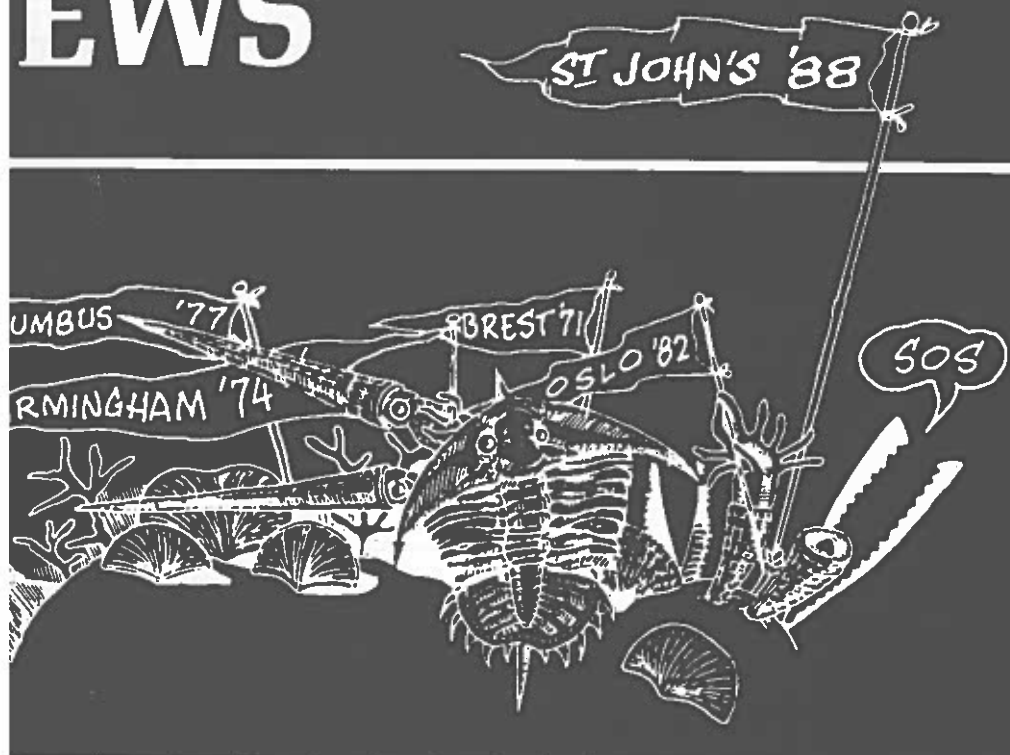


Ordovician EWS



IUGS COMMISSION ON STRATIGRAPHY
COMMISSION ON ORDOVICIAN STRATIGRAPHY

No. 5 1987

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NOTES FOR CONTRIBUTORS

Correspondence, reviews (and lists) of recent publications, brief summaries of current research, notices of relevant local, national and international meetings, and additions, deletions or changes to list of Ordovician workers will be welcomed.

Contributions should be in English, typed single spaced (double space between paragraphs) on white paper - print area should not exceed 18.5 x 26 cm. Copy should be mailed flat (with cardboard protector) to Barry Webby, Department of Geology and Geophysics, University of Sydney, N.S.W. 2006, Australia

Unless otherwise stated, Barry Webby is responsible for statements made in this issue of ORDOVICIAN NEWS

ANNUAL REPORT OF THE SUBCOMMISSION ON ORDOVICIAN STRATIGRAPHY

The Subcommittee on Ordovician Stratigraphy reports the following activities for 1986.

1. Ordovician Correlation Chart Series

The subcommittee continues its efforts to arrange a series of correlation charts for Ordovician strata in major regions of the world. This aims to establish the essential data base for later global analysis of Ordovician events, and chronostratigraphy. R. J. Ross Jr. continues to act as the Editor of the series.

One chart dealing with the regions of Kazakhstan and Middle Asia of the Soviet Union by Vice Chairman of the Subcommittee, Igor Nitikin and his colleagues, has now been published as No. 21 of the IUGS publications (September 1986). Other sections dealing with the regions of Taimyr (L. V. Nekhorosheva and colleagues) and North-East and Far East of the USSR (L. M. Oradovskaya), have also been submitted and will be included with contributions from the remaining parts of the Soviet Union in a second important publication. Other charts nearing completion include South America, Central Europe, Norway and Sweden, North Africa and Greenland.

2. Ordovician Chronostratigraphy Working Groups

The six regional Ordovician Chronostratigraphy Working Groups continue to focus on problems of correlation and use of the various internal subdivisions of the Ordovician. Most progress during the past year has been again from China and also from North America. However, it seems that generally these working groups are not making fast enough progress on regional agreements to permit the fullest possible discussion of Ordovician chronostratigraphy, and some levels of international consensus to be achieved by August 1988, when the V International Symposium on the Ordovician System in St. John's, Newfoundland is held. We plan to try and stimulate much more activity during 1987 and through the first half of 1988.

3. Subcommittee Newsletter

The fourth issue of 'Ordovician News' was printed and circulated in August and September 1986. This issue was larger than the previous three issues, being some 44 pages long. It was distributed to some 450 specialists and institutions, with the remaining 50 copies available for later distribution on request. The Secretary of the Subcommittee continues to act as Editor.

4. Participation in Cambro-Ordovician Boundary Working Group Meeting at Dayangcha, Hunjiang, Jilin Province, China, July 1986.

A number of members of the Subcommittee, including the Chairman, Chris Barnes, attended the Dayangcha field excursion in July. A full report of this meeting will be provided independently by the Chairman of the Boundary Working Group, Dr. B. S. Norford.

5. Concluding remarks

It is anticipated that during the next eighteen months leading up to the V International Symposium on the Ordovician System there will be increased activity on Subcommission work, especially the preparation of discussion papers from the six Chronostratigraphy Working Groups. Hopefully also the world-wide compilations of Ordovician correlation charts under the Editorship of Reuben Ross Jr. will be nearing completion. At least one further issue of 'Ordovician News' will be published and distributed in 1987.

18 November, 1986.

IN MEMORIAM

We record with deep regret the loss of two distinguished Ordovician and Silurian workers - Dr Einar Klaamann, leading Baltic tabulate coral specialist of the Institute of Geology, Academy of Sciences, Estonian SSR, Tallinn, USSR who died on 11 July 1986 after a long illness, and Professor Mu Enzhi, foremost Chinese graptolite expert of the Nanjing Institute of Palaeontology & Geology who died suddenly in April 1987.

TITULAR MEMBERSHIP (SOS)

Recommendations from the President of the Palaeontological Society of China, Professor Lu Yanhao (dated 14 January 1987) are for the following three Chinese titular members - Dr Chen Xu, Nanjing Institute of Geology & Palaeontology, Academia Sinica (New), Dr Wang Xiaofeng, Yichang Institute of Geology & Mineral Resources, Ministry of Geology & Mineral Resources of China (New), and Prof. Lu Yanhao, also of the Nanjing Institute, Academia Sinica (Continuing). This proposal is supported by the Chairman (C. R. Barnes) and Secretary (B. D. Webby) and has been forwarded to the Chairman of the Commission of Stratigraphy for approval.

IUGS ORDOVICIAN CORRELATION CHARTS

1. Kazakhstan and Middle Asia (Soviet Union Part 1). The first of the two Soviet Union correlation charts and explanatory notes was published in IUGS Publication No. 21 in September 1986. Authored by I. F. Nikitin, M. Apollonov, C. T. Tzaj, V. G. Koroljov, A. I. Kim, M. V. Erina, N. M. Larin and A. N. Golikov, this publication provides an invaluable 21 page text, 3 figures, and correlation charts, one of Kazakhstan and Kirgizia (39 columns) and the other of Middle Asia (13 columns). It is available from the Episodes Room 177, 601 Booth St, Ottawa, Canada K1A 0E8, for \$7.50 (US) including postage. ISBN 0-930423-11-9.

2. South America. This major contribution was published as IUGS Publication No. 22 in February 1987. It was co-authored by

F. G. Aceñolaza and B. Baldis (with the active cooperation of a further sixteen colleagues from different Latin American countries including Argentina, Brasil, Bolivia, Chile and Colombia), and comprises a 64 page text, 4 figures, and a 67 column correlation chart (in three sheets). ISBN 0-930423-12-7. This publication is also available from the Episodes Room (see above).

3. General. It is still hoped that Ordovician correlation charts for the Soviet Union Part 2 (contributions on Talmyr and the NE to Far East USSR have already been received), Scandinavia, Greenland, North Africa, Central Europe, India-SE Asia will be produced to provide a near complete global coverage. Rube Ross is to be congratulated for his efforts in editing this series.

ORDOVICIAN CHRONOSTRATIGRAPHY WORKING GROUPS

1. General

Chris Barnes (Chairman) writes as follows:

"Nearly four years ago the Subcommission established a number of Ordovician Chronostratigraphy Working Groups (see attached list). Their defined mandate was to tackle several issues including but not necessarily restricted to:

1. The precise definition of each series.
2. The occurrence and range of zonal fossils (especially graptolites, conodonts, shelly fossils) and the integration of different zonations.
3. The lithostratigraphy of series stratotype sections.
4. The nature of lithologic and faunal change away from the local sections, i.e. regional variation.
5. Recognition of the major regional faunal breaks that may have international correlative value (if not already at the base of one or more series).
6. Whether, after considering the above, the series presently in use are still appropriate for international usage, i.e. should major series revisions be attempted in Britain or adopt series defined elsewhere.

"The progress of most of these Working Groups has been reported in ORDOVICIAN NEWS and has resulted in some published results. The work of the Groups was not necessarily to embark on new field and research projects but to examine previous and current data for their region. The ultimate objective was to compare these regional recommendations and establish a revised and properly defined Standard Ordovician chronostratigraphy.

"I have been somewhat disappointed that results from some of the Groups have not been forthcoming earlier. However, the issue of Ordovician Chronostratigraphy will be a principal theme of the V International Symposium on the Ordovician System to be held in St. John's, Newfoundland, on August 9-12, 1988 (see the First Circular).

"I propose the following schedule to try and reach a formal agreement to recommend to the IUGS Commission on Stratigraphy:

- a) August-December 1987. Ord. Chronostrat. Working Groups to complete internal discussions and draft recommendations.

- b) By December 31, 1987, draft recommendations to be sent to me.
- c) Through January-February, 1988, I will compile recommendations and attempt to formulate some draft proposals for the System.
- d) March, 1988, I will distribute those draft proposals to Titular Members, Corresponding Members, Working Group Members, and for publication in Summary form in ORDOVICIAN NEWS (and possibly EPISODES).
- e) April-June, general correspondence between members, preparation of brief position papers for circulation and discussion at the Ordovician System Symposium.
- f) I will arrange copying and packaging of position papers or new summaries from Working Groups to then be available to registrants at the meeting in St. John's, August 1988.
- g) From the formal position papers circulated, others presented orally, and workshop discussions we will hopefully arrive at or close to a consensus on a standard Ordovician chronostratigraphy.
- h) September-November, 1988, final revisions by Titular Members to a formal recommendation to IUGS (if reasonable agreement has been achieved in St. John's).
- i) December 1988. Formal submission of Subcommittee recommendations to Commission on Stratigraphy for their internal consideration.
- j) Final approval by Commission and by IUGS prior to or at International Geological Congress, Washington, USA, August 1989.

"By 1988-89 a few more of the remaining Ordovician Correlation Charts will have been published to more firmly provide a global data base for Ordovician correlations.

"Please recognize that for university educators, text-books, regional geologists, preparation of maps and time scales it is desirable to have a standard Ordovician chronostratigraphy. This standard set of series may not be applicable worldwide and does not necessarily eliminate the need for some regional series terms. We do need to establish whether a single standard set of series can be achieved or whether a dual terminology is necessary to cover a) peri-Gondwanaland and cool water regions versus b) warm carbonate platform regions, given the severe faunal provincialism and difficulties of correlation between these two. A more complex formal arrangement of, say, five or six regional series classifications would be inappropriate particularly for non-Ordovician specialists. The critical questions that remain unanswered include:

- a) Where are the critical breaks or events in the Ordovician that could be used for series boundaries,
- b) how are these to be defined (e.g. faunally),
- c) where are appropriate stratotypes for the series boundaries,
- d) can we retain/modify existing Series names or are new ones required,
- e) is one standard set of series acceptable or is a dual terminology necessary,
- f) how many Series are appropriate,
- g) should there be a division into Upper and Lower or Upper, Middle and Lower and what are the boundaries,
- h) what supporting geochronologic, magnetostratigraphic, or chemostratigraphic data are relevant to these issues."

It is hoped that this proposed schedule will prove to be acceptable, and that a large number of Ordovician workers will attend the V International Symposium on the Ordovician System to be held in St. John's, Newfoundland in August 1988 (see copy of First Circular reproduced elsewhere in ORDOVICIAN NEWS) to participate in the wide-ranging discussions of issues aimed at leading to establishment of a properly-defined standard Ordovician chronostratigraphy.

2. Australasia

Roger Cooper reported on the 6th August 1987 as follows:

(1) All the principal Ordovician workers in Australia and New Zealand have been contacted either directly or indirectly and invited to comment.

(2) A questionnaire has been circulated to the following: R. A. Henderson, J. H. Shergold, B. J. Cooper, O. P. Singleton, A. J. Wright, C. Burrett, B. Stait, I. Stewart, H. E. Wilkinson, J. Lawrie, B. D. Webby, R. A. McTavish, M. R. Banks, L. Sherwin, Vandenberg and R. Cooper. Replies were received from Shergold, B. Cooper, Burrett, Stait, Webby, Sherwin, Vandenberg and R. Cooper.

(3) These replies have been circulated to those undertaking summaries of the various sections:

R. A. Cooper	- La-Da interval, graptolite facies
A. H. M. Vandenberg	- Gi-Bo interval, graptolite facies
B. D. Webby	- Shelly facies (Tasman Fold Belt + Craton)

Summaries remain to be prepared and then collated into a final report by January 1988; details of draft recommendations will be forwarded to C. R. Barnes (Chairman) for the international compilation to be circulated to Titular, Corresponding and Working Group members before the V International Symposium on the Ordovician System to be held in St. John's, Newfoundland in August 1988. Additional data will be provided as by-products of the Bureau of Mineral Resources project to establish an Australian stratigraphic scale - the Ordovician being coordinated by Bob Nicoll - and a symposium being organised by the Australasian Association of Palaeontologists entitled 'Progress towards an Australian Geological Time Scale' to be presented at the Ninth Australian Geological Convention in Brisbane from 31 January - 5 February 1988.

3. Membership of Ordovician Chronostratigraphy Working Groups

a. BRITAIN

Dr. W. T. Dean (Chairman)
Department of Geology
University College
Cathays Park, Cardiff, CF1 1XL, Wales

Members: H. B. Whittington, R. A. Fortey, R. B. Rickards, A. W. A. Rushton and A. D. Wright

b. NORTH AMERICA

Dr. A. Harris (Co-Chairman)
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Dr. J. Repetski (Co-Chairman)
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Members: C. R. Barnes, S. M. Bergström, W. B. N. Berry, R. L. Ethington, S. C. Finney, R. Ludvigsen, B. Norford, G. S. Nowlan, J. Riva, R. J. Ross, Jr., P. M. Sheehan and W. C. Sweet

c. **BALTOSCANDIA**

Dr. D. L. Bruton (Chairman)
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Sars gate 1
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Members: S. M. Bergström, B.-D. Erdtmann, V. Janusson, K. Larson, A. Lofgren,
A. W. Owen and S. H. Williams

d. **SOVIET UNION**

Dr. I. Nikitin (Chairman)
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P. Misius, M. Oradovskaja, and L. E. Popov

e. **CHINA**

Dr. Chen Xu (Co-chairman)
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Dr. Zhou Zhiyi (Co-Chairman)
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Members: Lu Yenhao and Mu Enzhi (Advisors), An Taixing, Chen Junyuan, Lai Caigen,
Rong Jiayu, Wang Xiaofeng, Wang Zhihao, Xu Hankui and Yang Shengwu

f. **AUSTRALASIA**

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Melbourne, Vic. 3000, Australia

Members: C. Burrett, B. Cooper, R. A. Henderson, J. Laurie, J. Shergold,
B. Stait, I. Stewart and B. D. Webby

CAMBRIAN-ORDOVICIAN BOUNDARY WORKING GROUP

The recent work of the IUGS Working Group on the Cambrian-Ordovician Boundary (Chairman, Brian Norford; Vice-Chairman, John Shergold and Secretary Jim Miller) is reproduced in full from their Circular 23 (September 1986):

***1. Results of Formal Vote on Four Resolutions proposed at Calgary Meeting**

Four resolutions passed informally at the July, 1985 meeting in Calgary were sent to the Voting Members for a formal vote. Partial results of the vote were sent to all members after the suggested deadline had passed, although 3 votes had not been received. One of these 3 votes was received several days after the deadline. Based on the preliminary results the Chairman determined that it would not be necessary for him to vote so as to break a tie, and so he abstained. One vote still has not been received, but this last vote is not necessary to obtain the sense of the Group. Voting Members were encouraged to comment on the resolutions, and these comments (slightly summarized in some cases) are reported here.

RESOLUTION 1: The group basically wishes to adopt the simple principle of driving a "golden spike" in a stratigraphic section as the method of selection of the boundary. FOR: 12 AGAINST: 0 ABSTAIN: 0

Comments from members

Ross feels that this resolution is very important.

Taylor and Whittington felt this resolution was unnecessary, being what we have been doing all along.

RESOLUTION 2: We resolve that we will select conodonts as the primary guide for a horizon close to but below the first influx of nematophorous graptolites. FOR: 9 (Cooper, Cowie, Dean, Erdtmann, Kaljo, Lu, Miller, Shergold, Taylor) AGAINST: 2 (Henningsmoen, Whittington) ABSTAIN: 1 (Ross)

Comments from members

Henningsmoen feels we should use conodonts and/or other fossils.

Miller feels that using conodonts as the primary guide should not mean that other fossil groups are to be ignored. The boundary must be placed at a horizon corresponding with (presumably) the lowest occurrence of some particular species of fossil. It is unlikely that we can choose a horizon marked by the lowest occurrences of important species of more than one fossil group, and thus one group must be chosen. If the horizon is to be marked by the lowest occurrence of a conodont, the relationship of this horizon to trilobite and graptolite zonal boundaries must not be ignored.

Ross feels that this resolution is a contradiction of Resolution 1. No one fossil group should be a primary guide, but all available fossil groups and their concurrent ranges must be used to carry the level of THE SPIKE from place to place.

Taylor feels that the most important part of the resolution is selecting conodonts as the primary guide, and that choosing a horizon close to but below the first influx of nematophorous graptolites is far less important.

Whittington feels we should use a variety of palaeo-biological criteria as guides to the horizon chosen, and not one particular group of fossils. This does not imply that we should not use conodonts, but that we should take into consideration other groups such as graptolites, trilobites and brachiopods as we select the horizon.

RESOLUTION 3: It is desirable that the stratotype section have potential for future study of paleomagnetism, geochemistry, and other nonbiological correlation tools. FOR: 8 (Cooper, Cowie, Dean, Erdtmann, Kaljo, Lu, Miller, Shergold) AGAINST: 4 (Henningsmoen, Ross, Taylor, Whittington) ABSTAIN: 0.

Comments from members

Henningsmoen feels these nonbiological tools should not be the decisive factor in the selection of the stratotype section.

Ross says that opposing this resolution may seem like opposing motherhood, but Resolution 3 resulted in burdening a Phanerozoic problem with fruits of Precambrian desperation.

Shergold feels that for the stratotype to have the potential for such tools is not essential. Traditionally, we have employed biological correlation tools in the definition of Systemic boundaries. The Silurian-Devonian boundary, for example, is the most recent to have been biostratigraphically spiked. No consideration was given in that case to nonbiological tools in the final definition or selection of stratotype.

Taylor suggests that the resolution is meaningless as stated, being more a statement of religious faith than scientific resolve.

Whittington: Of course it is desirable that the selected section should have potential for future study along all kinds of lines, not simply those names. I have voted against this resolution because though these qualities are desirable, a decision on the selection of an horizon should not depend on them, but on palaeobiological criteria.

RESOLUTION 4: Yes---we accept a decision now that the Newfoundland region gives an acceptable section to serve as the international stratotype. The precise section and level to be selected by the Newfoundland geologists and recommended to the Working Group.

No---we wish to defer a decision until we know much more about the Chinese section at Dayangcha.

FOR: 4 (Cowie, Henningsmoen, Ross, Whittington) AGAINST 7 (Cooper, Dean, Erdtmann, Kaljo, Lu, Miller, Shergold) ABSTAIN: 1 (Taylor)

Comments from members

Henningsmoen: Why wait longer: There is hardly a 100% ideal section.

Kaljo: The Calgary plenary session concluded that none of the sections is perfect, despite the large amount of work done. Because it is unlikely we will find a perfect section, it is high time to make decisions. At the moment the best section is Newfoundland, but I have voted "no" because we have started to consider Dayangcha and it would be unfair to stop before the studies are completed, and there is a concern about the graptolite sequence at Green Point, etc.

A few more words about Newfoundland. At Broom Point North there are together with the first Rhabdinopora flabelliformis flabelliformis and parabola the first Cordylodus intermedius, C. drucei, etc., and the last Cordylodus sp. Andres. The first Rhabdinopora ex. gr. flabelliformis (parabola mostly) are found below Hirsutodontus simplex (see Figure 9 of Calgary minutes).

Nearly the same sequence is observed at Broom Point South only Cordylodus intermedius began a bit earlier (Figure 10).

At Green Point (Figure 11) the assemblage of graptolites is quite different (ecology?) and I do think, a stratigraphically higher one. So, in general I agree with the interpretation of the sequence of graptolite faunas given by B. Erdtmann (p.13-14), perhaps his scheme is a bit overdetailed only.

In conclusion - the first Rhabdinopora assemblage (parabola fauna) is distributed below the Cordylodus lindstromi Zone, in the very beginning of the Cordylodus intermedius Zone and very close to the top of the Cordylodus sp. Andres Zone (this species was found in the Acerocare Zone of Scandinavia and in the East Baltic below or at least in the lower part of the Cordylodus proavus Zone (sensu stricto). This conclusion I have made on the basis of comparison of a potential boundary stratotype (Newfoundland) and East Baltic data.

A reconsideration of graptolite and conodont data from Tallinn will be published in the Proceedings of the Academy of Sciences, Estonian SSR in August. The main conclusions are that the lowest graptolite and conodont zones are not very well documented, so that with certainty we can only conclude that the Rhabdinopora flabelliformis group appears not later than the Cordylodus intermedius Zone. At the level of the Cordylodus sp. Andres Zone we have found no graptolites, but we cannot exclude the possibility that the Rhabdinopora flab. sociale Subzone may be correlated, at least partly, with the Cordylodus proavus Zone.

Proceeding from these data and discussion, I prefer to have the Cambrian/Ordovician boundary not higher than the base of the Cordylodus intermedius Zone

Ross: Given these choices I vote for a thoroughly studied and documented section over an uncertain product based on a TV show

Taylor: Resolution 4 implies that Newfoundland and Dayangcha are the only two sections that will be considered in future deliberations, despite Brian's meeting report which states otherwise.

Whittington: Assuming that voting for this resolution means accepting a decision that the Newfoundland region provides an acceptable section, I have voted for the resolution. Since there will be a meeting this summer to study the section in China at Dayangcha, then perhaps it would be better to defer a decision. My affirmative vote means that I consider the Newfoundland section is an extremely adequate one to serve as a stratotype.

2. Brief Report on the Conference at Dayangcha, China

"The Dayangcha Conference in late July 1986 was very successful and was attended by 7 Voting Members and numerous Corresponding Members. The field excursion provided adequate opportunity to examine the section and to collect samples. There was general agreement that the section had most of the characteristics necessary for a stratotype. The conodont succession is very like that in North America and Australia. Trilobites are recorded at many horizons, but are mostly non-cosmopolitan forms. Graptolites occur at several horizons and are thought to include very primitive planktic forms. Acritarchs are also recorded but presently have limited potential for correlation. The depositional environment seems not to be the shallow cratonic setting that some had anticipated, and most agreed that an outer shelf setting (as suggested last year at Calgary) is probably correct. There seems to be evidence for shallowing of the sea beginning

at the base of the Cordylodus proavus Zone to a shallow point a few meters higher, followed by deepening beginning at the base of the Fryxellodontus inornatus Subzone. Deepening apparently continues through several tens of meters of strata up to a few meters of reddish siltstones with graded bedding. Just above is the base of the Cordylodus intermedius Zone (= Hirsutodontus simplex Subzone), the horizon preferred by the Chinese for the Cambrian-Ordovician boundary. Slightly above are several conglomerate beds with exotic clasts and some glauconite beds. Above this sequence are the oldest graptolites and the base of the Cordylodus lindstromi Zone, preferred by some as a horizon for defining the boundary.

Considerable data were presented in a new book published by the Nanjing Institute, including descriptions of acritarchs, conodonts, graptolites, and trilobites, and geochemical, paleomagnetic, and sedimentological data. The volume has 410 pages and 98 plates.

There were three days of scientific meetings that culminated in an official business meeting of the Working Group. No formal motions were proposed. After considerable discussion there was a general consensus that a delay of eight to ten months was needed to allow resolution of the following points.

1. Foreign laboratories to process and study samples collected from the Dayangcha Section in July, 1986 to substantiate the results of the Chinese workers;
2. Dr. Kirschvink's (USA) laboratories to process and study samples collected from the Dayangcha Section in July, 1986 for paleomagnetism to provide preliminary data on the section's suitability for magnetic studies;
3. More extensive detailed sampling for conodonts in the Dayangcha Section to provide more refined biostratigraphic control establishing the base of the Cordylodus lindstromi Zone, the base of the C. intermedius Zone, and the age of the lowest occurrence of nematophorous graptolites (the newly discovered Rhabdinopora proparabola horizon);
4. Resolution of the controversy on the existence and extent of a stratigraphic hiatus some distance below the potential boundary site at Broom Point North, Newfoundland. This requires Drs. Barnes and Miller to reassess some conflicting conodont data.

(3) Special issue of the Geological Magazine

A series of contributions based on papers read at the Calgary meeting in July 1985 are now being edited for publication in the Geological Magazine by B. S. Norford and B. D. Webby. A tentative list of titles is as follows:

Introduction	Norford, B.S.: The International Working Group on the Cambro-Ordovician Boundary
Global Reviews	Erdtmann, B-D.: The earliest Ordovician nematophorid graptolites: taxonomy and correlation.
	Miller, J. F.: Conodonts as biostratigraphic tools for redefinition and correlation of the Cambrian-Ordovician boundary.
	Ripperdan, R. L., Kirschvink, J. L., Ma, G. G., Zhang, Z. C., Apollonov, M. K., Chang, R. Shih-Bin: Magnetostratigraphy of the Cambrian-Ordovician boundary.
	Shergold, J. H.: Review of trilobite biofacies distributions at the Cambrian-Ordovician boundary.

Key-Sections	Barnes, C. R.: The proposed Cambrian-Ordovician global stratotype and point (GSSP) in western Newfoundland, Canada.
	Chen Jun-Yuan, Gong We-Li, Li Hui-Ming, Lin Yao-Kun, Qian Yi-Yuan, Tao Xian-Chnog, Wang Ying Xi, Wang, Zong-Zhe, Yang Jie-Dong, Yin Lei-Ming, Zhang Jun-Ming: Cambrian-Ordovician Boundary Interval at Dayangcha, China.
Other Important Sections and Regions	Aceñolaza, F. G.: Progress on the Cambrian-Ordovician boundary transition in Latin America.
	Apollonov, M. K., Chugaeva, M. N., Dubinina, S. V., Zhemchuzhnikov, V. G.: Batyrbay Section, South Kazakhstan, U.S.S.R. - potential stratotype for the Cambrian-Ordovician Boundary.
	Bruton, D. L., Koch, Leif, Repetski, J.E.: The Naernes section, Oslo Region, Norway: trilobite, graptolite and conodont fossils reviewed.
	Kaljo, D., Heinsalu, H., Mens, K., Puura, I., Viira, V.: Cambrian-Ordovician Boundary Beds at Tõnismägi, Tallinn, North Estonia.

ORDOVICIAN - SILURIAN BOUNDARY AGAIN

As reported in the last issue of ORDOVICIAN NEWS, a volume entitled 'Ordovician-Silurian boundary - a global analysis' is currently being compiled and edited by L. R. M. Cocks and R. B. Rickards, and will be published in the near future as a substantial contribution in the Brit. Museum (Nat. Hist.) Bulletin Series. It should also be noted that in Vol. 20, no. 3 of Lethaia (July 1987), two articles raised certain concerns about the suitability of the newly ratified Ordovician-Silurian boundary stratotype at Dobs Linn section in Scotland. These papers are as follows:

- Berry, W. B. N., 1987. The Ordovician-Silurian boundary: new data, new concerns. Lethaia 20, 209-216.
- Lesperance, P. J., Barnes, C. R., Berry, W. B. N., Boucot, A. J. & Mu Enzhi, 1987. The Ordovician-Silurian boundary stratotype: consequences of its approval by the IUGS. Lethaia 20, 217-222.

Another relevant paper is:

- Wang Xiaofeng, Zeng Qingluan, Zhou Tianmei, Ni Shizhao, Xiang Liwen & Lai Caigen, 1986. Rediscussion on the division and correlation of the Ordovician-Silurian boundary. Bulletin of the Chinese Academy of Geological Sciences, 12, 157-178

A. V International Symposium on the Ordovician System, Newfoundland, August 1988



FIRST CIRCULAR
AND
CALL FOR PAPERS

Fifth International Symposium
on the

ORDOVICIAN SYSTEM

Global and regional syntheses including:

- Paleogeography and paleoclimatology
- Paleooceanography
- Magnetostratigraphy
- Chronostratigraphy and geochronology
- Biostratigraphy, bioevents and biogeography
- Event stratigraphy and tectonics
- Trans-Iapetus field trips

AUGUST 9-12, 1988
ST. JOHN'S, NEWFOUNDLAND
CANADA

Sponsored by
SUBCOMMISSION ON ORDOVICIAN
STRATIGRAPHY (ICS/IUGS)
INTERNATIONAL COMMISSION ON
STRATIGRAPHY
IGCP PROJECT 216 - GLOBAL BIOEVENTS

• INVITATION

The International Symposium on the Ordovician System has been held previously at Brest, France (1971), Birmingham, UK (1974), Columbus, Ohio, USA (1977), and Oslo, Norway (1982). It has provided a forum to consider all global aspects of the Ordovician System. The meeting has also served for discussions and workshops of the IUGS Subcommission on Ordovician Stratigraphy and related groups.

The 1988 meeting will attempt to focus on global approaches to Ordovician problems. As such, papers on all topics relevant to reconstructing the Ordovician world are invited. The work of the Subcommission on Ordovician Stratigraphy, of IUGS Boundary Working Groups, of IGCP 216 (Global Bioevents) and other groups will also be covered in separate sessions.

A number of invited keynote papers will highlight the program as well as oral and poster presentations. Papers will be considered for a refereed proceedings volume but must be submitted at or prior to the meeting. Comprehensive field trips will be offered to display the magnificent trans-Iapetus transect provided across the island of Newfoundland. This spans the clastic Avalon Zone in the east (Gondwanaland fragment), through the Gander Zone metaclastic sequences, through the oceanic-volcanic arc sequences of the central Dunnage Zone (Iapetus Ocean), to the carbonate slope and platform facies of the Humber Zone (North American cratonic margin) with obducted Ordovician oceanic crust.

You are invited and encouraged to submit a paper, oral presentation, or abstract and to indicate your interest in a field excursion. A second circular will be sent to those responding to the first circular and to other interested persons.

• TECHNICAL PROGRAM

Detailed worldwide study of Ordovician geology will be encompassed in the symposium. A principal objective will be to embrace all relevant data into reconstructing Ordovician paleogeography, and tectonic, eustatic, oceanographic and biologic events. Emphasis will be placed on global or regional syntheses and new concepts. Contributions emphasizing economic deposits are also encouraged.

The composition of the final program will depend partly on papers offered combined with keynote addresses. Preferred themes for the final proceedings volume will include:

1. Global paleogeography
2. Global paleoceanography
3. Global paleoclimatology
4. Major tectonic and geodynamic events
5. Eustasy and event stratigraphy
6. Chronostratigraphy, chemostratigraphy, magnetostratigraphy, and geochronology
7. Biostratigraphy and bioevents
8. Biogeography and community evolution
9. Clastic and carbonate facies
10. Economic geology

• ORAL PRESENTATIONS

Most presentations will be of 15 minutes and 5 minutes discussion. Keynote talks will be twice this allocation. Two 35mm projectors will be available.

Abstracts are due February 1, 1988, and abstract forms will be included in the second circular or sent on request. Abstracts should be submitted on the special forms provided and shall be of approximately 250-300 words in length.

A note from RUBE ROSS:

If anyone is planning to attend the Ordovician System Symposium in 1988 and would like to see the counterpart of the Newfoundland section as it was developed on the opposite side of the North American continent, I will consider showing them the Nevada and Utah sections. This could be before or after the meetings at St. John's. The cost would be about \$25/day for motel, \$20/day for food, and approximately (\$100/number of participants) for gasoline. Length of trip between 5 and 10 days. Please contact me, Reuben J. Ross Jr., Department of Geology, Colorado School of Mines, Golden, Colorado 80401, U.S.A.

• PUBLICATION

A proceedings volume is anticipated from the symposium. Further details will be given in a later circular. Manuscripts must be submitted prior to or at the time of the meeting. A guide to authors will be provided to all those submitting manuscripts. A limited number of papers not read at the meeting may be considered for the publication. All papers will be refereed; not all papers may be published.

• POSTER PRESENTATIONS AND EXHIBITS

Poster presentations, as opposed to oral presentations, are encouraged. Authors will be provided with a display space of approximately 1.5m x 2.5m and will be required to be present at their poster for one half-day session. A range of IUGS Ordovician Correlation Charts will be on exhibit. Specimens or special exhibits of any kind may be displayed provided that sufficient prior notice (by June 1, 1988) is provided.

• FIELD EXCURSIONS

Trans-Iapetus field excursions will be arranged to examine Ordovician rocks from eastern to western Newfoundland (clastic, volcanic, and carbonate facies and mineral deposits, covering a variety of paleotectonic terranes). Depending on response to this circular, a number of trips will be organized with different emphases. Most excursions will be approximately 5-8 days in duration with an estimated cost of about \$500-\$800 (Canadian), including meals, accommodation, transportation and guidebook. A half-day field excursion may be incorporated to the nearby Lower Ordovician clastic-iron ore units on Bell Island.

• **BUSINESS MEETINGS**

Adequate time will be provided for discussion and business meetings of the Subcommittee on Ordovician Stratigraphy, the Cambrian-Ordovician Boundary Working Group, IGCP Project 216 (Bioevents), including the Cambro-Ordovician and the Ordovician-Silurian Bioevent Working Groups, and similar organizations. Chairmen of such groups, or individuals, should formally request an appropriate time on the program for such meetings.

• **SOCIAL EVENTS**

Newfoundland is renowned for its informal hospitality. The intellectual discussions will be enhanced with a variety of social events guaranteed to provide a most enjoyable and productive visit to Newfoundland. We will also try to accommodate requests for earlier or later extensions to the meeting to discuss research matters or to examine Ordovician geology, whales, moose, or to dance the nights away with Newfoundland jigs.

For visitors outside of North America, other Ordovician specialists in Canada and the USA may be willing to organize special Ordovician field trips to other regions for interested groups, prior to or following the Ordovician System Symposium.

• **CORRESPONDENCE**

Please send all correspondence regarding the symposium to Dr. C.R. Barnes, V International Symposium on the Ordovician System, Department of Earth Sciences, Memorial University of Newfoundland, St. John's, NF A1B 3X5, Canada. Telephone: (709) 737-8143 - Telex: 016-4101.

Specific enquiries may be directed to members of the Organizing Committee:

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Exhibits and Posters:
HENRY WILLIAMS

Field Trips:
HAROLD WILLIAMS

Finance:
ROBERTA ELLIS HAYES

Program and Publications:
CHRIS BARNES

Registration:
LARS E. FAHRAEUS

Social Events:
PAUL DEAN

Technical Services:
HENRY WILLIAMS

B. 28th International Geological Congress, Washington, D.C., 9-19 July 1989

- (1) There will be a series of Ordovician Subcommittee and Cambrian-Ordovician boundary Working Group meetings scheduled during the Congress
- (2) On p.41 of the last issue of ORDOVICIAN NEWS (No. 4) a series of topics were suggested for the International Commission of Stratigraphy program of the Washington I.G.C. Some of the Symposia listed in the First Circular which may be of interest to Ordovician workers are:

- A1-3 Paleoclimate
- B2 Intercorrelations of time scales: biologic, radiometric magnetic and chemical
- B4 The record of sea-level fluctuations
- B5 Event stratigraphy
- B7 Global distribution of Sauk cycle platform carbonates and siliciclastics (Late Proterozoic and Cambrian-Ordovician)
- B8 Black shales and oceanic anoxia in the Paleozoic and Mesozoic
- B10 Global changes indicated by stratigraphic boundaries
- L4 Diversity at different levels
- L7 Global biological events in earth history

A symposium on a broad Lower Palaeozoic theme has also been suggested by C. R. Barnes

- (3) Field trips are listed in the First Circular as tentative; some will be cancelled depending on the number of responses. They include the following:

- T125: Cambrian and Early Ordovician stratigraphy and paleontology, Basin and Range province
- T133: Upper Ordovician and Silurian clastic sequences of the southern and central Appalachians
- T161: Cambrian-Ordovician carbonate banks and siliciclastic basins of the Appalachians
- T223: Silurian-Ordovician molasse deposits northern and west Virginia

Important dates: 2nd Circular January 1988
3rd Circular January 1989
Abstract deadline February 1989
Registration deadline June 1989

Contact for further information:

Dr. Bruce B. Ranshaw, Secretary General
P.O. Box 1001, Herndon, Virginia 22070-1001. U.S.A.

- C. Murchison Symposium - an International Symposium on the Silurian System to be held at the University of Keele, U.K. from 28 March to 9 April 1989.

Contact M. G. Bassett, Dept of Geology, National Museum of Wales, Cardiff CF1 3NP, U.K., for further details.

D. Meeting of the Geological Society of America, San Antonio, Texas, 11 November, 1986

Rube Ross reported a meeting of the Friends of the Ordovician at this GSA Meeting in November 1986, attended by 20 friends. He noted that abstracts of the position papers on the chronostratigraphic subdivision of the Ordovician System presented at the meeting of the Canadian Paleontology and Stratigraphy Seminar in September 1986 at Albany, N.Y., were made available for perusal. Attention was called to the appointment of Ed Landing as the successor to James Hall as the State Paleontologist of New York; Landing assembled a particularly notable program for that meeting.

E. Meeting of the Geological Society of America, North-Central Section, St. Paul, Minnesota, April-May 1987.

Two highly successful symposia on Ordovician topics were held at this meeting. First, a symposium on "Ordovician radiations and faunal gradients", organized by Robert L. Anstey (Michigan State University), and sponsored by the Paleontological Society on 30 April, and secondly, a symposium on "Ordovician lithostratigraphy and biostratigraphy", organized by Robert E. Sloan (Univ. of Minnesota) and Dennis R. Kolata (Illinois Geological Survey), and sponsored by the Society of Economic Paleontologists and Mineralogists on 30 April to 1 May.

The following contributions were presented:

Paleont. Soc. Symposium:

- J. Pojeta Jr. (U.S. Geological Survey, Washington D.C.): The first radiation of the Class Pelecypoda.
- A. I. Miller (Univ. of Cincinnati): Onshore-offshore patterns and the Ordovician radiation of the Bivalvia.
- P. M. Sheehan (Milwaukee Public Museum): The *Foliomena* Community - life below the thermocline in the Late Ordovician.
- B. D. Webby (Univ. of Sydney): Onshore-Offshore community patterns in an Ordovician island-arc.
- R. L. Anstey, S. F. Rabbio, & M. E. Tuckey (Michigan State University): Major community gradients and biome patterning of the Late Ordovician epeiric sea in North America.
- J. L. Cisne & J. M. Nicholson (Cornell Univ., Ithaca): Gradient analysis of fossil assemblages as applied to microevolutionary studies.
- W. B. Leatham (Ohio State Univ., Columbus): Late Ordovician conodont distribution across the western North American continental margin, Eastern Great Basin.
- J. F. Pachut (Indiana-Purdue Univ., Indianapolis): Heritability and heterochrony in Ordovician bryozoans along an environmental gradient.
- G. D. Brown Jr. & E. J. Daly (Boston College, Chestnut Hill): Dillsboro Formation trepostome bryozoans: shallowing water and faunal change.
- H. J. Howe (Purdue Univ., West Lafayette): Origin of the brachiopod genus *Thaerodonta* and its biogeographic dispersal.

S.E.P.M. Symposium:

- R. E. Sloan (Univ. of Minnesota): Black River/Tranton extinction, paleoceanography and chronology of the Middle and Late Ordovician of the Upper Mississippi Valley.
- W. C. Sweet (Ohio State Univ.): Distribution and significance of conodonts in Middle and Upper Ordovician strata of the Upper Mississippi Valley region.

- S. M. Bergström (Ohio State Univ.), J. B. Carnes, J. C. Hall, W. Kurapkat, B. E. O'Neill: Mutual stratigraphical relations of some Middle Ordovician stadial and series stratotypes in the Appalachians based on conodont biostratigraphy.
- D. Frederick (Northern Illinois Univ., De Kalb), P. Loubere, R. Votaw: Regional variations of Middle Ordovician conodont assemblages in the Upper Midwest.
- C. E. Mitchell (State Univ. New York, Buffalo), & S. M. Bergström (Ohio State Univ.): A new and stratigraphically significant graptolite succession across the base of the Cincinnati (Upper Ordovician) in Eastern Indiana.
- F. M. Swain (Univ. of Minnesota): Middle and Upper Ordovician Ostracoda of Minnesota and Iowa.
- W. F. Rice (Univ. of Minnesota): The brachiopod biostratigraphy of the Decorah Shale at St. Paul, Minnesota.
- E. P. Hedblom (Univ. of Minnesota): Biostratigraphy of trilobites from Middle Ordovician Platteville and Decorah Formations of Minnesota.
- T. J. Fresh (Univ. Washington, Seattle), D. R. Kolata (Illinois State Geol. Survey), J. C. Brower (Syracuse Univ.): Biostratigraphy and biogeography of Middle-Upper Ordovician echinoderms of the Upper Mississippi Valley region.
- J. C. Brower (Syracuse Univ.): Middle Ordovician crinoid assemblages from the Twin Cities area of Minnesota.
- R. J. Elias (Univ. of Manitoba): Biostratigraphy of Late Ordovician solitary rugose corals in the Upper Mississippi Valley Region.
- F. K. Lobdell (Univ. North Dakota): Distribution of Arthrostylidae (Bryozoa: Cryptostomata) in the Gunn Member, Stony Mountain Formation (Upper Ordovician), Manitoba and North Dakota.
- D. J. Kolata (Illinois State Geol. Surv.), W. D. Huff (Univ. Cincinnati), Joyce K. Frost: The Ordovician Deicke and Millbrig K-bentonite Beds: regional time lines and their application to analysis of paleoenvironments.
- J. T. Haynes (Univ. Cincinnati), W. D. Huff (Univ. Cincinnati), R. L. Hay (Univ. Illinois, Urbana), Compositional variations in the Middle Ordovician Deicke (T-3) and the Millbrig (T-4) K-bentonites in the southeastern United States.
- S. D. Samson (Univ. Minnesota), E. C. Alexander, Jr., (Univ. Minnesota), & P. R. Kyle (New Mexico Inst. M & T., Socorro), Chemistry, mineralogy and correlation of Ordovician bentonites.
- J. C. Matthews (Univ. Illinois, Urbana), & Mingchou Lee (Case Western Reserve Univ.): Mineralogy and regional pattern of episodic potassic alteration of Ordovician tuffs in the Upper Mississippi Valley.
- J. E. Conkin, J. Kubacko, Jr., N. A. Dugan (Univ. Louisville), Ordovician (Late Blackriveran-Early Rocklandian) metabentonite correlation between Kentucky and the Upper Mississippi Valley.
- L. E. Cisneros (Univ. Illinois, Urbana): Regional paleoenvironmental and paleoecological analysis of Ordovician carbonate strata bounded by isochronous volcanic ashbeds in the Mid-continent.
- M. J. Kunk (U.S. Geol. Survey, Reston), A. M. Brusewitz (Geol. Surv. Sweden): 39Ar recoil in an I/S clay from the Ordovician "Big Bentonite Bed" at Kinnekulle, Sweden.
- J. R. Hatch (U.S. Geol. Survey, Denver), S. R. Jacobson (Chevron Oil, La Habra): Organic geochemistry and organic petrography of Middle Ordovician rocks, North-central and Midcontinent region, U.S.A.
- D. Dathe, M. P. Weiss (Northern Illinois Univ., De Kalb): Origin of corrosion surfaces in the Platteville and Galena Formations (Middle Ordovician) of the Upper Mississippi Valley.
- S. R. Schutter (Exxon Production Research Co., Houston), Revision of the global relative sea level curve for the Ordovician Period.
- R. F. Gildner, J. L. Cisne (Cornell Univ., Ithaca): Correlation of the Galena Group by cross-correlation of sea level curves.

- C. W. Byers (Univ. Wisconsin): The Cretaceous as the key to the Ordovician.
- W. B. Harrison, III (Western Michigan Univ.): Lower and Middle Ordovician lithostratigraphy and facies types - Central Michigan Basin.
- M. P. Carlson (Univ. Nebraska): Lithostratigraphy and correlation of the Ordovician in Nebraska and adjacent areas.
- M. E. Brookfield (Guelph Univ., Ontario): A Mid-Ordovician temperate carbonate shelf - the Black River and Trenton Limestone Groups (Caradocian) of Southern Ontario, Canada.
- B. L. Wilcer, J. R. Dodd (Indiana Univ.): Surface exposures of shallow, subtidal deposits of the Ordovician Plattville and Galena Groups of Kentland, Indiana.
- J. M. Mazzullo (Texas A & M Univ.), R. Ehrlich (Univ. South Carolina): The St. Peter Sandstone - aeolian sands deposited on a marine shelf during transgression.
- E. Larcinese, D. Brandt, E. Anderson (Eastern Michigan Univ.): Diagenesis of the Stonington and Big Hill Formations (Upper Ordovician), Northern Michigan.
- M. E. Johnson (Williams College, Williamstown), B. J. Witzke (Iowa Geol. Survey): An ancient rocky shore on southeastern Hudson Bay (Manitoba, Canada) and the implications of its Late Ordovician microfauna.
- G. A. Ludvigson (Iowa Geol. Survey): Petrology of carbonate interbeds in the "Luana Beds" of the Upper Ordovician Dubuque Formation (Upper Galena Group), Upper Mississippi Valley.
- B. J. Witzke (Iowa Geol. Survey): Depositional cycles and facies in the Maquoketa Fm., Upper Ordovician of Iowa.
- D. Brandt, E. Anderson, E. Larcinese (Eastern Michigan Univ.): Petrography and depositional environments of the Upper Ordovician formations of Northern Michigan.

Excursions: Two Ordovician field trips were organized - on 29 April, a pre-session day-trip to study the Middle Ordovician stratigraphy and paleontology of the Twin Cities (organized by Robert E. Sloan, William F. Rice, Eric Hedblom and James M. Mazzullo), and on 2-3 May, a post-session field excursion to examine the Middle and Late Ordovician lithostratigraphy and biostratigraphy of the Upper Mississippi Valley (organized by Robert E. Sloan and Dennis Kolata). Both of these excursions were exceedingly well run and provided participants with a very good understanding of these lowly indurated, Mid-Continental platform successions. There were good opportunities for collecting the faunas and sampling the bentonites in the sequence. Robert E. Sloan and his co-organizers are to be congratulated for making these excursions so instructive, and in providing contributions to an excellent guide book (in N. H. Balaban, Edit., 1987. Field trip guidebook for the Upper Mississippi Valley, Minnesota, Iowa and Wisconsin. Minnesota Geol. Survey - University of Minnesota, St. Paul, Minnesota 55114, Guidebook Series no. 15, iii + 185 pp., ISSN 0192-6268). A separate 232 pp volume, edited by Robert E. Sloan, and entitled 'Middle and Late Ordovician lithostratigraphy and biostratigraphy of the Upper Mississippi Valley' - see fuller details in Bibliography of this issue of ORDOVICIAN NEWS - became available for purchase, at a cost of U.S.\$26.50, during the meeting.

- F. IV Congreso Argentino de Paleontología y Bioestratigrafía, Mendoza, 23-27 November, 1986

Dr. Matilde S. Beresi reports that the following program of talks was presented in the 'Simposio "Bioestratigrafía del Paleozoico inferior"', organized by Alfredo Cuerda:

- A. Cuerda, C. Cingolani, R. Varela & O. Schauer: Cámbrico y Ordovícico en la precordillera de San Juan: Formación de los Sombreros. Ampliación de su conocimiento bioestratigráfico.

- Osvaldo L. Bordonaro: Bioestratigrafía del Cámbrico inferior de San Juan, Argentina.
- Juan L. Benedetto, N. E. Vaccari & Zarela Herrera: El hallazgo de rocas cámbricas fosilíferas al oeste de Jáchal, provincia de San Juan.
- A. Cuerda & M. Alfaro: Las Graptofaunas de la formación Gualcamayo en su localidad Tipo, Precordillera de La Rioja.
- A. Cuerda: El género Pseudisograptus Beavis (Graptolithina) en el Ordovícico de la Sierra del Tontal, precordillera de San Juan.
- A. Cuerda: Graptolitos del techo de la Formación San Juan, precordillera de San Juan.
- Silvio H. Peralta: Graptofaunas del Llanvirniano Inferior (Ordovícico) y Ludlowiano Inferior (Silúrico) en la Formación Rinconada, precordillera oriental de San Juan.
- Silvio H. Peralta: La graptofauna ordovícica de la Formación La Cantera, precordillera oriental de San Juan.
- Bruno A. J. Baldís & Silvia B. Gonzales: Australcharpes precordilleranus nov. sp. (Trilobita, Ptychopariida, Harpidae) del Ordovícico Inferior de la Sierra de Villicum (Provincia de San Juan, Argentina).
- Ricardo Astini, Juan L. Benedetto & Marcelo Carrera: La Fauna de trilobites de la Formación Las Plantas (Ordovícico Tardío), precordillera de La Rioja, Argentina.
- Norberto E. Vaccari, Beatriz Waidfeld & Marcelo Carrera: Nuevos trilobites de la Formación San Juan (Ordovícico temprano), precordillera de San Juan y La Rioja, Argentina.
- Cesar Ruben Monaldi & Miguel Angel Boso: Hallazgo de Dalmanitina (Trilobita) en la Formación Zapla del noroeste argentino. Implicancia cronológica.
- Juan L. Benedetto, Fernando Canas & Ricardo Astini: Braquiópodos y trilobites de la zona de transición entre las Formaciones San Juan & Gualcamayo en el área de Guandacol (La Rioja, Argentina).
- Juan L. Benedetto & Zarela A. Herrera: Braquiópodos del suborden Strophomenidina de la formación San Juan (Ordovícico temprano), precordillera argentina.
- Ruben Ignacio Fernandez: El hallazgo de fósiles ordovícicos en la Formación "Calcáreo Carbonosa" de León-Voicán. Departamento de Tumbaya, Provincia de Jujuy, República Argentina.
- Teresa M. Sanchez: La presencia de la familia Eopteridae (Mollusca, Rostroconchia) en la Formación San Juan (Ordovícico inferior) de la Precordillera Argentina.
- Florencio Gilberto Acenolaza: El género Macrocystella (Cystoidea) en el Tremadociano de Salta y Jujuy.
- Alfredo M. Monetta & Silvia E. Martinez: Hallazgo de un conularido (Scyphozoa-Conulata) en el Silúrico Inferior de San Juan, Argentina.
- Maria C. Moya, Susana Malanca, Julio A. Monteros & Joes A. Salfity: Hallazgo de medusas en el Tremadociano inferior del norte argentino.
- Graciele N. Sarmiento: Hallazgo de Dasycladaceas (Algae, Clorophyta) en la Formación Las Aguaditas (Ordovícico), Dpto. Jáchal, San Juan.
- Luis Padilha de Quadros: Ocorrencia de microfósiles (Acritarchae) ordovícicos na sub-bacia do alto Amazonas, Brasil.

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CURRENT RESEARCH AND PUBLICATIONS OF ORDOVICIAN SPECIALISTS
(additional to those included in ORDOVICIAN NEWS Nos 2, 3 and 4)

BRITISH ISLES

Alan W. Owen (Univ. Dundee, Scotland) provides the following list of his publications:

- 1985 Owen, A. W. Trilobite abnormalities. Trans. Roy. Soc. Edinb.: Earth Sci. 76: 255-272
- 1986 Owen, A. W., Tripp, R. P. & Morris, S. R. The trilobite fauna of the Raheen Formation (Upper Caradoc), Co. Waterford, Ireland. Bull. Br. Mus. Nat. Hist. (Geol.), 40, (3), 91-122
- 1986 Harper, D. A. T. & Owen, A. W. A shelly biofacies from the graptolitic mudstones of the Lower Balclatchie Group (Lower Caradoc) near Laggan, Girvan district. Scottish Journal of Geology 22, 371-383.
- 1986 Owen, A. W. The uppermost Ordovician (Hirnantian) trilobites of Girvan, S.W. Scotland with a review of coeval trilobite faunas. Trans. Roy. Soc. Edinb.: Earth Sci. 77: 231-239
- 1987 Owen, A. W. The Scandinavian Middle Ordovician trinucleid trilobites. Palaeontology 30: 75-103, pls 11-14.

CANADA

Rolf Ludvigsen indicates that from the end of 1987 he will be leaving the University of Toronto for a different, "non-professorial life on the west coast" (see address elsewhere in this issue). His "interest in matters paleontologic will, of course, continue (albeit at a slower pace)" and he is "currently wrapping up the following trilobite projects:

Sunwaptan (Upper Cambrian) trilobites of the Cow Head Group, western Newfoundland (with Steve Westrop and Cecil Kindle). Submitted in early June to Palaeontographica Canadiana.

Silurian trilobites of northern Yukon Territory (with Ron Tripp). To be submitted to Royal Ontario Museum

Ontogeny and phylogeny of two Ordovician cheiruracean trilobites (with David Kopaska-Merket). To be submitted to Royal Ontario Museum."

BALTOSCANDIA

In the April 1987 issue of the Newsletter of the Working Group on Ordovician Geology of Baltoscandia (WOGOGOB) Professor Maurits Lindström (Dept of Geology, Univ. of Stockholm, S-106 91 Stockholm, Sweden) presented a most useful 25 page outline of recent progress and proposals for new directions in studies of the Baltoscandian Ordovician. He also provided a comprehensive list of members, their addresses and activities. Names and addresses of those not already receiving ORDOVICIAN NEWS have been added to the preceding supplement to the Directory of Ordovician workers. Their names and current research supplements information included in ORDOVICIAN NEWS No. 4, and are listed below:

SWEDEN

Lund University: P. Ahlberg - agnostid trilobites
K. Larsson - ostracodes, tentaculitids, cornulitids
K. Lindholm - graptolites, correlation
A. Lofgren - conodonts
S. Stridsberg - cephalopods

Sveriges Geologiska Undersökning, Uppsala: Y. Grahn - Chitinozoa

Uppsala University: U. Nordlund - sedimentology, phosphogenesis
U. Sturesson - ooids

Stockholm University: M. Lindström - carbonate facies, conodonts
G. Armands - geochemistry

Swedish Museum of Nat. Hist., Stockholm: V. Jaanusson - stratigraphy, trilobites
H. Mutvei - cephalopods

Unattached, Sweden: J. Johansson (Sköllersta) - local stratigraphy
V. Philip (Uppsala) - echinoderms, glauconite

ESTONIA (USSR)

Academy of Sciences, Estonian SSR, Tallinn:

H. Aru - trilobites
G. Bauert - chitinozoa, graptolites
H. Bauert - oil shale sedimentology, geochemistry
L. Hints - articulate brachiopods, echinoderms
E. Jürgenson - metabentonites
S. Mägi - lithostratigraphy, acid resistant fauna
T. Meidla - ostracodes
J. Nolvak - chitinozoans, biostratigraphy
T. Oja - phosphatic rocks
L. Polma - lithology, facies
I. Puura - inarticulate brachiopods
V. Puura - 'Obolus sandstone' project
L. Sarv - ostracodes

LITHUANIA (USSR)

Vilnius State University, Vilnius: J. Paskevicius - graptolites, brachiopods

LATVIA (USSR)

Vnimorego, Riga: L. Gailite - trilobites, ostracodes, chitinozoans
R. Ulst - graptolites, conodonts

POLAND

Institute of Geological Science, Polska Akademia Nauk, Warszawa:

W. Bednarczyk - conodonts, inarticulate brachiopods

Institute of Paleobiology, Polska Akad. Nauk, Warszawa:

P. Mierzejewski - graptolites

Institute of Geology, Warszawa: J. Modlinski - trilobites, graptolites
M. Nehring-Lefeld - conodonts

GERMANY

Technische Universität Berlin: B-D. Erdtmann - graptolites, acritarchs, organic

J. Maletz - graptolites
O. Schmidt - graptolites

Gottingen Universität: A. Hoffknecht - organic maturity studies/graptolites
P. Meyer - lithostratigraphy and facies
J. Wötje - conodonts

DENMARK

University of Copenhagen: M. Bjerreskov - graptolites
C. K. Clausen - maturity analysis, acritarchs
G. K. Pedersen - shale sedimentology
J. A. Rasmussen - conodonts

Danmarks Geologiske Undersøgelse, Copenhagen: S. Stouge - conodonts, trilobites
acritarchs

NORWAY

Universitetet Oslo: D. Bruton - trilobites, brachiopods
G. Henningsmoen - trilobites
N. Spjeldnaes - stratigraphy, bryozoans
K. O. Bjorlykke - geochemistry

BRITAIN

University of Liverpool: P. J. Bretchley - carbonate mud mounds
P. D. Middleton - carbonate mud mounds

University of Dundee: R. A. Heath - sedimentology of Ordovician-Silurian boundary
A. Owen - lithostratigraphy, trilobites
D. M. Ramsay - Calcodinida evolution

University College, Galway: D. A. T. Harper - brachiopods

U.S.A.

Ohio State University: S. Bergström - conodonts

CANADA

Memorial University, Newfoundland: L. E. Fahraens - conodonts

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A. BOOKS

Sloan, R. E. (ed.) 1987. Middle and Late Ordovician lithostratigraphy and biostratigraphy of the Upper Mississippi Valley. Minnesota Geological Survey - University of Minnesota, Report of Investigations no. 35, v + 232 pp. ISSN 0076-9177. (price U.S.\$26.50)

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This book provides an exceedingly useful, up-to-date summary of the Middle-Late Ordovician stratigraphy and faunas of part of the North American Midcontinental Platform, and with its vertical continuity of sequence, rich faunas, conodont assemblages, low thermal alteration and interlayered radiometrically-dated volcanic ash beds is likely to be of considerable chronostratigraphic importance, especially in future discussions of the subdivision of the Middle-Late Ordovician stratigraphic interval.

Benson, D. J., & Stock, C. W., 1986. Depositional history of the Middle Ordovician of the Alabama Appalachians. 23rd Annual Field Trip, Alabama Geological Society, 21-22 November, 1986. 120 pp. (Copies available from Alabama Geological Society, P.O. Box 6184, University, Alabama 35486).

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OTHER NEWS

- From the Annual Report for 1986 of the International Commission of Stratigraphy (ICS)
 - M. G. Bassett and A. R. Berger are currently organizing a time scale - entitled "ICS Global Standard Stratigraphic Scale" down to Stage/Age. A draft should be available shortly, and full publication before the Washington I.G.C. in 1989.
 - A revised second edition of International Stratigraphic Guide (ISG) is now in preparation. It is hoped that its publication will further contribute towards clarifying 'principles of stratigraphic procedure and unification of stratigraphic nomenclature'.
- From IGCP 216 (Bio-events) project circular 1987/3, O. H. Walliser reports (i) that a third International Conference of the project IGCP 216 will be held at Boulder, Colorado, USA from 15-21 May 1988 entitled "Abrupt changes in the global biota" (organizer Erle G. Kauffman, Dept of Geol. Sci., Univ. of Colorado Campus Box 250, Boulder, Co 80309), and (ii) work of this group will also be included in separate session at the Fifth International Symposium on the Ordovician System in St. John's, Newfoundland in August 1988. A working group has been established as part of the activities of IGCP 216, to consider the 'Ordovician-Silurian boundary event'. C. R. Barnes is leader of this project work. There will also be special symposia planned for inclusion in sessions B5, B10 and L7 of the Washington IGC in 1989.
- Silurian Subcommittee activities. D. Kaljo (Chairman of SSS) reports that (i) a successful field meeting was held in south-eastern Australia from 16-29 August 1986; and (ii) that the Subcommittee plans to compile a global correlation chart containing the most typical well studied reference sequences for each region (basin etc.) while at the same time showing change of facies. Hopefully this Silurian chart will be ready for presentation at the next Silurian Symposium in 1989.
- Additional note. In the general discussion of the Silurian meeting in Australia it was mentioned that a problem existed in the hierarchy of stratigraphic divisions between the Silurian and the Devonian, and that it was thought that the hierarchy should be harmonized. The problem is that the Silurian (and the Ordovician for that matter) is based on four named series rank divisions (Llandovery, Wenlock etc.) while the Devonian is based on a three-fold informal (Lower, Middle and Upper) and stage-rank named divisions with -ian terminations (Givetian, Famennian etc.). It was suggested that perhaps the Silurian should have a two-fold Lower and Upper informal Silurian subsystem (or series) division which might be equivalent

to the informal three-fold Lower, Middle and Upper Devonian subsystem (or series) division. It should be a matter for the Subcommissions to harmonize this hierarchy. And there is the ancillary need for Ordovician workers to consider this problem in the light of the need for consistency of usage in naming Series - should British views that our series names (e.g. Caradoc, Ashgill etc.) not have -ian terminations be adopted, or not?

5. In addition to an Institute of Cambrian Studies reported in the last issue of ORDOVICIAN NEWS, there is now a Devonian Institute based on the Alaska Pacific University, 410 University Drive, Anchorage, Alaska 99508, with a journal (or newsletter) called the 'Devonian Times' edited by Skip Roy.

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