SILURIAN TIMES
No. 9, 2001

A NEWSLETTER OF THE SILURIAN SUBCOMMISSION

SUBCOMMISSION ON SILURIAN STRATIGRAPHY
INTERNATIONAL COMMISSION ON STRATIGRAPHY
INTERNATIONAL UNION OF GEOLOGICAL SCIENCES

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EDITORS NOTES

First, I must express my thanks to Alf Lenz, who has edited this newsletter for the past five years and brought it into the internet age. As you can see (or at least, those of you with full internet access), that I have brought Silurian Times a step further into internet delivery, by posting it as a web site accessible to all. I have chosen to post it as a series of interconnected web pages rather than as a pdf download as has been done with Ordovician News simply because I personally find it more convenient to access the news this way. In addition, it provides the option of updating or editing the newsletter if errors or omissions are noted, or if timely items should arise after initial posting. With that in mind, I invite all members to notify me if errors or omissions are spotted so that I can fix them. In addition, I welcome further submissions and I can post those and notify the readers by e-mail of the new items as they become available. I hope the SSS members and other readers are in favour of this method of deliver of Silurian Times. I welcome any comments that you may have.

I should note that the background "wallpaper" for these web pages are taken from a digitally modified illustration of an actual sample of two crossing graptolite rhabdosomes, *Cyrtograptus sakmaricus* and *Pristiograptus nudus* (you graptolite workers may note that this particular specimen of *C. sakmaricus* is atypical in that the cladial spacing is not completely uniform as is typical of this species). This sample is upper Telychian (latest Llandovery) from Cornwallis Island, Arctic Canada. For future versions of this web site I would welcome other illustrations that I could use for this purpose.

Mike Melchin

Annual Report of the Subcommission on Silurian Stratigraphy (SSS) of the International Commission on Stratigraphy for 2000

1. Title of constituent body

   Subcommission on Silurian Stratigraphy (SSS)

2. Summary table of Silurian subdivisions

   Source: Holland, C.H. and Bassett, M.G. (1989). A Global Standard for the Silurian System, National Museum of Wales, Geological Series No. 9, p. 24.

System		Series	Stages
Silurian	Upper	Pridoli	(no subdivisions)
		Ludlow	Ludfordian
			Gorstian
	Lower	Wenlock	Homerian
			Sheinwoodian
		Llandovery	Telychian
			Aeronian
			Rhuddanian

No changes or additions to this scheme have been made during the last seven years. As recently as the last biennial meeting of the SSS in Spain in 1998, the membership confirmed its majority support for the status quo. New officers of the subcommission may take the decision to reopen nominclatural questions after July 2000 when the next biennial meeting of the SSS occurs in Australia.

3. Overall objectives

a) Elaboration and improvement of the standard global stratigraphical (SGS) scale for the Silurian System, including definition of boundaries and the selection of Global Stratotype Sections and Points (GSSP) under IUGS guidelines.

b) Refinement of international correlation within the Silurian System, with particular emphasis on development of a generalized scheme of zonal fossils (left-hand column) for global applications.

c) Stimulation of research and international cooperation, with particular emphasis on the coordination of working groups focused on various zonal fossils such as graptolites, conodonts, chitinozoans, etc.

d) Evaluation and integration of new approaches to the correlation of Silurian strata on a global scale.

4. Organization

The SSS is a subcommission of the International Commission on Stratigraphy, consisting of 15 Voting and 48 Corresponding members. Voting members are selected to achieve regional representation and a balanced stratigraphic expertise. Corresponding membership is open to all individuals demonstrating a commitment to scholarship in Silurian stratigraphy.

Officers:

Chairman: Rong Jia-yu (Nanjing Institute of Geology and Palaeontology, Academia Sinica, Nanjing 210008, People's Republic of China).

Vice-chairman: Tatjana N. Koren (All Russian Geological Research Institute – VSEGEI, Sredny pr. 74, 199026, St. Petersburg, Russia).

Secretary: Michael J. Melchin (Department of Geology, St. Francis Xavier University, P.O. Box 5000, Antigonish, Nova Scotia B2G 2W5, Canada).

The SSS Treasury is maintained as a separate organizational account at St. Francis Xavier University.

5. Extent of national/regional/global support of projects

Membership in the SSS is represented by specialists from 29 countries and from all continents except Antarctica. Most of the major regions of the world with extensive exposures of Silurian strata are covered, especially Eurasia, North America, South America, Australia, and Africa.

The 3rd and 2nd International Symposia on the Silurian System (convened in Rochester, N.Y. in August 1996 and in Orange, New South Wales (Australia) in July 2000 under sponsorship of the SSS)enjoyed significant financial support from educational institutions, private science foundations, and corporate sponsors. Ongoing grant support exists for symposia publications through the cooperation of the New York State Museum (Albany) and the Australian Museum (Sydney).

Substantial national-based support was contributed for other SSS field meetings in Australia (2000), Spain and Portugal (1998) Austria (1994), the Czech Republic (1992), Estonia (1990), Australia (1986), the Ukraine (1983), Norway (1982), Canada (1981), and the United Kingdom (1979, 1989).

6. Interface with other international projects

Due to the significant occurrence of thelodonts in Silurian strata, some members of the SSS participate in IGCP Project No. 406 (Circum-Arctic Lower-Middle Palaeozoic Vertebrate Palaeontology and Biostratigraphy) -which is scheduled to run through 2000. SSS member, Tiiu Marss (Estonia) is a co-leader of the project. Other SSS members are very active in the IPA international research groups on graptolites and conodonts. The SSS field conference held in Spain and Portugal in 1998 was arranged to coincide with the Sixth International Graptolite Conference.

7. Accomplishments and products generated in 2000

Three publications were brought out in 2000:

The eighth issue of *Silurian Times* -the official newsletter of the Silurian Subcommission (edited by outgoing Secretary Alf Lenz) was circulated in January 2000 to all subcommission members, as well as a broad constituency of Silurian researchers around the world. This is the third year we circulated the newsletter primarily via electronic mail. About 150 copies were distributed electronically and only 50 hard copies were circulated through the normal postal system. By this means, the SSS continues to realize a substantial savings in postal costs.

Geological Society of Australia – ABSTRACTS – Number 61, 183 p. (for *Palaeontology Down Under 2000* –including the Third International Symposium on the Silurian System, the Sir Frederick McCoy Symposium).

Post-Conference Excursion Guide 3: Sir Frederick McCoy Symposium, Carbonate/Buildup Workshop, Heron Island (Great Barrier Reef), 21-25 July 2000, 95 p. by John S. Jell, Department of Earth Sciences, The University of Queehsland, Queensland 4072, Australia.

8. Chief problems encountered in 2000

A decision was taken in 1998 to divide the keynote manuscripts from the 2nd International Symposium on the Silurian System into two volumes, based on the length of the early manuscripts submitted for editorial review. The last manuscript necessary for the volume on "Silurian Lands and Continental Margins, Exclusive of North America" was collected in March and has now gone through technical and peer reviews. The entire volume should be ready to go to press by the end of 2000.

9. Work plan for 2001

The main task for the SSS in 2001 will to organize a few groups for the work on re-evaluation of a few boundary stratotypes, such as the base of the Silurian and Llandovery-Wenlock boundary, using modern tools and new working groups. We are beginning this task, including organization of working groups and plans of operation for these groups.

10. Potential funding sources outside IUGS

A publication fund, based on revenues raised for the James Hall Meeting and ongoing grant contributions is established. These funds are being released to the New York Geological Survey in order to cover initial editing costs of symposium

volumes. Other potential funds through the New York State Museum may facilitate publication based on anticipated reimbursement from sales of symposium volumes. The 1998 volume entitled "Silurian Cycles – Linkages of Dynamic Stratigraphy with Atmospheric, Oceanic, and Tectonic Changes" (New York State Museum Bulletin 491, 327 p.) has enjoyed a solid sales profile.

11. Financial statement for 1999

a) Income (U.S. dollars)

1. Carryover from 1999	$202.15
2. 2000 ICS subvention	600.00
Total operating funds	802.15

b) Expenditures

1. Attendance by new chairman at Australian SSS field conference	600.00
2. Newsletter production	124.86
3. Postage	46.32
Total expenditures for 2000	771.18
Net balance at the end of 2000	$ 30.97

12. Budget for 2001

1. Production & mailing of newsletter	$200.00

ALLOTMENT REQUESTED FROM ICS FOR 2000 - $200.00

Name of Chairperson: Rong Jia-yu

Signature of Chairperson:

Date: October 20, 2000

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Titular members SSS

Rong, Chairman (China)
Koren, Vice-chairman (Russia)
Melchin (Secretary)
Brett (U.S.A. - nominee)
Caputo (Brazil)
Cocks (UK)
Hansch (Germany)
Jell (Australia)
Johnson (U.S.A)
Kaljo (Estonia)
Koren (Russia)
Kriz (Czech Rep.)
Le Herisse (France)
Lenz (Canada)
Loydell (U.K.)
Serpagli (Italy)

Corresponding members SSS

Aldridge (UK)
Antoskhina (Russia)
Barnes (Canada)
Bassett (UK)
Berry (US)
Bjerreskov (Denmark)
Blieck (France)
Boucot (US)
Chen (China)
Chlupac (Czech Rep.)
Dufka (Czech Rep.)
Einasto (Estonia)
Ferretti (Italy)
Fu (China)
Geng (China)
Gutierrez-Marco (Spain)
Holland (Ireland)
Jeppsson (Sweden)
Jin (China)
Kozlowska-Dawidzuik (Poland)
Larsson (Sweden)
Laufeld (Sweden)
Lawson (UK)
Legrand (France)
Lesperance (Canada)
Loydell (UK)
Mannik (Estonia)
Marsss (estonia)
Melchin (Cahada)
Musteikis (Lithuania)
Nestor (Estonia)
Norford (Canada)
Paris (France)
Peralta (Argentina)
Picarra (Portugal)
Predtechensky (Russia)
Rickards (UK)
Robardet (France)
Schonlaub (Austria)
Sennikov (Russia)
Storch (Czech Rep.)
Strusz (Australia)
Su (China)
Teller (Poland)
Tesakov (Russia)
Verniers (Belgium)
Walliser (Germany)
Yolkin (Russia)
Wang (China)
Zhang (China)

Minutes of the Meeting of the Subcommission on Silurian Stratigraphy
July 13, 2000, Orange, Australia

Titular members present: John Jell, Markes Johnson, Alfred Lenz, Michael Melchin, Rong Jia-yu, Enrico Serpagli - quorum was not met

New officers and members were introduced:
Chair - Rong Jia-yu
Vice-chair - Tatjana Koren'
Secretary and newletter editor - Michael Melchin

New titular members - Michael Melchin, David Loydell

Rong Jia-yu thanked Markes Johnson, the outgoing chair, for his contributions over the past four years, especially for organizing the James Hall Symposium and editing the two publications associated with that meeting. He thanked Alfred Lenz for producing Silurian Times as well as his other efforts as an SSS member. He also thanked Art Boucot and Des Strusz, outgoing SSS titular members, for their contributions.

The chair noted that ICS guidelines are that one-third of the titular membership be replaced every four years. He noted the two resignations and replacements that have taken place within the past year, but suggested that we send a letter to all titular members asking for their willingness to continue to serve on the Subcommission. Carlton Brett has been nominated as a new titular member pending availability of a vacancy in the Subcommission.

The following people were nominated as new corresponding members:
Andrew Simpson (Australia) - nominated by John Jell, seconded by Lennart Jeppson
Gudveig Baarli (USA) - nominated by Markes Johnson, seconded by Carleton Brett
Olga Bogolepova (Russia) - nominated by Markes Johnson, seconded by Alf Lenz

The lack of quorum prevented the election of these member, which will take place by mail.

Markes Johnson reported on the progress of production of the volumes from the 1996 Silurian Symposium in Rochester. The first volume on Silurian cycles, was published in 1998 The second, on Silurian paleogeography (except North America) should be published by the end 2000. The third volume dealing with Silurian Paleogeography of North America, is planned for later in 2001.

The chair asked for suggestions for the next Silurian Field Meeting. One suggestion was to have it in conjunction with the next meeting of the Graptolite Working Group, which will be in Argentina in 2003. It was suggested that Gladys Ortega, the organizer of the graptolite meeting, be contacted to see if she agrees with this proposal.

The chair then asked for suggestions as to what should be the main business of the SSS over the next four years. A number of participants at the meeting suggested that the most important business should be to begin a re-examination of some of the stratotypes of the Silurian System and its subdivisions. It was noted that it has be 16 years since they were ratified and, in some cases, problems have been identified with the practicality of some of the stratotype sections and points from the point of view of international correlation. Two

that were specifically named as in need of restudy are the base of the Silurian and the base of the Wenlock. Several points were noted for consideration in this process: both the section and the zonation on which the GSSPs are based need to be considered in the process; the potential for integration between different means of correlation; and, if the base of the Silurian System is to be reconsidered, it must involve workers from the Ordovician Subcommission.

Last, the chair thanked the Austrialian colleagues for organizing and hosting this meeting.

Mike Melchin, Secretary

CHAIRMAN'S CORNER

First of all, I am very glad to say Happy New Century and New Year 2001 to all Titular and corresponding members of the SSS and all who are interested in the study of Silurian Geology and Biology.

I am very pleased to have Prof. Mike Melchin as the new secretary of our SSS. It is also appreciated that he has assumed the editorship of our Silurian Times beginning with this 2001 issue. Our future correspondence regarding for the annual newsletter should be sent to Mike Melchin. We hope that our Silurian Times will be successful in the near future. Most importantly, this work needs the support from all specialists who study Silurian geology, biology, stratigraphy, oceanography, and many other related subjects.

On the behalf of all members of the SSS, I would like to thank Markes Johnson very much as the former chairman of the SSS. He has spent 8 years from 1992 to 2000 in this position, worked actively as our chairman, and has made a great number of contributions to the organization. For example, he organized the third Silurian Symposium (James Hall meeting) in 1997, and edited two volumes on Silurian geology and paleogeography. They will be of great benefit for the Silurian research all over the world. Although he has left his seat as the chairman, he is still one of the titular members of the SSS and will continue to devote his energy and spirit to our Silurian work.

On the behalf of all members of the SSS, I would like also to thank Alf Lenz very much not only as being the Secretary of the SSS, but also as being the editor of serial issues of the Silurian Times. He has completed a five-year term of service as the editors and made the transition to using the internet for distribution of the newsletter. We all received considerable benefit from the annual newsletter, so we should thank him once again for his long and faithful dedication to this very hard, comprehensive, and effective work.

Three famous Silurian specialists, Art Boucot, Des Strusz, and Lech Teller have relinquished their seats as the titular members and have resumed corresponding membership in the SSS. We all thank these distinguished colleagues very much for their many years of service and their outstanding contributions to Silurian geology and biology.

Three members have been promoted from corresponding to titular members: Mike Melchin from Canada, and David Loydell from United KingdoM in Orange, Australia in July of 2000; and Carlton Brett from USA by postal ballot in December, 2000. Our newest titular members are warmly welcomed in anticipation of their future years of useful service to the SSS organization.

Rong Jiayu, Chairman, Subcommission on Silurian Stratigraphy

PROGRESS REPORT OF THE GERMAN STRATIGRAPHIC SUBCOMMISSION ON RIPHEAN – SILURIAN STRATIGRAPHY (1996 TO 2000)

Name of Subcommission: *Subkommission Riphäikum-Silur* (Subcommission on Riphean-Silurian Stratigraphy of Germany).

Under the head of: *DUGW - Deutsche Union der Geologischen Wissenschaften* (German Union of Geological Sciences), *Stratigraphische Kommission Deutschlands* (German Stratigraphic Commission).

Period 1996 to 1999: In 1995 (01.12.1995) the chair and the voting members of the Subcommission on Riphean-Silurian Stratigraphy of Germany were elected for the period 1996 to 1999.

Officers: **Chairman:** K. Hoth; Secretary: Dietmar Leonhardt, Sächsisches Landesamt für Umwelt und Geologie, Freiberg /Sachsen (Survey for Environment and Geology, Freiberg / Saxony).

Voting members: G. Geyer (Würzburg); Th. Heuse (Berlin); E. Reitz (Marburg); U. Linnemann (Dresden); H. Brause (Freiberg); W. Hansch (Heilbronn); D. Leonhardt (Freiberg); H.-J. Anderle (Wiesbaden); P. Bankwitz (Potsdam); B.-D. Erdtmann (Berlin); G. Hirschmann (Hannover); K.H. Eiserhardt (Hamburg); I. Hinz-Schallreuter (Berlin); R. Walter (Aachen).

Period 2000 to 2003: In 1999 (15.10.1999) the chair and the voting members were elected for the present period (2000 to 2003).

Officers: **Chairman:** K.H. Eiserhardt, Hamburg (E-Mail: fg9a062@ geowiss. uni-hamburg.de); Secretary: D. Leonhardt, Freiberg (E-Mail: Dietmar.Leonhardt@lfug.smul.sachsen.de);
Voting members: K. Hoth, Freiberg; H.-J. Anderle, Wiesbaden (E-Mail: h.anderle@hlug.de); Th. Heuse, Weimar (E-Mail: t.heuse@tlfg-weimar.thueringen.de); E. Reitz, Eisenroth-

Siegbach; P. Bankwitz, Potsdam; H.-J. Berger, Freiberg (E-Mail: Jürgen.Berger@lfugfg.smul. sachsen.de); G. Geyer, Würzburg; H. Walter, Freiberg (E-Mail: Harry.Walter@lfugfg.smul. sachsen.de); J. Wunderlich, Weimar; C.-B. Ehling, Halle (E-Mail: bcehling@glahal.mw.Isa-net.de); I. Hinz-Schallreuter, Greifswald (E-Mail: ihinz-s@mail.uni-greifswald.de); U. Linnemann, Dresden (E-Mail: linnemann@snsd.de); J. Rohrmüller, Marktredwitz (E-Mail: Johann.Rohrmueller@gla.bayern.de).

On 07.04.2000 the Subcommission elected on their Freiberg-Meeting J. Maletz, Greifswald (E-Mail: Maletz@ mail.uni-greifswald.de) instead of the retired P. Bankwitz, and nominated J. Maletz for **SSS-voting member**.

Corresponding members: E. Bankwitz (Potsdam); G. Burmann (Berlin); B. Buschmann (Freiberg); H. Brause (Parchim); O. Elicki (Freiberg); B.-D. Erdtmann (Berlin); W. Hansch (Heilbronn); G. Hirschmann (Hannover); H. Kemnitz (Potsdam); G. Keßler (Freiburg); M. Kurze (Freiberg); W. Lorenz (Freiberg); M. Sehnert (Halle); G. Stettner (Holzkirchen); K.-A. Tröger (Freiberg); H. Wiefel (Bucha); R. Schallreuter (Hamburg); L. Koch (Ennepetal); R. Groschopf (Freiburg); G. Sawatzki (Freiburg); J. Nagel (Bonn); H.J. Franzke (Clausthal-Zellerfeld); M. Okrusch (Würzburg); P.-F. Schenck (Flintbek); A. Zeh (Würzburg); M. Montenari (Freiburg); Th. Servais (Lille); M. Hanel (Heidelberg); D.E. Meyer (Essen); K.-H. Ribbert (Krefeld); Dr. Kämpf (Potsdam); J. Kopp (Kleinmachnow); M. Schauer (Chemnitz); B.G. Gaitzsch (Freiberg); M. Sören (Dresden); K. Hahne (Potsdam; E. Geißler (Freiberg).

Subcommission Report for the period 1996 To 1999:

The subcommission organized two 2-3 day meetings (incl. field trips) each year covering the following main topic:

STRATIGRAPHIC MONOGRAPHS OF GERMANY: Continuation of preparation of the Stratigraphic Monographs of Germany („Stratigraphie von Deutschland“) on the Riphean to Ordovician stratigraphy. These monographs are concerned with the stratigraphy (litho- and biostratigraphy as well as chronostratigraphic units) of Germany. The following volume has already been published in 1997:
Stratigraphische Kommission Deutschlands (editor), 1997: Stratigraphie von Deutschland II. Ordovizium,

Kambrium, Vendium, Riphäikum“.- Teil 1: Thüringen, Sachsen, Ostbayern.– CFS, **200**: 1-437, 50 Fig., 3 Tab.; (Kramer) Frankfurt/Main. [ISSN 0341-4116 ISBN 3-929907-43-7]
This publication can be purchased from: Forschungsinstitut und Naturmuseum Senckenberg, Senckenberganlage 25; D-60325, Frankfurt am Main, Germany. (DM: 110.-)
The following **field meetings** had been carried out:
26.-28.04.1996: Knappenrode/Hoyerswerda (Görlitz area)
25.-27.10.1996: Wiesbaden (Taunus and Soonwald area)
25.-26.04.1997: Eisenach (Ruhla area)
31.10.-02.11.1997: Aachen and Herscheid (Venn- and Ebbe-Anticline) 03.-04.04.1998: Alzenau-Wasserlos (Spessart area) 15.-18.10.1998 Hofstetten and Bernau (Schwarzwald area) 29.04.-02.05.1999: Sternberg (core magazine Sternberg near Schwerin) 15.10.-17.10.1999: Kyffhäuser (Wippra area, Eastern Hercynian Mts.; Kyffhäuser area)

Subcommission Report for the period 2000 - :

1) STRATIGRAPHIC MONOGRAPHS: RIPHEAN-ORDOVICIAN
Continuation of the preparation of the 2nd. Volume („Stratigraphie von Deutschland“) on the Riphean to Ordovician stratigraphy of Germany. This volume will be divided in two sub-parts. The first part will appear in 2001, the second in 2001/2.
2) STRATIGRAPHIC COMMITTEE: SILURIAN IN GERMANY
On their Freiberg Meeting (07.-09.04.2000) the Subcommission established the „Arbeitsgruppe Silur von Deutschland“ (Subcommittee on the Silurian of Germany). The aim of this Subcommittee is to compile a monograph about the German Silurian in the next three years.

The following **field meetings** had been carried out:
07.-09.04.2000: Freiberg/Sachsen (Silurian of Middle-Saxony 3.-15.10.2000: Siegmundsburg/Thüringen (Silurian of Thuringia and Eastern-Bavaria).
Next meeting is planned for 06.-07.04.2001 in Krefeld. Aim of this meeting is to visit the core magazine of the Geological Survey of North-Rhine Westphalia in Krefeld and to see the uppermost Silurian of the Solingen area in the northern Rhenish Massif.

Reported by:

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Date: 01.02.2001

MEETING REPORT - PALAEONTOLOGY DOWN-UNDER 2000

The small city of Orange, New South Wales, Australia, was the host to a joint meeting of six interlocking events between August 11-15, 2000: 1. The Australasian Palaeontological Convention-2000, including a celebration honouring Barry Webby; 2. The Second Australasian Conodont Symposium; 3. The International Symposium on the Silurian System (Sir Frederick McCoy Silurian Symposium); 4. Meeting of IGCP410 (Great Ordovician biodiversification event); 5. Meeting of IGCP421 (North Gondwana mid-Palaeozoic bioevent/biogeography), and 6. Program for Secondary School Teachers and the General Public. Kinross Wolaroi School, a private school, was the site of all the meetings as well as social activities. For me personally, it was very pleasant to be back Down-Under, since more than ten years had elapsed since I had last been there, working with John Talent and Ruth Mawson.

During the four days of the meetings, scientists from 18 countries presented 120 papers, of which 28 were exclusively devoted to, or contained a considerable portion of, Silurian paleontology and stratigraphy. Topics from the various symposia were moderately intermixed, a clever move on the part of the organizers to keep everyone at the meetings, no doubt. All talks were at the Music Centre of the school; this proved very satisfactory, since seating was comfortable, audio-visual facilities were excellent, and acoustics of the room were very good.

The first evening, all participants were taken to the Orange Regional Art Gallery for the Mayor’s reception that proved to be very pleasant. The museum is modern and the gallery spacious, and participants could enjoy modern art while enjoying drinks and delicious “finger food”. The second evening, we were all treated to eloquently presented talks by John Talent and Noel Tait. John, using his typically superb photographs taken during his many world travels, gave a beautifully illustrated talk showing the relationship between geology, scenery and, sometimes, politics. Noel, a biologist, gave a fascinating talk, accompanied by superb photographs, on the many Australian species of the “living fossil” *Peripatus*, an onychophoran.

The meetings (as well as the several field trips) went very smoothly and without a hitch. John Talent and Ruth Mawson, and their multitude of very willing co-organizers and helpers, are to be thoroughly congratulated.

Submitted by Alf Lenz

Palaeozoic Vertebrate Biochronology and Global Marine/Non-Marine Correlation

Final Report of IGCP 328 (1991-1996), edited by Alain Blieck and Susan Turner Published as Courier Forschungsinstitut Senckenberg No. 223, 2000: price 150.00 DM

Review by Alfred Lenz

I have been asked to review this publication, specifically for inclusion in Silurian Times #9. I point out that I am not a vertebrate specialist (notwithstanding the fact that graptolites, my speciality, are considered to be hemichordates!). I can only, therefore, present my general impressions that, I must say at the outset, are very favourable. The publication is 575 pages in length all printed on high quality paper, and contains 25 papers, almost entirely related to microvertebrates and, more specifically, primarily scales. Of the 25 papers presented, all of which are well written, only one touches briefly on the Upper Ordovician, and two relate to the Carboniferous and Permian. The remaining papers are concerned with Silurian and Devonian microvertebrates, with the Devonian receiving somewhat more coverage. Regions of the world discussed include northern Eurasia, Britain, northwestern and Arctic Canada, northern Greenland, several regions in China and Australia, Baltic States, Belarus-Russia-Ukraine, East European Platform, “East Gondwana” and “Old Red Sandston Continent”. Most of the correlations of vertebrate occurrences are laudably and sensibly tied into the standard conodonts zonal scheme, and to a minor extent to graptolites zones, making the correlations consistent and relatively objective. Extensive bibliographies follow each paper, and a cursory examination shows they are up-to-date (i.e., 1996-1997); as well, a complete list of publications related to the IGCP project is included in the book. The publication, while not richly endowed with photographs, contains a reasonable number of plates with good quality scanning electron micrographs that will be of considerable aid to vertebrate workers, as well as to other kinds of microfossil workers who recover microvertebrate scales in their acid residues. Finally, this project was completed in five years, a remarkably short time, considering its magnitude. The leaders of the project and the editors are to be congratulated for a commendable job! Is the publication worth the hefty price of 150.00 DM? Only microvertebrate workers can answer that question, but I think everyone will agree that this is a fine effort and a fine contribution from a group of enthusiastic workers.

9TH INTERNATIONAL SYMPOSIUM ON THE ORDOVICIAN SYSTEM

7TH INTERNATIONAL GRAPTOLITE CONFERENCE

&

FIELD MEETING OF THE SUBCOMMISSION ON SILURIAN STRATIGRAPHY

ARGENTINA

SAN JUAN, AUGUST 18-21, 2003

FIRST CIRCULAR

Under the Auspices of
International Union of Geological Sciences
Subcommission on Ordovician Stratigraphy (ICS)
Subcommission on Silurian Stratigraphy (ICS)
International Palaeontological Association
National University of San Juan

National University of Salta
National University of Tucumán
Argentine Geological Association
Argentine Paleontological Association
National Academy of Sciences, Córdoba
Other Argentine Institutions

In the *8th International Symposium on the Ordovician System* held in Prague (Czech Republic) in 1999, Argentina was elected as host of the next international meeting of Ordovician workers. The *International Graptolite Conference* (approved in Madrid, Spain, 1998, to be held earlier, in Argentina) was re-scheduled in order to be in conjunction with the *ISOS* and the *Field Meeting of the Subcommission on Silurian Stratigraphy.*

Foreword

Knowledge of the Ordovician System in the Argentine Republic originated in the pioneering works of German naturalists who explored West and Northwest Argentina during the second half of the nineteenth century (e.g. Burmeister, Kayser, Stelzner, Brackebusch). Significant advances on the description of Ordovician sequences, and large paleontological collections were done in the early-middle part of the twentieth century. Today there is a fairly good understanding of Ordovician rocks, and some exciting discussions are taking place within the scientific community (terrane displacements and high resolution biostratigraphy in western Argentina).

The Ordovician System of Argentina can be considered as the most complete for South America, taking into account the areal extent and thickness of outcrops, the high variety of lithologies and the development of its biostratigraphic column.

Ordovician Rocks are particularly well represented in the three classical study areas of western and northwestern Argentina: the Precordillera, the Famatina System and the Eastern Cordillera. The regional geology of these provinces is characterized by distinctive paleoenvironmental settings and structural styles. The Ordovician System of the Precordillera shows a succession of thick carbonate sequences, black shale facies, flyschoid deposits and glacial marine sediments. The Ordovician of the Famatina System is dominated by restricted anoxic facies, complex volcanic-arc explosive sedimentation and extensive acid magmatism. The Eastern Cordillera exposes a thick pile of Ordovician sequences, from widespread, tidal dominated facies to deep-shelf siliciclastic deposits.

The Ordovician Period in the Argentine basins records major-order sea level fluctuations, extensional and compressional tectonism associated with significant metamorphism, as well as magmatic and volcanic events. Early Paleozoic volcanism, magmatism and metamorphism is well-presented in Central and Northwestern Argentina. Significant episodes of the Ordovician System include the volcano-sedimentary successions of the Famatina and Puna (with related metalliferous mineralization), the calk-alkaline subduction related magmatic arc in the Famatina and the granites emplaced in the

Precordilleran basement and the Western Pampean Ranges. Longitudinal outcrops of typical ophiolite sequences (Middle Ordovician) are exposed in Precordillera.

The paleogeographical position of the South American Gondwanan margin, the pattern of oceanic currents and the origin and latitudinal positions of some suspected exotic terranes, along with basinal developments and global paleoceanographic changes, controlled the evolutionary patterns, radiations, extinctions and faunal migratory interplays, as well as the diverse paleobiological provincialism exhibited by these geological provinces during the Ordovician Period.

Place and Dates

The scientific sessions for the *9th International Symposium on the Ordovician System*, the *7th International Graptolite Conference,* and the *field meeting of the Subcommission on Silurian Stratigraphy* will be held in conjunction in San Juan City. The sessions and business meetings of ISOS are scheduled to take place between the 18th to the 21st of August, 2003, the IGC is scheduled for 18th August, and the sessions of the field meeting of the SSS, on 19th August.

San Juan City, the Capital of San Juan Province, is located at the foot-hills of the Andes, 800 m above sea-level, in western Argentina, with a population of about 4 hundred thousand inhabitants. In August (winter) the weather could be temperate at noon, but cool the rest of the day. During this season, San Juan is under the influence of a hot wind, called Zonda or, conversely, a cold wind coming from the south. So, during the day, temperature could change dramatically. Climate is dry, as San Juan is placed in a typical desert region, bounded by mountain chains striking north-south.

San Juan is a land of fine vineyards and gentle people willing to give our visitors a nice Argentine experience. Most of hotels are concentrated in San Juan downtown, while University Residence is close, about 10 minutes, downtown.

San Juan Province integrates three main Geological Provinces: the Western Sierras Pampeanas, the Precordillera and the Andes Cordillera. The Sierras Pampeanas are characterized by Precambrian metamorphic rocks and intracratonic late Paleozoic, Mesozoic and Cenozoic continental basins. The Precordillera is mainly made up of sedimentary, carbonate and siliciclastic, rocks ranging in age from Lower Paleozoic to Cenozoic. The Andes Cordillera includes the Frontal and Principal morphostructural segments, composed, the first one, mainly of Late Paleozoic sedimentary rocks, Triassic and Neogene volcanic rocks; while the second one includes mostly Mesozoic sedimentary deposits.

In the Eastern and Central Precordillera, the Ordovician stratigraphy is characterized by platform deposits, made up of restricted to open shelf carbonate deposits, Tremadocian to early Llanvirnian in age, which bear an almost complete conodont, brachiopod and trilobite biozonal record, and reef structures. The carbonate sequence is overlain by a mixed calcareous/shaly package, with a fine graptolite biostratigraphy. Platform faunal

records have strong affinities with those from the southeastern margin of Laurentia. The carbonate bank is succeeded by a mixed marine siliciclastic sequence, including graptolites, conodonts and a rich shelly fauna. On the other side, the Western Precordillera displays deep water facies, represented by Cambrian to Early Ordovician re-deposited during the Caradocian, as well as autochthonous Upper Caradocian to Ashgillian black shales with graptolites, and turbidite deposits, mafic intrusive rocks and tholeitic pillow basalts. The Silurian System of the Precordillera is represented by siliciclastic platform-slope deposits in the Gondwanan margin.

Organizing Committee

ISOS
Honorary Chair: MARIO A. HÜNICKEN (National Academy of Sciences, Córdoba)
Chair: FLORENCIO G. ACEÑOLAZA (CONICET, National University of Tucumán)
Vice-chairs: SILVIO H. PERALTA (CONICET, National University of San Juan) & GUILLERMO L. ALBANESI (CONICET, National University of Córdoba)
Secretary: MATILDE S. BERESI (CONICET, CRICyT, Mendoza)

IGC - SSS field meeting
Honorary Chair: ALFREDO J. CUERDA (National University of La Plata)
Chair: GLADYS ORTEGA (CONICET, National University of Córdoba)
Secretary: GUILLERMO F. ACEÑOLAZA (CONICET, National University of Tucumán)
Technical programme coordinator SSS field meeting: MICHAEL J. MELCHIN (St. Francis Xavier University, Antigonish, NS, Canada)

ISOS - IGC - SSS field meeting

Treasurer: SUSANA B. ESTEBAN (National University of Tucumán)
Co-treasurer: M. FRANCO TORTELLO (CONICET, National University of La Plata)
Accommodation & social events coordinator: A. LUIS BANCHIG (CONICET, National University of San Juan)
Pre-symposia field trip coordinator: SILVIO H. PERALTA (CONICET, National University of San Juan)
Post-symposia field trip coordinators: GUILLERMO F. ACEÑOLAZA (CONICET, National University of Tucumán) & M. FRANCO TORTELLO (CONICET, National University of La Plata)

Registration and Costs

The registration fee for those attending the meetings includes the formal registration for 3 joint meetings, volumes of short papers (ISOS and IGC-SSS meeting), icebreaker party, closure dinner and an intra-symposia field trip. Registration deadline: April 15, 2003.
Preliminary prices:
ISOS-IGC-SSS meeting: US$ 300.- (after deadline US$ 350.-).
Student: US$ 70.- (after deadline US$ 100.-, without proceedings volumes).
Accompanying person: US$ 70.- (after deadline US$ 100.-, without proceedings volumes).

The booking form with final prices will be included in the 2º circular.

Field Trips

Three joint field trips are scheduled for the 9th ISOS - 7th IGC - SSS field meeting (detailed information will be provided in the 2º circular).

1) Pre-symposia Field Trip – PRECORDILLERA (San Juan and Mendoza provinces) – August 13-17, 2003.
Price: US$ 300.- includes transportation, guidebook, and lunch and snacks from the morning of the 13th to the night of the 17th (without hotel, to be booked personally in San Juan City).
Leaders ISOS: RICARDO A. ASTINI (CONICET, National University of Córdoba) & SILVIO H. PERALTA (CONICET, National University of San Juan).
Leaders IGC – SSS field meeting: GLADYS ORTEGA (CONICET, National University of Córdoba) & EDSEL D. BRUSSA (CONICET, National University of La Pampa).

The Argentine Precordillera is a unique site to examine a very complex geology throughout the Early Paleozoic. The Ordovician System of the Precordillera is probably the best well-known in South America, while controversial hypotheses regarding its paleogeographic origin were proposed and debated during the last decade. Siliciclastic rocks of the Silurian System represent typical Gondwanan environments. Dynamic research on the Precordillera makes all geological sub-disciplines provide updated information. A rich database is available from different paleontological groups, despite much work remain to be done.

2) Intra-symposia Field Trip – SAN JUAN RIVER SECTION –
August 20, 2003.
Price: included in the registration fee.
Leaders ISOS-IGC-SSS field meeting: SILVIO H. PERALTA (CONICET, National University of San Juan) & OSVALDO L. BORDONARO (CONICET, National University of San Juan).

This classical section, throughout the spectacular landscapes of the San Juan River, is the option for the one day field trip because of its direct access from San Juan City. Driving along the road connecting San Juan and Calingasta, after crossing over the thick Cambrian carbonates it is possible to observe a thick overthrust of the San Juan Formation in the eastern sector. Extensive siliciclastic deposits of the Alcaparrosa Formation, including oceanic floor mafic rocks will be seen to the West. Finally, an interesting visit to a block of the "temperate" carbonate facies could be visited (Sassito Formation, Upper Ordovician), as well as a good section of the siliciclastic Tambolar Formation (Silurian), at Portezuelo del Tambolar.

3) Post-symposia Field Trip - EASTERN CORDILLERA (Salta and Jujuy provinces) – August 22-26, 2003.
Price: US$ 900.- includes air ticket from San Juan to Salta, and all costs from August 22-26 (transportation, guidebook, hotels and meals - including the night of the 26th).

Leaders ISOS: M. CRISTINA MOYA (CONICET, National University of Salta) & RICARDO N. ALONSO (CONICET, National University of Salta).
Leaders IGC – SSS field meeting: BLANCA A. TORO (CONICET, CRICyT, Mendoza) & GLADYS ORTEGA (CONICET, National University of Córdoba).

Selected localities within landscapes of thick tropical rain forest, and dry areas as the Humahuaca Creek (where some Inca architectural remains are superbly preserved) will be visited. This field trip is devoted to see some reference sections of the Gondwanan margin of South America. They integrate thick siliciclastic sequences reaching up to 7000 m for the Cambrian-Ordovician. Highly fossiliferous sections will be visited (graptolites, trilobites, brachiopods, conodonts, ichnofossils) offering some biostratigraphical markers for the different subdivisions of the Ordovician System in this continental margin. A typical locality of the Subandean Ranges, with Silurian deposits, at southeastern border of Eastern Cordillera is planned to be visited.

Additional Field Trips

The Organizing Committee offers the following alternative field trips, albeit to be confirmed, depending on a minimum number of interested participants:

Tandilia System (Buenos Aires Province)
Leader: DANIEL POIRÉ (CONICET, National University of La Plata).
Cambro-Ordovician sequences, related to the Andean and South African basins are recorded. Interesting ichnofossil associations can be observed in these units, cropping out in the southern region of Buenos Aires Province.

San Rafael Block (Mendoza Province)
Leaders: CARLOS A. CINGOLANI (CONICET, National University of La Plata) & SUSANA HEREDIA (CONICET, National University of Comahue).
Siliciclastic pro-delta facies of the Arroyo Pavón Fm. (500 m thick) bear distinctive graptolite assemblages from the *C. bicornis* Zone. In neighboring outcrops different sections of the Ponon Trehue limestones yielded Lower to Middle Ordovician conodont associations similar to those of correlative facies from the Precordillera.

Famatina System (La Rioja and Catamarca provinces)
Leaders: M. GABRIELA MÁNGANO (CONICET, National University of Tucumán) & LUIS A. BUATOIS (CONICET, National University of Tucumán).

This is an opportunity to examine the Tremadoc Strata of the Volcancito Formation at the Bordo Atravesado section, as well as the Arenig-Llanvirn marine strata of the Suri Formation at Chaschuil area. This unit comprises part of the infill of the Famatinian Ordovician basin, formed along an active plate margin. La Planchadas Formation also records the volcanic activity of this interesting Ordovician magmatic arch. Sedimentary processes, biostratinomic trends, and the paleoecology of volcanic arc biotas can be analyzed.

Puna (Salta and Jujuy provinces)
Leader: JOSÉ G. VIRAMONTE (CONICET, National University of Salta).
This high plateau, over 4000 m altitude, records shallow water siliciclastic rocks related to an evolving volcanic arc (Tremadocian - Arenigian), covered by thick turbiditic

volcaniclastic successions (Arenigian - Llandeilian - Caradocian?), and typical Gondwanan faunas. The planned field trip includes a main transverse section reaching the Argentine-Chilean border, where Silurian-Devonian deposits could be visited.

IMPORTANT: Please, note that in the post-symposia field trip - Eastern Cordillera and the proposed Puna Geological Province of Northern Argentina - we will be going up to 4000 m above sea level. Health insurance is highly recommended for all participants of both meetings.

Preliminary Schedule

August 12 – Reception of participants of the Pre-symposia field trip to Precordillera at San Juan City.
August 13-17 – Pre-symposia field trip to Precordillera (San Juan and Mendoza provinces).
August 17 – Icebreaker party and opening dinner at San Juan City (ISOS-IGC).
August 18 - Scientific sessions and business meetings ISOS and IGC.
August 19 - Scientific sessions and business meetings ISOS and SSS.
August 20 – Intra-symposia field trip (San Juan River section).
August 21 – Scientific sessions and business meeting ISOS. Closure dinner.
August 22 - Flight from San Juan to Salta City.
August 22-26 – Post-symposia field trip to Eastern Cordillera (Salta and Jujuy provinces).
August 27 - End of Eastern Cordillera field trip at Salta City.

Publication

A short-paper volume for ISOS, and a short-paper volume for IGC and SSS meeting, will be published and given at San Juan. The contributions should not exceed four pages, including references and 2 line drawings. One photographic plate will be allowed. Further information about publications, including editorial board, will be provided in the next circular.

Communications

Oral and poster presentations will be accepted. 15 minutes will be given for oral presentation + 5 minutes of discussions. Overhead and slide projectors will be available for speakers. 2º circular will include further information about special sessions and workshops.

Conference Language

English.

Accommodation

Hotel of different prices will be selected (US$ 25-100+) in San Juan City. Bookings are to be made by participants directly with hotels (details in 2nd circular). Accommodation in the University Residence will be reserved for young scientist and people from less favored countries.

Accompanying Persons

A social program will be announced in the second circular.

Letter of Invitation

If an official document is needed to confirm participation or help arrange funds for travel and attendance, please write or contact the secretaries.

Expected Weather

August is usually quite cold (as it is expected, at that time we are in winter in the southern hemisphere). Expect 5º to 15º Celsius and no snow. If we are lucky we will have between 15º to 20º degrees. Days are short (getting dark at about 19:00 hs.), we will try to use all daylight in our activities. No rain is expected (dry season).

Correspondence

Please, send all correspondence concerning ISOS to:

MATILDE S. BERESI, IANIGLA-CRICYT, Avda. Ruiz Leal s/n, Parque Gral.S.Martín, (5500), Mendoza, ARGENTINA, E-mail: mberesi@lab.cricyt.edu.ar, URL: http://www.cricyt/ianigla.edu.ar, Tel.: 0054-261-4287029, Fax: 0054-261-4285940

Please, send all correspondence concerning IGC – SSS field meeting to:

GUILLERMO F. ACEÑOLAZA, INSUGEO, Miguel Lillo 205, 4000 Tucumán, ARGENTINA, E-mail: acecha@unt.edu.ar (other e-mails: <facenola@satlink.com>, <insugeo@unt.edu.ar>), Tel./Fax: 00 54-381-4253053

Other contacts

ISOS - GUILLERMO L. ALBANESI, Museo de Paleontología, Universidad Nacional de Córdoba, Casilla de Correo 1598, 5000 Córdoba, ARGENTINA, E-mail: galbanesi@arnet.com.ar, Tel.: 00 54-351-4718655, Fax: 00 54-351-4216350.

IGC - SSS field meeting - GLADYS ORTEGA, Museo de Paleontología, Universidad Nacional de Córdoba, Casilla de Correo 1598, 5000 Córdoba, ARGENTINA, E-mail: gcortega@arnet.com.ar, Tel.: 00 54-351-4718655, Fax: 00 54-351-4216350.

Important Dates

- Deadline to answer the first circular: December 1, 2001.
- Distribution of the second circular with definitive information, prices, formal registration form and detailed instructions for short papers presentation: March 1, 2002.
- Deadline for answering the second circular with preliminary title of your presentation: July 1, 2002.
- Deadline for submission of short papers to be reviewed: March 1, 2003.
- Last circular distribution with program and final arrangements: July 1, 2003.

The Organizing Committee will contact all interested people between circulars, giving updated information on organizational aspects of both, the ISOS and the IGC - SSS field meeting.

PROVISIONAL REGISTRATION FORM

Please return this form via e-mail (preferred), fax or normal mail before **December 1, 2001** to:

ISOS
MATILDE S. BERESI
IANIGLA-CRICYT
Av. Ruiz Leal s/n
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E-mail: mberesi@lab.cricyt.edu.ar
URL: www.cricyt/ianigla.edu.ar
Tel.: 0054-261-4287029
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IGC – SSS field meeting
GUILLERMO F. ACEÑOLAZA
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Tel./Fax: 00 54-381-4253053
You will get a confirmation of reception by the secretaries.

Name and Surname:
Address:
Tel.:
Fax:
E-mail:
- Would you attend the symposia?
ISOS: YES - NO
IGC: YES - NO
SSS field meeting: YES - NO
- Are you interested in any field trip?
Precordillera (pre-symposia): YES - NO
Eastern Cordillera (post-symposia): YES - NO
San Juan River (intra-symposia): YES - NO
- Alternative field trips
Famatina System: YES - NO
Tandilia System: YES - NO
San Rafael Block: YES - NO
Puna: YES - NO
The second circular will be mailed to all of those responding to this first circular.

PALAEOZOICS OF CENTRAL ASIA: MONGOLIA AND THE ALTAI MOUNTAINS OF SW SIBERIA
JOINT FIELD MEETINGS OF IGCP 410 AND IGCP 421

IGCP Project 410 - The Great Ordovician biodiversity event: implications for global correlation and resources & IGCP Project 421 - North Gondwana mid-Palaeozoic bioevent/biogeography in relation to crustal dynamics
August 3-21, 2001, Novosibirsk (with associated field trip: Ordovician-Early Carboniferous of the Altai Mountains), Russia;
August 21- 6 September 2001, Ulaanbaatar, (with associated field trip: Ordovician-Early Carboniferous of SW Mongolia), Mongolia
Palaeontologists, stratigraphers and others, not necessarily with formal linkage to either of the above IGCP projects are invited to participate in one or both parts of the following dual venture

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A. MEETING AND ASSOCIATED FIELD TRIP (NOVOSIBIRSK AND THE ALTAI MOUNTAINS)
August 3 - 21, 2001,

ORGANIZATION:
IGCP Project 421
IGCP Project 410
Institute of Petroleum Geology [IPG] of the Siberian Branch of Russian Academy of Sciences [SB RAS]
FGUO "Zapsibgeols'emka" of the Ministry of Natural Resources of Russia
CO-SPONSORSHIP:
Presidium of the Siberian Branch of Russian Academy of Sciences
Russian Foundation for Basic Researches
National IGCP Committee of Russia

PROJECT LEADERS:
R. Feist, Institut de l'Evolution, Université de Montpellier-II,
Montpellier, France
J.A. Talent, Centre for Ecostratigraphy and Palaeobiology, Macquarie University 2109, Australia
B.D. Webby, Centre for Ecostratigraphy and Palaeobiology, Macquarie University 2109, Australia
F. Paris, Sedimentologie et Paléontologie, Université de Rennes I, France
THEMES emphasized in this meeting and the succeeding meeting in Mongolia:
The Altai region of SW Siberia and Mongolia have excellent Ordovician to Early Carboniferous sequences, mostly (but not all) lying north of the main intercontinental suture zones. A principal focus of the meeting will be the biofacies\lithofacies database elaborated for the region in recent years and the increased precision in stratigraphic alignments that have resulted — improving palaeogeographic and palaeoclimatologic syntheses. Other foci are: 1. Ordovician biodiversity patterns in time and space (IGCP 410)

2. Bioevents (especially global extinctions and recoveries), major variation in biodiversity, and change in biogeographic differentiation along the North Gondwana and adjacent continental margins during the mid-Palaeozoic (IGCP 421). 3. Reef/clastic facial development and faunal associations within the shelf belt of the Siberian continental margin during the Ordovician-Silurian-Devonian and Early Carboniferous. 4. Eustatic cyclicity in Ordovician-Early Carboniferous sequences, exemplified by data from SW Siberian and Mongolian sections.

CONFERENCE AND FIELD EXCURSIONS:
The conference will be held in Novosibirsk at the Institute of Petroleum Geology, SB RAS.
Oral presentations are scheduled for 20 minutes each including time for questions from the audience. Poster presentations are possible as well. The conference room will be equipped with 35-mm slide projector and overhead transparency projector.
The field excursion will be held in the Gorny Altai, Salair and Kuznetsk Basin.
SHORT OVERVIEW OF GEOLOGY along trip route. The Gorny Altai, Salair and Kuznetsk Basin constitute the western part of the Altai-Sayan Folded Area (ASFA), characterized by a mosaic of structures generated by several periods of tectonic reactivation (Early Caledonian to Variscan orogenic cycles). Gradual decrease in age of accretional and collisional geological complexes from east to west (with distance from the Siberian Craton) is apparent. These features of the ASFA are related to successive accretion of terrains to the Siberian Craton,and anomalous development of shear movements during collisional and post-collisional stages (Berzin et al., 1994). After the Early Caledonian Orogeny (post-Early Ordovician), the western part of the ASFA was a shelf belt marginal to the Siberian Continent (Yolkin et al., 1994), with clear division into outer and inner shelf zones. The former was characterized periodically by large scale development of carbonate platforms (barrier reefs). The latter displays mainly clastic sedimentation. The Ordovician-Silurian faunal associations include graptolites and fossils of benthic groups. The Devonian and Early Carboniferous sequences are characterized mainly by benthic associations, though with occurrences of conodonts and ammonoids. Collisions of Mongolian terrains with the Siberian Continent at the beginning of the Devonian produced seaways along which exchange of benthic faunas took place between marginal seas between the ASFA and the Far East through Mongolia (Yolkin & Sennikov, 1998; Yolkin et al., 2000).
[REFERENCES:
1. Berzin, N.A.,Coleman, R.G., Dobretsov, N.L., Zonenshain, L.P., Xiao X.-C. & Chang, E.Z., 1994. Geodynamic map of the western part of the Paleoasian Ocean. Russian Geology and Geophysics (Geologiya i Geofizika), 35 (7/8): 5-22 (in English);
2. Yolkin, E.A., Bakarev, N.K., Buslov, M.M., Yazikov, A. Yu, & Gratsianova, R.T. 1994. Paleogeographic reconstructions of the Western Altai-Sayan area in the Ordovician, Silurian and Devonian and their geodynamic interpretations. Russian Geology and Geophysics (Geologiya i Geofizika), 35 (7-8): 100-124;
3. Yolkin, E.A.& Sennikov, N.V. 1998. Late Llandovery paleogeographic and paleoclimatic settings in the Altai-Sayan region and their dynamic interpretation. Russian Geology and Geophysics (Geologiya i Geofizika), 39 (8): 1151-1154;

4. Yolkin, E.A., Gratsianova, R.T., Izokh, N.G., Yazikov, A Yu, Bakharev, N.K., Alekseeva, R.E., Erina, M.V., Kim, A.I. & Shishkina, R.G., 2000. Devonian standard boundaries within the shelf belt of the Siberian Old Continent (South of Western Siberia, Mongolia, Russian Far East) and in the South Tien Shan. Courier Forschunginstitut Senckenberg, 225, 305-320.]

ITINERARY OF EXCURSION

First day (04/08/01 - Sat.) Arrival in Novosibirsk; accommodation in the hotel; registration in the Institute of Petroleum Geology SB RAS; brief introductory information; evening party.

Second day (05/08/01 - Sun.) Travel from Novosibirsk to Chineta Village camp in the northwest Altai via Barnaul-Pospelikha (600 km).

Third day (06/08/01 - Mon.) Two groups: (1) Ordovician-Silurian group (Guides - Sennikov N.V., Petrunina Z.E.). Route: Chineta camp-Bugryshykha-Chineta camp (150 km). Examination of Ordovocian section from Llanvirn to Ashgill and transitional beds to Llandovery. Fauna: brachiopods, trilobites, graptolites. (2) U.Silurian-Devonian-Lower Carboniferous group (Guides: Yolkin E.A., Izokh N.G.). Route: Chineta camp-Kur'ya Village (250 km). Examination of Lower Ludlow, Pragian and Lower Carboniferous . Fauna: brachiopods, trilobites, corals, ostracods, foraminifers, conodonts.

Fourth day (07/08/01 - Tues.) (Guides - Yolkin E.A., Sennikov N.V., Petrunina Z.E., Gladkikh L.A.). Route: Chineta camp - Ust' Chagyrka Village - Rossypnaya Mount - Chineta camp (80 km).Examination of sequence from Arenig to Wenlock in clastic and reef limestone facies. Fauna: graptolites, trilobites, brachiopods, corals, a few conodonts.

Fifth day (08/08/01 - Wed.) Two groups: (1) Ordovician group (Guides: Izokh N.G., Khlebnikova T.V., Obut O.T.). Route: Chineta camp-Charyshskoe-Chineta camp (170 km). Examination of sequence from Tremadoc to Arenig in deep water/oceanic) facies. Fauna: radiolarians and conodonts. (2) Silurian-Devonian group (Guides: Yolkin E.A., Sennikov N.V). Route: Chineta camp-Tigerek-Chineta camp (120 km). Examination of sequence from Lower Wenlock to Lower Ludlow in shallow water facies. Fauna: brachiopods, trilobites, ostracods, corals. Some exposures of Devonian volcanics.

Sixth day (09/08/01 - Thur.) (Guides: Yolkin E.A., Sennikov N.V., Izokh N.G.) Route: Chineta camp in the North-West Altai-Solov'ikha Village camp in North Altai (300 km). Examination of Emsian section as well as some important Llandovery and Pragian exposures in outer shelf facies and Lower Givetian volcanics. Abundant shelly fossils.

Seventh day (10/08/01 - Fri.) (Guide: Yolkin E.A.). Route: Solov'ikha camp-Cherny Anui village camp (or archaeological station). Brief stop for examination of Upper Llandovery and complete Lochkovian-Pragian sequence in clastic and reef limestone facies in vicinity of Kamyshenka village. Abundant shelly fossils.

Eighth day (11/08/01 - Sat.) Two groups: (1) Ordovician - Lower Silurian group (Guides: Sennikov N.V., Petrunina Z.E., Gladkikh L.A.). Route: Dietken Creek (50km). Examination of Caradoc-Lower Silurian clastic-reef limestone sequences. Fauna: graptolites, trilobites, brachiopods, corals. (2) Silurian-Lower Devonian group (Guide: Yolkin E.A.). Vicinity of Cherny Anui village. Complete Silurian clastic and reef limestone sequences. Fauna: graptolites, trilobites, brachiopods, corals.

Ninth day (12/08/01 - Sun.) Two groups: (1) Devonian group (Guides: Yolkin E.A., Bakharev N.K., Izokh N.G.). Route: Cherny Anui camp-Katun' River camp via Kuvash and Kislaya creeks (370 km). Examination of complete Lower Devonian succession

along Kuvash Creek within inner shelf clastic facies and Eifelian limestones. Fauna: brachiopods, trilobites, corals, ammonoids, conodonts, etc. Brief stop at Kislaya Creek for examination of the Lower Givetian volcanics, Upper Givetian and Upper Devonian sequence in clastic facies. Fauna: shelly fossils.
(2) Ordovocian group (Guides: Sennikov N.V., Petrunina Z.E.). Route: Cherny Anui camp-Katun' River camp via Kamlak Creek (320 km). Examination of Tremadoc sequence in shallow water facies. Fauna: brachiopods, trilobites, conodonts.
Tenth day (13/08/01 - Mon.) Travel from Gorny Altai to Salair and Kuznetsk Basin. Route: Katun' River camp-Biysk-Novokuznetsk (450 km). Accomodation in hotel (or camping). Visit to the Paleontological Laboratory and the Russian Geological Survey.
Eleventh day(14/08/01 - Tues.) Travel from Novokuznetsk to Gur'evsk camp (possibly hotel)(180 km). Stops for examination of quarried Givetian and Lower Carboniferous carbonate rocks with diverse shelly fossils (Guides: Yolkin E.A., Izokh N.G., Bakharev N.K., Klets A.G.).
Twelvth day (15/08/01 - Wed.) Vicinity of Gur'evsk town (30 km). Two groups: (1) Ordovocian-Silurian group. (Guides: Sennikov N.V., Petrunina Z.E., Tokarev V.N.). Examination of isolated Upper Cambrian to Upper Ordovician exposures. Fauna: trilobites, graptolites, conodonts. (2) Devonian group (Guides: Yolkin E.A., Bakharev N.K., Izokh N.G.). Examination of complete Lochkovian-Pragian sequence of bedded and massive (reefal) limestones characterized by abundant shelly fauna and a few conodonts.
Thirteenth day (16/08/01 - Thurs.) Vicinity of Gur'evsk (30 km). (Guides: Yolkin E.A., Bakharev N.K., Izokh N.G.). Examination of quarried Emsian and Eifelian sections with different facies: 1) fine grained clastics, 2) dark bedded clayey limestones and 3) light massive reefal limestones. These rocks include abundant fossils: brachiopods, corals, crinoids, trilobites, conodonts, etc.
Fourteenth day (17/08/01 - Fri.) Travel from Gur'evsk camp to the Tom' River camp (possibly hotel or camping — 200 km). (Guides: Yolkin E.A., Gutak Ya. M., Bakharev N.K., Izokh N.G.). Examination of Frasnian-Lower Famennian sequence along Tom' River reference section for the Kuznetsk Basin. Many intervals are characterized by abundant shelly fauna.
Fifteenth day (18/08/01 - Sat.) Route: Tom' River camp-Lebedyanka Villiage-Yaya River-Tom' River camp (180 km). (Guides: Yolkin E.A., Gutak Ya. M., Bakharev N.K., Izokh N.G.). Examination of extremely shallow water Upper Givetian to Famennian. Fauna: brachiopods, corals, fishes, ostracods, etc.
Sixteenth day (19/08/01 - Sun.) Travel from Tom' River camp to Novosibirsk (hotel in Akademgorodok) (300 km).
Seventeenth day (20/08/01 - Mon.). Indoor session in the Institute of Petroleum Geology of the Siberian Branch of Russian Academy of Sciences.
Eighteenth day (21/08/01 - Tues.) Departure to Ulaanbaatar.
TRANSPORT AND FOOD:
Cars and buses will be used for transport of participants within Akademgorodok and Novosibirsk. In the field there will be buses, 6WD bus, 4WD trucks and jeeps. In mountainous area within the Gorny Altai, exposures will be readily reached by "geology veterans" by 6WD buses.

Three meals per day will be provided in Akademgorodok (restaurant and dining-room of the Institute). During the excursion, participants will be provided with normal field food, including a modicum of alcoholic beverages.

ACCOMMODATION:

Three nights in the hotel of Akademgorodok and possibly several nights in hotels or camping during the excursion. In the field, participants will be provided with sleeping bags and will share tents.

COSTS:

80 US$ per day/per person (1360 USD for 17 days). This includes transport, accommodation and meals from arrival to Novosibirsk until departure to Mongolia (or home). We require 50% of total costs at least four weeks in advance of the field trip, payable to the Institute of Petroleum Geology, Siberian Branch of the Russian Academy of Sciences (see bank account details below). The transfer from your bank account should include a statement making it clear that the payment is "for participation in the Altai-Salairian Expedition".

DETAILS OF BANK ACCOUNT:

Beneficiary: Institute of Petroleum Geology of Siberian Branch of Russian Academy of Sciences

Account No: 40503840900200003584 (for USD)

Beneficiary Bank: SIBACADEMBANK
16, Prospect Lavrentieva
Novosibirsk 630090, Russia
SWIFT: SIBMRU55

Intermediary Bank: HSBC BANK, USA (Formerly REPUBLIC NATIONAL BANK OF NEW YORK)
452 Fifth Avenue
New York, NY 10018, U.S.A.
SWIFT: BLIC US 33
ABA 021004823
Account No. 608 211 346

MEDICAL CARE:

Participants should have health insurance for the journey. There will be first aid in Novosibirsk, Gorno-Altaisk, Novokuznetsk and Kemerovo. You should take necessary medicines. If you have medical problems (heart problems, high blood pressure, etc.) you should bring your own medicaments.

CLIMATE:

Novosibirsk is situated in the southern part of West Siberia E89 N55. Typical temperatures for the end of July to the beginning of August is 15-25 C (day) and 5-15 C (night). Rain is rare. In the Altai Mountains typical temperatures are 15-25 C (day) and 0-10 C (night). Rain is fairly common. Rather cool nights could occur after 15th August.

CLOTHING:

You are advised to bring field boots, warm sweaters, raincoats and caps.

TRAVEL AND VISA INFORMATION:

Several international flights are available (from Ulaanbataar, Beijing, Hanover, Frankfurt). See: http://www.transport.nsk.su/ind_engl.htm.

Detailed information about international flights can be obtained from:

http://www.sheremetyevo-airport.ru/rus/english_version/time_r_eng.htm
TICKET PRICES (RETURN FLIGHTS):
Beijing - US$433; Ulaanbaatar - US$291; Hanover - US$315, US$390 (two air companies); Frankfurt - US$315, US$390 (two air companies);
Moscow - US$240-250 depending on the air company.
All foreign participants are requested to have a valid passport and visa. In order to obtain an official invitation for visa application, foreign participants are requested to provide personal information: full name, date and place of birth, passport number, place of issue and expiry date.
The Organizing Committee requests that intendinf participants send all required information as soon as possible. The information should be sent by e-mail to project leaders and to E.A.Yolkin.
TECHNICAL PROGRAM & ABSTRACTS:
It is essential that abstracts of papers to be presented in the technical session at the Institute of Petroleum Geology SB RAS on August 20th be submitted by the deadline of June 1st to E.A Yolkin, with copies also to J.A. Talent (for contributions to the IGCP 421 program) or to B.D Webby (for papers relating to the IGCP 410 program) - all three will be involved in editing the abstract volume. The abstracts may be up to three pages in length (standard A4 size), and may include one or two figures.
CULTURAL PROGRAM:
During conference/arrival/departure days we will endeavour to organize visits to museums and touristic sites around Akademgorodok (Novosibirsk).
Organizing Committee:
Chairman: A. E. Kontorovich, Director, Institute of Petroleum Geology [IPG]
Vice-Chairmen: E. A. Yolkin, Principal Research Scientist
N. V. Sennikov, Deputy director of the IPG
N.K. Bakharev, Deputy director of the IPG
A.N. Metsner, Director of the FGO “Zapsibgeols’emka”

Members:
A.V. Kanygin, Head of laboratory
S.M. Borisov, Vice-director of the Committee of Natural Resources of the Kemerovo Region
N.I. Gusev, Chief geologist of the Committee of Natural Resources of the Altai Region
N.G. Izokh, Senior Research Scientist
A. G. Klets, Senior Research Scientist
A.N. Mamlin, Chief geologist, “Zapsibgeols’emka” Ya. M. Gutak, Head of laboratory (Novokuznetsk) Z.E. Petrunina, Principal paleontologist (Novokuznetsk)
G.A. Babin, Senior geologist, “Zapsibgeols’emka”
O. T. Obut, Research Scientist
A. A. Alekseenko, Engineer

Scientific Committee:
R. Feist R. & J.A. Talent, Joint-leaders of IGCP Project 421
A.V. Kanygin, Institute of Petroleum Geology

N.V/ Sennikov, Institute of Petroleum Geology
B.D. Webby & F. Paris, Joint-leaders of IGCP Project 410
E.A. Yolkin, Institute of Petroleum Geology

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B. MEETING AND ASSOCIATED FIELD TRIP, (ULAANBAATAR AND GOBI DESERT)
21 August 21 - September 6, 2001
1. WEATHER: temperature: at night + 12-15 C and daytime +20-30 C, humidity about 20-40 %. Continental desert climate.

2. TRANSPORT: During the field trip travel will be by Russian Jeep (4WD) and minibuses (4WD), and will follow 4WD tracks across country. Gasoline, food, and cooking facilities will be brought in accompanying vehicles.
3. MEALS: Breakfast (7:30 AM), Lunch (12:30 PM) and Dinner (7:00PM) will be provided each day. We will be happy to receive requests from vegetarians not later than 2 weeks before the meeting.
4. ACCOMMODATION: Each participant is required to bring his or her own sleeping bag. Also, it will be helpful if participants also bring they own tents, in order to feel more comfortable in the Gobi desert area. Other participants will be provided with tents sleeping 3-4 persons in each tent. In the Mushugai area we will request accommodation in a ger (nomad's house).
5. PAYMENT: 60 US$ per day/ per person. Total 960 US$ for 16 days including all transport costs in the field and city, meals in the field and city, accommodation in the field, hotels in Ulaanbaatar, and all other service charges, local fees, taxes etc. (Alcohol and Airport tax are not included)
Credit cards such as MasterCard, Visa card, and American Express are not popular in Mongolia. They are accepted only in some shops and hotels in Ulaanbaatar. Because of this it is best make cash payments in US$ on the first day. Also, 50 % of total payment is required in advance of the tour. It must be sent so it is received by B. Tumenbayer prior to July 31 2001. This should be done by transfer through your bank Account.
SEND TO:
Beneficiary's bank: Trade & Development Bank of Mongolia
(Ulaanbaatar, Mongolia SWIFT:TDBM MN UB)
Beneficiary: Baatar Tumenbayar
Account no: 360507
ID no: UB0437330
Correspondent banks: (1) Bank of Tokyo-Mitsubishi,Ltd. (Head office),Tokyo, Japan SWIFT CODE: BOTKJPJT. Or (2) Credit Lyonnais, New York (no. 01-11231-0001-00)
6. OTHER FIELD TRIP & INDOOR TECHNICAL SESSION DETAILS:
a. An English version of a field guide book and correlation chart is being prepared by Prof. Ch Minjin for the Mongolian field trip, with assistance from J.A Talent, B.D. Webby, O. Fatka & P. Kraft.
b. Abstracts for the technical session at the Mongolian Technical University on August 22nd should be submitted by the deadline of June 1st to Ch. Minjin, with copies also to J.A. Talent (for contributions to the IGCP 421 program) or to B.D Webby (for papers relating to the IGCP 410 program) - all three will be involved in editing the abstract volume. Further details of these arrangements will be provided later.
7. ITINERARY OF MONGOLIAN FIELD EXCURSION:
1st Day: (21/08/01 Tue.) Arrival Ulaanbaatar (from Novosibirsk, or from elsewhere), transfer to the hotel. Evening, registration at the hotel and brief introduction about workshop.
2nd Day: (22/08/01 Wed.) Meeting, technical presentations, lecture at the Mongolian Technical University, visit Natural History Museum and Geological Museum.
3rd Day: (23/08/01 Thu.) Leave Ulaanbaatar and early morning we drive to Middle Gobi by the minibus (4WD), along the road observe the scenery of the steppe, lunch at the

Rocky Mountain (Mesozoic), overnight in tent close to Delger Khangai Mountain (300 km)
4th Day: (24/08/01 Fri.) Afternoon arrive to Mushugai (South Gobi), general geological observation; overnight in tents and "ger" (mobile house of nomads)
5th Day: (25/08/01 Sat.) Main section in Bayankhoshuu (O, S, D, C). Group 410 will visit Ordovician part of section and Group 421 will visit (S, D, C). Possibility also of both groups joining together. All day.
6th Day: (26/08/01 Sun.) Both groups move to Bayanzag (60 km), visiting on the way sections at Haniin doloon (S), Havtsal (S, D), and the Olon ovoot (Au) deposit, or Mushgai (REE); (in reserve are sections at Nariin sukhait (S) and Morgotsog (D,C). Conjoined groups 410+421 overnight in tents.
(Bayan zag named Flaming Cliff is famous for dinosaur discoveries in 1922-30 by American Museum of Natural History expeditions led by Roy Chapman Andrews. After exploration we will enjoy dinner in this mysterious place.)
7th Day: (27/08/01 Mon.) Both groups move to Arts Bogd Mountain (about 190 km). On the way we will stop in Bulgan village to get gasoline, then continue our tour, having lunch in the sand dunes near the world famous dinosaur location, Togrogiin Shiree, where fighting and baby dinosaurs may be found. Overnight near Bogd village in the SE part of the Altai Mountains. Overnight in tents.
8th Day: (28/08/01 Tue.) Drive to Shine Jinst all day. (about 300km) passing Khatan suudal volcano in the Gobi desert and arrive Shine Jinst (second point). Camp near sections. Overnight in tents.
9th Day: (29/08/01 Wed.) Visit geological sections in Shine Jinst (sections not far from each other). Group 410 will visit Shar chuluut (O), and Ulaan shand (O) sections; Group 421 will visit Shar chuluut (C) and Ulaan shand (S,D) sections. Overnight in tents.
10th Day: (30/08/01 Thu.) Continue observations: Group 410 will visit section Daravgai (O) then Gashuu ovoo (O); Group 421 will visit first part of Tsakhir section (S, D). Overnight in tents.
11th Day: (31/08/01 Fri.) Continue observations: Group 410 will visit section at Yamaan us-2 (O); Group 421 will visit section at Yamaan us-2 (S, D). Afternoon free for discussions and barbecue party.
12th Day: (01/09/01 Sat.) Continue observations and separate tours: Group 410 will leave Shine Jinst early in the morning and drive to Bayankhongor (about 300 km), arriving at Tsagaan del section (tour will be managed by Prof. Minjin). Group 421 will visit second part of Tsakhir section (C1) (tour will be managed by Drs. B. Tumenbayar and Ariunchimeg)
13th Day: (02/09/01 Sun.) Group 410 will continue observations of the section at Tsagaan del (O) in the Bayankhongor area all day. Group 421 will examine the Yamaan us-1 section before leaving Shine Jinst in the afternoon for a camp site near the Big Bogd mountain.(150 km). Overnight in tents.
14th Day: (03/09/01 Mon.) Travel to Ongiin gol, both groups coming together in Ongiin gol. Group 410 will leave Tsagaan del and arrive Ongiin gol (300 km); Group 421 will leave Big Bogd area and travel to Ongiin gol (300km). Camp near the Ongiin gol river. Overnight in tents.
15th Day: (04/09/01 Tue.) Ongiin gol to Kara Korum to Elsentasarkhai. (250 km). Both groups will be together and will lunch at the river Orkhon; in afternoon will visit

Kharakorum — old Mongolian capital where Erdene Zuu monastery was built in 1586, using stones from the ruins of the ancient Kara Korum. Arrive Elsentasarkhai camp. Overnight in tents.
16th Day: (05/09/01 Wed.) Elsentasarkhai to Ulaanbaatar (240 km). Both groups arrive in Ulaanbaatar and check into hotel. Free time shopping. Evening: Farewell party.
17th Day: (06/09/01 Thu.) Departure

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COMMENT: FUTURE BUSINESS OF THE SILURIAN SUBCOMMISSION

As noted in both the minutes of the last SSS meeting and in the report to the ICS, there has been strong (but not unanimous) interest indicated by the membership in restudying at least some of the Silurian Global Stratotype Sections and Points (GSSPs). This was initially raised at the business meeting in Orange, Australia, in July, 2000, and was subsequently supported by the majority of voting members by correspondence. Members agreed that it would be prudent to begin the process by restudying two of the stratotypes and then, if that process is successful, and if it deemed that others are in need of restudy, that this should be undertaken at a later data. Most of those at the meeting and later polled by correspondence suggested that the two GSSPs in most urgent need of restudy are the base of the Silurian and the base of the Wenlock, although some members also suggested the base of the Ludlow.

I have been asked by the executive of the SSS to lead and organize a working group to restudy the base of the Silurian and I present a commentary and proposal on this elsewhere in this newsletter, including a request for suggestions/volunteers for other members of the working group. The SSS executive has asked David Loydell to lead the group to examine the Llandovery-Wenlock boundary and he also presents a commentary on this elsewhere in this newsletter. In all cases, the members made it clear that various countries and specialties must be represented on these working groups.

In addition to the work on GSSP restudy, a number of other matters were raised as scientific problems that the Subcommission should continue to pursue. One that sees universal agreement is the continued effort to better integrate the zonations of the different fossil groups and the chemostratigrpahic record, as well as the various paleogeographic regions and continents. Also needed are better ties between the biostratigraphic record and radiometric ages to constrain the durations of each of the subdivisions of the Silurian System. It seems to me, these will be essential components of the work of restudying GSSPs, although this work should pertain to the whole Silurian, not just selected boundary intervals. One member pointed out that, in the search for better definition of the Silurian and its subdivisions, better understanding of continuous sections in as many regions of the world will not only be the best way to select the most appropriate GSSPs (if that is deemed to be necessary) but also to make that GSSP work

in terms of international correlation. In addition, it was also suggested that we actively continue the work focus of the previous term of the SSS in regard to refinements of our understanding of Silurian paleogeography and terrane delineation.

I hope that, in this brief summary, I have captured the feeling of the members with whom I have corresponded on this issue. If any members wish to add comments, they (the comments) can be added to this web page on an ongoing basis (which is why I chose to do this as a web page rather than a pdf download).

Mike Melchin, SSS Secretary

THE GSSP FOR THE BASE OF THE SILURIAN SYSTEM

Submitted by Mike Melchin

As noted elsewhere in this newsletter, the membership of the SSS has strongly supported the notion of reconsidering some of the established Global Stratotype Sections and Points (GSSPs) for the Silurian System. One of the GSSPs recommended for reconsideration in the first round is the base of the Silurian System. Since the time of its initial approval, this stratotype has been the subject of debate (e.g. Lespérance et al., 1987; Berry, 1987). Now that 17 years has passed since its approval I have been asked by the executive of the Silurian Subcommission to establish a working group to re-examine Dob's Linn regarding its suitability as a stratotype section for the base of the Silurian System. I am hereby asking for suggestions for other names of people who may be interested in joining this working group. I am also asking members of the Ordovician Subcommission since this boundary has as much impact on correlation of the uppermost Ordovician as it does on the lowest Silurian.

As far as I see, we first need to ask some questions. The most important question is: despite its shortcomings, does the current GSSP (Dob's Linn) adequately serve its purpose as providing a suitable point of reference for international correlation of the base of the Silurian System? If so, does it require any revision to its definition to make it work better? If not, is there another section that would be significantly better as a stratotype in terms of facilitating international correlation?

For an ideal GSSP, the following criteria should be met: probable continuity of sedimentation through the boundary interval; completeness of exposure; adequate thickness of sediments; abundance and variety of well-preserved fossils; favorable facies for development of widespread, reliable, and time-significant correlation horizons; close ties to other facies; freedom from structural complication, metamorphism, or other alteration; freedom from unconformities; amenability to isotopic age determination; historical appropriateness; accessibility; and preferably an understanding of the phylogeny of the index taxa. It has always been acknowledged that Dob's Linn is well-suited regarding its historical appropriateness, accessibility, and the fact that the level can be clearly defined on the basis of graptolite occurrence, but it has been argued that it falls short to varying degrees in all other criteria.

As a basis for beginning discussions and hopefully prompting interest in this problem I would like to address some of these other criteria based on more recently published information and also based on work that is currently under way by myself and Henry

Williams. Some of the significant results of this work were published in an abstract presented at Palaeontology Down-Under 2000 (Melchin and Williams, 2000), and a copy of the abstract can be found below.

Probable continuity of sedimentation. It now seems quite clear that, as previously suspected, the Dob's Linn section shows continuous sedimentation through the *persculptus-ascensus-acuminatus* zonal interval. It is much more difficult to demonstrate that sedimentation is continuous through the whole Hirnantian, but that may be said for virtually all sections in the world because of facies changes associated with glacioeustacy. We must ask ourselves if this is a significant drawback of Dob's Linn.

Adequate thickness of sediments. At Dob's Linn, it is well known that the latest Hirnantian *persculptus* Zone is 1.6 m thick. What is less well known is that the thickness of what had previously been identified as the *acuminatus* Zone is 3.9 m, of which 1.5 m can now (Melchin and Williams, 2000) be assigned to the *ascensus* Zone and the remaining 2.4 m to the *acuminatus* Zone. By comparison with other well-known graptolite-bearing sections, this is certainly more condensed than some, such as the sections in Kazakhstan (Apollonov et al. 1980), NE Siberia (Koren' et al. 1983), and Wales (Zalasiewicz and Tunnicliff, 1994), but is comparable to those in Arctic and NW Canada (Lenz and McCracken, 1988; Melchin et al. 1991), and significantly thicker than sections in Bohemia (Storch, 1988) and some of the most biostratigraphically complete and well-known sections in China (Chen et al. 2000). In his most recent sampling, Williams (pers. comm., 2000) collected a succession of 9 graptolite-bearing samples in the *persculptus* Zone, 12 in the *ascensus* Zone, and 17 in the *acuminatus* Zone. The section is not anomalously condensed and is capable of yielding a fairly high sample resolution.

Abundance and variety of well-preserved fossils. It is certainly true that the Dob's Linn section is lacking in biostratigraphically useful shelly fossils and has an extremely sparse record of conodonts. Although some other graptolitic sections, such as some of those in China, NE Siberia and Kazakhstan have shelly fossils in the underlying Hirnantian strata, they are not present in the strata that span the Ordovician-Silurian boundary or in the immediately overlying beds. Strata in Arctic Canada (Melchin et al. 1991; Armstrong 1995) yield graptolites and conodonts (as well as chitinozoans, which are currently under study) across the boundary interval and thus provide an important linkage between the zonations of these groups. The Arctic Canadian sections could not be considered as suitable stratotype sections because of their inaccessibility and lack of akidograptines. Recently described sections in Nevada (Finney et al. 1999) support these graptolite-conodont correlations although graptolite distribution is not complete through the boundary interval. The Dob's Linn section has also been shown to yield recognizable chitinozoans and acritarchs (Whelan, 1988), thus providing an additional potential tool for correlation between facies. As a final point, although Williams' (1983) documentation of graptolites in the *persculptus* Zone was fairly complete, he only sampled the lowest part of the *ascensus-acuminatus* zonal interval. More recent sampling has yielded a much greater diversity of graptolites than previously known from this section, including taxa distinctive of both the peri-Gondwanan region such as *Normalograptus trifilis* and *Cystograptus ancestralis* as well as those previously known from paleo-tropical regions such as *Normalograptus lubricus* and *Hirsutograptus longispinosus*. A paper describing these new collections is in preparation. Thus, the Southern Uplands area appears to be a

critical paleogeographic link between lower and higher paleolatitudinal regions. In addition, although there are only two primary index fossils whose first appearances mark the base of the Silurian, one of these (*Akidograptus ascensus*) is very widely distributed and easily recognizable. From the graptolite point of view, the most significant drawback is that, at some levels within the *persculptus-acuminatus* interval, the strata have developed significant (nearly bedding-parallel) cleavage and the some of the graptolites are deformed as a result. Whereas many taxa can be readily diagnosed despite this deformation (including the akidograptine index species) some, especially unornamented normalograptids, are not always identifiable.

Favorable facies for reliable, widespread correlation - close ties to other facies. As noted above, from a graptolite paleogeographic and graptolite diversity point of view, Dob's Linn is very good. It is only through other sections, such as those in Arctic Canada where graptolites are less diverse but co-occur with conodonts, that cross-facies biostratigraphic correlation can be accomplished. We must ask ourselves, from an overall point of view of global biostratigraphic correlation, if this is good enough.

Freedom from structural complication. There is no question that the GSSP is on a small, fault-bounded block and is internally faulted, although not across the boundary interval. Does this seriously impair its utility as a biostratigraphic reference point?

Metamorphism and other alteration. Among the initial criticisms noted above, was the relatively high degree of metamorphism and thermal alteration, potentially limiting its usefulness for palynological, magnetostratigraphic or chemostratigraphic studies. Although I am unfamiliar with the magnetostratigraphic situation, I do know that , as noted above, palynomorphs have been successfully extracted from the section. In addition, the section has recently yielded a reliable carbon-isotope record that matches well with sections in other regions (Underwood et al.1997). In fact, the authors of this carbon-isotope study have used their data to argue that, by chemostratigraphic correlation with Anticosti Island, the latter section can be shown to have a stratigraphic gap equivalent to all or much of the *persculptus* Zone. While these results are at odds with the conodont biostratigraphic correlations and require further consideration, they clearly show that Dob's Linn is not lacking in potential for chemostratigraphic correlation. Some trace element geochemistry from this section has also been published (Wilde et al. 1986).

Amenability to isotopic age determination. Dob's Linn has numerous bentonites through the section. Several of these have already yielded radiometric dates (Tucker et al. 1990). The potential there is much higher than any other biostratigraphically complete O-S boundary section of which I am aware.

The question has also been raised about the our understanding of the phylogeny of the index taxa on which the GSSP is based. This was certainly not well known in the 1980s. However, Melchin (1998) was able to place the akidograptines as a whole within the broader phylogenetic context of Silurian "diplograptid" evolution. In our most recent restudy of the Dob's Linn graptolites (Melchin and Williams, 2000) we discovered what we believe are morphologically primitive forms of *Akidograptus ascensus* and *Parakidograptus praematurus*, and we suggest a possible evolutionary transition from *Normalograptus avitus* (found in the highest *persculptus* Zone at Dob's Linn) through these primitive akidograpines, to the more typical, advanced forms of *A. ascensus* and *P. acuminatus*. Thus, not only can the phylogenetic relationships be inferred, but they appear to be well represented at the stratotype section.

In summary, there is no question that Dob's Linn has significant drawbacks as a stratotype section, particularly in its scarcity of other biostratigraphically useful fossil groups besides graptolites, and in its structural complication. However, from a graptolite biostratigraphic point of view it is very good. New data suggest that it is complete, has a relatively diverse graptolite fauna representative of more than one paleogeographic region, and may show the phylogenetic relationships of the key zonal index species. In addition, it has been shown to be amenable carbon isotope chemostratigraphy. Based on study of the whole *ascensus-acuminatus* interval at Dob's Linn and systematic restudy of the index taxa, we have proposed a revision to the Biostratigraphic definition of the GSSP (Melchin and Williams, 2000), wherein the basal zone of the Silrurian System is the *Akidograptus ascensus* Zone, marked by the first appearance of *A. ascensus* n. subsp. (immediately followed in the overlying strata by *A. ascensus ascensus*) and *Parakidograptus praematurus*. The *ascensus* Zone is overlain by the *acuminatus* Zone, as is the case in many other parts of the world. We have proposed no change to the locality or the physical stratigraphic horizon of the GSSP.

As I assemble a new Ordovician-Silurian boundary working group, I wish this proposal to be considered. However, this proposal may not be the only one put forward. We must consider, even with this revision, whether Dob's Linn can adequately meet the needs of the entire stratigraphic community as a GSSP and, if not, can a significantly better section be found based on what we know now or will know in the near future. I hope that the community knows that even though I am coming into this with a specific proposal (which is why I was asked to organize this) I am fully prepared to keep an open mind to other possibilities.

I would welcome any correspondence on this.

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A RESTUDY OF THE AKIDOGRAPTINE GRAPTOLITES FROM DOB'S LINN AND A PROPOSED REDEFINED ZONATION OF THE SILURIAN STRATOTYPE

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The stratotype base of the Silurian System is defined in the Linn Branch stream section at Dob's Linn, Scotland, at 1.6 m above the base of the Birkhill Shale (Cocks, 1985). This level coincides with the base of the acuminatus Zone. The biostratigraphic study on which this decision was largely based was done by Williams (1983), who defined the base of the P. acuminatus Zone by the first appearances of A. ascensus and P. acuminatus sensu lato. Unfortunately, the "sensu lato" designation of the latter taxon was omitted in some subsequent references to their occurrence in those samples (e.g., Cocks, 1985). This has caused difficulties in studies in other regions where A. ascensus is normally found to have its first occurrence below that of P. acuminatus sensu stricto. The question arose as to which of those two species should be regarded as indicative of the boundary, for purposes of international correlation.

In order to resolve this problem we have restudied the material on which the Williams (1983) paper was based, as well as more recently collected samples from the same section taken at closer sample intervals (5 cm through the boundary interval), and extending into the overlying vesiculosus Zone. We found that although two different akidograptines can be found in the stratigraphic interval from 1.6-1.8 m above the base of the base of the Birkhill Shale, neither can be assigned to A. ascensus s.s. or P. acuminatus s.s. Williams (1983) suggested that the specimens he had referred to P. acuminatus s.l. might belong to P. acuminatus praematurus. Our restudy has shown that these specimens are indeed, referrable to that taxon, but that there seems to be no known morphologic overlap between them and the specimens of P. acuminatus s.s., which occur higher in the section, beginning at 3.15 m. For this reason, we would regard P. praematurus as a distinct species.

The other akidograptine occurring in the 1.6-1.8 m interval resembles A. ascensus in all respects except that it has a less protracted proximal end. However, in this case there seems to be a morphologic continuum between these forms and the more typical specimens of A. ascensus in the overlying samples. For this reason, we regard the stratigraphically lowest specimens at and immediately above the stratotype level, as a new subspecies of A. ascensus.

We can now affirm that at Dob's Linn, as at many other localities around the world, A. ascensus first occurs in strata substantially lower than P. acuminatus. Therefore, the strata that have previously been assigned to the acuminatus Zone at Dob's Linn should be divided into a lower ascensus Zone and a higher acuminatus Zone. The ascensus Zone marks the base the Silurian System and is recognized by the first appearances of A. ascensus n. subsp. and P. praematurus. A. ascensus ascensus makes its first appearance 20-30 cm above the boundary.

Akidograptus ascensus n. subsp. and P. praematurus both resemble their probable normalograptid ancestors more closely than A. ascensus ascensus, P. acuminatus, or any other more derived akidograptines. Therefore, these taxa may represent evolutionary transients between a normalograptid and more typical akidograptines. If this is the case, then it indicates that the stratigraphic succession through this interval "captures" the evolutionary origins of the akidograptid species on which the zonation is based.

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THE GSSP FOR THE BASE OF THE WENLOCK SERIES

Submitted by David Loydell

I have been asked by the executive of the SSS to co-ordinate work on defining the base of the Wenlock. Part of this work will involve considering whether the existing GSSP (Hughley Brook, Shropshire) has stood the test of time; the remainder will concentrate upon detailed studies of sections elsewhere that fulfil the criteria for a GSSP for the base of the Wenlock.

I would like to hear from anyone actively working on the Silurian concerning the following:

1. At what level should the base of the Wenlock be placed?

   and

2. Does anyone consider that a section that they are working on or plan to work on could be a potential candidate for the GSSP should Hughley Brook be considered to be unsatisfactory?

With regard to the level of the base of the Wenlock in practice most workers seem to use the base of the *Cyrtograptus centrifugus* Biozone. It is of course not known whether this level correlates with the 'Golden Spike' at Hughley Brook, because there are no graptolites known from the critical levels at this locality.

Three groups appear to be used very widely in Silurian stratigraphy and perhaps may be considered as the most important for defining system, series and stage boundaries: these are the graptolites, chitinozoans and conodonts.

From a graptolite worker's viewpoint the base of the *centrifugus* Biozone is attractive in that stability is maintained – this is currently the biozone most widely used as indicating the base of the Wenlock.

Are there advantages in proposing a different level, however? Without straying too far from current usage the base of either the *insectus* Biozone or the *murchisoni* Biozone could be considered to be better.

The advantages of the *insectus* Biozone are that its base appears to correlate approximately with that of the *Margachitina margaritana* chitinozoan Biozone, whereas the base of the *centrifugus* Biozone lies well above the base of the *margaritana* Biozone (see Mullins and Loydell in press). Historically also the *insectus* Biozone has been considered to be part of the Wenlock, most notably in the type area for both the species and the biozone: Bohemia.

The importance of chitinozoans in Silurian stratigraphy has increased dramatically in recent years. *Margachitina margaritana* seems to be the key taxon that appears at a level close to where the base of the Wenlock could be placed, although there are some anomalous significantly stratigraphically earlier records (discussed in Mullins and Loydell in press) that will have to be investigated as part of the GSSP revision process. I would be interested to hear from chitinozoan workers if they consider that a taxon other than *Margachitina margaritana* might be useful for defining the base of the Wenlock.

The much studied Ireviken Event (see e.g. Aldridge *et al.* 1993; Jeppsson, 1997) provides a number of datum points reflecting changes in the composition of conodont faunas. Datum 2 is stated to correlate with the Golden Spike at Hughley Brook (Jeppsson and Männik 1993). The question here is one of correlation with the chitinozoan and graptolite biozonal schemes. This correlation is at present uncertain. A major aim of future work must be the correlation of the earlier Ireviken Datum Points (1 and 2) with graptolite and chitinozoan biozones. I would be interested to hear from conodont workers as to what levels (either Ireviken Datum Points or bases of biozones) they feel could be used satisfactorily as a base for the Wenlock.

I have emphasised above I hope that for the conodonts and graptolites at least it is likely that more than one biostratigraphical level could be appropriate for the base of the Wenlock. What I want to avoid is a situation where a worker on one group is insistent upon a level that is totally unsatisfactory for those working on other fossil groups.

Please e-mail me at David.Loydell@port.ac.uk (or contact me by post at School of Earth and Environmental Sciences, University of Portsmouth, Burnaby Road, Portsmouth PO1 3QL, UK) with your views, by the end of June this year (2001). I will then provide a summary of the views expressed to the SSS.

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MONOGRAPTUS IN UPPER HOMERIAN STRATA?

A discussion by A.C. Lenz and A. Kozlowska-Dawidziuk

The effects of the *lundgreni* (graptolite) extinction event, coinciding with the lower and upper Homerian boundary, are now fairly well known. As a result of the event, all cyrtograptids, and apparently all but one species of monograptid and of one retiolitid, became extinct. Based on our recent detailed studies of isolated, uncompressed graptolites from Canadian Arctic and Poland, supplemented by data from literature, we have concluded that as many as 40 species of graptolites were present in the *lundgreni* Biozone interval. The extinction event therefore eliminated about 95% of the species, but in addition, eliminated the vast majority of morphotypes present in pre-extinction interval. The problem with this tidy picture of the extinction event is the report of *Monograptus* (sensu stricto) in the immediate post extinction, upper Homerian strata. Rickards in his 1976 publication shows *M. flemingii elegans* ranging into the upper Homerian in Britain and, later, Rickards, Packham, Wright and Williamson report (1995) a similar species in upper Homerian strata of New South Wales, Australia. By comparison, detailed studies –including our own- of superb lower-upper Homerian sequences in Arctic Canada, northeastern Poland, Czech Republic, Spain and Portugal, Germany, and Central Asia have not recovered *Monograptus* from upper Homerian strata. These two anomalies then appear to pose a problem. While in Australia attending the "Palaeontology Down Under" symposium in July, 2000, we took the opportunity of examining the material of Rickards and co-authors that is housed in the Australian Museum. We, of course, were especially interested in the so-called *Monograptus* from the upper Homerian. Our examinations fully convinced us that the specimens are NOT *Monograptus* but, rather, some type of badly deformed pristiograptid. We appear then, to have eliminated one anomaly. What about the second? Not having seen the UK material, we are in no position to comment, but would encourage Barrie Rickards to re-examine the "offending" material.

SILURIAN RESEARCH - 2000-2001

Dick Aldridge (UK) - 2000 turned out to be quite a busy year on things Silurian. The Geological Conservation Review Series published the British Silurian Stratigraphy volume (authors, Aldridge, Siveter, Siveter, Lane, Palmer and Woodcock), and a major research programme was launched to develop a palynomorph biostratigraphy of the British type Wenlock and Ludlow sequences (Aldridge, David Siveter and Gary Mullins, with Paul Hill, Ken Dorning, Stewart Molyneux, Alain Le Herisse, Paul Swire, Ruth Richards and Jane Washington-Evans). A third paper on Silurian oceanic episodes and events with Lennart Jeppsson, this time on the Ludlow, was provocatively published in November, and a paper on Llandovery mongolepids (microvertebrates) from South China was produced in collaboration with Ivan Sansom and Moya Smith. Among my research students, Jane Washington-Evans successfully completed her thesis on late Wenlock

palynomorphs of the type area, and David Gelsthorpe got into his stride on his project on acritarch assemblage changes through the Ireviken Event.

Anna Antoshkina (Russia) - I continue working on Lower Paleozoic sedimentology, reef paleoecology, stratigraphy and depositional environments throughout the Timan-northern Urals region. On July 12-15 I took part in organization the 406 IGCP Meeting "Pan-Arctic Palaeozoic Tectonics, Evolution of Basins and Faunas" in Syktyvkar and a joint field trip on the Paleozoic of the Subpolar Urals (Kozhym River region) on July 16-24.

Howard A. Armstrong (UK) - Over the past year I have been finalising a paper (with Alan Owen) on the paratectonic Caledonides and the second edition of "Microfossils." Conodont work (mainly Ordovician) has included the geochemistry of single conodont elements and histology and growth of coniform taxa. Preliminary results from a new project on the biogeography and palaeoecology of Upper Ordovician and Silurian conodonts from the Iapetus Ocean will be presented at the Lyell Meeting. Work continues on providing data for the diversity database being compiled by Alan Owen at Glasgow.

Chris Barnes (Canada) - I continue to expand field-based Lower Paleozoic conodont studies in the Canadian Cordillera. Detailed platform to basin transects have been sampled in the southern, central and northern Rocky Mountains (with Lee McKenzie McAnally and Leanne Pyle as Ph.D. students; Leanne is now a PDF on this project). The stratigraphic framework has been described in one paper in 2000 and another submitted; two papers are submitted on the conodont faunas. The central Rockies transect involved remote alpine field work in 1998 and 1999. Shunxin Zhang is mid-way through a PDF project using my extensive conodont database to relate conodont biostratigraphy, biofacies and biogeography to the pattern of eustasy and tectonism that affected northern Laurentia in the early Paleozoic. We have completed some taxonomic, biostratigraphic and paleoecological work on the Llandovery conodonts from Anticosti Island, Quebec (one paper in 2000 and four submitted). David Jowett completed his M.Sc. on the well preserved Llandovery to lower Ludlow conodont faunas of the Cape Phillips Formation (slope facies), Arctic Islands. Work completed, nearing completion or in process includes: Ashgill conodonts (Whitland section, South Wales with Annalisa Ferretti); Nd isotope work on Early Paleozoic conodonts (with Cindy Wright and Stein Jacobsen, one paper in press, one in preparation). A study nearing completion is of the ichthyoliths: from the Llandovery of the Arctic Islands (with Sue Turner). I am currently enjoying a year's sabbatical leave (July 2000-June 2001).

Stig Bergström (USA) - My work in the Silurian has been somewhat limited during the past year but I expect to continue the investigations of Early Silurian K-bentonites in the Appalachians during 200l.

Ol'ga K. Bogolepova (Russian in Sweden) - I am continuing work on the Palaeozoic faunas and stratigraphy of the Severnaya Zemlya Archipelago of Russia. The new faunal and palaeomagnetic data obtained from this area favour the independent status of the North Kara Terrane. New field work on October Revolution Island is planned in July-

August 2001. Work also continues on the collections from the Carnic Alps of Austria, Spain and Turkey.

Carole Burrow (Australia) - I submitted my Ph D thesis on "Late Silurian to Middle Devonian acanthodians of eastern Australia" in August 2000, and patiently await the return of referees' reports. A review of Australia's Silurian vertebrate faunas was included in the IGCP328 Final Report volume, finally published by CFS in 2000. I appreciated the chance to view some Early Silurian gnathostome spines and scales, and renew acquaintances with Chinese Palaeozoic fish workers, at the IVPP in Beijing while on a short visit to China in December 1999. Now if only I could find an institution in the USA which has specimens of their elusive Early Silurian fish spines!

Robin Cocks (UK) - Continuing work on Ordovician and Silurian global palaeogeography (with Richard Fortey and others), with papers in press in Journal of the Geological Sciety and submitted to Paleobiology. Useful field work in northern Malaysia and southern Thailand elucidating the Ordovician-Devonian stratigraphy of that key part of the Sibumasu Terrane (with Lee Chai Peng). Systematic brachiopod studies published and continuing on the brachiopod faunas of the Chu-Ili Terrane, Kazakhstan (with Leonid Popov and Igor Nikitin). A successful international Brachiopod Congress in London in July, with many papers encompassing the Lower Palaeozoic and participants from 32 countries. Active participation in the Europrobe Trans-European Suture Zone (TESZ) project, with meetings in Manchester and Zakopane, Poland, making sure that the geophysicists and others do not forget the palaeontological evidence for oceanic separations over Lower Palaeozoic time.

Carlo Corradini (Italy) - He is continuing the work on conodont stratigraphy and taxonomy of the Ockerkalk limestone of SE Sardinia. A biostratigraphical investigation of the Silurian rocks of the Italian side of the Carnic Alps has started, and some new sections have been sampled. A new project on conodont-graptolite zonation ties, mainly based on Bohemian sections will start soon (with E. Serpagli and P. Storch).

Annalisa Ferretti (Italy) - Work continues on the cephalopod limestone biofacies, mostly from the Carnic Alps.

Alexander Gubanov (Sweden) - I am mainly working on the evolution of Cambrian molluscs now, but continue studying Silurian and Ordovician gastropods. My special Silurian interest just now is well-preserved molluscs from carbonate nodules within the graptolitic shale recently collected from the Telychian of Severnaya Zemlya Archipelago (Arctic Siberia) and silicified gastropods from underlying carbonates.

Juan Carlos Gutiérrez-Marco (Spain) - At the present time I am mainly involved in Ordovician research through several projects in Spain, Morocco and South America. However, some Silurian activity was recently done with the submission (with Michel Robardet) of an updated synthesis on the Silurian of Spain (to be published by the Geological Society of London in a new special publication entitled "The Geology of Spain"), and of a paper on the Upper Silurian fossils of Bohemian type from NW Spain

(trilobites and bivalves, plus conodonts and radiolarians), written in collaboration with Graciela Sarmiento, Michel Robardet, Isabel Rábano and Jirí Vanek for the Havlícek volume of the next issue of the Journal of the Czech Geological Society. My "Silurian plans" for 2001 include: a) the completion of two papers about new biostratigraphical refinements in the complete graptolite sections of the Valle and Corral de Calatrava synclines (in collaboration with Petr Štorch and David Loydell), b) the review of the graptolite record - historical and new - of the Almadén mine (i.e., the graptolite shales that directly overlie the famous mercury ore: also with Petr Štorch), c) a re-appraisal of the Silurian/Devonian boundary in the Catalonian Coastal Ranges (with M. Robardet), and d) the returning to the study of the Upper Silurian synrhabdosomes and graptolites with Alfred Lenz. As a (personal) good new for my Silurian friends, last July I was elected Academician of the National Academy of Sciences of the Argentine Republic (settled from its foundation in 1869 in the city of Cordoba). I am very pleased for that honour (which required the unanimity among the members), and for being the youngest (43) Academician of this institution in the last 80 years!. But... I'm sorry, my formal lecture of admission dealed with Ordovician fossils!!

Wolfgang Hansch (Germany) - Wolfgang Hansch has recently been engaged mainly in the Triassic and is responsible for a big exhibition. This has left little time to work on Silurian research although he plans to return to this in the future.

Anette Högström (USA) - Current work is focused on upper Ordovician and lower Silurian machaeridians from for example the Taimyr Peninsula and Severnaja Zemlya of Arctic Russia, New York State and Baltoscandia.

Kathleen Histon (Austria) - A project on K-bentonite levels in the Carnic Alps is ongoing with Hans Peter Schönlaub, some 150 levels have been recognised to date. A paleoecologic and taphonomic study of the nautiloid fauna of the Silurian Cephalopod Limestone Facies in the Carnic Alps continues with Annalisa Ferretti and Hans Peter Schönlaub. Work continues on the systematics and paleobiography of the Silurian nautiloid fauna of the Carnic Alps.

Dimitri Kaljo (Estonia) - Work continues on late Ordovician and early Silurian rugose coral communities and diversity in context of environmental changes in the Baltic basin. The latter aspect is based on the facies and mainly carbon isotope analysis. My studies are a part of a teamwork - O. Hints, T. Martma, M.-A. Motus et al. are taking part. Some long-lasting, international co-operation projects are still in progress.

Mark A. Kleffner (USA) - I am currently revising a conodont-, graptolite-, and chitinozoa-based Silurian chronostratigraphy (with James Barrick), which now contains range-data on more than 370 taxa, for a GSA poster session and for submission for publication later this year. My remaining research time is spent on a study of the Lower Silurian of Ohio and Kentucky: conodont biostratigraphy, revision of the nature of the Brassfield/Noland-Dayton contact, recognition of more than one unit identified as the Dayton, and possibility of local late Llandovery tectonic activity. My thanks to all of the conodont, graptolite, and chitinozoa workers who have been kind enough to send me

reprints of all of their recent studies, and in many cases, more detailed information on fossil distribution than is published in those studies. Those data have been extremely helpful to me as I revise the Silurian composite mentioned previously.

Tanya Koren' (Russia) - Since 1999 I am involved in the study of graptolites from the Röstangå1 and Lonstorp1 cores drilled in western-central Scania, Sweden. Preliminary stratigraphic assessment and regional comparison based on the Röstangå1 drilling core were given by Bergström and others (1999). The uppermost Ashgill and Llandovery sequence consists of dark gray and black shales and mudstones about 47 thick. Numerous well preserved graptolites were sampled successively from each 20 cm thick interval. The following zonal units are recognized in ascending stratigraphic order: the *persculptus, ascensus, acuminatus, vesiculosus,, revolutus, convolutes, sedgwickii, linnaei, turriculatus* and *crispus*. The stratigraphic hiatus established in the Röstangå1 core corresponds to the interval within the uppermost *revolutus* to the lowermost *convolutus* zones. The Lonstorp1 drilling core penetrated the sequence of graptolite-bearing shales and mudstones 73 m thick. High resolution sampling revealed the same sequence of graptolite zonal units as that in the Röstangå1 core and a slightly more extensive stratigraphical gap, starting from the uppermost *vesiculosus* Zone. However, in the upper part of the sequence studied in the Lonstorp1 core two more Telychian graptolite units, namely the *griestoniensis* and *spiralis* Zones are established. The uppermost Ashgill and Llandovery graptolite sequence revealed in both cores is well correlated and can serve as a most complete reference standard for the Llandovery in the southernmost Sweden. The Ordovician-Silurian boundary interval shows the most complete graptolite sequence. The detailed graptolite biostratigraphic and taxonomical work is planned for the future. My thanks are due to Profs. S.M. Bergstrom, K. Larsson, P. Ahlberg and A. Nielsen, who gave me a possibility to sample the cores and study the beautifully preserved and numerous graptolites. My other graptolite occupation is to continue jointly with A. Sujarkova the study of the rich Ludlow fauna from the Central Asian sections (Koren and Sujarkova, 1998, Proc. 6th Intern. Grapt. Conf. & Field Meet., IUGS SSS, Temas Geologico-Mineros ITGE, vol. 23, Madrid, pp.198-201). The first part is dedicated to the taxonomy, phylogeny and biostratigraphic distribution of the numerous species belonging to *Bohemograptus , Polonograptus* and *Egregiograptus* sampled in the continuous graptolite bearing sequences of the Kursala Formation, Alaj Range.

Jiri Kríž (Czech Republic) - In 2000 completed monograph on "Lochkovian bivalves of Bohemian type from the eastern Anti-Atlas (Morocco)". In 2000 started to work on the paper on the "Enantiomorphous dimorphism in the Silurian bivalves; *Maminka* Barrande, 1881 (Lunulacardiidae) - the oldest known example".

Phillippe Legrand (France) - Phillippe Legrand continues work on the Lower Silurian diplograptids and monograptids of the Algerian Sahara and the neighbouring countries. He starts work on the Pridolian Series of the Algerian Sahara and is also studying graptolites of Saudi Arabia.

Alfred Lenz (Canada) - Studies continue on Upper Wenlock and Ludlow isolated, uncompressed graptolites from Arctic Canada. For the last 15 months, Anna Kozlowska-

Dawidziuk (Poland) was a visitor with me, during which time we collaborated on several projects. These involved two monographic studies of pre-extinction *lundgreni* Biozone graptolites, and of upper Homerian post-extinction graptolites. Both of these are completed and have been submitted for publication. One summary-type paper has been submitted for the C.H. Holland Festschrift, and another is being prepared for the Havlicek volume. Work is continuing on a broader project involving the integration of graptolite, radiolarian, organic-walled microfauna and microflora-range data, with organic geochemistry, for the late Wenlock to the top of the Silurian in the Canadian Arctic, in collaboration with A. Kozlowska-Dawidziuk, P. Noble (University of Nevada @ Reno), Assedine Soufiane (INRS- Géoressources, Quebec), and C. Holmden (University of Saskatchewan).

Steve LoDuca (USA) - Work continues on the taphonomy, systematics, and evolution of Silurian noncalcified algae, and on the sedimentology and stratigraphy of the distinctive Lagerstatten that yield them. Descriptions of several new and surprisingly morphologically complex Silurian noncalcified dasycladalean taxa are currently underway in collaboration with Don Mikulic and Joanne Kluessendorf (Illinois and Wisconsin material), Denis Tetreault (Ontario material), and Mike Melchin (Arctic Canada material); a detailed, paleobiomechanics-based analysis of the functional morphology of these and other Silurian dasycladalean taxa has recently been initiated. Work also continues on taxon-specific stable carbon isotopic compositions of Silurian "organic macrofossils" (especially algae and graptolites) with Lisa Pratt.

David Loydell (UK) - Work continues on many projects. Currently being written up for publication is an integrated biostratigraphical study of the Aizpute core, Latvia, with Peep Männik and Viiu Nestor. Jörg Maletz is visiting Portsmouth for 6 months - we are working together on graptolites from the Llandovery of Sweden. A new Ph.D. student, Andrew Mallett, has started work on the Hawick Group graptolites of the Southern Uplands. He is jointly supervised by Maxine Akhurst and Mark Williams of the British Geological Survey (who are providing half of the funding for the project). Kate Saunders (co-supervised by Don Mikulic and Joanne Kluessendorf) will complete her Ph.D. thesis on Silurian dendroids during the next few months. Anthony Butcher (also co-supervised by Don Mikulic and Joanne Kluessendorf) is extending his work in Illinois to include chitinozoan biostratigraphy of northern Illinois. A diverse assemblage (co-occurring with graptolites) is currently being studied from very close to the Ordovician-Silurian boundary. The Welsh Basin continues to yield splendid material - during this year's fieldwork what may be the world's longest graptolite (1.45 m long and not complete!) was discovered as was an exciting new trace fossil assemblage which will be further studied during the summer of 2001.

Štìpán Manda (Czech Republic) - Silurian and Lower Devonian cephalopods from the Prague Basin.

Peep Männik (Estonia) - I am actively working on the evolution, ecology and taxonomy of Ordovician and Silurian conodonts from Baltic, Arctic regions and Siberia, and on conodont-based high-resolution stratigraphy. Joint studies of the evolution of Silurian

conodont faunas (with L. Jeppsson from Lund; Sweden), and distribution of conodonts, graptolites (with Dr. D. Loydell from Portsmouth, U. K.) and chitinozoans (with Dr. V. Nestor from Tallinn, Estonia) are going on. A joint project with James E. Barrick (Texas Tech University) "Evaluation of proposed Silurian global oceanic episodes and events using conodonts" continues. In June, J. E. Barrick visited Tallinn and Lund to study Silurian conodonts from Baltoscandia, and in August-September I visited Lubbock to study conodonts from southern United States. Together with Mark T. Harris (Wisconsin-Milwaukee University), Peter M. Sheehan (Milwaukee Public Museum), and several colleagues from Estonia a three-year project "Collaborative research: comparing Upper Ordovician-Lower Silurian carbonate platform in Estonia and Great Basin: a test of the synchrony of sequences and faunal changes" has been started. In 2000, our team studied several Upper Ordovician-Lower Silurian sections in Utah and Nevada. Collaborative studies (together with colleagues from Vilnius, St. Petersburg, Syktyvkar, Ukhta, Novosibirsk, etc.) of the evolution and high-resolution stratigraphy of the Early Palaeozoic sedimentary basins in northern Baltica and Siberia palaeocontinents are going on. In July, I participated in the organization of meeting "Pan-Arctic Palaeozoic tectonics, evolution of basins and faunas" (Syktyvkar, Russia, July 12-15, 2000), and accompanying it excursions to the Subpolar Urals and Timan region. It was the final meeting of the IGCP Project No 406 "Circum-Arctic Lower-Middle Palaeozoic vertebrate palaeontology and biostratigraphy" (1996-2000). Two field guides, abstract volume, and a special volume of Proceedings of the Estonian Academy of Sciences (devoted to the Early Palaeozoic stratigraphy and palaeontology of the Timan-northern Ural region) were published.

Michael Melchin (Canada) - Mike and his students and colleagues are currently working on a number of aspects of Late Ordovician and Early Silurian graptolites, radiolaria and biostratigraphy, biodiversity and paleoenvironmental changes as represented mainly in Arctic Canada, Russia, and China, as well as some problems of international correlation. Work is in progress on the systematics and phylogeny of *Cystograptus* and *Paraclimacograptus* from Arctic Canada and Russia (with Tanya Koren'), Llandovery retiolitids (with Alf Lenz), and Llandovery monograptids Aleksandra Naczk has recently completed her MSc thesis on the phylogeny of *Glyptograptus* and related forms from Arctic Canada. With Henry Williams, Mike is working on the systematics, phylogeny and biostratigraphy of the akidograptids and related forms from Dob's Linn, with the aim of further refinement of the Silurian stratotype and its potential for international correlation. Some results of this work were presented at Palaeontology Down Under-2000 and are summarized elsewhere in this newsletter. Mike will also be travelling to China in May-June (2001) to work with Chen Xu, Fan Junxuan and Chuck Mitchell on Hirnantian and Rhuddanian graptolites from South China. Ph.D. student Jennifer Russel is almost finished her work on the taphonomy and paleoecology of Llandovery graptolites, focusing on the details of their distribution faunal compositional changes within Cape Phillips concretions and their various lithologies. She has already presented a preliminary graptolite taphofacies model and is refining this model and applying to the wealth of data from the Arctic samples to try to unravel the relative contributions of paleoecologic versus taphonomic control on these graptolite assemblages. In a collaborative project, Mike is working with several other researchers and students to

compile a comprehensive documentation of the biostratigraphy, biodiversity patterns, stratigraphy, and stable isotope geochemistry of the mid-Ashgill-early Wenlock succession in Arctic Canada. Samples were collected together for graptolites, radiolaria (being studied by Ph.D. student Eugene MacDonald, supervised by Mike), conodonts (recently completed by David Jowett, supervised by Chris Barnes), chitinozoa (Azzedine Soufiane, supervised by Aicha Achab), and stable isotopes of carbon and oxygen (Chris Holmden - some results presented at Palaeontology Down Under-2000). We anticipate that the unique co-occurrence of these various fossil groups will provide us with an unprecedented opportunity for detailed cross-correlation of the various zonal schemes and chemostratigraphic record, as well as a view of the relationship between the biodiversity dynamics of each group together with the environmental signals recorded in the physical and chemical properties of the sediments. The radiolarian fauna from this succession provides particularly unique opportunities since it is almost certainly the best and most continuously preserved succession of Llandovery-Wenlock radiolaria in the world. Eugene has already published some of the results of this work and is in the midst of the mammoth task of identifying and describing much of the rest of the fauna. Mike is also working with Chuck Mitchell as assistant co-ordinating author of the next edition of the graptolite volume of the Treatise of Invertebrate Paleontology. Besides working with Chuck on several of the introductory chapters, Mike's main responsibility is with the systematics and phylogeny of the Silurian taxa.

Donald G. Mikulic & Joanne Kluessendorf (USA) - Donald G. Mikulic & Joanne Kluessendorf continue working on a number of projects related to the Silurian and Devonian of Wisconsin and Illinois, including their work with the Wisconsin Geological & Natural History Survey on mapping the Silurian and Devonian rocks of southeastern Wisconsin. In September, they spent a couple of weeks on Gotland with Lennart Jeppsson looking at Silurian event stratigraphy and studying trilobite distribution in reefs. Joanne also served as the external faculty opponent for Mikael Calner's dissertation on the Silurian of Gotland at Lund University. Don presented a paper, co-authored with Joanne, on the Silurian "Dudley Locust" and the discovery of trilobites at the Paleontological Society North-Central Section held at the Geological Society of America (GSA) sectional meeting in Indianapolis in April (Don organized and convened the session as chair of the PS Section for 2000). They also co-authored an abstract with Rod Norby, David Loydell, and Andrew Mallett on Llandovery-Wenlock flooding events in Illinois and Wisconsin at the GSA annual meeting in Reno in November. Don and Joanne continue to help supervise David Loydell's (University of Portsmouth, U.K.) students; Anthony Butcher's work on the Silurian biostratigraphy and sequence stratigraphy of west-central Illinois continues and has expanded into chitinozoan biostratigraphy. Their joint interests are Silurian sedimentology, paleontology, reef paleoecology, sequence stratigraphy, and depositional environments throughout the central U.S., as well as Silurian Fossil Konservat-Lagerstätten. Don continues to work on Silurian trilobites, especially on the systematics, paleoecology, and taphonomy of trilobites in Silurian reefs of the Milwaukee-Chicago area. Joanne is also focuses on Silurian paleokarst and ichnological trends. Joanne has been named director of the Weis Earth Science Museum, which is being built on the campus of the University of Wisconsin Fox Valley in Mensha, Wisconsin.

Tatiana Modzalevskaya (Russia) - I 'm actively working on studying of Ordovician-Early Silurian brachiopods of Tajmyr Peninsula. The Atlas with this fauna is prepared for publication. The results were reported on the IGCP 416 meeting in Syktyvkar (Komi Republic, Russia), July 12-15, 2000. These are new data on correlation of the Andrej Formation (Silurian) with standard scale and graptolite biozones. The lowermost beds of Andrej Formation correspond to the Rhuddanian-Aeronian on the basis of brachiopod studies in the Eastern Tajmjr. The lower ostracod-brachiopod beds with *Sibiritia norilskensis*, *Norilskinia norilica* and *Dubaria tenera* and beds with *Sibiritia kotelnyensis* of the Andrej Formation in Central Tajmyr correspond to *convolutus-sedgwicki* and *turriculatus crispus* graptolite biozones (Late Aeronian-Early Telychian) (Abushik & Modzalevskaya, 2000). Moreover, the report: "Trends in athyridid diversity and dynamics" (with Fernando Alvarez) was shown in the Millenium Brachiopod Congress (London, July 10-14, 2000).

Heldur Nestor (Estonia) - Has studied stratotype sections of some recently established Silurian formations in Estonia with special emphasis on their low-rank cyclicity comparable with the Milankovitch cycles.

Viiu Nestor (Estonia) - In cooperation with Viive Viira (conodonts) and other colleagues a study of Llandovery and Wenlock chitinozoans from several Estonian core sections has been completed recently and two papers will be published. Joint study of the integration of chitinozoan, conodont (Peep Männik) and graptolite (David Loydell, U.K.) biostratigraphy of the Rhuddanian, Aeronian and lower Sheinwoodian in the Aizpute core section (Latvia) is also nearly completed. Work continues on the late Silurian chitinozoans and biostratigraphy of the East Baltic and Kaliningrad deep core sections. Joint core samples with P. Männik from the Rhuddanian and Aeronian interval are currently being processed within the framework of the project concerning Silurian climatic and biotic cyclicity in the Baltic Basin.

Paula Noble (USA) - I continue to work on Silurian radiolarians with the goal of improving their biostratigraphic potential. This work is currently being applied to better resolving structural and stratigraphic relationships in the Roberts Mountains allochthon, Nevada, USA. Work in the Canadian Arctic fosuses on relating the geochemical and plankton responses to the Wenlockian *lundgreni* and *ludensis* graptolite events, and is being done in collaboration with Alf Lenz, Matt Zimmerman, and Chris Holmden.

Godfrey Nowlan (Canada) - I am actively working on a number of projects: 1, Conodonts from Cambro-Ordovician Deadwood Formation in Saskatchewan and North Dakota; 2, Conodont biostratigraphy and biofacies related to neodymium and carbon isotope signatures (with C. Homden, University of Saskatchewan) with the objective of tracking sea level on the North American craton during the Middle to Late Ordovician. We have recently completed a manuscript on sections in the subsurface of Iowa and Saskatchewan for Geochimica et Cosmochimica Acta. We have also applied for funding to extend the project geographically to the east and stratigraphically up into the Silurian; 3, I have recently completed (with Denis Jackson and Brian Norford) a study of the

graptolites and conodonts of the Glenogle Formation in southern British Columbia (this is in press as a GSC Bulletin); 4, Another recently completed study is a contribution on Cambrian-Silurian conodont biostratigraphy to a GSC Bulletin on Prince of Wales Island and adjacent areas in the Canadian Arctic, Nunavut (Mayr et al.); 5, As Secretary of the International Cambro-Ordovician Boundary Working Group, I am completing the work necessary to erect a marker and interpetive sign for the Green Point section in western Newfoundland; 6, Currently working on an Ordovician-Silurian rocky shoreline section on Hudson Bay near Churchill, Manitoba (with Bob Elias and Graham Young). This study involves detailed biostratigraphy as an aid to mapping the rocky shoreline; 7, Working jointly with Oliver Lehnert (University of Erlangen) on a study of Cambrian to Silurian clasts in a Tertiary conglomerate on eastern Ellesmere Island; 8, Conodont biostratigraphy of Cambrian to Silurian strata of eastern Ellesmere Island in support of geological mapping by K. Dewing and U. Mayr; 9, Continuing biostratigraphic service work on Cambrian, Ordovician and Silurian conodonts from all over Canada.

Gladys Ortega (Argentina) - I´m currently working on new material of the genus *Talacastograptus* (Llandovery) from Subandean Ranges, NW Argentina, in cooperation with Barrie Rickards and other colleagues. Also, I´m studying graptolite faunas from the Ordovician/Silurian boundary interval in the Argentine Precordillera.

Silvio H. Peralta (Argentina) - Currently, I´m working on Silurian deposits of the Eastern and Central Precordillera, focusing ichnology, sedimentary, biostratigraphic, paleoenvironmental and paleogeographic aspects. Also, I carry into effect a specific project entitled "Stratigraphy and structure of the Ordovician and Silurian of the La Deheza Creek, Central Precordillera, San Juan Province, Argentina", which is sponsored by the San Juan University. The major goal in this project is the stratigraphic analysis of the Silurian deposits outcropping between Talacasto creek, where they are named as the Tucunuco Group (La Chilca and Los Espejos Formations), and San Juan River, where they are named as the Tambolar Formation. In this way, the Silurian deposits of the La Deheza creek represent a critical link between both the Talacasto and San Juan River sections. In addition, they represent the facies change between the Tucunuco Group and Tambolar Formation. On the other side, I´m working together with my colleague Dr. Graciela Sarmiento on the allochtonous conodont fauna included in the sedimentary mélange of the Rinconada Formation, Upper Silurian of the Eastern Precordillera of the San Juan Province. Graciela Sarmiento is an Argentinian conodontologist, who is working in Spain many years ago. Several Ordovician simple conodonts were recovered from the biggest calcareous olistoliths arising from the San Juan Formation (Early Ordovician). But, from one channel-fill deposit in the upper part of the Rinconada Formation, an interesting Ordovician condont association occurs. Also a very few Silurian S elements of *Ozarkodina* were obtained. An abstract has been submitted for the International Meeting of the Ordovician Subcommission, which will be held in Morocco, in 2001. Besides, Laura I. Leon, from San Juan University, is carrying into effect her Ph.D. Thesis. She is working on the Ichnology, sedimentology and paleoenvironment of the Tambolar Formation, Silurian of the Central Precordillera, San Juan Province, Argentina. As well, Elba Persia, a student of Geology, is close to taking her degree. She is working on taphonomic aspects related to the Los Espejos Formation (Upper Silurian),

at the Talacasto creek, Central Precordillera San Juan Province, Argentina. During August 18 to 25, I was involved as Chairman in organization of the International Cambrian Meeting "Argentina 2000", which took place in the San Juan, Salta, and Jujuy provinces. In fact, we had too many things to do before and after that meeting.

José Manuel Piçarra (Portugal) - Stratigraphy of the Lower Paleozoic of South Portugal (Ossa Morena Zone). Silurian graptolites from Portugal (with cooperation of J.C. Gutiérrez-Marco) and Armorican Massif (Portuguese-French cooperation, with M. Robardet, J. Le Meen and R. Gourvennec).

Michel Robardet (France) - During 2000, I have been working on: 1) the Ordovician-Silurian boundary in the Armorican Massif of western France (with F. Paris, J.M. Piçarra and J.C. Gutiérrez-Marco). We have found two localities with graptolite assemblages of the basal Llandovery *Parakidograptus acuminatus* biozone: one in Central Brittany (within sandstones), the other one in the southernmost Armorican Massif (within alternating black shales and black cherts). This is the first evidence of Rhuddanian graptolites in the Armorican Massif, a region which was supposedly characterized by an important and generalized stratigraphical hiatus at the Ordovician-Silurian boundary, including the Rhuddanian + Aeronian. This study will go on in 2001 with the micropaleontological study of the glaciomarine deposits that underlie the basal Llandovery (with F. Paris and A. Bourahrouh). 2) Upper Silurian from NE Spain (Catalonian Coastal Ranges), SE Spain (Ossa Morena Zone) and SE Portugal (Barrancos area in the Ossa Morena Zone), with J.C. Gutiérrez-Marco and J.M. Piçarra (see their reports).

Rong Jia-yu (China) - I have been studying the late Ordovician and early Rhuddanian brachiopods from South China in order to further investigate the latest Ordovician mass extinction and survival and recovery following the extinctions. I am also starting to study a minor extinction of brachiopods near the boundary between Aeronian and Telychian which is mainly based on the data derived from the Yangtze Region. In addition, I have been studying the early radiation of Ordovician brachiopods in South China. This is a complicated problem and needs more data to be collected.

Claudia Viviana Rubinstein (Argentina) - I am actively working on the taxonomy, biostratigraphy and paleobiogeography of Silurian palynomorphs (acritarchs, cryptospores, spores and chitinozoans). Current projects include Silurian palynomorphs from the Precordillera and Puna, Argentina and palynomorphs from the Siluro-Devonian boundary of Libya and Brazil, in collaboration with Philippe Steemans (Liege) and Alain Le Hérissé (Brest).

Enrico Serpagli (Italy) - Enrico Serpagli continues his research on conodont biostratigraphy of Sardinia and Carnic Alps. A new research project on conodont-graptolite ties mostly based on Bohemian sections started with P.Štorch.

Lawrence Sherwin (Australia) - Lawrence Sherwin spent half the year (2000) at Cambridge, working on graptolites with Barrie Rickards. They have a paper in press on

Pridolian graptolites which should appear soon in Alcheringa. Also in press in the same journal is a joint paper with Greg Edgecombe on late Llandovery trilobites from the Forbes district in central NSW. His regional mapping work will include revising the important Silurian sequence at Yass district in 2001.

Connie Soja (USA) - In the last year, Colgate students and I working collaboratively with Anna Antoshkina (Syktyvkar, Russia) and Brian White (Smith College, MA) published our results on Upper Silurian stromatolite reefs of SE Alaska (Alexander terrane) and the Northern Urals. This research shows that the reefs are remarkably similar in composition, biofabrics, and environmental setting. As such, they add additional support to our hypothesis that the Alexander terrane was positioned in the Late Silurian along the Uralian Seaway, which allowed for the transmigration of organisms between Laurentia-Baltica-Siberia. Taphonomic experiments on modern hydroids and thin-section analysis are helping to assess the paleobiology and paleoecology of *Fistulella*, a problematic hydroid that occurs in the Alaskan and Russian stromatolites. Thanks to John Talent, Ruth Mawson, George Wilson, John Jell, and many others, we thoroughly enjoyed the Palaeontology 2000-Down Under meeting in Australia last summer, including the McCoy Symposium and Heron Island workshop. Organizers are to be commended for the wonderful meeting and for their generosity in hosting international visitors on a diversity of field trips and workshops.

Petr Štorch (Czechia) - Work continues on graptolite taxonomy and integrated graptolite-conodont biostratigraphy in the Lower Silurian black-shale dominated reference sections of Spain (with J.C. Gutierrez-Marco, D.K. Loydell, and G. Sarmiento). Current research on Lower Silurian graptolite faunas and stratigraphy of Libya, Tunisia and Niger (with D. Massa) benefits from new material collected by the author in the northern part of Murzuq basin. Several biozones of the international graptolite zonation and many taxa have been recorded for the first time in Libya. A review of the Lower Silurian graptolites of Libya is in press. More detailed papers describing Rhuddanian graptolites of northern Niger and Aeronian graptolites of Murzuq basin are near completion.

Jacques Verniers, **Joakim Samuelsson** and students (BELGIUM) (Lab. Palaeontology, Ghent University) activity 1999+2000 - Jurgen De Permentier (M.Sc. thesis 1999) studied the Chitinozoa from 17 samples around two GSSP's: the Rhuddanian/Aeronian boundary and the Aeronian/Telychian boundary in the area around Llandovery , Wales (U.K.). He also did a biometrical study on the index species of the global biozonations *S. maennili*, *E. dolioliformis* on material from Estonia provided by V. Nestor and *C. alargada* on Spanish material provided by H. Priewalder. He could establish the exact position of the bases of these three global biozones versus the chronostratigraphy in its type sections. Three M.Sc. theses were finished in the summer 2000. Thijs Vandenbroucke studied 37 samples with Chitinozoans in the Upper Ordovician and Llandovery of the Girvan District, Schotland and presented his results at the Pal Ass meeting in Edinburg Dec. 2000 (see abstract Vandenbroucke and Verniers, 2000). Stijn DeSchepper described in detail three formations in their type locality (Corroy, Bois Grand-Père and Vichenet) and their chitinozoan content in the Orneau Valley, Brabant

Massif (Belgium) (extented abstract submitted). He could date the previously undated Vichenet Formation as uppermost Sheinwoodian to Homerian, Wenlock. Bruno Billiaert described in detail three formations in their type locality (the Ordovician Vitrival-Bruyère and Fosses foramtions and the Ashgill-Llandovery Génicot Formation) and their chitinozoan content in the Fosses area, Condroz Inlier (Belgium). Jacques Verniers co-ordinated a revision of all existing formal and informal formations and members of the Lower Palaeozoic of Belgium. In a half to a full printed page each formation is described with short history, the biostratigraphical arguments. Several figures with chronostratigraphical position of all accepted formations and members are given with colour indications of facies (Verniers et al. in press; a poster was presented at the IGC at Rio in august 2000). The calibration of graptolite and Chitinozoa biozonations of the Wenlock in Wales was published in December 1999 in the proceedings of the CIMP-PISA1998 Symposium (Verniers, 1999). Together with my PhAD. student Tim Debacker a structural study on the large Silurian outcrop of Ronquières was published. Chitinozoa in Neolithic slate arm rings allowed to localise the source of these artefacts in Belgium (Jadin & Verniers, 1998). I submitted a Chitinozoan study on 37 fertile samples from seven Silurian formations of two closeby outcrop areas of the Brabant Massif: the Ronquières and the Monstreux areas. It contains some systematical descriptions and a new species (Verniers et al., submitted). I will continue on the publications on Chitinozoa and lithostratigraphy of the Silurian and Ordovician outcrop areas of the Brabant Massif, Condroz ridge, etc.

Viive Viira (Estonia) - I am currently working on Ludlow conodonts and biostratigraphy of Saaremaa Island in Estonia.

Rodney Watkins (USA) - Rodney Watkins continues work on paleoecology of Silurian benthic marine communities.

Rosie Widdison (UK) - I am currently finishing a PhD on Silurian crinoids from Britain, at the University of Birmingham, UK. My research is dominated by systematic work and ecological analysis on Wenlock crinoids, for which I have also done comparative studies with North American and Swedish faunas. I have recently written a paper entitled 'Symbiosis in crinoids from the Wenlock of Britain' for the volume of Conference Proceedings from the 10th International Echinoderm Conference, but it is not yet published.

Henry Williams (Canada) - Henry Williams went through a mid-life career change last year, quitting his job at Memorial University of Newfoundland for a position in hydrocarbon exploration with Petro-Canada in Calgary. This has meant a big shift in work, which has so far involved Devonian carbonates and Mesozoic clastics but no Ordovician or Silurian. He is thoroughly enjoying the stimulation of acquiring new skills, but hasn't had time to do much in the way of graptolites. He is, however, keen on keeping abreast with what is going on in the Lower Paleozoic and hopes that everyone will keep him informed about their latest work.

Evgeny A. Yolkin (Russia) - The last year of the second millennium was devoted to a preparation of the volume "Paleozoic of the West Siberian Lowland" that is now in press. Silurian subsurface sections are not complete. Revised paleontological data show that there are only fragments of the Llandovery, Wenlock and Ludlow. The presence of the Pridoli is problematic. Much time was spent on clarification of the Cambrian, Ordovician and Devonian stratigraphy. Organization of the IGCP 420/421 field meeting in Siberia in August with examination of the Ordovician, Silurian and Devonian sections of the Altai and Salair is now under discussian with project leaders (R. Feist, J.A. Talent and B. Webby).

Graham Young (Canada) - I am continuing to work on Early Paleozoic corals, paleoecology, and stratigraphy. An ongoing field study of the Hudson Bay Lowland of Canada, with Bob Elias (University of Manitoba), Ed Dobrzanski (Manitoba Museum), David Rudkin (Royal Ontario Museum), and Godfrey Nowlan (Geological Survey of Canada), examines paleoenvironmental events across the Ordovician-Silurian boundary in a unique archipelago setting. Other research with Bob Elias examines distribution, diversity, paleoecology, and morphologic trends in Ordovician and Silurian corals. Research with Steve Kershaw (Brunel University) considers paleoenvironmental applications of growth banding in corals and stromatoporoids. M.Sc. and Ph.D. projects on paleontology, paleoecology, and stratigraphy are available.

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