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C.I.M.P. Devonian Taxonomic working Groups

King's College, London, 6 - 7 January, 1975

CURRENT RESEARCH IN DEVONIAN PALYNOLOGY

- 1 & 2. Dr. K. Allen (University of Bristol, England)
1. Devonian spores from Trondheimsfjord district, Norway.
  2. Microspores from the Melby Fish Beds, Shetland.
3. Professor W.G. Chaloner (Birkbeck College, London)  
Microfossil evidence for the earliest land plants.
4. Miss A. Fletcher (University of Bristol, England)  
Devonian spores from the Melby Fish Beds.
5. Dr. F. G. Gensel (University of Connecticut, Storrs, U.S.A.)  
Studies of in situ Devonian spores.
6. Drs. K. Higgs and G. Clayton (University of Sheffield, England, and University College, Dublin, Ireland)  
Palynological correlations in the Givetian/Frasnian, Famennian and Tournaisian sediments of southern Ireland.
7. Dr. V. Iliescu (Geological Institute, Bucharest, Romania)  
Some observations on Upper Silurian-Lower Devonian microfloras from the Moesian Platform, Romania.
8. Dr. D.C. McGregor (Geological Survey, Ottawa, Canada)  
A Gedinian to Givetian spore sequence from the Hudson Basin, Canada.
9. Dr. A. Moreau-Benoit (University, Paris, France)  
Palynology of the Lybian Devonian.
10. Drs J.B. Richardson and S.M. Rasul (King's College, London)  
Witney borehole reworked.
11. Dr. V. Riegel (University of Göttingen, West Germany)  
Palynological sequence from Lower Emsian to Givetian of the Eifel region.
12. Professor M. Streel, Dr. M. Demaret-Fairon and Mr. N. Otazo (Université de Liège, Belgium)  
Siegenian and Emsian spores from the Dinant Basin, Belgium.
13. C.J. van der Zwan and P.M. Van Veen (State University Utrecht, The Netherlands)  
Some preliminary results of a palynological investigation of the transition beds between the Upper Old Red Sandstone and the Carboniferous Limestone (S.W. Ireland).
14. Dr. H. Visscher (State University, Utrecht)  
A palynological assemblage from the Dingle Group, southern Ireland.

CIMP Executive Committee meeting.

A CIMP Executive Committee meeting was held in the Commonwealth Hall, Cartwright Gardens, LONDON, on January 28th, 5th.

This meeting has been mainly devoted to discussions on the aspects of CIMP participation at the next Carboniferous Congress at Moscow and also to location and timing of next activities.

Our activities are scheduled as follow :

- 15th - 17th May, 1975 : Subcommission on Chitinozoa (convener : S. LAUFELD)  
At least three and possibly six or seven papers on Chitinozoa will be presented at the North Central Section Meeting of the Geological Society of America (and the Geological Association of Canada) in Waterloo, Ontario, Canada. Abstracts of these papers will appear in the G S A Abstracts and Program volume to be issued before the Meeting.
- June, 1975 : Megaspore working group (convener : F. FIERART)  
Revision of Carboniferous megaspores with gula (genera Lafenicula and Lesenoisporites)  
meetings in France and Belgium :  
1. University of Paris (France) : megaspores of the "Sarre-Lorraine basin".  
2. University of Lille (France) : megaspores of the "Nord-Has de Calais basin".  
3. University of Mons (Belgium) : megaspores of the "Borinage and Campine basin".

9th - 12th September, 1975 : Subcommission on Stratigraphy (convener : B. OWENS)  
Taxonomic working groups (convener : W. RIEGEL) and General Assembly, at the VIII International Congress of Carboniferous Stratigraphy and Geology, MOSCOW.  
(See more detailed informations later).

14th - 15th October, 1976 : CIMP has been invited by the American Association of Stratigraphic Palynologists (AASP) to co-sponsor their 9th Annual Meeting, to be held in Halifax, Nova Scotia.

A tentative program is :  
Monday, 11th : arrival.  
Tuesday, 12th : Acritarch Forum and Tour of Halifax and environs.  
Wednesday, 13th : Continental Drift and Floral Provincialism.  
Thursday, 14th : General Palynology and CIMP meetings.  
Friday, 15th : CIMP meetings and Offshore Palynology.  
Saturday, 16th : Field trip.

London Devonian Meeting.

A Symposium "Current research in Devonian Palynology" has been organised by Dr. J.B. Richardson at King's College London on the 6th and 7th January 1975.

Lectures (See programme on page 1) were given on the morning and afternoon of Monday 6th. Most of them were followed by discussions.

In the evening, a Buffet reception was generously offered by King's College. Attending members were kindly welcomed by Sir John Hackett, Principal.

The full day of January 7th was entirely devoted to informal discussions and demonstrations on most of the subjects presented during the first day. Photographs and slides were examined as well as projects on extant taxonomic working groups.

Both days have been very successful. Thanks and congratulations to J.B. Richardson to have allowed this typical CIMP "ambiance".

Attending members

- |                           |                              |
|---------------------------|------------------------------|
| AMAD, London              | MORTIMER, M., London         |
| ALLAM, (Morocco)          | OWENS, B., Leeds             |
| ALLEN, K., Bristol        | POTTER, T.I., London         |
| CHALONER, W.G., London    | RASUL, S.M., London          |
| CLAYTON, G., Dublin       | RICHARDSON, J.B., London     |
| COLLINS, A., Newcastle    | RIEGEL, W., Göttingen        |
| DORNING, K.C., Sheffield  | SCHREIBER, T.M., London      |
| FLETCHER, A., Bristol     | SMITH, D.G., Dublin          |
| GARDINER, F., Dublin      | STREEL, M., Liège            |
| GENSEL, F., (Connect.USA) | TAUGOURDEAU, F., Paris       |
| GUEINN, K., Sheffield     | TAUGOURDEAU-LANTZ, J., Paris |
| HIGGS, K., Sheffield      | THOMAS, R., Bristol          |
| ILJESCU, V., Bucharest    | VAN VEEN, P.M., Utrecht      |
| MCGREGOR, D.C., Ottawa    | VISSCHER, H., Utrecht        |
| MICHELLE, F., Bordeaux    | WILTMAR, N.I., London        |
| MOREAU-BENOIT, A., Paris  | WILLIAMS, G.E., London       |
| MORGAN, D., Cardiff       | VAN der ZWAN, Utrecht        |

1 Devonian spores from the Trondheimsfjord district, Norway  
K.C. Allen; Department of Botany, University of Bristol

Rock samples were collected from a number of localities. From these samples, poorly preserved but identifiable spores were obtained from three localities. The first, from small islands north of Tristenen, compare with Emsian assemblages recorded by McGregor from Canada, Lanninger and Schulz both from West Germany, and the present author from Spitsbergen. The second from Dosvik contains few spores, all found at Tristenen, and is probably Lower Devonian in age. The third from west of Storfosen contains species suggesting a slightly younger age than the Tristenen assemblage, probably Emsian or Eifelian.

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2 Microspores from the Melby Fish Beds, Shetland

Work on the small spores was carried out in conjunction with Miss A. Fletcher's study of the megaspores. The assemblage compares most closely with Richardson's Achanarras assemblage; over seventy per cent of the Achanarras species being present in the Melby Fish Beds. Other assemblages which show close comparison are the Canadian Wetherall assemblage recorded by McGregor and Uyeno, an assemblage recorded as Eifelian from the Soviet Union by Archangelskaya, and part of Reigel's West German succession. The Melby Fish Beds are certainly not lower than Upper Eifelian, and probably nearer the Eifelian/Givetian boundary.

4 Devonian spores from the Melby Fish Beds

Miss Anne Fletcher; Department of Botany, University of Bristol

Large spores (150  $\mu\text{m}$ +) from the Melby Fish Beds (Middle Devonian) Shetland Islands, were discussed. The Melby Fish Beds have been compared with the Achanarras horizon, Cathness and Sandwick Fish Beds Orkney on the basis of fish faunas. Many of the large spore species were closely comparable to species described by Richardson (1960, 62, & 65) e.g. *Aurospora macromanifestus*, Richardson 1960, *Ancyrospora grandispinosa*, Richardson 1960,

*Grandispora megaeformis* (Richardson) McGregor 1973, *Calyptosporites microspinosus* Richardson 1960, *Rhabdosporites Landi* (Eisenack) Richardson 1960 and *Trileites Landi* Richardson 1965. A major component of the large spore assemblage is

*Hyalicosporites porcutus* (Winston) Allen 1965. Several new species of megaspores were also obtained including species of *Biharisporites*,

*Allicosporites*, *Hyalicosporites*, *Ancyrospora*, *Triangulatisporites* and *Nikitinsporites*.

The number of megaspore species present in the Melby Fish Beds is greater than in other Ordovician Basin deposits; however, on the basis of the other species in common with the Achanarras horizon, it would seem probably that the Melby Fish Beds are of a comparable age.

### 3 Microfossil Evidence for the Earliest Land Plants

William G. Chaloner; Birkbeck College, University of London

Work published in the last decade has added precision to our record of the earliest evidence of vascular plants. Three types of microfossil have been widely cited as evidence for the existence of this group: Tri-radiate spores, "cuticle" (with or without stomata) and tracheids. The last, alone, represent direct evidence of tracheophytes. Our earliest generally-accepted record of microfossil vascular plants is still that of the genus *Coleksenia* now known from late Silurian occurrences from several parts of the world (Czechoslovakia, Wales, New York State and Libya). Recent work on plant microfossils (principally acritarchs, together with associated triradiate spores) confirms the relative rarity of the latter in Silurian rocks. The number of genera of triradiate spores now known from successive units within the Silurian are: Llandevey 2, Wenlock 4, Ludlow 7 and Downtonian 10. We remain ignorant of the sources of these spores; but their slow build up in diversity would be consistent with their origin from land plants, possibly vascular, if this group had appeared in the early Silurian. Records of "cuticle" fragments in pre-Gedinnian rocks all lack stomata. We need reliable criteria for separating plant and animal cuticle, where evidence of stomata is lacking. Work in progress suggests that nitrogen content in excess of 3% may be a reliable guide to an animal origin (e.g. a membrane of chitinous or scleroprotein nature). No indisputable records of tracheids are known before the Downtonian; reports of tracheids with conifer-like bordered pits from the Ordovician of Czechoslovakia urgently need confirmation from other localities. Xylem elements of this type are unknown *in situ* before the Middle Devonian, raising the inevitable question of possible contamination by "stratigraphic leak" etc.

5 Studies of in situ Devonian spores

M Patricia C. Gensel : Biological Sciences Group, University of Connecticut

Several plants of Emsian or Eifelian age from northern New Brunswick and Gaspé, Quebec, including representatives of the rhyniophytes, zosterophylls, trimerophytes and progymnosperms, have yielded well preserved in situ spores. These spores have been removed from sporangia and examined with transmitted light and scanning electron microscopy and in each instance the spores are described and illustrated along with the parent plant and compared with dispersed spore taxa. Our studies to date provide information on in situ spores for the following plant genera :

1. Rhyniopsida - New genus. This is a simple plant of Emsian age from Gaspé, consisting of 7 mm wide main axes and dichotomous lateral branches which terminate in globose to reniform sporangia. Spores are circular, trilete, curvaturate and smooth to slightly granulose. They most closely resemble the dispersed spore genus Retusotrilletes (Naum.) Streel.

2. Zosterophylloids - Sawdonia new species. This plant is probably Middle Devonian in age and differs from the type species Sawdonia ornata in possessing a variable array of emergence types on both axes and sporangia. Spores from this plant are circular, trilete and possess a dark triangular apical area, a thin exine and no ornamentation. The spores are, however, covered with Ellobules which possibly represent tapetal residue. They are most similar to the dispersed spores called Calamospora stava by McGregor (1973).

3. ? Progymnospermopsida - Chaleuria cirrosa Andrews et al. This plant is from the Middle Devonian of New Brunswick and consists of a main axis with densely spiralled lateral branches. The first-order laterals bear dichotomously divided sterile and fertile branchlets. Sporangia contain spores of two sizes and morphologies and it is suggested that this plant represents an early stage in the evolution of heterospory. Most of the large spores (60-150 µ) are similar to the dispersed spore genus Apiculiretusispora (some are more comparable to a Cyclogranisporites) and the small spores (30-45 µ) are similar to spores variously referred to Camarozonotriletes, Trocoronidspora, or Anapiculatisporites burnotensis.

4. Progymnospermopsida - New genus. This Middle Devonian plant from northern New Brunswick is of interest in having zonate spores. It consists of a stout main axis with spiralled lateral branches, along which are borne erect ovoid sporangia. The general appearance of the plant is reminiscent of the genus Tetraxyllopteris but it is much simpler in organization. The spores are zonate, from 90-120 µ in diameter and ornamented distally with spines and cones which often are bifurcated. They are similar to Samarisporites praterivus in Allen (1956).

5. Trimerophytaceae ---- Psilophyton cf. P. forbesii and cf. i. new species. Two species of Psilophyton are presently being studied; one possesses strongly ribbed, smooth axes and is referable to P. forbesii and the other has small axes covered with delicate spines and is probably a new species. The spores of these two plants differ in quality of preservation but are otherwise indistinguishable in general morphology. They are very similar to the dispersed spore genus Apiculiretusispora brandtii.

6. Trimerophytaceae-lertica new species. This plant, of Emsian age from Gaspé, is over two meters tall and possesses lateral branches which divide dichotomously, trichotomously and pseudomonopodially. Its spores are strikingly similar to those of the previously mentioned Psilophyton, differing mainly in lacking curvaturae and a darkened apical area and in having a slightly more pronounced ornamentation. They are tentatively compared to the dispersed spore genera Abicula-tisporis and Apiculiretusispora (cf. A. plicata).

Banks (1966) lists ten genera of fossil plants with named spores in situ and several genera with in situ spores which are not named. Publications since 1969 have added at least 6 more fossil plant genera with named in situ spores and we are adding several more, including one with in situ zonate spores. This more than doubles the number of fossil plant genera in which the spores are compared with dispersed spore genera and it is hoped that future studies will expand our knowledge further.

Abstracts of papers 6,7 and 8 will hopefully be reproduced in the next newsletter

9 Palynology of the Libyan Devonian

Ariette Moreau-Benoit: University, Paris, France

The results of a palynological study on 20 petroleum boreholes drilled in Libya, mainly by the "Compagnie Française des Pétroles", between 1957 and 1965 are summarized.

My personal results are on the spores and the Chitinozoans of the Upper Silurian and the whole Devonian. Dr. J. Deuff is studying acritarchs from the same samples, and Madame J. Thuogourdeau is working on the Carboniferous part of the Libyan borings.

Geographical and Geological Frame

The studied district is the north west of Libya, near the frontiers of Algeria and Tunisia, namely the Tripolitanian region, and especially the Rhodmès Basin, to the north west.

Lithology

The whole Silurian is about 700m thick, and the Devonian about 200m.

The upper part of the Silurian is composed of:

Alternating shales and sandstones formation which corresponds to the upper Eudmanian (graptelites), and is similar to the Accus Formation of the Mourzouk Basin.

Tadart Formation - sandstones lying with unconformity on the Alternating Shales and Sandstones Formation. They look similar to formations of the Algerian Sahara which contains Silurian faunas (Fort Palginc Basin, and Western Large Erg).

Ouan Kasa Formation - shales and silts with intercalations of thin sandstones. The faunas indicate an Emsian age.

Aouinet Ouaino Formation - this is a siltstone/sandstone sequence dated as middle and upper Devonian lying with apparent conformity on the Ouan Kasa Formation.

Palynological datation

About 140 species of spores have been described and 25 species of chitinozoans for the upper Silurian and the whole Devonian.

Two associations, described for the top of the Silurian, from further information to Richardson and Ichniowski's paper (1973).

Eleven associations have been defined for the Devonian.

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Qun Kasa Formation - shales and silts with intercalations of thin sandstones. The faunas indicate an Emsian age.

Acinet Ouenine Formation - this is a siltstone/sandstone sequence dated as middle and upper Devonian lying with apparent conformity on the Qun Kasa Formation.

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add Two associations, described for the top of the Silurian, from further information to Richardson and Iordani's paper (1973).

Eleven associations have been defined for the Devonian:-

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Lithology	Palyn. Zones	Probable Age
Tahara	II	Strunian
A.C.IV	10	upper Permian
	9	lower Permian
A.O.III	8	Middle and Upper Frasnian
	7	Lower Frasnian
A.O.II	6	Upper Givetian
	5	Lower Givetian
A.O.I	4	Couvinian
	3	Upper Emsian
Fedzart	2	Upper Siegenian - Lower Emsian
	I	Siegenian
Alternating Shales and Sandstones F.	H	Upper Budegian
	G	Lower Emsian

All these results will be published in the "Revue de l'Institut Français du Pétrole" with 6 plates, during this year.

10 **Witney borehole reworked**

John B. Richardson & S.M. Rasul: Department of Geology, King's College London

A number of boreholes in southern England have entered Devonian rocks for marine or Old Red Sandstone facies. Many of these have been investigated for palynomorphs (Chaloner, 1963, Mortimer and Chaloner, 1967, 1972) with variable success. The Geological Survey borehole at Apley Barn (Witney, Oxfordshire) penetrated Old Red Sandstone facies between 1123.9m (below O.D.) and terminated at 1421m (below O.D.). Spores and acritarchs have been obtained from samples between 1131.3m and 1416.5m (below O.D.), and of the 34 samples so far studied in detail only two samples have proved entirely barren of microfossils (spores and acritarchs); these are from the upper part of the section which the Geological Survey considers may be Upper Devonian in age. All the other samples have yielded Devonian spores and reworked acritarchs, mainly of Tremadocian age, or spores alone.

Range charts showing the distribution of spore species and reworked acritarch species from the Old Red Sandstone sediments have been prepared and show that there is little change in the spore species spectrum, which is a limited one, through the productive part of the Old Red Sandstone succession. In addition counts have been made of spores and acritarchs from all the samples and shows that although in many cases the proportion of spores far exceeds that of reworked acritarchs the range of the proportion of reworked acritarchs to spores is from 2 to 74%.

Microspore species are represented by the genera *Retusotriletes*, *Apiculoretuspora*, *Acanthotriletes*, *Verruciretusispora*, *Emphanisporites*, and *Achnosporites* with the genus *Apiculiretusispora* usually dominant. The latter is mainly represented by *Apiculiretusispora* cf. *brundji* (Street) Street, a species which is common in Emsian and lower Middle Devonian strata. The spore assemblage as a whole is indicative of the Emsian and is most probably of lower Emsian age. The microspore assemblage is also interesting for its peculiar lack of diversity - only ten species are at all common compared with species lists of around 125 for other parts of the world. Further one sample is almost monospecific being practically wholly comprised of *A. cf. brandji*. This lack

of diversity has probably a palaeoecological control and possibly the site of deposition in Emsian times was very close to where the parent flora was growing thus masking, by local profusion, elements coming in from other contemporaneous floras. From the sediments the site of deposition was probably within an upper flood plain regime of braided stream development rather similar to that of the Senni Beds of South Wales. The spore flora of the latter, however, is quite distinct and is clearly earlier (probably Siegenian). In addition to the spores the borehole has yielded macroplant remains which are being studied by Professor Chaloner and his students. Chaloner (1963) records *Psallophyton* and *Hestimella*.

**Reworked acritarchs and palynogeology**

Acritarchs reworked from Lower Palaeozoic marine sediments are common in the Witney assemblages, mostly the acritarchs are derived from rocks of Tremadocian age. They are usually pale yellow to brown in colour representing low diagenetic states in the enclosing rocks. However, some acritarchs are completely carbonised representing a different area and provenance from rocks which have undergone more intense diagenetic and post-diagenetic changes.

The most important group of acritarchs represented is the diacrodians represented by various species of *Acanthodiacrodium*. A few monospecific clusters consisting of 50 to 60 specimens have also been found. The second most important group is the Herkimerids represented by the genus *Cymatogaster*. Both these forms are prominent in Tremadocian strata. In addition to these a few post-Tremadocian acritarchs have also been found. These are *Verybanchium trispinosum*, *V. lairdi*, *Visbyphacra* sp., *Pectinosphaeridium* sp., and *Dicellaethereis* all of which, except for *Dicellaethereis* and *V. lairdi*, appear to be carbonised.

The acritarchs have probably been reworked from source rocks of at least four different ages:-

- 1) Tremadocian. Uncarbonised acritarchs have been found resembling assemblages from Welsh Borderland source rocks such as The Shineton Shale (Shineton shale assemblage, Rasul, Thesis, 1971, and 1974).
- 2) Post-Tremadocian carbonised acritarchs (*Pectinosphaeridium* sp., and *Verybanchium trispinosum*). Preservation features of specimens of both these species appear to be similar. The species *V. trispinosum* ranges from Aronigian to Devonian and the genus *Pectinosphaeridium* from Aronigian to Ishgillian. In all probability these forms have been derived from the same source rock which was most likely Ordovician.
- 3) Post-Tremadocian non-carbonised acritarchs *Verybanchium lairdi* and *Dicellaethereis* sp. *V. lairdi* ranges from Aronig to Devonian and *Dicellaethereis* through the Silurian (Llandoveryian to Ludlowian). These forms are probably derived from Silurian source material.
- 4) Post-Tremadocian carbonised *Visbyphacra* sp., the latter genus ranges from upper Llandoveryian to Lower Downtonian.

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C.I.M.P. SUBCOMMISSION ON CHITINOZOA

Report on the Symposium on Ordovician and Silurian Chitinozoa, Visby, Gotland, 17th - 24th August, 1974, respectfully submitted by Sven Laufeld, Chairman of the Chitinozoa Subcommission.

For various reasons a fairly small number of scientists attended the Symposium and only two papers were given. It is felt that this small number of participants reflects difficulties in raising funds for going to isolated meetings in exotic countries. However, symposia often are more rewarding with a restricted number of dedicated participants and the small number of papers undoubtedly reflects a desire among us to come together for informal discussions of mutual problems rather than giving formal papers. This is, of course, a sound reflection among scientists (less than 60 according to the 1974 Directory) working with a group of problematic fossils such as chitinozoans.

The following participated in the Symposium and/or the field trips:

- Stefan Bengtson, Sweden
- Tove G. Bockalje, Norway
- Arthur J. Boucot, U.S.A.
- Barry J. Cooper, U.S.A. and Australia
- Fritz H. Cramer, U.S.A. and Spain
- Maria del Carmen R. Diez, U.S.A. and Spain
- Christina Frazzen, Sweden
- Jane Gray, U.S.A.
- Goran Kjellström, Sweden
- Kent Larsson, Sweden
- Francine Martin, Belgium
- Anders Martinsson, Sweden
- Florentin Paris, France
- Claude Poumot, France
- Mme Poumot, France
- Ulf Sivhed, Sweden
- Roland Skoglund, Sweden
- Hans Tralau, Sweden
- Jaques Verniers, Belgium
- Gonzalo Vidal, Sweden and New Zealand

17th August, 1974

The Symposium was opened by Sven Laufeld who also conveyed regards to the participants from the Secretary General of C.I.M.P., Dr. M. Streel, and from Professors Eisenack and Lange and Drs. Combar, Da Costa, Jansonius, Jenkins, and Rauscher. The chairman moved that special compliments were sent to Professor Eisenack from the participants of the Symposium and the motion was passed unanimously.

After the opening address, the chairman gave a two hour lecture on the geology of Gotland and on the paleontological studies currently performed on the island by members of the Baltic-Scandinavian Silurian Project (now Project Ecostratigraphy). The members present were introduced to the specialists on Chitinozoa.

After lunch in the park outside the field station, D. Tadeau, J. Deunff, J.-L. Henry, and F. Paris (Speaker) gave a paper entitled "Acriftriches, Chitinozoaires et Trilobites de l'Ordovicien du Portugal (Serra de Bucaco) et du Massif Armoricaïn: essai de comparaison et signification paléogéographique".

**Abstract:** Après une brève énumération des formations ordoviciennes de la Serra de Bucaco (Portugal) et du synclinorium médian (Massif Armoricaïn), un essai de comparaison est tenté entre ces deux unités géologiques actuellement distantes de 850 km et situées à des latitudes différentes. La faune et le microplancton de la Formation de Postolonner, des "Schistes à *Homalonotus oehleri*" et du banc à oolithes de chlorite (Caradoc) qui apparaît à leur partie supérieure, interviennent seuls dans cette comparaison. La ressemblance très nette qui existe entre les Trilobites, les Acriftriches

et les Chitinozoaires de ces deux régions, confirme l'existence d'une aire paléogéographique commune englobant l'actuel Bucaco et le synclinorium médian au cours de l'Ordovicien et probablement durant tout le Paléozoïque inférieur.

Toutefois, en raison de leur vaste répartition géographique, les Acriftriches et les Chitinozoaires sont plutôt de remarquables "outils" stratigraphiques que de bons index paléogéographiques.

The paper will appear in the Bulletin du Service géologique du Portugal.

This was followed by a discussion on "Chitinozoa and Lithofacies" in which the above-mentioned paper also was discussed. Most participants agreed on a certain dependence of facies of Chitinozoa. Such a dependence has been demonstrated in some recent publications and it was also demonstrated in Florentin Paris' presentation. It can be concluded that most participants agreed on the fact that we have paid too little attention to the petrographic characteristics of our rock samples and that we should try to relate our samples in the future as far as possible to physical bodies of rocks.

In the evening all symposium participants gathered to a dinner in the restaurant Gutekällaren in Visby.

18th August

The morning was devoted to a paper by Fritz H. Cramer (Speaker) and Maria d. Carmen R. Diez entitled "Uncommon morphologies in Silurian ancyrochitid and desmochitid chitinozoans from Tunisia and Libya".

**Abstract:** We illustrate several modes of polymorphism of ancyrochitid and desmochitid chitinozoans and show the regional distribution of the three most common modes. Polymorphism is rare among the conochitids, and we have not found any among the cyathochitids.

The abundance of ancyrochitid and desmochitid polymorphic modes may run as high as 0.1 percent, but is generally between 0.01 and 0.005 percent in the high abundance areas. Regionally, polymorphism is most common in the Silurian low latitudinal belts, and is extremely rare at the high paleolatitudes. We have no evidence one way or the other to determine whether polymorphism was climate, salinity, or substratum controlled or even linked.

Recently their paper was published in Palaeontographica.

In the discussion following the presentation some specialists reported scattered occurrences of "polymorphism", especially among chitinozoans in shales. Sven Laufeld mentioned that "aberrant" forms were extremely rare in the Silurian of Gotland and in the Ordovician of Öland and the mainland of Sweden and that he was inclined to consider the "polymorphs" as monstrosities. However, all participants stressed the importance of reporting and illustrating such forms because of their importance as possible clues to an understanding of the systematic affinity of Chitinozoa.

The remaining part of the morning was spent on a discussion on "Chitinozoa and palaeogeography" which was chaired and introduced by Fritz Cramer. He concluded his introduction by stating that chitinozoans probably do not show as pronounced geographic provincialism as most acriftriches. Sven Laufeld supported



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the idea of provincialism of Chitinozoa put forward by Cramer in 1971, since hitherto unpublished data on e.g. chitinozoans in Ordovician-Silurian rocks from the North Slope of Alaska confirm Cramer's suggestion of a "Baltic chitinozoan-facies (Arctic Canada, Sweden)". Tove Bockellie indicated a dissimilarity between chitinozoans in the Lower Ordovician of Spitsbergen and those of the Baltic area (unpublished). Claude Pomot, Florentin Paris and others pointed out the dissimilarities between Chitinozoa from North Africa and the Baltic area. However, some participants noted the difficulties in delineating paleogeographic chitinozoan provinces, if they exist, because of the present state of taxonomic confusion. The best remedy for the latter state of affairs would be improvements of illustrations, exchange of material, and holding of meetings where specialists on Chitinozoa come together for discussions.

After lunch in the park in the same splendid weather that lasted the entire week, Fritz Cramer chaired the discussions on the agenda proposed in Symposium Circular No. 3.

Unanimous decision were taken that

- (1) the International Code of Zoological Nomenclature must be adhered to in the classification of Chitinozoa until it is proved that Chitinozoa do not belong to the Animal Kingdom;
- (2) the compilation of a "Catalogue of Chitinozoa" should await further stability in the systematics of the group;
- (3) the next symposium on chitinozoans should take place within 2-3 years in a place located close to outcrops of Ordovician-Silurian-Devonian rocks providing a basis for field trips and collecting and that the symposium should be organized in connection with a major international meeting, symposium, or congress in order to facilitate for possible participants the task of raising financial support.

The late afternoon was spent on a rambling on the famous Allekvia park-meadows and on a trip to Hogkint 1, type locality of the Wenlockian Hogkint Beds, and Kõvar Liljas hala, a cave in the scenic cliff exposing the Visby and Hogkint Beds.

#### 19th August

The remaining part of the week was spent in the field, where the participants had an opportunity to study and sample all the major topostratigraphical units in the Silurian of Gotland. The field trips aimed partly at an understanding of the reef-controlled sedimentary regimes (and their microfossils), partly at collecting of topotype sample material of chitinozoans and other organic-walled microfossils in the Silurian of Gotland. Your chairman acted as guide in the field and in this capacity he was supported by Professor Anders Martinsson (ostracodes, stratigraphy and paleontology), Dr. Roland Skoglund (graptolites), Dr. Kent Larsson (centaculites), Ms. Christina Franzen (crinoids), and Dr. Stefan Bengtsson (machaeridians). The three latter colleagues helped with logistic problems in all possible ways and are worthy of every recognition for making the field trips such an enjoyable experience to us all.

#### 2nd August

Getland Shipwrecking, 1000-300 B.C.  
Anaravik 3, Hogkint Beds  
Göteborg 1, Upper Visby Beds (excavated from the harbour)  
Välbytt 1, Silite Hart  
Väile 1, Silite Hart  
Kinnabys 1, Silite Silitestone - Halla Beds (ripple marks)  
Kinnaberget 1, Kinnaberget Beds (Lunch)  
Kinnaberget 1, Silite Silitestone  
Mölnar 1, Silite Silitestone  
Djupvik 1, Mulde Beds  
Snoder 2, Håmoa Hart  
Botes 1 (new locality, cf. Småas 1 - eqv.), Kinnaberget Beds

In the evening the participants got a demonstration of a series of large aerial photos (1x1 m) by Arne Philip of Väby. These photos from Gotland will be exhibited in the UNESCO building in Paris in the spring, 1975. After the demonstration the roasted lamb was ready and the participants had dinner in the park of the Allekvia field station. The discussions were carried on until very late.

#### 23rd August

Stångåkers 2, Håmoa Beds  
Stångåkers church 1350, giant sculptures of captials by Egyptian  
Lye church 1300, sculptures of captials by Egyptians 1225-1330, wall paintings 1400, glass paintings 1300 (the most complete and beautiful in Scandinavia)  
Lån church 1220-1270, wall paintings 1520, crucifix 1250, font by Sigtun about 1175  
Sunnskyrke 1, Eka Beds  
Lån Bäcker 1, Eka Beds  
Ljögarn (Lunch)  
Lånsvär 1, Håmoa Beds  
Gäddar, gråvar-fälld from the Bronze Age  
Börjen 4, Håmoa - Eka Beds  
Börjen 5, Eka Beds  
Börjen 6, Börjavik - Håmoa Beds  
Börjen 7, Börjavik - Håmoa Beds  
Källunda 2, Eka Beds  
Pecarve 15, Eka Beds

#### 20th August

Game 2, Silite Hart  
Vallåviken 1, Silite Hart  
Lån Bäcker 1, Silite Beds, sea stack area  
Lån Bäcker 2, Silite Hart and limestone  
Bogkint 1, Silite Beds (lunch at the sea stack area)  
Vike 1, Silite Hart  
Tjelleshövan 6, Halla Beds (Ice cream on the beach)  
Gottshamn 2, Halla - Kinnaberget Beds  
Vallåviken 2, Silite Hart  
Börjen 1, Silite - Halla Beds  
Börjen 4, Halla Beds  
Hörne 5, Halla Beds  
Hörne 6, Halla Beds  
Börjen church ruin

#### 21st August

Kocklöfver Claustrian Monastery from 1164  
Cyle 1, Håmoa Beds  
Lembäcke 1, Håmoa Beds  
Öjumsån church 1300, sculptures of captials by  
Gamleån church 1300, defence tower from 1100, sculptures of captials by  
Kuppön 2, Håmoa Beds (Lunch, sockad flöndera)  
Kuppön 1, Håmoa Beds

#### 24th August

Uddvike 1, Börjavik - Håmoa Beds  
Bodudd 1, Håmoa Beds (covered by water)  
Bodudd 2, Eka Beds (covered by water)  
Olavene 3, Eka Beds  
Sunder, defence tower from 1100 at the church  
Hölmålar 1, Sunder Beds (sea stack area)  
Håstergården (Lunch)  
Höbörjen 1, Börjavik - Håmoa Beds  
Höbörjen 2, Börjavik - Håmoa Beds  
Höbörjen 3, Håmoa Beds  
Höbörjen 4, Håmoa - Sunder Beds  
Höbörjen 5, Håmoa Beds  
Höbörjen 6, Håmoa Beds (active quarry, grindstones; before visiting the quarry we climbed the cliff for a scenic view of the southernmost part of the island)  
Höbörjen 7, Håmoa Beds  
Höbörjen 8, Håmoa Beds  
Höbörjen 9, Håmoa Beds  
Höbörjen 10, Håmoa Beds  
Höbörjen 11, Håmoa Beds  
Höbörjen 12, Håmoa Beds  
Höbörjen 13, Håmoa Beds  
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Höbörjen 97, Håmoa Beds  
Höbörjen 98, Håmoa Beds  
Höbörjen 99, Håmoa Beds  
Höbörjen 100, Håmoa Beds

CIMP activities during the Carboniferous Congress in Moscow will be : discussion meetings and working sessions with microscopes.

Discussion meetings : see time-table on page 12.

Discussion meetings would run on precise topics like "top spores (or pollen) near a boundary problem".  
Top meaning selected on the criteria of restricted stratigraphic range, wide geographic distribution and distinctive morphology.

For each topic, two regional co-convenors have been selected (see list on time-table page 12), one from USSR and one amongst western countries in order to facilitate concentration of data. On each side publications are now available, some written in view of these Moscow meetings. A tentative but not completed list of now available publications which match the proposed topics is given on page 12.  
 Each meeting will be prepared by written contacts between both co-convenors before the Congress. Palynologists who want to demonstrate microfossils range charts or other data related to these topics should immediately write to the appropriated regional co-convenor.

Except for more convenient arrangements to be taken at Moscow, co-convenors will also chair together their respective discussion meeting. Projecting 5 cms x 5 cms slides facilities, surface for displaying documents and good microscopes will be available in each of the 3 (possibly 4) rooms devoted to CIMP activities.  
 We have thought that because lacking of time, papers, if any, will be shortly presented but however that appropriate manuscripts would be accepted for publication in the Congress "Compte Rendu" (Organisers are planning to accomplish publication of C.R. in 1978). All manuscripts should be available to Dr. S. Meyen, Moscow before the Congress. A copy of these manuscripts should reach the appropriated regional co-convenor before the Congress so that these papers can be introduced at the beginning of each meeting.  
Timing of each discussion meeting will thus be as following :

- Introductory speech by USSR co-convenor (5')
  - Short presentation by USSR palynologists of papers or just general explanations of charts and informations about slides available (maximum 10' each).
  - Same presentation as above by non-USSR attending members.
  - Coordination of finalised or planned works, presented together by both co-convenors.
- Working-sessions will be organised concurrently with the discussion meetings in other rooms. Time-table will be arranged during the Congress. Attending palynologists are asked to bring microscopical slides.

Tentative list of papers announced :

SIVERTSEVA : Upper (?) Permian and Lower Carboniferous of Kamchatka Peninsula (first data on the flora of this part of Pacific).

DIGNER : Upper Permian of Antarctica.

MAHESHWARI : Middle Gondwana of India.

TETERYUK; INOSOVA : (two papers) : Whole section of Carboniferous and Lowermost Permian of Donetz Basin.

RASKATOVA & KHOLMOVAYA; BYVSHEVA; CHIBRIKOVA (3 papers) : Carboniferous/Devonian boundary.

JACHOWICZ, COQUEL & LOBOZIAK : Westphalian Western Europe.

PIERART, LOBOZIAK, LACHKAR et al : Megaspores morphology revision.

etc...

- RICHARDSON, J.B., 1974. Int.Symp. Belgian Micropal. limits, 9 : 1-13.
- GUEINN, K., 1974. Int. Symp. Belgian Micropal. limits, 10 : 1-13.
- CHIBRIKOVA, E.V. & NAUMOVA, S.N., 1974. Palyn. Protero-Paleophyte; Nauk Akad. Moscow : 39-47.
- KEDO, G.I., 1974. Palyn. Protero-Paleophyte, Nauk Akad. Moscow : 86-92.
- BYVSHEVA, T.V., 1974. Palyn. Protero-Paleophyte, Nauk Akad. Moscow : 100-105.
- TETERIUK, V.K., 1974. Palyn. Protero-Paleophyte, Nauk Akad. Moscow : 114-116.
- INOSSOVA, K.I., SHWARTSMAN, E.G. & KRUSINA, A.K. Palyn. Protero-Paleophyte, Nauk Akad. Moscow : 116-124.
- LOBOZIAK, S. Rev. Palaeobot. Palyn., Utrecht, 18, 3-4 : 224-271.
- VISSCHER, H. & WARRINGTON, G., Editors. Permian and Triassic Palynology, CIMP Symposium, BousSENS.- Rev. Palaeobot. Palyn., Utrecht, 18, 1-2 : 1-216.

A meeting on Acritarcha is not formally planned by CIMP but attending palynologists who wish to meet their russian colleagues working on Acritarcha should directly contact Dr. Volkova. (See address on page 16)

Discussion meetings.

Tuesday 9th  
(Room A)

morning :	Upper Permian Triassic	YAROSHENKO	VISSCHER
afternoon :	Autunian Lower Permian	FADEEVA	DOUBINGER

(Room B)

morning :	Incoming of Middle Devonian spores	CHIBRIKOVA	RIEGEL
afternoon :	Givetian/Frasnian	SERGEEVA	RICHARDSON

Wednesday 10th

(Room A)

morning :	Upper Tournaisian - Viséan	BYVSHEVA	GUEINN
afternoon :	Famennian-Middle Tournaisian	CHIBRIKOVA KEDO	STREEL

Thursday 11th

(Room A)

morning :	Namurian		OWENS
afternoon :	Westphalian- Stephanian	TETERIUK	LOBOZIAK PIERARD (megaspores)

## PROGRAMME OF THE CONGRESS

As it was mentioned in the First Circular, the work of the Congress will proceed at plenary sessions and section sessions. The papers to be delivered at sessions will be grouped in accordance with the following theme subjects:

1. Stratigraphy (including the absolute age).
2. Palaeontology.
3. Lithology and palaeogeography.
4. Tectonics.
5. Mineralogy and geochemistry.
6. Coal-bearing formations.
7. Petrography and genesis of coal.
8. Relation of coal, oil, and gas formation.
9. Applied (economic) geology and geophysics.

Papers on subjects 1-5 are within the Carboniferous. Subject 2 does not cover problems of systematics of fossil organisms unless they are directly related to the solution of stratigraphic problems. Subjects 6-9 deal with coal-bearing formations of not only the Carboniferous age, but of another age as well. One section session may be devoted to mathematical methods in geology.

## CALENDAR PLAN

The term of submitting the abstracts is extended till July 1, 1974.

Deadline for registration: January 1, 1975.

Deadline for submitting the papers: May 1, 1975.

Deadline for membership fee: June 1, 1975.

The arrival of delegates at the starting point of the pre-Congress excursions: August 31, 1975.  
Excursions I, III, V, VII, IX, XI, XIII: August 31 (September 1) - September 6(7), 1975.

Arrival of all delegates in Moscow: September 7, 1975.  
Work of the Congress: September 8-13, 1975.

Leaving Moscow for the starting point of the post-Congress excursions: September 13 (evening) - September 14, 1975.

Excursions II, IV, VI, VIII, X, XII, XIV: September 13(14) - September 20, 1975.

Departure of the delegates: September 20-21, 1975.

The following International bodies will function during the Congress:

International Committee for Coal Petrology (ICCP).  
President: Dr. R. Noel, INIEX, Liège, Bois du Val-Benoit, rue du Chêne, Belgique; Secretary: Dr. D. G. Murchison, Department of Geology, the University, Newcastle upon Tyne 1, England.

International Commission for the Microflora of the Palaeozoic (ICMP).  
President: Dr. B. Alpern, GERCJAR, Verpoortje-Halatte, B. P. 27, F-40 Creil, France; Secretary General: Prof. M. Streef, Palaeobotaniek & Palaeoynologie, Universiteit, 7, place du XX Août, B-4000, Liège, Belgique.

International Subcommittee on Carboniferous Stratigraphy (SCCS).  
Chairman: Dr. A. Houroz, Charbonnages de France, 9 Av. Percier, 75008 Paris, France; Secretary and Vice-Chairman: Prof. R. II. Wagner, Department of Geology, University of Sheffield, Mappin Street, St. George's Square, Sheffield, S1 3JD, England; Assistant Secretary: Dr. C. F. Winkler-Prins, Rijksmuseum van Geologie en Mineralogie, Leiden, The Netherlands.

International Subcommittee on Permian stratigraphy (SCPS).  
Chairman: Prof. D. L. Stepanov, USSR, 190178, Leningrad B-178, 16 Linija, 29, Kafedra paleontologii, Leningrad University; Secretary: Dr. set. S. V. Meyen, USSR, 109017, Moscow 17, Pyzhevsky per., 7, Geological Institute of the USSR Academy of Sciences.

These international bodies are responsible for further information on their work. The place of the work will be reported in the Third Circular.

## TIME-LIMIT FOR PRESENTATION OF PAPERS

As it was mentioned in the First Circular, only the papers of attending members will be delivered. At plenary sessions each author will be given 40 minutes, to be followed eventually by a discussion of 20 minutes, that at a section session - 20 minutes to be followed eventually by a discussion of 10 minutes. Each participant will be allowed to deliver one report only (two in case of co-authorship). All illustrations are to be presented as slides sized 5 x 5 cm.

## PREPARATION OF MANUSCRIPTS

The papers delivered at the Congress will be published in the "Compte rendu" in that official language of the Congress (Russian, English, German, French) in which they have been submitted. Each paper will be accompanied by either a Russian or English abstract. A manuscript to be published must not exceed 3,000 words, including a bibliography, conclusions, an abstract and space for illustrations with captions. The captions should be typed separately. The maximum size of illustration is 21 x 25 cm. Coloured illustrations will not be accepted.

Manuscripts must be typewritten on one side, standard-sized white paper, double spaced, with an ample left margin. Line drawings should be submitted in black on tracing paper or as photos with glossy finish. The text and illustrations must be submitted in three copies. The abstract accompanying the manuscript must not exceed 200 words. The bibliography should be typed separately and must comprise all the works which are referred to in the text, and nothing else. Tables must be submitted on separate sheets. References are to be written as follows: author(s), date of publication, title of the paper (book), title of a journal, volume, number (part), pagination (obligatory). Books should have the place of publishing. Abbreviations of reference must be given according to those recommended by the Journals themselves. Otherwise they should be given without abbreviations.

Examples of references:  
Walton J. 1928. Carboniferous Bryophyta. II. Hepaticae and Musci. Ann. Bot., vol. 42, No. 107, p. 707-746.

Walton J., Weir J., Leitch D. 1938. A summary of Scottish Carboniferous stratigraphy and palaeontology. In: Compte rendu 2-ème Congrès pour l'avancement des études de stratigraphie carbonifère. Iwerdon, 1935, t. 3, Maestricht, p. 1343-1355.

Gignoux M. 1960. Geologie stratigraphique, Paris, 759 p. Manuscripts should be submitted to the Secretary General before May 1, 1975.

The Permanent International Committee reserves the right not to accept the papers the theme of which does not directly concern the above problems, or deal with the subject of merely local value. The Permanent Committee reserves also the right to limit the number of papers for publication, as well as to return manuscripts which do not satisfy the requirements.

**C.I.M.P. attending members  
have to register as member  
of the VIII Int. Congress.**

VIII INTERNATIONAL CONGRESS  
ON CARBONIFEROUS STRATIGRAPHY AND GEOLOGY,  
Moscow, 8-13 September, 1975

## FINAL REGISTRATION FORM

Name \_\_\_\_\_

Profession, title \_\_\_\_\_

Full mailing address \_\_\_\_\_

I wish to register as an Attending Member \_\_\_\_\_ (yes, no)

Non-attending Member \_\_\_\_\_ (yes, no)

Accompanying persons in Moscow \_\_\_\_\_

Title of the paper (subject No. \_\_\_\_\_)

I wish to participate in the excursions (write «yes» in a corresponding square):

Pre-Congress	Moscow basin		Donets basin		South Urals	Kuznetsk basin	Middle Asia
	I	III	V	VII			
		Geology	Stratigraphy	Donets-North Caucasus			
Pre-Congress	I	III	V	VII	IX	XI	XIII*
Post-Congress	II	IV	VI	VIII	X*	XII*	XIV

\* Unfavourable weather conditions.

ABSTRACTS

Participants of the Congress wishing to deliver a paper have to submit an abstract to the Secretary General before July 1, 1975. Abstracts will be published prior to the Congress in two sets: in Russian (including translation of those abstracts which will be submitted in other official Congress languages), and in English (or in any official Congress language according to original text submitted to the Secretary General). Abstracts of Soviet delegates will be translated into English.

The text should not exceed 300 words (one page and a half, standard-typewritten, double-spaced i. e. total 42 lines, 62 letters per line). Abstracts should be submitted in three copies. The order of the text: the author's name, country, title of the paper, the text proper. Illustrations will not be accepted. References are allowed in the text only, abbreviated.

PRESENTATION OF PAPERS

It is supposed that several Sections of the Congress should be organized for delivering the papers. However, judged by the number of the papers applied in registration forms of the First Circular, only a part of the papers applied can be allowed for presentation. The rest of the papers can be exhibited on special display. Delegates will be informed about it together with the Third Circular. Extra time will be given for surveying such display. The abstracts of undelivered papers will be published.

CONGRESS LANGUAGES

Four official languages of the plenary sessions are: Russian (interpreted into three other languages), English, German and French (interpreted into Russian). Section sessions will be held preferably in two languages: Russian and English. The Organizing Committee does not guarantee a simultaneous interpretation at section sessions.

EXHIBITS

An exhibition of literature and displays devoted to the Congress problems will be organized during the Congress. Participants of the Congress are allowed to exhibit their collections. Microscopes and binoculars will be at their disposal.

REGISTRATION

Fill in the attached registration form. The third, the last, circular will be dispatched only to those persons and institutions who will return their filled-in registration form to the Organizing Committee before January 1, 1975.

In case, when all places in the given excursion are occupied, I should like to participate in the excursion (No, name) \_\_\_\_\_

I will be accompanied on excursions by \_\_\_\_\_

I wish to participate in sightseeing of Moscow and its surroundings (write eyes in a corresponding square):

August 31	September 7	2-hours' excursion	September 14	September 20	September 21

Accompanying persons in this excursion \_\_\_\_\_

I shall arrive in Moscow \_\_\_\_\_ by \_\_\_\_\_ (transport)

Date \_\_\_\_\_ Signature \_\_\_\_\_

Please, fill-in this form (typewritten) and return before January 1, 1975 to the address: Secretary General, Dr. Sci. Sergei Viktorovich MEYEN, Geological Institute of the USSR Academy of Sciences, Carboniferous Organizing Committee, Pyzhevsky per., 7, Moscow 109017, USSR.

MEMBERSHIP FEE

The participants of the Congress are divided into three categories:

1. Attending members (they receive all publications of the Congress: programme, abstracts, «Complete reading, guide-books); membership fee — 52 dollars (of an equivalent sum in any hard currency).
2. Accompanying members (staying in Moscow under a special programme for sight-seeing, visiting museums, exhibitions, etc.); membership fee — 26 dollars (or an equivalent sum in any hard currency).
3. Non-attending members (institutions and private persons not participating in the Congress but wishing to have all its publications); membership fee: 39 dollars (for private persons) and 52 dollars (for institutions), or an equivalent sum of any hard currency.

Membership fee should be sent until June 1, 1975 to address: USSR, Moscow 109016, Kopyevsky per., 35, Bank for foreign trade of the USSR, current account No. 70102356, Geological Institute, Soviet Organizing Committee of VIII International Congress on Carboniferous stratigraphy and geology. Please do not forget to record your name on the postal transfer.

The membership fee does not include payments for excursions (see paragraph «Excursions»).

ACCOMMODATION

All participants of the Congress will be accommodated in hotels. Foreign delegates of the Congress will be served through the Soviet Travel Agency «Intourist» only. For those of foreign delegates who will arrive at the Congress without vouchers, accommodation cannot be guaranteed. The foreign delegates are requested to make arrangements through their local «Intourist» bureau or through a travel agency, which has a contractual relation with «Intourist».

According to the «Intourist» tariff, the cost of one day's staying in Moscow is 27—36 dollars. This price includes: transfer to and from airport (railway station), staying in a hotel, breakfast, dinner, sight seeing). Further details concerning costs of staying in Moscow will be given in the Third Circular.

EXCURSIONS

It is planned to organize 7 pairs of pre- and post-Congress excursions. They are aimed at examining the most complete Carboniferous sections of the USSR: I, II — the Moscow basin (the southern part of the Moscow syncline); III, IV — Stratigraphy of the Donets basin; V, VI — Geology of the Donets basin; VII, VIII — Donets basin, North Caucasus; IX, X — South Ural; XI, XII — Kuznetsk basin; XIII, XIV — Middle Asia (Uzbekistan, South Kazakhstan).

Old numbers in each pair denote excursions before the Congress, whereas even numbers — excursions after the Congress.

The Soviet Organizing Committee calls the delegates' attention to the fact that excursions X (South Ural) and XII (Kuznetsk basin) will be proceeding in late September when the weather conditions may frequently be unfavourable. Therefore, the delegates wishing to visit the South Ural (Bashkir) area and Kuznetsk basin are recommended to apply to IX and XI pre-Congress excursions. Pre-Congress excursion XIII (Middle Asia) falls on the season when the day temperature reaches +40° C. and even over; it is recommended that the delegates wishing to visit Middle Asia should apply to post-Congress excursion XIV.

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Convenor for  
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C.I.M.P., MOSCOW  
SEPT. 1975



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2. Kalibová-Kaiserová
3. Terekhova
4. Péniguel
5. Lanzoni
6. Owens
7. Loboziak
8. Somers
9. Coquel
10. Chibrikova
11. Richardson
12. Archangelskaya
13. Gomankov
14. Yaroshenko
15. Doubinger
16. Grebe
17. Faddeeva
18. Byvsheva
19. Kedo
20. Teteriuk
21. Jachowicz
22. Nazarenko
23. Raskatova
24. Krutschov
25. Umnova
26. Sergeeva
27. Sennova
28. Poponina

