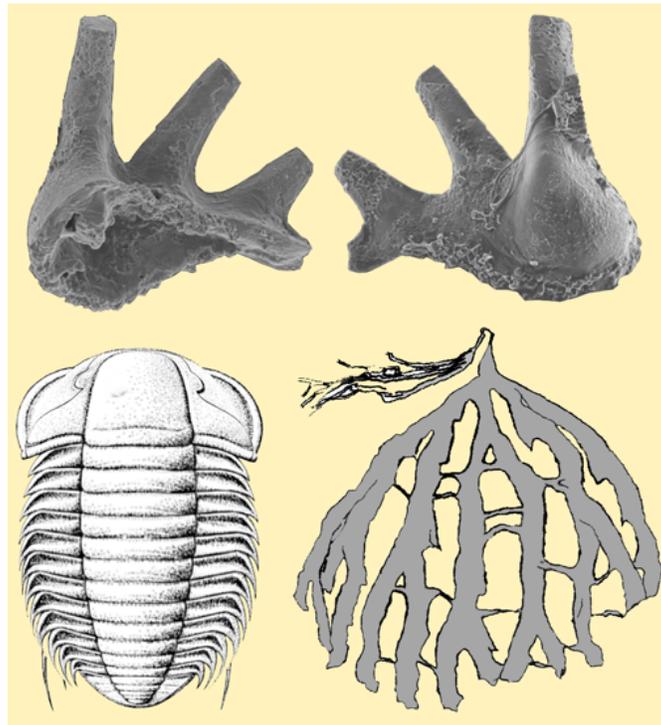


# ORDOVICIAN NEWS

SUBCOMMISSION ON ORDOVICIAN STRATIGRAPHY  
INTERNATIONAL COMMISSION ON STRATIGRAPHY



N° 16

1999

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**Cover:** fossil genera involved in the definition of the global Cambrian-Ordovician boundary: the conodont *Iapetognathus*, the graptolite *Rhabdinopora* and the trilobite *Jujuyaspis*.

**NOTES FOR CONTRIBUTORS**

The continued health and survival of *Ordovician News* depends on YOU to send in items of Ordovician interest such as lists and reviews of recent publications, brief summaries of current research, notices of relevant local, national and international meetings, etc. As more geological software becomes available, details of this would also be welcomed by many of us. Also please ensure the SOS's Secretary (responsible editor) be notified of any changes in address, telephone or fax number and e-mail address.

**EDITOR'S NOTE**

The present number of *Ordovician News* is the first one that I am editing as Acting Secretary of the SOS. I would like to thank you all for the many contributions for the current issue; your electronic files made an easier editing job.

I am particularly grateful to my predecessor in the editing task, S. Henry Williams, who gave me fundamental help in order to make 1999's *Ordovician News* a reality. Special assistance and technical support were kindly provided by Chris Barnes and Sue Dunlop (CEOR, University of Victoria, Canada).

The attached special report regarding the "Proposed Stratotype Section and Point for Base of the Ordovician System" by R. A. Cooper and G. S. Nowlan (on behalf of the International Working Group on the Cambrian-Ordovician Boundary) was previously printed as a particular report from the COBWG (SOS-ICS-IUGS), March 1999, 28 pp., Geological Survey of Canada, 3303 – 33<sup>rd</sup> Street NW, Calgary, Alberta, Canada T2L 2A7. The version included in the present number was provided by G. S. Nowlan.

Because the formal Secretariat of the International Subcommittee on Ordovician Stratigraphy will be established in Prague, during the upcoming 8<sup>th</sup> International Symposium on the Ordovician System, please do not send any submissions for the next issue of *Ordovician News* until we know the identity of the new editor. Thanks.

GUILLERMO L. ALBANESI

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## CHAIRMAN'S REPORT

In a few weeks, most of us will be meeting in Prague at the 8th ISOS. Our organizers, in particular Olda Fatka and Petr Kraft, have been working extremely hard to put together an excellent technical program, splendid accommodations, wonderful social activities, and informative field excursions. I hope to see most of you there. Prague is an exciting venue, and the symposium has much to offer all of us.

The Ordovician Subcommittee will soon vote on two boundary proposals. The first is the Cambrian-Ordovician boundary - the last Paleozoic system boundary yet to be formally designated. The International Working Group on the Cambrian-Ordovician Boundary has worked hard since the 7th ISOS in Las Vegas. By a majority vote, it selected the Green Point, Newfoundland section and Point for the GSSP for the base of the Ordovician System, as well as the lowest series and lowest stage of the Ordovician. The Working Group's proposal was recently submitted to the Ordovician Subcommittee for ratification which will occur by means of a formal postal ballot immediately following the Prague symposium. The boundary proposal is included in this issue of *Ordovician News*. Roger Cooper and Godfrey Nowlan, Chairman and Secretary, respectively, of the Working group, will present the proposal as a contribution to the technical program in Prague. In addition, a Subcommittee meeting will provide the opportunity for further discussion of the proposal. Two candidate stratotype sections are currently under consideration for the base of the *Tetragraptus approximatus* graptolite Biozone, which will serve as the lower boundary of the second stage of the Ordovician System. Proponents of each section are presently preparing final information and arguments for their

respective sections. This boundary also will be discussed at length at Prague; to be followed by formal postal ballots to select a single stratotype.

When the upcoming votes are completed, considerable progress will have been made on defining formal, global chronostratigraphic subdivisions for the Ordovician System. The GSSP for the Darriwilian Stage was formally dedicated in September 1998 during a field trip to the JCY area of China, organized as part a IGCP 410 meeting held in Nanjing. An impressive monument was built on the site, and its dedication generated considerable local publicity. All important candidate stratotype sections for the base of the *Nemagraptus gracilis* graptolite Biozone will have been visited and evaluated by the time you read this. Formal voting on this biohorizon, which will define the base of the Upper Ordovician Series, will take place in late 1999 or early 2000.

Subcommittee members have been busy contributing to IGCP Project 410 as reported by Barry Webby, and many biodiversity papers will be presented in Prague. In addition, sessions will also be dedicated to the GOES project (Global Ordovician Earth Systems), headed by Bill Berry, and will include a variety of papers addressing the Late Ordovician extinction and associated Earth system perturbations.

Corresponding membership will be an important agenda topic in business meetings of the Subcommittee in Prague. The membership list has not been updated for almost ten years. Many who have not been active will be removed, and many new members will be added. If you are an active Ordovician worker and wish to be added, please send me an e-mail message or contact me at Prague.

Besides the Project 410 meeting in Nanjing, Ordovician workers contributed substantially to international meetings on graptolites and conodonts in 1998. The 6th

International Graptolite Conference was held in Madrid in June 1998, in conjunction with a field meeting of the Subcommittee on Silurian Stratigraphy. Coordination of the two meetings provided the opportunity for several excellent field excursions in Spain. Juan Carlos Gutiérrez-Marco, the primary organizer, ensured that all participants not only experienced the geology but also tasted the culture of Spain. Many papers on Ordovician conodonts were presented at the 7th International European Conodont Symposium held in Bologna-Modena, Italy in June 1998. A pre-meeting excursion visited Ordovician outcrops in Sardinia.

The 31st International Geological Congress will be held in Rio de Janeiro, Brazil, in August 2000. The Ordovician System will be represented in two sessions. Gilberto Aceñolaza and I are conveners of general symposium session entitled: "Paleontological, stratigraphical and paleogeographical relations among South America, Laurentia, Avalonia and Baltica during the Ordovician". Please contact us if you wish to contribute a paper, either oral or poster, to the session. Barry Webby is convener of a session on Ordovician Biodiversification. There is reason to visit South America again in 2001, when the 7th International Graptolite Conference will be held in Argentina. Gladys Ortega is the new Chair of the Graptolite Working Group of the IPA and is the primary organizer of the meeting.

Henry Williams provided valuable service as Secretary to the Subcommittee for many years. However, because of other professional commitments, he has long wished to be relieved of those duties. During the last year, I appointed Guillermo Albanesi as Acting Secretary to edit this issue of *Ordovician News* and to handle routine secretarial duties for the Subcommittee. I ask all of you to personally thank Henry for his many years

of service when you see him in Prague. And, I thank Guillermo Albanesi for his fine contribution in editing his first issue, this issue, of *Ordovician News*.

STANLEY C. FINNEY

## SOS ANNUAL REPORT FOR 1998

### 1. Name of subcommission

Subcommission on Ordovician Stratigraphy (SOS)

### 2. Summary table of Ordovician subdivisions

SYSTEM	GLOBAL SERIES	GLOBAL STAGES	KEY GRAPTOLITE/ CONODONT (C) BIOHORIZONS
ORDOVICIAN	UPPER	-----?-----	← <i>P. acuminatus</i> (GSSP - Dob's Linn) ← <i>D. complanatus</i> , or <i>A. ordovicianus</i> (c)
	MIDDLE	<b>DARRIWILIAN</b>	← <i>N. gracilis</i> ← <i>U. austroridentatus</i> (GSSP - Huangnitang)
	LOWER		← <i>T. laevis</i> (c) ← <i>T. approximatus</i>  ← <i>Iapetognathus</i> n.sp. 1 (c)

### 3. Overall objectives

The Subcommittee promotes international cooperation in Ordovician Stratigraphy. Specific objectives are:

a. To delimit and subdivide the Ordovician System (and Period) as a part of the overall ICS work to elaborate the standard global stratigraphic scale. This work aims to establish the boundaries (GSSPs), the correlation of the subdivisions (Stages and Series), and the nomenclature of the subdivisions.

b. To promote regular international meetings on aspects of Ordovician geology, especially those devoted to clarifying stratigraphic procedures, nomenclature and methods for use in establishing a unified global time scale, and to prepare correlation charts with explanatory notes (this latter task now completed).

c. To encourage, promote, and support research on all aspects of Ordovician geology worldwide and to provide outlets, *Ordovician News* and international meetings, for reporting results of this research.

d. To encourage, promote, and support interdisciplinary research on the Ordovician global Earth system, addressing topics that require high-resolution, global correlation.

#### 4. Organization

##### *Subcommission Executive*

Chairperson, S.C. Finney (U.S.A.)  
Vice-chairperson, Chen Xu (P.R. China)  
Acting Secretary, G. L. Albanesi (Argentina)  
18 other Voting Members  
92 Corresponding Members

##### *Cambrian/Ordovician Boundary Working Group*

Chairperson, R.A. Cooper (New Zealand)  
Secretary, G.S. Nowlan (Canada)  
11 other Voting Members  
57 Corresponding Members

##### *Informal intra-Ordovician Working Groups*

Conveners of these groups are as follows:

- (i) base of *approximatus* (base of second Stage of Lower Ordovician Series) - S.H. Williams, S. Bergström, C.R. Barnes
- (ii) base of *laevis* (base of Middle Ordovician Series) - R.J. Ross, Jr., S. Finney, R. Ethington
- (iii) base of *gracilis* (base of Upper Ordovician Series) - S. Finney, S.M. Bergström, Chen Xu, R. Fortey
- (iv) base of *ordovicicus* (base of upper Stage of Upper Ordovician Series) - S. Bergström and C.R. Barnes

##### *GOES Program - research committee*

Secretary, W.B. N. Berry (U.S.A.)  
4 other members

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

Independent support for projects comes mainly from individual Ordovician workers, through their employer organizations and through individual to multidisciplinary, cooperative, team activities supported by grants from national/regional government-funded bodies. SOS receives no formal support from international organizations outside IUGS/ICS. The activities of some Subcommission members (titular and corresponding) have been supported in part by IGCP 410.

#### 6. Interface with other international projects

The membership of the Sub-commission both geographically and in terms of research interests effectively reflects

available expertise in aspects of Ordovician stratigraphy.

The Subcommittee has no formal links with other global projects, though some individual Ordovician workers are members of IGCP projects, most notably the following:

*Project 319:* Global Palaeogeography of the Late Precambrian and Early Paleozoic.

*Project 321:* Gondwana dispersion and Asian accretion.

*Project 328:* Palaeozoic microvertebrate biochronology and marine/nonmarine correlation.

*Project 335:* Biotic Recovery from Mass Extinction events - patterns, processes and implications.

*Project 351:* Early Paleozoic Evolution from the nucleus to the margins in Africa and South America.

*Project 386:* Response of the Ocean / Atmosphere System to Past Global Changes.

*Project 410:* The Great Ordovician Biodiversification Event.

## 7. Accomplishments and products generated in 1998

a. The GSSP for the base of the Darriwilian Stage at Huangnitang, China was published in *Episodes*, v. 20., no. 3.

b. A rather elaborate monument for the GSSP for the base of the Darriwilian Stage was dedicated at Huangnitang on September 20, 1998 during a post-meeting field excursion associated with a meeting of IGCP 410 held in Nanjing.

c. Roger Cooper and Godfrey Nowlan, Chair and Secretary, respectively, of the Cambrian-Ordovician Boundary Working Group reported the results of the postal ballot to approve the choice of the Green Point Section as the global stratotype section and point (GSSP) for the base of the

Ordovician System. The vote was 9 approving, 3 disapproving, and 1 no response. The boundary would be placed at the first appearance of the conodont *Iapetognathus* n. sp. 1. A paper describing the new species of *Iapetognathus* is in final revision. Once the paper is in press, a submission will be made to the Ordovician Subcommittee.

d. An informal business meeting of the Subcommittee was held on the evening of June 22, 1998 during the Sixth International Conference of the Graptolite Working Group of the International Palaeontological Association. The goals of the Subcommittee were reviewed for 35 participants of the graptolite conference, including 6 titular members, in attendance. Several papers dealing with Ordovician biostratigraphy and especially relevant to the activities of the Subcommittee were presented. Associated field excursions provided opportunities for examining Ordovician graptolite successions in central and southwestern Spain.

e. Considerable progress was made evaluating candidate stratotype sections for the base of the *N. gracilis* graptolite zone (= base of Upper Ordovician Series). With support from the National Geographic Society and the Chinese Academy of Sciences, Stan Finney, Stig Bergström, Chen Xu, and Wang Zhi-hao investigated the section at Pingliang, Gansu Province, China in September 1998. In Nanjing, they also studied extensive graptolite collections from the candidate section at Dawangou, Xinjiang Province.

f. A meeting of IGCP 410 (the Great Ordovician Biodiversification Event) in Nanjing, 16-18 September, 1998, provided the opportunity for more than 30 Ordovician paleontologists to present papers, some of which addressed candidate stratotype sections.

g. In 1998 a 57-page issue of *Ordovician News*, No. 15, was published. It was edited by S. Henry Williams.

h. A Friends of the Ordovician meeting was held on October 27, 1998 at the Annual Meeting of the Geological Society of America in Toronto, Canada. More than 40 Friends, including 5 titular members, attended. Stan Finney reported on 1998 activities of the Subcommittee.

i. Dr. Guillermo L. Albanesi has been appointed as Acting Secretary of the Subcommittee to serve in place of S. Henry Williams.

### **8. Problems encountered in 1998**

S. Henry Williams has resigned as Subcommittee Secretary, and considerable time passed before Guillermo Albanesi was appointed Acting Secretary. A planned review of Corresponding membership was delayed as a result.

### **9. Work plan for 1999**

a. *Ordovician News*, No. 16, will be assembled by Guillermo Albanesi and published in the Spring 1999.

b. A formal postal ballot will be taken on two candidate stratotype sections (the Ledge Section in Newfoundland and the Diabasbrottet Section in Sweden) for the base of the *T. approximatus* graptolite Zone (the base of the second global subdivision of the Ordovician).

c. The 8th International Symposium on the Ordovician System will be held in Prague, Czech Republic, 21-25 June, 1999. It will be coordinated with and followed by the Barrande Conference on 26 June, and it will include pre- and post-symposium field excursions to Morocco, Germany and Poland, and the Barrandian area. The meeting

will provide many opportunities for open discussions on candidate stratotype sections and biohorizons and for meetings of titular members at which membership will be evaluated and a new secretary formally appointed.

d. The Cambrian-Ordovician boundary GSSP submission will be published in *Ordovician News*, No. 16 and discussed at length at the 8th ISOS. A formal vote by the Ordovician Subcommittee will be taken immediately after the Prague Symposium on approval of the Green Point GSSP for the base of the Ordovician System. If approved, it will be submitted to the ICS in late summer 1999.

e. Assuming that adequate progress is made by Prague and adequate discussion takes place at the symposium, a formal vote by the Ordovician Subcommittee will be taken immediately after the Prague Symposium on approval of the Whiterock Canyon GSSP for the base of the Middle Ordovician System.

f. Calera, Alabama (USA) and Fågelsång, Sweden, will be revisited in January and April, 1999, respectively, for final evaluation as candidate stratotype sections for the base of the *Nemagraptus gracilis* Zone (= base of Upper Ordovician Series).

g. The research committee of the GOES Program will identify and encourage research projects consistent with the program, and will plan dedicated sessions for meetings in 1999 of the Geological Society of America and the 8th International Symposium on the Ordovician System.

h. The Corresponding Membership of the Subcommittee will be reviewed.

### **10. Anticipated work plan for 1997-2000**

a. The Executive will continue to focus on defining boundary stratotypes for

all Stage and Series subdivisions of the Ordovician System. Considerable progress is planned for 1998 and 1999. Goals for formal ballots by the Subcommittee are early 1999 for the base of the *approximatus* Zone, late 1999 for the base of the *laevis* Zone, and early 2000 for the base of the *gracilis* Zone.

b. The Subcommittee will sponsor a symposium titled "Paleontological, stratigraphical, and paleogeographical relations among South America, Laurentia, Avalonia, and Baltica during the Ordovician" at the 31st International Geological Congress in Brazil, 6-17 August, 2000.

## 11. Potential funding sources outside IUGS

The Subcommittee has no regular funding sources outside IUGS. Individual members of the executive, Voting Members and Corresponding Members must find their own financial support to carry out their research activities on boundary stratotypes and to attend various meetings (GSA-Friends of Ordovician, 8th ISOS-Prague).

## INTERNATIONAL SYMPOSIA AND CONFERENCES

8<sup>TH</sup> INTERNATIONAL SYMPOSIUM ON THE ORDOVICIAN SYSTEM TO BE HELD IN PRAGUE, CZECH REPUBLIC, JUNE 21-25, 1999

### List of submitted papers

#### *Quo vadis Ordovician?*

**ACHAB AÏCHA, ASSELIN ESTHER, LIANG BO:** «CHITINOS»- A client-server microfossil image- and data-acquisition systém

**ALBANESI GUILLERMO L., ORTEGA GLADYS, BARNES CHRISTOPHER R., HÜNICKEN MARIO A.:** Conodont-graptolite biostratigraphy of the Gualcamayo Formation (Middle Ordovician) in the Gualcamayo-Guandacol rivers area, Argentina Precordillera

**ASTINI RICARDO A.:** The Late Ordovician glaciation in the Proto-Andean margin of Gondwana revisited: geodynamic implications

**ASTINI RICARDO A.:** Sedimentological constrains on the Middle-Upper Ordovician Extension in the exotic to Gondwana Precordillera Terrane

**ASTINI RICARDO A.:** Sedimentary record, vulcano-tectonic cyclicity and progressive emergence of an Early Ordovician perigondwanan volcanic arc: the Famatina System

**BARNES CHRISTOPHER R., ZHANG SHUNXIN:** Pattern of conodont extinction and recovery across the Ordovician-Silurian boundary interval

**BERGSTRÖM STIG M., FINNEY STANLEY C., CHEN XU, WANG ZHI-HAO:** The Dawangou Section, Tarim Basin (Xinjiang Province), China: Potential as global stratotype for the base of the *Nemagraptus gracilis* Biozone and the base of the global Upper Ordovician Series

**BERRY WILLIAM B.N., FINNEY STANLEY C.:** New Insights into Late Ordovician graptolite extinctions

**BOGOLEPOVA OLGA K.:** Ordovician cephalopods and lingulate brachiopods from the Southern Alps: remarks on palaeogeography

**BOTTING JOSEPH P.:** The ecological effects of volcanic ash-fall in the marine Ordovician of Central Wales

**BOTTING JOSEPH P., THOMAS ALAN T.:** A pseudoplanktonic inarticulate brachiopod attached to graptolites and algae

- BRENCHLEY PAT J., MARSHALL JIM D.:** Relative timing of critical events during the late Ordovician mass extinction.
- BRUSSA EDSSEL D., MITCHELL CHARLES E., ASTINI RICARDO A.:** Ashgillian (Hirnantian?) graptolites from the western boundary of the Argentine Precordillera
- BUDIL PETR:** Some comments on the genus *Ormathops* DELO from the Bohemian Ordovician
- CARRERA MARCELO G., SÁNCHEZ TERESA M., BENEDETTO JUAN L.:** Paleo-environmental controls on biofacies in the early Ordovician limestones of the Argentine Precordillera
- CHEN XU, RONG JIA-YU, C. E. MITCHELL, D. A. T. HARPER, FAN JUN-XUAN, ZHANG YUAN-DONG, ZHAN REN-BIN, WANG ZHI-HAO, WANG ZHONG-ZHE, WANG YI:** Stratigraphy of the Hirnantian Substage from Wangjiawan, Yichang, W. Hubei and Honghuayuan, Tongzi, N. Guizhou, China
- CHRISTIANSEN JØRGEN L., STOUGE SVEND:** Using palaeo-oceanographical modelling in reconstructing Early Ordovician palaeogeography
- COCKS L. R. M.:** Ordovician geography of South-east Asia
- COOPER JOHN D.:** Depositional and Sequence Stratigraphic Framework of Upper Ordovician Platform to Basin Sections, Central Nevada, USA
- COOPER ROGER A.:** The Ordovician time scale - calibration of graptolite and conodont zones
- COOPER ROGER A.:** Graptolites and the great Ordovician biodiversification event
- COOPER ROGER A., NOWLAN GODFREY S.:** Proposed global stratotype section and point for base of the Ordovician System
- COPPER PAUL:** Brachiopod extinction and recovery at the Ordovician / Silurian boundary, Anticosti, E Canada
- DORNING KEN J.:** Ordovician acritarch biohorizons, palaeoenvironmental interpretation and event stratigraphy
- DRONOV ANDREI, HOLMER LARS E.:** Depositional sequences in the Ordovician of Baltoscandia
- DROSER MARY L., LI XING, JOHNS RONALD, SHEEHAN PETER:** The Ordovician Radiation: Evidence from Carbonate Biofabrics of the Great Basin, western USA
- EBBESTAD JAN OVE R., HÖGSTRÖM ANETTE E.S.:** Gastropods and machaeridians of the Baltic late Ordovician
- EGENHOFF SVEN, MALETZ JÖRG, ERDTMANN BERND-D.:** Upper Ordovician basin evolution in southern Bolivia
- EGERQUIST EVA:** Early Ordovician (Billingen-Volkhov stages) Brachiopod Faunas in the East Baltic
- ELIAS ROBERT J., YOUNG GRAHAM A., NOWLAN GODFREY S., DOBRZANSKI EDWARD P., RUDKIN DAVID M.:** Ordovician-Silurian boundary section discovered near Churchill, Manitoba: preliminary report
- ERDTMANN BERND-D., SUAREZ-SORUCO RAMIRO:** The Ordovician Tectono-stratigraphy of Bolivia
- ESTEBAN SUSANA B.:** Cyclopygid trilobites and associated facies from the Ordovician of the Famatina Basin (Northwestern Argentina): Paleogeographic and evolutionary implications
- FEDOROV PETR V.:** A new type of organic mud mound from the Lower Ordovician of the East Baltic
- FINNEY STANLEY C., BERGSTRÖM STIG M., CHEN XU, WANG ZHI-HAO:** The Pingliang section, Gansu Province, China: Potential as global stratotype for

- the base of the *Nemagraptus gracilis* Biozone and the base of the global Upper Ordovician
- FINNEY STANLEY C., BERRY WILLIAM B. N.:** Late Ordovician graptolite extinction: the record from continental margin sections in central Nevada, USA
- FORTEY RICHARD A.:** Olenid trilobites as chemoautotrophic symbionts
- FOSTER CLINTON B., WINCHESTER-SEETO THERESA M., O'LEARY TERESA:** Preliminary study of the environmental significance of Middle Ordovician (Darriwilian) acid resistant microfossils from the Canning Basin, Western Australia
- FRYDA JIŮÍ, ROHR D. M.:** Taxonomy and Paleobiogeography of the Ordovician Clisospiridae and Onychochilidae (Mollusca)
- GAINES ROBERT R., DROSER MARY L, HUGHES NIGEL C.:** The Ichnological Record in Ordovician Mudstones: Examples from the Cincinnati strata of Ohio and Kentucky (U.S.A.)
- GUBANOV ALEXANDER P., BOGOLEPOVA OLGA K.:** Minute fossils from the Ordovician Uggwa Limestone of the Austrian Carnic Alps
- GUBANOV ALEXANDER P., EBBESTAD JAN OVE R., BOGOLEPOVA OLGA K.:** Microcommunity of the Boda Limestone (Upper Ordovician, Sweden)
- HARPER DAVID A.T., RONG JIA-YU, SHEEHAN PETER:** Ordovician diversity patterns in early rhynchonelliform (protorthide, orthide and strophomenide) brachiopods
- HARPER DAVID A.T., RONG JIA-YU, ZHAN REN-BIN:** Late Ordovician development of deep-water brachiopod faunas
- HEUSE Thomas:** New biostratigraphical and biofacial aspects of the Ordovician of Saxo-Thuringia, Germany
- HINTS OLLE:** Ordovician scolecodonts of the East Baltic and surrounding areas – an overview
- HORNÝ RADVAN J.:** Gastropod, paragastropod and tergomyan biostratigraphy of the Ordovician of Bohemia
- HUFF WARREN D., MÜFTÜOĞLU ELIF, KOLATA DENNIS R., BERGSTRÖM STIG M.:** K bentonite bed preservation and its event stratigraphic significance
- JIN JISUO:** Evolution and extinction of the Late Ordovician epicontinental brachiopod fauna of North America
- KALJO DIMITRI, HINTS LINDA, HINTS OLLE, MARTMA TONU, NOLVAK JAAK:** Carbon isotope excursions and coeval biotic-environmental changes in the late Caradoc and Ashgill of Estonia
- KENRICK PAUL, KVAÈEK ZLATKO, BENGTON STEFAN:** Putative Ordovician land plants from central Bohemia reinterpreted as animals
- KOREN TATJANA N., SOBOLEVSKAYA RIMMA F.:** Facies and faunal diversity across the Ordovician-Silurian boundary in the Asian part of Russia and adjacent territories
- KRSTIC B., MASLAREVIC LJUBINKA, ERCEGOVAC M., ZAJIC SLAVICA:** Ordovician of the East - Serbian South Carpathians
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- METTE WOLFGANG, SERVAIS THOMAS:** The messauoudensis-trifidum acritarch assemblage (late Tremadoc-early Arenig) from the Barriga Shales (Sierra Morena, SW-Spain)
- MIKULÁ RADEK:** Ordovician of the Barrandian area: development of ichno-assemblages
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- MOLYNEUX STEWART G.:** Acritarch biostratigraphy of the Skiddaw Group (Tremadoc-Llanvirn), NW England
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- NEUMAN ROBERT B.:** Arenig-early Llanvirn age Celtic brachiopod assemblage reaffirmed
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- PERCIVAL IAN G., ENGELBRETSSEN MICHAEL J., BROCK GLENN A.:** Distribution of Middle to Late Ordovician lingulate brachiopods in New South Wales
- PERCIVAL IAN G., WEBBY BARRY D.:** Ordovician biodiversity profiles in eastern Australia
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- POUSSART PASCALE F., WEAVER ANDREW J., BARNES CHRISTOPHER R.:** Late Ordovician Glaciation and High Atmospheric CO<sub>2</sub>: Addressing an Apparent Paradox via a Coupled Model Approach
- PUURA IVAR, VIIRA VIIVE:** Chronostratigraphy of the Cambrian-Ordovician boundary beds in Baltoscandia
- RAUMER VON JÜRGEN, STAMPFLI GÉRARD:** The peri-Gondwanan organization of pre-Variscan areas during the Ordovician
- RUBINSTEIN CLAUDIA V., TORO BLANCA A.:** Acritarch and graptolite biostratigraphy in the lower Arenig of the peri-Gondwana related Eastern Cordillera, Argentina.
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- SAMUELSSON JOAKIM:** Ordovician Chitinozoa from Rügen, North-East Germany
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- SÁNCHEZ TERESA M., CARRERA MARCELO G., WAISFELD BEATRIZ G.:** Ordovician faunal turnover in the Argentine Precordillera
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- SOUFIANE AZZEDINE, ACHAB AÏCHA, ASSELIN ESTHER:** Late Ordovician chitinozoans from Laurentia
- SPRINKLE JAMES GUENSBURG, THOMAS E., ROZHN OV SERGEI V.:** Correlation Anomaly Shown by Ordovician Shelly and Trace Fossils in Baltic Russia: Redating the Ordovician Radiation

- STEEMANS P.:** Cryptospores and spores from the Ordovician to the Llandovery. A review
- STEHL JÖRN, ERDTMANN BERND-D., EGENHOFF SVEN, MALETZ JÖRG:** A new view on some Upper Ordovician strata in Västergötland, Sweden
- STURESSON ULF, HOLMER LARS E., FELITSYN SERGEI, POPOV LEONID:** Neodymium isotope composition of Early Paleozoic biogenic apatite from Baltoscandia
- SU WENBO:** Sea-level changes, fauna responses and their global correlation: Ordovician sequence stratigraphy at the southeastern margin of the upper Yangtze platform, China
- SU WENBO:** The SMST and its superface subjacent to the Ordovician-Silurian boundary: sequence stratigraphy attribute of the glacial eustatic lowering deposits and its significance
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9<sup>TH</sup> INTERNATIONAL SYMPOSIUM ON THE ORDOVICIAN SYSTEM, 2003

### Call for proposals

Ordovician symposia were held in Brest, France (1971), Birmingham, United Kingdom (1974), Columbus, Ohio (1977), Oslo, Norway (1982), St. John's, Newfoundland (1988), Sydney, Australia

(1991) and Las Vegas, Nevada (1995). The 8<sup>th</sup> ISOS will be held in Prague, Czech Republic in June, 1999. Where will the 9<sup>th</sup> ISOS be held? Who will host it? This is a call for proposals. Those who are interested are encouraged to present a proposal at Prague. Give some thought to location, facilities, accommodations, accessibility, field trips, and publications. Also contact Subcommittee Chair Stan Finney for advice on developing proposal.

### **Bibliographic comment and invitation**

The very recent book edited by Bob Pankhurst and Carlos Rapela by the Geological Society of London (Special Publication 142) is a nice state of the art to the knowledge on the geology and evolution of the Proto-Andean margin of Gondwana in southern South America. A new book edited by Victor Ramos and Duncan Keppie (by the Geological Society of America Special Paper 339) is also about to come out on "Gondwana Laurentia interactions". Both books show, regarding the Argentine Precordillera and surrounding regions, that the topic on the origin and amalgamation of this continental margin is still very controversial and merits a lot more research.

Its fascinating Ordovician history nevertheless, will be at hand to all Ordovician workers if, at the next ISOS in Prague, Argentina is selected as the next ISOS host and come to share the knowledge of our intriguing Ordovician basins with us. A formal proposal was already commented in the Friends of the Ordovician Meeting held at the 1997 GSA Annual Meeting at Salt Lake City and a new proposal will be submitted for your consideration in Prague. We hope that all friends of the Ordovician are willing to consider Argentina as the host of the next meeting, a unique place to test

Laurentia-Gondwana interactions. We look forward to suggestions.

RICARDO A. ASTINI

### **4<sup>TH</sup> BALTIC STRATIGRAPHICAL CONFERENCE, RIGA, LATVIA, 1999**

The upcoming conference of the Baltic Stratigraphical Association will be held in Riga, Latvia 27-30 September 1999. After the conference two two-day field trips (Devonian and Quaternary) are planned. According to the first circular the main topic of the conference will be the problems and methods of modern regional stratigraphy.

LINDA HINTZ

### **3<sup>RD</sup> INTERNATIONAL CONFERENCE ON TRILOBITES AND THEIR RELATIVES, UNIVERSITY OF OXFORD, U. K., 2001**

After successful meetings in Oslo, Norway (1973), and St Catherines, Canada (1997), this meeting will be based at the University of Oxford, U. K., 2-6 April 2001. There will be four days based in Oxford, with field-trips preceding and following. The three full day formal programme will afford students of fossil arthropods an opportunity to present papers in both theme-directed and open sessions. There will be invited presentations in the thematic sessions, and contributions of research at any stage of progress are invited for all sessions. Posters will be welcome. The two main thematic sessions will be devoted to the topics "Functional morphology, mode of life and ecology" and "Biodiversity and evolutionary patterns". Papers on any aspect relevant to the conference will be considered for the day of open sessions.

The pre- and post-conference field-trips will visit the classic Palaeozoic areas of Britain including many Ordovician localities. Field guides will be provided to field-trip attendees. The pre-conference excursion (28 March - 2 April, 2001) will start in Glasgow and examine sites in Scotland and northern England, finishing at Oxford in time for the start of the formal sessions. The post-conference (7-11 April, 2001) excursion will cover Wales and the Welsh Borders, again ending in Oxford.

For further details, contact:

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ALAN OWEN

#### 7<sup>TH</sup> INTERNATIONAL GRAPTOLITE CONFERENCE, ARGENTINA, 2001

The “7<sup>th</sup> International Graptolite Conference” will be held in Argentina, September 2001. The preparation of the first circular with further details is in progress, which will be eventually delivered including a “preliminary registration form”.

The meeting is going to include two days of formal talks, a mid-conference field trip and a workshop. It is being planned to arrange one pre-conference field trip to the Cordillera Oriental and Puna (North-western Argentina), and one post-conference field trip to the Precordillera (Western Argentina), in order to visit diverse classical localities for graptolites and interesting new sections that involve the Cambrian-Ordovician boundary interval, Lower, Middle and Upper

Ordovician sequences and the Ordovician-Silurian boundary interval.

GLADYS ORTEGA

#### PROJECTS

IGCP PROJECT N° 410: THE GREAT ORDOVICIAN BIODIVERSIFICATION EVENT: IMPLICATIONS FOR GLOBAL CORRELATION AND RESOURCES

BARRY D. WEBBY

#### Aims

This globally based project was established in 1997, and is expected to continue for five years to 2001. It has as overall goal to fully appraise all known records of preserved biotas in Ordovician rocks, as a basis for comprehensively evaluating how the greatest diversification of marine life on earth took place.

Our approach to achieving this primary goal will require that we additionally undertake the following tasks:

- 1) Identify the significant global (and regional) bioevents;
- 2) Establish the onshore-offshore biofacies profiles within each latitudinal belt;
- 3) Assess, on a group-by-group basis, diversity trends for each major taxonomic group;
- 4) Find possible physical and/or chemical causes (e.g., whether they be related to changes in climate, sea level, volcanism, plate movements, etc.);
- 5) Evaluate economically significant, Ordovician organic-matter assemblages of contrasting deeper pelagic and shallow, intracratonic oil-shale deposits.

An increased awareness of the factors that may have controlled this major period of biotic diversification of life on

earth, the development of a more highly resolved Ordovician time scale, and the much fuller analyses of facies and biotal gradients (especially in the oil shale deposits), are aspects of the work that should be of benefit to society.

### **Data collection**

A web-based relational database has been established for the input of relevant biotal data (species level and above), as well as related geographical, stratigraphical and environmental information, see:

<http://www.uc.edu/~amiller/comment4.htm>

A wholly integrated stratigraphic framework has also been assembled to provide the basis for establishing a more reliable framework for global and regional correlation (Webby 1998).

### **Regional teams**

A well-defined management structure has been organized under general direction of the three Co-Leaders, Barry Webby (Australia), Mary Droser (USA) and Florentin Paris (France). Seven regional teams with invited coordinators have been proposed, for the main regions of the world: Australasia, Baltoscandia, China / Korea / Vietnam, Europe-Africa, Kazakhstan / Middle Asia / Siberia, North America and South America.

ALL persons who wish to participate in the compilation of Ordovician data from any of these regions should contact Barry Webby, Mary Droser or Florentin Paris as soon as possible to join as IGCP 410 members.

A set of guidelines for this regional team work will be sent by electronic mail to anyone who wants to participate in the work.

### **Clade teams**

Additionally, we are currently establishing independent clade teams to assess the worldwide distribution patterns of the main taxonomic groups, in time and space. Leading specialists are being approached to act as team leaders. The work will essentially complement the regional study program.

### **Networking**

Information about the activities of IGCP project no. 410 are contained in the following hard copy and electronic sources:

1) Regular updates outlining progress, details of meetings and work program are included in the Ordovician Subcommittee's Newsletter, *Ordovician News* (edited to 1998 by S. Henry Williams, Dept of Earth Sciences, Memorial University of Newfoundland, St John's NF, A1B 3X5, Canada; e-mail:

[williams@sparky2.esd.mun.ca](mailto:williams@sparky2.esd.mun.ca). This newsletter is usually published between May and July each year. Requests for back issues should be sent to Henry Williams. Guillermo Albanesi is the new Acting Secretary of the Ordovician Subcommittee and is handling the compilation and publication of the 1999 issue of *Ordovician News*. His e-mail address is: [albanesi@uvic.ca](mailto:albanesi@uvic.ca)

2) In June 1998, in order to widen interest and scope for our work program, we published the first issue of IGCP project no. 410, Newsletter No. 1 - copies are available on request from Barry Webby. Newsletter No. 2 will be published in May 1999.

3) We also provide to those participating in the project regular updates of information by electronic mail. Currently about 150 members are sent these circulars.

4) The Web site at Macquarie University is as follows:

<http://www.es.mq.edu.au/MUCEP/igcp410.htm>

### **Linkages**

Project no. 410 is the first IGCP project to highlight, exclusively, Ordovician rocks and fossils - it aims to be fully cooperative with the Subcommission on Ordovician Stratigraphy, especially in aspects relating to the establishment of a more refined time scale.

It also has limited overlap relationships with two other IGCP projects:

- 1) Aspects of work on Late Ordovician bioevents and biodiversity shifts, with IGCP project no. 421 (Co-Leaders Raymund Feist and John Talent). Their project mainly focusses on "North Gondwanan Mid-Palaeozoic Biodynamics".
- 2) Studies of Arctic Canadian, Russian and Baltic Ordovician microvertebrates, with IGCP project no. 406 (Co-Leaders Mark V.H. Wilson and Tiiu Märss). Their project is entitled "Circum-Arctic Palaeozoic Vertebrates".

### **Meetings**

#### **1997**

The principal meeting for 1997 was held in the A.P. Karpinskii All-Russian Geological Research Institute (VSEGEI) in St Petersburg, Russia, from 10-16 August, in association with an indoor and field meeting of the Working Group on Ordovician Geology of Baltoscandia. It was attended by 49 persons from 15 countries. This inaugural IGCP no. 410 meeting provided a first opportunity to hold lengthy discussions about how the early stages of the work program should be developed.

The meeting was attended by regional coordinators from the Baltoscandian, European, North American, Kazakhstani and Australian regional teams. Despite the severe financial crisis in Russia (no salaries paid to VSEGEI scientists through the nine months prior to the meeting, and the Institute completely closed during the month of May 1997), Dr Tatjana Koren and colleagues hosted a remarkably successful meeting. A most useful 63-page volume of Abstracts was published and, with Swedish support, a most instructive 24-page Excursion Guidebook. Included in the Abstracts volume was a paper outlining the main objectives and the work program of IGCP no. 410 (Webby et al. 1997).

Three regional team meetings of the IGCP no. 410 project were also held during 1997:

- 1) North American meeting in association with the annual gathering of the "Friends of the Ordovician" at the Geological Society of America Annual Meeting, on 21 October in Salt Lake City, USA.;
- 2) European-African meeting during the APF/SGF (French Palaeontological Association/Geological Society of France) meeting on "Biostratigraphy and Palaeogeography", on 27 November in Lyon, France; and
- 3) Australasian meeting, in conjunction with the AAP (Australasian Association of Palaeontologists) conference on the "Palaeobiogeography of Australasian floras and faunas", on 9 December, at the University of Wollongong. It focussed mainly on how the Australasian Ordovician data should be collected, but the program also included 13 published abstracts specifically relevant to IGCP 410 (in Wright, 1997).

**1998**

Two meetings were scheduled as a part of the work program for 1998. The first was held in early July - a meeting associated with an international symposium entitled "Paleodiversifications: land and sea compared", at the Université Claude Bernard, Lyon 1, France. It included a number of Ordovician workers from France, United Kingdom, Belgium, Spain, Poland, Russia, USA, Argentina and Australia. An IGCP 410 workshop was held on the evening of 6 July. Ten abstracts published in the symposium volume (Gayet & Otero, 1998) specifically acknowledged IGCP project no. 410.

The second comprised a succession of activities in September 1998 – an indoor and field meeting in South Korea from 7-12 September (the indoor meeting held at the Seoul National University), and an indoor meeting and two field excursions in China from 13-23 September. The indoor meeting in China was held at the Nanjing Institute of Geology and Palaeontology, Academia Sinica, over three days (16-18 September). The field trips in China involved activities in the Yangtze Gorges area near Yichang, and in an area near Changshan and Yushan county towns (Jiangnan Belt of SE China).

In Korea a total of 22 scientists representing 7 countries participated in the meeting, and in China 42 scientists from 11 different countries attended the IGCP activities. The largest gathering of 35 participants was held in the indoor meeting at the Nanjing Institute of Geology and Palaeontology. Important volumes of abstracts and guidebooks were published in Korea (Choi and Lee 1998; Choi 1998), and in China (Rong et al., 1998; Wang 1998). We particularly acknowledge the support of Professor Duck K. Choi and colleagues in Korea, and of Professors Rong Jia-yu, Chen Xu, Wang Xiao-feng, Zhou Zi-yi and colleagues in China.

**1999**

The major IGCP 410 meeting for 1999 is to be held in association with the 8th International Symposium on the Ordovician System (ISOS) in Prague, Czech Republic, from 21-25 June, 1999. The symposium is being sponsored by IGCP 410, and will include special biodiversity and Ordovician palynology sessions. It will also have a series of workshop discussions to focus on the establishment of workable databases, and the programs of work being undertaken by the seven regional teams and the clade groups. Two pre-symposium excursions (Germany & Poland, and Morocco) and one post-symposium excursion (classic Barrandean area of the Prague Basin) have been proposed, with a particular focus on sedimentary deposits and the cooler (Mediterranean-type) biotas.

At least two IGCP-related publications are expected to result from these activities. First, extended abstracts will be published in the Charles University journal "Acta Universitatis Carolinae Geologica", and these will include most of the IGCP 410 related contributions. Secondly, a special issue of the "Review of Palaeobotany and Palynology" will be edited by Florentin Paris and Thomas Servais based on the Ordovician palynomorph papers contributed to the meeting.

For further details, contact the Organisers of the 8th ISOS at:

<http://www.natur.cuni.cz/ISOS/>

or Eva Pacesova, Correspondence Secretary, 8th ISOS, Czech Geological Survey, Geologicka 6, CZ - 15200, Praha 5, Barrandov, Czech Republic: fax +420 - 2 - 58 -18 - 748

**2000**

IGCP project no. 410 is scheduled to hold two meetings in 2000. The first will be in Orange, central New South Wales (Australia) during July, and will be

associated with five interlocking events (two IGCP meetings, three symposia and associated excursions) that will immediately follow the Australian Geological Congress in Sydney (3-7 July) - meetings of IGCP 410 and 421, the Australasian Palaeontological Convention, the 3<sup>rd</sup> International Symposium on the Silurian System and the 2nd Australasian Conodont Symposium (11-15 July). Field excursions will precede and postdate the conference activities. Details are available on the Macquarie University web site, as follows:

<http://www.es.mq.edu.au/MUCEP/auscos/auscos.htm>

The second will involve sponsorship of Session 2-7 of the Paleontology and Historical Geology symposium at the 31st International Geological Congress in Rio de Janeiro, Brazil, during August 2000. The theme for this special IGCP 410 session is: "The Great Ordovician Biodiversification Event - significance of biotal patterns in both regional and global contexts". Co-convenors are Barry Webby (Australia), Ramiro Suarez Soruco (Bolivia) and Gilberto Aceñolaza (Argentina). Abstracts are required by Sept. 1, 1999. IGC web site is: <http://www.31igc.org>

## **2001**

A major meeting is to be held at the University of California, Riverside, to present results on completion of the survey and analysis of global biodiversity patterns within the individual clade groups. A thematic volume entitled "Ordovician biodynamics: global patterns of biodiversity change" is expected to be published immediately after that meeting.

## **Acknowledgment**

The Co-Leaders of the IGCP Project No. 410 (The Great Ordovician Bio-

diversification Event) wish to acknowledge in particular the continued UNESCO and IUGS financial support granted through the Scientific Board of IGCP.

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IGCP PROJECT N° 410: THE GREAT ORDOVICIAN BIODIVERSIFICATION EVENT

**Nanjing meeting (September 1998)**

CHEN XU

An international working group has been organized by myself including Rong Jia-yu, Zhang Yuan-dong, Fan Jun-xuan, Zhan Ren-bin, Wang Zhong-zhe, Wang Zhi hao, Yin Lei-ming and Geng Liang-yu from the Chinese side and Chuck Mitchell and David Harper from abroad. The project is mainly working on the Hirnantian Substage. It is supported by the Chinese Academy of Sciences (Academia Sinica). During the past 3 years, We have re-studied 4 classic sections, the Wangjiawan and Fengxiang

sections of Yichang (deeper water facies) and the Honghuayuan, Tongzi and Ludiping, Saotao sections (nearshore shallow water facies) in the Yangtze region. Systematic and continuous collections of graptolites, brachiopods, trilobites, as well as conodont, acritarch, chitinozoan samples have been done and the results of the identification have been completed. The Carbon-Oxygen analysis has been also carried out. Recently, I worked with Chuck Mitchell in USA. We \*are also fortunate that Mike Melchin visited us and give us very good comments. The biozonation based on these field works and the indoor works has been prepared. In descending order they are:

*Parakidograptus acuminatus* Zone

*Akidograptus ascensus* Zone

*Normalograptus persculptus* Zone

Hirnantian beds

*Normalograptus ojsuensi* / *N. extraordinarius* Zone

*Paraorthograptus pacificus* Zone

*Diceratograptus mirus* Subzone

*Tangyagraptus typicus* Subzone

Un-named Subzone

*Dicellograptus complexus* Zone

*Foliomena-Nankinolithus* / *Dicellograptus complanatus* Zone

The base of the Hirnantian Substage will be coincident with the base of the *N. ojsuensis* / *N. extraordinarius* Zone and includes *N. ojsuensis* - *N. extraordinarius*, *Hirnantia*, and *N. persculptus* zones. The working group will submit reports to the Ordovician Symposium (Prague meeting) this year in June. This project also includes another joint work with Stan Finney and Stig Bergstrom on the base of the Upper Ordovician. Stan and Stig visited China last year on the Pingliang and Longxian sections of the west margin of the North China Block. Stan and Stig will continuous to work with me and my Chinese colleagues. Stan, Stig and I will submit reports at the coming Prague meeting. A related project lead by

Rong Jia-yu and also supported by the Chinese Academy of Sciences (Academia Sinica) on the O-S, F-F, and P-T mass extinction and recovery is carried out at the same time.

#### IGCP PROJECT N° 406

##### PEEP MÄNNIK

IGCP Project 406 will have its 1999 annual meeting in Riga, Latvia, in conjunction with the 4th Baltic Stratigraphic Conference (for more information about both meetings contact Ervins Luksevics, e-mail: ldm@com.latnet.lv), and in 2000 in Syktyvkar, Russia. Field-trip(s) to the Palaeozoic sections in the Subpolar Urals are planned during the Syktyvkar meeting. Preliminary registration to the Syktyvkar meeting is announced. For more information about this meeting contact Anna Antoshkina:

E-mail: Antoshkina@geo.komi.ru or Peep Männik, e-mail: mannik@gi.ee. More information about IGCP 406 is available from Palaeozoic Microvertebrates Page - <http://www.biology.ualberta.ca/wilson.hp/Palaeozoic.html> Palaeozoic News Page.

#### SCIENTIFIC REPORTS

##### LATE ORDOVICIAN CONODONTS FROM EUROPE

##### ANNALISA FERRETTI

Several Late Ordovician conodont faunas from diverse localities in Europe were reported by a joint-team (G. Bagnoli, C.R. Barnes, A. Ferretti and E. Serpagli) in the previous year.

A Late Ordovician conodont assemblage was described for the first time

from Bohemia (Ferretti, 1998). On the occasion of the Seventh International Conodont Symposium held in Europe (ECOS VII) recently taken in Italy, our interest focused also on the Late Ordovician calcareous levels exposed in Sardinia (Ferretti and Serpagli, 1998; Ferretti *et al.*, 1998 a, b, c; Leone *et al.*, 1998) and in the Italian Carnic Alps, where a new section has been sampled and preliminary studied (Bagnoli *et al.*, 1998).

Finally, an important rich conodont fauna, implying important evolutionary and taxonomic considerations was reported by Barnes *et al.* (1998) from south Wales.

a) BOHEMIA (A. Ferretti): A conodont assemblage was reported for the first time from the Late Ordovician of Bohemia (Ferretti, 1998). Two different levels of the Králov Dvur Formation (calcareous nodules below and "Perník Bed" above), both well known for their brachiopod and trilobite associations, produced poor and fragmentary conodont material, which nevertheless supports an Ashgill age. The Bohemian material includes 13 multielement species representing 11 genera, 8 of which are left in open nomenclature. The fragmentary preservation of the material and the incompleteness of many apparatuses make premature any detailed interpretation on the fauna abundance. Nevertheless, when considering the fauna as a whole, elements of *Scabbardella altipes* (Henningsmoen, 1948) and *Sagittodontina* cf. *robusta* Knüpfer, 1967 are dominant; on the contrary species such as *Icriodella* sp. are represented by very few specimens.

The fauna from the Perník Bed is more diverse than that from the calcareous nodules. It marks the appearance of relatively abundant elements of *Sagittodontina* cf. *robusta* and other species like *Plectodina* aff. *tenuis* (Branson and Mehl, 1933), mostly represented by single

elements. Furthermore, the M element of *Amorphognathus* aff. *lindstroemi* is here reported.

The Bohemian conodont fauna reported here still has strong Mediterranean affinity, bearing typical components of the Mediterranean Province. Nevertheless, genera like “*Birkfeldia*” (see point c) and *Plectodina*, common in Great Britain and in the Carnic Alps faunas and present in the studied collection with scarce elements, indicate the existence of a connection with these regions.

Closest faunal affinity appears to exist with the fauna of Southern Europe, but there are also similarities to the Anglo-Baltic area.

b) SARDINIA (A. Ferretti and E. Serpagli): Five sections were investigated both in SW and in SE Sardinia, four of which have documented the *A. ordovicicus* Zone (Ferretti and Serpagli, 1998; Ferretti *et al.*, 1998 a, b, c). The conodont fauna includes, among others, representatives of *Amorphognathus ordovicicus* Branson and Mehl, 1933; *Amorphognathus lindstroemi* (Serpagli, 1967); *Ansella* cf. *pseudorobusta* (Serpagli, 1967); *Dichodella* cf. *circumplicata* (Orchard, 1980); *Cornuodus bergstroemi* Serpagli, 1967; *Dapsilodus mutatus* (Branson and Mehl, 1933); *Hamarodus europaeus* (Serpagli, 1967); *Icriodella* cf. *superba* Rhodes, 1953; *Istorinus erectus* Knüpf, 1967; *Panderodus gracilis* (Branson and Mehl, 1933); *Plectodina* cf. *alpina* (Serpagli, 1967); *Sagittodontina robusta* Knüpf, 1967; *Scabbardella altipes* (Henningsmoen, 1948); *Hamarodus* sp., *Walliserodus* sp., ”carniodiform” element *sensu* Ferretti and Barnes, 1997. Conodonts recovered from these sections belong to the HDS (*Hamarodus europaeus* - *Dapsilodus mutatus* - *Scabbardella altipes*) biofacies of Sweet and Bergström (1984).

The conodont fauna is closely similar in composition to that reported from other areas of the cold-water Mediterranean

Province in the Late Ordovician. Nevertheless, the Sardinian fauna differs strikingly from the others in the relative proportion of the species, being dominated by elements of *Hamarodus europaeus*, *Amorphognathus* sp. and *Scabbardella altipes*. *Sagittodontina robusta* and *Istorinus erectus*, dominant in other areas supposed to be parts of the Northern Gondwana margin, are almost undetectable in Sardinia, the former being represented mostly by very rare ramiform elements and the latter by a single certain element. Furthermore, typical low-latitude species, like *Plectodina* cf. *alpina* and *Dichodella* cf. *circumplicata*, are here reported.

In spite of the structural differences, the conodont faunas of SW and SE Sardinia are similar in composition and in age. They only differ in sample productivity, the former being much higher, and in a slightly different order of abundance of the main species.

A microfacies study on the calcareous horizon exposed in the Cannamenda outcrop of SW Sardinia (Ferretti *et al.*, 1998b) offered a good example of facies control in conodont distribution with both samples packed by conodonts and completely barren ones. Five main microfacies have been recognized, two of which are the conodont productive horizons. The first one consists of a slightly dolomitized limestone which provided most of the conodont fauna. When texture is still visible, it is a wackestone to packstone bearing echinoderm fragments, trilobites and rare bryozoans. Accumulation of ostracode shells are locally present. Quartz is abundant. A second one is a wackestone-packstone which consists of dominant fragmentary echinoderms associated with bryozoans, trilobites, sponges and sponge spiculae, brachiopods, gastropods and very rare small cephalopods scattered in a micritic matrix (?bioturbation). Quartz fragments are

again common. A bryozoan-packstone and a coarse-grained encrinitic-packstone, as well as a mixed bryozoan-encrinitic packstone, revealed to be completely barren in conodonts.

A poorly preserved but peculiar conodont assemblage was reported in one section (Cea Brabetza) of SE Sardinia. The fauna contains few elements of *Drepanoistodus* cf. *suberectus* (Branson and Mehl, 1933), *Icriodina* sp. s.f. and *Oistodus venustus* s.f. Stauffer, 1935. *Dapsilodus mutatus* is abundant while *Hamarodus europaeus* is apparently absent and *Scabbardella* only possibly present. No biofacies assignment in the scheme of Sweet and Bergström (1984) is proposed, but strong similarities appear to exist with the Ashgillian conodont fauna described in the French *Calcaire de Rosan* by Paris *et al.* (1982).

c) CARNIC ALPS (G. Bagnoli, A. Ferretti and E. Serpagli): The newly investigated Valbertad section is currently under study. A well preserved, but extremely fragile, conodont fauna composed of very small individuals preliminary documented eighteen species belonging to seventeen genera (Bagnoli *et al.*, 1998). The constituent species are: *Amorphognathus ordovicicus* Branson and Mehl, 1933; *Amorphognathus lindstroemi* (Serpagli, 1967); *Acodus trigonius* s.f. (Schopf, 1966); *Ansella pseudorobusta* (Serpagli, 1967); *Cornuodus bergstroemi* Serpagli, 1967; *Dapsilodus mutatus* (Branson and Mehl, 1933); *Decoriconus minutus* (Serpagli, 1967); *Dichodella exilis* Serpagli, 1967; *Drepanoistodus suberectus* (Branson and Mehl, 1933); *Hamarodus europaeus* (Serpagli, 1967); *Nordiodus italicus* Serpagli, 1967; *Panderodus gracilis* (Branson and Mehl, 1933); *Plectodina alpina* (Serpagli, 1967); *Protopanderodus liripipus* Kennedy, Barnes and Uyeno, 1979; *Scabbardella altipes* (Henningsmoen, 1948); *Walliserodus*

*amplissimus* (Serpagli, 1967); *Icriodella* sp.; *Pseudooneotodus* sp.; "carniodiform" element *sensu* Ferretti and Barnes, 1997.

The material investigated offered possibilities of taxonomic revision on some species. *Dichodella exilis* s.f. Serpagli, 1967 was regarded as the Pa element of the apparatus reconstructed by Orchard (1980) as *Birskfeldia*. In addition, also the morphospecies *Prioniodus ethingtoni* Serpagli, 1967 was included as the Pb element. According to priority rules, this apparatus was assigned to the Genus *Dichodella* Serpagli, 1967 and *Birskfeldia* considered a junior synonym.

The composition of the conodont fauna of the Valbertad section closely matches that reported by Serpagli (1967) from M. Zermula and Rifugio Nordio. Conodonts recovered from the Valbertad section belong to the HDS (*Hamarodus europaeus*-*Dapsilodus mutatus*-*Scabbardella altipes*) biofacies of Sweet and Bergström (1984). The possible gradation to the *Amorphognathus* - *Plectodina* biofacies suggested by Sweet and Bergström (1984) is also indicated by the relative abundance of these two genera in this association.

The Valbertad material confirms the special character of the Carnic Alps conodont assemblage inside Southern Europe, being a moderate diverse fauna with typical taxa like *Nordiodus italicus*, *Acodus trigonius* s.f. and *Plectodina alpina*. Distinctive representatives of the high-latitude Mediterranean Province such as *Sagittodontina robusta* and *Istorinus erectus* are here apparently missing.

d) WALES (C.R. Barnes, A. Ferretti and E. Serpagli): A high-diversity and abundant conodont fauna, obtained from the Sholeshook Limestone that is exposed completely in a relatively recent and extensive roadcut at Whitland, south Wales, was preliminary reported by Barnes *et al.* (1998). The fauna includes over 16 000

specimens and yields more than 25 conodont species, with those representing *Amorphognathus*, *Plectodina* / *Aphelognathus* and *Eocarniodus* comprising about two-thirds of the whole fauna. *Decoriconus* and *Sagittodontina* are reported from the Anglo-Welsh area for the first time, the latter being characteristic of the high-latitude Mediterranean Province. The Whitland conodont assemblage provides a good example of the moderately high-diversity fauna of the British Province, North Atlantic Realm for the Ashgill (Bergström, 1990). This high abundance is unusual for Upper Ordovician conodont faunas from the British Isles and the preservation is moderately good allowing some significant taxonomic revisions to several taxa, such as *Dichodella circumplicata* and *Eocarniodus gracilis*.

Of particular biostratigraphic and phylogenetic importance is the occurrence of abundant representatives of *Amorphognathus*, and in particular the recovery of over 500 diagnostic "holodontiform" elements. *Amorphognathus ordovicicus* occurs here from the base of the section. In the lower third of the section, *A. superbus* is also present in low numbers. Therefore, it appears certain that the base of the Shoeshook Limestone at the Whitland section lies at or fractionally above the base of the *A. ordovicicus* Zone. *A. ventilatus* is present in moderate numbers. *A. lindstroemi* is more common in the middle-upper part of the section and shows a gradual modification of the lateral denticle which becomes more and more defined and tends to migrate posteriorly. A new type of holodontiform element bearing a main long denticle only on the inner side of the cusp, so that the oral edge appears as having a kind of bifurcation, is present in the middle part of the section. A peculiar holodontiform element with reclined cusp, similar in some ways to the M element of *A. tvaerensis*,

represents the M element of *Rhodesognathus elegans*.

From the nature of the species of *Amorphognathus* present in the fauna, the age of the Shoeshook Limestone at Whitland is considered to be basal Ashgill.

A further conodont fauna was recovered from thin and slightly calcareous beds in the overlying mudstone unit. The collection is dominated by *Phragmodus undatus* with small numbers of *Plectodina* sp. and *Belodina confluens* and indicates faunal affinities to the Midcontinent Realm.

Conodont collections were also made of the Upper Ordovician Robeston Wathen, Shoeshook (Haverfordwest) and Trewern limestones. On the basis of the recovery of *Amorphognathus ordovicicus*, it is concluded that these are of similar age to the Shoeshook Limestone at Whitland. The absence of *A. superbus* suggests that they are certainly no older and could be slightly younger.

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#### BLACK SHALES FACIES OF THE ORDOVICIAN OF THE CUYO PRECORDILLERA

SILVIO H. PERALTA

The scope of this project is the biochronologic, paleoenvironmental and related mineralization analysis of the black shales deposits of the Cuyo Precordillera (Argentina): in a first step, this study is focused on the graptolite faunas, sedimentologic features and sulphide

mineralization of the Los Azules Formation, early Caradoc in age (*N. gracilis* Zone) in the La Chilca Hill area, Central Precordillera, and of the Gualcamayo Formation, early to middle Llanvirn in age, in Western slope of the Villicum range, Eastern Precordillera. This Project was supported by San Juan University and was developed from January 1997 to December 1998; during this time one paper related to graptolite faunas of the Los Azules Formation has been published, and other dealing with stratigraphic topics, paleoenvironment and sulphide mineralization related to the Los Azules and Gualcamayo Formations is in review (XIII Argentine Geological Congress, in revision). A paper on palynologic associations of the Los Azules Formation and other on graptolite faunas of the Gualcamayo faunas are in course.

#### THE ORDOVICIAN FROM CERRO BOLA REGION, SAN RAFAEL BLOCK, MENDOZA

CARLOS CINGOLANI AND ALFREDO J. CUERDA

Recent research carried out in the Cerro Bola region, allowed the recognition of the Pavon Formation (Holmberg, 1948, nom.subst.), characterized by massive sandstones, siltstones and shales. A rich graptolite faune composed of 23 taxa (families Glossograptidae, Nemagraptidae, Dicranograptidae, Diplograptidae, Orthograptidae, Lasiograptidae and Retiolitidae) has been found in the cerro Bola-Arroyo Pavon facies. From base to top the graptolites are arranged into three assemblages:

1) *Lasiograptus costatus*, *Normalograptus* cf. *tubuliferus*, *Amplexograptus* aff. *arctus*, *Orthoretiolites* sp., *Climacograptus bicornis* and *Climacograptus tridentatus*.

- 2) *Dicranograptus ramosus ramosus*,  
*Dicranograptus nicholsoni nicholsoni*,  
*Dicranograptus ramosus* cf. *longicaulis*.  
 3\_ *Orthograptus truncatus* aff. *truncatus*,  
*Orthograptus apiculatus*, *Cryptograptus*  
*insectiformis*, *Leptograptus validus validus*,  
*Dicellograptus salopiensis*.

The species *C. bicornis* and *C. tridentatus* are present only in the lower and upper graptolite assemblages. The graptolites were described and their biostratigraphic ranges discussed. The age of the sequence is Lower Caradoc (*C. bicornis* Biozone). Now we focused to elucidate the stratigraphy, sedimentology and structural aspects of the 700 m thick sequence, in close relationship with the regional tectonic framework.

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## MISCELLANEA

### Student Paleontological Society – St. Petersburg State University, Russia

In 1998 the Student Paleontological Society (SPS) was founded at the Department of Paleontology of the St. Petersburg State University. The main task of SPS is to popularize paleontology among students graduating in geology and biology,

as well as to co-ordinate scientific activities of the undergraduate and postgraduate students studying paleontology. Most SPS members have experience in the sampling and study of the Ordovician faunas from the sections in north-west Russia. Some of them are also studying Paleobotany, Devonian and Carboniferous paleontology north-west Russia and Cretaceous vertebrates from Kazakhstan. The activities of SPS include monthly meetings dedicated to the discussion of various current problems of paleontology, review of current paleontological and geological publications. Leading scientists who work in paleontology, stratigraphy and biology give lectures to SPS members. In the future, the expansions of SPS activities presupposes field geological excursions to the Lower and Middle Paleozoic sections in the vicinity of St. Petersburg and some other parts of northwestern Russia, both for SPS members and for any interested persons. Should you or your colleagues plan the trip to St. Petersburg we would be glad to see you as our guests at SPS meetings. We would appreciate it greatly if you would give us a talk about your studies. We would be also grateful for any information concerning grants and internships for students and young scientists studying paleontology.

*For contacts:* Fax: + 7 (812) 346-11-29 (for Michael Zuykov, Chairman SPS).

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MICHAEL ZUYKOV

## Comment

Previous issues of *Ordovician News* seem to be a little light on when it comes to subjects like Ordovician tectonics and basin analysis, or even timescales. Most contributors seem to work on the palaeontological side. I would be very keen

to hear of people working on tectonics, or radiometric dating in the Ordovician.

FONS VANDENBERG

**Notice**

From the beginning of 1999 I have become the editor of *Lethaia*. Authors that wish to publish in *Lethaia* can contact me for further information or submit manuscripts to the address on my name (see below).

SVEND STOUGE

**Errata**

There are two errors in the 15th Issue of *Ordovician News*. The information "Ordovician of the Siberian Platform" was written by A. G. Yadrenkina only. The next information, "Problems related to..." was written by G. P. Abaimova and A. G. Yadrenkina together.

GALINA ABAIMOVA

**HONORARY NOTES**

In 1998 memorable dates of two outstanding Ordovician researchers were celebrated in Estonia -- Valdar Jaanusson 75 and Armin Opik 100. Some details can be found in Proceedings of the Estonian Academy of Sciences. Geology, vol. 47, p.130-131/139-140.

DIMITRI KALJO

In the Institute of Geology at San Juan University, Argentina, with deep regret we remember the death of Bruno A. J. Baldis on May 28th, 1997. As a researcher from CONICET and Professor of the Buenos Aires and San Juan Universities, he was one of the leaders on trilobite researches, as well as a major contributor on the knowledge of Early Paleozoic studies, through his long-standing and distinguished work related to stratigraphic and tectonic topics of Argentina, South America and mainly Gondwanaland. The results of such researches were published in over a hundred papers, many of such belong to pioneer studies in a number of different aspects of Stratigraphy, Paleontology and Structural Geology. Not only was Bruno a dedicated professional and an acknowledged authority on Geology, but also a big friend, a person with wide interests in culture, art, music; for this reason he enjoyed very much traveling to different countries of the world in order to know other peoples and their customs. His career was characterized by distinguished services to the discipline and he provide vital leadership to those entering the field. His long, outstanding career in Geology was acknowledged receiving the Award of the National Academy of Sciences, Argentina, in 1993. His happy, enthusiastic presence will be missed by all of us who knew him and had the pleasure and honor to work with him.

SILVIO H. PERALTA

**CURRENT RESEARCH**

ABAIMOBA, GALINA P. (Russia) is continuing her works on Ordovician conodonts of the northern part of the Siberian Platform.

ACEÑOLAZA, F. GILBERTO (Argentina) is currently working on several aspects of regional geology and tectonic evolution of NW-Argentina involving Ordovician questions. Recently, with J. C. Gutiérrez Marco, we have done a revision of the Moridunian graptolite fauna of the Famatina Range (Western Argentina), including horizontal tetragraptids (*Tetragraptus akzharensis*) as well as some reflexed-extensiform and declined didymo-graptids (*Didymograptus (Expansograptus) cf. constrictus*).

ACEÑOLAZA, GUILLERMO F. (Argentina) is currently working on faunal dynamics of the W and NW Gondwanan margin during the Ordovician. I have moved to Madrid, Spain, working under a grant from the Argentine Research Council (CONICET) with Juan Carlos Gutiérrez-Marco. I have been involved on finishing papers related to graptolites (Ordovician), trace fossils and echinoderms (Cambrian-Ordovician) from NW Argentina and Spain.

AINSAAR, LEHO (Estonia) is continuing his work on carbonate sedimentology and stable isotope geology of Caradocian (with Tõnu Meidla and Tõnu Martma) and with detailed stratigraphy and sea-level history of Arenigian in Baltoscandia (with Tõnu Meidla, Andrei Dronov and Oive Tinn).

ALBANESI, GUILLERMO L. (Argentina) is currently working on conodont taxonomy, biostratigraphy and biofacies from the Cambrian-Ordovician boundary interval in the Volcancito Formation, Famatina Range,

Argentina. These studies are being carried out at the Centre for Earth and Ocean Research, University of Victoria, Canada, as a post doctoral fellowship (CONICET, Argentina), under the supervision of C. R. Barnes and M. A. Hünicken. Studies on these new sections are being undertaken together with colleagues from Argentina (S. Esteban, G. Ortega, F. Tortello, E. Ottone) in order to analyze the associated macro and microfauna, and paleobiological events throughout the Cambrian-Ordovician boundary. Moreover, other parallel studies are being continued on Ordovician conodont-graptolite biostratigraphy from Argentina Precordillera (including a new project granted by CONICET regarding the Ordovician-Silurian boundary interval, with G. Ortega and M. A. Hünicken) and Ordovician conodonts in extended projects regarding the stratigraphy and paleontology of diverse formations from Northwestern Argentina (with colleagues from the Universities of Salta, Tucuman, Córdoba, La Plata and Buenos Aires, the Geological Survey of Argentina, Spain and France).

ALDRIDGE, DICK (United Kingdom) my main Ordovician interests lie in the Soom Shale, which I continue to work on with Sarah Gabbott and Hannes Theron. Sarah's paper on the taphonomy of the Soom biota was published this year, and she has one in press in 'Palaeontology' on the orthocones. We also published a short paper on the chitinozoans and have a paper in press in 'Lethaia' (with Simon Braddy) on a eurypterid with three-dimensionally preserved gills. In addition, I retain an interest in Ordovician conodonts, especially prionodontids (with Stephanie Barrett and Viive Viira).

ARMSTRONG, HOWARD A. (United Kingdom) is currently working on conodonts from mid- Ordovician limestone clasts in

LORS of the Midland Valley, Scotland (with Alan Owen); Arenig cherts and conodonts from the Southern Uplands (with Lu Tingqing and Jim Floyd); growth in deep water conodonts; new tectono-stratigraphic models for the British Caledonides (with Alan Owen). Just about to start a project on REE geochemistry of Ordovician cherts from the Highland Border Complex.

ASTINI, RICARDO A. (Argentina) continues working on comparative sedimentology, stratigraphy and basin analysis of the three major Argentine Ordovician sedimentary basins located along the Andes, the Argentine Precordillera, the Famatina System and the Northwestern basins, particularly Sierras Subandinas and Cordillera Oriental. The aim is to compare styles and patterns of sedimentation involving regions that have complete different histories of evolution. Regarding the Precordillera, I am focussed to the early stages of rifting from Laurentia but also actively working on the postcollisional sedimentary patterns. Particular emphasis I am making in sedimentation related to the extensional setting in the eastern tectofacies and an update of the stratigraphy of the western tectofacies. Comparisons with typical Gondwana units like those of the northwestern basins may bring new light on the different controls that were active at the time in such different environments. The Famatina System has shown to be spectacular in terms of its combined sedimentary and volcanic history. Deepening on several topics is the aim of a project just funded by the Research Council of Córdoba (CONICOR). I am also working in collaborative projects on K-bentonites and the Hirnantian glaciation along the proto-andean margin of southern South America with colleagues in the United States and UK.

BAGNOLI, GABRIELLA (Italy) is working on lower Ordovician conodont biostratigraphy and biofacies from Öland (Sweden), on upper Ordovician conodonts from the Carnic Alps (Italy), and on Ordovician chitinozoan associations from Newfoundland.

BARNES, CHRIS (Canada) continues to expand field-based Lower Paleozoic conodont and stratigraphic studies in the Canadian Cordillera. Detailed platform to basin transects have been sampled in the southern, central and northern Rocky Mountains in high alpine terrain with exceptional exposure (with Lee McKenzie McAnally and Leanne Pyle as Ph.D. students). The most recent transect, in the central Rockies, was initiated in 1998 with another field season in 1999. Jianqin Chen continues Ph.D. work in Ordovician conodonts from North and South China. Guillermo Albanesi arrived in January 1999 for a PDF primarily continuing work on Ordovician conodonts from Argentina with a focus on those near the C/O boundary. Shunxin Zhang recently completed a PDF project on Early Llandovery conodonts from Anticosti Island, Quebec as part of a continuing study of the O/S conodont extinction and the subsequent adaptive radiation. In a related project, David Jowett (M.Sc. student) completed field work in a project to study the latest Ordovician to lower Ludlow conodont faunas of the Cape Phillips Formation (slope facies), Arctic Islands. Work completed, nearing completion or in progress includes: Ashgill conodonts of the Whitland section, South Wales with Annalisa Ferretti; upper Ordovician conodonts from the Bowan Park succession, N.S.W., Australia, Geobios (1999), with Yong-yi Zheng and Barry Webby); Nd isotope work (with Cindy Wright and Stein Jacobsen, one paper in press, one in preparation); modelling the Ashgill glaciation (Paleoceanography, in

press, with Pascale Poussart and Andrew Weaver); Ordovician conodonts of Tarim Basin, China (2 papers in preparation with Zhixin Zhao); strontium isotope curve for the Ordovician and Silurian (*Geochimica Cosmochimica Acta*, 1998, Qing *et al.*); evolutionary study of *Paroistodus originalis* - *P. horridus* transition (with G. Albanesi, submitted); Arenig conodonts from the Cow Head Group, Newfoundland (with David Johnston, 2 part issue in press in *Geologica et Paleontologica*). As part of the work with the Subcommittee, contributions have been made with regard to the base of the Ordovician and to the base of the second Stage.

BARRETT, STEPHANIE (United Kingdom) is currently working on prioniodontid conodont apparatuses from the Ordovician. With well preserved collections from Estonia and Russia, I am concentrating on the apparatuses, the histology of the elements and evidence of functional morphology. If any clusters of prioniodontid elements have been recently discovered, or if any assemblages have come to light, I would be exceptionally interested, as this would obviously be pivotal information for my research.

BEHNKEN, FRED H. (U.S.A.) is working as a consultant in Midland, Texas. In addition to describing samples and doing petrographic work, I am working outcrop samples from the Mineral Wells, Texas area from the Ellenburger and have worked the conodonts from over 25 wells in the Llano, West Texas and Oklahoma area (Arbuckle, Ellenburger).

BENEDETTO, J. LUIS (Argentina). I am studying new early Ordovician silicified brachiopod faunas from the San Juan Limestone, in the Argentine Precordillera. The taxonomic study of the late Ordovician brachiopods from the La Cantera Formation

is actually in progress. I have recently completed a work on the very interesting Late Caradoc-Ashgill brachiopod fauna from the Trapiche Formation and other on the genus *Drabovinella* from the NW Argentina. Both papers were submitted to *Ameghiniana* for publication. Other studies include a description of the rich brachiopod fauna from the Arenig volcaniclastic succession of the Famatina Range and early Ordovician brachiopods from the Puna region. Other research focuses on the factors controlling the (paleo)geographical distribution of high taxa of Ordovician brachiopods. I am also working together Teresa Sánchez and collaborators in the IGCP project 410 (The Great Ordovician biodiversification Event)

BERESI, MATILDE SYLVIA (Argentina) is actively working on the biostratigraphy, microfacies and depositional paleoenvironments of Ordovician carbonate platform sequences from the San Juan and Mendoza Precordillera of western Argentina. I continue to work on Ordovician spicule sponges, sponge fauna and most recently, nautiloid associations from the Precordillera. I am working on several joint projects in these subjects with S. Heredia (Conodonts) and S. Peralta (Graptolites).

BRUSSA, EDESEL D. (Argentina) is working on Ordovician graptolites from the Precordillera basin; a review of the *Undulograptus austrodentatus* Biozone in different localities is in advance. Middle and Upper Ordovician graptolite faunas are been studied with Chuck Mitchell and Blanca Toro. I am also studying graptolites from the Puna region (FONCYT Project directed by J. Luis Benedetto) and integrating data for other FONCYT Project directed by Teresa Sánchez about the Ordovician Radiation Bioevents from Western Argentina.

BRUTON, DAVID L. (Norway) is working on early Ordovician trilobites from Iran, and have works in press dealing with trilobites from the Cambrian of the Oslo Region, Permian of Spitsbergen and the Devonian Hunsrück Slate.

CARRERA, MARCELO G. (Argentina) is actively working on biogeography and evolutionary history of Ordovician sponges. I'm also working on different aspects of the Ordovician radiations along with Teresa Sánchez and Beatriz Waisfeld in the context of the Great Ordovician Biodiversification event (GOBE) IGCP project 410. My studies also focus on taxonomy, paleoecology and paleobiogeography of the Ordovician sponges and bryozoans of the Argentine Precordillera.

CHOI, DUCK K. (Korea) is mainly working on the Cambrian-Ordovician trilobites of Korea. During the last couple of years, special attention has been given to the Lower Ordovician pandemic trilobites from the Mungog Formation to understand their paleogeographic implications (with D.H. Kim). Last year I was deeply involved in the IGCP 410 Korea Meeting which was held at 8-11 September, 1998: one-day indoor meeting at Seoul National University and three-day field trip to the Ordovician sequences of South Korea.

ETHINGTON, R. L. (U.S.A.) is working on conodonts from the Manitou Formation in Colorado, from the Au Train Formation in the Upper Peninsula of Michigan, and from the Oneota Dolomite and Blue Earth Siltstone of the Upper Mississippi Valley region. Continuing projects are concerned with the Ibexian-Whiterockian conodonts of the Great Basin, southern Oklahoma, and the Ouachita Mountains.

FERRETTI, ANNALISA (Italy) is continuing her work on Late Ordovician conodonts from some European spots. A global report with Enrico Serpagli on conodont faunas from Sardinia (Italy) is in press, as well as a paper with Chris Barnes and Enrico Serpagli with considerations on the evolution of the genus *Amorphognathus* recorded by the Whitland section (south Wales). The new Valbertad section in the Italian Carnic Alps, preliminary described in the occasion of the ECOS VII conodont meeting, will be carefully and now more quietly investigated with Gabriella Bagnoli and Enrico Serpagli.

FINNEY, STANLEY C. (U.S.A.) reports the results of a multi-disciplinary study of Late Ordovician sections in central Nevada are being published with the first key paper appearing in *Geology*. Funding is being sought to extend this research to additional sections in the Great Basin. Stan continues 1) his work mapping Ordovician to Devonian strata in mountain ranges of central Nevada, 2) his joint efforts with James Gleason on neodymium chemostratigraphy of Upper Ordovician sections in the Ouachita and Appalachian mountains, and 3) his joint efforts with George Gehrels on provenance of Ordovician quartz sandstones in Cordilleran orogen. More recently, Stan joined forces with Stig Bergstrom and Dan Goldman to re-examine the graptolite biostratigraphy of the lower Upper Ordovician in North America. Silvio Peralta will join Stan in August to October to study lower Upper Ordovician graptolites from the Ouachita Mountains and the Great Basin. Along with Stig Bergstrom and Chen Xu, Stan continues to evaluate candidate stratotype sections for the base of the *N. gracilis* Zone. Last Autumn, they visited the Pingliang section in Gansu Province, China, and in April 1999, Stan will recollect and study the classic succession at Fagelsang, Sweden.

FORDHAM, BARRY G. (Australia) continues working on mid-Paleozoic time scales and conodont biostratigraphy of the Ordovician to Lower Carboniferous of the Yarrol Province (central Queensland, Australia).

GONCUOGLU, YAKUT (Turkey) is currently working on stratigraphy and correlation in Lower Ordovician of Turkey. Some papers on conodont stratigraphy (with Dr. H. Kozur) resulting from my work in the Taurides have been submitted to European journals. I am also involved in the Lower Paleozoic projects of the Geological Survey of Turkey.

HEREDIA, SUSANA (Argentina) is actively working on Llandeilian conodonts from Sierra Pintada, Southern Mendoza and Arenig-Llanvirn conodonts from San Juan Province, Argentina.

HINTZ, LINDA (Estonia) is actively working on Ordovician faunas, mainly on brachiopods in the frame of the project "Changes of the Ordovician biotas along an onshore-offshore transect in the Baltic Palaeobasin and their biostratigraphic interpretation" (Project No 3516; 1998-2000) supported by the Estonian Science Foundation. The special goals of this project lead by me are 1) clarify the trends of biotas differentiation along the environmental gradient and analyze relations between macro- and microfaunal associations, 2) work out palaeontological criteria for identification of stratigraphical boundaries along the profiles with variable fauna and facial composition, 3) investigate spatial and temporal extent of stratigraphical gaps and evaluate their importance for ecosystem and facial models, 4) present new data on the taxonomy, palaeoecology and possible stratigraphical applicability of some up to now poorly studied faunal groups

(scolecodonts). My colleagues Jaak Nolvak, Olle Hints, Helje Parnaste and Aile Korts are involved in the project. Data on the taxonomic composition and distribution of faunas present a contribution to the IGCP Project No 410. 1998 was a last year of the project led by D. Kaljo. In the frame of this project two manuscripts are prepared together with D. Kaljo, J. Nolvak, O. Hints and T. Martma concerning the carbon isotope excursions and coeval biotic-environmental changes in the Baltic Basin.

HINTZ, OLLE (Estonia) is continuing his study on different aspects on fossil jaw-bearing polychaetes. The emphasis is currently on the Ordovician material of Baltoscandia as this is the subject of my Ph.D. thesis which will be completed in three years. I take part in two projects lead by D. Kaljo and L. Hints. Study of some aspects of organic-walled microfossils and regional stratigraphy in collaboration with J. Nolvak and M. A. Zuikov (St. Petersburg) are also in progress. Two papers on scolecodonts appeared in 1998 and some are submitted for publication, or in final stage of preparation.

JOWETT, DAVID M. S. (Canada) is working on latest Ordovician-Early Silurian conodonts from the Franklinian Miogeocline of Cornwallis Island, Arctic Islands, Canada (M.Sc., Dr. C.R. Barnes, supervisor) The fieldwork, led by Dr. M. Melchin, was completed this summer, with field support by the Polar Continental Shelf Project and the Geological Survey of Canada. The aims are to construct a high-resolution conodont bio-stratigraphy to integrate with the already well-established graptolite zones. In addition, we hope to interpret our findings in light of the Silurian ocean / climate state models, oxygen and carbon isotope excursions, and the effects of the Terminal Ordovician glaciation.

KALJO, DIMITRI (Estonia) is working together with colleagues (see publications) on the upper Ordovician stratigraphy and faunas of Estonia. My primary interests include carbon isotope event markers and rugose corals. Recent studies show that below the well-known Hirnantian carbon isotope peak (5-7 per mille) there occur 3-4 low (ca. 2 per mille) positive delta 13C excursions (middle and upper Caradoc, lower Ashgill). Some correlation with biotic and environmental changes can be traced.

KRAFT, JAROSLAV (Czech Republic) described some new dendroids from Bohemian Lower Ordovician. In cooperation with Petr Kraft he studied new material of the Lower Ordovician graptolites from Bohemia and proposed a revised biostratigraphical scheme of the Bohemian Lower-Middle Ordovician. Together with Petr Kraft, Olda Fatka and Rudolf Seidl, he described the first kiaerograptid and associated fossils from Bohemia.

KRAFT, PETR (Czech Republic) worked as an Alexander von Humboldt-Foundation Research Fellow at the Technical Univ. Berlin in Bernd Erdtmann's Berlin department. He studied new material of the Lower Ordovician graptolites from Bohemia with Jaroslav Kraft. The oldest Bohemian graptoloid was found and described with Jaroslav Kraft, Olda Fatka (associated chitinozoans) and Rudolf Seidl (private collector). Some comparable studies have been started on graptolites from Bolivia (with Bernd-D. Erdtmann) and Oslo Region (with Jorg Maletz). A revised biostratigraphical scheme of Lower-Middle Ordovician in Bohemia was proposed together with Jaroslav Kraft. A revision and some new interpretations of the oldest chatetognath is under preparation with Oliver Lehnert and Jiri Fryda.

KOZUR, HEINZ (Hungary) is working on the Ordovician of Turkey: conodonts, ostracods, Muellersphaerida, radiolarians, stratigraphy, paleogeography. He is also studying Ordovician radiolarians and conodonts world-wide.

KUGLITSCH, JEFFREY J. (U.S.A.) is interested in North American mid-continent Ordovician and early Silurian ostracodes.

LEATHAM, W. BRITT. (U.S.A.) is currently working with John Cooper on sequence stratigraphy and conodont biostratigraphy of the Tippecanoe Sequence in the southern Great Basin of Nevada and California.

LEE, DONG-JIN (Korea) is actively working on phylogeny and paleobiology of early (Ordovician) tabulates.

LEHNERT, OLIVER (Germany) is working, for the next 2 years, on Ordovician conodont biostratigraphy in the Pogonip Group and the Eureka Quartzite in Southern Nevada and Eastern California and hopes that a study of conodonts from the Ely Springs Dolomite in this region will follow. The conodonts should help to check the sequence stratigraphy in these "forgotten dolomites" of the southern Great Basin. However, I am not giving up interest in studying Cambro-Ordovician faunas from South America and their paleogeographical affinities. With colleagues and friends I am also working on aspects of some associated microfossil groups.

LESLIE, STEPHEN A. (U.S.A.) most recent research has involved the conodont biostratigraphy, sequence stratigraphy, and event stratigraphy of the Middle Ordovician Joachim Dolomite in the Ozark Region of Northern Arkansas. This project has now been expanded in stratigraphic range and

scope to incorporate the use of conodont graphic correlation in determining Mowhawkian and Cincinnati sea-level changes along the southern margin of the Ozark Dome. Other active projects include the analysis of possible K-bentonite beds in the Ordovician deep water facies of the Ouachita Mountains, the use of stable isotopes from biogenic apatites and carbonate rocks around the Deicke and Millbrig K-bentonite beds in an attempt to study the dynamics of paleoseawater of the Mohawkian epihercynian sea in Laurentia (with Chris Holmden, Univ. of Saskatchewan, and Stig Bergström, Ohio State), and continued interest in the conodont faunas of the Independence Mountains, Elko County, NV.

LÖFGREN, ANITA (Sweden) is currently working on stratigraphy and correlation in the upper Arenig of Baltoscandia. Some papers on conodont taxonomy resulting from this are being published (on "*Scolopodus*" *peselephantis*, *Semiacontiodus cornuformis* and *Cornuodus longibasis*). But I have also been busy with some other projects: together with Ray Ethington and John Repetski I have just finished a paper on "*Oneotodus*" *variabilis* and other coniform taxa with trans-Iapetus distribution in the Tremadoc, and I am also working on a paper with Tania Tolmacheva on *Paracordylodus gracilis*. Another very interesting project is continued work on the Mäekalda section in Estonia with Viive Viira.

MÄNNIK, PEEP (Estonia) is actively working on the evolution, ecology and taxonomy of Ordovician and Silurian conodonts from Baltic, Arctic regions and Siberia, and on the conodont-based high-resolution stratigraphy. Joint studies of the distribution of conodonts and graptolites in Baltic are going on together with Dr. D. Loydell from Portsmouth, U.K. Since the beginning of

1998 I am acting as a co-leader of the IGCP Project 406 "Circum-Arctic Lower and Middle Palaeozoic Vertebrate Palaeontology and Biostratigraphy".

MÁNGANO, MARIA G. (Argentina) is working on sedimentology and ichnology of Ordovician marine clastic successions of northwest Argentina. I am particularly interested in ichnofacies models of tide-dominated shallow marine deposits, the implications of tidal-flat ichnofaunas in evolutionary paleoecology, and volcanoclastic facies and depositional evolution of the Famatina Basin.

MEIDLA, TÕNU (Estonia) is continuing his studies on the Ordovician of Baltoscandia and on taxonomy and distribution of the Ordovician ostracodes. The activities are divided between late Ordovician (ostracodes, glaciation event and chemostratigraphy, together with J. Marshall and P. Brenchley), mid-Caradoc (oceanographic event and related aspects in Baltoscandia, together with L. Ainsaar, L. Hints, O. Hints, T. Martma, J. Nõlvak) and Billingenian - Volkhovian (ostracodes stratigraphy, facies and sea level in Baltoscandia, together with L. Ainsaar, A. Dronov and O. Tinn).

MIKULÁ, (MIKULAS) RADEK (Czech Republic) is working on ichnological evaluation of the Ordovician in the Barrandian area (Czech Republic).

NOLVAK, JAAK (Estonia) is actively working on Ordovician chitinozoans and biostratigraphy from the Baltoscandian sections with my Estonian colleagues and our co-operation with Yngve Grahn and Florentin Paris continues. Current research concerns also the study of one Polish section in co-operation with Zdzislaw Modlinski.

NOWLAN, GODFREY S. (Canada) is actively working on a number of projects: 1, Conodonts from the Cambro-Ordovician Deadwood Formation in Alberta, Saskatchewan and North Dakota; 2, Conodont biostratigraphy and isotope stratigraphy (with C. Holmden, University of Saskatchewan) from the middle to late Ordovician and Early Silurian of the Williston Basin and Hudson Bay Basin of cratonic North America; 3, Conodont biostratigraphy of the Ordovician Glenogle Formation of British Columbia; 4, As Secretary of the Cambro-Ordovician Boundary Working Group, I am working on the final draft of the proposal of the GSSP for the base of the Ordovician at Green Point Newfoundland (with Roger Cooper); 5, Continuing biostratigraphic service work on Cambrian, Ordovician and Silurian conodonts from all parts Canada.

ORTEGA, GLADYS (Argentina) is involved in diverse projects regarding graptolite taxonomy, biostratigraphy and paleobiogeography from Ordovician-Silurian strata of the Argentina Precordillera (particularly, in a new project on high resolution conodont-graptolite biostratigraphy together with G.L. Albanesi, M.A. Hünicken and C.R. Barnes). New advances were made on the Lower Ordovician graptolite biostratigraphy of the Cordillera Oriental, and the Famatina Range, Northwestern Argentina, by means of two recently accomplished projects granted by CONICET and CONICOR which participated several Argentina workers (on diverse paleontological groups) from different Argentine Universities. Some other graptolite related works are being carried out with colleagues from Spain and France.

PALSSON, CHRISTIAN (Sweden) is currently working on Middle and Upper Ordovician graptolites and biostratigraphy in Sweden.

At present, I am focusing on the *P. linearis* Zone in a drill-core from central Scania, southern Sweden.

PERALTA, SILVIO H. (Argentina) is currently working on upper Ordovician marine sequences (*N. gracilis* Zone) from Western Argentina Precordillera, San Juan Province. From a biostratigraphical point of view, this study involves mainly graptolite faunas of the Los Azules Black Shales (Central Precordillera) and of the Alcaparrosa Formation (Western Precordillera); likewise, the siliciclastic deposits of the La Cantera Formation and carbonate and mixed carbonate-siliciclastic deposits of the Las Aguaditas Formation. Paleoenvironmental and tectonosedimentary evolution of the upper Ordovician basin of Precordillera are considered in such studies. Moreover, I'm working on early Ordovician carbonate and mixed carbonate-siliciclastic sequences of the Gualcamayo Formation and its correlatives which bear graptolites and/or conodont faunas, associated with several other forms such as trilobites, brachiopods, sponges, bryozoans, and palynomorphs. In this case, conodont studies are being carried out by Susana Heredia (Comahue University, Neuquen Province), microfacies by Matilde Beresi (CONICET-CRICYT, Mendoza Province), and palynomorphs (acritarchs and chitinozoan) by Elba Diana Pothe de Baldis (Institute of Geology - San Juan University).

IAN PERCIVAL (Australia) is now doing more conodont research than studying brachiopods and molluscs, although the latter are not being neglected. Two short papers have just been published (in Quarterly Notes of the Geological Survey of New South Wales, 1999), illustrating Ordovician conodonts from the northern Lachlan Fold Belt in central NSW, while a paper (with co-authors Y. Zhen, R. Nicoll, B. Webby, A. Hamedi, and I. Stewart)

describing *Appalachignathus*, *Bergstroemognathus*, and *Rhipidognathus* from Australia and Iran is about to be submitted. Work continues on a manuscript (with Zhen and Webby) on Early Ordovician conodonts from the Hensleigh Formation of NSW. I am also studying conodont assemblages of latest Cambrian - early Ordovician age from far-western NSW in order to establish a biostratigraphic framework for this poorly-known region. Invertebrate faunas from Middle and Late Ordovician strata across the Lachlan Fold Belt are being prepared for publication with collaborators B. Webby and J. Pickett in one instance, and M. Engelbretsen and G. Brock of Macquarie University working with me describing lingulate, acrotretide and discinide brachiopods in another project. I am actively involved in the IGCP 410 project, and attended the Korea and South China meetings in September 1998.

PYLE, LEANNE (Canada) is currently working on my thesis entitled "Upper Cambrian to Lower Silurian Stratigraphy and Conodont Biostratigraphy and Paleocology of Platform to Basin Facies, Northern British Columbia" as a Ph.D. candidate under the supervision of Dr. C. R. Barnes.

RONG JIA-YU (China) and his colleagues are working on three subject: 1. Proposal of A GSSP candidate section in the Yangtze Platform region, South China, for a new Hirnantian boundary stratotype with Chen Xu, David Harper, and Chuck Mitchell. 2. Study of the Late Ordovician brachiopod succession with a special references to the *Foliomena* Fauna. A paper on The Late Ordovician (Caradoc-Ashgill) brachiopod faunas with *Foliomena* based on data from China was submitted to *Palaios* in 1998. It was completed by Rong Jia-yu, Zhan Renbin and Dave Harper. 3. Study of the survival and recovery of the early Silurian

brachiopod in South China by Rong Jia-yu and D. A. T. Harper.

RÕMUSOKS, ARVO (Estonia) is currently involved in studies on the chasmopine trilobites and strophomenides of the Ordovician of northern Estonia.

RUBINSTEIN, CLAUDIA V. (Argentina) is currently investigating acritarch and chitinozoan biostratigraphy and paleogeography in the upper Tremadoc-Arenig of the Cordillera Oriental, northwestern Argentina, in collaboration with Blanca Toro from Córdoba, Argentina (graptolites) and Beatriz Waisfeld from Buenos Aires, Argentina (trilobites).

SALAS, MARÍA J. (Argentina) is working on her Ph.D. thesis about the taxonomic, biostratigraphic and paleogeographic aspects of the Ordovician ostracode faunas from the Precordillera basin, western Argentine.

SÁNCHEZ, TERESA M. (Argentina) continues working on Ordovician bivalves from western Argentina. I also continue research on biodiversification patterns of Ordovician associations from western Argentina (with Beatriz Waisfeld, Marcelo Carrera, Juan L. Benedetto), as a part of the IGCP Project 410 (The Great Ordovician Biodiversification Event). Short papers summarising some aspects of the current research (environmental control on biofacies, and faunal turnover) have been submitted to the 8th ISOS and should be available in Prague, in June.

SANSOM, IVAN J. (United Kingdom) is currently writing up a number of pieces of work relating to research into the palaeobiology, palaeoecology and stratigraphic occurrence of Cambro-Ordovician fish, in collaboration with Paul Smith (Birmingham UK) and Moya Smith

(UMDS, London). These include detailed studies of Ordovician ichthyolith remains from the Harding Sandstone and related facies in the western USA. This work is currently being expanded to study the patterns of fish evolution across the Ordovician-Silurian boundary.

SZANIAWSKI, HUBERT (Poland) is working on the early evolution of conodonts and protoconodonts, especially Late Cambrian and Early Ordovician.

SARMIENTO, GRACIELA N. (Spain) is actively working on Ordovician conodonts from the Iberian Peninsula, Morocco and Turkey.

SERPAGLI, ENRICO (Italy) together with other projects, is continuing his biostratigraphic work on Late Ordovician conodonts, mostly from Sardinia and the Carnic Aps.

SMITH, PAUL (United Kingdom) is working on the Ordovician of Greenland and Svalbard and on the phylogeny and palaeobiology of Ordovician vertebrates

STOUGE, SVEND (Denmark) is currently working with the Lower to Lower Upper Ordovician conodont succession from the east Baltic region in collaboration with colleagues from Estonia and Russia. The conodont work on Lower Ordovician conodonts from Sweden and in collaboration with G. Bagnoli is still in progress. I am also working on the Cambro-Ordovician successions in North Greenland .

SYCHEV, OLEG V. (Russia) is actively working on the Ordovician lithology and facies of the Siberian Platform. Lithofacies maps and paleoenvironment reconstruction have been accomplished for five stratigraphic levels of Early Ordovician. At present I am

engaged in the description of the Ordovician reference sections of the northern Siberian Platform.

TERENTIEV, SERGEY S. (Russia) is working on the morphology, paleoecology and distribution of Middle Ordovician echinoderms from north-west Russia. Current work is with Michael Zuykov on the early Caradoc faunal association of the East Baltic.

TINN, OIVE (Estonia) is currently working on Arenigian ostracodes of Baltoscandia.

TORO, BLANCA A. (Argentina) continues working on taxonomic, biostratigraphic and paleogeographic aspects of graptolite faunas from northwestern Argentina. Graptolite data belonging to Famatina Range and Eastern Cordillera are integrated in FONCYT Project directed by J. Luis Benedetto.

TORTELLO, M. FRANCO (Argentina) is actively working on systematics and biostratigraphy of Uppermost Cambrian-Lower Ordovician trilobites of northwestern Argentina. A manuscript (with S. B. Esteban) on trilobites and graptolites from the Cambrian-Ordovician transition in the Volcancito Formation (Famatina System, La Rioja Province) was submitted. A short paper on the occurrence of the genus *Psilocara* (Trilobita, Olenidae) in the Lower Arenig of the Parcha Formation (Eastern Cordillera, Salta Province) is ready for publication. Other projects on Tremadoc faunas from Eastern Cordillera are in progress.

VANDENBERG, FONS (Australia) is currently engaged in writing two comprehensive reviews of the Ordovician of southeastern Australia, one for the forthcoming edition of "Geology of Victoria" (to be published in

2000) that concentrates on stratigraphy, depositional environments and basin analysis. This is co authored by Chris Fergusson. The other will be published in a book provisionally titled "Tasman Fold Belt in Victoria" and also considers the broader tectonic aspects of SE Australia in the lower Palaeozoic. It is to be published this year.

VIIRA, VIIVE (Estonia) is still working on Ordovician and Silurian conodonts. Research on Ordovician conodonts currently include 1) study of Maekalda section (Arenig-Llanvirn) together with Anita Löfgren, 2) Biostratigraphy of Cambrian-Ordovician boundary beds with Ivar Puura, 3) Paper with Stephanie Barrett on conodonts of Kohtla oil shale section (Caradoc) is nearing completion.

VILLAS, ENRIQUE (Spain) is presently working on the brachiopods of Tremadoc age from Vogtendorf Formation in Germany, with Wolfgang Hammann and Klaus Szdzy, who are studying the trilobites and echinoderms. I am also preparing a paper on the Ashgill brachiopod *Foliomena* Fauna from Sardinia (Italy) along with Wolfgang Hammann and David A.T. Harper. I have started a close cooperation with the Argentine Guillermo Aceñolaza, Guillermo Albanesi, Zarela Herrera, Gladys Ortega and Franco Tortello, to study the Lower Ordovician successions from the Cordillera Oriental Argentina. At present I am studying a Tremadoc brachiopod collection of the area stored at the Museo de Paleontología of the Universidad Nacional de Córdoba (Argentina).

WAISFELD, BEATRIZ G. (Argentina) is currently working on Ordovician trilobite dominated association from North-western Argentina. Studies on Ordovician radiation go on along with Teresa Sánchez and Marcelo Carrera. Moreover, work on

Ordovician silicified faunas from Argentina continues jointly with Emilio Vaccari, Brian Chatterton and Greg Edgecombe.

WILLIAMS, S. HENRY (Canada) is spending the year at the Geological Survey of Canada in Calgary while on sabbatical leave. He is using the time to try to clear some of the backlog of research which has been developing over the past few years. So far, papers have been submitted dealing with the form of the graptolite prosicula (with Lorna Clarke, a B.Sc. Honours student), the Ordovician of the Hamburg klippe around Harrisburg, Pennsylvania (with Bob Ganis and John Repetski) and a synthesis of recent hydrocarbon exploration in western Newfoundland (with Mark Cooper of PanCanadian and numerous other authors). He has also been restudying the faunas of the Tremadoc-Arenig boundary at Cow Head, including chemically isolated (HF) graptolites from the shales, conodonts from the so-called "barren interval" (with Godfrey Nowlan and Chris Barnes) and chitinozoans (with Randy Batten, an M.Sc. student at Memorial University). Henry is also planning to carry out some taxonomic work on some of the Yapeenian and Darriwilian graptolites of the Glenogle Shale in the Canadian Rockies, utilized by Brian Norford and Dennis Jackson in their recently completed study of that unit.

WILSON, MARK A. (United Kingdom) is working with Paul Taylor (Natural History Museum, London) on Ordovician bryozoan evolution and paleoecology. I am also continuing investigations of Ordovician hardgrounds and the evolution of their encrusting and endolithic faunas.

YADRENKINA, ANASTASIYA (Russia) is actively working on the Ordovician brachiopods and stratigraphy of the Siberian Platform. Nowadays I have finished the

description of the Ordovician brachiopods from the northern Siberian Platform intended for the collective work "Ordovician and Silurian fauna of the northern Siberian Platform" edited by Yu. I. Tesakov. At present I am working on the description of the Ordovician reference sections of the Siberian Platform. The description of the most complete Ordovician sections penetrated in the wells drilled on the northern Siberian Platform is given for the first time.

ZUYKOV, MICHAEL (Russia) is continuing his work on Ordovician brachiopods from the East Baltic. A manuscript on the genus *Platystrophia* from the Arenig-Llanvirn of northwest Russia has been submitted for publication to Proceedings of the Estonian Academy of Sciences. He is also working on the various aspects of the Ordovician (Caradoc) faunas and sedimentology of the East Baltic together with colleagues Sergey Terentiev and Marina Tugarova and in cooperation with Olle Hints. His M.Sc. thesis defence is in June 1999, after which he will continue his work as a Ph.D. student.

#### RECENT ORDOVICIAN PUBLICATIONS

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**ACEÑOLAZA, G. F. 1998.** Graptolites, conodonts and trilobites of uppermost Cambrian and Lower Ordovician age from Jujuy Province, northern Argentina, p. 145-147. In: J.C. Gutiérrez Marco and I Rábano (eds.), Proceedings 6<sup>th</sup> International Graptolite Conference (GWG-IPA). Instituto Tecnológico Geominero de España, Temas Geológico-Mineros, 23, Madrid.

**ACEÑOLAZA, G. F. 1998.** Observaciones estratigráficas y bioestratigráficas en las unidades Cambro-Ordovícicas de la Provincia de Jujuy, República Argentina. Stratigraphic and biostratigraphic observations on the Cambrian-Ordovician boundary in Jujuy Province, Northern Argentina. Geogaceta 24: 3-7, Madrid.

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- ALBANESI G. L. 1998.** Taxonomía de conodontes de las secuencias ordovícicas del cerro Potrerillo, Precordillera Central de San Juan, R. Argentina. Actas XII Academia Nacional de Ciencias., Córdoba: 101-253.
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