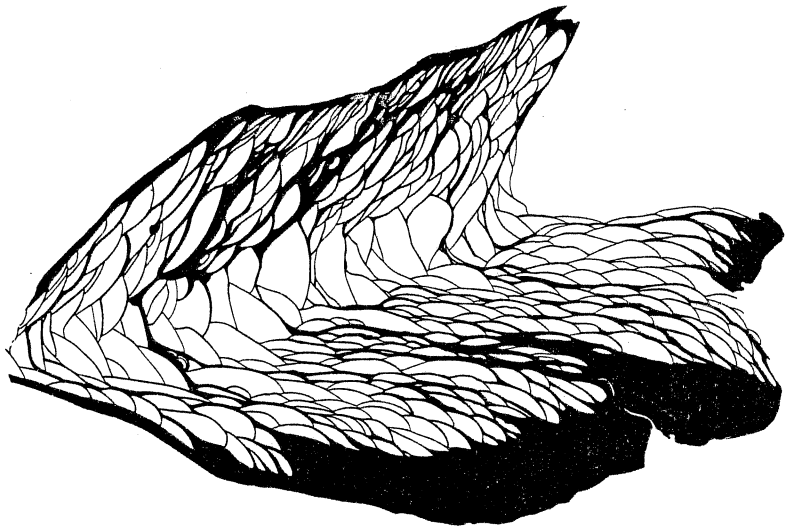
SILURIAN TIMES

No. 1 May 1993

A NEWSLETTER OF THE SILURIAN SUBCOMMISSION



SUBCOMMISSION ON SILURIAN STRATIGRAPHY

INTERNATIONAL COMMISSION ON STRATIGRAPHY

INTERNATIONAL UNION OF GEOLOGICAL SCIENCES

COVER PICTURE: A specimen of *Rhizophyllum* sp. from reefs of Pridoli age in the Devon Island Formation at Goose Fiord, Ellesmere Island, Arctic Canada. (Illustration kindly supplied by Alan Pedder, Geological Survey of Canada, Calgary)

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SILURIAN TIMES

EDITORIAL

Welcome to the first issue of Silurian Times. This is the newsletter of the Subcommission on Silurian Stratigraphy of the International Commission on Stratigraphy. It is intended to be available to all those interested in Silurian rocks worldwide. Our initial mailing list is derived from several sources: the current list of voting and corresponding members of the Silurian Subcommission; a mailing list for the North American Silurian Working Group; various other sources including the World Directory of Paleontologists. We are bound to have missed many interested people and we urge those of you who receive this first edition to show it to your colleagues and ask them to respond to the request for information.

This issue is brief and provides a few news items. We look forward to your response to the request for information on page 00 and will construct the second edition later in 1993. Submissions for inclusion in the next edition of Silurian Times should arrive on or before 30 November 1993; when providing lists of recent publications, please include only fully refereed articles and books (not abstracts) published during 1992-93.

NOTES FOR CONTRIBUTORS

Contributions should be in English, typed double spaced and sent by mail, fax or E-Mail to:

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For longer contributions, it would help if a copy was sent on 3.5" or 5.25" diskette. Please indicate on the diskette the operating system used and, if possible, provide one version in ASCII.

SUBCOMMISSION REPORT FOR 1992

The following is the text of the 1992 report on SSS submitted to IUGS by Dim Kaljo. The numbered headings follow a special IUGS format.

1. **Title of Constituent Body**
   Subcommission on Silurian Stratigraphy (SSS) of the International Commission on Stratigraphy, IUGS.

2. **Overall Objectives**
   Elaboration and improving of the standard global stratigraphical (SGS) scale for the Silurian System, including definition of boundaries and selection of Global Stratotype Sections and Points under ICS guidelines and refinement of international correlation. Stimulation of research and international cooperation, evaluation of different new approaches in Silurian stratigraphy.

3. **Fit within IUGS Science policy**
   The main goal of the SSS - development of the Silurian SGS Scale - is in essence a fundamental problem and at the same time of wide practical application. This can be achieved only by international cooperation aimed at promotion of common language in geology.

4. **Organization**
   The SSS consists of 16 Voting and 57 Corresponding members. Several temporary working groups have been established.

   Officers until the end of August:
   Chairman: D. Kaljo (Institute of Geology, Estonian Academy of Sciences, Tallinn, Estonia.
   Secretary: T.N. Koren, All-Union Geological institute, St. Petersburg, Russia.
   Treasurer: M.G. Bassett, National Museum of Wales, Cardiff, U.K.
   Contact person with Subcommission on Geochronology:
   L.R.M. Cocks, British Museum of Natural History, London, U.K.

   New Officers:
   Chairman: M.E. Johnson, Williams College, Williamstown, Massachusetts, U.S.A.
   Secretary: G.S. Nowlan, Geological Survey of Canada, Calgary, Canada

5. **Extent of National/Regional/Global Support**
   The Silurian Subcommission consists of specialists from 27 countries from all continents, so all main Silurian areas of the world are represented, especially well Europe, North America, also former USSR and China part of Asia. There has been much nation-based support for organization of symposia and field meetings (U.K., 1979, 1989, Canada, 1981, Norway, 1982, Ukraine, USSR, 1983, Australia, 1986, Estonia, 1990, Czechoslovakia, 1992).

Support of the National Museum of Wales, Cardiff, U.K. for publication of the field guide for 1992 is acknowledged here.

6. **Interface with other international projects**
SSS took part in IGCP Project No. 216 (Global Biological Events in Earth history), especially in a subproject entitled: "Wenlock-Ludlow Boundary Event", terminated this year. SSS is going to continue the cooperation with a succeeding IGCP project on biotic recoveries from mass extinctions. SSS is cooperating also with IPA international research groups on graptolites and conodonts.

7. **Chief Accomplishments last year**
Field Meeting and seminar in Prague Basin, Czechoslovakia, 21-29 August, 1992, were devoted to the expertise of the Barrandian classical Silurian sections, especially Pridolian stratotypes and Silurian-Devonian boundary, the first achievement of the international stratigraphical community on the way to common understanding of standard stratigraphy. Preparation of the meeting and publication of a special field guide inspired improvements in Bohemian stratigraphy. Collected new materials will promote additional progress.

A summary paper on the Silurian bioevents and event-stratigraphy was compiled by an international team coordinated by D. Kaljo (a chapter of the book Phanerozoic Bioevents and Event Stratigraphy to be published by Springer-Verlag in 1993). Six levels with good prospects for global correlation were established.

8. **Chief Problems encountered last year**
For correlation purposes a global standard for Silurian graptolite biozonation was compiled by a team led by L.R.M. Cocks and discussed at Prague meeting. There was considered useful also to add conodont biozonation.

9. **Chief Publications, Maps, last year**
Kriz, J. 1992. Silurian Field Excursions: Prague Basin (Barrandian), Bohemia. National Museum of Wales, Geological Series No. 13, 111 p.

10. **Summary of expenditures last year**
SSS accounts for 1992 are as follows (compiled by Treasurer, M.G. Bassett):

	Income	Expenditure
Income		
1. Opening balance from 1991	589.15	
2. Received via IUGS Treasurer	1,000.00	
Expenditure		
1. Subvention to 4 members for attendance at Subcommission conference and field meeting, Czechoslovakia, August 1992		1,100.00
2. General Subcommission Expenditure (postage, telephone etc.)		100.00
3. Contribution to production of field guide for Prague meeting		250.00
4. Bank charges and exchange commission		37.77
	1,589.15	1,487.77
Net Balance for 1992: (Transferred by cheque to new Chairman)		101.38

11. **Work Plan for next year**
a) Planning of the second international symposium on the Silurian System to be held in Rochester, NY, U.S.A. in 1995-96 (M.E. Johnson and C.E. Brett).

b) Preparation of the next subcommission field meeting to be held in the Carnic Alps in 1994 (H.P. Schonlaub).

c) To continue compilation of the Global Standard for biozonations (L.R.M. Cocks and G.S. Nowlan).

12. **Critical milestones to be achieved next year**
To finalize plans for the next SSS field meeting in the Carnic Alps and the Second International Symposium on the Silurian System.

13. **Anticipated results, next year**
The first version of a global standard of conodont biozonation correlated with the graptolite one.

14. **Communication plans**
Distribution of circulars among members of the Subcommission.

15. **Summary budget for next year**
SSS budget application for 1993 (compiled by Treasurer M.G. Bassett):

1.	General Subcommission administration	300
2.	Contribution to Newsletter production	250
	Total:	550

Silurian Subcommission is here applying for 1993 for US$550.

16. **Potential Funding Sources Outside IUGS**
Will be studied by new officers of the Subcommission

17. **Membership List**
(see inside front cover)

18. **Copies of circulars**
(not provided here)

19. **Review of chief accomplishments/results over the last 5 years (1988-92)**
Co-sponsored and co-organized:
1. A field meeting in Estonia in 1990 and publication of a corresponding field guide.
2. The first international Symposium on the Silurian system (The Murchison Symposium), University of Keele, U.K., 28 March - 9 April, 1989 with field excursion.
3. A field meeting in Czechoslovakia in 1992 and publication of a corresponding field guide.
4. Publication of:
   a) Holland, C. H. and Bassett, M.G. (eds.) 1989. A global standard for the Silurian System. National Museum of Wales, Cardiff, 325 p. (also IUGS Publication No. 23).
   b) Bassett, M.G., Lane, P.D. and Edwards, D. (eds.) 1991. The Murchison Symposium: proceedings of an international conference on the Silurian System. Special Papers in Palaeontology, 44, 397 p.

20. **Summary of Anticipated Objectives and Work Plan for the next five years (1993-97)**
1. To continue refinement of the global standard for the Silurian, especially on the Chronozone level.
2. To compile a global correlation chart. The project is to be completed in 1992.
3. To organize field meetings in the key regions, the first one is scheduled for 1994 in the Carnic Alps.
4. To organize the Second international Symposium on the Silurian System in U.S.A. in 1995 or 1996.

CHAIRMAN'S CORNER

The recent field conference on the Prague Basin of Bohemia (Czechoslovakia) organized by Jiri Kriz and sponsored by the Subcommission on Silurian Stratigraphy was a tremendous success. Attendance was excellent, with over 40 participants. Twelve out of the Subcommission's 17 voting members were in attendance, including new-comers Wolfgang Hansch (Germany), André Le Herissé (France), Alf Lenz (Canada) and Enrico Serpagli (Italy). At least 16 corresponding members were present. Also on hand as a special guest of the conference was John W. Cowie, the outgoing Chairman of the International Commission on Stratigraphy.

Official business included transition of the Subcommission chairmanship from Dimitri Kaljo (Estonia) to Markes Johnson (U.S.A.). We are all very grateful to Dim for his eight-year term of service, which most notably led to the memorable joint Ordovician-Silurian field conference in Estonia in 1990. During that period, Tatyana Koren (Russia) served as the Subcommission's able secretary. Godfrey Nowlan (Canada) agreed to assume the duties of secretary. Organization of this news letter is one tangible representation of Godfrey's new duties and we hope Silurian Times will be useful, not only for the dissemination of official Subcommission news, but also for the sharing of information among members of the Silurian research community worldwide.

By unanimous acclamation, it was settled that the next official Subcommission meeting will occur in the Carnic Alps and adjacent areas of Austria in 1994, to be organized by Hans P. Schonlaub (see separate news item below).

Following this decision, plans were outlined for the 2nd International Symposium on the Silurian System -the James Hall Symposium, to be held in the Niagara Falls border region between the U.S. and Canada. The meeting's co-conveners will be Markes Johnson and Carlton Brett. Primary focus of this conference will be on paleogeography, with key-note speakers describing the stratigraphic parameters of the major Silurian shelf margins and constituent land masses. Publication of a special volume, tentatively entitled Silurian Lands and Shelf Margins, is envisioned. Particular attention will be drawn to ancillary means of correlating the various series and stage boundaries in the widest possible range of depositional environments, thus adopting the Subcommission's ongoing correlation project. An open session may concern patterns of extinction and radiation with respect to established chronostratigraphy and sea-level patterns. Another session is expected to deal with aspects of Silurian economic geology.

This plan was broadly approved by the membership present at the Prague meeting, although the feasible timing of the symposium generated much discussion. The window of opportunity prescribed by the sponsors during this discussion was 1995-1997.

Many felt that 1995 was too soon following one year after the Austrian field conference; many felt that 1997 would be too distant. A major objection to 1995 is the fact that at least three international meetings are already scheduled for that year. Indeed, the first call for the 7th International Symposium on the Ordovician System (Las Vegas, Nevada, June 12-16, 1995) has now been circulated. That meeting will be co-ordinated with the 5th International Conference of the Graptolite Working Group (Long Beach, California, June 22-24, 1995). Also scheduled for 1995 is the 3rd International Brachiopod Congress (1st week of September in Sudbury, Ontario). The main objection to 1996 is the fact that our meeting would conflict with the next International Geological Congress, being organized for China. Consultation with Chinese members of the Subcommission was promised, before a final decision.

Consultation has now taken place and it has been learned there are no plans for a major Silurian field trip associated with the China Congress. Due to the extensive preparations necessary for the pre- and post-meeting field trips planned for the North American Symposium, as well as the necessary research time leading up to a well-coordinated session on paleogeography, the conveners rule against the 1995 schedule and rule in favor of the 1996 schedule. The technical sessions will most probably take place in Rochester, New York, in mid-August 1996. Four days of meetings will be split by a day-long excursion to Niagara Falls. The pre-meeting field trip will involve an excursion through the clastic-rich Silurian sequences in the Appalachian Trough, possible from Alabama to New York State; the post-meeting field trip will involve an excursion through the carbonate-rich Silurian sequences from Niagara Falls to Manitoulin Island (Canada).

The organizing committee assembled by the conveners includes Godfrey Nowlan and Paul Copper (Canada) and Ed Cotter, Steven Driese, and Richard Smosna (U.S.A.). As planning for the technical sessions intensifies, others will surely be joining in the fun and work. A formal announcement of the 2nd International Symposium on the Silurian System may be expected mid-year 1993.

M. Johnson

THEME SESSION ON "PALEOGEOGRAPHY OF SILURIAN TACONICA" AT THE ANNUAL MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA IN BOSTON, OCTOBER 25-28, 1993.

The Technical Program Committee for the 1993 Boston G.S.A. meeting recently announced its approval of the theme session organized by Markes Johnson (Williams College) and David Roy (Boston College).

This symposium is designed to bring together a diverse group of stratigraphers, sedimentologists, paleoecologists metamorphic petrologists, structural geologists, and geochronologists interested in the Silurian development of a narrow land mass called Taconica, which extended along the margin of Laurentia from Quebec to Alabama. The persistence of this feature through the full Silurian Period, its broad meridional extent, and its dichotomy of tectonically active and passive flanks provides a challenging mosaic of paleogeographic patterns to be interpreted and correlated as a coherent entity.

One session will be devoted to the passive flank of Silurian Taconica, as understood through temporal and spatial changes in the geology of the Appalachian Trough facing the stable platform interior of Laurentia. Aspects of climate, sea-level change, sedimentary provenance, and marine communities will be compared region by region from Alabama to Quebec in order to characterize a highly variable shoreline.

Another session will be devoted to the tectonically active, oceanic margin of Taconica. Evidence from the Canadian Maritimes and New England will be compared region by region in order to assess significant questions regarding direction of subduction, occurrence of island arcs, styles of volcanism, and the formation of sedimentary basins. New results in geochronology will be highlighted, as will recent growth in the lexicon of Silurian formations, with the goal of paleogeographic reconstruction firmly in mind.

Taken together, the two sessions are intended to provide a detailed working model of a significant land mass which has similar counterparts on several other Silurian paleocontinents. If you would like to present a paper at this meeting, please contact David Roy or Markes Johnson.

M. Johnson

CLIPS FROM CURRENT RESEARCH PUBLICATIONS:

Grahn, Y. and Caputo, M., 1992, Early Silurian glaciations in Brazil: Palaeogeography, Palaeoclimatology, Palaeoecology, 99:9-15.

p. 14: "Several glaciation centers of Early Silurian age developed in the uplands in central Gondwana. The ice sheets advanced on three or four occasions during the Llandovery over fluviatile and littoral sediments and, at the southern margin of the Amazonas Basin, also over marine environments."

Baarli, B.G., Brande, S. and Johnson, M.E., 1992, Proximality trends in the Red Mountain Formation (Lower Silurian) of Birmingham, Alabama, in Chaplin, J.R. and Barrick, J.E. (eds.), Special papers in paleontology and stratigraphy: A tribute to Thomas W. Amsden: Oklahoma Geological Survey Bulletin, v. 145, p. 1-17.

p. 2: "The object of our study is to expand the available bathymetric data base for the Silurian of the southern Appalachians by applying an analysis of proximality trends to a sequence lacking extensive community information. ...The Red Mountain Expressway locality may be one of the few sites in the world where all four Lower Silurian cycles of sea-level change can be viewed together in a single exposure."

Moore, G.T., Hayashida, D.N., and Ross, C.A., 1993, Late early Silurian (Wenlockian) general circulation model-generated upwelling, graptolitic black shales, and organic-rich source rocks -An accident of plate tectonics: Geology, 21:17-20.

p. 19: "The accidental association of the southern hemisphere mid-latitude upwelling zone with the -28,000 km Gondwanan margin placed a zone of high biologic productivity over a vast shelf area in the Rheic and the southern Panthalassa oceans. Virtually no sea ice formed here and bottom dysaerobic and anoxic conditions probably prevailed. ...High organic flux to the sea floor accumulated and was subsequently buried and preserved as future source rocks."

Mahmoud, M.D., Vaslet, D., and Husseini, M.I., 1992, The Lower Silurian Qalibah Formation of Saudi Arabia: An important hydrocarbon source rock: American Association Petroleum Geologists Bulletin, 76:1491-1506.

p. 1504: "The Qusaiba includes a basal, euxinic, black 'hot shale,' which is considered to be the source rock of the Paleozoic oils and sweet gas of Saudi Arabia. This consideration has been established from the high degree of similarity in the isotope and biomarker distribution between the Paleozoic reservoir oils and the Qusaiba source rock, which show much closer correlation than with extracts of other potential source rocks."

Fordham, B.G., 1992, Chronometric calibration of mid-Ordovician to Tournasian conodont zones: a compilation from recent graphic-correlation and isotope studies: Geological Magazine, 129:709-721.

p. 717: "A distinct increase [is] required by the new calibration, in the duration for the Llandovery: approximately 16 m.y., much longer than usual estimates (for example, 9 m.y. in Strusz, 1989; 8.6 m.y. in Harland et al, 1990)."

NEW LEFT HAND SIDE FOR CORRELATION DIAGRAMS

At the Silurian Subcommission meeting in Estonia in 1990 it was decided that a standard left hand side for national and international correlation charts should be agreed as a matter of priority. Accordingly Tanya Koren and Robin Cocks drafted a combined international graptolite zonation. Different vertical heights, initially graded between long, medium and short, were given to each zone, based both on extensive experience and also in the relative thickness of these zones found in thin and deep oceanic sediments. This draft was circulated in Autumn 1990, and various comments were received from several commission members, and in particular the conodont zonation was added by Godfrey Nowlan. The matter was again discussed and the provisional diagram tabled at the Subcommission meeting in Prague in August 1992, after which members were given until the end of October 1992 to forward further changes and comments to Robin Cocks. The newly prepared diagram is a result of these extensive discussions and subsequent letters. Tanya Koren and Robin Cocks take responsibility for the graptolite zonation and Godfrey Nowlan has modified the conodont column.

	SERIES	STAGES	PRIMARY BIOZONES		SUPPLEMENTARY BIOZONES		
			GRAPTOLITES	CONODONTS	CHITINOZOA	SPORES	VERTEBRATES
POST SIL			*uniformis*	*I. w. woschmidti*		*newportensis-micrornatus*	*T. pagei*
SILURIAN	PRIDOLI		*bouceki/transgrediens*	*O. r. eosteinhornensis*	*U. urna*: *A. superba*		*K. timanicus*
					U. urna: *M. elegans*		*P. punctatus*
			lochkovensis		*U. urna*: *F. kosovensis*	*tripapillatus-spicula*	*N. gracilis*
			parultimus/ultimus				*T. sculptilis*
	LUDLOW	LUDFORDIAN	*formosus*	*O. crispa*	*E. intermedia*	*libycus-poecilomorphus*	
			bohemicus/ kozlowskii	*O. snajdri*			*A. hedei*
			leintwardinensis	*P. siluricus*	*E. philipi*		*P. elegans*
		GORSTIAN	*scanicus*	*A. ploeckensis*	*A. echinata*		*P. ornata*
			nilssoni	*O. bohemica bohemica*	*C. latifrons*		*L. martinssoni*
	WENLOCK	HOMERIAN	*ludensis*		*S. lycoperdoides*	*brevicostata-verrucatus*	
			nassa/deubeli				
			lundgreni		*C. pachycephala*		*L. taiti*
		SHEINWOODIAN	*rigidus/ellesae*		*C. cingulata*	*chulus-nanus*	
			riccartonensis	*O. sagitta sagitta*			
			centrifugus/ murchisoni	*O. sagitta rhenana*	*M. margaritana*		?
	LLANDOVERY	TELYCHIAN	*crenulata*	*P. amorphognathoides*			
			griestoniensis	*P. celloni*	*A. longicollis*	*dilatus-avitus*	*L. scotica*
			turriculatus/crispus	*D. staurognathoides*	*E. dolioliformis*		
		AERONIAN	*sedgwickii*				
			convolutus		*C. aiargada*	*membranifera-pseudodyadospora*	
			gregarius		*S. maennili*		
		RHUDDANIAN	*cyphus*	*D. kentuckyensis*	*C. electa*		?
			vesiculosus		*B. postrobusta*		
			acuminatus		*S. fragilis*		
PRE-SIL			*persculptus*				

The Prague meeting decided that only graptolites and conodonts should be designated as primary biozones for correlation. However, further columns are added here on chitinozoa, spores and microvertebrates following pleas from their authors for inclusion. The chitinozoan scheme was compiled by Jacques Verniers, Pavel Dufka, Florentin Paris and Viuu Nestor, following a meeting of chitinozoan workers. The spore scheme was sent in by Phillipe Steemans and modified by John Richardson (the late Pridoli has few useful spores, hence the cross-hatching on the diagram. The microvertebrate scheme was provided by Tiuu Marss.

An overall drafting point is that different nations have different conventions on the use of strokes and dashes. In this chart, where a stroke is used (e.g. turriculatus/crispus) it indicates that the two successive zones of turriculatus and crispus have been combined; where a dash is used (e.g. chulus-nanus) it indicates that the two named species occur together to form a single biozone.

It is intended that all future correlation charts should be drafted with this new left hand side, and that the series, stages and graptolite and conodont biozones should always be included (with the same relative lengths of the various biozones) to make future comparison easier between different charts. Whether the supplementary chitinozoan, spore or microvertebrate columns should be included is at the future compilers' discretion. There may well be other supplementary columns to be added to this chart.

L.R.M. Cocks & G.S. Nowlan

FIELD MEETING 1994: CARNIC ALPS AND ADJACENT AREAS

Dates: August 21-29, 1994

Day 1: Bus tour from Vienna (assembly). Silurian deposits in the surroundings of Graz - Kotscach Mauthen (Carnic Alps).

Day 2-4: Field trip in Carnic Alps (visit to various graptolite sequences, transitional facies and shelly limestone facies in the central Carnic Alps. Moderately steep walks are involved in these trips but we try to provide field vehicles for transportation. Nevertheless the whole day will be spent in the mountains and some walks between stops may take up to an hour.

Day 5: Lectures at City Hall in Koschach-Mauthen.

Day 6-7: Kotschach-Mauthen to Graywacke Zone of Salzburg and Tyrol with visits to selected Silurian deposits in the northern Alps.

Day 8: Departure from Salzburg or Vienna.

Tentative Costs

Total costs are difficult to estimate at present. We shall try our best to raise some funds and to keep expenses as low as possible. A reasonable level should be about US$50 per day to cover accommodation and meals. This price does not include transportation which will be subject to further developments.

Guides

Hans P. Schönlaub, Geological Survey of Austria, F. Ebner, Montanuniversitat Looben, and H. Mostler, University of Innsbruck.

H.P. Schönlaub