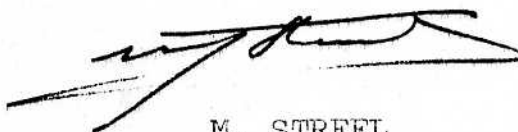
Ces 3 réunions, à l'initiative du Dr. Jachowicz, ne comprendront qu'un nombre très restreint de spécialistes, la CIMP sera représentée par MM. GUEINN (Dinantien), LACHKAR (Mégaspores), LOBOZIAK (Mégaspores, Westphalien), OWENS (Namurien), PIERART (Mégaspores) et VISSCHER (Permien). S. LOBOZIAK et B. OWENS sont respectivement chargés des contacts avec le Dr. JACHOWICZ pour l'organisation de ces réunions sur les Mégaspores et sur la Stratigraphie du Dinantien au Permien.

- Symposium sur les Chitinozoaires de l'Ordovicien et du Silurien du 17 au 24 août 1974 - à VISBY (Gotland, Suède) à l'initiative du Dr. S. LAUFELD.
- Une réunion préparatoire sur la stratigraphie du Dévonien en décembre 1974 à LEEDS (Grande Bretagne) à l'initiative du Dr. B. OWENS.

Toutes ces réunions ont pour but de préparer la prochaine assemblée générale de la CIMP qui se tiendra à Moscou du 6 au 9 août 1975 à l'occasion du VIII^e Congrès International du Carbonifère.

12.12.1973

Le Secrétaire Général,



M. STREEL

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10ème ASSEMBLEE GENERALE C.I.M.P.
SYMPOSIUM PERMIEN-TRIAS - SYMPOSIUM ACRI-TARCHES
BOUSSENS, 12 au 15 SEPTEMBRE 1973

LIST OF ATTENDING MEMBERS

MC. ADLOFF	France	G. LACHKAR	France
CY. BELSKY	France	S. LOBOZIAK	France
DC. BHARADWAJ	India	F. MARTIN de HEINZELIN	Belgium
M. BIENS	France	J. MEDUS	France
T. BJAERKE	Norway	P. MILLEPIED	France
D. CAMERON	Saudi Arabia	SJ. MORBEY	U.K.
JJ. CHATEAUNEUF	France	M. MOREAU	France
G. CLAYTON	U.K.	M. MORTIMER	U.K.
R. COQUEL	France	R. NEVES	U.K.
FH. CRAMER	U.S.A.	R. NEVILLE	U.K.
C. CRAMER-DIEZ	U.S.A.	NA. OTAZO-BOZO	Bolivia
M. DEL RIO	Italia	B. OWENS	U.K.
M. DOERENKAMP	France	G. PENIGUEL	France
CH. DOWNIE	U.K.	P. PIERART	Belgium
Mme DUCAZEAUX	France	R. RAUSCHER	France
CH. FELIX	U.S.A.	M. RAYNAUD	France
A. GANDIN	Italia	JB. RICHARDSON	U.K.
H. GORKA	Poland	W. RIEGEL	Germany
H. GREBE	Germany	B. SCHEURING	Switzerland
D. GRIGNANI	Italia	W. SCHUURMANN	The Netherlan
KJ. GUEINN	U.K.	DG. SMITH	U.K.
JW. HALL	U.S.A.	M. STREEL	Belgium
GFW. HERNGREEN	The Netherlands	J. TAUGOURDEAU	France
PJ. HILL	U.K.	A. VAN ERVE	The Netherlan
S. JACHOWICZ	Poland	M. VAVRDOVA	Czechoslovaki
M. JARDINE	France	J. VERNIERS	Belgium
R. KALVACHEVA	Bulgaria	H. VISSCHER	The Netherlan
G. KIESER	France	HS. WALTON	Canada
M. KONZALOVA	Czechoslovakia	G. WARRINGTON	U.K.

Visby, Gotland, 17th -24th August, 1974

As indicated in a letter earlier sent out to all workers on Chitinozoa, we have planned a symposium on Chitinozoa to take place in the isle of Gotland, Sweden, in late summer, 1974.

We have now fixed the dates for our symposium and decided on the topics to be dealt with and cordially invite you to participate.

The Symposium will take place in our field station at Allekvia, about 8 km east of Visby. The Symposium on palaeocope ostracodes will succeed us in Allekvia (26th - 31st August, 1974). The Symposium on the Ordovician System at Birmingham starts on the 17th of September, 1974. Overseas participants therefore have good possibilities to get the most out of their visit to Europe.

TOPICS: All aspects on Ordovician and Silurian chitinozoans.

PROGRAMME: The indoor meetings will start in the morning of the 17th August. Three full-day sessions will allow for about 25 half-hour presentations of scientific papers and discussions in connection with these. Five full-day field-trips on Gotland will give the participants some acquaintance with the classical Silurian succession of the island. Hence, it will be possible to get a representative collection of samples from the Late Llandoveryan through Ludlovian strata of this area.

PRESENTATION OF PAPERS: In agreement with IUGS policy (see enclosure), papers presented at this Symposium should have been published in any convenient serial publication not earlier than 15th June, 1973, or be accepted for publication in such a serial by 15th June, 1974. The latter date is the deadline for submission of short previews of the presentations, to be collected and reproduced by the organizers of the Symposium.

DISTRIBUTION OF THIS CIRCULAR: Circular No. 1 is distributed to all persons listed in the 1973 Directory of Workers on Chitinozoa. Please check the Directory earlier sent to you and inform us if there is some relevant person who is not listed.

ECONOMY: The participants are expected to pay their own travel and per diem expenses. The organizers will apply for public funds in order to eliminate the costs for administration.

DEADLINE FOR REPLIES TO THIS CIRCULAR : Please fill in the attached form and return it before end of December, 1973, to Sven Laufeld, Department of Historical Geology and Palaeontology, Sölvegatan 13, S-223 62 LUND, Sweden. Your reply is not binding.

NEXT CIRCULAR : Circular No. 2 will be distributed in Late December, 1973, and contain lists of persons interested to participate in the Symposium, topics of presented papers, time-table for the Symposium and advice regarding travel, accomodation, and per diem expenses. Circular No. 2 will only be distributed to persons who return the attached form.

Lund, September, 1973

For the Baltic-Scanian Silurian Project and the CIMP Chitinozoa Subcommission.

Sven Laufeld

EXTRACT OF THE IUGS POLICY FOR PUBLICATIONS PRESENTED AT SYMPOSIA

Symposia on primary results of research, such as "progress report symposia" and "Arbeitstagungen", should not necessarily result in the publication of a special symposium volume. Papers to be presented and discussed at such a symposium should be published in any convenient extant periodical not earlier than one year before the dead-line set for symposium contributions, or be accepted for publication in a convenient periodical before that date. The following technical premises for the symposium should then be considered:

(a) Papers to be considered for presentation at the symposium should be submitted to the organizer in the form of reprints, proofs or a manuscript copy, together with an abstract and the bibliographical reference to the complete printed paper.

(b) The Abstracts of papers accepted for presentation at the symposium, together with the bibliographical reference to the complete printed paper, should be reproduced by convenient methods by the organizer of the symposium for distribution among the participants. IUGS subsidies may be requested for this purpose in case the entire costs cannot be covered by participants' fees.

(c) Reprints or mimeographed manuscript copies which the author wants to distribute to the participants of the symposium should be submitted not later than two weeks before the session.

NOTE: For the SYMPOSIUM ON ORDOVICIAN AND SILURIAN CHITINOZOA this means that papers should be published or accepted for publication within the period 15th June 1973 - 15th June, 1974.

BALTIC - SCANIAN SILURIAN PROJECT/CIMP CHITINOZOA SUBCOMMISSION.

Please fill in (typescript or block letters) and return before end of December, 1973, to Sven Laufeld, Department of Historical Geology and Palaeontology, Sölvegatan 13, S-223 62 Lund, Sweden. Your replies are not binding.

I wish to attend the SYMPOSIUM ON ORDOVICIAN AND SILURIAN CHITINOZOA in Visby, Gotland, 17th - 24th August, 1974.

I wish to present a paper entitled:

Comments:

Family name:

First name(s)

Address:
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.....

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1973 DIRECTORY OF CHITINOZOA WORKERS

In order to make it possible to produce an up-to-date Directory, please keep me informed about changes of address and about news you may have regarding new Chitinozoa workers. The Directory has been compiled from returns of a questionnaire distributed in May, 1973. I will be most grateful if omissions, misspellings, etc., are pointed out to me. Further copies of this Directory may be obtained upon request.

Lund in August, 1973

Sven Laufeld
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6

LES SPORES

Secrétaires de Rédaction : B. ALPERN, M. STREEL

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670602	Les Chitinozoaires. Analyse bibliographique illustrée. [1967], 114 p., 11 pl. h.-t.	41,70
	Fascicule 2 COMBAZ A., CALANDRA F., JANSONIUS J., MILLEPIED P., POUMOT C., VAN OYEN F.H.	
670611	Les Chitinozoaires. Morphographie. [1967], 52 p., 5 pl. h.-t.	27,80
	Fascicule 3 DEUNFF J., MUIR M. et W.A.S. SARJEANT.	
710058	Acritarches	57,80
	Fascicule 4 H. GREBE et A.H.V. SMITH.	
710046	Spores	55,60
	Fascicule 5 Y. SOMERS	
720029	Spores	53,50

MONOLETE MIOSPORES OF THE PALAEOZOIC

by B. ALPERN and J. DOUBINGER

Monolete miospores occur at the end of the Palaeozoic and present their maximum in the Carboniferous. Laevigate forms appear first, then spores with variable ornaments - less diversified than in Triletes-develop. Their evolution with time is rapid and their ornamentation is an interesting feature for biostratigraphic zonations. The volume presented, owing to radical recasting of the systematic and correlative reduction of the number of species maintained, is quite in the line of the work of the CIMP.

LES MIOSPORES MONOLÈTES DU PALÉOZOÏQUE

par B. ALPERN et J. DOUBINGER

Les miospores monolètes apparaissent à la fin du Paléozoïque et connaissent leur maximum d'expansion au Carbonifère. Les formes lisses apparaissent les premières, puis viennent des spores chargées d'ornements variables, moins diversifiés que chez les Trilètes, mais évoluant rapidement avec le temps et constituant donc un caractère intéressant pour les zonations biostratigraphiques. Le travail présenté, par sa vigoureuse refonte de la systématique des Monolètes et la réduction corrélatrice du nombre des espèces retenues s'inscrit bien dans la tradition des travaux de la CIMP.

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 L. perminutus ALP. 1958.
 L. vulgaris (IBR. 1933) emend.
 L. maximus (LOOSE 1934) POT. et KR. 1956.
- Punctatosporites* (IBR. 1933, KRUTZSCH 1959) emend.
 P. punctatus (KOS. 1950) emend.
 P. minutus (IBR. 1933) emend.
 P. granifer (POT. et KR. 1956) emend.
 P. cingulatus (ALP. 1958), nom. nov. emend.
 P. rotundus (BHARD. 1957) emend.
- Torispora* (BAL. 1952, ALP. 1959, ALP. DOUB et HORST 1965) emend.
 T. securis (BAL. 1952) ALP. DOUB. et HORST 1965.
 T. laevigata BHARD. 1957.
 T. verrucosa ALP. 1958.
- Thymospora* (WILS. et VENK. 1963) emend.
 T. obscura (KOS. 1950) WILS. et VENK. 1963.
 T. thiessenii (KOS. 1943) WILS. et VENK. 1963.
 T. pseudothiessenii (KOS. 1950) emend.
- Spinospores* ALP. 1958.
 S. spinosus ALP. 1958.
 S. exiguus UPSHAW et HEDLUND 1967.
 S. peppersi (PEPPERS 1964) nom. nov.
- Striatosporites* BHARD. 1954.
 S. major BHARD. 1954.
- Columinisporites* PEPPERS 1964
 C. ovalis PEPPERS 1964.
 C. heyleri (DOUB. 1968) emend.
 C. peppersi nov. sp.
- Extrapunctatosporis* KRUTZSCH 1959
 E. fabaeformis (AGR. et AK. 1967) emend.
 E. microtuberosus AGR. et AK. 1967.

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3ème édition	Staplin	65	1
	Waltz		1
	Lüber		4
	Naoumova		28
4ème édition	Neves	8	-
	Jansonius	1	1
	Mc. Gregor	14	2
	Chaloner	2	-
	Bharadwaj	11	1
	Alpern	1	1
	Butterworth - Williams	2	-
	Taugourdeau-Lantz	4	-
	Kosanke	1	-
	Daugherty	1	-
5ème édition	Smith - Butterworth	6	4
	Balme - Spode	-	1
	Marshall - Smith	4	-
	Neves	17	-
	Neves - Owens	4	-
	Sullivan - Marshall	6	3
	Neville	3	-
	Neves - Dolby	1	6
Staplin	-	1	

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6th edition of colour transparencies of Paleozoic miospores by Y. SOMERS

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H : holotype, P : paratype.

Hy: hypotype, I : isotype

Except otherwise stated, dark lines on transparencies = 50 μ
 a [designate two different foci on a same specimen.

1	<i>Convolutispora circumvallata</i>	CLAYTON 1971	H	Tournaisian ?	U. K.				
2	<i>Propriisporites undosus</i>	"	H	"	"				
3	<i>Umbonatisporites distinctus</i>	BUTTERWORTH & SPINNER 1967	H	Visean	"				
4	<i>Lophotriletes plicatus</i>	"	H	"	"				
5	<i>Convolutispora planimuricata</i>	"	H	"	"				
6	<i>Dictyotriletes plumosus</i>	"	H	"	"				
7	<i>Orbisporis convolutus</i>	"	H	"	"				
8	<i>Lycospora rugulosa</i>	"	H	"	"				
9	<i>Tholisporites cumbriensis</i>	"	H	"	"				
10	<i>Raistrickia variabilis</i>	DOLBY & NEVES 1970	H	Upp.Dev.--Tourn.	"				
11	<i>Retusotriletes planus</i>	"	H	"	"				
12	<i>Biannulatisphaerites simplex</i>	NEVILLE in NEVES & al.1973	H	Tourn.--Visean	"				
13	<i>Acanthotriletes acritarchus</i>	"	H	"	"				
14	<i>Tricidarisporites arcuatus</i>	"	H	"	"				
15	" <i>magnificus</i>	"	H	"	"				
16	<i>Dictyotriletes fragmentimurus</i>	"	H	"	"				
17	<i>Ahrensisporites duplicatus</i>	"	H	"	"				
18	? <i>Rotaspora disjuncta</i>	"	H	"	"				
19	? <i>Rotaspora xenika</i>	"	H	"	"				
20	? <i>Stenozonotriletes mirabilis</i>	"	H	"	"				
21	<i>Colatisporites denticulatus</i>	"	H	"	"				
22	? <i>Apiculatisporis porosus</i>	WILLIAMS in NEVES & al.1973	H	Visean	"				
23	<i>Tripartites distinctus</i>	"	H	"	"				
24	<i>Triquitrites comptus</i>	"	H	"	"				
25	<i>Diatomozonotriletes fragilis</i>	CLAYTON in NEVES & al.1973	H	Namurian A	"				
26	? <i>Tholisporites decoratus</i>	GUEINN in NEVES & al.1973	H	Tourn.--Visean	"				
27	<i>Baculatisporites fusticulus</i>	SULLIVAN 1968	H	Tournaisian	"				
28	"	"	I	"	"				

29	<i>Raistrickia corynoges</i>	SULLIVAN 1968	H	Tournaisian	U. K.
30	"	"	I	"	"
31	<i>Schopfites claviger</i>	"	H	"	"
32	"	"	I	"	"
33	<i>Verrucosporites scoticus</i>	"	H	"	"
34	"	"	I	"	"
35	"	"	H	"	"
36	<i>variotuberculatus</i>	"	I	"	"
37	<i>Hymenozonotriletes ? hastulus</i>	"	H	"	"
38	"	"	I	"	"
39	<i>Knocisporites pristinus</i>	"	H	"	"
40	"	"	I	"	"
41	"	"	H	"	"
42	<i>Auroraspora macra</i>	"	I	"	"
43	"	"	H	"	"
44	<i>Lophotriletes linguaeformis</i>	BERTELSEN 1972	I	Upp. Tourn. or low. Viséan	Denmark
45	"	"	H	"	"
46	<i>Pustulatisporites multicapitis</i>	"	H	"	"
47	<i>Convolutispora turgida</i>	"	H	"	"
48	<i>densorugosa</i>	"	H	"	"
49	<i>Dictyotriletes membranireticulatus</i>	"	H	"	"
50	"	"	H	"	"
51	<i>Reticulatisporites copiosus</i>	"	H	"	"
52	<i>Cingulizonates sittleri</i>	"	H	"	"
53	<i>Knoxisporites gilletti</i>	DOUBINGER & RAUSCHER 1966	H	Viséan	France
54	"	"	H	"	"
55	<i>Foveosporites insculptus</i> Playf. var. minor	"	H	"	"
56	<i>Reticulatisporites camillae</i>	"	H	"	"
57	<i>Knoxisporites ruhlandi</i>	"	P	"	"
58	"	"	P	"	"
59	"	"	P	"	"
60	<i>Leiotriletes microgranulatus</i>	PLAYFORD 1962	H	Tourn.-Viséan	Spitsbergen
61	<i>Punctatisporites labiatus</i>	"	I	"	"
62	" <i>stabilis</i>	"	H	"	"
63	<i>Phyllothecotriletes rigidus</i>	"	H	"	"
64	<i>Waltzispora sagittata</i>	"	H	"	"
65	<i>Cyclogranisporites flexuosus</i>	"	H	"	"

66	Verrucosiporites gobbettii	PLAYFORD 1962	H	Tourn.-Visean	Spitsbergen
67	" eximius	"	H	"	"
68	"	"	I	"	"
69	Anapiculatisporites concinnus	"	H	"	"
70	" serratus	"	H	"	"
71	Convolutispora harlandii	"	H	"	"
72	" crassa	"	H	"	"
73	" labiata	"	H	"	"
74	" usitata	"	H	"	"
75	Dictyotriletes caperatus	"	I	"	"
76	Reticulatisporites peltatus	"	H	"	"
77	Foveosporites insculptus	"	H	"	"
78	Murospora friendii	"	I	"	"
79	Anulatisporites canaliculatus	PLAYFORD 1963	I	"	"
80	Densosporites diatretus	"	Hy	"	"
81	" rarispinosus	"	H	"	"
82	" variomarginatus	"	H	"	"
83	Cristatisporites echinatus	"	H	"	"
84	Lophozonotriletes variverrucatus	"	H	"	"
85	Monilospora triungensis	"	I	"	"
86	" dignata	"	I	"	"
87	Potoniespores delicatus	"	I	"	"
88	Diatomozonotriletes hughesii	"	H	"	"
89	" trilinearis	"	H	"	"
90	Radiales costatus	PLAYFORD 1964	H	Mississippian	Canada
91	Leiotriletes tortilis	"	P	Horton Group	"
92	Gulisporites torpidus	"	H	"	"
93	Retusotriletes avonensis	"	P	"	"
94	Granulatisporites crenulatus	"	H	"	"
95	Cyclogranisporites commodus	"	H	"	"
96	Verrucosisporites congestus	"	H	"	"
97	" nitidus(Naum.)	"	Hy	"	"
98	Convrrucosisporites parvinodosus	"	P	"	"
99	Anapiculatisporites hystricosus	"	H	"	"
100	" tersus	"	H	"	"
101	Apiculatasporites compactus	"	H	"	"
102	Pustulatisporites pretiosus	"	H	"	"

	PLAYFORD 1964	H	Mississippian Horton Group	Canada
103 Acanthotriletes hacquebardii	"	H	H	"
104 Spinozonotriletes conspicuus	"	H	H	"
105 Raistrickia abstrusa	"	H	H	"
106 " ponderosa	"	H	H	"
107 Schopfites augustus	"	H	H	"
108 Microreticulatisporites hortonsensis	"	P	"	"
109 Dictyotriletes admirabilis	"	H	H	"
110 Dictyotriletes submarginatus	"	H	H	"
111 Reticulatisporites cheveriensis	"	H	H	"

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New Working Groups on Systematic Revision

At the general assembly of the C.I.M.P. at Boussens last September the establishment of the following working groups on systematic revision has been announced:

- Working group Archaeozonotriletes, coordinator: B. Owens, Leeds
 Working group Vallatisporites, coordinator: G. Clayton, Sheffield
 Working group Hystricosporites (possibly including Ancyrospora)
 coordinator: W. Riegel, Göttingen

Palynologists considering to cooperate in any of these working groups by supplying material, contributing data or providing critical comment are invited to contact the respective group coordinator. A brief statement describing the scope of each working group will then be published in the next C.I.M.P. - Newsletter.

With regard to Permo-Triassic taxa it has been decided at the Boussens symposium that revision work should be initiated in the following broad groups:

Striatiti, Monosaccates, Cavates and Circumpolles.

Here, however, closer delimitation of scope and aims of effective working groups is necessary and currently being worked out. Their formal establishment will be announced at an appropriate time.

W. Riegel, Göttingen, November 10, 1973.

NOTE PRELIMINAIRE SUR LA REVISION DES ESPECES DU GENRE
ZONALESPORITES (IBRAHIM, A., 1933), POTONIE, R. et KREMP, G., 1954
 emend. SPINNER, E., 1965

par
 G. LACHKAR⁽¹⁾, St. LOBOZIAK⁽²⁾ et FIERART, P.⁽³⁾

RESUME

Les caractères systématiques du genre de forme Zonalesporites (IBRAHIM, A., 1933), POTONIE, R. et KREMP, G., 1954 emend. SPINNER, E., 1965 sont revus principalement sur la base des caractères de la corona.

Les espèces suivantes sont étudiées et retenues :

- Z. brasserti (STACH, E. et ZERNDT, J., 1931), POTONIE, R. et KREMP, G., 1956;
Z. anguitectus (BHARDWAJ, D.C., 1957), LACHKAR, G., LOBOZIAK, St. et FIERART, P., comb. nov.;
Z. mucronatus (NOVAK, J. et ZERNDT, J., 1936), LACHKAR, G., LOBOZIAK, St., et FIERART, P., comb. nov.;
Z. solidus (DIJKSTRA, S.J., 1971), LACHKAR, G., LOBOZIAK, St. et FIERART, P., comb. nov.;
Z. rotatus (BARTLETT, H., 1929), SPINNER, E., 1965;
Z. dentatus (ZERNDT, J., 1938), SPINNER, E., 1965;
Z. superbus (BARTLETT, H., 1929), KARCZWSKA, J., 1967.

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(3) Service de Palynologie, Université de Mons.

A C R I T A R C H A S Y M P O S I U M

Convenor: S.JARDINE

Boussens : 12th - 13th September 1973

Abstracts of papers to be published in

Review of Palaeobotany and Palynology ,Elsevier,Amsterdam.

Magda Konzalová

Geological Institute
Academy of Sciences
PRAHA 2 VINOHRADSKA 93 (Czechosl.)

Microfossils isolated with ordinary palynological methods and studied at the same time in thin sections of sedimentary rocks of the Late Precambrian /Upper Proterozoic/ and Cambrian complexes in the Central and West^{ern} Bohemia /Czechoslovakia/ will be discussed. They were gained from the sedimentary complexes of the classical region of Barrandian belonging to the great structure unit, the Bohemian Massif. The Upper Proterozoic complex of this area affected in a different degree with regional metamorphism is in the middle part overlain by non-altered, folded /unconformable/ Early Paleozoic. For the regional stratigraphic division of the Proterozoic rocks three groups are distinguished: the pre-spilitic, the spilitic and the post-spilitic groups. The last two, containing the lydites and greywackes were examined and spherical shales of single and clustered sphaeromorphic acritarchs and even acanthomorphic acritarchs were obtained. Some of them are comparable with sphaeromorphic acritarchs of Fusatia in GDR /East Germany/ and partly also with microfossils described from the Russian Precambrian. Systematically, some of them may be the representatives of the genus Salvisphaeridium Eis. /Archacohystrichosphaeridium Tim./, some of them represent new genera and species. The relatively advanced morphologic diversification may be the evidence of the Late Precambrian up to /Eocambrian/ age of some lithostratigraphic units of the Bohemian Precambrian. /By means of K-Ar analysis the highest absolute age of 647 million years has been established in the samples from the spilites./

For the sake of comparison, the Bohemian Cambrian (Middle Cambrian s.c. Acadian) - represented by Skryje and Jince - shales, the zones with trilobite fauna of Eccaparadoxides gracilis (Barr.) and Eccaparadoxides rugulosus (Barr.) - were studied. The acritarch assemblage is made up of relatively small specimens of the acanthomorphic acritarchs and is characterized by the missing of ooidians acritarchs and very very rare occurrence of diaerodians.

BRITISH CAMBRIAN ACRITARCHS

T. I. Potter

Department of Geology, University of Sheffield St George's Sq.
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A study of acritarch assemblages from a number of successions was undertaken in order to attempt a palynological characterization of sequences of known Cambrian age in England and Wales. In addition, two well preserved acritarch assemblages from the Middle Cambrian of north-west Spain were also examined. Seventy-two species and thirty-seven species types attributable to thirty-two genera were recorded, of which five genera and thirty-nine species are new.

The assemblages examined range in age from the Lower Cambrian Protolenid-Stremuellid Zone to the Upper Cambrian Parabolina Spinulosa Zone. Material from post Parabolina Spinulosa Zone successions did not yield acritarch assemblages, and no material from the Ollenid and Non-trilobite Zones was prepared.

The Lower Cambrian assemblages are dominated by species of the genus Micrhystridium Deflandre, but typically contain Baltisphaeridium oliosum Volkova and forms with a body wall divided into a number of polygonal plates by sutures.

The Middle Cambrian assemblages are characterized by the simple plate structured forms mentioned above, a fusiform species also possessing a body wall divided by sutures, and by species of the genus Granomarginata (Naumova) Volkova. Species of the genus Micrhystridium Deflandre are common and in the upper part of the Middle Cambrian a group of forms with a plate structured body wall bearing processes with branching terminations appear and become dominant.

A large number of taxa common in later Lower Palaeozoic assemblages first appear in the Upper Cambrian Olenus Zone, these include the genera Cymatogalea Deunff, Leiofusa (Eisenack) Combaz, Lange and Pensart, Veryhachium (Deunff) Downie and Sarjeant and Vulcanisphaera Deunff. The genera Dasydiacrodium (Timofeyev) Deflandre and Deflandre-Rigaud, Ooidium Timofeyev, and Polygonium Vavrdova are among those making their first appearance in assemblages from the Parabolina Spirulosa Zone. Species of the plate structured form bearing processes, and Staplinium cambriense Slavikova are common forms in most of the Upper Cambrian assemblages examined. Simple spherical forms are present throughout the Cambrian, many of them displaying an equatorial split.

A number of zones can be recognized based on the systematic study of the microflora. Comparison with the results of similar studies by other workers in Europe and the U.S.S.R. suggest that correlations of Cambrian strata may be possible over long distances. In addition, assemblages of acritarchs were obtained from otherwise more or less unfossiliferous successions in Snowdonia and the Malverns, which indicate the potential of micropalaeontology for dating problematic Cambrian successions in England and Wales.

Ch. DOWNIE - Acritarchs from near the Cambrian-Precambrian boundary.
(Univ. Sheffield)

Changes in the acritarch assemblages from the Precambrian into the Lower Cambrian allow a zonation which enables a correlation to be made between Russia, Norway, Scotland and Greenland. The most striking change is the appearance of acanthomorph acritarchs above the Cambrian base.

ETUDE PALYNOLOGIQUE DU CAMBRO-TREMADOCIEN
DE BELGIQUE ET DE L'ARDENNE FRANCAISE

Systematique et Biostratigraphie

Résumé de la thèse présentée à l'Université de Liège
pour l'obtention du grade de Dr. en Sciences géologiques
et minéralogiques

par M. VANGUESTAINE (*)

Le Cambro-Trémadocien est représenté en Belgique et en Ardenne française par des dépôts flyschoïdes qui se répartissent en trois unités lithologiques, de bas en haut : le Devillien, le Revinien et le Salmien. Une investigation palynologique poussée de ces terrains a été effectuée dans le but de préciser la position qu'ils occupent dans l'échelle stratigraphique internationale. Les résultats principaux qui découlent de cette investigation concernent 1. la systématique, 2. l'établissement d'une zonation palynologique, 3. les corrélations interrégionales et 4. les corrélations internationales avec des coupes datées du Cambro-Trémadocien.

1. L'étude systématique a conduit à distinguer 77 espèces d'Acritarches et de Tasmanacées se répartissant en 35 genres. Leur description a nécessité la création de 3 genres nouveaux Homodiacrodiium, Revinotesta et Timofeevia, de 24 espèces nouvelles, l'amendement de la diagnose générique des genres Alliumella, Impluviculus, Lophodiacrodiium, Polygonium et Staplinium, ainsi que la proposition de 10 combinaisons spécifiques nouvelles.
2. La reconnaissance d'associations naturelles de microfossiles a permis le découpage de l'intervalle sédimentaire Devillien supérieur - Salmien inférieur en 9 zones micropaléontologiques qui seront détaillées dans la publication faisant suite à la réunion de Boussens. (Espèces zonales d'Acritarches du Cambro-Trémadocien de Belgique et de l'Ardenne française")

(*) Paléobotanique et Paléopalynologie, Université de Liège, 7 place du XX Août, B - 4000 Liège, Belgique.

3. Des corrélations interrégionales ont conduit entre autres à clarifier la position stratigraphique des roches recoupées par un sondage profond de 3200 m : le sondage de Grand-Halleux. Les roches foncées les plus profondes sont reviniennes et disposées selon un pli couché.
4. Ainsi qu'il a été dit précédemment, l'objectif principal de ce travail fut la datation des terrains investigués. Leur âge était imprécis du fait de l'absence quasi totale de macrofossiles. On connaît toutefois, à la base du Salmien, un niveau à Dictyonema flabelliforme conduisant à la corrélation de ce niveau avec le Trémadocien Inférieur du Pays de Galles. Le Revinien et le Devillien sous-jacents étaient de ce fait rangés dans le Cambrien sans qu'il soit possible de déterminer à quelles séries de ce système correspondent ces deux unités lithologiques.

La figure 1 fournit les résultats d'une confrontation des diverses Zones à microfossiles avec les données micropaléontologiques provenant de coupes datées du Cambrien et du Trémadocien. Certaines de ces Zones, indiquées en hachuré, sont datées avec une précision suffisante; les autres, en blanc, le sont de manière moins précise.

Le problème que représente le Salmien supérieur de l'Est de la Belgique n'est pas abordé ici. Il constitue cependant un important chapitre de la thèse. L'intérêt de sa datation réside surtout dans la précision qu'elle apporte à l'âge du plissement calédonien de l'Ardenne.

Conclusion.

L'un des apports majeurs de cette thèse est de montrer que la quasi totalité du Cambrien est représentée en Belgique et en Ardenne française. Ce résultat intéresse non seulement la géologie d'Europe occidentale, mais aussi, la biostratigraphie du Paléozoïque inférieur, en ceci qu'est élaborée pour la première fois une zonation micropaléontologique du Cambrien utilisable à l'échelle internationale (1).

(1) Ch. DOWNIE a souligné durant l'assemblée de Boussens le parallélisme existant entre les zones palynologiques du Cambrien de Belgique et les diverses associations à Acritarches qui composent le Cambrien de Grande-Bretagne.

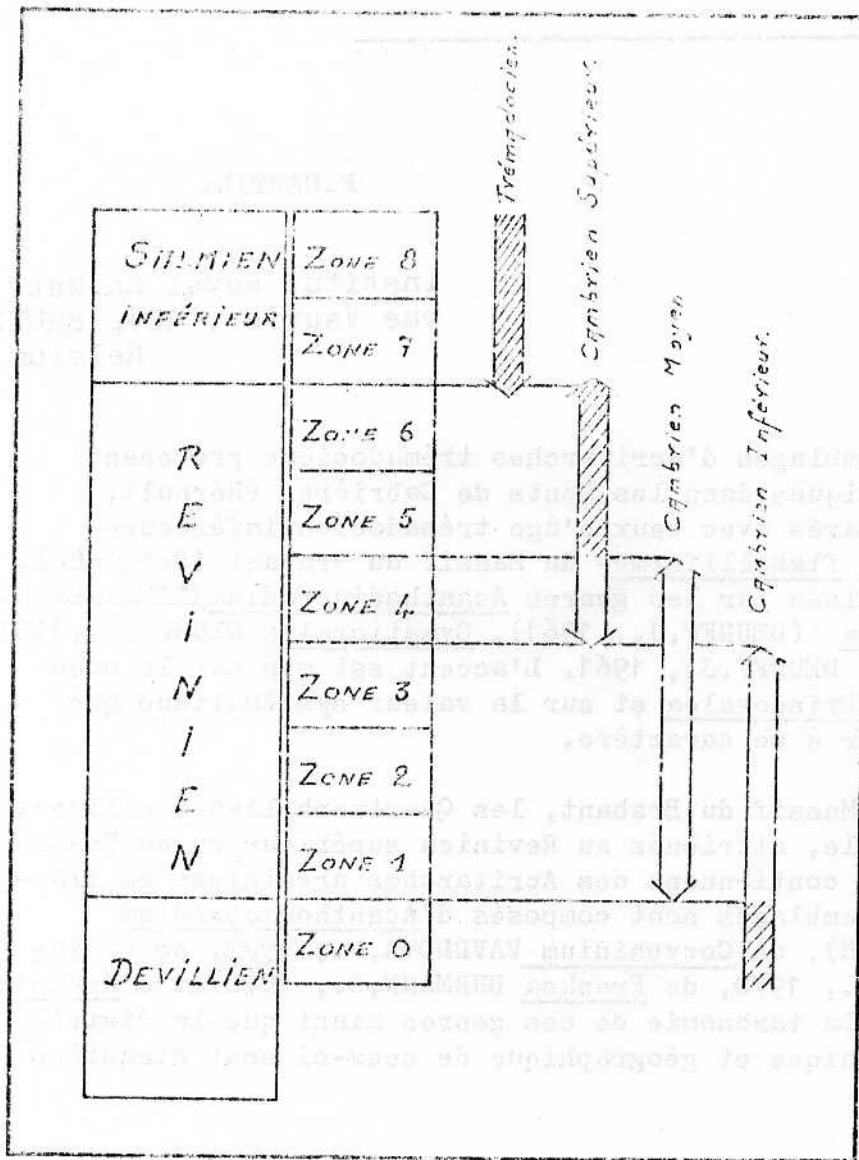


Figure 1 : Age du Devillien supérieur, du Revinien et du Salmien inférieur de Belgique et de l'Ardenne française d'après les corrélations biostratigraphiques indiquées par les microfossiles.

(HERAULT, FRANCE) ET DU MASSIF DU BRABANT (BELGIQUE).

F. MARTIN.

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Des assemblages d'Acritarches trémadociens provenant d'écaillés tectoniques dans les Monts de Cabrières (Hérault, France) sont comparés avec ceux d'âge trémadocien inférieur-zone à Dictyonema flabelliforme du Massif du Brabant (Belgique). Ils sont caractérisés par les genres Acanthodiacrodium (TIMOFFEV, B., 1958), Priscogalea (DEUNFF, J., 1961), Cymatiogalea DEUNFF, J., 1961 et Vulcanisphaera DEUNFF, J., 1961. L'accent est mis sur le mode de déhiscence de Priscogalea et sur la valeur systématique que l'on peut accorder à ce caractère.

Dans le Massif du Brabant, les Quartzophyllades siliceux de Villers-la-Ville, attribués au Revinien supérieur ou au Trémadocien supérieur, contiennent des Acritarches arénigiens ou llanvirniens. Les assemblages sont composés d'Acanthodiacrodium (TIMOFFEV, B., 1958), de Coryphidium VAVRDOVA, V., 1972, de Striatotheca BURMANN, G., 1970, de Frankea BURMANN, G., 1970 et d'Arkonina BURMANN, G., 1970. La taxonomie de ces genres ainsi que la distribution stratigraphique et géographique de ceux-ci sont discutées.

Les Acritarches de l'Ordovicien en France

par R. RAUSCHER, Maître-Assistant (Université L. Pasteur,
rue Blessig, Strasbourg)

Sommaire - Différents assemblages d'Acritarches ordoviciens provenant de diverses régions françaises (Montagne Noire, Normandie) sont présentés et comparés aux assemblages décrits à l'étranger. Un schéma de distribution stratigraphique est proposé.

R. Kalvacheva and A. Chobanova

(Summary)

The population studied consists of acritarchs, obtained from a rock sample, taken from the Balkan Mountains, 32 km to the north of Sofia. It comes from the quartzite beds of the Rebrovo Group (800 m thick). The Group builds up the core of the Late Alpine Svoge anticline. Sparse graptolitic and trilobitic fauna is found in several localities which makes possible to date the Group as Ordovician (Haberfelner und Boncev, 1934; Spasov, 1968). The age of the quartzite beds, which occupy the lower 250 m of the Group, has been determined Lower Llanvirian, but the presence of Tremadocian has been suggested (Spasov, 1968).

The palinological study of the quartzite beds indicates that they are rich in acritarchs (Kalvacheva, 1972). The assemblages found exclude the possibility of a Tremadocian presence. They are closest, in relation to species composition, to the assemblages established in the Upper Arenigian - Lower Llanvirian in Belgium (Martin, 1968).

Veryhachiids of a quadrangular outline of the central body are one of the main components of the microplankton assemblages in the quartzite beds. The Bulgarian representatives, just as the quadrangular veryhachiids from Belgium (Martin, 1968) show a marked variability of the sparse features on which the separate species are based. Owing to this, we faced taxonomic difficulties which called for the use of quantitative methods. The abundant material at our disposal, although not very well preserved, made it possible to undertake a biometrical investigation.

A previous paper (Kalvacheva and Chobanova, 1973) deals with a population, consisting of quadrangular veryhachiids, with a size of the central body from 4 to 28.4 μ . In accordance with taxonomic

practice so far, this species could be classified as *V. lairdi* 38. (Defl.), 1946, *V. valiente* Cramer, 1964 and *V. minutum* Downie, 1953. The biometrical analysis show that *V. lairdi* and *V. valiente* belong to the same statistical population, and, hence, are a single species. We combine this two species in one, by the name *V. lairdi*. It is markedly variable. The specimens, referred to *V. minutum*, form a separate statistical population. It is a well-differentiated independent species which manifests no lesser variability than *V. lairdi*. The vast variability in the outlines of the central body, the nature and the length of the processes emerged in the course of the study of the small specimens, included in this paper. In spite of this, only the variability of *V. lairdi* is the object of the statistical analysis, while the variability of *V. minutum* seems to be disregarded. The reason for this is the fact that the measurements effected with an ordinary micrometric eyepiece proved insufficiently precise in respect to these small objects. The accumulations in the histograms and the correlation table clearly indicate that the measurements of *V. minutum* are not suitable for further statistical treatment. (Kalvacheva and Chobanova, 1973, Figs 2 and 3).

One-hundred specimens of *V. minutum*, with sizes of the central body, ranging from 3.0 to 10.2 μ , have been measured with the aid of a screw micrometric eyepiece for this paper. The statistical analysis indicates that the precision of the measurements is satisfactory this time. This provides an opportunity ~~void~~ in the previous paper by the authors to be filled.

The following four features have been measured: length of the processes, length (L), width (l) and waist (w) of the central body. Only the L and w will be discussed in this paper. The other two parameters have been neglected for the following reasons: the processes are partially broken off or are fully lacking in some

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One-hundred specimens of *V. minutum*, with sizes of the central body, ranging from 3.0 to 10.2 μ , have been measured with the aid of a screw micrometric eyepiece for this paper. The statistical analysis indicates that the precision of the measurements is satisfactory this time. This provides an opportunity ~~void~~ in the previous paper by the authors to be filled.

The following four features have been measured : length of the processes, length (L), width (l) and waist (w) of the central body. Only the L and w will be discussed in this paper. The other two parameters have been neglected for the following reasons: the processes are partially broken off or are fully lacking in most

the specimens studied; the results obtained for L are similar to those for l. The parameter w proved to be the most suitable for statistical processing, because it is fixed best and is measured with the highest precision.

Along with the measurements taken, the specimens are divided into three groups: (1) specimens having straight or slightly inflated sides of the central body (v); (2) specimens with strongly waisted sides (a), and (3) specimens transitional between the two groups (t). Each morphotype is marked with the corresponding letter in the text and the sketches of the drawings enclosed herewith. The length of the processes in all three types ranges from 1 to 2 $\frac{1}{2}$ up to an exceeding L.

The following statistical operations have been effected: determination of the functions of distribution, Student's and Fischer's tests, a correlation analysis and a regression analysis.

The mathematical analysis shows the following:

(1) The 100 specimens studied, irrespective of a considerable variability in the morphology, form a single statistical population;

(2) The distribution is normal (Fig.1);

(3) There exists a strong dependence between the L and w features (Fig.2).

(4) A trend towards a grouping of the three morphotypes in different parts of the correlation table is observed.

(5) The growth is isogonic.

Conclusion: The 100 specimens studied are referred to a markedly variable species - *V. minutum* Downie, 1958. They form a continuous morphoserries. Its final members - the straight-sided (v) specimens and the strongly waisted (a) specimens are clearly differentiated in the correlation table. They occupy the peripheral

of the empirical area.

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List of Taxa Identified up to March 1973
in the West Balkan (Bulgaria)

I. Quartzite beds (Upper Arenigian - Llanvirian) of the
Rebrovo Group

§ + <i>V.lairdi</i> (Defl), 1946	. very abundant
· (I refer here and <i>V.valiente</i> Cramer, 1964)	
§ + <i>V.minutum</i> Downie, 1958	very abundant
§ <i>V.sartbernardense</i> Martin, 1965	rare
§ <i>V.trispinosum</i> (s.lat)	rare
& <i>Dicrodiaerodium</i> cf. <i>normale</i> Burmann, 1966	very rare
§ <i>Baltisphaeridium</i>	abundant
§ <i>Micrhystridium</i>	abundant
§ <i>Leiosphaeridium</i>	common
& <i>Cymatiosphaera</i>	very rare

II. Quartzite beds (Upper Llanvirian or younger) of the
Diabase-Phyllite Group

§ <i>V.lairdi</i> (Defl), 1946 (plus <i>V.valiente</i>)	rare
§ <i>V.trispinosum</i> (s.lat)	very abundant
& <i>Acanthodiaerodium</i> cf. <i>prismaticum</i> (Dff) Martin, 1968	very rare
§ <i>Baltisphaeridium</i>	abundant
§ <i>Micrhystridium</i>	abundant
§ <i>Leiosphaeridia</i>	common

§ - Published name only in Kalvacheva, 1972; + - Published drawings in Kalvacheva and Chobanova, 1973; &- No published.

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by

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We present a range-chart of over three hundred pre-Carboniferous species of the acritarch general Actopilion (1 species), Aramoricanium (8), Asketopalla (1), Baltisphaeridium (63), Cymatiogalea (16), Eisenackidium (6), Estiastra (5), Florisphaeridium (4), Goniosphaeridium (15), Gracilisphaeridium (1), Hemibaltisphaeridium (1), Hystriospheridium (3), Multiplicisphaeridium (146), Orthosphaeridium (8), Pezteinosphaeridium (22), Polyancistrodorus (1), Pulvinosphaeridium (3), Tunisphaeridium (3), Tylotopalla (6), and Vulcanisphaera (5).

Using as point of departure data from hundreds of localities with, essentially, Middle Silurian acritarch assemblages, logical constraints on the composition of these assemblages as they can be inferred from geological information, are discussed. We infer that the regional composition of coeval acritarch spectra was primarily temperature controlled, and only secondarily determined by such factors as abnormally high or low salinity, turbulence, etc. We furthermore conclude that acritarch spectrum provincialization is the rule rather than the exception in the Lower Paleozoic and we present a palynological province model for the Wenlockian, which is based on hundreds of sample localities, and also a tentative one for the Lower Ordovician.

There is not always a perfect match between our palynological province model and observed palynofacies, the geotectonic implications of which are discussed in some detail and summarized in the conclusions.

Microplankton from the Upper Emsian and Eifelian of the Rhineland, Germany - A preliminary report.

by W. RIEGEL^(*)

(*)Geologisch-Paläontologisches Institut der Georg-August-Universität, Berliner Strasse, 28, D - 34 Göttingen, Deutschland.

Mikroplankton assemblages, which have been encountered during spore studies in the fully marine, but largely terrigenous beds of Upper Emsian and Eifelian age in the Rhineland, are generally poor in species diversity and frequency. They deserve some attention, however, because of their good stratigraphic control in connection with the Emsian-Eifelian type region and their close association with diversified spore floras. As an initial survey the major forms are described and their distribution indicated. Some paleoecological considerations are added and comparisons made with equivalent microplankton assemblages from other areas, as well as younger assemblages from the Rhineland (Upper Devonian, Prüm syncline).

ZONES D'ACRITARCHES DANS LE PALEOZOIQUE DU SAHARA ALGERIEN

par S. JARDINE, A. COMBAZ, L. MAGLOIRE,
G. PENIGUEL et G. VACHEY

Les acritarches sont nombreux et caractéristiques sur l'ensemble de la série paléozoïque du Sahara. Une range-chart résume l'extension stratigraphique connue de 170 formes typiques sélectionnées dans une série stratigraphique synthétique. Cette succession est composée à partir des données sur 3 régions : Bassin d'Illizi-Tinrhert, Province Nord Occidentale et Province Nord Orientale. La zonation n'est pas fondée uniquement sur les acritarches mais tient compte des associations de spores et de Chitinozoaires. 23 zones principales ont été déterminées entre le Trémadocien inférieur et le Strunien à *H. lepidophytus*. Leur valeur est inégale car la densité des données est proportionnelle à l'intérêt pétrolier attaché aux séries. Il ne s'agit donc pas d'une zonation continue et exhaustive mais d'un schéma utile. Les microplanktons sont particulièrement riches et typiques dans l'Ordovicien inférieur, le Silurien, surtout le Ludlow et le Dévonien moyen et supérieur.

STRATIGRAPHIC PALYKOLOGY OF ACRIARCHS FROM THE TYPE AREA OF THE
LLANDOVERY AND THE WELSH BORDERLAND

by - PAUL JOHN HILL - Division of Biological and Earth Sciences
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SUMMARY

70 species and varieties of acritarchs are recorded from the type area of the Llandoverly in Wales; 106 are recorded from the Llandoverly and Lower Wenlock succession of the Welsh Borderland. 59 species and varieties are common to both areas.

The succession in the type area is divided into four assemblage zones (1to4) and the Welsh Borderland succession is divided into four assemblage and one sub-assemblage zone(s) (2to5a). A stratigraphic correlation of the two areas is presented based on the relative incomings and outgoings of selected acritarch species. This indicates that the basal sequence in the Welsh Borderland corresponds to the upper part of assemblage zone 2 of the type area which is Idwian (Middle Llandoverly) in age.

With the aid of a "best fit" correlation curve, other horizons in the two areas are equated.

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The Stratigraphic distribution
of the acritarchs in the Ludlow
succession at Ludlow

Range charts for the acritarchs of the Ludlow succession were presented. They show the ranges of 84 species present. A conspicuous change takes place in the Lower Elton Beds where Estiastra and Pulvinosphaeridium die out. Progressive changes take place throughout and there is a dramatic reduction in the variety of the assemblages as the end-Silurian regression develops.

45.

Micropalaeontology of Devonian sediments from a Borehole
in Oxfordshire, England

B Owens¹, C Downie² and M J Reynolds¹

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As part of its programme to delimit the size and extent of the recently discovered Oxfordshire Coalfield, the Institute of Geological Sciences has recently drilled a deep borehole at Steeple Aston. In addition to proving a thick Upper Westphalian sequence, over 190 metres of Devonian sediments were encountered. Micropalaeontological examination of these sediments has yielded new information on the Upper Devonian miospore, acritarch and conodont assemblages from this part of England. The miospore assemblages which are dominated by representatives of Retusotriletes, Geminospora, Ancyrospora, Hymenozotriletes and Archaeozotriletes suggest an upper Frasnian age, the acritarch assemblages which are rich in Verhachium, Micphystridium and Cymatiosphaera, suggest a Frasnian or more probably lower Famennian age. The evidence obtained from the limited number of conodont assemblages independently supports a Frasnian-Famennian boundary age.

"Quelques Acritarches du Famennien de Pologne"

par H. GORKA (*)

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Résumé.

Les concrétions calcaires trouvées dans les calcaires de la région des Monts de Sainte Croix, Pologne), dont l'âge a été fixé comme Dévonien supérieur (Famennien), contiennent des microfossiles en bon état de conservation, appartenant aux Acritarches, Radic Spores et Conodontes.

Les Acritarches sont représentés par les familles suivantes : Acanthomorphitae, Polygonomorphitae, Netromorphitae, Herkomorphitae, Pteromorphitae et Prismatomorphitae.

Parmi les Herkomorphitae et les Prismatomorphitae on a décrit de nouvelles espèces : Cymatiosphaera polonica n.sp. et Polyedrix lagoviensis n.sp.

On a tiré des conclusions concernant leur répartition stratigraphique ainsi que leur palécécologie.

The stratigraphical utilization of some Silurian and Devonian
microfossils in the eastern part of the Silesian Massif

Abstracts

John H. Bristow

Abstracts. Some of the indications of massive spore beds are
briefly outlined and fifty new spore forms are listed as follows:

6th SEMINAR ON SILURIAN-SILESIA SPORE STRATIGRAPHY

Abstracts, Poland and western France and Spain, Hellenic and British

Convenor: B. OWENS

Boussens : 14th September 1973

Abstracts on an inter-regional basis in the Silesian Massif

Abstracts of papers to be published in different journals

Abstracts approximately 10 x 15 cm of general interest

Abstracts and their stratigraphical subdivisions are as follows:

Abstracts, Boussens (1973) detailed 19 spore complexes through the

Silesian - Devonian - Permian of the Russian Massif and the

conclusion has not been reached inter-regionally.

Abstracts of papers, published in the Silesian Massif

Abstracts, Poland, France, Spain, Hellenic and British

Abstracts in the Silesian Massif, Poland, France, Spain, Hellenic and British

Abstracts, Poland, France, Spain, Hellenic and British

Abstracts, Poland, France, Spain, Hellenic and British

Silesian
Dinantian
Devonian
Silurian

The stratigraphical utilization of some Silurian and Devonian
miospore species in the northern hemisphere: an attempt at a
synthesis.

John B. Richardson (*)

Abstract. Some of the limitations of assessing spore data are briefly outlined and fifty one spore taxa are plotted on three range charts which cover spore sequences in north Africa, Canada, Scotland, England and Wales, France and Spain, Belgium and Germany, Poland, Vespitsbergen, and the Russian platform. From this data, fifteen major spore floral assemblages are tentatively erected which are recognizable on an inter-regional basis in the interval from Llandoveryan to uppermost Devonian (lower Tournaisian, lower Tn lb) and representing approximately 70 m.y. of geological time. Regionally much finer stratigraphical subdivision has been achieved, for example, Naumova (1953) detailed 19 spore complexes through the Givetian - Frasnian - Famennian of the Russian Platform but so far such precision has not been reached inter-regionally.

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Geological survey, Brussels.

Siegenian and Emsian spores from marine Facies in Belgium

N. OTAZO-BOZO and M. STREET

(to be published by the "Annales de la Société géologique de Belgique")

Several Lower Devonian marine profiles, well dated by invertebrate fossils (mainly brachiopods) on both the North and the South side of the Dinant basin (Belgium) contain spores and acritarcha. Acritarcha will be studied in another paper. Spores have been observed from the following beds (except Winenne), the stratigraphical position being compared to those beds from the Eifel region.

	South side of Dinant basin	North side of Dinant basin	Eifel	
	=====		=====	
COUVINIAN	Bure		Heisdorf	<u>EIFELIAN</u>
EMSIAN	Hierges (Winenne)	Burnot	Wetteldorf (Ems quarzit)	EMSIAN
	Vireux	Wepion	Klefer	
	Pesches		Stadtfelder	
SIEGIAN	Petigny			
	St. Michel			
	Anor			

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Special attention have been made to ornamented and "zonate" spores due to their less doubtable stratigraphic value.

Clear evidence of Emphanisporites evolution from the Anor beds (lower part of Siegenian) to Burnot beds (upper part of Emsian) is demonstrated : occurrence of E. rotatus altogether with small ornamented Emphanisporites in Anor and St Michel beds (lower and middle Siegenian); E. erraticus is also present; first occurrence of E. annulatus in Pesches beds (Lower Emsian) that goes up to the Burnot (Upper Emsian).

The Brochotriletes-Dictyotriletes spores are present from Anor to Petigny beds (Siegenian) but rare to absent in the Emsian beds.

The first "zonate" spore happened to be found in St Michel beds (Middle Siegenian). It is a rather primitive, weakly or not ornamented forms; the first obviously ornamented "zonate" spore has, so far, been found in the Hierges beds (upper part of Emsian) altogether with the first spores with bifurcated appendage (Ancyrospora).

Several histograms have been made to establish any possible variation of assemblages size in relation to time and rock types. But no remarkable differences in size were founded. During all Siegenian to middle Emsian beds the modal size seems to be under 45 microns with predominance of 30 to 40 microns modal size. Nevertheless a obvious increase in size is observed in the upper Emsian beds with the occurrence of big zonate and "Hystricospore" forms.

Sorting effect in marine currents has probably altered the original picture of size of these assemblages.

Top of Pusillites-Lepidophytus zone in three sections dated with Conodonts from Western Germany.

M. STREEL (*)

(to be published by the Belgian Geological Survey, in 1974)

The three sections are : OESE, described by PAPROTH; SEILER, a new trench, now filled made by LEUTERITZ and ZIEGLER; STOCKUM, two new trenches, now filled made by WALLISER. Logs and conodonts data from these authors are not yet published.

Data from OESE show ten meters of Hangenberg Shales with the typical PLs 2 assemblage of spores separated by a gap from the succeeding 15 meters of Hangenberg Sandstone, the top of which carry a Protognathodus Fauna. The upper half of these Sandstones contains rather poor spores assemblages with murornated spores from the complex "Convolutispora, Corbulispora, Dictyotriletes". H. lepidophytus and V. pusillites are also present but much less abundant than in the Hangenberg Shales. The gap between Hangenberg Shales and Hangenberg Sandstone and the paucity of spores assemblage from the last one do not allow a more precise study of the limits in the spore zonation of that section.

The new data from SEILER concern only a sequence of five meters of sediment the top of which is dated by a succession of a Protognathodus Fauna and the Siphonodella sulcata zone. Samples from the level of the Protognathodus Fauna and from three meters below also carry a murornated spores assemblage very similar to the Hangenberg Sandstone assemblage from Oese.

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The new data from STOCKUM allowed us to examine for the first time in a same section the contact between the pusillites-lepidophytus zone and the more recent murornated spores assemblage. This contact occurs in both trenches a few meters below the Stockumer Kalk where the Protognathodus Fauna has been originally defined.

Therefore we now believe that the PLS 3 assemblage earlier described at Stockum (See Paproth and Streel, 1971, p. 381 and Fig. 1 and 3) and containing Dictyotriletes trivialis and H. explanatus with V. pusillites, H. lepidophytus and H. famenensis must now be considered as belonging to the Trivialis-Explanatus ^{PLS 3} assemblage. Indeed the murornated spores are dominant in this assemblage as they are in the assemblage occurring a few meters below the Protognathodus Fauna in the new trenches. We now consider the joint occurrence of H. explanatus and the murornated spores as marking the base of our Trivialis-Explanatus assemblage which base, consequently, is located below the Devonian/Carboniferous junction.

		<i>Paproth and Streel</i> 1971.		<i>Present paper.</i>		
		<i>Trivialis - Explanatus</i> ass.		<i>Trivialis - Explanatus</i> ass.		
Tn1b	<i>Pusillites - Lepidophytus</i> a.		3 (Stockum)	<i>Pusillites - Lepidophytus</i> a.		
		upper	2 (Oberöd.)		upper	2
			1			1
Tn1a		middle		middle		

----- not in succession
in a same rock sequence.

- a. H. lepidophytus, V. pusillites
H. famenensis.
b. V. nitidus.
c. Murornated spores.
d. H. explanatus.

by

K. J. Gueinn(*)

SUMMARY

The records of western European Dinantian miospores are concentrated in two main regions, the British Isles and the Ardenno-Rhenish basins of France, Belgium and West Germany. Of the records from the British Isles, those from south-west England, south Wales and southern Eire are generally restricted to the Devonian-Carboniferous transition measures, whereas those from northern England and the Midland Valley of Scotland range in age from Upper Tournaisian to Namurian. In the Ardenno-Rhenish basins the assemblages recorded are also only from the Devonian-Carboniferous transition measures.

Palynological zonations for the British Isles and the Ardenno-Rhenish basins have been proposed by Neves et al 1972, slightly modified subsequently by Clayton et al (in press) and Paproth and Streel (1970), emmended by Streel (in press) respectively. By comparison of the ranges of the stratigraphically significant miospore species on which these schemes are based correlations between the Devonian-Carboniferous transition measures in the two regions can be made.

The lowest assemblages from the Verrucosisporites nitidus-Vallatisporites vallatus (NV) Zone of the British Isles are characterised by the association of V. nitidus, H. lepidophytus and V. pusillites. This is also typical of the Vallatisporites pusillites-Hymenozonotriletes lepidophytus superieur (PLs) Zone of Streel (in press), (PLs 1 and 2 of Paproth and Streel 1970).

The relationships of the miospore zones proposed by Neves et al (1972) from Northern England and the Midland Valley of Scotland to other methods of zonation of the British Dinantian are reviewed in the light of further work and suggestions made as to their equivalence to the Belgian standard sequence.

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by

B. Owens, Geological Survey of Great Britain,
Ring Road Halton, Leeds LS 15 8TQ, Great Britainto be published in Geological Survey of Great Britain,
Bulletin.Summary

Detailed investigations of Westphalian and more recently Dinantian miospore Assemblages in Western Europe, especially in the British Isles, have enabled the recognition of miospore associations which facilitate the establishment of miospore zonal schemes for these series. Relatively little in comparison is known of the Namurian from published records.

The succession of Namurian rocks in Northern England has offered excellent opportunities for the study of miospore associations from sediments of both block and basin facies. Several sections have been investigated as part of a joint project carried out by the Institute of Geological Sciences and the University of Sheffield. Each section examined was treated as a separate entity and possible zonal subdivisions were established for each local example. The current work attempts to co-ordinate all of these individual studies in to a regional synopsis which will be utilised to establish a formal series of miospore zonal subdivisions for the British Namurian. It is proposed where possible to integrate the results obtained into the framework of the existing goniatite zonal scheme by the study of the proposed stratotype sections for the Namurian and to incorporate of all other available macro- and micropalaeontological data from the local sections.

Preliminary results clearly indicate that zonal subdivision is possible although it is evident that the boundaries which are established are unlikely to coincide with existing goniatite boundaries. Major compositional changes in the assemblages are rare, the observable changes which do take place are the result of progressive replacement of specific elements. The miospore assemblages which characterise the uppermost Visean deposits continue more or less unchanged into the lower part of Namurian A with genera such as Acanthotriletes, Tricidarisorites, Microreticulatisporites, Rotaspora, Tripartites, Grandispora, Remysporites, Rugospora and Schulzospora all being commonly represented. The upper part of Namurian A (E₂) marks the time when those typical upper Visean and lowermost Namurian A forms progressively begin to die out, to be replaced by a whole range of characteristic Namurian forms. In the upper part of Namurian A characteristic miospore associations begin to emerge i.e. the assemblages from the E₂^b subzone are characterised by containing Crassispora kosankei (in small numbers), Bellisporites nitidus and Remysporites magnificus. Amongst the new forms to appear in the upper part of Namurian A are typical Namurian forms such as Ibrahimisporites, Mooreisporites and Proprisporites together with characteristic Namurian representatives of the genus Knoxisporites i.e. K. semi-radiatus and K. dissidius.

The base of Namurian B is readily defined by the incoming of large numbers of Crassispora kosankei, below this horizon it is known only as an infrequent component of the assemblages. This horizon is also marked by the disappearance of many of the typical Namurian A forms. Representatives of the genus Spelaeotribetes form a significant part of Namurian B and C assemblages and are frequently accompanied by representatives of the Vallatisporites complex, Ceratiradites rarus, Krauselisporites spp. and Secarisporites spp.

Namurian C assemblages are broadly similar to those encountered in Namurian B but new elements do appear such as Dictyotriletes varioreticulatus, Camptotriletes superbus, Proprisporites rugosus and Schopfipollenites ellipsoides var corporeus. This period represents a transitional phase with many typical Westphalian forms beginning to appear and replace the Namurian forms as they die out. Large and as yet undescribed complexes of forms which may be assigned to the Tricuitrites - Ahrensiporites group are characteristic components of this period.

Considérations palynologiques sur le Westphalien
d'Europe occidentale par S. Loboziak (*)

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Résumé

Les bassins houillers d'Europe occidentale pour la plupart ont fait l'objet, ces dernières années, de travaux palynologiques de synthèse dans lesquels ont été mis en évidence des zones biostratigraphiques.

Un premier tableau montre les résultats obtenus dans les bassins ou groupes de bassins suivants : Grande-Bretagne (Smith et Butterworth 1967), Nord - Pas-de-Calais (Loboziak 1971 et Coquel, travail en cours), Campine (Somers 1971), Ruhr (Grebe 1971), Sarre-Lorraine (Alpern, Choffé, Lachkar et Liabeuf 1969), Camocha Mine, Gijon (Neves 1964) et enfin Asturies centrales (Châteauneuf 1973).

Les zonations constituées, bien que tenant compte pour une grande part de phénomènes locaux, sont assez proches les unes des autres. On y découvre une succession d'événements qui montrent une évolution parallèle.

C'est cette succession qui a été recherchée et mise en évidence de manière à définir, pour la région considérée, des unités palynologiques communes qui puissent être appliquées au problème du contenu et des limites des assises du Westphalien et également à celui des corrélations avec l'ensemble des bassins houillers.

Le souci pour ce travail a été de faire un choix dans la masse des spores décrites et figurées. Un second tableau donne l'extension des genres et espèces retenus. Il comporte 16 colonnes de microspores distinctes, parfaitement connues et dont la détermination ne prête à aucune contestation. Des niveaux repères synchrones (niveaux marins et tonsteins) ont permis de situer, de manière relativement précise, la biozone et les stades de variations des taxons considérés.

La répartition tant qualitative que parfois quantitative de ces taxons a donné la possibilité de découvrir, dans le Westphalien, 7 zones délimitées par des axes qui correspondent aux variations les plus notables. Ces zones se présentent comme suit :

- une zone inférieure numérotée 0 qui se caractérise par la présence, aux côtés des formes courantes, telles Lycospora, Densosporites, Crassispora etc ... de 3 espèces présentes déjà au Namurien supérieur : C. loricatus, S. rara, et P. sinuatus,
- une zone I dont la limite inférieure est marquée par la base de l'épibole des Florinites et Laevigatosporites, et celle de la biozone des Punctatosporites qui deviennent très vite abondantes en Grande-Bretagne et dans la Ruhr. Cette zone se divise en 2 sous-zones qui se différencient par la présence, dans la sous-zone inférieure, de R. aligerens,
- une zone II limitée à la base par le sommet de la biozone de S. rara et P. sinuatus. Dans sa partie inférieure apparaissent F. junior et M. nobilis. Sa partie supérieure voit l'extinction de S. nux et A. guerickei. D. bireticulatus y montre son maximum de fréquence,
- Une zone III marquée par la très nette régression de C. loricatus (sommet de l'épibole) et l'apparition de T. securis (base de la biozone). Dans cette zone apparaissent les Vestispora à petites lumières,
- une III-IV dont la limite inférieure est marquée par la base de l'épibole de T. securis. Dans cette zone apparaissent et se développent les Punctatosporites à ornementation plus régulière et plus dense du type granifer. Les spores du "Densospore Group", en particulier l'espèce faunus, deviennent plus rares,
- une zone IV caractérisée par l'apparition des premières monolètes à verrues et des Schopfites. Les Densosporites, dans la partie supérieure plus particulièrement, ont très nettement régressé (sauf dans quelques rares niveaux),
- une zone IV-V limitée à sa base par le développement des Thymospora.

Une confrontation des axes ainsi créés avec les limites conventionnelles encore actuellement admises depuis les congrès de Heerlen de 1927 et 1935 termine cette étude.

La limite Namurien - Westphalien = base de la zone à G. subcrenatum n'est pas marquée en palynologie. Par contre, légèrement au-dessus, se situent la base de l'épibole de 2 genres importants : Florinites et Laevigatosporites de même que celle de la biozone des Punctatosporites. Apparaît également à cet horizon une espèce peu fréquente, mais stratigraphiquement intéressante du fait d'une extension verticale courte : R. aligerens.

La limite entre les Westphalien A et B = N.M. de Poissonnière ou Katharina coïncide avec le sommet de la biozone de S. rara et P. sinuatus. Légèrement en-dessous s'éteint R. aligerens, alors qu'un peu au-dessus apparaissent F. juni et M. nobilis.

La limite entre les Westphalien B et C est également constituée par un niveau marin bien connu en Europe occidentale = N.M. de Rimbert ou Aegir. L'intercalation de ce niveau n'a rien changé au contenu sporologique de cette zone stratigraphique. Par contre, au-dessus se situent le sommet de l'épibole de C. loricatus et la base de la biozone, puis un peu plus haut de l'épibole de T. securis.

Le Westphalien supérieur débute avec l'apparition de Neuropteris ovata. Dans les bassins où elle est connue, cette apparition se situe légèrement après la base de la biozone des Thymospora. En fait, les 2 séquences, d'une part paléobotanique et d'autre part palynologique, sont très proches et se superposent.

L'axe ultime de la zonation = base de l'épibole des Thymospora a été retenu, sur proposition d'Alpern et Liabeuf, comme limite Westphalien-Stéphanien par le Congrès de Géologie et de Stratigraphie de Sheffield.

PERMIAN - TRIASSIC SYMPOSIUM

Convenor: H.VISSCHER

Boussens: 12th -13th September 1973

Abstracts of papers to be published in

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STUDES PÉRIODIQUES DE LA SOCIÉTÉ

REVUE

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1973

A part de ses observations palynologiques effectuées dans les bassins de la région (Alsace, Lorraine, Bretagne, Normandie, Flandres, Pays de la Loire, etc.) sont dépeints les caractères palynologiques de la végétation permienne. Trois zones successives sont reconnues: une zone permienne inférieure, une zone permienne moyenne et une zone permienne supérieure. Les études palynologiques des formations permienno-triassiques de la région de Boussens ont permis de constater que la végétation permienne de cette région est caractérisée par une flore palynologique très riche et diversifiée. Les études palynologiques de la région de Boussens ont permis de constater que la végétation permienne de cette région est caractérisée par une flore palynologique très riche et diversifiée.

PALYNOLOGICAL ASSEMBLAGES FROM "SAXONIAN" DEPOSITS OF THE SAAR-NAHE BASIN
(GERMANY) AND THE DÔME DE BARROT (FRANCE) - AN APPROACH TO CHRONOSTRATIGRAPHY

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Abstract

The term Saxonian is not tenable in any modern scheme of chronostratigraphical classification and correlation because the only possible type-sequence of Saxonian strata has no potential with regard to a biostratigraphical evaluation. In addition, rare palynological assemblages from deposits termed Saxonian do not support the concept of an independent stage between the Autunian and Thuringian of western Europe.

Two of the best-preserved "Saxonian" palynological assemblages found so far exhibit differing characteristics: an assemblage from the Waderner Gruppe (Saar-Nahe Basin, Germany) has Autunian compositional affinities and an assemblage from the "Faciès de Léouvé" (Dôme de Barrot, France) has Early Thuringian affinities.

ETUDES PALYNOLOGIQUES DANS L'AUTUNIEN

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RÉSUMÉ

A partir des observations palynologiques réalisées dans divers bassins autuniens (Autun, Blanzay, l'Aumance, Brive, Lodève, Sarre-Palatinat, Thuringe, Saxe ...) sont dégagés les caractères particuliers de la microflore autunienne. Trois zones successives sont définies par des associations palynologiques précises. Des comparaisons sont faites avec les flores carbonifères des formations voisines ainsi qu'avec celles du Permien marin. Certains éléments de la microflore autunienne seraient liés au faciès et apparaissent sporadiquement mais de façon assez constante dès le Namurien. La partie inférieure de l'Autunien présente des caractères palynologiques encore nettement carbonifères. Des affinités notables sont cependant mises en évidence entre la microflore de l'Autunien supérieur et celle de l'Artinskien Kungourien inférieur (Permien inférieur des séries marines de l'U.R.S.S.)

ABSTRACTPALYNOLOGICAL INTERPRETATION OF THE BASEOF PERMIAN IN EASTERN SHELF REGIONOF NORTH CENTRAL TEXAS, U. S. A.

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The interpretation of palynological data is based upon studies of Pennsylvanian and Permian well samples in Wichita County (Eastern Shelf), Ector County (Midland Basin), and Pecos County (Delaware Basin) of Texas. The last-named well is located in the type area of Permian in North America. Samples were also collected from outcrops in seventeen counties in north central and west Texas. Spore and pollen succession in Pennsylvanian and Lower Permian strata in three depositional basins were analyzed and compared. The conclusion is reached that the base of Permian in Eastern Shelf region is located at a much higher horizon than what has been suggested by fusulinid evidences. Most of the Wichita Group is Pennsylvanian (Stephanian) rather than Lower Permian (Wolfcampian, Sakmarian). The fusulinid evidence is inconclusive. A solution to the apparent conflict between fusulinid data and palynological evidence is suggested.

IN SITU POLLEN FROM GYMNOSPERMOUS CONES FROM THE UPPER PERMIAN
OF THE ITALIAN ALPS - A PRELIMINARY ACCOUNT

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Saccate pollen grains have been found in situ in gymnospermous male cones from Late Permian deposits of the Dolomites and the Vicentinian Alps (northern Italy). Bisaccates assignable to the dispersed form-taxa Lunatisporites spp., Jugasporites delasaucei and Lueckisporites virkkiae originate from structurally similar coniferalean cones. The monosaccate pollen described as Nuskoisporites dulhuntyi has also been isolated from coniferalean cones but the affinity of a cone yielding bisaccates assignable to Gigantosporites hallstattensis is not yet clear.

The material studied confirms the view of a frequent intraspecific variability among the Late Permian coniferalean pollen grains found in dispersed assemblages in western Europe.

ANALYSE PALYNOLOGIQUE DES SEDIMENTS ROUGES SALIFERES DU
ZECHSTEIN SUPERIEUR ("ZOUBER" ROUGE) A KLODAWA, POLOGNE.

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Les sédiments argilo-salifères rouges du Zechstein supérieur de Klodawa, en Pologne, contiennent des grains de pollen et des miospores bien conservés, connus déjà dans le Permien supérieur de l'Europe occidentale. Une liste de seize taxa identifiés et le pourcentage des différents genres représentés donnent la physionomie de l'assemblage. La composition du palynodème Lueckisporites indique un âge Thuringien tardif.

MICROFLORES DES FORMATIONS DU GABON ATTRIBUEES AU KARROO

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In Gabon the thick Cretaceous and Tertiary successions are found lying on a sedimentary sequence which is now considered to be a correlative of the Karroo formations. This correlation has been established on the basis of well-preserved and characteristic palynological assemblages. Unfossiliferous glacial deposits, probably assignable to the Dwyka, are overlain by the clastics and dolomites of the "Série de l'Agoula". The latter formation is characterized by the occurrence of three distinctive palynological assemblages :

(1) An assemblage in the lower part of the formation is composed of monosaccates, striate monosaccates, striate disaccates, and some characteristic pollen grains such as Walikalesaccites ellipticus, Hoegiasaccites transitus, Fusacolpites ovatus and Fusacolpites fusus. This assemblage can be compared with assemblages from the "Série des Schistes Noirs de Walikale et Lukuga" in Zaïre (Congo Kinshasa) which has been assigned to the Early Permian (Sakmarian) Ecca formations.

(2) An assemblage in the middle part of the formation includes Corisaccites spp., Lueckisporites spp., Hamiapollenites karrooensis and Protohaploxypinus spp. This assemblage compares with assemblages from the Lower Coal Measures of Tanganyika (Ecca), the Upper Barakar and Raniganj of India, and the Lower Permian of the Salt Range; it is considered to be diagnostic of the upper part of the Lower Permian (Artinskian-Kungurian).

(3) After an important unfossiliferous interval the upper part of the formation is characterized by an assemblage with Klausipollenites schaubergeri, Lueckisporites virkkiae, and Taeniaesporites noviaulensis. This Late Permian assemblage has a European Appearance.

The "Série de l'Agoula" is overlain by the clastics of the "Série de M'Vone" yielding a Middle Jurassic palynological assemblage with Classopollis torosus, Callialasporites dampieri and Spheripollenites scabratus. After another unfossiliferous interval (N'Dombo), Cretaceous sedimentation commences with the dominantly argillaceous deposits of the "Série de Kango" yielding a palynological assemblage with Dicheiropollis etruscus, Classopollis classoides, Ephedripites spp. and Cicatricosisporites spp.

THE IMPACT OF PALYNOLOGY ON PERMIAN AND TRIASSIC STRATIGRAPHY
IN WESTERN EUROPE

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Current concepts of regional stratigraphical classification and correlation of Permian and Triassic successions in western Europe are still frequently a mixture of traditional "layer-cake" stratigraphy and more advanced biostratigraphical approaches. Palynology could well be regarded as one of the most interesting and rewarding methods of research in fundamentally re-evaluating the existing concepts.

In the present paper four aspects of West-European Permian and Triassic Stratigraphy are discussed in general terms : (1) the traditionalist's concepts; (2) some of the new approaches based on recent studies in palaeontological disciplines other than palynology; (3) the different trends characterizing the impact of palynology; and (4) some suggestions for future collaborative palynological work.

A SCHEME OF PALYNOLOGICALLY DEFINED CONCURRENT-RANGE ZONES
AND SUBZONES FOR THE TRIASSIC RHAETIAN STAGE (SENSU LATO)

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Four Concurrent-range Zones and six Concurrent-range Subzones are proposed for the upper Triassic Rhaetian Stage on the basis of miospores and organic-walled microplankton obtained from a section in the Kendelbachgraben, Austria. The Kendelbachgraben section is proposed as a potential stratotype for the base of the Rhaetian Stage. The upper limit of this stage is, pending definition of the base of the Jurassic System, taken at a provisional horizon in the Kendelbachgraben section and the Stage is, therefore, termed "sensu lato" in the present account.

A regional correlation between the Kendelbachgraben section and a section of the British Rhaetic, from a borehole in Nottinghamshire, is proposed.

PREMIERE ETUDE DES SPORES DU TRIAS MOYEN DE GABIAN (BORDURE
SUD DE LA MONTAGNE NOIRE, FRANCE)

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Nous décrivons les premières associations de spores du Muschelkalk bien daté dans le Sud-Est de la France. Parmi les 33 espèces recueillies, Aequitriradites minor Mädlér, 1964 et Cristianisporites triangulatus Antonescu, 1969 sont considérées comme caractéristiques de Trias moyen.

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ABSTRACT

Since 1960 palynological studies have brought about a major improvement in the understanding of the time relationships of the various Triassic facies known in Britain. Miospores, the only fossils which occur abundantly and are geographically and stratigraphically widespread in British Triassic deposits, have provided a means of correlating the sequences in different parts of Britain with one another and also with sequences on mainland Europe.

British miospore assemblages have been compared with those described from the Germanic Trias (mainly of Holland and Germany) and from the Alpine Trias of southern Europe. The British facies have thus been assigned relative ages by comparison, directly or indirectly, with the Alpine sequence and the chronostratigraphical terminology employed has been that of the ammonoid-based stage sequence of southern Europe. This basis for the dating and correlation of the British deposits is unsatisfactory but is the only one which could be adopted in the absence of a reference or standard sequence in Britain.

The Bunter (lowest division of the British Trias) has so far proved unproductive of miospores but the overlying Keuper and Rhaetic (the former approximately correlatable with the sequence from the Röt to the Mittel Keuper of Germany) have yielded numerous assemblages. A number of extensive Keuper and Rhaetic sections have recently been studied and have yielded microfloral sequences which provide a basis for a miospore zonation. The zonation scheme, which is, unfortunately, not yet complete, has the advantage that it is related to a small number of reference sections which have been closely documented and have considerable stratigraphical extent. Borehole sections in west Lancashire have penetrated some 400 to 500 m of the Keuper and have been studied throughout at intervals of approximately 10 m. The miospores obtained from these sections

indicate that the strata are approximately equivalent to the sequence from the "Rot to the Lettenkohle of Germany. The Keuper of West Lancashire rests upon barren Dunter sandstones; the junction is sharp and is probably a minor unconformity related to the Hardegsen disconformity.

Cliff sections on the coast of north Somerset provide continuous exposure from the highest Keuper into the Jurassic. The abundant microspore assemblages obtained from this sequence indicate that the strata are equivalent to the highest Mittel Keuper and the Ober Keuper of Germany.

The sections in west Lancashire and north Somerset have thus provided detailed microfloral data throughout a large part of the British Keuper and Rhaetic. Only strata equivalent to the German Mittel Keuper remain to be studied to complete the analysis of the microfloral sequences in the British Keuper. Cored borehole material which probably covers this interval has recently been obtained from Somerset and will be studied shortly.

LATE TRIASSIC POLLEN AND SPORES FROM THE KAPP TOSCANA
FORMATION, HOPEN, SVALBARD; A PRELIMINARY ACCOUNT

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ABSTRACT

Recent palynological work in Svalbard confirms the Late Triassic age of the sedimentary succession of the island of Hopen. Correlation with the Standard Stratigraphic Scale is difficult, but strata of Norian, and possibly Karnian, age appear to be represented. The presence of strata of Rhaetician age is demonstrated on the basis of the palynological information.

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ABSTRACT

Upper Triassic continental strata in the United States contain rare horizons which yield pollen assemblages. The Dockum Group and Chinle Formation of the American Southwest, as well as certain rock units within the Deep River, Richmond, and Taylorsville Basins of the Newark Group, contain palynomorphs which exhibit stratigraphically restricted ranges in Europe. The presence of Vallasporites ignacii, Camerosporites secatus and Ovalipollis ovalis in the Dockum Group, Chinle Formation, Cumnock Formation of the Deep River Basin, Vinita Formation of the Richmond Basin, and unnamed units in the Taylorsville Basin suggest that all these units are approximately contemporaneous. The occurrence of these and other stratigraphically diagnostic pollen taxa, particularly Patinasporites densus, further indicates a Middle to Upper Karnian age for these units.

The palynostratigraphy also implies that the Pekin Formation of the Deep River Basin is slightly older than the above mentioned units.

A RE-EVALUATION OF GLOBAL PLANTGEOGRAPHIC PROVINCES OF THE
LATE PALEOZOIC

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A re-evaluation of the global plantgeographic maps for the Late Paleozoic, which have evolved through decades of paleobotanic investigations, is required in the light of plate tectonic studies. Advances in the computerization of palynologic data offer a new approach to this problem. Analyses based upon the palynologic data file of the Department of Geosciences, University of Arizona, render better correlation analyses of the plantgeographic conditions in the Late Paleozoic possible and aid the construction of more precise climatological maps which will provide crucial evidence for current plate tectonic models.

The plantgeographic reconstructions produced indicate that;

- (1) the Euramerian flora was situated in tropical regions and extended northwards and southwards into belts of dry climate.
- (2) the Angaran flora appears to have been located in northern temperate zones.
- (3) the Gondwanan flora developed in the southern temperate zones.

A discrepancy existed, however, in relation to the Cathaysian flora. If China formed a part of the Eurasian plate in the Late Paleozoic, then extensive areas of the Cathaysian flora occurring in the coalfields of China and Korea should, according to current plantgeographic maps, have been located in northern arctic regions. However, paleobotanical and palynological criteria indicate that because the Cathaysian flora was closely related to the Euramerian flora, it must have occupied a tropical terrain. This independent paleobotanical evidence supports the case of those scientists who, for other reasons, expected that the China plate and the Indian plate were located further south in the Late Paleozoic and drifted to the north in Mesozoic times.

(Canberra, Australie, Août Septembre 1973)

par A.DEBOURLE*, P.PIERRART**, M.WATERLOT ***

Ce symposium est le troisième réunissant les spécialistes de la Géologie du Gondwana. Les réunions précédentes avaient eu lieu en Amérique du Sud (Buenos Aires) en 1967 et en Afrique du Sud (Capetown et Johannesburg) en 1970. Le prochain symposium aura vraisemblablement lieu en Inde en 1977.

Le Symposium de Canberra réunissait 165 participants à l'Université Nationale d'Australie, sous les auspices de l'Académie australienne des Sciences. Les communications, au nombre d'environ 70, étaient réparties en 6 sections d'une journée.

La première section était consacrée à la paléogéographie : dans la matinée ont été exposés les résultats récents obtenus grâce aux études de paléomagnétisme; l'après-midi étant réservée aux aspects sédimentologiques des reconstitutions paléogéographiques.

La deuxième section traitait de paléobotanique, les communications présentées étant essentiellement orientées vers l'étude de la macro et de la microflore gondwaniennes. D'autres problèmes connexes ont été également évoqués comme, par exemple, celui des implications paléogéographiques de certaines flores siluro-dévonniennes ainsi que celui des reliques phytogéographiques gondwaniennes.

La troisième section était axée sur l'environnement et l'origine des charbons gondwaniens ainsi que sur l'étude de l'évolution de la matière organique dispersée dans les sédiments.

La quatrième section faisait le point des découvertes récentes dans le domaine des dépôts glaciaires fossiles et actuels et attirait l'attention sur l'importance des remaniements paléontologiques dans ce type de sédiments.

La cinquième et la sixième section, moins spécialisées, outre différents aspects de la stratigraphie et de la paléontologie gondwanienne, ont permis

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la présentation de synthèses paléogéographiques et paléotectoniques de la plupart des continents gondwaniens.

Par ailleurs, une large part des travaux de ces sections était réservée aux phénomènes pétrogénétiques liés à la dynamique des plaques.

Le Symposium était précédé et suivi d'excursions montrant différents aspects des formations gondwaniennes en Australie.

L'excursion n° 1 a mené les participants dans la partie sud de l'Etat de Victoria ainsi qu'en Tasmanie.

L'excursion n° 2, organisée en Australie occidentale, a permis de voir la stratigraphie et la tectonique des bassins de Perth et de Carnarvon.

L'excursion n° 3 était destinée à montrer les différents aspects du bassin de Sydney et de ses bordures.

La dernière a été consacrée aux bassins d'Ipswich et de Bowen.

Les travaux de ce Symposium paraîtront dans un an et demi. Tous renseignements complémentaires sur les communications présentées peuvent être obtenus auprès des auteurs de ce compte-rendu.
