COMMISSION INTERNATIONALE
DE MICROFLORE DU PALEOZOIQUE

NEWSLETTER 22

November 1979

President

Dr Serge Jardine
Laboratoire Exploration Elf - RE
31360 Boussens
France

Secretary General

Dr Bernard Owens
Institute of Geological Sciences
Ring Road Halton
Leeds LS15 8TQ
England

CONTENTS

1) ELECTION OF NEW CIMP PRESIDENT FOR 1980 - 1984

In accordance with the rules of CIMP it will be necessary in 1980 to hold an election for the office of President of CIMP. Our current President, Serge Jardine was elected in 1976 and his four year term of office will expire at the time of the Cambridge ICP Conference in July 1980. He has indicated to the CIMP Comite Executif that because of professional reasons he does not wish to stand for election for a second term.

Therefore in accordance with our rules it is now necessary to initiate the procedure to elect a new President. The rules state that this election will be in two stages (A and B).

A. Call for candidates for the vacant post in the Newsletter in the middle of the last year of the mandate. Nominations will be acceptable if they represent

a) an active member of CIMP of several years standing

b) the same nomination is proposed by at least three different laboratories

The two candidates with the majority of proposals for the new mandate will be eligible to stand for election.

Exceptions to these rules are

a) when either the President or the Secretary General is eligible for re-election and agrees to his nomination going forward, he is automatically one of the candidates retained.

b) when the Secretary General is either not eligible for re-election or does not wish his nomination to go forward, the Deputy Secretary who would have been elected two years previously, is automatically one of the two candidates retained. (Applicable only in election of Secretary General)

B. Ballot forms will be sent to all members in "good standing" early in 1980 following receipt of nominations.

You are therefore invited to submit your nomination before the end of January 1980. Please ensure that you have the permission of the person you wish to nominate before submitting it.

For your guidance we enclose a summary of the current composition of the CIMP Comite Executif

Officers

President	S Jardine	(1976 - 1980)
Vice President	J Doubinger	(1976 - 1980)
Past President	B Alpern	(1976 - 1980)
Secretary General	B Owens	(1977 - 1981/2)
Past Secretary General	M Streel	(1976 - 1980)

Other members of the Comite Executif are connected with the various specialist group responsibilities.

Stratigraphical working groups

Permo - Trias	- H Visscher
Stephanian - Autunian	J Doubinger
Westphalian	S Loboziak
Namurian	B Owens
Dinantian	G Clayton

Famennian - Tournaisian	M Streel
Eifelian - Frasnian	W Riegel
Silurian - Lower Devonian	J B Richardson
Pre-Silurian	C Downie

Morphological working group

Miospores	W Riegel
Megaspores	P Pierart
Spores in situ	J P Laveine
Acritarchs	P J Hill
Chitinozoa	S Laufeld
Scolecodonts	A Van Erve

In addition D C McGregor was co-opted to the committee to be responsible for our international relationships with the AASP.

** Remember send your nomination for the post of CIMP President as soon as possible but not later than 31 January (via Air Mail) to the Secretary General.

---

2) ELECTION OF DEPUTY SECRETARY

It is normal for us to also elect at this time (two years before the end of the present Secretary General's mandate) a Deputy Secretary. The role of the Deputy Secretary being to provide a sense of continuity in our activities of the period of a change in Secretary General.

We would therefore welcome your nominations for the post before 31 January 1980. The rules applying to the Presidental Election will also apply to this position.

Please use the nomination form supplied with this newsletter

---

3) 5th INTERNATIONAL PALYNOLOGICAL CONFERENCE

Cambridge, England. 29 June - 6 July 1980.

You are reminded that the deadline for submission of abstracts of papers to be presented at this conference is 1 December 1979. It is essential that these details are known as soon as possible so that the programme committee can consider as wide a spectrum of papers as possible.

If you have not sent in the abstract of your paper PLEASE DO SO AS SOON AS POSSIBLE !!!

We have already indicated that it is our intention to publish some if not all of the papers presented at the sessions organised by CIMP in the Revue of Palaeobotany & Palynology. We will require all manuscripts, plates and text figures to be submitted at the Conference so that we do not experience delays in submitting the proceedings to the printers. Full instructions to authors will be sent to those concerned early in 1980.

If you wish to participate in any of the pre or post-congress excursions it is advisable for you to make your reservations as soon as possible. Some excursions are becoming well subscribed so to avoid disappointment you are advised to book yours as soon as possible.

If you haven't received a copy of the second circular you may do so by

writing to Mrs G Drewry, 5th IPC Secretary, Dept of Geology, Sedgwick Museum, Downing Street, Cambridge, CB2 3EQ, England.

The third circular which will be issued in March 1980 will only be sent to those who have registered to attend the meeting. We will attempt to include as much of the relevant data in the CIMP Newsletter, but if you want to be kept up to date and avoid disappointments

REGISTER NOW!!!

---

4. CHITINOZOAN NEWSLETTER NO.1.

With this newsletter you will receive your copy of the Chitinozoan Newsletter compiled by Sven Laufeld and Yngve Grahn. This excellent effort which reflects the revival of activity in the Subcommission on Chitinozoa was produced and distributed with the kind support and assistance of the Geological Survey of Sweden, to whom CIMP expresses its sincere thanks.

The newsletter is full of up-to-date information of the activities in the Chitinozoan field and hopefully will set a standard which other groups might well try to follow.

---

5. CARBONIFEROUS MEGASPORES WORKING GROUP

The next meeting of this working group will be held from 2nd - 6th June 1980 in MONS (Belgium) at the invitation of Prof P Pierart, Service Biologie-Ecologie de l'Universite de l'Etat du Mons.

---

6. PROPOSAL TO ESTABLISH NEW WORKING GROUP ON PERMIAN, TRIASSIC AND EARLY JURASIC PHYTOPLANKTON

Dr S J Morbey has written to suggest that the time may be appropriate to consider establishing a new working group on the above topic. His proposal includes the following comments

> This new GROUP would stimulate research and collaboration between interested parties in the development of dinoflagellates and acritarchs through the Permo-Triassic and Lower Jurassic.
>
> The GROUP could obviously be subdivided according to dino. or acritarch interests.
>
> The GROUP would hope initially to develop set programmes of study; to select localities of potential stratigraphic and palynological interest for the determination of new taxa, the geographic/geologic extent of significant taxa, the overall influence of facies & provincialism.
>
> The GROUP would aim to integrate their information for publication through joint studies - collection trips - material exchanges.
>
> The formation of such a GROUP would, hopefully, bring together a variety of specialists internationally.
>
> The following areas of study are suggested forthwith :-
>
> 1) Triassic dinoflagellate evolution, stratigraphy in Tethyan/ Alpine Realm.
>
> 2) Provincialism in Triassic & Lower Jurassic dinoflagellate assemblages.

3) A re-examination of the dinoflagellate genus NANNOCERATOPSIS (Deflandre) Evitt. ie. the recognition of species (new versus existing), facies morphotypes, evolutionary lineages, floral provinces, stratigraphic ranges in different geographic/geologic areas.

4) The development of a monograph of TRIASSIC ACRITARCHA - to illustrate known taxa, their localities, stratigraphic ranges etc. A study, which can only be undertaken through international collaboration.

Anyone interested in this proposal for a new group is asked to write directly to Dr S J Morbey, Bio-Strat Consulting, 7 Braybrooke Road, Little Bowden, Market Harborough, Leicestershire, England. If sufficient people are interested in this group it is proposed to hold an initial discussion meeting at the ICP Meeting in Cambridge.

---

7. ABSTRACTS OF PALAEOZOIC AND KEROGEN STUDY PAPERS PRESENTED AT THE AMERICAN ASSOCIATION OF STRATIGRAPHICAL PALYNOLOGISTS MEETING, DALLAS, TEXAS, NOVEMBER, 1979.

IMPLICATIONS OF SOME SOLID HYDROCARBONS IN PALYNOLOGIC PREPARATIONS.

Peter K H Groth

Amoco Production Company, Security Life Building, Denver, Colorado - 80202

Hydrocarbon components in kerogen can be readily distinguished from other biologic components if palynologic residues are mounted in a particular way. A chemical-physical reaction between the two mounting media and the "asphaltines" produces microscopie extrusions.

Several types of extrusion substrates suggest different hydrocarbon origins. On a larger scale, the hydrocarbon extrusion may explain the emplacement of gilsonite, and perhaps the mechanism for initial hydrocarbon expulsion and primary migration.

The occurrence of hydrocarbons in palynologic residues may have oil exploration potential if direct observation is tempered with stratigraphic geologic and engineering judgement. Currently recognized possibilities include: indications of thrust faulting, "minishows" in drilling wells, relict paths of migration, and the possibility that eager geologists reporting shows may be overlooking drilling mud contamination.

STATUS OF PALYNOSTRATIGRAPHY AND MATURATION STUDIES IN THE SVALBARD AND BARENTS SEA AREA.

Svein B Manum

Institutt for Geologi, Universitet I, Oslo, PO Box 1047, Blindern, Osla 3, Norway

Palynological research in Svalbard has been intensified during the last five years, mainly because Svalbard is the key reference area for interpretation of the geology of the shelf between Svalbard and north Norway. This shelf is considered a potential petroleum province with high promise. Status of palynostratigraphy and maturation studies will be illustrated by presentation of major results of the research by a number of workers over the last few years.

PROTEROZOIC MICROFOSSILS FROM THE SUKHAYA TUNGUSKA FORMATION OF NORTH-CENTRAL SIBERIA

C V Mendelson and J W Schopf

Department of Earth and Space Sciences, University of California at Los Angeles, Los Angeles, California - 90024

The approximately 1,100 m.y. old Sukhaya Tunguska Formation, from the Turukhansk region of Siberia, contains a diverse microflora permineralized in black, stromatolitic cherts. The formation consists of relatively unmetamorphosed dolomite and limestone, with interbedded cherty lenses, and occurs near the western edge of the exposed portion of the Siberian Platform.

The microflora is dominated by filamentous blue-green algae (Oscillatoriaceae) which evidently were responsible for construction of the flat-lying, Stratifera-like, finely laminated stromatolitic sediments in which they occur.

Although of relatively rare occurrence, cellularly preserved trichomes provide ample evidence of the taxonomic affinity of such forms. Both solitary and colonial spheroidal unicells also occur, including those which comprise a three-dimensional colony type distinguished by its regular, cuboidal organization. Of the ten morphotypes detected, all are apparently of prokaryotic affinities; no firm evidence of eukaryotic organization has been observed.

The most important practical problems confronting Precambrian micropaleontology are those relating to taxonomy and biostratigraphy. The occurrence of bacterial degradation, diagenetic alteration, life cycle variants, and a general lack of morphological complexity in prokaryotic microrganisms make systematic studies of Precambrian microfossils difficult. At present, the taxonomy of such fossils is thus in a confusing and rather imprecise state. Similarly, the application of stomatolitic microbiotas to problems of biostratigraphy has yet to be firmly established. In this study, for example, some forms appear to be distinctive, and may be relatively time-restricted, whereas others are morphologically comparable to taxa of the somewhat younger Bitter Springs microbiota of central Australia (about 850 m.y. old) and to those preserved in cherts of the much older (about 2,000 m.y. old) Kasegalik, McLeary, and Gunflint Iron Formations of southern Canada. Clearly, additional studies will be needed before the taxonomy and possible biostratigraphic usefulness of the members of Precambrian microbial communities can be conficently established.

LATE PRECAMBRIAN MICROBIOTA FROM THE MIN'YAR FORMATION, SOUTHERN URAL MOUNTAINS, U.S.S.R.: EVOLUTIONARY AND STRATIGRAPHIC SIGNIFICANCE

A V Nyberg and J W Schopf

Department of Earth and Space Sciences, University of California at Los Angeles, Los Angeles, California - 90024

Well preserved microfossils ars described from black chert layers in stromatolitic dolostones of the Late Precambrian Nin'yar Formation (Karatau Group) from the southern Ural Mountains in the Soviet Union. The elements of this assemblage constructed laminated mats on a carbonate platform in the shallow subtidal and intertidal environments approximately 750 million years ago. The microfossils were preserved as a result of early diagenetic permineralization by silica. The Min'yar

microbiota consists of abundant and diverse filamentous and coccoidal blue-green algae, and probable filamentous bacteria. The presence of a probable Stigonematalean blue-green alga represents the oldest occurrence of this group reported to date. Spheromorphic acritarchs, some of which may be redeposited benthonic algal unicells, are abundant in some stromatolitic laminae. Probable eukaryotic algal taxa are present; criteria used for distinguishing these from prokaryotic taxa will be briefly discussed. Post-mortem degradational effects must be considered before meaningful classification of the microfossils can proceed. The Min'yar asswmblage shares many taxa with the slightly older Bitter Springs Formation of Australia.

PALYNOMORPHS FROM THE NONESUCH SHALE (PRECAMBRIAN) OF NORTHERN MICHIGAN

P K Strother

Paleobotanical Laboratories of the Botanical Museum, Harvard University, 22 Divinity Avenue, Cambridge, Massachusetts - 02138

Samples of dark, carbonaceous shale from the ore-bearing horizon of the White Pine Mine outcrop along the Presque Isle River and one diamond drill core through the Freda and Nonesuch Formations all yield a palynoflora consisting exclusively of sphaeromorph acritarchs (sensu Downie, 1973). The major features used in the construction of sphaeromorph genera are discussed. The affinities of this group are uncertain; they most probably represent the cyst walls of eukaryotic planktonic algae belonging to the divisions Chlorophyta and Pyrrophyta. The Nonesuch Shale assemblage is compared briefly with a palynoflora of similar age (about 1 x 10^9 years BP) from the Dundas studies, along with those of European workers, indicate the Precambrian palynology will eventually prove quite useful in determining stratigraphic relationships between late Proterozoic sequences.

EARLY SILURIAN NONMARINE PALYNOFLORULES FROM POE PADDY, PENNSYLVANIA

Paul Strother and Alfred Traverse

Department of Geosciences, Pennsylvania State University, Deike Building, University Park, Pennsylvania - 16802

A series of samples from eight shale partings in the upper quarter of the predominantly sandstone Tuscarora Formation (Llandoverian) at Poe Paddy, Pennsylvania, were processed for palynomorphs. Tetrads predominate in the palynoflorules, although monads may be dominated in individual samples. Acanthomorph acritarchs are unknown from the Tuscarora, but sphaeromorph and diacrodioid acritarchs are present. Flattened, unornamented tubular elements and cuticular structures are also common features of the palynoflora. The overall character of the Tuscarora, based on palynological evidence is nonmarine. Changes in abundance of major palynomorph groups throughout the section are probably due to localized fluctuations in a rapidly coalescing deltaic stream system. It is hypothesized that the microfossils from the Toscarora Formation represent, at least in part, the remains of terrestrial "thallophytes" which existed prior to the origin of a vascular plant flora.

SOURCE MATERIAL, GEOLOGIC AGE, THERMAL MATURATION AND PROPERTIES OF KEROGEN

Francis T C Ting

Department of Geology and Geography, West Virginia University, Morgantown, West Virginia - 26506

Vitrinite macerals of coals and kerogens of Carboniferous age are dominated by plant debris of lycopoda and articulates. On the other hand, dominant macerals in Upper Cretaceous and Tertiary coals and kerogens are derived from conifers. There are systematic differences in vitrinite reflectance between Carboniferous and Cretaceous-Tertiary vitrinites. Reflectance of vitrinite of Cretaceous-Tertiary age converges to that of vitrinite at lower vitrinite reflectance than exinites of Carboniferous age. At lower maturation levels, reflectance of exinite stays as a constant. However, at high maturation levels, reflectance increases exponentially with increase in maturation.

OIL EXPULSION - A CONSEQUENCE OF OIL GENERATION

James A Momper

Amoco Production Company, Security Life Building, Denver, Colorado - 80202

In source beds, much of the oil-generating organic matter is concentrated along bedding surfaces. During the principal phase of oil generation, when adequate thermal energy is available, 25 to 30 weight percent of the organic matter commonly is converted to liquids, mainly bitumen with some water. Part of the bitumen is then thermally cracked to crude oil. Hydrocarbon gases with some CO_2 and N_2 are generated also; much of the water and CO_2 is generated before oil is formed.

The release of fluids from organic matter causes a reduction in volume of the residual solid organic matter; however, this volume decrease is offset by the considerably greater volume of generated fluids. As a result, pressures increase greatly along sealed bedding surfaces. Internal (intrasource) migration of oil and gas occurs when local, transitory fluid pressures become sufficient to part the bedding laminae and to form or reopen near-vertical microfractures connecting the partings. Permeable migration pathways also may develop along laminae as a result of the reduced volume of the organic matter. Fluids are driven along permeable laminae and partings, into connecting, less pressurized laminae where two or more laminae converge, and along microfractures and faults within the source sequence. Eventually, high fluid pressures will develop in most parts of an actively generating source rock section if the section is sealed and confined.

Two properties of argillaceous rocks that permit overpressuring are anisotrophy and heterogeneity. Additionally, enough oil must be generated to increase fluid pressure sufficiently for local dilations to occur in oil source rocks. This requires at least 0.5 weight percent of hydrogen-rich organic matter. In argillaceous source rocks, clay-sized quartz and clay provide brittle pressure and fluid seals, susceptible to microfracturing, on individual laminae. In carbonate-evaporite sequences, evaporites sealing laminae are less likely to fracture.

At a given generation site, dilation and fluid release are followed by a sharp reduction in pressure and closing of partings and fractures to

further fluid movement. Pressure will again increase and dilation recur at a given generation site until the fluid generation rate has diminished enough for the fluid pressure to remain below the dilation point, that is, the fluid pressure required to open or reopen any part of the system sufficiently for local internal fluid migration or expulsion.

A source rock system functions much like a pressure cooker. It is self-opening and self-sealing. As liquids are expressed from a parting into a fracture, the pressure drops quickly and the fracture will close on the retained liquids, immobilizing them. Silica and/or calcite cement commonly are precipitated along such fractures, both before and after oil migration. Immobilized oil devolatilizes, leaving a solid or semisolid residue. These materials enable resealed parts of the system to repressurize and refracture through the peak gas generation phase. Thus the generation of fluids can provide themeans by which oil and gas are expelled from source rocks.

PROTEROZOIC AND CAMBRIAN ACRITARCHS VALUE IN CANADIAN EXPLORATION

Huon S Walton

Chevron Standard Ltd., 400 5th Avenue SW, Calgary, Alberta, Canada T2P OL7

Acritarchs have been found to be of value in differentiating the later Proterozoic and Cambrian in recent exploration in the Canadian Arctic. Large Sphaeromorphitae similar to Chuaria Walcott and Kildinella Timofeev occur accompanied by coccoid algal forms in the late Proterozoic. The Cambrian marks the appearance of Acanthomorphitae and Oomorphitae with coccoid forms frequently abundant. Comparisons are made with assemblages elsewhere in North America and in the Baltic region.

A SIMPLE METHOD FOR OIL SOURCE BED EVALUATION

W A Waples

Department of Chemictry and Geochemistry, Colorado School of Mines, Golden, Colorado - 80401

The oil source capacity of sedimentary rocks depends on four factors; quantity, quality and thermal maturity of kerogen, and the expulsion efficiency of the source sequences. All four factors represent simultaneous requirements placed on the source bed; that is, all four must exceed theshold values before a source bed can yield significant quantities of oil.

It is important to distinguish between oil which has already been generated and oil which will be generated sometime in the future. We define "total oil source potential" as the sum of past and future oil generation. "Oil already generated" is that portion which has been generated up to the present time.

Quantity, quality and thermal maturity are measured by a variety of accepted organic geochemical techniques; these data are then scaled to reflect oil source capacity. From the scaled values, both "total oil source potential" and "oil already generated" can be evaluated. Because numerical scales are used, the results are semiquantitative and can be graphed for easy visual interpretation. This method is particularly useful on a well profile format

---

ORGANIC-WALLED MICROPHYTOPLANKTON OF THE MIDDLE DEVONIAN SILICA FORMATION, OHIO, USA.

Reed Wicander[1] and Gordon D Wood[2]

[1]Central Michigan University, Mt Pleasant, Michigan - 48859

[2]Amoco Production Company, Box 3092, Houston Texas - 77001

Thirty-seven samples from 29 units of the Middle Devonian Silica Formation yielded a diverse and well preserved organic-walled microphytoplankton flora. These samples were collected from a 55-foot section at the North Quarry of the Medusa Portland Cement Company, Sylvania, Ohio, a site well known for its invertebrate and chitinozoan fauna.

The Silica Formation organic-walled microphytoplankton flora contains over fifty species referable to 25 genera and these are well distributed throughout the section. Among the more abundant and common Devonian species are: Cymatiosphaera winderi Deunff 1967, Dictyotidium variatum Playford 1977, Duvernaysphaera tenuicingulata Staplin 1961, D. tenuimarginata (Brito) Playford 1977, Navifusa bacillum (Deunff) Playford 1977, Polyedrixium fragosulum Playford, 1977, P. pharania Deunff 1967, Tyligmasoma alargadum (Cramer) Playford 1977, Veryhachium cf. downiei Stockmans and Williere 1962, and V. cf. lairdii Deflandre ex Deunff 1959. In addition, several new species have been discovered which may prove stratigraphically useful.

Similar organic-walled microphytoplankton floras have also been reported from the Middle Devonian Kwataboahegan Formation, Moose River Formation, Murray Island Formation, and Williams Island Formation of Ontario, Canada, and the USA.

The Silica Formation thus provides another occurrence to the rather sparse literature of the Middle Devonian North American organic-walled microphytoplankton flora.

---

8. MEETINGS OF OTHER SOCIETIES

a) PALAEONTOLOGICAL ASSOCIATION ANNUAL MEETING

University College, Cardiff, Wales. 16-20 December 1979

Abstracts of Palynological Papers to be Presented

K J Dorning (Pallab Research, Sheffield)

Silurian acritarch biostratigraphy

Examination of palynological assemblages from the type and other sections in the Silurian of the British Isles shows abundant acritarchs in both space and time. Excellent preservation in the type Wenlockian, Ludlovian and other sections in the Welsh Borderlands, contrasts with the less well preserved assemblages from Wales where there is a greater thermal maturation of organic material. Concurrent ranges of selected acritarch taxa show a refined biostratigraphic zonation that is established over a wide area.

C O Hunt (Aberystwyth)

Palynomorphs from the Lulworth Beds of Durlston Bay Dorset

Palynomorphs recovered from 21 samples of the upper Portland Freestone,

Lulworth Beds and Cinder Bed of Durlston Bay, Dorset, include 26 species of dinocyst, 12 species of acritarch, 42 spore and 24 pollen species. The Berriaisian age of most of the section is confirmed by comparison with Upper Jurassic - Lower Cretaceous assemblages. Distinct microplankton associations can be related to macrofauna and lithology, enabling tentative environmental conclusions to be drawn.

T M Windle (Birkbeck College)

The occurrence and significance of megaspores and charophyte gyrogonites in the Bathonian of southern England

Megaspores and charophyte gyrogonites are microfossil female spores. The megaspores appear to be those of lycopods. Extant lycopods are small herbaceous plants of damp habitats. No arborscent lycopods are known from the Jurassic. Thus those lycopods that produced megaspores were probably similar to the living Selaginella. Extant Charophytes are aquatic, favouring carbonate-rich fresh water. Some are known to tolerate salinities of up to 18 ppt.

In the Bathonian both groups have a unique distribution, being confined to terrestrial/near shore facies at three stratigraphical intervals, the Sharps Hill Formation, the Hampen Marly Formation and the Forest Marble Formation. Geographically their occurrences reflect the development of the London-Belgian island. They are common at many localities in Northamptonshire and north-east Oxfordshire. Their recent re-discovery in the Forest Marble Formation of Gloucestershire poses some palaeogeographical problems.

Further details of this meeting may be obtained from Mr T Nield, Dept of Geology, University College, Cardiff CF1 1XL, Wales.

b) BRITISH MICROPALAEONTOLOGICAL SOCIETY

A symposium on The Micropalaeontology of Shelf Seas, Fossil and Recent will be held by the BMS at Hull University from 19 - 25 July 1980 (following the meetings of the IGC at Paris). Papers and demonstrations are invited on relevant topics. Those interested in participating should write to the local secretary: Dr M D Brasier, Geology Department, The University, Cottingham Road, Hull, HU6 7RX, England.

---

9. TRANSLATION OF RUSSIAN PUBLICATIONS

If you are interested in purchasing copies of any of the translations listed below you are advised to write to the Librarian, Geological Survey of Canada, 601 Booth St, OTTAWA, Canada KIA OE8. The request will be forwarded to an agency who will send you an invoice and carry out the work when you return the order together with your payment (see Newsletter 17 for further details)

SHISHOVA, G., 1975. Spore subassemblages of the lower Sachigrovian horizon and their relationship to the lithologie composition of the enclosing rocks [in Nekotoryve vophosy stratigrafii osadothnogo chekhia voronezhskogo anteklizy (Geological Survey of Canada Library Translation No. 2236)].

VOLKOVA, N.A., 1976. Finds of Pre-Cambrian spores with a tetrad scar [in Paleontologiya morskaya geologiya p. 14-18 (Geological Survey of Canada Library Translation No. 2119)]

ZAKLINSKAYA, E., 1973. The palynology of the Cenophytic [in Palinologiya Kaynofita (Moskva, "Nanka") pp. 5-12, 16-24, 39-72, 89-93, 101-129, 138-162, 165-215 (Geological Survey of Canada Library Translation No. 818)]

BYVSHEVA, T.V., 1971. Palynological description and stratigraphy of the Tournaisian and lower and middle Visean deposits of the eastern regions of The Russian platform [in Vsesoyuznyy Nauchno; Issledovatelskiy Gedogorazvedochnyy Institut, Trudy 106 pp 18-46 (Geological Survey of Canada Library Translation No. 819)]

NEKRYATA N.S. Spore assemblages from the Lower Famennian (intersaliferous) strata of the Pripyat Depression and their stratigraphical significance [in Belorusskii nauchno - issledovatel'skii geologorazved-ochnyi institut Sbornik nauthnykh trudov. Spory Paleozoya Byelorussu (Geological Survey of Canada Library Translation No. 2091)]

PARTYKA, I.I., 1971. Plant microfossils of the Tiverian Stage of the Southwestern Margin of the Russian Platform [in Paleontologicheskiy sbornik vol.2 no. 7, pp 52-55 (Geological Survey of Canada Library Translation No. 2201]

APPENDIX 1 CIMP MEMBERSHIP DIRECTORY 1979

CHANGES OF ADDRESS

CHAIFFETZ, M.S., Dr.
Robertson Research (US) Inc
16730 Hodgecroft, Suite 306
Houston
Texas 77060
U.S.A.

MORBEY, Jack, S., Dr
Bio-Strat Consulting
7 Braybrooke Road
Little Bowden
Market Harborough
Leicestershire
England

SCHUURMAN, W., Dr,
Shell UK Exploration & Production
UEE/31
Shell Mex House
The Strand
London WC 2R ODX
England

VERNIERS, Jacques, Dr
Labo. voor Paleontologie
RUG
Krÿgslaan 271, S8
B-9000 Gent
Belgium

DORNING, Kenneth, Dr,
58 Robertson Road
Sheffield S6 5DX
England

NEW MEMBERS

BRAMAN, Dennis Dept of Geology & Geophysics University of Calgary Calgary Alberta Canada T2N IN4	Carboniferous especially Mississippian, miospores
KANKOWSKA, Maria, Mgr Instytut Geologiczny Oddzial Gornoslaski ul Bialego 1 41-200 Sosnowiec Poland	Carboniferous megaspores
KARCZEWSKA, Jadwiga, Dr Zaklad Paleobiologie PAN Al Zwirki i Wigury 93 02-089 Warszawa Poland	Palaeozoic palynology Charophyta
BOYER, Paul, S., Dr Dept of Earth Sciences Fairleigh Dickinson University Madison New Jersey 07940 USA	Scolecodonts and polychaete jaw apperatuse from Palaeozoic, Mesozone and some cenozoic

CHANGES IN ORIGINAL ENTRIES

MILLER, Merrell A, Mr Texaco Inc., address	- delete entry with PO Box 430, Bellaire, Texas
SHESHEGOVA, L.I., Dr	Research interests include Scolecodonts, Chitinozoa and spores
OBUT, A.M., Prof	Research interests graptolites and Palaeozoic stratigraphy

NOMINATION FORM FOR CIMP ELECTIONS 1979/80

PRESIDENT

I wish to nominate for post of President

Name

Address

DEPUTY SECRETARY

I wish to nominate for the post of Deputy Secretary

Name

Address

SIGNED

Name

Address

Please remember to obtain the approval of the person(s) you wish to nominate and to return this form to the Secretary General, Dr B Owens, Institute of Geological Sciences, Ring Road Halton, Leeds LS15 8TQ, England before 31 January 1980