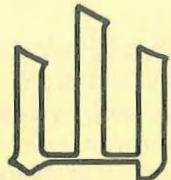


R. Th. Becker



INTERNATIONAL UNION OF  
GEOLOGICAL SCIENCES  
COMMISSION ON STRATIGRAPHY

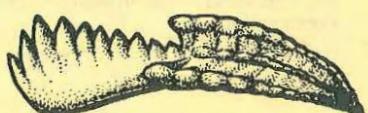
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SUBCOMMISSION ON  
DEVONIAN STRATIGRAPHY

**NEWSLETTER No. 13**



December 1996



# I. U. G. S Subcommission on Devonian Stratigraphy

**Newsletter No. 13, December 1996**

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The *Newsletter* appears annually following SDS meetings. Contributions may be sent to the Editor at any time during the year for inclusion in the next issue. Guidelines for consideration in the preparation of contributions are presented on the inside of the back cover.

The printing of this issue is 150 copies with 102 mailed to titular and corresponding members, 19 to honorary members, Chairmen of the Carboniferous and Silurian Subcommissions, IUGS and ICS officers, friends of the Devonian, and libraries. Remaining copies are available from the Chairman, Secretary, or Editor. The costs of preparation, printing and postage for the *Newsletter* were shared equally by SDS and The Department of Geology, University of Texas at Arlington.

The *Newsletter* can also be viewed in electronic published format via the SDS World Wide Web site at URL <http://geology.uta.edu/geoweb/sds/>. The SDS anonymous ftp site at <ftp://geology.uta.edu/incoming> or <ftp://129.107.18.20/incoming> is maintained for the convenience of SDS members.

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## EDITORIAL NOTES

### ELECTRONIC SDS

The installation of a new web server has forced a small but very important change in the SDS web site address. The address is now <http://geology.uta.edu/geoweb/sds/>. The addition of the directory "geoweb" being the necessary change. The SDS web page is presently under construction and should be completed near the end of January 1997. The complete newsletter will be ready for viewing with a standard web browser (Netscape, Internet Explorer, or Cyberdog). If the web site does not appear properly with your current browser, you can download the most current versions of these browsers from the SDS Anonymous ftp site. The address of the SDS Anonymous ftp site did not change and remains [geology.uta.edu](http://geology.uta.edu) if you will use a standard file transfer program or <ftp://geology.uta.edu/incoming> if you will use a web browser to connect to the site. If you have problems making a connection, contact me.

I greatly appreciate all who used the ftp site to transfer contribution materials for the newsletter as well as those who have mastered the technique of attaching formatted text and graphics to e-mail messages. Your efforts greatly reduce my work load.

### CU-SEE ME TECHNOLOGY

In 1992 the computer wizards at Cornell University developed a video and audio technology which makes it possible to use the internet as a medium for audio communication as well as video communication. The audio component allows two or more parties to "chat" over the internet providing each party has the software CU-SeeMe installed on their computer and has either modem or direct access to the internet. Video is possible, that is seeing the person talking or listening, if one or the other or both have a video monitor connected to their computer. While the video component is enticing, it is the audio component that may be of interest to most of us. Because, you see, the basic software created at Cornell is free, works on all computer platforms, and even if you do not have free connections to the internet the cost of connection charges are usually much, much less than the cost of long distance telephone charges. How are the long-distance telephone carriers taking this? They have tried several court cases in which they demand that the practice of using the internet for long-distance communication stop BUT so far the courts have decided in favor of internet users. So lets use it as long as possible. Cornell has sold the rights to the software to White Pine Software. White Pine sells a jazzy commercial version of CU-SeeMe for \$69US and their URL is <http://www.goliath.wpine.com/cu-seeme.html>. The original free software or freeware developed at Cornell is quite serviceable and is still available to users from many sources. You can find the software at Cornell University (<http://cu-seeme.cornell.edu>), at an informative CU-SeeMe web site (<http://home1.gte.net/jkl/cu.htm>), and at the web site for share- and freeware (<http://www.shareware.com>).

I would like to assist anyone who wishes to use the technology. You may download the necessary software from within the CUSEEME folder within the SDS Anonymous ftp incoming folder (<ftp://geology.uta.edu/incoming/cuseeme>). Versions are available for 68K Macs, PowerPC Macs, and Windows (3.1,NT,&95). The folder also includes basic documentation to help in configuring the software.

The following is material copy from the Cornell's CU-SeeMe web page (<http://cu-seeme.cornell.edu>) which you really should visit if you want to use the technology:

CU-SeeMe is a free videoconferencing program (under copyright of Cornell University and its collaborators) available to anyone with a Macintosh or Windows and a connection to the Internet. With CU-SeeMe, you can videoconference with another site located anywhere in the world. By using a reflector, multiple parties at different locations can participate in a CU-SeeMe conference, each from his or her own desktop computer.

So far as we know, CU-SeeMe was the first and may still be the only software available FREE for personal computers (Macintosh and Windows) that allows desktop videoconferencing with more than one other site. (CU-SeeMe supports up to 8 "windows" to other "parties" on your own computer screen.) When development of CU-SeeMe began in 1992, the only real-time videoconferencing software for the Internet required expensive hardware which severely limited the number of potential senders and receivers. The philosophy of the Cornell project was to start immediately with available, affordable hardware and deploy it as rapidly as possible. The goal was to stimulate creative thinking and create a wide base of user experience. By opening Internet videoconferences to Macintosh users, the CU-SeeMe team hoped to accelerate the adoption and usefulness of desktop conferencing, including live video. Because CU-SeeMe uses simple but efficient video frame-differencing and compression algorithms, it opens networked videoconferencing capability to users of lower cost desktop computers, and enables broader participation in desktop video technology. During 1993 this grassroots development strategy was realized as interest in CU-SeeMe grew rapidly with training and user support from the New York State Educational Research Network (NYSERNet). NYSERNet spread the word among Internet users by providing one of the first "public" reflectors encouraging users to try the technology and test their connections.

### CHANGES TO THE GEOLOGIC TIME SCALE

The lead article in the March & June 1996 issue of *Episodes* (v. 19, nos. 1 & 2:3-5) is titled *A Phanerozoic time scale* (F.M. Gradstein & J. Ogg) and was accompanied by a full color Geological Timescale. The Paleozoic portion of that time scale is reproduced in the adjacent column. What immediately catches one's attention is the rather drastic changes to the duration of the Silurian and Devonian. The Devonian expands to 63 Ma (417-354 Ma) at the expense of the Silurian which shrinks to just 26 Ma (443-417 Ma) losing

time to both the Devonian and Ordovician. Using CM Gavin Young's Devonian time scale (Young, 1995) the Gradstein & Ogg time scale changes the duration of Devonian stages as follows:

	Durations (Ma)		
	Young	Episodes	Harland
Famennian	10.5	10	4
Frasnian	5	6	10
Givetian	8	10	4
Eifelian	7	11	5
Emsian	15	9	4
Pragian	5	12	6
Lochkovian	5.5	5	13

The authors point out that the Paleozoic time scale was constructed from Harland et al. (1990), with the pre-Carboniferous updated by more precise isotopic ages for stage boundaries by Roberts et al. (1995) and Tucker and McKerrow (1995). Gradstein & Ogg apparently overlooked the work of CM Young which is unfortunate. Throughout the article little attention is paid to the Paleozoic and it is implied that the changes to the Devonian largely followed Tucker and McKerrow. Roberts et al. deal almost exclusively with Early Carboniferous dates. Rereading the paper of Tucker and McKerrow did not instill a strong sense of confidence in either the age assignments to boundaries or the changes to duration of stages. In fairness to Tucker and McKerrow, they did not report values above the Tioga K-bentonite. They did indicate that their estimate for the base of the Devonian is only constrained by two dates ( $419 \pm 2$  Ma; topmost Ludlow) and ( $421 \pm 4$  Ma; thought to be Pridoli to Pragian based on plant fossils identified by CM Richardson from thin sediments containing erupted volcanics). They admit that the 417 Ma age for the base of the Devonian is an estimate with an uncertainty of 2–3 Ma. Tucker and McKerrow report the base of the Pragian to be near to 412 Ma and that the base of the Emsian was interpolated using the  $390 \pm 0.5$  Ma date of the Tioga K-bentonite. They consider the Tioga K-bentonite to be a good indicator for the base of the Eifelian. Unfortunately Gradstein & Ogg do not reveal the source for changes in the duration of Givetian, Frasnian, and Famennian. The durations offered in the Episodes time scale for these stages are much closer to those of CM Young suggesting that Gradstein & Ogg did not rely solely on Harland as a guide. Your thoughts and comments are welcome.

Gradstein, F.M., and Ogg, J., 1995. A Phanerozoic time scale. *Episodes*, 19 (1&2):3-5.

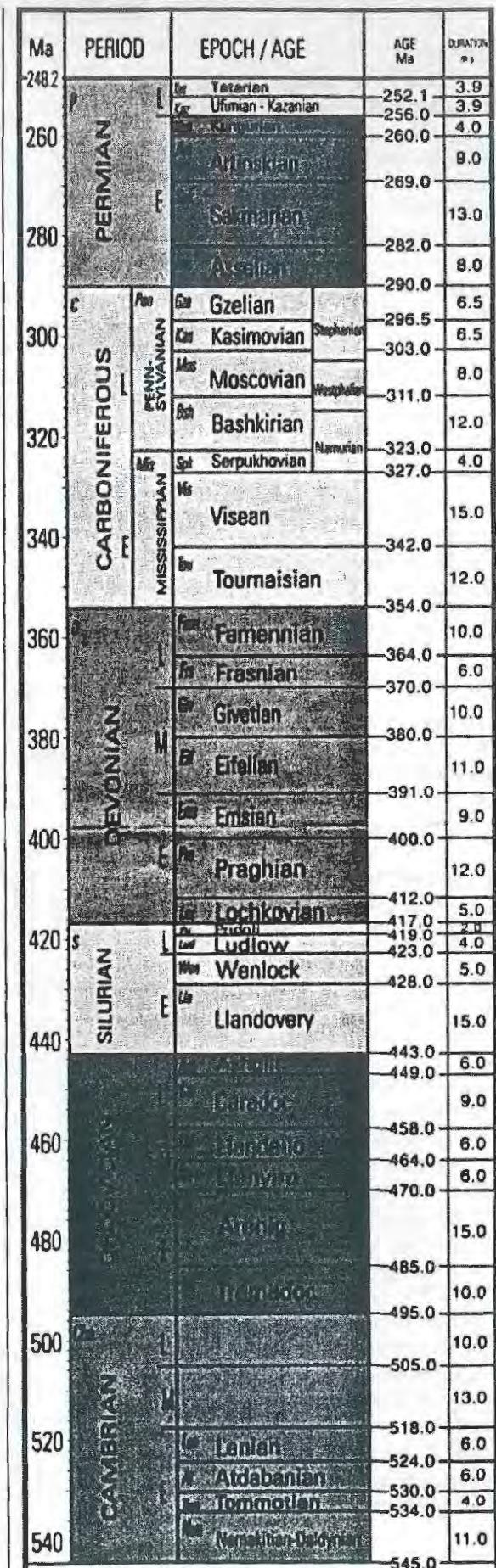
Harland et al., 1990. A geologic time scale 1989. Cambridge University Press, 265 pp.

Roberts, J., Claeue-Long, J., and Jones, P.J., 1995. Australian Early Carboniferous time, in Berggren et al., eds.,

*Geochronology, time scales and global stratigraphic correlation*, Tulsa, SEPM Special Publication, 54:24-40.

Tucker, R.D., and McKerrow, W.S., 1995. Early Paleozoic chronology: A review in light of new U-Pb zircon ages from Newfoundland and Britain. *Canadian Journal of Earth Science*, 32:368-379.

Young, G.C., 1995. Timescales 4. Devonian. *AGSO Record 1995/33*, 47 pp.



This past spring witnessed the passing of one of the greatest geologists, paleontologists, and teachers known to virtually all paleontologists and biostratigraphers. It is doubtful that another will emerge from our profession with his unique mix of talents and his sense of history. I was fortunate to have been his student, colleague, and friend for twenty-six years. The following memorial will appear in slightly altered form this spring in the *Journal of Paleontology* and the *Bulletin of the American Association of Petroleum Geologists* —Ed.

### CURT TEICHERT (1905-1996)

On May 1996, two days after his 91st birthday, Curt Teichert succumbed to natural causes associated with advanced age. Curt is survived by his sister Gertrude Walker and nephew Irwin Walker of Hamilton, Ontario and his longtime friend and confidante Margrit Faggart of Arlington, VA.

Curt was born in Konigsberg, East Prussia (now Kaliningrad, Russia) on May 8, 1905. Konigsberg was the site of his primary, secondary and university education except as an exchange student at the University of Munich and the University of Freiburg. He completed all requirements for the Ph.D. at the University of Konigsberg except publication of the dissertation in 1927 shortly after turning 22. The degree was officially awarded in August 1928. Two events occurred during his pre-university education that would forever shape his view of science. The first was reading Alfred Wegener's book, *Die Entstehung der Kontinente und Ozeane*, and the second was the many excursions into the Pleistocene glacial terrane surrounding Konigsberg. Wegener's book turned Curt toward geology and gave him a global view of geology at an early age. The excursions brought him into contact with the many erratic boulders of Ordovician and Silurian age derived from Paleozoic units of the Baltic region. Most boulders contained nautiloid cephalopods and the mechanical abrasion had exposed the internal structure of nautiloids belonging to a variety of different groups. Illustrations of these structures for science projects eventually led Curt to recognize the variety of internal structures and their relationship ship to other taxonomic features.

Curt met Gertrude Kaufmann in 1925, the daughter of a physics professor. Later they would marry and Trude became Curt's field companion, traveling partner, confidante, photographer, illustrator, and mother to students on many continents.

In 1930-31 Curt visited the United States on a Rockefeller Foundation fellowship. During this trip he was introduced to the geology of North America and August Foerste who introduced Curt to the rich cephalopod faunas of the North American Paleozoics.

Curt accepted a position on a Danish expedition to east Greenland in 1931 and would spend 15 months in Greenland including a winter over. His work during this period laid the foundation for later studies in Precambrian and Permian series in the region.

With the political situation in Germany in 1933 worsening and Trude's Jewish ancestry, the Teicherts were forced to consider emigrating. Curt sold his microscope to fund passage to the United States to attend the 1933 IGC in Washington. With contacts made at the IGC and promises of support from the leader of the Greenland expedition, the Teicherts moved to Copenhagen. When the promised support never fully materialized, they were supported for the most part by Trude's translations of German scientific articles into Danish.

As conditions in Germany deteriorated, the Rockefeller Foundation funded a program to resettle German scientists, and in 1937 the Teicherts emigrated to Perth (Western Australia) to take a position in the Geology Department of the University of Western Australia. By this time Curt had published the first 50 of his 350 publications including the benchmark study and illustration of the internal workings of the actinoceroid siphuncle which led to understanding of the role of buoyancy regulation in nautiloid cephalopods.

Australia and Australians were always special to Curt and Trude. The geology of Western Australia was virtually unknown in 1937 and Curt found himself one of only 6 full-time professional paleontologists in Australia with 5 being on the east coast. The result was some 80 papers on Ordovician, Devonian, Permian, Jurassic, Cretaceous and Eocene fossils and their biostratigraphic significance, and on aeolianites, algal structures in salt lakes, eustasy, palaeoclimatology, neotectonics, and on contemporary and Pleistocene reefs. His field localities, section descriptions, and sections in the Perth, Carnarvon, Bonaparte and Canning Basins are still in use. Applying his knowledge of ammonoids used in zonation of the European Devonian, Curt was able to establish the biostratigraphic framework for understanding the now famed Devonian reef system of the Canning Basin, discovering the first Australian Famennian goniatites and later the first clymeniids. In honor of his many contributions to the geology of Western Australia, a group of hills (exhumed reef core) within the reef tract at Bugle Gap near Fitzroy Crossing (Western Australia) bear the official name of Teichert Hills.

With the outbreak of World War II, Curt's travel was restricted due to his official status of a German national. He spent much of the early war years collaborating on a text book that was used for the next 40 years, writing up the results of field work, and serving as geologist on various government projects such as mapping phosphate deposits. Along the way he began publishing on deposits of ichthyosaur and plesiosaur remains discovered in the course of work on phosphate deposits and resulting in the discovery of the youngest Australian ichthyosaur. In 1944 Curt was allowed to join Rhodes Fairbridge in Queensland to study the system of reefs now referred to as the Great Barrier Reef. Curt and Fairbridge accepted the assignment of attempting a photointerpretation of the reef system for scientific purposes and as a photographic record of the system they feared would be destroyed during an invasion. Although resources were limited, they managed to arrange for a light observation plane to fly them over the reef in a crisscross pattern while

they took turns hanging out the door of the plane operating the camera. Curt's German accent understandably caused concern on the various military installations they encountered and he was convinced to put on a basic uniform and to masquerade as a Dane. When challenged at one installation and asked by an Australian officer why a Dane would be interested in reefs - Curt replied, "Because we have none!"

In 1944, The Teicherts became naturalized Australian citizens and the University of Western Australia awarded Curt the D.Sc. Unfortunately the University failed to give him tenure, offering only a 3-year contact at a much reduced salary. Curt relocated to Victoria as Deputy-Director of the Geological Survey of Victoria where he began and completed mapping of the important Buchan District with its globally important Early Devonian sequence, leading to publication on some of the earliest ammonoids.

A vacancy at the University of Melbourne brought yet another move and Curt began his long association with the Bureau of Mineral Resources. During this time Curt served as one of the four authors of the Australian Code of Stratigraphic Nomenclature, one of eleven founders of the Geological Society of Australia, and secretary of the Committee on Correlation of the Karoo Series, later the Gondwana Congress. While at Melbourne he was awarded the David Syme Prize.

In 1949, Raymond Moore invited Curt to organize the nautiloid volume of the *Treatise on Invertebrate Paleontology*. Sensing that advancement within the post-war Australian system would be slow, Curt accepted a position at the New Mexico Institute of Mining and Technology at Socorro and left Australia at the end of 1952. Thus began Curt's long time association with Rousseau Flower. In 1954, Curt accepted a position with the U.S. Geological Survey in Denver where he headed the petroleum geology lab. In 1961-64 he was placed in charge of the USGS' interests/activities in Pakistan, the result being his study of the Permo-Triassic boundary in the Salt Range. He extended his activities in the region and from 1964-1976 coordinated correlation programs including those of Iran and Turkey.

In 1964, the University of Kansas offered Curt a distinguished professorship where he joined Raymond Moore in work on the *Treatise* and was responsible for revisions of existing volumes. In the late 1960's Curt returned to Greenland with Bernard Kummel to continue work on the Permo-Triassic boundary. In 1971, he was elected president of the Paleontological Society. Curt was forced to retire from teaching in 1975 by the then policy of retirement at 70.

In 1977 and with the urging of David Raup, the University of Rochester (Rochester, NY) offered Curt a lifetime appointment as Adjunct Professor with full privileges. Curt rewarded Rochester with NSF funding and a final 60 or so papers and reviews including major works on the Permo-Triassic boundary in east Greenland, and on Chinese Cambrian and Ordovician nautiloids. He received the Raymond Cecil Moore Medal in 1982 and Paleontological Society Medal in 1984.

Curt was blessed with two special individuals in Rochester: Carlton Brett who understood and appreciated Curt's unique blend of geology; and Margrit Faggart, who acted first as Curt's secretary, then invaluable assistant, and finally as the Teichert's friend, confidante, and companion. Carlton organized the 1988 *Curt Teichert-Festschrift* volume (Struve, 1988) containing contributions from 40 friends and former students.

In November 1993 Trude's sudden passing ended 66 years of marriage and companionship, and Curt's life was never again the same. His final move in early 1995 to Arlington, VA brought him closer to friends in the Smithsonian and the USGS.

Curt produced more than 350 reviewed publications. His first in 1926 were on geophysics and volcanology but by 1929 he has shifted to biostratigraphy and paleontology (nautiloids). Generally producing 5 refereed articles a year, he produced more than 12 in 1947 and 1948 and again after official retirement in 1976 and 1993. At the time of his death he was actively collaborating on the development of a database of all valid Paleozoic nautiloid species together with stratigraphic and geographic information. The data base will be published with the revision of Part K (the nautiloid volume) of the Treatise.

Curt's reputation as a scientist and paleontologist extended far outside his speciality of nautiloid cephalopods. By the time of his death, 40 species (only 16 of which are cephalopods), 5 genera and 1 family have been named in his honor using either his first or last name. Curt considered himself extremely fortunate to have conducted the business of geology on all but one continent, and greatly regretted that he had somehow missed the opportunity to work in Africa.

Curt always considered students to be his greatest legacy. In his view there was no such thing as "former" students and class was never over. Most of us privileged to have been touched by his greatness and nurtured in his counsel continued the association throughout Curt's life. We not only lost a great scientist and teacher but a friend as well.

#### Reference cited

- Brett, C. E., Struve, W., and Yochelson, E. L., 1988, Curt Teichert-Festschrift: Senckenbergiana Lethaea, v. 69: Frankfurt am Main, Senckenbergische Naturforschende Gesellschaft, 628 p.

## SUBCOMMISSION ON DEVONIAN STRATIGRAPHY

### REPORT OF THE RETIRING SDS CHAIRMAN

The new Bureau was elected in August 1996 at Beijing and they take over at the beginning of 1997. The Beijing IGC meeting was extremely successful, owing in no small part to the excellence of the China World Trade Centre as a venue, the efficiency of the Chinese organisers, and the great interest of the famous sites in the area, the Great Wall, the Ming Tombs, the Summer Palace and the many sites within Beijing itself. For the SDS special appreciation must be expressed for the work of Hou Hong-fei who oversaw all the needs for the SDS from the earliest stages and throughout the Congress. Particular events relevant to SDS were the Business Meeting, the Minutes of which (taken by Thomas Becker in the absence of the Secretary) are given elsewhere in this Newsletter, and the special symposium on Devonian High Resolution Stratigraphy held in the Beijing International Hotel.

Two other major SDS projects are underway. The proposed volume collating matters relating to the GSSP decisions is still being assembled for publication by the editors Pierre Bultynck and Raimund Feist. The volume of contributions accepted for publication from the Moscow Symposium was completed and submitted for consideration to the Courier Forschungsinstitut Senckenberg in July 1996, contributions having been updated by authors to March 1996. Through the kind offices of Prof. Willi Ziegler and Dr. Konigshof it has been agreed that the Moscow Symposium volume will be accepted for publication by the Courier Forschungsinstitut Senckenberg.

The major achievements during the last four years have been the presentation and completion of the remaining GSSP's and their ratification by IUGS. All these have been reported in *Episodes*, apart from that for the Emsian which is in course of completion. The final submission was for the Emsian, and that has proved particularly tiresome. Although agreed by SDS in 1989 following the Washington meeting, no presentation to ICS was made until 1993, when ICS then held up voting on the report until 1995; then voting by IUGS was expected but in early December 1995 I was requested to produce, within four days, a shortened report for submission to the IUGS meeting in January 1996. In the event the Executive Secretary of IUGS then left the papers behind in the USA and they were not voted upon by IUGS. It was decided that both the Emsian and another GSSP proposal should be deferred for vote until August in Beijing, but in March I was asked to submit new copies of the shortened submission, the first having been said to be lost. This done all was successfully completed with IUGS at Beijing.

The efficiency of SDS in completing the main task given it by IUGS however, seems likely to lead to pressure for SDS to be closed down. The Chairman of ICS, J. Remane, alerted subcommissions to this possibility in May 1996 quoting statements from Robin Brett following the January meeting of IUGS. The information was transmitted to members by Rex Crick who organised a circulation which led to letters being sent to SDS members, many of whom wrote individual letters to Brett. The result was a letter from Brett to Rex

Crick suggesting there was little reason for SDS to be worried. However, in September, in reply to the letter sent on behalf of SDS by Eva Paproth, Robin Brett (who became President of IUGS in Beijing) states that "The "task" is to choose the boundaries and GSSP's, and whatever else is necessary, whatever that is. I do not believe the task includes research in perpetuity on the area of stratigraphy represented by the particular subcommission." Thus the matter seems to have become critical.

What should be the future tasks of SDS when decisions on GSSP's were complete was considered by SDS at the Frankfurt meeting in 1990 when, as Secretary of SDS, I was instructed to send a memorandum of future SDS priorities to ICS for their preliminary approval. Since ICS did not respond the summary was sent for a second time in 1992. Priorities in 1990 were given as: Marine/nonmarine correlation; regional stratigraphic correlation; biological stratigraphy; radiometric stratigraphy; seismic and eustatic stratigraphy; Milankovitch-band stratigraphy; stratigraphic data bases; magnetostratigraphy; international palaeogeographical syntheses. Matters considered SDS priorities have been repeated in the SDS Annual Report to ICS for the last three years.

With so many subcommissions not having made recommendations on any stage boundaries, it is known that ICS does not currently see definition of substages as something with which it wishes to be formally involved, however important SDS might feel the matter to be. But correlation of pelagic facies GSSP's into neritic and terrestrial facies would seem to be very important.

The SDS has broadened its interest to those international problems requiring a precise chronology by organising symposia on Devonian Changes in World Ocean Level (1994), Ranges of Devonian taxa (1995), Devonian High Resolution Stratigraphy (1996), and the forthcoming, Devonian Cyclicity and Sequence Stratigraphy to be held next year (1997), has led the way in highlighting those major areas of Devonian science for which international cooperation is essential. It is on these grounds that the continuance of the SDS seems so fundamentally important. SDS represents a group of dedicated international specialists with expertise on the Devonian which is quite unrivalled and the circulation of the Newsletter ensures that Devonian activities are circulated internationally. The umbrella of IUGS for SDS activities is highly desirable in aiding members to attend. It may be recalled that it was the need for an international discussion of Devonian stratigraphic problems that led to the formation of international geologic congresses in the first place, established in no small way due to the efforts of James Hall and a group of Devonian workers in 1876. James Hall became the organizing president of the first Congress of Geologists held in Paris in 1878. There is no doubt in my mind that the IUGS should have standing committees on each of the stratigraphic systems.

As usual, the basis of the proposed closure of subcommissions has the aim of cost saving to IUGS, and thus enabling limited funds to be used for other purposes. Of the income of

about \$1550 received by SDS, about \$1000 has traditionally been reserved to aid those from soft currency areas to attend meetings. The actual running costs of the SDS are small because IUGS funds cover postage and a limited contribution to the cost of the Newsletter. Thus if SDS received a much more restricted budget, it would be those from soft currency areas who would be the main losers.

Thus the success of the SDS has now placed it in a difficult position for the future. The major problems of the correlation of pelagic GSSP's with boundaries in the neritic and terrestrial realms still remains to be accomplished, and it seems to me that this is area with greatest claim on ICS and IUGS support. Our cooperation with IGCP 335 and others has been especially fruitful.

Should IUGS support end, it seems to me that steps should be taken to ensure the continuance of the Newsletter and there should be a group responsible for collating matters relating to Devonian affairs internationally. The continuance of the Newsletter would require an assured financial base, and the introduction of charges; in fact this may be best instituted immediately because it may be that the SDS might continue under ICS support, but with very limited, if any, financial support.

Finally it is a great pleasure for me to express thanks to the many who have contributed to the success of the last four years in running the programme so successfully. It only remains for me to wish the incoming Bureau, Pierre Bul-tynck, Rex Crick and Thomas Becker, best wishes for the future in the rough waters which appear to lie ahead.

**Prof. M. R. House (Southampton)**

### **MINUTES OF THE SDS BUSINESS MEETING, 7TH AUGUST 1996, BEIJING**

The meeting was held in the evening of Wednesday 7th August, in the China World Trade Centre, Beijing, and in conjunction with the 30th International Geological Congress which took place at the same site from the 4th to 14th of August. SDS, with the support of Chinese colleagues, and especially TM Hou, Hongfei, organized an associated symposium on "Devonian High Resolution Stratigraphy" the morning after the business meeting (see separate report and abstracts).

**PRESENT.** Titular members: Bai, Shun-liang, Hou, Hongfei, M.R. House, W.T. Kirchgasser. Corresponding members; R.T. Becker, D. Brice, Pan, Jiang, P. Sartenaer. Guests: A. Boucot, R. Lane, Lee, Cho-Min, B. Milhan, B. Mistiaen, M. Narkiewicz, J. Remane, M. Szulczewski.

#### **1. Introduction**

The Chairmen, M.R. House, opened the meeting at 6.00 p.m. and thanked the Chinese hosts, especially TM Hou for their efforts to enable the meeting and the associated symposium during the International Geological Congress. He also welcomed the ICS Chairmen, Prof. J. Remane.

Apologies for absence were recorded from vice-chairman R. Crick, SDS secretary P. Bultynck, from TMs A. Blieck, R. Feist, V. Menner, G. Racki, C.A. Sandberg, J. Talent, W. Ziegler, and Cms R. Mawson, N. Ovnatanova, E. Schindler, K. Weddige, S. Yatskov, and G. Young.

#### **2. Minutes of the Paris Meeting 1995**

The minutes of the Paris meeting circulated within newsletter no. 12 were approved.

#### **3. Chairman's Business**

The chairmen gave special apologies for the absence of the secretary.

#### **4. Review of work since the Paris meeting**

##### *A. Base of the Emsian*

The chairmen drew attention to the fact that although the Zinzalban GSSP has been approved by ICS in June 1995, ratification by the IUGS still has not been proceeded. The ICS chairman explained that the updated version of the GSSP proposal, provided by the SDS chairman, had been lost and he apologized for the delay caused by this. A joint publication in *Episodes* on the base of the Emsian will be prepared by A.I. Kim, E.A. Yolkin, K. Weddige and M.R. House (as coordinator). [Subsequently at Beijing, IUGS accepted the Emsian GSSP]

##### *B. Moscow Symposium Volume*

The chairmen reported on the progress concerning the planned volume on "Devonian Eustatic Changes of the World Ocean Level" which contains papers submitted during and after the SDS symposium in 1994. TM Ziegler had offered publication in the *Courier Forschungsinstitut Senckenberg* after it became clear from bad experience of IGCP 328 that current publishing time in another journal is unacceptable. However, incomprehensible English of some manuscripts and long review processes led to further significant delay. All manuscripts have been sent to Senckenberg at Frankfurt prior to the congress and TM Crick provided assistance concerning computerized diagrams. The volume will be dedicated to M.A. Rzhonsnitskaya in honour for her significant contributions to the Devonian stratigraphy of Russia and the former USSR.

**C. International Devonian Correlation Review**

The large majority of manuscripts for the comprehensive volume on "Devonian International Correlation Review", to be published again in the *Courier Forschungsinstitut Senckenberg* series, has arrived at the secretary at the given deadline in spring 1996. Unfortunately, some sections are still missing but it is hoped though that publication will take place in 1997.

**D. Progress in Radiometric Dating**

In SDS newsletter no. 11 TM Talent, who during the Paris meeting 1995 had accepted to act as a coordinator, has published a call for biostratigraphically well-constrained zircon-bearing volcanites that can be used by SHRIMP ion microprobe dating in order to improve Devonian radiometric dating. It seems that no material has yet arrived in Australia but present SDS members referred to several promising beds. CM Becker reported that new metabentonites have already been sampled by CM Weyer in the latest Famennian of the Hasselbachatal Auxiliary Stratotype Section which gave a precise zircon-date for the Devonian-Carboniferous boundary in 1992 based on a basal Carboniferous bentonite layer. TM Kirchgasser mentioned the discovery of a volcanic level in the middle Frasnian of New York and TMs Hou and Bai drew attention to the prospects of Chinese volcanics.

**E. Progress in Documentation of Taxa**

Following the 1995 SDS symposium on "Documentation of Devonian Taxa ranges and Bioevents", the chairmen urged members to continue work and to provide more detailed compilations of stratigraphic ranges. As a starting point generic ranges of possibly all groups against the available high-resolution international time-scale are needed. R. Lane drew attention to recent advantages in conodont research in relation to studies on biodiversity changes.

**5. Devonian Marine/Non-Marine Correlation**

No report on progress on Devonian marine/non-marine correlation had reached the chairmen. It was approved that any contributions will be included in the next newsletter.

**6. IUGS Matters**

The SDS and ICS chairmen drew attention to the continuing discussion in the IUGS concerning a formal recognition of auxiliary stratotypes. It was agreed that the formal establishment of terrestrial auxiliary stratotypes would be desirable.

The chairmen also reported on a letter by Dr. R. Brett, Executive Secretary of IUGS, dating from March 1996, which includes among a list of "action items" the wish to "phase out some Subcommissions" after they finished their tasks. After the final approval of the last Devonian GSSP this was interpreted as a worrying view concerning the future existence of SDS, and following suggestions by ICS chairman Remane, SDS members were asked to send letters of objections to the IUGS Executive Secretary. The ICS chairman reported that these letters have helped in the discussion and that it was agreed that Subcomissions should continue their work even after all GSSPs have been decided.

**7. Future Tasks**

TM Bultynck submitted a document on "Devonian Standard Chronostratigraphic Scale: Importance of Substages and additional Stages" in which the formal subdivision of (some) stages and/or the establishment of additional stages is recommended as a priority task of SDS in the next four years. TM Bai objected and would give preference to the elaboration of decided boundaries, based on modern techniques such as chemostratigraphy, in order to improve the correlation potential. R. Lane and J. Remane spoke against the formal recognition of additional and new chronostratigraphic names but CM Becker drew attention to the strong need for a defined use of the widely applied lower, middle and upper subdivisions of established stages. The chairman proposed to designate people to be in charge of special working groups on stage subdivisions and this was approved.

**8. Election of the SDS Bureau for 1997-2000**

The chairmen reported that ICS has approved the SDS nominations for the chairmen, P. Bultynck, Vice-Chairmen, R. Crick, and Secretary, R.T. Becker.

**9. Membership****A. Withdrawals**

The chairman reported that TM Ziegler and TM House have decided to continue for one additional year before stepping down but would wish to continue as CMs.

**B. Election of CMs**

Written nominations of P.E. Isaacson (Moscow, Idaho, USA: Devonian of South America), A. El Hassani (Rabat, Morocco: Devonian stratigraphy and tectonics of the Moroccan Meseta and of Southern Morocco) and A. Kuzmin (Moscow, Russia: conodonts, Devonian of the Russian platform) were approved unanimously.

*C. Election and replacement of TMs*

No changes.

**10. Reports**

*A. South American Activities*

No report has been submitted from any South American SDS member and the lack of such contributions was regretted. It is hoped that the new CM Isaacson will help to improve contacts.

*B. Financial Report*

	[in US \$]
Carried forward from 1995	144.05
IUGS subvention for 1996	<u>1530.00</u>
sum	1674.05
support for soft currency attendents, Beijing 1996	1000.00
secretary expences	100.00
costs associated with the editing of the Moscow Symposium volume	80.00
Newsletter (no. 13) allocation	250.00
room hire Beijing 1996	<u>100.00</u>
sum	1530.00
provisional balance end of 1996	144.05

**11. Future Meetings**

*A. New York Meeting, 1997*

The chairman distributed a provisional invitation and programme for the SDS meeting in 1997 which will be organized jointly by CM C. E. Brett and TM W.T. Kirchgasser and will take place in the week of the 20th to 27th July at the Department of Earth and Environmental Sciences at the University of Rochester. The business meeting and a two day symposium on "Devonian cycles, sequences, and bioevents" will be linked with a field trip in New York, and possibly to Pennsylvania. Programme, other details and registration forms will be included in the next newsletter.

*B. 1998 Meeting*

TM Turner has informed the chairman about the possibility to hold a meeting in association with field work on Devonian microinvertebrates in Mongolia. A formal invitation, however, has not been submitted. CM El Hassani invites SDS to come back to Morocco in 1998 to visit the so far mostly unavailable Devonian sequences of the Dra Valley and to hold the business meeting and a symposium in Rabat.

*C. Future Meetings further ahead*

TM Yolkin asked SDS to consider to hold a joint meeting in 1999 together with the International Silurian Congress in Siberia.

**12. Any other Business**

The prospect of a fine Beijing Duck was stronger than the wish to discuss any other business. The audience thanked the outgoing chairman with big applause for his efficient, energetic and determined work during his term.

# SUBCOMMISSION ON DEVONIAN STRATIGRAPHY

(International Union of Geological Sciences)

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[Bureau elected August 1996]

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November, 1996

## Devonian Standard Chronostratigraphic Scale: Importance of Substages and additional Stages

Since the formal definition of the base of the Devonian in 1972, the elaboration of the Devonian Standard Global chronostratigraphic Scale, down to the stage level, has been accomplished by the SDS in a little more than 20 years. Such a long-term effort by a large group of Devonian stratigraphers, just for defining 6 stage boundaries, is fully justified because the Devonian Standard Scale should be used as a framework for communication of any kind of research results in Devonian Earth History.

A weakness of the actual Devonian Chronostratigraphic Standard, defined in G.S.S.P.'s and selected by using biostratigraphic methods, is that more recent research methods in historical geology (e.g. event stratigraphy, sequence stratigraphy, chemostratigraphy...) need a framework with higher (relative) time resolution to communicate such results in precise terms of a chronostratigraphic standard, easily understandable by anyone involved in the study of historical geology.

Estimated durations of Devonian Stages vary from maximum 13 m.y. (Famennian) to minimum 5 to 4 m.y. (Frasnian, Eifelian, Emsian). In other Palaeozoic systems (e.g. the Silurian: Sheinwoodian, Homerian...), some stages appear to have lasted shorter than the Devonian stages. Several Devonian intra-stage global events (within the Emsian, Eifelian, Givetian, Frasnian and Famennian), are well documented and discussions on the establishment of new additional Devonian stages (e.g. Upper Emsian, Strunian...) arose at several SDS meetings. Therefore, the formal subdivision of Devonian stages and possibly the establishment of additional stages should be considered as a priority by the SDS for the next four years.

It should be clear that proposals for substages or additional stages should in no way alter the position of the G.S.S.P. for the base of Lochkovian, Pragian, Emsian, Eifelian, Givetian, Frasnian and Famennian.

Similar initiatives have already been undertaken by other Subcommissions. During the meeting of the Subcommission on Cretaceous Stratigraphy (Brussels 8-16 September 1995) formal definitions of substage boundaries of the Albian, Turonian and Coniacian were proposed and the Neogene Subcommission defined a Boundary Stratotype for the Gelasian, a new stage at the top of the Pliocene.

Attached you will find a questionnaire on Devonian substages and possible additional stages. Would you be so kind to return it to the secretary or chairman no later than January 31, 1997. We intend to make this item the main point of discussion at the next SDS Business meeting in New York State (Rochester) in July 1997.

**SDS QUESTIONNAIRE:**  
**Your proposals for Devonian Substages and additional Stages**

1. **Name:**

2. **Your proposals (please complete)**

Stages	Need of Substages			Number of Substages
	high	moderate	little	
Famennian				
Frasnian				
Givetian				
Eifelian				
Emsian				
Pragian				
Lochkovian				

3. **Please complete:**

I am willing to submit a written proposal for the Subdivision of  
the.....Stage(s) at  
the next SDS Business meeting in New York State.

4. **Additional Stages:**

4.a. Indicate and delimitate additional Stages you consider to be highly desirable and useful.

4.b. I am willing to submit a document on the additional  
.....Stage(s)  
above-mentioned, at the next SDS Business meeting in New York State.

**Return to Chairman or Secretary no later than January 31, 1997**

FIRST CIRCULAR AND PRELIMINARY REGISTRATION  
**SYMPORIUM AND FIELD MEETING ON DEVONIAN CYCLICITY AND  
SEQUENCE STRATIGRAPHY**  
SPONSORED BY  
THE IUGS SUBCOMMISSION ON DEVONIAN STRATIGRAPHY  
AND  
DEPARTMENT OF EARTH AND ENVIRONMENTAL SCIENCES  
UNIVERSITY OF ROCHESTER  
ROCHESTER, NEW YORK

JULY 20-27, 1997

- The technical sessions of the symposium will be held on the River Campus of the University of Rochester July 20-21.
- The Annual Meeting of the Subcommission on Devonian Stratigraphy will be held the afternoon of July 21.
- A field trip on the theme of cyclicity and sequences in the New York Devonian will follow the meeting. The field trip is divided into two parts, participants may select one or both parts.:.

**FIELD TRIP I- transportation by bus; July 22-23.**

**TUES JULY 22-BUFFALO AREA**

(UPPER HAMILTON GROUP (MD), GENESEE, SONYEA, WEST FALLS, LOWER CANADAWAY (UD). SECTIONS AROUND GIVETIAN-FRASNIAN AND FRASNIAN-FAMENNIAN BOUNDARIES. Overnight: Univ. of Rochester.

**WED JULY 23-GENESEE VALLEY TO NORTHERN PENNSYLVANIA.**

ONONDAGA LIMESTONE-HAMILTON GROUP (MD), GENESEE (MD-UD), SONYEA, WEST FALLS, CANADAWAY, CATTARAUGUS-SUNFISH GROUPS [LOCK HAVEN AND CATSKILL IN PENNSYLVANIA](UD). Overnight: Univ. Rochester. (A north to south traverse (up-section) to examine reef and carbonate platform facies of the Onondaga Limestone, cycles in the subtidal shelf facies of the Hamilton Group, and in the late Devonian, the succession of siliciclastic cycles of the progradational Catskill clastic wedge: distal (basin) and open shelf facies (Genesee and Portage facies), subtidal shelf and nearshore facies (Chemung facies ), peritidal interbedded marine and non-marine facies (Cattaraugus facies), and terrestrial red-bed facies (Catskill facies ).

**FIELD TRIP II- Transportation by van, July 24-27; Registration limited to 40; A west-to-east transect to examine the facies and cycles of the Lower and Middle Devonian Onondaga Limestone and subjacent strata and the Middle and Upper Devonian cycles of basin, shelf, near-shore and terrestrial facies of the Catskill Clastic wedge.**

**THURS JULY 24 CAYUGA LAKE VALLEY**

TRISTATES GROUP (Oriskany Sandstone) (LD), ONONDAGA LIMESTONE, HAMILTON GROUP, TULLY LIMESTONE (MD), GENESEE GROUP (MD-UD).

Dinner and Reception: Paleontological Research Institution, Ithaca, NY. Overnight : Syracuse University.

**FRIDAY JULY 25 SYRACUSE TO MORRISVILLE**

HELDERBERG ,TRISTATES GROUPS (Oriskany SS.) (LD), ONONDAGA LIMESTONE, HAMILTON GROUP, TULLY LIMESTONE (MD), GENESEE GROUP (MD-UD). Overnight: Syracuse University.

**SAT JULY 26 CHERRY VALLEY-SCHOHARIE VALLEY**

HELDERBERG , TRISTATES GROUPS (Oriskany SS) (LD), ONONDAGA LIMESTONE, LOWER HAMILTON (Marcellus Fm); UPPER HAMILTON-TULLY (MD)- Lower GENESEE GROUP (MD-UD) EQUIVALENTS (Cooperstown, Gilboa, Manorkill, Oneonta Fms: peritidal and terrestrial facies). Overnight: Motel in Catskill, New York.

**SUNDAY JULY 27 HUDSON VALLEY-CATSKILL FRONT**

TRISTATES (Oriskany SS.)(LD), ONONDAGA LIMESTONE, LOWER HAMILTON GROUP (Marcellus Fm.) (MD); UPPER HAMILTON (MD) AND LOWER GENESEE GROUP EQUIVALENTS (MD-UD) (terrestrial Catskill facies). Overnight: University of Rochester.

Rochester is situated on Lake Ontario in western New York. The University of Rochester campus is located two miles from downtown Rochester and 10 minutes from the greater Rochester Airport. Rochester is served by several major airlines, including American, Delta, United and US Air.

Carlton E. Brett  
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Rochester, New York 14627  
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(716) 275-2408 Fax (716) 244-5689

William T. Kirchgasser  
Dept. of Geology  
State University of New York  
Potsdam, New York 13676  
e-mail: kirchgwt@potsdam.edu  
(315) 267-2296 Fax (315) 267-3170

Letter of Invitation: If an official document is needed to confirm participation or help arrange funds for travel and attendance, write or contact the organizers.

Field Trip Leaders: C. Brett, G. Baird, J. Bridge, W. Kirchgasser, J. Over, C. Ver Straeten, D. Woodrow

**SDS AND UNIV. OF ROCHESTER SYMPOSIUM ON DEVONIAN CYCLICITY AND SEQUENCE STRATIGRAPHY**

**UNIVERSITY OF ROCHESTER -JULY 20-27**

**PRELIMINARY REGISTRATION FORM (please print clearly)**

Name \_\_\_\_\_

(last) (first name)

Address \_\_\_\_\_

City State Zip Code \_\_\_\_\_

(                  ) (                  ) (                  )

Country (other than USA) Business Phone Fax Home phone

e-mail \_\_\_\_\_

Spouse/Guest Name (last) (first name)

Please check appropriate spaces:

Will probably attend / Would like to attend but uncertain

Technical Sessions Only \_\_\_\_\_ / \_\_\_\_\_

Tech. Sessions + Field Trip I \_\_\_\_\_ / \_\_\_\_\_

Full Meeting \_\_\_\_\_ / \_\_\_\_\_

Estimated costs: Do not send money at this time:

Registration: Technical Sessions Only (3 days): Room & Board \$100 Registration Fee \$ 85

Tech. Sessions + Field Trip I (5 days): Room & Board \$160 Registration Fee \$165

Full Meeting (9 days) Room & Board \$345 Registration Fee \$200

Tentative title of talk \_\_\_\_\_ or poster \_\_\_\_\_

TITLE \_\_\_\_\_

Abstracts due June 1 (instructions will be mailed with Second Circular) Please return this form by mail or Fax by March 15  
to: Conference & Events Office

c/o Keith Kurz  
Administration Bldg. Box 41  
University of Rochester  
Rochester,  
NY 14627  
FAX 716-275-8531

**MINUTES FOR THE GERMAN SDS GROUP**

In February 1996 the German group of the SDS held their annual meeting at the Senckenberg Museum in Frankfurt (as it does traditionally in the meantime). By reaching the maximum time of prolongation, the chairmanship of Karsten Weddige (Frankfurt) ended with this meeting. For the same reason Claus-Dieter Clausen (Krefeld) is no longer secretary. The members of the German SDS thanked both colleagues for their very active work and patience. Both will, of course, continue to contribute to Devonian research in the future. The TM's elected myself as new chairman and Dieter Weyer (Magdeburg) as new secretary (addresses at the end).

At the meeting, further research activities have been discussed. The primary aspect concerning stratigraphic work will be the boundary between the Lower and Upper Emsian (comp. also contribution of Thomas Becker in Newsletter No. 12). Since our meeting I talked to most of our group dealing with this topic. Because of overworking of the "elder" experienced Emsian workers among them, they agreed to get the activities coordinated by a "young" colleague, working very actively on Emsian strata. This is Ulrich Jansen (Forschungsinstitut Senckenberg, Frankfurt) who works on Lower Devonian brachiopods from the Rheinisches Schiefergebirge and from Morocco. The experienced colleagues promised to contribute and support this coordination task. There have already been detailed suggestions during our meetings concerning this topic. We shall try to give an overview at the next meeting of the international group next summer. Those who are interested should contact Uli Jansen directly (address at the end). Further, the subcommission discussed (and agreed) to enlarge the variety of stratigraphies, i.e. to consider more strongly - of course on the fundament of biostratigraphy - other possible tools for correlations (i.e. lithostratigraphy, magnetostratigraphy, geochemistry, tephrostratigraphy, cyclic stratigraphy, event stratigraphy, radiometric dating [taken together = holostратigraphy]). All this shall be applied more intensly for future fine-scale correlations. The time resolution can be elevated by combining various parameters (an example of high time resolution around the Frasnian/Famennian boundary using event-stratigraphical aspects has been presented at the meeting by Eberhard Schindler, Frankfurt). About further research activities besides the above mentioned, the colleagues might give informations separately (like in Newsletter No. 12).

Another main topic of the German SDS is the long-planned volume on the Devonian of Germany (publication shall be realized in the Cour. Forsch.-Inst. Senckenberg). Although there has been some delay in the past (for several reasons, not at least by the grown area of Devonian rocks due to the German reunification) the volume is close to publication now. Karsten Weddige continues the edition that he took over as chairman of the German group. Evolving

from the contributions of this volume, an extremely detailed correlation chart is prior to publication. This chart, yielding a biostratigraphic and a regional/lithostratigraphic part, appears in the next Senckenbergiana lethaea before the end of 1996. Senck. leth. will be the forum for publishing this chart from time to time with updates and corrections/new suggestions. Furthermore, Karsten Weddige offered the blank pages of the Senck. leth. to the German SDS for announcements, short statements/comments concerning SDS matters. Still furthermore, a list of members of the German SDS (TM's and CM's) can be purchased via myself, Willi Ziegler or Karsten Weddige.

Briefly, I want to announce a volume of the Courier Forschungsinstitut Senckenberg (CFS) with mostly Devonian articles (+ excursions to late Silurian and Carboniferous). The volume contains mainly the overhang of the Willi-Ziegler-Festschrift (issued in three volumes in 1994, CFS 168-170). The above mentioned volume deals with biostratigraphy and biofacies of conodonts as well as with sedimentological topics from various variscan areas (German Variscides, Pyrenees, Moroccan Meseta, Southern Nevada). One paper is on Devonian tentaculites from the German Harz Mountains. The contributions are written either in German, English or French. Citation of the volume: Koenigshof, P. & Schindler, E. [Hrsg.] (1995): Beitraege zur Geologie und Palaeontologie aus unterschiedlichen Regionen des Palaeozoiiks. - Cour. Forsch.-Inst. Senckenberg, 188: 209pp., 50 Abb., 15 Tab., 24 Taf., Frankfurt/M. (ISBN 3-929907-29-1). The costs are 100,- DM + postage. Copies of the volume may be ordered from: Sabine Jessel, Forschungsinstitut und Naturmuseum Senckenberg, Schrifttausch, Senckenberganlage 25, D-60325 Frankfurt/M., Germany; Fax: ..49-69-746238; e-mail: sjessel@sng.uni-frankfurt.de

List of addresses of colleagues mentioned in the minutes (FIS = Forschungsinstitut und Naturmuseum Senckenberg, Senckenberganlage 25, D-60325 Frankfurt/M., Germany):

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Karsten Weddige, FIS (see above); Tel.: ..49-69-97075141, Fax: ..49-69-97075137, e-mail: kweddige@sngkw.uni-frankfurt.de

Dieter Weyer, Naturkundemuseum Magdeburg, Otto-von-Guericke-Strasse 68-73, D-39104 Magdeburg, Germany; Tel.: 49-391-5365034, Fax: ..49-391-5365010

Willi Ziegler, FIS (see above); Tel.: ..49-69-97075145, Fax: ..49-69-97075137, e-mail: wziegler@sngkw.uni-frankfurt.de

Eberhard Schindler  
Senckenberg Frankfurt/Main

**JURGEN REMANE, CHAIRMAN OF ICS**

[*Prof. Remane sent the following to for inclusion in the Newsletter and is presented here as it was received—Ed.*]

Neuchatel, Nov. 5, 1996

Dear colleagues,

On Oct. 29, I distributed a circular to all Voting Members of ICS, informing them about the serious problems which the group of S. Lucas had had in China. In the same time I asked you to base your vote on the Darriwilian GSSP on purely scientific arguments, the political decision to accept or not a GSSP being the domain of the IUGS EC.

After reception of my circular Stan Finney, Chairman of the Ordovician SC, asked me to circulate in full his and Barry Webby's comments relating their experience in the collaboration with Chinese colleagues. You will find attached both of these messages to the present circular. It should also be added that Markes Johnson, Chairman of the Silurian SC had a very good and fruitful collaboration with Chinese colleagues.

The experience made by young biologists from Neuchatel was more in the sense of that of Spencer Lucas. It would therefore be interesting to have more information of this kind from all those who have done field work in China.

With best wishes,

Jurgen Remane, Chairman of ICS

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**Letter from Barry D. Webby (Macquarie University) to Jurgen Remane**

Dear Jurgen:

Thank you for sending me copies of the various items relating to the study of a P/T section in Xinjiang. I will offer some frank comments from a position of past Chairman of the Ordovician Subcommission, and I do hope they will help in resolving this matter. I do not know any of the American or Chinese scientists involved in this saga, so I am simply giving my views based on the papers you sent me.

I must say I am greatly concerned that what seems to be a totally isolated case of a dispute (at a beginning stage of work) to find a possible P/T auxiliary section is being blown up into a major issue impinging on ALL fully documented GSSP proposals from China, but specifically at this time, our Darriwilian proposal.

I have carefully read what you have sent me and I suggest, with respect, that there have been some serious misunderstandings on both sides - there may have been a lack of communication and/or language difficulties, but frankly it seems that one cannot apportion blame more to one side than the other without having a great deal more information from both sides. Yet the way I read it you have more-or-less accepted at face value all the allegations Lucas and his colleagues have made about Cheng and Li. I certainly think it would be useful to have a clearer picture of the dispute from the Chinese side - with comments perhaps from Professor Zhao Xun (Vice President of the Chinese Academy

of Geological Sciences) and/or Professor Wang Nai-wen - before giving public support to Lucas and co-workers.

I find the sentiments (and language) contained in the Lucas et al. letter, specifically the remarks that "the Ministry of Geology condoned unprofessional, unethical and criminal behaviour by Cheng and Li", and that theirs was "clearly part of an institutional pattern of behaviour of Chinese scientific institutions", particularly offensive. This is not the sort of language to engender cooperative scientific research in China, or for that matter, anywhere else in the world.

I do not think it will be of particular help to have these Lucas et al allegations published in an IUGS/ICS funded stratigraphic newsletter unless it is accompanied by a balanced response in the same issue of the newsletter from Cheng Zheng-wu.

I do not accept that because of this isolated instance of problems working on a promising P/T section that, ICS should specifically single out the Chinese to guarantee access. Such guarantees should be provided as a part of ALL submissions from ALL countries where GSSPs are to be established. Clearly conservation and accessibility issues must be addressed for ALL GSSP submissions, again in ALL countries, not just China (in the Cowie et al version of the GSSP guidelines, 1986, this was spelt out in section B.III.7).

The Ordovician Submission has since 1977 enjoyed an excellent, cooperative working relationship with our Chinese Ordovician colleagues, both in Academia Sinica (with Professor Chen Xu, currently Vice Chairman, and Professor Zhou Zhi-ji - earlier Prof. Lu Yan-hao) and in the Ministry of Geology (with Professor Wang Xiao-feng - formerly Profs. Sheng Shen-fu and Kuo Hung-chun). There have been many collaborative achievements (and no difficulties) in our working relationships during this long and close association. The latest and most important cooperative work has been the assembly of data for the submission to ICS of the Darriwilian GSSP proposal. I hope that the Full Commission of ICS will adopt this proposal on its scientific merits. The separate issues of access and conservation need to be addressed (as they must be for ALL GSSP submissions). I am contacting, through Subcommission Chairman Stan Finney, Professor Chen Xu immediately to ask him to provide this information (details of conservation of the site and essential guarantees of access) as soon as possible.

With all good wishes

Barry

\*\*\*\*\*

Barry D. Webby

Centre for Ecostratigraphy & Paleobiology School of Earth Sciences

Macquarie University

**Letter from Stan Finney (California State University - Long Beach) to Jurgen Remane**

Dear Dr. Remane:

I am sorry that I did not respond sooner to your e-mail of October 22. I am not happy with the October 29 message that was sent to all Subcommission chairs in that it did not state the position of the Ordovician Subcommission strongly

enough. In my opinion, disagreements between international scientists often involve miscommunication, misunderstanding, and often unreasonable people. Based on what I've heard, I believe it possible that the incident with the Triassic group resulted from these causes and is not typical of the experiences of most visiting scientists in China. As I mentioned, our experiences indicate that the situation is opposite to that of the Triassic group, and it is our experiences that should be used to characterize working relations with Chinese colleagues and not those of the Triassic group.

Stan Finney

Stanley C. Finney

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## NEWS FROM THE MEMBERSHIP

### R.T. BECKER (BERLIN)

In the last year I made myself comfortable in the Museum für Naturkunde (Humboldt-Universität zu Berlin) which offers, despite the irresponsible government cuts in funding of universities, a nice place for work and research in a very friendly atmosphere. Everybody is invited to visit and use the enormous Devonian collection which yields to me again and again surprises. Hidden in draws which remained unopened for decades, again and again supposedly lost ammonoid types and specimens re-appear which will be revised step-by-step in the future. This well may be true for other groups but only specialists could judge this.

Research has continued, together with Michael House, Raimund Feist, Gil Klapper and the "Moscow Team", on ammonoid biostratigraphy, facies fluctuations, sealevel changes and events in Morocco, the Canning Basin, and in the Timan. A Moroccan trip in March yielded important and rich new Famennian collections, especially from the Maider, and we also continued our work in the late Givetian and Frasnian of the Tafilalt and on the Frasnian-Famennian boundary in the Meseta. Phantastic collections were made available by two amateur collectors, Dr. V. Ebbighausen and J. Bockwinkel (Odenthal), who became further infected with the research virus during joint field work.

During the International Cephalopod Symposium in Granada, ideas on Upper Devonian ammonoid autecology and evolutionary ecology were presented and this topic will be continued intensively in the future. At the meeting, Royal Mapes made a fascinating pyritized late Famennian (Wocklumian) ammonoid fauna from Oklahoma available which includes the usually rare *Rhiphaeoclymenia* as a common faunal element.

In the Rhenish Massif, a contribution to the coral biostratigraphy around the Middle/Upper Devonian boundary has been completed and published together with A. May (Münster). A first Upper Frasnian goniatic fauna with archoceratids has been discovered by V. Ebbighausen and J. Bockwinkel in the classical Büdesheim Syncline of the Eifel Mts. and will be described jointly. Other late Frasnian goniaticites

where found by J. Boy (Mainz) in the Bergisch Gladbach region. A project by T. Steuber (Cologne/Erlangen) on oxygen isotopes in conodont phosphate using modern laser techniques has started and sections around the D/C boundary have been re-sampled jointly leading to the recovery of some rare latest Devonian ammonoids. New research on the Frasnian-Famennian boundary in Belgium, Germany (Rhenish Massif, Thuringia, Saxony) and Morocco is planned from the next year on, together, amongst others, with P. Clayes (from our museum) and E. Schindler. Unfortunately, it is not yet clear whether a project to be conducted mostly by Theo Engeser (formerly Hamburg, now FU Berlin) on the fundamental revision of orthoceratids will be financed by the German Research Foundation. An M.Sc. student soon will start to work on early ontogenetic stages of Palaeozoic ammonoids. Muscle attachment scars in beautifully preserved pyritic Famennian goniaticites will be studied in the frame of a Ph.D. under supervision of Prof. Fischer (Hannover).

### Papers of 1996:

BECKER, R.T. & KULLMANN, J.: Paleozoic ammonoids in space and time. - In: *Ammonoid Paleobiology*. (LANDMANN, N., TANABE, K. & DAVIS, R., Eds.), Topics in Geobiology, Vol. 13: 711-753, 8 Abb., Plenum Publ. Corp., New York.

MAY, A & BECKER, R.T.: Ein Korallen-Horizont im Unteren Bänderschiefer (höchstes Mittel-Devon) von Hohenlimburg-Elsey im Sauerland (MTB 4611 Hohenlimburg; Rheinisches Schiefergebirge). - *Berl. geowiss. Abh.*, E, 18: 209-241, 1 Abb. 2 Tab., 3 Taf.

HOUSE, M.R., MENNER, V.V., OVNATANOVA, N.S., KUZMIN, A.V., BECKER, R.T. & YATSKOV, S.: Mid-Paleozoic reef episodes in the Frasnian of the Timan and Pechora area and their association with anoxia and sea level changes. - In: *Carbonate Ramps. Oceanographic and Biological Controls, Modelling and Diagenesis*, Abstracts Meeting Geol. Soc. London (WRIGHT, P. & BURCHETTE, T., Conv.): 1 S.

- BECKER, R.T.: New faunal records and biostratigraphic correlation of the Hasselbachatal D/C-Boundary Auxiliary Stratotype (Germany). - *Ann. Soc. géol. Belg.*, 117 (1): 19-45,
- BECKER, R.T.: Functional Morphological and palaeobiological aspects of Upper Devonian ammonoid morphotypes. - *Abstr. IV. Internat. Ceph. Symp., July 1996, Granada*, 1 S.
- HOUSE, M.R. & BECKER, R.T.: Origin and evolution of the Beloceratidae. - *Abstr. IV. Internat. Ceph. Symp., July 1996, Granada*, 1 S
- BECKER, R.T.: High-resolution ammonoid biostratigraphy in the Famennian of southern Morocco. - *Abstr. Int. Geol. Congr., Beijing, August 1996*, 1 S.
- MENNER, V., OVNATANOVA, N., KUZMIN, A., YATSKOV, S., BECKER, R.T. & HOUSE, M.R.: Dating of Frasnian reef episodes in the Timan-Pechora region using conodonts and ammonoids. - *Abstr. Int. Geol. Congr., Beijing, August 1996*, 1 S.
- BECKER, R.T.: Zur Evolutionsökologie bei Ammonoideen des unteren und mittleren Famenniums. - *Abstr. 66. Tagung der Paläont. Ges., Leipzig, September 1996, Terra Nostra*, 96/6: 19.
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- RECENT DEVONIAN PAPERS**
- [Submitted by CM BECKER—Ed.]
- [In this section we ask SDS members to draw attention to papers of the last two to three years dealing with Devonian matters which may be hidden for the broader public since they have been published in regional journals with limited international distribution or in journals Devonian workers normally would not check frequently. Special emphasis should be on papers dealing with stratigraphy, regional Devonian geology and topics with some general interest such as sealevel changes, events, palaeobiogeography, cyclic sedimentation etc. Very recent publications of major journals may be included as well.]
- Alberti, G.K.B. (1995): Zu Kenntnis und Problemen der Biostratigraphie und der faziellen Entwicklung des Silurs und Devons im Harz. - *Nova Acta Leopoldina, Neue Folge*, 71 (Nr. 291): 23-39.
- Ammer, M.R., Rathmann, S. & Richter, E. (1994): Henry PAULS "Étroeungt-Schichten" des Bergischen Landes. Biostratigraphie und Biofazies am Nordrand des Velberter Sattels. - *Archäologie im Ruhrgebiet*, 2: 73-98.
- Ashouri, A.R. (1995a): Conodonts role on biostratigraphy: An example from Devon, South of England. - *Geo-Sciences*, 4 (14): 56-63, Geological Survey of Iran.
- Ashouri, A.R. (1995b): Platform conodont from Frasnian/ Famennian boundary of El Atrous section, Morocco. - *Geo-Sciences*, 4 (17,18): 10-15, Geological Survey of Iran.
- Aung, A.K. (1995): New Middle Devonian (Eifelian) rugose corals from Myanmar. - *J. Southeast Asian Earth Sci.*, 11 (1): 23-32. [with some limited conodont data from the classical Burmese Devonian area]
- Bai, S.L., Bai, Z.Q., Ma, X.P., Wang, D.R. & Sun, Y.L. (1994): *Devonian events and biostratigraphy of South China. Conodont zonation and correlation, bio-event and chemo-event, Milankovitch cycle and nickel-episode*. - 303 pp., 45 pls., Peking University Press.
- Bartzsch, K., Blumenstengel, H. & Weyer, D. (1995): Ein neues Devon/Karbon-Grenzprofil am Bergaer Antiklinorium (Thüringer Schiefergebirge) - eine vorläufige Mitteilung. - *Geowissenschaftliche Mitteilungen von Thüringen*, 3: 13-29.
- Becker, G. (1993): Großwüchsige pelagische Ostracoden aus dem hessischen und thüringischen Oberdevon. Mit einer Bemerkung zur Event-Theorie. - *Jahrbuch des Nassauischen Vereins für Naturkunde*, 114: 5-18; Wiesbaden. [mostly on large-sized Kellwasser ostracods]
- Becker, G. & Blumenstengel, H. (1995): Ostracoden vom Thüringer Ökotyp aus der „Postriß-Kappe“ des Rübeländer Riffes (Elbingeröder Komplex, Harz; Obere crepida-Zone, Oberdevon). - *Abhandlungen und Berichte für Naturkunde*, 18: 63-101, Magdeburg.
- Blumenstengel, H. (1994): Zur Bedeutung von Meeresspiegelschwankungen bei der Bildung der Oberdevonsedimente von Saalfeld, Thüringer Schiefergebirge. - *Geowissenschaftliche Mitteilungen von Thüringen*, 2: 29-44; Weimar.
- Blumenstengel, H. (1995): Zur Ostracodenfauna der Oberen Clymenien-Schichten von Saalfeld (höchstes Famennium, Thüringer Schiefergebirge). - *Beiträge zur Geologie von Thüringen, Neue Folge*, 2: 3-27.
- Budil, P. (1995a): Demonstrations of the Kacak event (Middle Devonian, uppermost Eifelian) at some Barrandian localities. - *Vestnik Českého geologického ústavu*, 70 (4): 1-24.
- Budil, P. (1995b): The Middle Devonian Kacak Event in the Barrandian area. - *Geolines*, 3: 7-8.
- Bureau of Geology and Mineral Resources of Nei Mongol Autonomous Region (1996): *Stratigraphy (Lithostratigraphic) of Nei Mongol Autonomous Region*. - 344 p., China University of Geosciences Press. [including detailed sections with faunal lists which include newly named taxa which appear to be nomina nuda]
- Casier, J.-G., Lethiers, F. & Clayes, P. (1996): Ostracod evidence for an abrupt mass extinction at the Frasnian/ Famennian boundary (Devils Gate, Nevada, USA). - *C. R. Acad. Sci. Paris*, 322, sér. Iia: 415-422.
- Chen, D. & Chen, Q. (1994): Devonian sedimentary evolution and transgression-regression patterns in South China. - *Scientia Geologica Sinica*, 29 (3): 246-255.
- Chen, D. & Chen, Q. (1995): Dynamics of Sedimentary Evolution for the Early and Middle Devonian, Southern Guizhou. - *Acta Sedimentologica Sinica*, 13 (3): 54-65. [another paper without English translation was published earlier by the two authors in: *Science in China*, Ser. B., 1994 (11): 1197-1205]

- Coen, M. (1996): Ostracodes from the Frasnian to Visean deposits of Central Hunan, South China. - *Mém. Inst. Géol. Univ. Louvain*, 36: 55-72.
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- Ebert, Jo. (1993): Globale Events im Grenz-Bereich Mittel-/ Oberdevon. - *Göttinger Arbeiten zur Geologie und Paläontologie*, 59, 106 pp., 1 pl. [detailed study on events around the *Pharciceras*-Stufe]
- Ebert, Ja. (1994): Crinoiden-Stielglieder aus der Ems- und Eifel-Stufe des Sauerlandes (Rheinisches Schiefergebirge). - *Göttinger Arbeiten zur Geologie und Paläontologie*, 64, 85 pp, 3 pls. [monography on crinoid ossicle stratigraphy and taxonomy]
- Ernest, C. (1993): Koloniebildende Phillipsastraeidae und Hexagonariinae aus dem Givetium des Messinghausener Sattels und vom Südrand des Briloner Massenkalkes. - *Geologie und Paläontologie Westfalens*, 26: 7-45. [with a discussion on coral biostratigraphy around the Givetian-Frasnian boundary]
- Fenninger, A. & Hubmann, B. (1994): Devonian Calcareous Algae of the South- and Austroalpine Region: The State of Knowledge. - *Beiträge zur Paläontologie*, 19: 83-89; Vienna.
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- ANNUAL MEETING OF THE GERMAN PALAEONTOLOGICAL SOCIETY**
- [Submitted by CM BECKER—Ed.]
- The 1996 annual meeting of German Paleontologists took place from the 22nd to the 28th of September in the Institute of Geophysics and Geology/Geological-Paleontological Collection. A large part of first days programme was compiled in honour of Johan Georg Bornemann (1831-1896) who became both famous for his paleobotanical work and for his research in the Paleozoic of Sardinia where he was in charge of a large mine. Congress organisation and two exhibitions, on the Tertiary of the Leipzig region, and on J.G. Bornemann, lay in the hands of the small but active paleontologist group under the lead of Prof. A. Müller. Field excursions did not visit the badly neglected Devonian of Saxony, but CM D. Weyer (Magdeburg) and his old friend and co-author K. Bartsch (Saalfeld) gave a good overview of Famennian sections of Thuringia, including the new, recently described Devonian-Carboniferous boundary section in the Kahleite-East Quarry of the Schleiz area. Excursion guides and abstracts, unfortunately excluding the Devonian part, have been published in *Terra Nostra*, volumes 96/5 and 96/6 (publication series of the Alfred Wegner Society). The following talks with Devonian topics have been presented at the meeting (see vol. 96/6):
- Talks**
- Amler, M.R.W. & Richter, E.: Evolution der Conocardioidea. [included Devonian members of the group]
- Becker, R.T.: Zur Evolutionsökologie bei Ammonoideen des unteren und mittleren Famenniums.
- Braun, A.: Paläozoische Kleinarthropoden in "cuticularer" Erhaltung - ein breites und vielversprechendes Forschungsgebiet. [including Lower Emsian cuticular remains of arthropods with preserved receptory organs]
- Brühl, D.: *Alveolites megastomus* STEININGER 1849 (Anthozoa, Tabulata) aus dem Eifelium (Mittel-Devon) der Eifel (Rheinisches Schiefergebirge).
- Haude, R.: Fluchtversuche verschütteter Holothurien in einer unterdevonischen Echinodermen-Taphozönose. [on Lower Devonian holothurids from Argentina]
- Otto, M.: Die Placodermengattung *Arctolepis* im Unterdevon des Rheinischen Schiefergebirges.
- Pohler, S.M.L.: Paläontologie devonischer Karbonatkörper im Tamworth Belt als Beitrag zur Sedimentationsgeschichte eines intra-ozeanischen Inselbogensystems (New South Wales, Australien) [mostly on corals, stromatoporoids and the regional basin evolution]
- Schudack, M.: Sedimentäre und biofazielle Zyklen in Massenkalken des Hönnetals (Sauerland) - Beispiele für devonische Milankovic-Zyklen?
- Schlücker, I.: "Faunal recovery" am Beispiel der Conodonten nach dem Kellwasser-Event.
- Schultze, H.-P.: Primitive Knochenfische aus dem Unterdevon der kanadischen Arktis. [including lung fishes, Rhipidistia and Actinopterygia]
- Weber, H.M.: Die Stromatoporen-Biostrome im Strunian Westeuropas (höchstes Oberdevon, Belgien und Bundesrepublik Deutschland)
- Posters**
- Brühl, D.: Sekundäre Mikrostrukturen im Skelett von *Alveolites LAMARCK* 1801 (Anthozoa; Tabulata) aus dem Mittel-Devon (Eifelium) der Dollendorfer Mulde (Eifel/Rheinisches Schiefergebirge).
- Hubmann, B.: Rugose und tabulate Korallen des alpinen Raumes: eine Synopsis. [included data on Devonian corals from the Graz region, the Karawanken and the Carnic Alps]
- Minwegen, E.: Erster Famenne-Mound im Rheinischen Schiefergebirge. [late Famennian unbedded limestones in the famous Provincial Quarry Dreher with a range of D/C boundary sections have been identified as a diagenetically altered mudmound]
- Otto, M.: Fossildiagenese und Fossilinterpretation am Beispiel des Hunsrückshiefers. [continuation of the claim that there is no true soft body preservation in the Hunsrück Shale - supposed ctenophorans, e.g., are re-interpreted as brachiopods]
- Schindler, E., Schlücker, I. & Ziegler, W.: Die Frasne/Famenne-Grenze im Sessacker-Schurf, Dill-Mulde. [preliminary results on the Upper Kellwasser Event in the new trenches at the famous Seßacker site]
- The large quantity of Devonian contributions in this year may be seen as a hopeful sign for the future. A very active research group has formed in Cologne after H.-G. Herbig took the paleontology chair two years ago.

**CARLTON BRETT (ROCHESTER)**

During 1996 much of my time was consumed with activities related to the James Hall Symposium, the Second International Symposium the Silurian System, held here in Rochester in August, such that Devonian studies took a back seat. However, Gordon Baird (SUNY College, Fredonia) and I did do some fieldwork on the Middle Devonian in central Pennsylvania and western Maryland. We were able to extend correlations of several cycles and condensed marker beds in the Onondaga-equivalent Needmore Formation and lower to middle parts of the Hamilton Group (Mahantango Formation) through south-central Pennsylvania and western Maryland. Study of exposures at Spring Gap, Maryland also led to the discovery important trilobite rich beds in the Onondaga-equivalent Needmore (Eifelian) that yielded possibly new phacopids and Odontocephalus, presently under study by Gerald Kloc. In addition, I worked on refining uppermost Hamilton-Tully- lower Genesee stratigraphy in central New York, and sampled fossil assemblages extensively for ongoing evolutionary paleoecology studies. This research was done in conjunction with bedrock mapping of the Tully and Otisco Valley Quadrangles, by former PhD student Chuck Ver Straeten, for the New York State Geological Survey.

Now my attention will be focused on the upcoming SDS Meeting and Field trips on Devonian sequences and cycles to be based here in Rochester July 20 to 27, 1997 (see announcement and forms in this newsletter). I want to welcome you to come to Rochester and to participate in a field traverse of Devonian depositional sequences and smaller cycles across New York State from Lake Erie to the Catskill Escarpment this summer. Here we go again!.

## Publications by Brett &amp; Co-Workers 1996

## Refereed Papers

Brett, C.E., and Baird, G.C. 1996, Middle Devonian sedimentary cycles and sequences in the Northern Appalachian Basin. In Witzke, B.J., Ludvigson, G.A., and Day, J., eds., Paleozoic Sequence Stratigraphy: Views from the North American Craton. Geological Society of America Special Paper 306, p. 213-241.

Brett, C.E. and Goodman, W.M., 1996, Sequence stratigraphy of central Pennsylvania and Central New York State: A regional synthesis. In Broadhead, T.W., ed., Sedimentary Environments of Silurian Taconia. University of Tennessee Department of Geological Sciences Studies in Geology, V. 26, p. 170-199.

Brett, C.E. and Goodman, W.M., 1996, Silurian stratigraphy of the type Clinton area of central New York. In Broadhead, T.W., ed., Sedimentary Environments of Silurian Taconia. University of Tennessee Department of Geological Sciences Studies in Geology, v. 26, p. 200-230.

Brett, C.E., Ivany, L. and Schopf, K., 1996, Coordinated stasis: An overview. *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 125.

Oliver, Jr., W.A., Sorauf, J.E., and Brett, C.E., 1996, A unique occurrence of *Endophyllum* (Rugose coral:Devonian) in eastern North America: An ecological and biogeographical puzzle. *Journal of Paleontology*, v. 70, p. 46-56.

Taylor, W.L. and Brett, C.E., 1996, Taphonomy and paleoecology of echinoderm Lagerstätten from the Silurian (Wenlockian) Rochester Shale. *Palaios*, v. 11, p. 118-140.

## Guidebooks

Brett, C.E. and Goodman, W.M., 1996, Upper Ordovician and Silurian sequence stratigraphy and depositional environments in western New York: A Field Guide for the James Hall Symposium, Second International Symposium on the Silurian System; University of Rochester, Rochester, N.Y., 178 p.

**REX E. CRICK (DALLAS)**

At the Paris SDS meeting, I was fortunate to interest Raimund Feist and John Talent in two collaborative projects. Both involve the marriage of magnetic susceptibility stratigraphy with some aspect of existing sections. The work with Raimund Feist and Catherine Girard involves a centimeter by centimeter analysis of four Frasnian/Famennian sections (Courniac-Upper Quarry; Courniac-Lower Quarry, Causses-et-Veyran South, La Serre Trench C) in the Montagne Noire for the purpose of comparing the magnetic susceptibility profile among the four sections in hopes of establishing a correlation link between profiles. The condensed nature of all but the La Serre Trench C section causes some problems but there is a clear pattern of magnetic susceptibility between all sections allowing correlation on a scale much finer than a conodont zone. The Upper Kellwasser interval stands out particularly well. We have some details to clear up and will submit the manuscript for publication in *Palaios* within the next few months. I am joined in the work by my good friend and geophysicist, Brooks Ellwood of this department.

The project with John Talent involves the development of magnetic susceptibility profiles for sections being processed for chemostratigraphy. The goal is to test the agreement between so called "chemical" events and "iron" events within a well defined biostratigraphic context. John has the details on the specific location of sections and their age range.

Brooks Ellwood and I have been fortunate to receive funding from both the Petroleum Research Fund and the National Science Foundation to extend our work on developing a composite magnetic susceptibility profile for the Devonian. We were back in the western Sahara of Morocco in November to add to the existing data base and will return to the Tafilalt, Maider, and other appropriate basins in May 1997 in an attempt to finish the magnetic susceptibility profile for the Devonian of the region. The funding will also allow a magnetic susceptibility profile to be developed for the Silurian/Devonian GSSP (with help from our Czech

colleagues) and to begin the development of profiles for areas of the western & eastern USA. We look forward to demonstrating some of these findings at the Rochester meeting. We are convinced that the use of magnetic susceptibility together with biostratigraphy will benefit efforts to define substage boundaries.

We have also "attacked" a nasty sequence of Late Frasnian-Early Carboniferous black shales outcropping in southern Oklahoma (Woodford Shale) that begin in the *jamieae* zone and extend into at least the *sulcata* zone. The rhythmic bedding carries a detailed magnetic susceptibility signature that has allowed us to unmask the periodicity of the rhythms using harmonic analysis. While the preliminary results are quite good, the Woodford does not presently have the quality of biostrat control needed to complete the work. Thus far we have only been able to work two sections. The first begins in the *jamieae* zone and extends into the *marginifera* zone and the second section begins in the *trachytera* zone and extends at least into the *duplicata* zone. Harmonic analysis aided in the identification of the major orbital forcing cycles (OFC) responsible for the rhythmic nature of the bedding. The youngest section (Late Famennian-Early Carboniferous) does not appear to have any major unconformities and has what appears to be a relatively constant rate of sedimentation. The major harmonic is the fourteenth and when it is selected as the 413 Ka OFC, the remaining harmonics fall at the appropriate spacing for the higher frequency OFCs. This gives of the section a duration of approximately 5.7 Ma. The older section (Late Frasnian - Middle Famennian) shows evidence of change in rates of sedimentation caused by the position of the section proximal to source. We have had to treat several portions of this section differently but the combined result of the harmonic analysis gives a duration of 5.5 Ma. The absence of overlap will be solved, hopefully, this summer with much needed help from CM Jeffrey Over. We were fortunate that the Petroleum Research Fund selected Jeff as an ACS-PRF Summer Research Fellow to join us in this research. Jeff's Ph.D. research was conducted on these and other Woodford sections.

Mr. Ding Yuechao of the Xinjiang Petroleum Institute (Urumqi, Xinjiang, PRC) has joined us for 6 months to learn the specifics of magnetic susceptibility and its possible application to the correlation of Triassic-Jurassic terrestrial sequences in the Tarim Basin.

The revision of *Part K of The Treatise on Invertebrate Paleontology* is moving very slowly due to the lack of funding which would allow visits by key authors to decide the organization and scope of the various portions.

#### M.R. HOUSE (SOUTHAMPTON)

The INTAS programme with V.V. Menner, N.S. Ovnanova, A. V. Kuzmin, S.A. Yatskov, R.T. Becker and M.R. House came to an end in February 1996 and a Final Report was produced under the grant title Mid-Palaeozoic greenhouse anoxic and eustatic events in the Timan, Urals and western European regions was presented to INTAS largely

summarising conclusions relating to the Frasnian of the southern Timan. A paper on this work was presented at Beijing in August 1996. Final presentation for publication is hoped to take place in 1997. The final report was recommended by INTAS and an extension of the grant to cover work in the more northern Timan and Polar Urals, and the Famennian has been approved by INTAS for the next two years. Pierre Bultynck replaces Michael House as Project Coordinator.

The award of a Leverhulme Emeritus Fellowship for 1997 in 1998 should enable the completion of the monograph of the Late Devonian goniatite faunas of New York which has been jointly undertaken with Bill Kirchgasser over many years: the grant includes sums to cover the cost of plate publication. Work with Thomas Becker has continued on a range of projects, especially in the Canning Basin, Western Australia, and in Morocco. Several papers are in the course of completion. The award of a Natural Environmental Research Council (NERC) award will enable a continuance of work on the Frasnian of the northwest European area.

House, M.R. 1996. The Middle Devonian Kacak Event. Proceedings of the Ussher Society, Vol. 9, 79-84.

House, M.R. 1996. An Eocanites from the early Carboniferous of Chile and its palaeogeographic implications. Annales de la Societe Geologique de Belgique, Tom. 117, 95-105.

#### MICHAEL MURPHY(DAVIS)

Most importantly, the volume edited by Klapper, Murphy and Talent honoring the life and work of J. G. Johnson has been assembled and is in the hands of the GSA book editor. This volume contains mostly articles concerning the Devonian. My contributions to the volume are 1) a paper with Valenzuela-Rios on LD conodonts of the stygia group and 2) a review of Nevada Lochkovian corals with Alan Pedder.

Otherwise, I am engaged in a cooperative study with Peter Carls and Nacho Valenzuela of the high Silurian and low Devonian conodont faunas from Nevada, Spain, Germany, Austria and the Czech Republic with Chlupac, Schoenlaub, Walliser and Weddige as consultants. We hope to revise some of the taxonomy of the tough nuts and to come up with some tighter correlations in the Lochkovian and high Silurian.

#### FLORENTIN PARIS (RENNES)

My recent activity on Devonian material focused mainly on chitinozoans biostratigraphy in Ukraine (with Y. GRAHN, Sweden), Czech Republic (with S. GEPPA, P. DUFKA and I. CHLUPAC) and Algerian Sahara (with K. BOUMENDJEL). Concerning the Algerian Sahara, a long term project on the Devonian of Ougarta area (sponsored by SONATRACH) is completed now and 15 papers dealing with lithostratigraphy, chronostratigraphy, faunas and palaeobiogeography of this area are submitted for publication in Ann. Soc. Géol. Nord.

A tentative global zonation of Devonian chitinozoans has been proposed. Investigations are also carried out in collaboration with Ch. LECUYER (ENS Lyon, France) on the stable

carbon isotope ratios of various organic walled microfossils (sorted populations of chitinozoans, graptolites, leiospheres, wood debris...) preserved in Devonian marine sediments.

#### Recent publications

Galtier, J. Paris, F. El Aouad-Debbaj, Z. 1996. La présence de Callixylon dans le Dévonien supérieur du Maroc et sa signification paléogéographique. *C. R. Acad Sci.* 322, IIa: 893-900.

Paris, F., Girard, C., Feist R. Winchester-Seeto, T. 1996. Chitinozoan bio-event in the Frasnian/Famennian boundary beds at La Serre (Montagne Noire, Southern France). *Palaeogeography, Palaeoclimatology, Palaeoecology*, 121,: 131-45

Paris, F. Grahn, Y. 1996. Chitinozoa of the Silurian-Devonian boundary sections in Podolia (Ukraine). *Palaeontology*, 39, 3, p. 629-649.

Paris, F. & Lécuyer, Ch. 1996. Stable carbon isotope ratios of sorted organic walled microfossils of early Paleozoic age. 9 th International Palynologic Congress, Houston, Texas, June 23-28, 1996 (Abstract)

Y. Melo, J.H., Grahn, Y., Loboziak, S. & Paris, F. 1996. First record of Fungochitina fenestrata (Taugourdeau & Jekhowsky 1960) (Chitinozoa) in the Devonian of Brazil and its biostratigraphic significance. *Anais do 1. Simpósio Sul Americano do SiluroDevoniano. Estratigrafia e Paleontologia. Ponta Grossa.* p. 263-288.

Paris, F., 1996. Chitinozoan biostratigraphy and Paleogeography. In: J. Jansonius and D. C. McGregor (Editors), *Palynology: principles and applications*. American Association of Stratigraphic Palynologists Fondation, Vol. 2, Chapter 17, p. 531-552.

Paris, F., Winchester-Seeto, T., Boumendjel, K. and Grahn, (in press). Toward a global biozonation of Devonian chitinozoans. *Cour.Forsch.-Inst.Senckenberg*.

#### EBERHARD SCHINDLER (FRANKFURT)

New directions and/or regions of investigations have been started besides ongoing work on Upper Devonian strata (among others e.g. trenches near Buedesheim/Eifel Hills and Oberscheld/Dill Syncline of the Rhein. Schiefergebirge = old Sessacker Trench; in both cases cooperation with national and international colleagues is achieved). As a new area of Devonian research Northeastern Albania has been visited during a five-weeks field trip by Peter Koenigshof (Forschungsinstut Senckenberg, Frankfurt/M.) and myself. Selam Meco, Polytechnic University Tirana (Albania) has been guiding the trip. Work on the collected samples is currently under way. Following the announcement of John Talent (Macquarie University, North Ryde, Australia) in the last newsletter, a first bentonite sample with very good stratigraphic control from Steinbruch Schmidt has been sent to John.

Recent papers (abstracts mostly submitted for publication):  
Feist, R. & Schindler, E. (1994): Trilobites during the Frasnian Kellwasser Crisis in European Late Devonian

cephalopod limestones. - *Cour. Forsch.-Inst. Senckenberg*, 169: 195-223, 7 figs., 5 pls.; Frankfurt/M.

Morrow, J.R.; Sandberg, C.A. & Schindler, E. (1995): Conodont diversity trends across the late Frasnian (mid-Late Devonian) mass extinction interval, Nevada and West Europe. - *Geol. Soc. Amer., Abstr. with Progr.*, 27(4): 48; Boulder.

Morrow, J.R.; Schindler, E. & Walliser, O.H. (1995): Phanerozoic development of selected global environmental features. - in: Walliser, O.H. (ed.): *Global events and event stratigraphy in the Phanerozoic*: 53-61, 1 chart; Berlin (Springer).

Koenigshof, P. & Schindler, E. [eds.] (1995): *Beitraege zur Geologie und Palaeontologie aus unterschiedlichen Regionen des Palaeozoikums.* - *Cour. Forsch.-Inst. Senckenberg*, 188: 209pp., 50 figs., 15 tabs., 24 pls.; Frankfurt/M.

Schindler, E. & Koenigshof, P. (1996): Sedimentologie und Mikrofazies oberdevonischer Kellwasser-Kalke an ausgewählten Beispielen (Oberer Kellwasser-Horizont, hohe Frasne-Stufe). - *Sediment* 96, 11. Sedimentologentreffen, Kurzfassungen: 154; Wien. Schindler, E.; Schuelke, I. & Ziegler, W. (1996): Die Frasne/Famenne-Grenze im Sessacker-Schurf, Dill-Mulde. - 66. Tagung der Palaeontologischen Gesellschaft, Terra Nostra, Heft 96/6: 126; Leipzig.

#### JOHN A. TALENT & RUTH MAWSON (NORTH RYDE, N.S.W., AUSTRALIA)

Life has been a little quieter since our last report. We had the pleasure of visits, each of 2 months, from Lennart Jeppsson (Lund) and from Monique and Raimund Feist (Montpellier). They visited key Silurian and Devonian sections in eastern Australia and gave inspiration to many eastern Australian palaeontologists old and young. Raimund made biogeographically interesting discoveries of Middle Devonian trilobites from specific ecologic niches in the Broken River Group and from the earliest Carboniferous Ruxton Formation, both in north-east Queensland. Until the visit of the Feists, there were no known occurrences of Tertiary or older Charophyta from Australia. We can now report definite charophytes from the Fairy Beds (Pragian) at Buchan, and from the Mytton Formation (?early Frasnian) in the Broken River area, and possibly from the late Ludlow (*crispus* Zone) at Cowombat on the Victoria-NSW border.

Glenn Brock [gbrock@laurel.ocs.mq.edu.au] is now editor of *Alcheringa*. He and John Talent completed editing the special volume of *Historical Biology* in honour of Art Boucot; it was published around mid-year as a 4-part issue of *Historical Biology*.

#### Theresa Winchester-Seeto

[twinches@laurel.ocs.mq.edu.au] has contributed a paper on Devonian chitinozoan biogeography to the Jess Johnson memorial volume. A long paper on the chitinozoans (Emesian) of the Taravale Formation of eastern Victoria was published this year (in *Acta Pal. Polonica*).

**Mehdi Yazdi** completed a doctoral dissertation on Late Devonian-Carboniferous conodonts from the Tabas region of eastern Iran; he is now back in Isfahan where he is planning work on the biostratigraphy of Devonian sequences in central Iran.

**Zerina Johanson** ([greded@amsg.austmus.oz.au](mailto:greded@amsg.austmus.oz.au)) will soon complete her PhD on tonne upon tonne of Late Devonian fish from Canowindra, central NSW.

Other doctoral and MSc students continue research along the lines outlined in the last issue of the Newsletter.

**Barry Webby** [[bwebby@laurel.ocs.mq.edu.au](mailto:bwebby@laurel.ocs.mq.edu.au)] and **Yong-yi Zhen** [[yzhen@laurel.ocs.mq.edu.au](mailto:yzhen@laurel.ocs.mq.edu.au)] continue work on eastern Australian Devonian stromatoporoid faunas; a long paper on the stromatoporoids from the Broken River area of northern Queensland will appear in the next issue of *Alcheringa*. About to appear in *Palaeontographica* is a monograph by Yongyi (and John Jell) on the Middle Devonian rugose corals of the Burdekin Basin of northern Queensland; he has also completed a manuscript reviewing the sequence of Australian Devonian rugose coral faunas.

**Ruth Mawson** [[rmaulson@laurel.ocs.mq.edu.au](mailto:rmaulson@laurel.ocs.mq.edu.au)], and **John Talent** [[jtalent@laurel.ocs.mq.edu.au](mailto:jtalent@laurel.ocs.mq.edu.au)] report continued work on several mid-Palaeozoic projects. They have a paper in press on conodont data in relation to the Devonian-Tournaisian (Early Carboniferous) transgression-regression pattern in the Burdekin and Clarke River basins and the Broken River Province of north-eastern Queensland. A manuscript is in early stages of preparation on the Lochkovian-early Pragian of the Broken River Province, north-east Queensland; this includes conodont data on the Martins Well and Arch Creek limestone members of the Shield Creek Formation and on the shale/debris-flow-carbonate interval between the Jack Limestone and the Shield Creek Formation. They have received a grant from the Australian Research Council (see last issue of the SDS Newsletter) for a program of radiometric dating of zircons from biochronologically well constrained acid and occasionally intermediate tuffs from mid-Palaeozoic sequences. The analyses are being undertaken on the SHRIMP machine at Curtin University in Perth, Western Australia, and on Greg Dunning's TIMS machine at Memorial University, St Johns, Newfoundland. Also under way are studies of illite crystallinity in relation to tectonic events in the Broken River region and Burdekin Basin of northern Queensland (with Covadonga Brime, University of Oviedo), and of magnetotusceptibility stratigraphy on select intervals of some of the same sequences (with Rex Crick and Brooks Ellwood, University of Texas at Arlington).

#### **North Gondwana mid-Palaeozoic bioevent/biogeography patterns in relation to crustal dynamics**

##### **Preliminary Notice**

Raimund Feist and John Talent are endeavouring to launch an international project: "North Gondwana mid-Palaeozoic bioevent/biogeography patterns in relation to crustal dynamics". The project is of special concern to all friends of the Devonian, palaeontologic, sedimentologic and otherwise. The project is focused on the North Gondwana

crustal blocks now forming the underbelly of Eurasia and the northern regions of the residual continental blocks (Africa, Australia, South America) from which they were calved. The project is directed towards analysis of bioevents (especially global extinctions and recoveries), major variation in biodiversity, and change in biogeographic differentiation along the North Gondwana continental margin during the mid-Palaeozoic. Integration of these data with the biofacies/lithofacies database for the region will be undertaken in pursuit of increased precision in stratigraphic alignments and improved palaeogeographic and palaeoclimatic syntheses, and improved understanding of the relative positioning of crustal blocks and of geodynamic events during the crucial period leading to the Pangaea assembly.

Launching this initiative is timely. A good chronologic framework for effective prosecution of the proposed project has crystallized as a result of activities by the IUGS subcommissions on Silurian and Devonian stratigraphy (and associated system-boundary working groups), and by IGCP 216 Global biological events in Earth history (1984-1992). The proposed project is viewed as having interest and ramifications far beyond the region of prime focus. Inputs from all corners of the globe will be sought. If the project is successful, all SDS titular members and correspondents will be notified immediately and invited to participate in this endeavour.

#### **Palaeobiogeography of Australasian faunas and floras**

8-11 December 1997, Wollongong, Australia (SEE Tony Wright)

#### **Seventh European Conodont Symposium (ECOS VII) and associataed excursions**

24-26 June 1998, Modena and Bologna, Italy

The excursions associated with this event, to Sardinia (pre-symposium) and the Carnic Alps (post-symposium), have major mid-Palaeozoic focii and are therefore of particular interest to Devonian workers. The first circular for this symposium is scheduled to be distributed in a few weeks time.

Contacts: Prof. Enrico Serpagli, Istituto di Paleontologia, Dipartimento di Scienze della Terra, Via Università 4, 41100 Modena, Italy; fax: (39.59) 218212; e-mail: [serpagli@unimo.it](mailto:serpagli@unimo.it); Dr Maria Cristina Perri, Dipartimento di Scienze della Terra e Geologico Ambientali, Università di Bologna, Via Zamboni 67, 40127 Italy; fax: (39.51) 354522; e-mail: [perri@geomin.unibo.it](mailto:perri@geomin.unibo.it)

#### **Forewarning**

Near conjunction of the Sydney Olympic Games (15 September-1 October 2000) and the Third International Symposium on the Silurian System has provided the occasion for mounting a 3-week package of interrelated mid-Palaeozoic events. The package is as follows:

25 August-1 September 2000 - The Sir Frederick M'Coy Symposium: Third International Symposium on the Silurian System. It is planned to mount the symposium at the Heron Island Research Station, 70 km ENE of Gladstone (Queensland) and to take advantage of the context for, *inter alia*,

discussions on carbonate sedimentation with particular reference to mid-Palaeozoic organic buildups. Symposium sessions will include an introduction to reef dynamics, and will provide opportunities (at low-tides) for "hands-on" exposure to a well-studied contemporary reef system.

Contacts for M'Coy Symposium: John Jell\Andrew Simpson, Earth Sciences, University of Queensland, Australia; fax: (61.7) 3365 1277; e-mail: johnj@earthsciences.uq.edu.au; simpson@earthsciences.uq.edu.au.

11-15 September 2000 - Second Australasian Conodont Symposium (AUSCOS-2) concurrent with a possible symposium:Sutures\faunas\floras in the mid-Palaeozoic of Australia and south-east Asia in relation to geotectonic\geophysical data Venue: Macquarie University, hosted by the Macquarie University Centre for Ecostratigraphy and Palaeobiology.

2-10 September 2000 - Excursion: Late Ordovician-Early Carboniferous of central and northern NSW, and central Queensland. The excursion, commencing in Gladstone (Queensland) and ending in Sydney, will include the Ludlow-Pragian sequences at The Gap, Eurimbla, Wellington and Nubrigyn, the late Emsian-Givetian sequences at Timor, Tamworth, Manilla, and the Barnard River, as well as the late Emsian-Tournaisian of the Rockhampton-Gladstone area.

Contacts for the preceding: Glenn Brock\Ruth Mawson\John Talent, MUCEP, Earth Sciences, Macquarie University 2109, Australia; fax: (61.2) 9850 8428; e-mail: gbrock@laurel.ocs.mq.edu.au, r.mawson@laurel.ocs.mq.edu.au, jtalent@laurel.ocs.mq.edu.au.

#### Radiometric scale for the Devonian: Further call for materials

In the last issue of the Newsletter, an appeal was made for biochronologically well-constrained acid (and perhaps intermediate) mid-Palaeozoic volcanics which might contain zircons and therefore have potential value for aligning the biochronologic and absolute time-scales. I am happy to report that the Australian Research Council has responded positively to a recent application for funds to support this initiative - though, inevitably, with rather less funds than we would have liked!. The project is to run for 3 years. Accordingly, I am renewing the invitation made in the last Newsletter for mounting a global attack on absolute chronology in relation to the Devonian and Silurian systems. The analyses will be undertaken on the SHRIMP machine at Curtin University in Perth, Western Australia, and on Greg Dunning's TIMS machine at Memorial University, St Johns, Newfoundland. We are presently organising our priorities. So, if you have chronologically well constrained clay bands that may in fact be weathered tuffs, please get in touch with us. One or 2 kg of a rhyolitic tuff, for instance, is normally sufficient, but, it should be noted, the polygenetic character of ignimbrites can cause problems. As noted in the last Newsletter, co-authorship will be accorded to all who can

come up with zircon-bearing material deemed worthy of U-Pb dating.

#### E.A.YOLKIN (Novosibirsk)

The last year my team and I were busy mostly with Silurian stratigraphy and paleogeography of the Altai-Sayan Folded Area [ASFA] (reports for the 2nd International Symposium on the Silurian System) as well as with intra-Asian Devonian correlations (the paper for the Bultynck's volume) and with subsurface Paleozoic stratigraphy and paleontology of the western Siberian Plain. The main results are:

- (1) in pre-Devonian times the Siberian continent and Tuva-Mongolian microcontinent were separated by ocean waters. A position of the Siberian continent, as it is shown on Scotese and McKerrow maps, should be changed nearly 180 degrees and shifted into the tropical belt. The collision of mentioned crustal blocks was happened on the Silurian /Devonian boundary;
- (2) during Devonian times the ASFA, Mongolia and Russian Far East had common geological history and belonged to a shelf of the enlarged Siberian continent which had two zones - inner shelf mostly with clastic sedimentation and outer shelf with periodically appeared carbonate platforms or edge reefs. A precise correlation of these different deposits is possible now by brachiopods and conodonts.

#### Current and ongoing work:

1. Continued study of the Silurian and Devonian event-stratigraphy of the Altai-Sayan Folded Area [with some support from the Russian Foundation for the Basic Researches - RFBR, for the team: E.A.Yolkin (leader), N.V.Sennikov, N.K.Bakharev, N.G.Izokh, A.G.Kletz, A.Yu.Yazikov];
2. Continued study of the subsurface Paleozoic of the Western Siberian Plain;
3. Started study on the project Information-Research Complex "BIOCHRON" [with support from the RFBR for the team: N.V.Sennikov, (leader, graptolites), E.A.Yolkin (curator on paleontology, conodonts), O.A.Betekhtina (non-marine bivalves), R.T.Gratsianova, A.G.Kletz and A.Yu.Yazikov (brachiopods), N.G.Izokh and T.A.Moskalenko (conodonts), V.N.Yolkina (curator on computer programming), T.P.Kipriyanova, N.V.Semyonova and E.N.Shemyakina (programming)];
4. Collaborative project is discussed on Silurian stratigraphy, paleontology, sedimentology and paleogeography of the Altai-Tuva territory (with M.Basset, Derek Siveter, David Siveter, F.Ettenson and J.Barrik).

#### News from Siberia

I would like to explain what we are trying to do to keep up biostratigraphical studies in Siberia.

Financial support of geological researches in the world (as well as in our country) is not the best, you know. Most of the paleontological and stratigraphical centers in Siberia are destroyed. The Department of Paleontology and Stratigraphy

of our Institute has survived but it also lost many workers. In this situation it is difficult to find ways to carry out joint works inside Department and Institute as well as collaborative studies with colleagues of different Russian Institutes and even with foreign colleagues. It is easier to get a financial support from different Foundations, particularly from RFBR (Russian Foundation for the Basic Researches).

To reach these aims we work together with our regional geologists and accumulate revised biostratigraphical data on electronic devices. Besides of this we believe it is important to inform our foreign colleagues about our scientific results that could initiate collaborative studies. These guide ideas are realizing in: (1) developing of biostratigraphical database as RFBR project Information-Research Complex (IRC) "BIOCHRON", (2) organizing a special periodical edition "New fossil taxa of Siberia", and (3) participation in a special UNESCO-UIGGM project SIBERGEN - Siberian and Far East Geology and Environment electronic Database of abstracts.

Point (1). This is a large-scale REBR project. Its main goal is to create an electronic system for accumulation and processing the clarified biostratigraphic data that could be used in current and future studies on regional and global bases. If it will not be done now much data will be lost for ever.

The purpose of the IRC BIOCHRON consists in following:

- I. to organize to common database the paleontological data of global character as a system of the selected fossil groups from species (subspecies) to higher taxonomic levels as well as distribution of these taxa in real Siberian sections,
2. to develop the special software enabling rationally "pack" huge, diverse paleontological and lithological information as well as to give it out by request in form convenient for the user,
3. to adapt to the created database already developed Data Analysis software and to add it with new one to solve the problems of biostratigraphy, zonal biochronology, paleoecology and paleobiogeography with elements of geodynamics.

The main components of the IRC are three interconnected systems: TAXON, STRATON and Data Analysis System (DAS) connected by a global menu bar, which is accessible from any mode of operations and permits to address to additional subsystems.

It is supposed that the complex BIOCHRON will operate in two modes: information and research. The information mode assumes various methods of operative reception, by the user request, of necessary information of paleontological, stratigraphical character, as well as reference information for various types of geochronological scales and complete bibliographical information. It is provided by basic systems TAXON and STRATON as well as by additional subsystems accessible from global menu bar.

The research mode will be connected to functioning of the Data Analysis System and is intended for formalization, acceleration and automatic fulfillment of main operations,

which the expert makes at analysis of taxonomic diversity of organisms and changes of their associations in time and space, at giving conclusions about age of rocks, biofacial and paleobiogeographical zonation and other correlations.

The system TAXON is a paleontological information system consisting of the series of the associated data tables. Each table contains a set of necessary formal and global items of information (name, author and date of publication, stratigraphical and geographical location, diagnosis, description and other) on any taxon of hierarchical system of chosen fossil groups (for first stage of development of the ITC - conodonts, brachiopods, non-marine bivalvia and graptolites). The photoimages of species holotypes represent scanned photos from different paleontological sources and paleontological objects themselves. Processed then by graphic program COREL-PhotoPaint they link to the necessary field of table. Data Base Management System (DBMS) ACCESS gives the access to object application, where was created the object file. The user can open the object application, make his changes and keep on working.

The basic part of the system STRATON is the biostratigraphical database containing the information about stratigraphical subdivisions and objects (formations, members, beds, boreholes, sections), as well as geological (geographical) superregions, regions, districts. The biostratigraphical database contains information about stratigraphical subdivisions, including origin name, author, time and source of first published or manuscript description, geographical location, lithological description with showing of the appropriate fauna, age on standard and regional stratigraphical scales, and other necessary information.

The software of the Data Analysis System will provide opportunities to make processing of data, which are in the IRC BIOCHRON, and additional data, which arrive to data tables according to new scientific problems. These are the following possibilities: (1) classification (grouping) objects with similar features, (2) search of analogues, (3) prediction the pattern name for a new object, (4) choice the subset of the most informative characteristics, describing classes and objects of researches, (5) restoration of missed data of some characteristics of investigated objects, (6) acquisition of new knowledge on the basis of available initial data, analysis of these knowledge and received from the experts ones, and other. For the DAS of the complex BIOCHRON the expert system EXSNA will be adapted. It has software for solving of the majority of named above problems.

The IRC BIOCHRON is being developed for a work in Microsoft Windows 95 (Windows NT) under management the DBMS Microsoft Access. The graphic information (species images, stratigraphical schemes and other) and bibliographical data (the optical recognition of marks for text data transformation to edited text) are prepared for input in database using the graphic package CorelDraw.

Point (2). We have now more limited than earlier possibilities for a publication of the regional paleontological monographs. In this situation we intend to organize the new periodical edition - NEW FOSSIL TAXA OF SIBERIA, to keep up a flow of a new paleontological data. Now we have

already 12 paper for the first issue. In future our foreign colleagues might publish here their papers that are based on Siberian collections.

Point (3). Our Institute was invited by UNESCO to start (with financial support for the first years) a preparation of the special electronic database of annotated geological literature. It was done. Below you can find the Editorial Board information.

#### New! Siberian Science is now available to you!

**UIGGM and UNESCO Joint Project**

"Siberian and Far East

Geology and Environment"

Annotated Bibliographic Database

**SIBERGEN**

Russian Academy of Sciences, Siberian Branch, United Institute of Geology, Geophysics & Mineralogy - UNESCO

The vast territory of Siberia with its fascinating geological phenomena and rich and varied mineral resources, such as oil, gas, diamonds, gold, and many other, is the subject of extensive geologic investigation. The results of these studies, however, are scattered in various journals, monographs, open-file reports, and other sources, often published only in Russian. Information, thus, remains largely unavailable to the majority of the non-Russian researchers.

To fill this gap, UIGGM and UNESCO have created searchable annotated Bibliographic Database SIBERGEN. The main purpose of the database is to accumulate professional geological and environmental information about Siberian region and to make it available to the international scientific community.

Materials to be included in the SIBERGEN Database are thoroughly selected. Abstracts are prepared by the authors or by our experts and translated into English. Collections of electronic records containing, besides abstracts, detailed bibliographic information appear as quarterly issues.

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#### Features:

no analogues; more than 2.000 records per year; abstracts and full bibliographic information in English quarterly updates

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Coming soon: mid 1997 - version for Windows platform

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The database is created with the financial support of UNESCO

#### Media:

Quarterly issues of the database is shipped on diskettes 3.5" 1.44 Mb. Cumulative volume (four quarterly issues in one) can be sent either on diskettes or on compact disk. Standard format is DOS.

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**WILLI ZIEGLER (FRANKFURT/MAIN)**

[The following list of Courier volumes/titles was provided by Prof. Ziegler—Ed.]

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## REPORTS FROM THE MEMBERSHIP

## G. K. B. ALBERTI (GROSSHANSDORF)

Planktonic tentaculitid biostratigraphic data as auxiliary means for the recognition and correlation of the close Lochkovian/Pragian and Pragian/Emsian Standard Boundary intervals (early Lower Devonian).—CFS, Frankfurt/Main. (submitted)

## Abstract

The Lower Devonian standard boundaries (or better boundary intervals) Lochkovian/Pragian and Pragian/Emsian are summarily discussed according to their recognition and correlation by biostratigraphic data (as auxiliary means) of planktonic tentaculitids from early Lower Devonian sections of some regions of Europe, North Africa (and East Australia).

Addendum: *Peneauia biannulata* (Peneau 1928) after present knowledge seems probably to be the only relevant indicator for the *kitabicus*-Zone (see G. Alberti 1995: 35, Tab. 1).

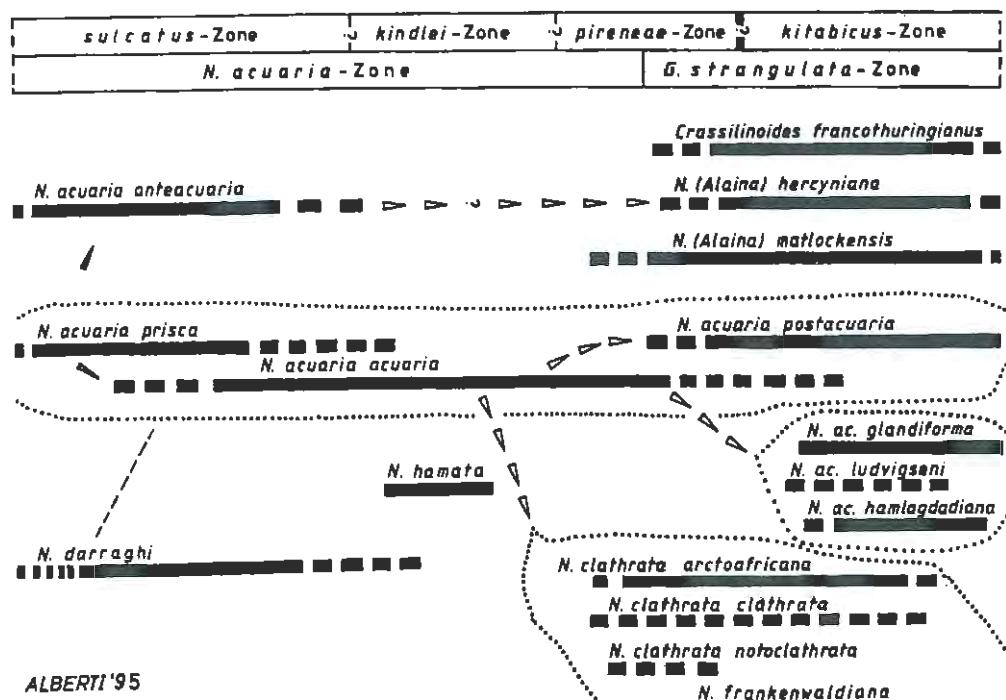
Neue planktonische Tentaculiten-Taxa aus dem älteren Unter-Devon.—*Senckenbergiana lethaea*, 76: Frankfurt/Main.—In Press (1996).

## Abstract

The present paper informs about several new taxa of planktonic tentaculitids from older Early Devonian of Morocco, Franconia/Thuringia, Harz Mountains, and Northern Canada. 1 new genus is defined, 3 new species and 9 new subspecies are briefly described. From Morocco come: *Nowakia (Turkestanella) acuaria glandiformis* n. ssp., *Nowakia (Turkestanella) acuaria hamlagdadiana* n. ssp., *Nowakia (Turkestanella) acuaria prisca* n. ssp., *Nowakia (Turkestanella) clathrata arctoafriicana* n. ssp. and *Nowakia (Turkestanella) hamata* n. sp.—From Franconia/Thuringia come:

*Nowakia (Turkestanella) acuaria posterior* n. ssp., *Nowakia (Turkestanella) frankenwaldiana* n. sp. and *Crassilinoides francothuringianus francothuringianus* n. g., n. sp., n. ssp.—From the Harz come: *Nowakia (Turkestanella) acuaria oehrenfeldensis* n. ssp. and *Crassilinoides francothuringianus zorgensis* n. ssp.—From the Canadian Arctic comes:

*Nowakia (Turkestanella) acuaria ludwigseni* n. ssp.—For its detailed description (partly by means of biometric data too) and illustration see the new monograph on tentaculitids which is in press in the *Palaeontographica* (Stuttgart).



Additionally, brief information is given on trends in evolutionary development (with regard to events too) of relevant early Lower Devonian planktonic tentaculitid groups or species.

Chart 1. Tentative range chart of stratigraphically significant, planktonic tentaculitids of the *Nowakia (Turkestanella) acuaria* group, of the *Nowakia (Turkestanella) clathrata* group, of the *Nowakia (Alaina) matlockiensis* group and of *Crassilinoides francothuringianus* from the Pragian and the Pragian/Emsian boundary beds, based on sections in Thuringia, Franconia, Harz Mts., Barrandian, Carnic Alps, North Africa and SE-Australia (after G.K.B. Alberti 1996).

**G.K.B. ALBERTI AND LORE ALBERTI**

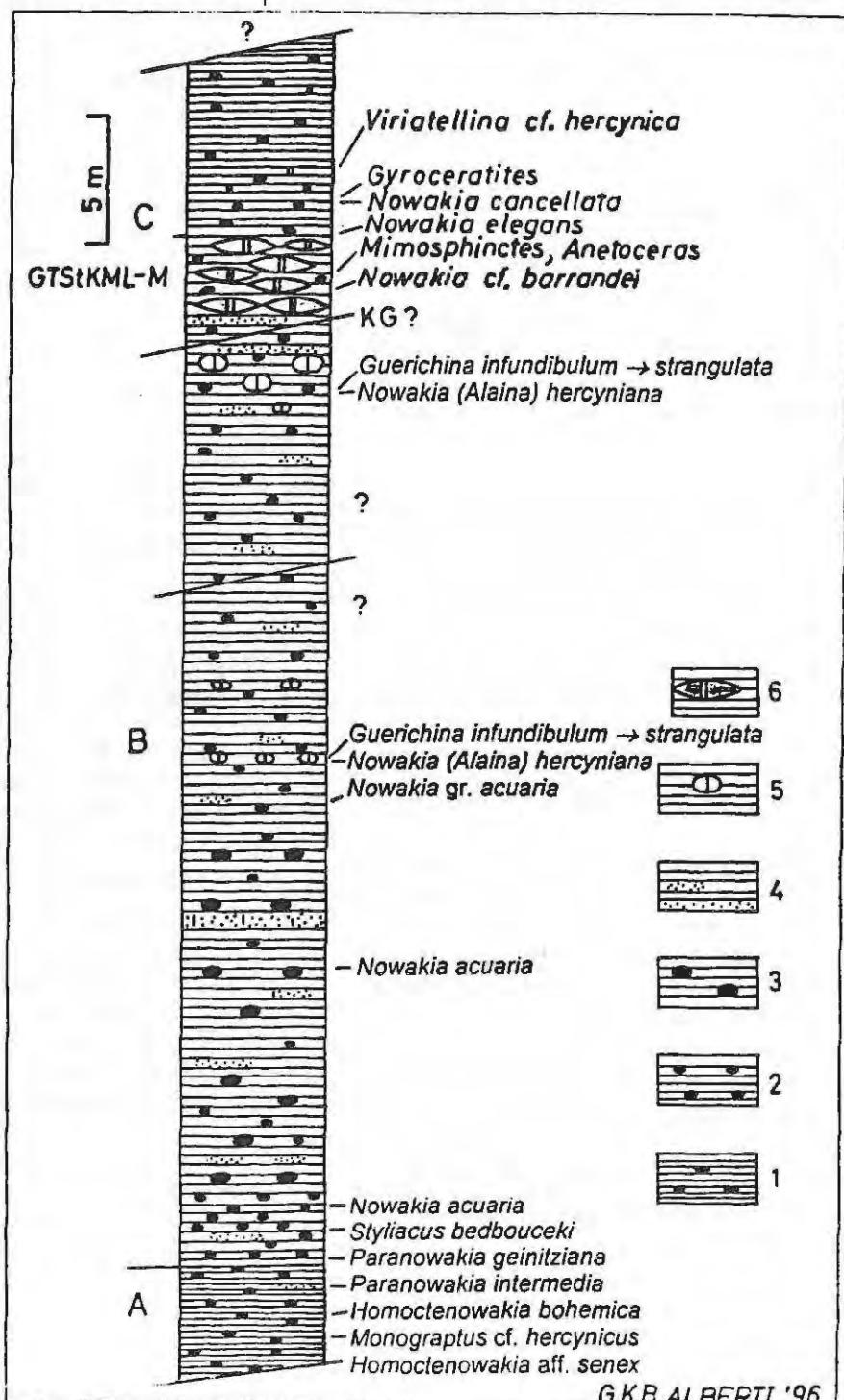
Zur Lithologie, Fauna und Stratigraphic des unterdevonischen Anteils der "Harzgerode Tongallen- und Kieselgallenschiefer-Formation" ("Herzynische Beckenfazies Unterharz").— *Seckenbergiana lethaea*, 76; Frankfurt/Main.— In press (1996).

**Abstract**

Based on new outcropped sections through the mostly Lower Devonian sequence of the "Harzgerode Tongallen- und Kieselgallenschiefer-Formation" at the quarry of the "New brick yard Harzgerode" (Lower Harz Mountains), the Lower Devonian part of this formation is described lithologically and represented in a columnar section; moreover an attempt is made at subdivision the latter one into three lithologically different units. Biostratigraphic determinations were carried out by means of planktonic tentaculitids. The whole sequence shows a dominance of shales and slates with silicous concretions (and a few limy lenses) ranging in age from Lochkovian up into the late Lower Emsian or rather early Upper Emsian. Information is given about relevant fossils, among them is the first evidence of Upper Zlichovian ammonoids in the upper part of this formation.

Generally speaking, it is only now, that the fully stratigraphic range and the lithological development of the Lower Devonian basinal facies of the "allochthonous" Lower Harz area has been elucidated.

Fig. 1. Simplified columnar section through the Lower Devonian part of the "Harzgerode Tongallen- und Kieselgallenschiefer-Formation", Lower Harz (from G.K.B. Alberti & L. Alberti 1996, modified and completed).— Caused by "schuppen"-tectonics the formation's real thickness is uncertain 1, 2 and 3 = Shales (slates with silicous concretions. 4 = Shales (slates), silty shales with thin beds (mostly phacoidal lenses) of greywacke and partly tiny conglomerate layers of olistostromal character (?). 5, 6 = Intercalated weathered yellow limy lenses and nodules. KG = Calcarous greywacke.



**ALAIN BLIECK (VILLENEUVE)**

The Third Baltic Stratigraphical Conference (III BSC, Tallinn, Estonia, 8-12 Oct., 1996) and IGCP 406: Circum-Arctic Palaeozoic Vertebrates workshop (Tallinn, 7 Oct., 1996) - Report of Meeting

The Baltica-Barentsia-Siberia groups of IGCP 406 met on Monday, October 7th, in the Institute of Geology, Tallinn, under the convenorship of Tiiu Märss, co-leader of IGCP 406. After an introductory welcome talk by R. Vaikmäe, director of the institute, oral communications and reports were given by:

D. Goujet: Placoderms as stratigraphic markers in the Lower Devonian beds of the Circum-Arctic Region;

S. Melnikov: Lower Palaeozoic conodont biostratigraphy in Timan-Pechora Region;

V. Tsyganko: On new fish localities of the Polar and Near-Polar Urals;

M.G. Bassett: Biogeography of Timan-Pechora - Baltica or Laurentia ?;

H. Blom: Silurian vertebrates from northern Greenland;

D. Goujet & A. Blieck: Palaeozoic vertebrate studies on Spitsbergen, and informations on the IGCP 328 Final Report CFS Volume;

T. Modzalevskaya: Silurian brachiopod biostratigraphy of Severnaya Zemlya;

V. Menner: Strategies and possibilities for the future geological work in the Russian Arctic, and present state in preparing the monograph on the geology of Severnaya Zemlya.

The workshop then discussed future work of IGCP 406. A 1997 workshop might be held either in Berlin or in St Petersburg. The three following days were devoted to the III BSC, held in Hotel Hermès, suburban Tallinn. Several sessions were held at the same time so that I only followed the Devonian sessions as well as other vertebrate talks. The following Devonian communications have been given:

E. Mark-Kurik: Stage boundary problems in the East Baltic Devonian;

V.S. Tsyganko: Fluctuations of the world ocean level and correlation of the Devonian of the Pechora Plate and south-eastern Baltic Region;

C. Bexiga & A. Blieck: New data on pteraspids (Pteraspidomorphi, Heterostraci) of the Lower Devonian, Fraenkelyggen Formation of Spitsbergen;

A. Blieck, A.-M. Candilier, S. Loboziaik & E. Mark-Kurik: Palynological study of the Devonian series of the East Baltic area: preliminary results from the Gauja Regional Stage at Küllatova, Estonia;

P. Sartenaer: Are all rhynchonellid species of the Main Devonian Field assigned to the genus *Ripidiorhynchus* Sartenaer, 1966 valid ?

O.A. Lebedev & E. Luksevics: Attempted correlation of the upper part of the Famennian deposits of Baltic and Central Russia by vertebrates;

A.V. Zhuravlev, I.O. Evdokimova & E.V. Sokiran: New data on conodonts, brachiopods and ostracodes from the strata-types of the Ilmen and Bureg beds (Frasnian, Main Devonian Field);

J. Valiukevicius: Devonian marine and non-marine correlation based on acanthodian biostratigraphy;

E. Luksevics & A. Ivanov: Late Devonian placoderm zonation of the Main Devonian Field;

N.S. Ovnatanova, T.G. Obukhovskaya, V.V. Menner & G.A. Schuvalova: Upper Devonian high resolution stratigraphy of the East European Platform: correlation of regional stages, miospore and standard conodont zonation.

Also interesting for fish people was the communication of:

T. Märss & V. Karatajute-Talimaa: Correlation of the Silurian vertebrate zones of the East Baltic.

All other communications were on Vendian to Silurian and Quaternary stratigraphy. Nearly 100 people attended the conference.

Concerning Devonian, most hotly debated topics were on stage boundaries within the East Baltic sequence (Mark-Kurik, Blieck, Sartenaer, Luksevics, Evdokimova, Valiukevicius, Ivanov, Menner, Tsyganko, Rzhonsnitskaya and others) as compared to the other parts of the East European Platform (Main Devonian Field and Central Devonian Field), the Timan-Pechora succession, and the Ardenne-Rhenish reference sequence. Strong discussions were on correlating fish biozones to conodont and spore biozones, which was a major aim of IGCP 328, and is also one for IGCP 406. People seem to have agreed that miospores and other palynomorphs may be of great help in solving so many problems as, for instance, the Givetian/Frasnian boundary. This has been proposed within the Gauja Formation, Lode Member, at Küllatova (Blieck et al.), above the Watsonosteus-bearing Abava beds (either formation or not, following various authors) which are clearly correlated to the upper Givetian (Mark-Kurik), and below the conodont- and brachiopod-bearing Plavinas Regional Stage which is clearly lower Frasnian (Valiukevicius and others). We should all meet next year somewhere else in NE Europe to continue discussions and solving problems !

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**MICHAL GINTER (WARSAW)****SHARKS FROM THE DEVONIAN/CARBONIFEROUS BOUNDARY BEDS OF THURINGIA**

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Samples dissolved for conodonts from the upper Famennian and lower Tournaisian of Thuringian sections yielded many ichthyoliths, among them shark teeth and scales. Buschteich section, sampled bed-by-bed and dated by Dr D. Weyer (Kulturhistorisches Museum, Magdeburg), appeared to be particularly rich in chondrichthyan remains.

Samples from the Early *expansa* through the Early *praesulcata* conodont zones contain typical fauna for the *Phoebodus limpidus* zone of the phoebodont-based ichthyolith zonation, established for the pelagic facies on the East European Platform margins (Ginter & Ivanov, 1995): *Ph. limpidus* Ginter, 1990, *Thrinacodus ferox* (Turner, 1982), *Ph.? australiensis* Long, 1990, *Symmorium* sp., *Stethacanthus* sp. nov. However, *Ph. gothicus* Ginter, 1990, a species usually found together with the above listed taxa on the platform margins (Holy Cross Mts, South Urals) and in some other regions (e.g. Morocco; Derycke, 1992) is almost absent from the studied material.

The only positive sample from the Late *praesulcata* conodont zone in the studied area comes from the Kahlleite-Ost section. Sharks are represented here by *Th. ferox* and *Protacrodus* sp. The latter is the only specimen of protacrodonts, usually treated as shallow water indicators, found in the region.

The diversity of chondrichthyan fauna in the early Tournaisian is reduced compared to that of the late Famennian. Only *Th. ferox*, *Ph.? australiensis* morphotype 2 *sensu* Ginter (1990) and *Stethacanthus* sp. nov. can be found in the samples from the *sulcata* through *duplicata* conodont zones. The "true" phoebodonts did not persist into the Carboniferous.

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Ginter M. 1990. Late Famennian shark teeth from the Holy Cross Mts, Central Poland. *Acta Geologica Polonica*, 40, 69-81.

Ginter M. & Ivanov A. 1995. Middle/Late Devonian phoebodont-based ichthyolith zonation. *Géobios, Mémoire Special*, 19, 351-355.

Long J. A. 1990. Late Devonian chondrichthyans and other microvertebrate remains from northern Thailand. *Journal of Vertebrate Paleontology*, 10, 59-71.

Turner S. 1982. Middle Palaeozoic elasmobranch remains from Australia. *Journal of Vertebrate Paleontology*, 2, 117-131.

**JINDRICH HLADIL, JANA HLADIKOVA & JAROSLAVA ZUSKOVA (PRAGUE)****STRONG POSITIVE EXCURSION IN  $\delta^{13}\text{C}$  VALUES IN THE TIME-EQUIVALENT OF THE PA. TRANSITANS Z. (FRASNIAN, MORAVIA): A LOCAL FACIES CONTROL IS SUGGESTED**

Relations among the isotope ratios, chemical composition, sedimentological features, eustatic fluctuations and diagenetical history have been documented from the reef/basin transition in the Moravian Karst (Krtiny HV-105 borehole). The  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$  values of the Late Devonian limestones are within the ranges of common data for the Late Devonian marine sedimentary environment. Nevertheless, the formerly different isotopic compositions of the fossils and other rock components were equalized within the frame of a few of meters large "cells". This equalization originated in closed marine pore-water/rock systems, under condition of rapidly decreased permeability. Thus, each of the individual "cells" involves the average information which is related to the facies. The  $\delta^{13}\text{C}$  values of 2 to 2.5‰ are characteristic for bioherms, parts of the fore-reef to off-reef slope, and lagoons which were away of shore. The minimum values (about 0) are characteristic for shallow back-reef as an effect of algal grass. The low  $\delta^{13}\text{C}$  values of reef margin developed during the occasional emergence of this facies. A significant anomaly in  $\delta^{13}\text{C}$  values (up to +5.5‰) has been documented. This anomaly originated at the transition between the proximal and distal forereef in the *Pa. transitans* Zone of the Early Frasnian (371 to 371.4 Myr), just before the peak of maximum sea-level rise. This unusual positive excursion of the  $\delta^{13}\text{C}$  values beggars description of the global-event anomalies. Existence of this anomaly on the slope of the Moravian Karst is tentatively explained by the local III<sup>rd</sup>-category upwelling, which was enabled by the diversion of the deeper contour and shallower wind-driven currents away from the shore. This anomaly corroborates the hypothesis about the strong facies control of the  $^{13}\text{C}$  content in carbonates.

**Towards the general eustatic scenario:**

The tectonic, transtensionally evoked fluctuation in the subsidence had to bias the sedimentary record which was basically controlled by the global sea-level changes. However, no trustful model concerning the development of the Frasnian transtension, 367 to 374 Myr, is still available. The details of the calculated eustatic curve for the HV-105 Krtiny borehole show some differences but many similarities with the reference curves. Very interesting is the matching with the eustatic curve published by Shen (1995). In general, the sea-level fluctuation pattern display the same features as documented in the Australian Canning Basin or elsewhere over the world: i.e., the transgressive onlap of the reef-margin facies was effective until the Middle Frasnian *Pa. punctata* times when an opposite downlap movement prevailed (cf. Dvorak et al. 1984). The Late Frasnian (*Pa. rhenana*) basinward retreating of the reef sediments is pronounced, almost reaching the eustatic and T-R points of the earliest Frasnian. A subsequent very strong Early Famennian lowstand was accompanied by the catastrophic impoverishment of the reef benthos as reflected also by an extreme narrowing of the coral-stromatoporoid carbonate

platforms. These platforms were replaced by lime-mud ramps which were placed mostly on the frontal parts of the extinct coral banks whereas the back-end of the extinct banks was emerged.

#### Conodont stratigraphy of the HV-105: object of revision

The conodont stratigraphy provided the main support points for the time scaling of the section. The first evaluation of conodonts was carried out by O. Friakova (Dvorak et al. 1984) and was shaped by means of the standard conodont zones as they were valid twelve years ago. However, the recent standard of the conodont zones is considerably reshaped and the new conodont scale must be applied. A part of the previous data was correlated mechanically, the other part was reinvestigated in detail and newly determined on the original conodont material from the HV-105 (coll. Czech Geological Survey).

The main differences from the 1984 conodont determinations and zone stratigraphy are:

76.7-80.1 m: *Pseudopolygnathus triangulus triangulus* and lower part of the *Siphonodella crenulata* Zs. (O. Friakova) = *Siphonodella crenulata* Z.

83.1-84.4 m: *Pseudopolygnathus triangulus inaequalis* Z. (O. Fr.) = *Siphonodella duplicita / sandbergi* Zs.

87.0-88.0 m: *Protognathodus kockeli* and *Siphonodella sulcata* Zs. (O. Fr.) = *Siphonodella sulcata* Z.

88.2-88.6 m: *Protognathodus kockeli* Z. (O. Fr.) = upper part of the *Siphonodella praesulcata* Zs. [defined by the first occurrence of *Protognathodus kockeli* Bischoff; 88.2-88.3 m].

89.0-108.0 m: *Bispachodus costatus* Z. (O. Fr.) = middle and upper part of the *Palmatolepis expansa* Z. [middle part of the *Pa. expansa* Z. is defined by first occurrence of *Bispachodus costatus* E.R. Branson and *Bi. aculeatus aculeatus* (Branson et Mehl); the lower part of the *Pa. expansa* and *Pa. postera* Zs. are missing or very reduced in thickness]

110.0 m: *Polygnathus styriacus* Z. (O. Fr.) = *Pa. trachytera* Z.

111.0-120.2 m: *Scaphignathus velifer* Z. (O. Fr.) = *Pa. trachytera* Z. [defined by occurrences of the conodont taxa *Pa. rugosa trachytera* Ziegler, *Pa. glabra lepta* Holmes, *Pa. minuta minuta* Branson et Mehl; together with *Po. perplexus* (Thomas)]

The determinations between the depths of 130 and 170 m are similar to the former report in 1984, with an exception for the base of *Pa. rhenana* [~ base of the *Pa. gigas* Z.] which is newly pushed down to the depth of 176.2 m

176.2-198.6 m: ?*Ancyrognathus triangularis* Z. (O. Fr.) = the assemblage does not confirm this zone (this zone is missing or very reduced in the thickness)

beginning from the depth of 180 m and down to the last conodont evidences at 334 m, all assemblages belong to *Po. asymmetricus* Zs. [lower part of the *Pa. hassi*, *Pa. transitans* and *Me. falsiovalis* Zs. cannot be defined with great accuracy because of the dominance of *Icriodus* spp., *Ancyrodella rotundiloba rotundiloba*, *An. rotundiloba*

*alata*, *Ozarkodina* spp., *Ligonodina* spp.]. The additional sedimentological and coral-stromatoporoid scaling had to be applied within the ranges of the *Po. asymmetricus* Zs.

#### The anomaly:

The highest, really anomalous  $\delta^{13}\text{C}$  values have been documented in the fore reef (up to +5.5‰). With the exception for the CO<sub>2</sub>-degassing and methanogenesis, no other processes related to burial or meteoric diagenesis would produce a significant enrichment in  $^{13}\text{C}$ . Of course, the both possible processes were not reflected by the sedimentary structures of the rocks. If this assumption about the absence of the massive methanogenesis is right, the documented  $\delta^{13}\text{C}$  anomaly is related to the original sedimentary conditions. From the view of facies, this anomaly is placed at the transition between the proximal and distal fore reef, just before the maximum peak of the transgression (sea level rise), in the time, when very steep gradient of sea-level rise was decreased. From the view of stratigraphy, this anomaly has been approximately correlated with the age-points 371.0 and 371.4 Myr, i.e. within the ranges of the standard conodont zone *Pa. transitans* (= formerly in the upper part of the Lower *Po. asymmetricus* Zone). As a lack of information about any time-controlled anomaly is evident, a reason for this unusual  $\delta^{13}\text{C}$  anomaly in the HV-105 was probably a local change of the sedimentary conditions.

#### Towards the origin of the anomaly:

The occurrence of the above mentioned anomaly in times of widely submerged shelves does not support the commonly used explanation that upwelling was caused by disturbances in ocean water stratification in relation to the origination of the mixed-ocean. This scenario is restricted almost exclusively to the strong lowstands of sea level, seeing that it probably took effect later on, during the Kellwasser event. The triggering mechanism of this upwelling had to be different, although the effect could be similar: Based on sedimentological data we suggest that huge amounts of nutrients were supplied to the surface waters thus allowing for a tremendous bloom of marine biota. The expanded marine biota preferentially take up the  $^{12}\text{C}$  isotope and inevitably cause a rise in  $^{13}\text{C}$  of bicarbonate. We can suggest a tentative scenario for the Moravian Karst off-shore which is based on the sedimentological data:

The effect of a strong contour current has been documented at the frontal margin of the Late Givetian reefs (Isaacson - Galle 1991). This contour current which bore upon the Moravian Karst fore-reef slope was characteristic for the both Late Givetian and earliest Frasnian times. This current, when correction for the paleomagnetically documented rotation is applied (120° clockwise; Krs et al. 1995), was oriented towards 80° ENE. However, the orientation of this current was just opposite to the surface, wind-driven current (270-290° WNW) which was responsible for the stratigraphically climbing migration routes of the Frasnian tabulate corals from Moravia to northern Rhenish Slate Mts. and Belgium (*Alveolites delhayei*, *Al. suborbicularis*). Later in the Frasnian, there is no evidence for this contour current. The trajectory of the east-directed contour current had to be significantly deflected towards the Devonian South. Simulta-

neously, the surface west-directed current also ceased, because the Middle to Late Frasnian continuation of this route was strongly reduced. Diversion of the both currents, i.e. the surface wind-driven and contour ones, and their reorientation towards the interiors of the Rhenish Basin (=from the Laurussian continent towards sea, in average) took effect on the circulation pattern.

There exist two possible reasons for this change: the first explanation may be an analogy of Ekman transport which is typical for the contact between two atmospheric/hydrospheric circulation belts, the second explanation may be based on the changed morphology of islands or gates on the Devonian West and East. At all events, the window resulted from the diversion of the both currents was sufficient for the upwelling of the III<sup>rd</sup> category (Wilde et al. 1990). In addition, the transtensional tectonism of the Rhenish back-arc basin, deltas of the Laurussian continent and local restrictions of bays could result in subordinated disturbances, generating an unstable patchy pattern of water with different salinity and temperature. However, any consistent interpretation of the latter factors is still impossible due to discontinuity and scarcity of the data.

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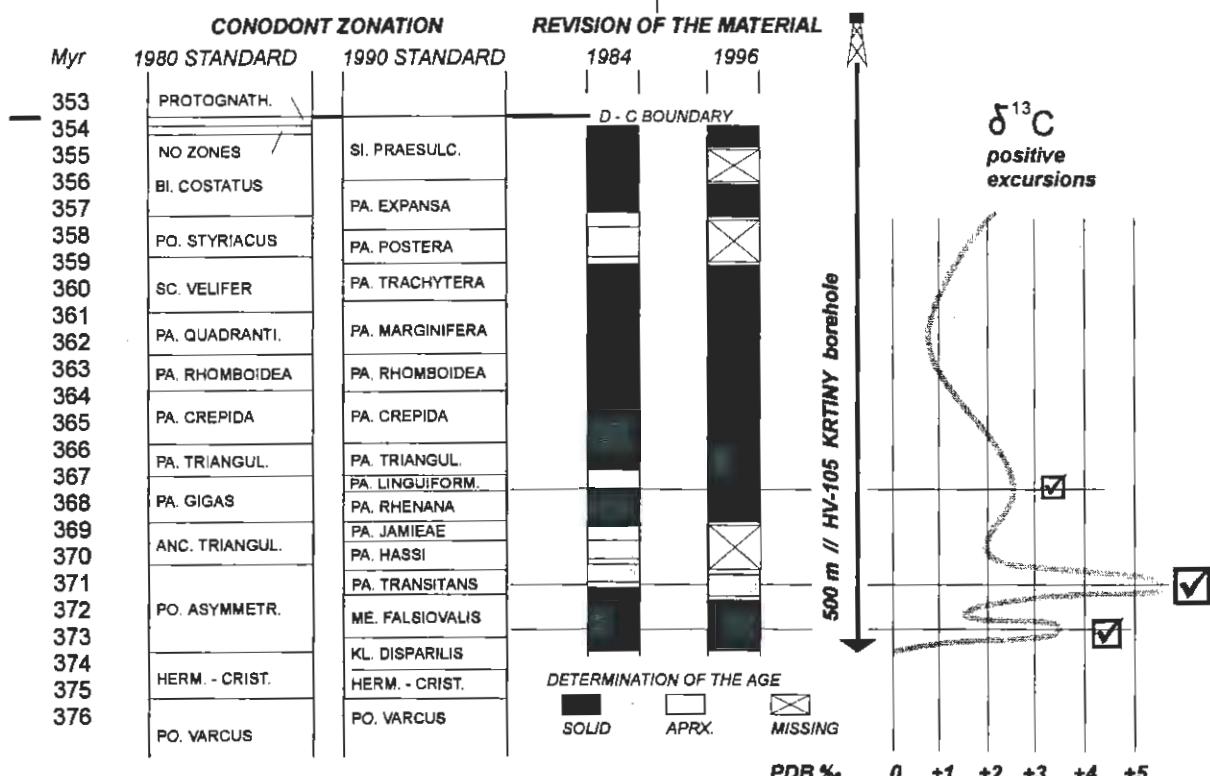


Fig. 1 - Conodont zones: comparison of the zones and their application in 1984 and 1996; time assignment of the positive the  $\delta^{13}\text{C}$  anomalies.

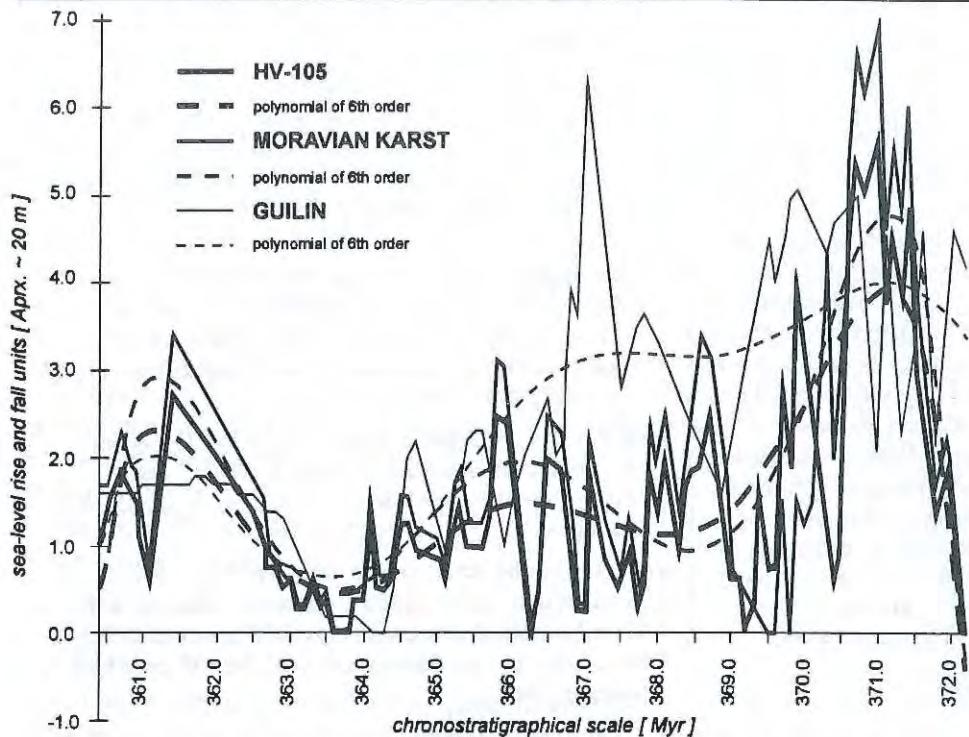


Fig. 2 - The Frasnian-Famennian eustatic curves: an estimate for the HV-105 Krtiny borehole in comparison with average data for the Moravian Karst en masse (modified after Hladil 1988) and data from Guilin, China (after Shen 1995). Note the correspondence of many peaks as well as considerable similarity of the polynomial smoothed curves of the 6th order. Age on the horizontal axis (rising to right, Myr); sea-level fluctuation on the vertical axis (rising upwards, U ~ Aprx. 20 m).

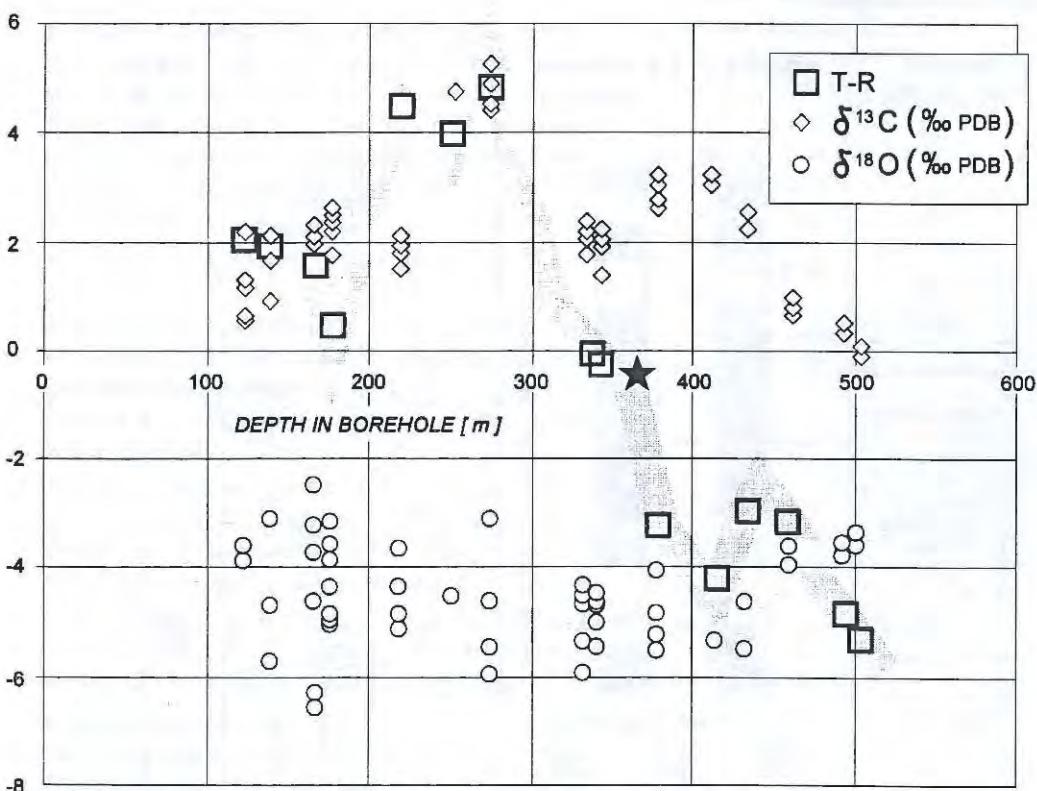


Fig. 3 - C and O isotopes: comparison of the  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$  values (PDB) with the eustatic curve along the drilled section of the HV-105. Depth in meters on the horizontal axis (rising to right). At a rough estimate, the sea-level change per one unit is 20 m. Bold asterisk marks the beginning of the eustatic curve in detail (cf. Fig. 2).

**JINDRICH HLADIL & JIRI KALVODA, BRNO****A SHORT RANGE ANOMALY IN THE EARLIEST EMSIAN  
SEDIMENTATION OF THE BARRANDIAN: POSSIBLE  
REFLECTION OF WIDELY CONTROLLED OR GLOBAL EVENT**

Individuality of the Pragian/Emsian sedimentary records in the Barrandian, in dimension of a few of kilometers, is bigger than could be explained in terms of facies variability within the deeper carbonate shelf and slope environment. In addition, there is an elevated, very specific Koneprusy segment, which displays a stratigraphy which is entirely different from the rest of the Barrandian, cf. Chlupac's stratigraphic and Chlupac-Kukal's event-stratigraphic concepts (Chlupac & Kukal 1986). The structure of the central-Barrandian brachy-synform consists of several tectonic slices which are shaped similarly to thin-skin structure; elongated WSW-ENE in the map, dipping in sections to NNW (C. Tomek ~ pers. comm.). The individual segments differ in facies and fauna (V. Havlicek ~ in print). The latest Pragian-earlier Emsian sedimentation, as recorded in the Barrandian (Bohemia), displays at least three patterns:

1. Missing sedimentation during the entire interval of latest Pragian to Early Emsian has been documented in the Koneprusy segment. This gap, which originated due to the emergence of the Pragian Koneprusy reef, corresponds to visible upper sequence boundary. The overlying, transgressive tract of the red, Late Emsian limestones appeared very late in Sandberg's-Ib cycle having impact by many neptunian fills on the underlying complex. Therefore, the Koneprusy Pragian/Emsian history can be studied only in the fills, not in the normal strata. The best example of this transition is accessible in quarries Certovy Schody, that means Devil's Stairs, near Koneprusy village [35 km SW of Prague].
2. A thick, rhythmic series of packstones deposited in conditions of lower ramp to slope. The Dvorce and Prokop facies consist of gray limestone with smooth or nodulated bedding surface, respectively. This sedimentation continued in the earliest Emsian, before the manifestation of an abrupt change in the basin configuration (Aprx. 6m above the biostratigraphically indicated Pg-Em boundary = first occurrence of the *Po. dehiscens*). This change was reflected by a series of channelized debris flows which truncated the underlying beds. The early Emsian Zlichov Fm. represents an upwards thinning and fining calciturbidite sequence; the sedimentary material originated from different source than during the Pragian. The best of the available outcrops is the measured section below the Barrandov Bridge [W margin of Prague].
3. A thin, rhythmic series of packstones-wackestones resemble the Ammonitico rosso. Relatively starving slope was covered by lime-mudstone turbidites which largely involve the reworked hemipelagites deposited on the slope during the quiet intervals (L.F. Jansa ~ pers. comm.). Sedimentary record of this type is usually condensed, with evident cyclic fluctuations in thickness and color of the individual beds. In this sedimentation environment, the best manifestation of the earliest Emsian anomaly is available. A distinct series of eight dark-shale

beds appears 2m above the first occurrence of the conodont *Po. dehiscens* (= Pg-Em boundary) but 6-7m below the base of the Zlichovian calciturbidites for which the lack of basal debris flows is typical. The best of the accessible sections are the Stydlo Vody and Mramorka quarries which are situated 25 and 20 km WSW of Prague.

Whereas the sections of the [1]- and [2]-types provides very weak or no evidence for the discussed anomaly, and they must be further scrutinized, the manifestation of the event in the [3]-type of sedimentation is very strong. The [3]-type sedimentary record is typical for the segments in the northern, and partially in eastern part of the central-Barrandian brachy-synform.

**The EVENT ~ the dark, graptolite-bearing level:**

The characteristic set of 8 dark shale beds within the Ammonitico-rosso limestones is 1.1-1.3 m thick. The base of this interval is 2m above the first occurrence of the conodont *Po. dehiscens*. Debris of graptolites is common in thin sections, and *Monograptus atopus*, *M. yukonensis* a/o. have been collected by Boucek (Stydl Vody). Each of the dark gray beds which alternate the shale consist of several thin, normal-graded turbidites. The material originated from the ramp; deep-sea hardgrounds of the beds were sporadically colonized by brachiopods and *Parastriatopora* corals. Fluctuating  $d^{13}\text{C}$  and  $d^{18}\text{O}$  values indicate strong difference between the clayey sedimentation of the background and turbidites. Increase in glauconite-content is very typical. Tentatively, a sea-level fall caused a crisis in autochthonous carbonate hemipelagic aggradation on the lower ramp and slope. The autochthonous sediments were depleted in carbonate and the allochthonous sediments originated from shallower environment.

**Challenge for precise correlation:**

Position of this level must be stated more precisely within the documented *P. kitabicus* (=dehiscens) Zone (Kalvoda 1995) and more details about the Pg-Em sea-level changes are applied. The possible level of interest may be connected with the Subzlichovian and basal Zlichovian events in the Barrandian, with the boundary of the Ia/b cycles of Johnson and Sandberg in North America, with the changes at the Madmon and Zinzelbam Formation boundary in the Middle Asia, or higher with Walliser's Lower Emsian event (Walliser 1984).

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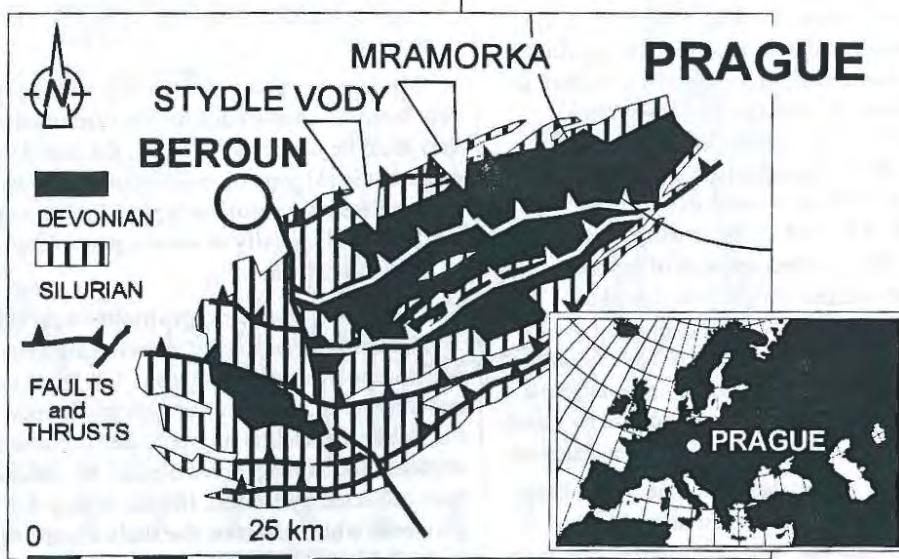
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Packstone: Lower Devonian, Barrandian, Bohemia. - Journal of Sedimentary Research, Vol. 66, No. 5, September, 1996: pp. 888-899.

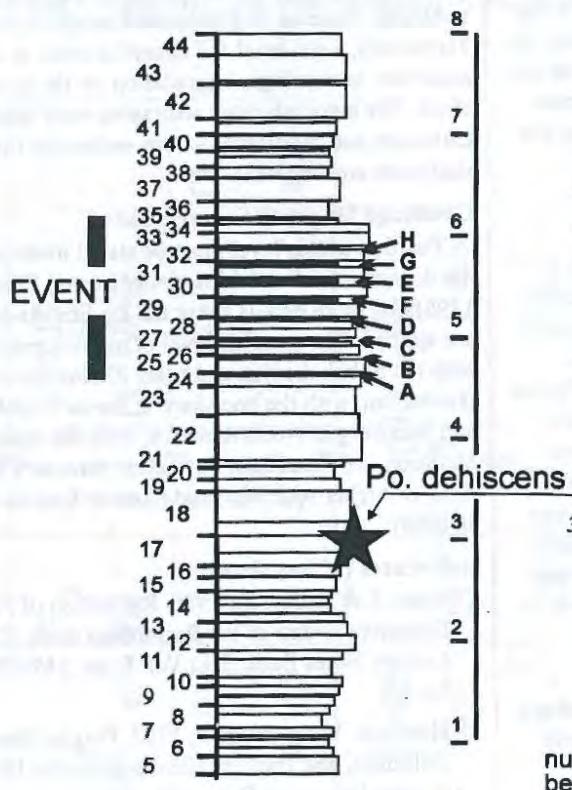
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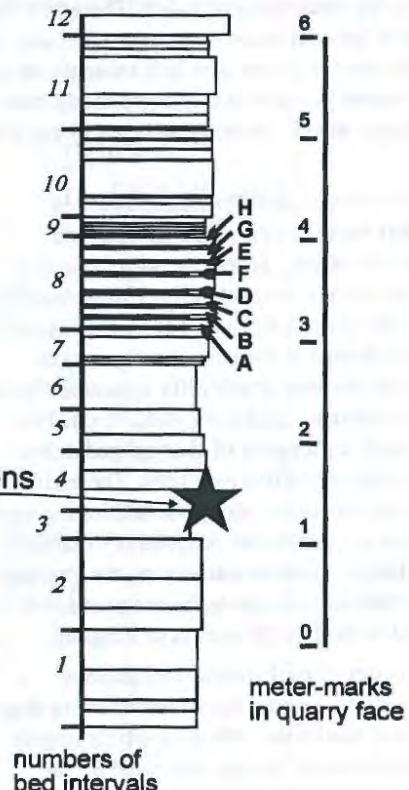
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## STYDLE VODY



## MRAMORKA



**TONY WRIGHT (WOLLONGONG)****NOTICE OF MEETING****PALAEOBIOGEOGRAPHY OF AUSTRALASIAN FAUNAS AND FLORAS**

DATES: December 8-11, 1997.

**STEERING COMMITTEE:**

Tony Wright, John Talent, Gavin Young.

**VENUE:** School of Geosciences, University of Wollongong, New South Wales, Australia.

A conference with the above major theme is planned for the approximate period of Monday December 8- Wednesday 11, 1997, at the University of Wollongong, NSW, Australia. The Organising Committee (Tony Wright, John Talent and Gavin Young) cordially invites all interested scientists to attend and submit papers for publication and/or oral presentation. The rationale behind the conference is the urgent need for a comprehensive monographic publication summarising the changing patterns of biogeographic affinities of the Australasian region through geological time.

This meeting will be the only 1997 conference sponsored by the Association of Australasian Palaeontologists, so papers on other themes (e.g., evolutionary studies, palaeoecology, precision in biostratigraphy) are welcome. In keeping with the major theme, papers dealing with the biogeography of any group for any geological interval are particularly welcomed.

**CONFERENCE FORMAT.**

Sessions will be arranged around a series of themes, with keynote papers focussing on major topics and time-slices. Concurrent sessions (if any) will be minimised. Posters are encouraged, and will be programmed as pivotal episodes in the meeting.

**WOLLONGONG.** The city of Wollongong, with a population of greater Wollongong is about 183,000, is located about 80 km south of Sydney on a very attractive coastline. The expected December daily maximum is about 25°C, and the prevailing wind is from the NE. Wollongong is easily reached by car, bus and train from Sydney.

**ACCOMMODATION.** Excellent quality single accommodation will be available, including continental breakfast, for \$A 45 per night. There will be a special rate for bona fide students. This accommodation is within easy walking distance of the on-campus lecture theatres, the University Union, bar, general shop, banks, food outlets and bus transport to the city of Wollongong.

**CONCURRENT FIELD TRIPS.**

1. The Illawarra region is ideally situated for us to offer a short (1-day) field trip, probably during the conference, when attendees can examine typical Permian, shallow marine Shoalhaven Group exposures; rainforest at Minnamurra Falls; and present-day rocky coastal communities. Cost about #A 30 per person, including rainforest visit and bus transport.

2. We also seek responses from likely attendees as to interest in a longer (approximately 5 days), post-conference field trip through the southern Alps of NSW and the Wee Jasper-Taemas-Yass district of NSW, examining, in particular, Silurian-Devonian sequences. Your early response to this inquiry by e-mail will be greatly appreciated.

**PUBLICATIONS.** Publications resulting from this conference (PAFF) will go some way to fill the gap in consolidated published information on biogeography of biotas of the Australasian region. All written contributions for publication must be submitted by the end of the conference.

Two modes of publication are envisaged:

1. A thematic volume, will focus on the biotas of the various segments of the geological timescale as well as (it is hoped) papers providing overviews of the history and biogeographic affinities of major biotic groups. Individual chapters will deal with a single time interval or major topic. One or more authors will be responsible for each chapter and will, in most cases, coordinate contributions from relevant experts. Publication in the Oxford Biogeography Series is under discussion.
2. A second collection of papers on biochronology and other topics may be appropriate, depending on submissions; a possible venue for publication is Historical Biology.

**OTHER ACTIVITIES.**

An international conference on the Permian of Eastern Tethys will be held at Deakin University, Melbourne, Victoria from 30 November to 3 December, 1997, followed by a post-conference field trip (December 4-7) examining the Permian of the southern Sydney basin on the NSW coast south of Wollongong. Participants on this field trip, who are attending PAFF, can finish their trip at Wollongong on Sunday 7 December. Contact: the Secretariat, PET Conference on fax no 61.3.9244.7480 or on e-mail at [asnrm@deakin.edu.au](mailto:asnrm@deakin.edu.au).

**IMPORTANT DATES**

**SECOND CIRCULAR:** JANUARY 1997, with details of costs, submission format and conference arrangements.

**FINAL CIRCULAR** will be issued to intending registrants by June 1997.

**SUBMISSION OF ABSTRACTS:** August 1997.

**REGISTRATION AND PAYMENT OF DEPOSITS:** August 1997. [Ed. note: Registration form on page 30]

Contact information.

Tony Wright: Phone 61.42.213.329; fax 61.42.214.250; e-mail [t.wright@uow.edu.au](mailto:t.wright@uow.edu.au)

John Talent: Phone 61.02.850.8336; fax 61.42.850.8428; e-mail [jtalent@laurel.ocs.mq.edu.au](mailto:jtalent@laurel.ocs.mq.edu.au)

Gavin Young: Phone 61.62.499.391; fax 61.62.499.983; e-mail [gyoung@agso.gov.au](mailto:gyoung@agso.gov.au)

[This is the registration form to accompany the meeting announcement for PALAEOBIOGEOGRAPHY OF AUSTRALASIAN FAUNAS AND FLORAS. The poor quality of the form is due to loss of resolution through the Editor's scanning of a fax copy—Ed.]

~~SECRET~~ PRELIMINARY REGISTRATION

Please provide details to receive further circulars.

Name and Title:

Preferred name for conference tag:

Postal Address:

Phone number:

Fax number:

Email address:

I wish to present ..... oral presentation(s) with the following provisional title(s):

I wish to present ..... poster presentation(s), with the following provisional title(s):

ACCOMMODATION

- on-campus accommodation (single rooms only): YES/NO
- please send details of off-campus motel/hotel accommodation (single, twin, double); bookings will be arranged for overseas registrants.
- mid-conference field trip YES/NO
- 5-day field trip YES/NO
- conference dinner YES/NO

I require a letter of invitation? YES/NO

Please return completed form, or e-mail your details, to:  
Tony Wright,  
School of Geosciences,  
University of Wollongong, Wollongong NSW 2525  
Tel:(042)213 329; Fax:(042)214 250;  
Email: t.wright@uow.edu.au

## ITEMS OF RELATED INTEREST

### **REX E. CRICK (ARLINGTON)**

#### **PALAEONTOLOGICA ELECTRONICA**

As an Associate Editor of the first electronic journal dedicated to paleontology, I want to pass along the following information on *Palaeontologica Electronica* and encourage you to consider submitting manuscripts for publication.

The Paleontological Society and the Palaeontological Association have both agreed to become primary sponsors, and peer review procedures and instructions to authors are nearly finalised. An announcement and call for papers will be distributed in January 1997, and a copy of this announcement appears below. You can also examine a mock-up issue of *Palaeontologica Electronica* which gives an indication of how the first issue will look (the URL is <http://www-odp.tamu.edu/paleo/index.htm>). This only a mock-up, not the first issue). Your comments on this mock-up would be welcome and there is a page at the site to take your comments.

#### ***Palaeontologica Electronica* - Call for Papers**

The first electronic paleontological journal-*Palaeontologica Electronica* -is now accepting papers for volume 1. *Palaeontologica Electronica* is a peer-reviewed general paleontological journal of the widest possible scope. Technical contributions in the form of papers, editorials, book reviews, announcements, etc. from any branch of paleontology (e.g., micropaleontology, palynology, invertebrate paleontology, paleobotany, vertebrate paleontology) or related biological discipline and on any topic will be welcome within its pages. These contributions will come from members of the professional paleontological and biological communities in the same way that contributions to standard print-based paleontological journals are authored and submitted. All technical papers will be reviewed by professional paleontologists and biologists (using advice from an international panel of associate editors), edited to be accessible to non-specialists, and published as html documents accessible to all with Internet connections via the World Wide Web (WWW). The publication of descriptive taxonomic papers-especially those having to do with the naming of species and higher taxa-will not be encouraged in *Palaeontologica Electronica* at the present time because the current codes of zoological and botanical nomenclature do not recognize electronic publications (though we expect this situation to change in the foreseeable future). All other types of formal paleontological and biological papers will be considered.

Unlike traditional print-based journals, *Palaeontologica Electronica* will be highly graphical in both format and content. Authors will be encouraged to make use of color in their figures and tables and to include high-resolution digital images as illustrations. Moreover, *Palaeontologica Electronica* will encourage active experimentation with animation, 2D and 3D modelling of morphologies, online access to databases, and the creation of online data analysis tools. There will be NO PAGE LIMIT and NO PAGE CHARGES for articles published in *Palaeontologica Electronica*,

though all articles will be edited to optimize their information content. This freedom from normal print-publishing overheads is made possible because of the unique advantages of the digital format and because there will be no analogue to the paper, typesetting, and distribution costs. Each volume of *Palaeontologica Electronica* will also be available free-of-charge via the WWW for one publishing year. After this time, archive copies will be available to individuals and institutions on CD-ROM.

Authors wishing to submit manuscripts for review may consult the WWW addresses listed below for Author Guidelines. We would prefer that manuscripts be submitted to either of the executive editors as electronic word processor documents (MS-Word or WordPerfect for Macintosh or Windows platforms preferred), with figures submitted in GIF, TIFF, JPEG, or EPS graphics formats (minimum resolution for review: 200 dpi). Tables may be submitted in one of these graphics formats, as tab-delimited text files, or as MS-Excel worksheets (both Macintosh or Windows versions accepted). If you cannot match these formats please contact the editors for alternatives. Hard-copy manuscripts will be accepted for review, but will require additional time to process. [Note: if you need to submit a hard-copy manuscript please contact one of the executive editors prior to the actual submission.] Manuscript files may be sent as compressed archives on 3.5" floppy disks to the executive editor's surface mail addresses, as e-mail attachments (by prior arrangement with the editor) or deposited in a public ftp site (by prior arrangement with the editor).

Norman MacLeod (*Palaeontologica Electronica* Executive Editor) Department of Palaeontology The Natural History Museum Cromwell Road London SW7 5BD U.K. (1071) 938-9006 (Office) (0171) 938-9277 (Fax) N.MacLeod@nhm.ac.uk (E-mail)

R. Timothy Patterson (*Palaeontologica Electronica* Executive Editor) Ottawa-Carleton Geoscience Centre and Department of Earth Sciences Carleton University Ottawa, Ontario K1S 5BD Canada (613) 520-2600 (ext. 4425) (Office) (613) 520-4490 (Fax) tpatters@ccs.carleton.ca (E-mail)

#### **PALEONTOLOGICAL SOCIETY INTERNATIONAL RESEARCH PROGRAM**

#### **PalSIRP**

#### **ANNOUNCEMENT**

The Paleontological Society is pleased to announce continuation of a small grants program for paleontologists living in Eastern Europe and republics of the former Soviet Union. A small number of grants in the range of US \$500 to \$1000 will be awarded during 1997. These grants, supported in part by the American Quaternary Association and the Society of Vertebrate Paleontology, will be made directly to individuals and not to institutions. Grantees will be selected by a committee of the Paleontological Society on the basis of

three criteria in the following order: 1) quality of past achievement of the paleontologist; 2) financial need; and 3) quality and feasibility of proposed research. Special consideration will be given to active paleontologists under the age of 40 years, but other professional paleontologists will not be excluded from funding.

Applications for a PalsIRP grant must include the following three items, all typed in English:

1. Cover letter, stating the applicant's full name as it appears on the passport, passport number, date of birth, institutional affiliation, address, and telephone and fax numbers (e-mail, if available). The letter should also briefly state financial need and provide names of North American paleontologists familiar with the applicant's research; these persons will be used as references.
2. Research proposal, no longer than two pages, single-sided, providing a project title, a brief description of proposed research, and the general uses of the PalsIRP funds. Appropriate uses include (but are not limited to) salary support, domestic and foreign travel, and equipment purchase. No detailed budget or accounting is required for the normal grant of \$500. However, needs in excess of \$500 should be discussed in the cover letter.
3. Curriculum vitae (C.V.) listing birth date, education and current professional position, and all published papers, articles, and books. Additional information, such as employment history, awards, participation in international conferences and projects, etc., can be included.

These three items should be mailed or faxed to the following address:

PalsIRP  
c/o Rodney M. Feldmann  
221 McGilvrey Hall  
Department of Geology  
Kent State University  
Kent OH 44242 USA  
fax: 330-672-7949  
e-mail: rfeldman@kentvm.kent.edu

Proposals received prior to 30 March 1997 will be considered for 1997 funding. Proposals received after that date will be considered for 1998 funding. All proposals that are not in English will be returned without consideration.

Paleontologists living in the following countries are currently eligible for PalsIRP grants: all republics of the former Soviet Union, including the Baltic States, Mongolia, and nations in Eastern Europe (other than East Germany), including Poland, the Czech Republic, Slovakia, Hungary, Romania, Bulgaria, Albania, and the countries of the former Yugoslavia.

The Paleontological Society asks all readers for their assistance in advertising the PalsIRP grants. Please send this information to your colleagues in Eastern Europe and the former Soviet Union: mail, fax, e-mail, or talk directly to them about this program and ask them to spread the word among their colleagues. Thank you.

**SUSAN TURNER (SOUTH BRISBANE)**

**A NEW CASE STUDY OF A IMPORTANT  
FRASNIAN SITE**

***Devonian Fishes and Plants of Miguasha,  
Quebec, Canada***

**Hans-Peter Schultze and Richard Cloutier (editors)**

Verlag Dr. Friedrich Pfeil - München 1996 Price: US\$50  
Wolfratshauser Str. 27  
D-81379 München  
Germany

**Contents:**

**History**

SCHULTZE, H.-P. & CLOUTIER, R. VÉZINA, D. Preface.  
LEMIEUX Fossil Lagerstätte Miguahsa: Its Past and Present History.

**Geology**

PRICHONNET, DI VERGILIO & CHIDIAC Stratigraphy, sedimentology, palaeontological context of the Escuminac Formation: paleoenvironmental hypotheses.

SEGUIN Miguasha in relation to palaeomagnetism of North America.

CHIDIAC Paleoenvironmental interpretation based on geochemical evidence.

PARENT N. & CLOUTIER R. - Distribution and preservation of fossils in the Escuminac Formation.

**Palaeobotany**

GENSEL & BARNETT-LAWRENCE Plant megafossils.  
MCGREGOR Spores.

**Invertebrates**

JERAM Chelicerata

MARTENS Conchostraca (Phyllopoda, Crustacea)

MAPLES Palaeoenvironmental significance of trace fossils.

**Vertebrates**

ARRATIA & CLOUTIER Actinopterygii.

ARRATIA & CLOUTIER Reassessment of the primitive actinopterygian *Cheirolepis canadensis* Whiteaves.

CLOUTIER Diplopoans.

CLOUTIER R. The primitive actinistian *Miguashaia bureaui* Schultze.

CLOUTIER & SCHULTZE Porolepiformes.

CLOUTIER Taxonomic review of *Eusthenopteron foordi* Whiteaves.

GAGNIER Acanthodii.

JANVIER Anaspidia.

JANVIER & ARSENAULT Osteostraci.

JARVIK Evolutionary importance of *Eusthenopteron*.

McALLISTER Coprolites.

SCHULTZE Vertebrate fauna.

SCHULTZE The elpistostegid fish, *Elpistostege*, the closest the Miguahsa fauna comes to a tetrapod.

SCHULTZE & CLOUTIER Comparison of the Escuminac Formation ichthyofauna with other Late Givetian/Early-Middle Frasnian ichthyofaunas.

VÉZINA Placodermi.

The fossil site of Miguasha was discovered in 1842 by Dr Abraham Gesner and promptly "forgotten" until its rediscovery in 1879 by R.W. Ells of the Geological Survey of Canada. The fossil material found, especially plants and fish, became the focus for now classic work by William Dawson and J. F. Whiteaves (Lemieux chapter). Whiteaves referred to the site as the Baie des Chaleurs of Scaumenac Bay, and for the next century, the site was known as "Scaumenac Bay". The richness of fossil fish has drawn expeditions and collectors from all over North America and Europe: the antiarch placoderm *Bothriolepis* and the lungfish *Scaumenacia* are so common and so well preserved at the site that they have been used as representatives of their respective groups in exhibits and teaching collections all over the world. In 1978 an interpretation centre for the Escuminac Formation fossil fish was opened under the directorship of Marius Arsenault. The fossil site was declared a provincial park, the Parc de Miguasha, in 1985 and collecting is now allowed only under strict conditions. New finds are stored and curated now in the museum of the park (Musée d'Histoire naturelle de Miguasha) which has the largest collection of Escuminac fossils in the world (Parent and Cloutier chapter). In July 1991 the Parc de Miguasha held a very successful symposium on Early Vertebrates which was also the first international meeting of IGCP 328: Palaeozoic Microvertebrates [see Arsenault & Janvier eds 1995]. Many of the participants at that meeting along with palaeontologists and geologists from Canadian, United States and European institutions have co-operated to contribute to this fine book on the Miguasha assemblage.

Since the early descriptions of fish and plants, the number of taxa from Miguasha has more than tripled. This new book presents the first comprehensive description of the history, geology, paleoenvironment and fossil content of the Late Devonian site of Miguasha since Ørvig's (1957) compilation of the fish assemblage and the sedimentological and paleoenvironmental interpretation given by Dineley and Williams. For the past 25 years, the paleoenvironment of the Escuminac Formation has generated a great deal of controversy. Originally interpreted as a lacustrine environment by Dineley and Williams (1968), recent evidence suggests that the Escuminac Formation was deposited in a coastal marine environment (Schultze, 1972; Schultze and Arsenault, 1985; Vézina, 1991; Schmitz *et al.*, 1991; Hesse and Sawh 1992; and chapters by Prichonnet *et al.*, Chidiac, Maples, Schultze and Cloutier).

The paleogeography of Miguasha has also been a 'hot' topic. During the Late Devonian, Miguasha was under equatorial climate as given by the position of paleocontinents (Seguin chapter) and the presence of terrestrial scorpions (Jeram, this volume) and luxurious plants (Gensel and Barnett-Lawrence chapter). Despite a rich palynomorph assemblage (McGregor chapter), the megaflora shows only low diversity, an indication of distance from the coastline and/or destruction by transport. However, McGregor reports no palynomorphs suggesting marine conditions. On the other hand, acritarchs which have yet to be described, are known from the lower part of the formation (Schultze and Cloutier chapter).

The assemblage is poor in invertebrate taxa; Jeram and Martens describe three arthropod taxa, including the first North American stylonuroid eurypterid. The first trace fossils are also recorded from the Escuminac Formation; they indicate a marginal marine environment (Maples chapter).

The entire vertebrate assemblage is revised, including some of its paleoecological interactions and microvertebrate potential (McAllister chapter). Of the 21 taxa, the agnathans are unique and include some of the last survivors of the group; *Bothriolepis*, the acanthodian *Triazeugacanthus*, *Scaumenacia*, and the osteolepiform *Eusthenopteron* are the most abundant taxa; the acanthodian *Homalacanthus* and actinopterygian *Cheirolepis* are less common; all other taxa are rare. Most major groups of Devonian fishes are represented in Miguasha, with the exception of heterostracan agnathans, chondrichthyans and onychodontiforms. However, these last two might be expected in the microfauna when investigated further.

The volume closes with a comparison of the fish assemblage of Miguasha with some of the contemporaneous Frasnian assemblages (Schultze and Cloutier). The ichthyofauna is highly endemic at the species level (20 of 21 species are unique), whereas at the generic level it is similar to now far distant localities in Ellesmere Island, Scotland and Russia, and at the familial level it is reminiscent of at least one locality in Australia. The authors, however, concentrated their efforts mainly on sites with macrofauna; they might well have included some of the microfaunal sites in their comparison to provide further data; the Gneudna Formation of the Carnarvon Basin of Western Australia and some of the newer sites in the Holy Cross Mountains spring to mind. In addition instead of using the outmoded genus "Cladodus" they might have ascertained which cladodont teeth were represented in each fauna (e.g., *Stethacanthus*, *Symmorium*, *Ctenacanthus*, *Cladoselache*, *Phoebedous*, etc.) to give potentially clearer picture and biostratigraphic data from the chondrichthyans - the presence of phoebedont teeth for instance can allow correlation to one or two standard conodont zones.

The book is excellently produced with a stunning orange cover design featuring *Eusthenopteron* against the backdrop of the Miguasha cliffs. It would certainly grace any Devonian bookshelf!

#### DR. L. V. NEKHOROSHEVA (ST. PETERSBURG)

A new bryozoan species of genus *Unitrypa* from the Lower Devonian of the Kotel'nyi Island (Novosibirsk Islands). Russian Acad. of Sciences. Palaeontol. Journal (1996), No. 2, p. 73-75.

**MARK WILSON**

**IGCP 406 "CIRCUM-ARCTIC PALAEZOIC VERTEBRATES" OR "CIRCUM-ARCTIC LOWER-MIDDLE PALAEZOIC VERTEBRATE PALAEONTOLOGY AND BIOSTRATIGRAPHY"**

Meetings for 1997:

1997 Meeting #1.

"Circum-Arctic Palaeozoic Vertebrates: Biological and Geological Significance"

Contributions invited on:

biostratigraphy, correlation, paleoecology, biogeography, evolution, and systematics of Ordovician, Silurian and Devonian vertebrates and associated fossils from Arctic regions. Buckow (near Berlin), Germany

July 5-6, 1997

Abstract Deadline: February 28, 1997

Abstract Submission: to M. V. H. Wilson, e-mail mark.wilson@ualberta.ca Hotel Registration: by February 28, 1997 Hotel Payment Deadline: March 31, 1997

Meeting Registration: Early Deadline is February 28, 1997 Contact Mark Wilson (mark.wilson@ualberta.ca) for more details (a package was mailed to everyone listed as a participant in IGCP 406).

This meeting is immediately before another meeting at the same place: "Mesozoic Fishes - Systematics and the Fossil Record" July 7-11, 1997 Contact Gloria Arratia, e-mail gloria.arratia@rz.hu-berlin.de

1997 Meeting #2.

"Palaeozoic Strata and Fossils of the Eurasian Arctic" With workshop on Severnaya Zemlya monograph

St. Petersburg, Russia

September 23 - 26, 1997

Organizing Committee: A. Ivanov, T. Mozdalevskaya, I. Evdokimova, A. Zhuravlev

Contact Address:

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Mark Wilson (Univ. Alberta, Alberta)

**M.R. HOUSE (SOUTHAMPTON)**

**GEODYNAMIC MAP OF GONDWANA SUPERCONTINENT ASSEMBLY**

Produced jointly by:

IGCP Project 288 (data base generation)

Council for Geoscience, Pretoria, South Africa (GIS and digital cartography)

Bureau de Recherches GÉologiques et MinÉres, OrlÈans, France (printing)

Scale: 1:10,000,000

4 sheets

Total dimensions: 1950 x 1250 mm

Price: US \$50

Publisher: Bureau de Recherches GÉologiques et MinÉres - 1996

The map shows Gondwanaland in a tight reconstruction, with cratons and post-Paleozoic cover generalized, and detailed data on Mesoproterozoic (1600-1000 Ma), Neoproterozoic (1000-540 Ma) and Paleozoic mobile belts. The unique legend presents chronology (color), rock types, and their geotectonic environment.

Legend symbols are grouped as follows:

Sedimentary and magmatic-sedimentary sequences: Craton cover and intracratonic basins; Mobil belts: passive margins, active margins, molasse basins and aulacogens; oceanic sequences.

Glaciogenic sediments.

Tectonics, Structure and Kinematics.

Metamorphism: Metamorphic facies.

Magmatism: Pre and syn-orogenic magmatism in mobil belts;

Late- to post-orogenic magmatism in mobile belts and anorogenic magmatism in cratons.

Orders for the map can be placed at either of the addressed below:

Editions BRGM  
Avenue Claude Guillemin  
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2. Type USER ANONYMOUS (once the computers are linked)
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