



SCCS

IUGS Subcommittee on Carboniferous Stratigraphy

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Dr. R.H. Wagner, Vice-Chairman.

Dr. C.F. Winkler Prins, Secretary.

Dr. W.B. Saunders, Associate Secretary.

Newsletter on Carboniferous Stratigraphy

Number 3 (April 1982)

S.C.C.S. News

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The Newsletter on Carboniferous Stratigraphy is distributed among all members of S.C.C.S. (titular and corresponding alike) free of charge. Other persons or institutions interested in receiving the Newsletter can subscribe at an annual fee of US \$ 5.-, to be paid to the new Editor, Dr W.B. Saunders. If this moderate price causes any problems, please do not hesitate to contact him for some other solution (e.g. some kind of exchange).

Editor: Dr Cor F. Winkler Prins
Bachlaan 16
2253 BA Voorschoten
The Netherlands

New Editor: Dr W. Bruce Saunders
Department of Geology
Bryn Mawr College
Bryn Mawr PA 19010
U. S. A.

S.C.C.S. News

Report of the IUGS Subcommittee on Carboniferous Stratigraphy for the year 1981

Membership

Two titular members have this year resigned because of pressing administrative responsibilities: Dr M.A. Calver, the chairman of the Working group on the Westphalian A-C, and Dr W.W. Nassichuk, the chairman of the Working group on the Middle Pennsylvanian. As successors have been appointed Dr C.F. Winkler Prins and Professor P.K. Sutherland, respectively. Professor Sutherland (School of Geology and Geophysics, University of Oklahoma, 830 Van Vleet Oval, Room 107, Norman OK 73069, U.S.A.) becomes a new titular member.

Unfortunately, we still don't know what working groups the five nominees for titular membership from the People's Republic of China represent, so they are still not accepted as titular members. Our Chairman, Dr W.H.C. Ramsbottom, has again explained to our Chinese contact, Professor Wang Zejiu, Secretary-General of the Geological Society of China, this problem. In the mean time the Chinese nominees are kept informed of all S.C.C.S. activities.

Activities

From 25 August to 3 September 1981 a Field and General Meeting was organized in the British Isles. During the excursions before and after the indoor meeting in Leeds, the 16 boundary stratotypes proposed in Great Britain and Ireland for Carboniferous stages were visited. One evening the titular members assembled to discuss Subcommittee matters, such as membership, publications, and future meetings. The indoor meeting was mainly dedicated to the 'Symposium on a mid-Carboniferous boundary'. Information on all stratigraphically important fossil groups was presented by specialists from North America and Europe (partly presenting information from North Africa) and written contributions had been received from Soviet colleagues. Although no consensus was reached on the level at which the boundary should be drawn, much useful information was accumulated which will be published shortly (see below). As a result, a committee will be installed under the chairmanship of Dr H.R. Lane, to study the problem of the lower/middle Carboniferous boundary further.

Publications

This year number 2 of the Newsletter on Carboniferous Stratigraphy appeared and no. 3 is scheduled for January 1982.

Unfortunately, the editing of the Proceedings of the S.C.C.S. Field and General Meeting in Turkey (IUGS Publ. no. 4) has not yet been completed, but we will do our utmost to get the papers in the press early next year, so they may still appear in 1982.

Since the organizers of IX I.C.C. were not keen on publishing the reports intended for the S.C.C.S. Meeting in Washington (1979) but not presented there, and in view of the delay and problems still connected with the publication of the Compte Rendu of the IX International Congress of Carboniferous Stratigraphy and Geology (Urbana, 1979), it was decided to publish these reports together with the proceedings of the S.C.C.S. Field and General Meeting in the British Isles, which consist mainly of the contributions to the 'Symposium on a mid-Carboniferous boundary'. The proceedings will be edited by R.H.W. Ramsbottom & W.B. Saunders, published in off-set from camera-ready copies by the Institute of Geological Sciences (Leeds), and they are scheduled for early 1982.

Another S.C.C.S. publication to appear in 1982, and also connected with the S.C.C.S. Field and General Meeting in the British Isles, is a volume on the stratotypes of West European Carboniferous stages (W.H.C. Ramsbottom, editor), which will be an Occasional Publication of the Yorkshire Geological Society.

Future plans

Our main goal for the 'near' future (the coming 5 to 10 years) is to integrate the four main subdivisions used in the Carboniferous equatorial belt - North America, Western Europe, the U.S.S.R., and China - into one international scheme, hopefully flexible enough to be used also elsewhere - notably for Gondwanaland and Angaraland - be it not in the same detail (e.g. series truly worldwide, stages mainly to be used in the palaeo-equatorial belt).

The first initiative to achieve this goal was a paper presented at the S.C.C.S. Meeting during the VIII I.C.C. in Moscow, 1975, this meeting being an ideal opportunity to discuss this problem (Bouroz, A., O.L. Einor, M. Gordon, S.V. Meyen & R.H. Wagner, 1977-1979. *Predloženiya po sozdaniya mezhdunarodnoj stratigraficheskoj shkaly karbona.* - *Izv. A.N. SSSR, Ser. Geol.*, 1977, 2: 5-24. Proposition pour une classification chronostratigraphique internationale du Carbonifère. - *Industrie minière*, 60, 10 (1978): 469-483. Proposals for an international chronostratigraphic classification of the Carboniferous. - *C.R. VIII Congrès Int. Strat. Géol. Carbonifère, Moskva 1975*, 1 (1979): 36-69 (with discussions)).

The S.C.C.S. Meeting in conjunction with IX I.C.C. in Washington, 1979, seemed another good opportunity to make some progress, but the absence of the Soviet members made the discussions less fruitful than had been anticipated. The presence of an important delegation of Carboniferous stratigraphers from the People's Republic of China, who showed a great deal of interest in the Subcommittee work, made our hopes running high that also the problem of integration of the Chinese subdivisions could be attacked. It is disappointing that so far no working groups were established in China and we therefore have no Chinese titular members as yet. It is hoped that this matter can be solved in the near future.

This year's 'Symposium on a mid-Carboniferous boundary' during the S.C.C.S. Field and General Meeting in the British Isles was a continuation of this project with the aim of settling the most important boundary within the Carboniferous, used both for a bipartite (subsystems: Mississippian/Pennsylvanian) and tripartite (series: lower/middle) subdivision of the Carboniferous. Since no agreement was reached, a committee was set up to study this boundary further and to report at the next S.C.C.S. Meeting, in conjunction with X I.C.C. (Madrid, 1983).

At the same meeting in Madrid, a symposium will be held on the middle/upper Carboniferous boundary and hopefully it will be possible to choose a biostratigraphical horizon to draw this boundary. Later on a suitable type section can be selected. Also a symposium will be held, based on the publication 'The Carboniferous of the World' (see below), on the size of series and stages in the Carboniferous. All results will, of course, be published, and discussed in the Newsletter on Carboniferous Stratigraphy. Formal decisions will be made afterwards by postal ballot among the titular members.

The invitation by Dr S. Archangelsky to organize the 1985 Field Meeting of S.C.C.S. in Argentina offers an excellent opportunity to check these results in an area outside the palaeo-tropical belt, viz. Gondwanaland.

In the mean time the investigations by the working groups on details of the different regional subdivisions will continue (e.g.

the choice of (boundary)stratotypes for regional stages), and special problems will be discussed during symposia (a symposium on the correlation of the Bashkirian/Moscovian boundary will be organized during X I.C.C.).

The Spanish National Commission on Stratigraphy has invited S.C.C.S. to co-operate in the preparation of a special publication 'The Carboniferous of the World' for X I.C.C., to which we have agreed. The Spanish Commission will provide the necessary funds and the S.C.C.S. members will provide the scientific information. This publication of some 1000 pp. will be edited by C. Martínez Díaz, R.H. Wagner & C.F. Winkler Prins. It is hoped that this compilation of present day knowledge of the Carboniferous will provide useful background information for the integration of the existing schemes into a truly international subdivision for the Carboniferous.

S.C.C.S. Account for the year 1981

Accounts for 1981

Balance of 1980	\$ 51.60	
Grant received for 1981	\$ 300.00	
Revenues Newsletter	\$ 65.00+	
Total revenues	\$ 416.60	
Secretarial expenses f 510.25		\$ 212.60
Expenses Newsletter f 300.00 ¹⁾		\$ 125.00+
Total expenditure		\$ 337.60

Budget for 1982

Secretarial expenses ¹⁾		\$ 249.00
Expenses Newsletter ¹⁾		\$ 500.00+
Total expenditure		\$ 749.00
Balance of 1981	\$ 79.00	
Expected revenues Newsletter	\$ 70.00	
Grant requested for 1982	\$ 600.00+	
Total revenues	\$ 749.00	

¹⁾ The expenses for the Newsletter sofar just consisted of the mailing costs, the costs for paper, envelopes, etc. were paid by the Rijksmuseum van Geologie en Mineralogie. On 1 July 1982, Dr W.B. Saunders will succeed Dr C.F. Winkler Prins as S.C.C.S. Secretary, and it seems unlikely that his institution, Bryn Mawr College, will contribute to the costs of the Newsletter in the same way. It is expected to have two numbers of the Newsletter in 1982.

1 \$ = f 2.40.

Account of the S.C.C.S. Field and General Meeting in the British Isles, 25 August - 3 September 1981

Arrival

In the evening of Tuesday 25 August thirty-six participants from nine nations assembled at the Clawthorpe Hall Hotel in Burton near Kendal (Cumbria), arriving with the excursion bus, or privately by train. A nice brief-case with ample documentation, including a.o. maps, an excellent guidebook with exhaustive information on the localities to be visited in Great Britain, and a souvenir crown for the royal wedding.

Cumbria

The first day in the field (26/8) started with a visit to the Asbian boundary stratotype at Little Asby Scar (3 km NNW of Newbeggins-on-Lune), where the Asbian Potts Beck Limestone rests conformably on the Holkerian Ashfell Limestone, both being highly fossiliferous (marine macro- and microfossils).

After a short stop at Kirkby Stephen for shopping, the River Eden at Janny Wood was visited. Here we had lunch and studied the Brigantian boundary stratotype showing the Asbian Birkdale Limestone overlain by a few metres of sandstone, which in turn are overlain by the Brigantian Peghorn Limestone. Both limestones, as well as some others exposed in the same river, contain both macro- and microfossils; the clastic deposits between the limestones have yielded a good miospore flora.

The last stop that day was at the Holkerian boundary stratotype on the eastern shore of the Leven Estuary at Barker Scar, on the grounds of Holker Hall. Here the Holkerian Park Limestone rests conformably on the top limestone of the Arundian Dalton Beds, both limestones containing a varied micro- and macrofauna. At the end of the day we returned to Clawthorpe Hall.

Lancashire and Yorkshire

The second day (27/8) began with a visit to the Kinderscoutian boundary stratotype on the right bank of the River Darwen at Samlesbury Bottoms, 110 m N of the old mill. The section consists of Alportian and Kinderscoutian mudstones with goniatites and bivalves, and also providing miospores. The base of the Alportian is taken at the base of the *Hodsonites magistrorum* Marine Band.

The next stop was at the Pendleian boundary stratotype in Light Clough, a little stream running north-westwards off the slopes of Pendle Hill. The succession consists here of Brigantian and Pendleian mudstones with some thin limestones, both containing goniatites and bivalves. The base of the Pendleian, being also the Viséan/Namurian boundary, is taken at the base of the *Cravenoceras leion* Marine Band.

After lunch at Dowham Green, the Chadian boundary stratotype at the Chatburn bypass road cutting near Clitheroe was visited, where the Chadian Chatburn Limestone of the Bankfield East Beds rests conformably on the top limestone of the Courceyan Horrocksford Beds. Unfortunately, both limestones are rather poorly fossiliferous here. This boundary represents at the same time the Tournaisian/Viséan boundary.

The last stop of the day was at the Chokierian boundary stratotype in the banks of Gill Beck (near Cowling). The succession consists of Arnsbergian and Chokierian mudstones with some limestone intercalations, both containing goniatites and bivalves, whilst the mudstones also yielded miospores. The boundary is taken at the base of a thin limestone above barren beds overlying the highest *Nuculoceras nuculum* Marine Band.

We spent the night at the Parkway Hotel in Leeds, after a splendid reception at the Civic Hall of Leeds, where we were shown around by the Secretary of the City Council.

Staffordshire and Yorkshire

On the 28th of August the first stop was made at the Lumpool Plantation near Longnor to visit the Alportian boundary stratotype, situated in Blake Brook. The Alportian consists of a mudstone sequence with some limestone bands, overlying the Chokierian Lum Edge Sandstone. The base of the Alportian is taken at the base of a thin ankeritic limestone with *Hudsonoceras proteus* and conodonts. The mudstones contain a varied miospore flora.

After lunch at the Mermaid Inn, the boundary stratotype of the Yeadonian Stage in the banks of the stream on Orchard Common (north of Readylee Green) was visited. The succession consists of Marsdenian and Yeadonian mudstones, fairly rich in goniatites and bivalves, and especially miospores. The base of the Yeadonian is taken at the base of the *Gastrioceras cancellatum* Marine Band.

The day ended with a visit to the Marsdenian boundary stratotype in Park Clough, Hey Green (near Marsden). The boundary is taken at the base of the *Reticuloceras gracile* Marine Band in a mudstone sequence with goniatites and bivalves, lying on top of the Upper Kinderscout Grit.

In the evening the participants attended a lively reception at the Institute of Geological Sciences (Leeds) and the night was spent again at the Parkway Hotel.

Westphalian around Sheffield

The morning of the 29th started with a visit to the Westphalian B/C boundary stratotype in an old pit of the Stairfoot Brickworks, 3 km ESE of Barnsley. The boundary is taken at the *Donetzoceras aegiranum* Marine Band (= Mansfield Marine Band) in a fossiliferous mudstone sequence above a coal with a seat-earth. A varied miospore flora was found at the stratotype.

The Westphalian A boundary stratotype - providing at the same time the Namurian/Westphalian boundary - in the banks of the River Little Don (1 km E of Langsett) was next visited. The Yeadonian/Westphalian A boundary is placed at the base of the *Gastrioceras subcrenatum* Marine Band in a mudstone sequence on top of the Pot Clay Coal. Between the marine band and the coal occurs a non-marine - or rather brackish marine? - bivalve and ostracode fauna. The point was discussed whether the cycle really started with the marine band, with the non-marine (or brackish) horizon, or with the coal, indicating a rise of the groundwater table and therefore considered the first indication of a transgression (see also News1. Carb. Strat., 2: 12). From the stratotype section a rich miospore flora is recorded.

After lunch in Langsett, the Westphalian A/B boundary stratotype in a disused railway cutting at Duckmanton (4 km E of Chesterfield), now forming the W.H. Wilcockson Nature Reserve, was visited. The boundary is taken at the base of the *Anthracoeras vanderbeckeri* Marine Band above the Joan Coal with seat-earth. The succession produced a rich miospore flora, the marine band contains a goniatite, bivalve, *Lingula* fauna, and below the coal and above the marine band non-marine bivalves and ostracodes are found.

Meeting of S.C.C.S. titular members

In the evening, the following titular members assembled in the Chevin Suite of the Parkway Hotel to discuss Subcommittee matters: W.H.C. Ramsbottom (Chairman), R.H. Wagner (Vice-Chairman), C.F. Winkler Prins (Secretary), W.B. Saunders (Associate Secretary), M. Calver, M. Gordon Jr, R. Kosanke, H.R. Lane (for C. Collinson), B. Mamet, E. Paproth, and (partly) P.K. Sutherland.

Replacement of members: A) The resignation of Dr W.W. Nassichuk because of pressing administrative demands and increasing involvement with the Permian Subcommittee, was announced. Professor P.K. Sutherland, University of Oklahoma, was nominated and elected to replace Dr Nassichuk as titular member and working group chairman. Professor Sutherland then joined the meeting in progress. B) The resignation of Dr M.A. Calver, Chairman of the Working group on the Westphalian A-C, was announced at the Urbana Meeting where it was agreed that Dr C.F. Winkler Prins will replace Dr Calver; this will be effective immediately. C) The Associate Secretary, Dr Saunders, will become Secretary in

July 1982. This means that a new Associate Secretary needs to be nominated and elected. Dr W.L. Manger, University of Arkansas, was nominated for the office; this was agreeable to the members present, and the matter was to be discussed further with Dr Manger. D) The chairmanship of other working groups was discussed and Dr J. Doubinger was to be asked to provide a membership list for her working group.

X I.C.C.: Concerning a possible programme for the S.C.C.S. meetings to be held in Madrid, 1983, in conjunction with the X International Congress on Carboniferous Stratigraphy and Geology, Dr Wagner proposed a symposium on chronostratigraphic subdivision of the Carboniferous which could be held using as background the 'Carboniferous of the World'. The results of the lower/middle Carboniferous boundary symposium (Leeds) could be developed into a formal proposal, to be voted upon by titular members.

The Carboniferous of the World: The comprehensive project was originally undertaken by the Spanish Committee on Stratigraphy, which invited our Subcommission to co-operate scientifically. Dr R.H. Wagner read a letter, signed by Drs Ramsbottom, Wagner and Winkler Prins and sent October 1980 to all titular members, to explain the situation. At this time a few contributors are not members of S.C.C.S. and the question whether it is a formal S.C.C.S. project was discussed at length. Dr Winkler Prins proposed adopting this as an S.C.C.S. project, giving it our full support and cooperation, but with no intended obligation to individual members. This was voted upon and carried 5 (for) 3 (against).

Chinese representation on S.C.C.S.: Five titular members have been proposed by the Chinese, although specific working groups and their memberships have not been provided. It was suggested that the structure of the S.C.C.S. might not be clear to the Chinese representatives and that this should be clarified by mail.

S.C.C.S. Field Meeting in 1985: A letter has been received from Dr S. Archangelsky, concerning the possibility of hosting a field and general meeting in Argentina. While no commitments were being requested, Dr Archangelsky did wish to have a feeling from the S.C.C.S. concerning the degree of interest in such a meeting. Discussion followed on what Carboniferous is present in Argentina, and what the attendance would be (all of those present indicated that they would attend such a meeting, if possible). Dr Ramsbottom will inform Dr Archangelsky that the Subcommission is definitely interested. The possibility of Nova Scotia as a possible alternative or as a site for a future meeting was discussed.

New Business: The status and definition of corresponding members of the S.C.C.S. was reviewed; it was agreed that a corresponding member need not be a member of a working group, but that this category be represented by specialists in areas relevant to the work of the Subcommission who are interested and/or involved in the work of the S.C.C.S.

Dr B.F. Glenister (Univ. of Iowa) has written that members of the Permian-Carboniferous Boundary Group have not yet been selected, but that he will keep us informed.

The questions of the status of the Soviet contributions to the 1979 Washington (D.C.) Subcommission Meeting was discussed. A total of 13 Soviet contributions arrived at that meeting too late to be presented and were in need of editorial work. They later arrived at the IX I.C.C. editorial office late; in view of their length and the difficulties and delays in the publication of the IX I.C.C. *Compte Rendus*, their publication with that series of volumes seemed very unlikely. It was agreed to return these papers to S.C.C.S. and an effort would be made to publish them.

There was brief discussion of publication of the proceedings of the 1977 S.C.C.S. Meeting in Turkey. Could the S.C.C.S. pursue this, perhaps by sending Dr Winkler Prins to Turkey? No decision was reached on how to expedite the publication of these proceedings.

It was agreed that publication of the 1981 Leeds symposium 'A mid-Carboniferous Boundary' would be undertaken in the format of the proceedings of the 1965 Sheffield Meeting. Publication preparations will proceed as soon as the authors' contributions have been received by the editors (Drs Ramsbottom & Saunders), and it is hoped that the volume will be published early in 1982.

There being no further new business, the meeting was adjourned.

Indoor Meeting at the Parkway Hotel

Forty-five participants assembled on the 30th of August for the indoor meeting, which started with a discussion on the British stratotypes visited and on general principals of stratotypes. The Symposium on a mid-Carboniferous boundary formed the main topic of the meeting. Copies of most contributions were handed out to the participants before the meeting started. The symposium was opened with papers on conodonts: H.R. Lane compared the information from the U.S.A. (paper by H.R. Lane & F. Baesemann) with that from the U.S.S.R. (paper by T.I. Nemirovskaya), Western Europe (paper by A.C. Higgins), and North Africa (paper by M. Weyant). Next the foraminiferal evidence was presented by P. Brenckle and B.L. Mamet, comparing the North American results with those from the U.S.S.R. and Western Europe. As an introduction C.F. Winkler Prins discussed the ranges of Viséan-Namurian brachiopods, followed by details on the brachiopod development in the U.S.S.R. with special emphasis on the pallial markings (paper by S.S. Lazarev & V.I. Poletayev), Ms M. Legrand-Blain discussed the Algerian brachiopods, also considering especially the pallial markings, and M. Gordon Jr discussed the brachiopod distribution in the U.S.A. (a joint paper with T.W. Henry and P.K. Sutherland). W.L. Manger discussed the ammonoid evidence from the U.S.A. (joint paper with W.B. Saunders) and the U.S.S.R. (paper by M.F. Bogoslovskaya), and W.H.C. Ramsbottom presented the Northwest European evidence, stressing the fact that the base of the *Homoceras* 2c Subzone is a far more important boundary than the base of the *Reticuloceras* Zone. B. Owens and R.M. Kosanke gave information on the palynomorphs from Western Europe and North America, respectively.

In the evening the ancient city of York was visited with its medieval city walls, beautiful cathedral and picturesque pubs.

The second day of the indoor meeting (31/8) started with R.H. Wagner's presentation of the information on plant megafossils from Central Europe (paper by V. Havlena) and North America (paper by H. Pfefferkorn & W.H. Gillespie), analysing the results and adding his own views. Coral evidence from North America, the U.S.S.R. and North Africa was discussed by P.K. Sutherland (joint paper with P. Semenov-Tian-Chansky). Crinoid evidence prepared by Th.W. Broadhead was presented by W.H.C. Ramsbottom. Finally there was a contribution on the bivalve distribution in the U.S.S.R. (paper by M.T. Sergeeva). The results of the different fossil groups were summarized and the preferred boundaries indicated and discussed:

- conodonts - base of the Chokierian
- foraminifera - base of the Chokierian and partly base of Kinderscoutian
- brachiopods - base of the Kinderscoutian
- ammonoids - base of the Chokierian
- plant megafossils - within the upper part of the Arnsbergian
- palynomorphs - within the upper part of the Chokierian; North America: base of the Kinderscoutian
- corals - in the top part of the Alportian
- crinoids - somewhere between base Kinderscoutian and base Chokierian

At the end an inofficial vote was taken to see the preference of the audience: 20 persons were in favour of the boundary at the base of the Chokierian, 8 of the base of the Kinderscoutian, and 3 of the base of the Pendleyan.

After vigorous discussions, the Chairman, Dr Ramsbottom, announced that a committee chaired by Dr H.R. Lane (Amoco Production, P.O. Box 591, Tulsa OK 74102, U.S.A.) will be formed, with membership selected by Dr Lane in consultation with the Subcommission officers, to systematically evaluate the various possible choices for a mid-Carboniferous boundary, as presented at Leeds. The committee's charge will be to present in Madrid a formal proposal for such a boundary for approval and adoption by the S.C.C.S. members. As chairman of this Committee, Dr Lane will have full voting status in matters of the S.C.C.S.

After the presentation of some working group reports the meeting was closed, giving us the opportunity to have a cricket match between the English participants and the rest of the World. Perfect hosts as they are, the English were content with a mere 45 runs (in 10 overs) and were beaten by the rest of the World.

In the evening the Working Group on the Devonian-Carboniferous Boundary assembled.

Wales

On the first of September a relatively small group of 18 participants started their journey to Wales. In the late afternoon they arrived at the Castlemartin Tank Range in South Pembrokeshire, where the Arundian boundary stratotype at Hobbyhorse Bay was visited, showing a magnificent coastal scenery composed of the erosion remnants of the Arundian Pen-y-holt Limestone on top of the Chadian Hobbyhorse Bay Limestone. The limestones contain nice macrofossils, which are however often difficult to collect, and a varied microfauna.

Ireland

After dinner at Pembroke we departed with the overnight ferry to Cork, where we arrived the next morning (2/9). It was a bit disappointing, after the excellent weather we had had so far, to be welcomed by rain in Ireland, but it soon stopped and we had again perfect weather until the end of the excursion. We were picked up at the docks of Cork by the bus with the Irish excursion leaders. After receiving the guidebook for the Irish part of the excursion with the geological map of Ireland, the Courcayan boundary stratotype at the Old Head of Kinsale was visited. Here the Courcayan Castle Slate Member of the Kinsale Formation rests conformably upon the Upper Devonian Old Head Sandstone Formation, both deposits having yielded miospores. It took us the rest of the day to travel to the Bush Hotel (an appropriate place for geologists) in Carrick-on-Shannon.

On the last day (3/9) we visited the Arnsbergian boundary stratotype, a remote locality on the south side of Stony River east of Lough Allen (Country Leitrim). Here a shale sequence is exposed; the base of the Arnsbergian is taken at the base of the *Cravenoceras cowlingsense* Marine Band, which contains here goniatites and bivalves. The excursion ended with a drink in Trinity College, Dublin.

Word of thanks

The Organizing Committee of the S.C.C.S. Field and General Meeting in the British Isles can be congratulated with a perfectly organized and highly successful meeting and all contributors have earned our warmest thanks.

Membership changes

Before the Field and General Meeting in the British Isles (1981), Drs M.A. Calver and W.W. Nassichuk had informed us that they wished to resign as chairman of the Working group on the Westphalian A-C and of the Working group on the Middle Pennsylvanian, respectively, due to pressing administrative demands. At the meeting of titular members in Leeds (see p.5) they were replaced by Dr C.F. Winkler Prins and Professor P.K. Sutherland, respectively.

The Bureau wishes to express its gratitude to Drs Calver and Nassichuk for their valuable contributions to the work of the Sub-commission. We hope to continue to profit from their experience and knowledge in the future, albeit to a lesser degree than before, since they remain corresponding members.

Election of a new Associate Secretary

On the first of July the Bureau will change its composition: the present Chairman will become Vice-Chairman, the Vice-Chairman Chairman, the Secretary will retire and be succeeded by the Associate Secretary. Therefore a new Associate Secretary is needed and has to be elected before that time. The Bureau has considered the matter for some time and found Dr W. Manger (Department of Geology, University of Arkansas, Fayetteville AR 72701, U.S.A.) prepared to be candidate for the post. All titular members are invited to propose competing candidates (not necessarily titular members) and send their names and addresses, together with a note of acceptance by the candidate, to the Secretary. The proposals should reach the Secretary not later than 30 May 1982.

If no competing candidates are proposed, Dr Manger will automatically be elected, otherwise a postal ballot will be organized among the titular members. If the postal ballot ends in a tie, the Chairman will have an additional casting vote.

Publication

The proceedings of the Leeds (1981) Symposium have appeared and can be obtained from Dr W.H.C. Ramsbottom. Participants of the S.C.C.S. Field and General Meeting in the British Isles will receive a copy free of charge. The volume is edited by Drs W.H.C. Ramsbottom, W.B. Saunders and B. Owens, and entitled 'Biostratigraphic data for a mid-Carboniferous boundary'.

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Special sale

There will be a 50% reduction (from US \$ 35.00 to \$ 17.50) in the price of Streel, M. & R.H. Wagner (eds) *Colloque sur la stratigraphie du Carbonifère* (Congrès Colloques Univ. Liège, 55: 1-551, 38 pls), for as long as the present supply lasts. Copies may be ordered from W.B. Saunders, Department of Geology, Bryn Mawr College, Bryn Mawr PA 19010, U.S.A. (payable in US \$ only).

Open forum

Correlation chart 1

The expressed views to the correlation between Western Europe and the USSR (rather the European part of the USSR, because in the Asiatic part the given division can often hardly be followed) are presented from the foraminiferal stratigrapher's point of view. As the problems of foraminiferal correlations between the mentioned areas are often intricate, only the main points (in the author's opinion) are discussed.

In the stratigraphic chart (News1. Carb. Strat., 2: 11) the criteria used for the definition of the Viséan base in the USSR and Western Europe are not the same. At the stratotype section of

the Petrovsky horizon, the first archaedisoids appear already at its base (Postojalko, 1975), while in Western Europe they don't appear before the Arundian (Conil et al., 1979). Typical Viséan taxa in Western Europe, such as *Eoparastaffella*, *Endothyranopsis*, *Globoendothyra*, appear in the USSR already in the Kosvinsky horizon (Conil et al., 1970; Chermnykh & Kuzina, 1979; Postojalko, 1975). The correlation of the Chadian with part of the Kosvinsky horizon and the Pesterkovsky horizon with the lower part of the Arundian seems to us more acceptable.

The Ilychsky (not Ulychsky) horizon with its primitive archaedisoids and without representatives of the genus *Archaedisoides* (sensu Conil & Pirlet, 1974) in the Ural sections corresponds most probably to the Arundian too. The first representatives of the genus *Archaedisoides* (sensu Conil & Pirlet, 1974) appear in the USSR in the Bobrikovsky horizon that should be analogous to the Ilychsky.

The Tulskey horizon overlies the Bobrikovsky often unconformably and there existed conditions rather disadvantageous for the development of the foraminiferal assemblages in its lower part in the stratotype area. The correlation of the lower part is therefore problematic even in the USSR. While Reitlinger (in Conil et al., 1970) prefers the correlation with the V2a (Arundian) of Belgium, Vdovenko (1980) prefers correlation with the V2b (Holkerian).

The correlation of part of the Asbian with part of the Tulskey horizon seems questionable. After Reitlinger (in Conil et al., 1970) and Vdovenko (1980) the Tulskey horizon should not be younger than Holkerian and the overlying Aleksinsky horizon should correspond to the Holkerian too.

We prefer in our correlation to use the evolution of the family Archaedisoididae, that has a large worldwide distribution and a great number of taxa in common in the palaeotethyan realm. The probability of diachronism in the evolution of this family between the USSR and Western Europe seems to us far less important than in the case of the lower taxonomic units of different families. Several taxa such as *Houchinia*, *Cribrostomum*, *Paleotextularia* ex gr. *longiseptata*, *Endothyranopsis* *crassus* (characteristic for Asbian) are known in the Tulskey horizon (some of them are known even from older deposits) with archaedisoids of 'Holkerian' aspect. Archaedisoids of 'Asbian' aspect (*Neoarchaedisoides*, *Asteroarchaedisoides*, large *Archaedisoides* ex gr. *moelleri*) appear in the Aleksinsky horizon (Vdovenko, 1980). We suppose therefore that the Tulskey horizon should be correlated with the Holkerian and the Aleksinsky horizon with part of the Asbian.

To conclude I should like to state that such correlations based only on the literature are rather questionable. Only the joint study of the sections in Western and Eastern Europe can help to avoid misinterpretations that could follow from correlations based only on the literature.

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Jiří Kalvoda (Hodonín)

Correlation chart 2

The Wolfcampian, as defined with the first appearance of *Schwagerina* in the American sense (= *Pseudofusulina* in the Soviet sense), begins in the Upper Gzhelian *Daisina sokensis* Zone. Moreover, Ruzhencev (1977) has placed the lower boundary of the Asselian at the lower boundary of the hitherto used Middle Asselian. He is correct in the sense of the stratotype succession and he is the author of the Asselian.

The Asselian has a typical Upper Carboniferous marine fauna and should therefore be placed in the Carboniferous. Only at the base of the Sakmarian, the first typical Permian elements appear in the marine fauna (e.g. conodonts, ammonoids - may be that also in the topmost part of the Asselian the first Permian ammonoids are present, but not earlier).

The Autunian sensu Haubold & Katzung (1975), defined with the first appearance of *Callipteris* begins already in the higher Kansas City Group (with *C. flabellifera*) and in the higher Stephanian B (also with *C. flabellifera*). Therefore the first appearance of *Callipteris* cannot be used to define the top of the Stephanian. In that case the whole upper Stephanian B and the whole Stephanian C will be a time equivalent of the lower Autunian.

The Stephanian begins with the lower Marmaton Group of the Desmoinesian and the whole Stephanian A and Cantabrian can be correlated with the upper Desmoinesian.

The Missourian corresponds to the Stephanian B and the Stephanian B/C boundary lies approximately at the top of the Kansas City Group.

According to conodonts, the base of the Myachkovian corresponds to the Atokan-Desmoinesian boundary.

The Virgilian corresponds to the Stephanian C and D and to the middle and upper Gzhelian only.

The Kasimovian-Gzhelian boundary lies according to the conodont data within the Kansas City Group of the Missourian.

As a summary: the correlation between Western Europe and the USSR is correct, but the correlation of the North American standard both with the West European and the USSR standard is rather wrong (see above). My correlations are based on conodonts, plants, insects, conchostraca, and other fossil groups.

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H. Kozur (Budapest)

Correlation chart 3

The correlations of the Lower Pennsylvanian given in the News1. Carb. Strat. (2: 11) agree well with those of the COSUNA global chronostratigraphic scale (Correlation of Stratigraphic Units of North America) and with results that have been interpreted in the Midwest (Shaver & Smith, 1974; Shaver et al., in press). In this arrangement, we are placing the upper Bashkirian with the lowest (or next to lowest?) Russian *Profusulinella* Zone wholly within the time frame of late Morrowan; the lowest Spanish *Profusulinella* is within the same time frame;

and Westphalian A is essentially late Morrowan in age.

You (and others) must be correct in bringing the earliest Moscovian (part of Vereyan) into registry with late Morrowan and late Westphalian A. Some additional evidence in support is Barskov & Alexyev's (1975) report of the conodont *Neognathodus bassleri* in the lower Kashirian and in the Vereyan and *Declinognathodus noduliferus* in Vereyan rocks of the Moscow area; in America, *N. bassleri* occurs in upper Morrowan to lower Atokan rocks, and *Declinognathodus* is reported only from Morrowan rocks (Midcontinent) and lower Derryan rocks (= upper Morrowan in the judgement here). Note that the order of occurrence near Moscow (*bassleri* extends higher than the other species but begins lower) is the same as in the American Midcontinent. *N. bassleri* has also been reported in northwest Spain (Requadt et al., 1977) from the 'Namur B bis Westfal A'. The particular subspecies (*symmetricus*) was first described from upper lower and lower upper Morrowan rocks. All these evidences, partaking of increasingly harmonious occurrences, seem to build a strong case for the COSUNA scale and the correlations that you espouse.

But what of the enigma of the *Profusulinella* Zone in America almost always being cited as corresponding with the lower Atokan and, simultaneously, as being wholly post-Morrowan in age? This puts it out of synchronization by about one whole zone or stage with respect to the European relations. I am convinced that it is an accident in the history of study. The relationship of the *Profusulinella* Zone with the Atokan (and Morrowan) is a matter of provincial research, including type sections and correlations. Problems involved are:

- 1) The type Atoka Formation is a flysch deposit lacking fossils that are used for dating.
- 2) The time value of the type Atoka Formation includes early Desmoinesian (that is, part of Cherokee time) and much of Morrowan time.
- 3) For purposes of fixing a type section or area for a suitable Atokan Series, the Oklahoma biostratigraphers have had to move the effective Atoka(n) type section (area) northward onto a partly carbonate shelf, whose rocks (partly Morrowan) are overlapped through facies change by the Atoka Formation.
- 4) Some of the fusulinid stratigraphers and some others seem to have paid little attention to the Morrowan Series-Atoka Formation facies relation and in effect have assumed that the Atoka Formation is essentially the same age everywhere along its top and bottom.
- 5) Or, those persons who haven't thought that far have in effect transferred the authority of type sections (i.e., for the Morrowan, Atokan, and Desmoinesian series) to the presumed evolutionary ranges of fusulinid taxa, and, as it happens, the presumed ranges are not all correct with respect to type-section relations.
- 6) These same people have not answered to the fact that the one published occurrence of *Profusulinella* in Oklahoma is in lowest nontypical Atoka rocks that, beginning more than 50 years ago, were said to be Morrowan in age on the basis of zonal fossils 100 feet or more below the lowest recognizable Atokan (agreeably Atokan and not Morrowan) cephalopod zone.
- 7) Some persons have erroneously assumed that the so-called Derryan Series of the Rocky Mts and the Great Basin (New Mexico, Nevada) equals the Atokan Series because of *Profusulinella* in the Derryan.
- 8) Some then even cite the 'Atokan' (= Derryan) relations of *Profusulinella* in the far west as proof of its Atokan age in the Midcontinent(!).
- 9) Some are ignoring very convincing conodont and ostracode evidence in sticking to their traditional fusulinid formula. And, actually, they are ignoring some good fusulinid evidence.

In the Newsletter the bottom of the Cherokee Group seems to be too high, as it probably extends down into the Westphalian B interval

and is partly Atokan in age. This is actually a compromise, however, as some Midwestern stratigraphers currently are concluding, partly on the basis of miospores, that the original Cherokee (defined as part of the Desmoinesian) extends down to include virtually all Atokan time that is not also Morrowan time. I have an unpublished manuscript (not mine), for example, that first recommended elimination altogether of the Atokan Series (because hardly any part of it does not usurp the Morrowan and Desmoinesian concepts), but that proposal was crossed out as a second thought and with the idea of a compromise to preserve a shortened Atokan Series, one that predates the range of *Fusulinella iowaensis* in the type Desmoinesian rocks. The COSUNA handling of the Iowa section does just this - assigns a lower part of the Cherokee to a restricted Atokan Series.

Profusulinella and other forams appear to be irregular in their New World occurrences, just as they were in Western Europe, which observation helps to explain the American enigma over *Profusulinella*. It is absent from many rocks that nevertheless are in the right interval. In the Illinois Basin and the far west, however, it seems to have arrived at about the same time as in Spain and in at least one of the low Russian occurrences. (I'm not sure that the lowest profusulinellid occurrence in Russia is all that sure, as I believe the earliest possible note of it is with a question mark in what would be rocks of Namurian C age.)

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Robert H. Shaver (Bloomington, Ind.)

Time, a factor in deciding major chronostratigraphical divisions?
Ramsbottom's first question 'To what extent should time be a factor in deciding major stratigraphical divisions?' (see News1. Carb. Strat., 2: 10) is a challenging one. At first sight it seems a logical procedure to take the length of time into account in deciding whether the Carboniferous should be subdivided into two or three major units. There is, however, a major problem: the unreliability of the radiometric ages for the various parts of the Carboniferous. The unreliability is caused by two fundamental problems:

- 1) The different ages obtained for the same samples when different methods are used, or different values for constants in the formulae. Also, the possible error may sometimes amount to several tens of millions of years.
- 2) The often rather poor stratigraphical control of the samples, especially when intrusives are used. There may also be some differences of opinion on the exact position of some boundaries, notably the Carboniferous/Permian boundary, and their correlation.

It is amazing to see how large the discrepancies are between the data of different authors from the past 15 years (see Table 1). One

Table 1. Radiometric ages for the Carboniferous (in MA = millions of years).

MA	A	B	C	D	E	F	G	H	I
260	Perm.		Perm.		Perm. +30 MA		Perm.		
265									
270									
275									
280	Perm.								
285	Ste.	Vir.	Orenb.	Perm.	Kasim.			Perm.	
290			Gzhel.					Gzh. Vir.	Perm.
295		Mis.		Ste.	+30 MA	Perm.		Kas. Mis.	
300								Des.	Gzh. Vir.
305	Wes. Des.			+10 MA	Mosc. +25 MA			Atok.	Kas. Mis.
310	Der.		Mosc.	Wes.				Mos.	Mos. Des.
315			Bash.	Nam. Mor	Bash.				Atok.
320	Mor.	Nam.						Mor.	
325	Nam. Ches.	+5 MA	Serp.	Vis. Ch.				Bash.	Bash. Mor.
330	Vis.			Tour.				Ser. Ches.	
335		Vis.	Vis.	+6 MA					
340				Dev.	+10 MA			Vis. Mer.	Ser. Ches.
345	Tour. Kind.		Tour.		+5 MA			Tour. Osag.	
350	Devonian		Dev.		Tour.			Kind.	Vis. Mer.
355									
360		Tour.			Dev.			Devonian	Tour. Osag.
365		+5 MA							Kind.
		Dev.							Devonian

A: Ross, 1970;
Harland, 1971.

B: George, 1976.

C: Aliev, 1978.

D: Bouroz, 1978;
Gordon & Mamet,
1978.

E-G: Waterhouse, 1978

E: Median values;

F: High values;

G: Low values.

H: data from a first
draft of the
COSUNA scale, see
Correlation chart
3' on p.12.I: Shaver et al., in
press; revised
COSUNA scale (May
1981) on advise
of Dr N.J. Snelling
(Chairman of the
IUGS Subcommittee
on Geochronology).

author may draw the Devonian/Carboniferous boundary where an other draws the Dinantian/Silesian boundary! These data do not invite to rely on them for judging the validity of major boundaries in the Carboniferous.

When using the data from Table 1 to evaluate the merits of a two-fold subdivision (Dinantian-Silesian, or Mississippian-Pennsylvanian) against the threefold subdivision accepted by our Subcommittee for administrative purposes (Bouroz et al., 1979, p.30), we find that most data (see Table 2) support the threefold subdivision into lower, middle and upper Carboniferous, only one set of data favouring a twofold subdivision into Mississippian and Pennsylvanian. Contrary to Dr Ramsbottom's remark that the Dinantian Subsystem occupies about half of all Carboniferous time, I found that the Dinantian occupies about half as much time as the Silesian, thus one third of all Carboniferous time, or even less.

Concluding one can say that the results of the radiometric age determinations, as given in the literature, seem not reliable enough to use them for a decision on the major stratigraphical divisions of the Carboniferous. If we nevertheless consider the data (Table 2) they seem to support the threefold subdivision provisionally accepted by S.C.C.S., with some data supporting a Mississippian/Pennsylvanian subsystem boundary. It seems that an evaluation of the faunal and floral changes is still the best way for deciding on the major chronostratigraphic boundaries in the Carboniferous and their rank. If possible, major global events (such as the beginning of the Carboniferous ice age) should be taken into account.

Table 1. Duration in MA of the major Carboniferous units (the Mississippian corresponds roughly to the L. Carb. and the Pennsylvanian to the M. and U. Carb.).

	A	C	D	E	H	I
Dinantian	20	c.20	c.10	20	20	25
Silesian	45	c.45	c.30	60	45	50
L. Carb.	25	25	10	c.25	25	35
M. Carb.	25	20	15	c.25	30	20
U. Carb.	15	20	15	30	10	20

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- Weber, C.C. (ed.), 1981. IUGS Directory. 2nd ed.: 1-134. This extensive and useful list of all members of IUGS and its commissions, subcommissions and other bodies with their addresses can be obtained at the price of US \$ 6.- plus postage from: IUGS General Secretariat, Maison de la Géologie, 77 rue Claude Bernard, F 75005 Paris, France.

Address list

- Dr R.L. Austin, Dept. Geol., Univ. Southampton, Southampton, England.
- Prof. Guo Hougzun, Changchun Geol. College, Changchun, Jilin Prov., People's Rep. of China.
- Mr J. Jameson, Exxon Production Research Company, P.O. Box 2189, Houston TX 77001, USA.
- Dr I.S. Johnson, Dept. Geol., Queen's Univ., Belfast, N. Ireland (UK).
- Dr J. Kalvoda, Mikropaleont. odd., Moravské naftové doly, 695 30 Hodonín, Czechoslovakia.
- Dr Th.F. Krans, Geol. Bureau v.h. Mijng gebied, Postbox 126, 6400 AC Heerlen, The Netherlands.
- Dr I. Metcalfe, Dept. Geol., Univ. of Malaya, Kuala Lumpur 22-11, Malaysia.
- Dr H.G.J.W. Schalke, Subcom. Strat., Commissie Geol. Wetensch., Rijksmuseum van Geologie en Mineralogie, Hooglandse Kerkgracht 17, 2312 HS Leiden, The Netherlands.
- Mr P. Seibert, Föhrstr. 21, D 7410 Reutlingen 1, Fed. Rep. of Germany.
- Dr R.H. Shaver, Indiana Geol. Survey, 611 North Walnut Grove, Bloomington IN 47401, USA.

- Dr O. Stehn, Geol. Landesamt Nordrhein-Westfalen, Postfach 1080,
D 4150 Krefeld, Fed. Rep. of Germany.
- Dr E.M. Truswell, Bureau of Mineral Resources, P.O. Box 378, Canberra
City A.C.T. 2601, Australia.
- Prof. Wang Zejiu, Secretary General Geol. Soc. China, Pai Wan Chuang
Fuchengmenwai, Beijing, People's Rep. of China.
- Dr G.D. Wood, AMOCO Production Co., P.O. Box 3092, Houston TX 77001,
USA.