SUBCOMMISSION ON DEVONIAN STRATIGRAPHY

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I. U. G. S Subcommission on Devonian Stratigraphy

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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.

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Contents

EDITORIAL NOTES
Electronic SDS .......................................................................................................................... 1
CU-SeeMe Technology ............................................................................................................ 1
Changes to the Geologic Time Scale ....................................................................................... 1
Curt Teichert (1905-1996) ..................................................................................................... 3

SUBCOMMISSION ON DEVONIAN STRATIGRAPHY
Report of the Retiring SDS Chairman .................................................................................... 5
Minutes of the SDS Business Meeting, 7th August 1996, Beijing ......................................... 6
Devonian Standard Chronostratigraphic Scale: Importance of Substages and Additional Stages ................................................................. 9
SDS Questionnaire: Your proposals for Devonian Substages and Additional Stages ............. 9
Symposium and Field Meeting on Devonian Cyclicity and Sequence Stratigraphy .............. 11
Minutes for the German SDS Group ..................................................................................... 13
Jurgen Remane, Chairman of ICS ........................................................................................... 14

NEWS FROM THE MEMBERSHIP
R.T. Becker (Berlin) ............................................................................................................... 15
Recent Devonian Papers ......................................................................................................... 16
Annual Meeting of the German Palaeontological Society ...................................................... 19
Carlton Brett (Rochester) ...................................................................................................... 21
Rex E. Crick (Dallas) ............................................................................................................ 21
M.R. House (Southampton) .................................................................................................. 22
Michael Murphy (Davis) ....................................................................................................... 22
Florentin Paris (Rennes) ...................................................................................................... 22
Eberhard Schindler (Frankfurt) ............................................................................................. 23
John A. Talent & Ruth Mawson (North Ryde, N.S.W., Australia) ........................................ 23
North Gondwana mid-Palaeozoic bioevent/biogeography patterns in relation to crustal dynamics .............................................................................. 24
Palaeobiogeography of Australasian faunas and floras ........................................................ 24
Seventh European Conodont Symposium (ECOS VII) and associated excursions .............. 24
Forewarning .......................................................................................................................... 24
Radiometric scale for the Devonian: Further call for materials ............................................ 25

(Continued on outside of back cover)
EDITORIAL NOTES

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-see.me.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 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:

<table>
<thead>
<tr>
<th>Stages</th>
<th>Durations (Ma)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faminean</td>
<td>10.5</td>
</tr>
<tr>
<td>Frasnian</td>
<td>6</td>
</tr>
<tr>
<td>Givetian</td>
<td>8</td>
</tr>
<tr>
<td>Eifelian</td>
<td>7</td>
</tr>
<tr>
<td>Emsian</td>
<td>13</td>
</tr>
<tr>
<td>Pragian</td>
<td>5</td>
</tr>
<tr>
<td>Lochkovian</td>
<td>5.5</td>
</tr>
</tbody>
</table>

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 ± 2 Ma; topmost Ludlow) and (421 ± 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 ± 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 Faminean. 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.

This past spring witnessed the passing of one of the greatest
diologists, 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 Königsberg, East Prussia (now Kaliningrad, Russia) on May 8, 1905. Königsberg 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 Königsberg 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 Kontinents und Ozeane, and the second was the many excursions into the Pleistocene glacial terrane surrounding Königsberg. 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 Forste 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 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 clyrmeniids. 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 Gip 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 textbook 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 photographic record 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 Teichert's 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 Gondwanan Congress. While at Melbourne he was awarded the David Symne 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
SUBCOMMISSION ON DEVONIAN STRATIGRAPHY — (December 1996) Newsletter No. 13

SUBCOMMISSION ON DEVONIAN STRATIGRAPHY

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 databases; 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 subcommisions 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 organizing 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 1876. 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 subcommisions has the aim of cost saving to IUGS, and thus enabling limited funds to be used for other purposes. Of the income of
Newsletter No. 13 (December 1996) — Subcommission on Devonian Stratigraphy

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 an 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 Bultynck, 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).


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.


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 chairman gave special apologies for the absence of the secretary.

4. Review of work since the Paris meeting

A. Base of the Emsian

The chairman 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 my 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 chairman 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 Hasselbachtal 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 Subcommissions 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.
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

Carried forward from 1995 144.05
IUGS subvention for 1996 1530.00
sum 1674.05
support for soft currency attendants, Beijing 1996 1000.00
secretary expenses 100.00
costs associated with the editing of the Moscow Symposium volume 80.00
Newsletter (no. 13) allocation 250.00
room hire Beijing 1996 100.00
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 micrconvertebrates 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.
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 stage boundaries of the Albion, 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.

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

1. **Name:**

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

<table>
<thead>
<tr>
<th>Stages</th>
<th>Need of Substages</th>
<th>Number of Substages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Famennian</td>
<td>high</td>
<td></td>
</tr>
<tr>
<td></td>
<td>moderate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>little</td>
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<tr>
<td>Frasnian</td>
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<td>Givetian</td>
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<td>Eifelian</td>
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<td>Emsian</td>
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<tr>
<td>Pragian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lochkovian</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
SYMPOSIUM 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, SONYEAYA, 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), SONYEAYA, 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).


FRIDAY JULY 25 SYRACUSE TO MORRISVILLE
HELDERSBERG, TRISTATES GROUPS (Oriskany S.S.) (LD), ONONDAGA LIMESTONE, HAMILTON GROUP, TULLY LIMESTONE (MD), GENESEE GROUP (MD-UD). Overnight: Syracuse University.

SAT JULY 26 CHERRY VALLEY-SCHOHARIE VALLEY
HELDERSBERG, TRISTATES GROUPS (Oriskany S.S.) (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 S.S.), LOWER HAMtTON 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
Dept. of Earth and Environmental Sciences
University of Rochester
Rochester, New York 14627
e-mail: cebb@dbl.cc.rochester.edu
(716) 275-2408 Fax (716) 244-5689

William T. Kirchgasser
Dept. of Geology
State University of New York
Potsdam, New York 13676
e-mail: kirchgw@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, W. Kirchgasser, J. Bridge, W. Kirchgasser, J. Over, C. Ver Straeten, D. Woodrow
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) 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 = holostratigraphy]). All this shall be applied more intensively 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 mean 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 lehacae before the end of 1996. Senck. leh. 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. leh. 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): Beiträge zur Geologie und Paläontologie aus unterschiedlichen Regionen des Paläozoikums.- 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, Schriftenausch, 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):

Ulrich Jansen, FIS (see above); Tel.: 49-69-97075146, Fax: 49-69-97075137, e-mail: ujansen@sng.uni-frankfurt.de

Eberhard Schindler, FIS (see above); Tel.: 49-69-97075132, Fax: 49-69-97075137, e-mail: eschindl@sng.uni-frankfurt.de

Karsten Weddige, FIS (see above); Tel.: 49-69-97075141, Fax: 49-69-97075137, e-mail: kweddige@sng.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@sng.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 Darrwilian 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

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 Darrwilian 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-yi - 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 Darrwilian 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

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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 will 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 Mader, and we also continued our work in the late Givetian and Famennian of the Tafiliat 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 goniatite fauna with archoceratids has been discovered by V. EbbighAUSEn and J. Bockwinkel in the classical Biedesheim Syncline of the Eifel Mts. and will be described jointly. Other late Frasnian goniatites 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 ontogenic stages of Palaeozoic ammonoids. Muscle attachment scars in beautifully preserved pyritic Famennian goniatites will be studied in the frame of a Ph.D. under supervision of Prof. Fischer (Hannover).

**Papers of 1996:**


**HOUSE, M.R., MENNER, V.V., OVNATANOVA, N.S., KUZMIN, A.V., BECKER, R.T. & YATSKOV, S.:** Middle-Palaeozoic 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.
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 sea level changes, events, palaeobiogeography, cyclic sedimentation etc. Very recent publications of major journals may be included as well.


Bureau of Geology and Mineral Resources of Nei Mongol Autonomous Region (1996): Stratigraphy (Lithostratic) 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]


Ebert, Jo. (1993): Globale Events im Grenz-Bereich Mittel-/Obere Devon. - Göttinger Arbeiten zur Geologie und Paläontologie, 59, 106 pp., 1 pl. [detailed study on events around the Phacoceris-Stufe]

Ebert, J. (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]


Grigo, M. (1994b): Palaeocopida und Eridostraca (Ostracoda) aus den Seiferer Schichten des Westerwaldes (Unter-Devon, Rheinisches Schiefergebirge). - Beitr. zur Paläontologie, 64, 85 pp., 3 pls. [monography on ostracod biostratigraphy and taxonomy]


Weller, H. (1996): Controls on the Origin and Composition of a Devonian Mud Mound (Frasnian of the Harz Mountains) with Special Respect to the Construction and


ANNUAL MEETING OF THE GERMAN PALAEOENTHOLOGICAL 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 research in the Paleozoic of Sardinia, 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. Bartzsch (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 Conocerentoida. [included Devonian members of the group]


Braun, A.: Paläozoische Kleinarthropoden in "cuticularer" Erhaltung - ein breites und vielversprechendes Forschungsgebiet. [included Lower Emsian cuticular remains of arthropods with preserved receptor 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]


Pohler, S.M.L.: Paläontologie devonischer Karbonatkörper im Tamworth Belt als Beitrag zur Sedimentationsgeschichte eines intra-ozeanischen Inselbogensystems (New South Wales, Australien)


Schulze, H.-P.: Primitive Knochenfische aus dem Unterdevon der kanadischen Arktis. [including lung fishes, Rhipidistia and Actinopterygia]

Schülcke, I.: "Faunal recovery" am Beispiel der Conodonten nach dem Kellwasser-Event.

Schultz, H.-P.: Primitive Knochenfische aus dem Unterevondyn der kanadischen Arktis. [including lung fishes, Rhipidistia and Actinopterygia]

Weber, H.M.: Die Stromatoporen-Biotome im Strunian Westeuropas (höchstes Oberdevon, Belgien und Bundesrepublik Deutschland)

Otto, M.: Fossildiagenese und Fossilinterpretation am Beispiel des Hunsrückschiefers. [continuation of the claim that there is no true soft body preservation in 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):

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Haude, R.: Fluchtversuche verschütteter Holothurien in einer unterdevonischen Echinodermen-Taphozönose. [on Lower Devonian holothurids from Argentina]


Pohler, S.M.L.: Paläontologie devonischer Karbonatkörper im Tamworth Belt als Beitrag zur Sedimentationsgeschichte eines intra-ozeanischen Inselbogensystems (New South Wales, Australien)


Schulze, H.-P.: Primitive Knochenfische aus dem Unterdevon der kanadischen Arktis. [including lung fishes, Rhipidistia and Actinopterygia]

Schülcke, I.: "Faunal recovery" am Beispiel der Conodonten nach dem Kellwasser-Event.

Schultz, H.-P.: Primitive Knochenfische aus dem Unterevondyn der kanadischen Arktis. [including lung fishes, Rhipidistia and Actinopterygia]

Weber, H.M.: Die Stromatoporen-Biotome im Strunian Westeuropas (höchstes Oberdevon, Belgien und Bundesrepublik Deutschland)

Posters


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 Drewer with a range of D/C boundary sections have been identified as a diagnostically altered mudmound]

Otto, M.: Fossildiagenese und Fossilinterpretation am Beispiel des Hunsrück-Schiefers. [continuation of the claim that there is no true soft body preservation in 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 Conocerentoida. [included Devonian members of the group]


Braun, A.: Paläozoische Kleinarthropoden in "cuticularer" Erhaltung - ein breites und vielversprechendes Forschungsgebiet. [included Lower Emsian cuticular remains of arthropods with preserved receptor 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]


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Weber, H.M.: Die Stromatoporen-Biotome im Strunian Westeuropas (höchstes Oberdevon, Belgien und Bundesrepublik Deutschland)
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 & Co-Workers 1996

Refereed Papers


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 jamiaeae 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 jamiaeae zone and extends into the marginifera zone and the second 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 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. Ovнатанова, 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 commended 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.


MICHAEI 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 focussed mainly on chitinozoans biostratigraphy in Ukraine (with Y. GRAHN, Sweden), Czech Republic with S. GESSA, P. DUFKA and L. 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


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 (Forschungsinstitut 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):


Sedimentologentreffen, Kurzfassungen: 154; Wien.


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 Myton 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 (Emer- sian) 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 (greged@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] and Yong-yi Zhen [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 Yongi-yi (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 [rmawson@laurel.ocs.mq.edu.au], and John Talent [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 magnetosusceptibility 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 palaeoclimatologic 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

7-11 December 1997, Wollongong, Australia (SEE Tony Wright)

Seventh European Conodont Symposium (ECOS VII) and associated 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 foci 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, Instituto di Paleontologia, Dipartimento di Scienze della Terra, University of Rome, 1-00134 Italy; fax: (39.59) 218212; e-mail: serpagli@unimo.it; Dr Maria Cristina Perri, Dipartimento di Scienze della Terra e Geologico Ambientali, Universita di Bologna, Via Zamboni 67, 40127 Italy; fax: (39.51) 354522; e-mail: 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 Ecosтратigraphy 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 sequence 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, rmawson@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 Palaeozoic stratigraphy and paleontology of the western Siberian Plain. The main results are:


2. Continued study of the subsurface Palaeozoic of the Western Siberian Plain;


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:

1. 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, 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 data 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 IRC - 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.

Geographic coverage: Siberia, Russian Far East, plus some other regions of Asia (Central Asia, Kazakhstan, Urals, Mongolia, etc.)

Subject coverage:
- Geochemistry; Stratigraphy; Mineralogy/Petrology;
- Geomorphology; Structural Geology/Tectonics;
- Paleontology/Paleobotany; Sedimentology; Geophysics/Tectonophysics; Igneous Geology; Hydrogeology;
- Metamorphic Geology; Engineering Geology;
- Geochronology; Environmental Geology; Petroleum Geology; Natural Hazards; Economic Geology; Permafrost

Time coverage:
- monographs - from 1990 onward; journal articles - from 1993 onward; theses, open-file reports - from 1993 onward; maps - from 1985 onward

Features:
- no analogues; more than 2,000 records per year; abstracts and full bibliographic information in English quarterly updates

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Of course, the subscription cost is rather high. But this is a cost of enlarged abstracts for all indicated sections of 4 issues per year that could be very useful for big Institutions. A subscription for separate section (or group of sections) could be much less. We are intended to include in this edition the abstracts of all paleontological monographs and papers with illustrated fossils since early 60's.
WILLI ZIEGLER (FRANKFURT/Main)

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

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Vol.


150 SANDBERG, C.A.; ZIEGLER, W.; DREESEN, R. & BUTLER, J.L. (1992): Conodont biochronology, biofacies, taxonomy and event stratigraphy around Middle Frasnian Lion Mudmound (F2h), Frasnes, Belgium. - 87 S., 21 Abb., 6 Tab., 10 Taf. DM 20.—


161 WANG, RONGHU (1993): Taxonomie, Palökologie und Biostratigraphie der Mikroichthyolithen aus dem Unterdevon Keltiberiens, Spanien. - 205 S., 22 Abb., 16 Tab., 18 Taf. DM 42.—


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

Addendum: Pencauria 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 Lower Devonian standard boundaries (or better boundary intervals) Lochkovian/Pragian and Pragian/Emsonian 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).

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) acuria group, of the Nowakia (Turkestanella) clathrata group, of the Nowakia (Alaina) matlockiensis group and of Crassilinoides francothuringianus from the Pragian and the Pragian/Emsonian 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 LORÉ ALBERTI
Zur Lithologie, Fauna und Stratigraphie 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- and 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 basal 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.

<table>
<thead>
<tr>
<th>Species</th>
<th>Lithological Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viriatellina cf. hercynica</td>
<td>1</td>
</tr>
<tr>
<td>Gyrococeras</td>
<td>2</td>
</tr>
<tr>
<td>Nowakia cancellata</td>
<td>3</td>
</tr>
<tr>
<td>Nowakia elegans</td>
<td>4</td>
</tr>
<tr>
<td>Mimosphinctes, Anetoceras</td>
<td>5</td>
</tr>
<tr>
<td>Nowakia cf. barrandei</td>
<td>6</td>
</tr>
<tr>
<td>Guerichina infundibulum → strangulata</td>
<td>7</td>
</tr>
<tr>
<td>Nowakia (Alaina) hercyniana</td>
<td>8</td>
</tr>
<tr>
<td>Nowakia acuaria</td>
<td>9</td>
</tr>
<tr>
<td>Styliacus bedboucouki</td>
<td>10</td>
</tr>
<tr>
<td>Paranowakia goinitziana</td>
<td>11</td>
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<tr>
<td>Paranowakia intermedia</td>
<td>12</td>
</tr>
<tr>
<td>Homoclenowakia bohemica</td>
<td>13</td>
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<tr>
<td>Monograptus cf. hercynicus</td>
<td>14</td>
</tr>
<tr>
<td>Homoclenowakia aff. sonex</td>
<td>15</td>
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</tbody>
</table>
ALAIN BLIECK (VILLENEUVE)

The Baltic-Barentsia-Sibera groups of IGCP 406 met on Monday, October 7th, in the Institute of Geology, Tallinn, under the convenership of Tiit Märs, 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 - Baltic 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: Fluctuactions of the world ocean level and correlation of the Devonian of the Pechora Plate and southeastern Baltic Region;
C. Bexiga & A. Blieck: New data on pteraspids (Pteraspido-morphi, Heterostrochi) of the Lower Devonian, Frænkel-ryggen Formation of Spitsbergen;
A. Blieck, A.-M. Candilier, S. Loboziak & 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 Fmamennian deposits of Baltic and Central Russia by vertebrates;
A.V. Zhuravlev, I.O. Evdokimova & E.V. Sokiraj: New data on conodonts, brachiopods and ostracodes from the stratotypes 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;

Also interesting for fish people was the communication of:
T. Märs & V. Karataju-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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BEWARE: from October 18, 1996, new telephone/fax numbering

National: Tel. 0320 434140 Fax. 0320 436900
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SHARKS FROM THE DEVONIAN/CARBONIFEROUS BOUNDARY BEDS OF THURINGIA
Institute of Geology, Warsaw University, Zwicki i Wigury 93, 02-089 Warszawa, Poland; e-mail: fiszbit@geo.uw.edu.pl

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 *Phoeodus 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 Urala) 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.


STRONG POSITIVE EXCURSION IN δ13C 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 δ13C and δ18O values of the Late Devonian Weyer (Kulturhistorisches Museum, Magdeburg), appeared to be particularly rich in chondrichthyan remains.

The δ13C values of reef margin developed during the occasional emergence of this facies. A significant anomaly in δ13C 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 excursio of the δ13C 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 IIIc category upwelling, which was enabled by the division 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 13C 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 Zs.

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

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

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

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

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

111.0-120.2 m: Scaphignathus velifer Zs. (O. Fr.) = Pa. trachytera Zs. [defined by occurrences of the conodont taxa Pa. rugosa trachytera Ziegler, Pa. glabra lepta Holmes, Pa. minuta minuta Branson et Mehl; together with Pa. 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 Zs.] which is newly pushed down to the depth of 176.2 m

176.2-198.6 m: ?Ancyrognathus triangularis Zs. (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. transiens and Me. falsisialis Zs. cannot be defined with great accuracy because of the dominance of Icriodus spp., Ancyrodelia rotundiloba rotundiloba, An. rotundiloba alata, Osmarchodina 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 $\delta^{13}C$ values have been documented in the fore reef (up to +5.5%). With the exception for the CO$_2$ -degassing and methanogenesis, no other processes related to burial or meteoric diagenesis would produce a significant enrichment in $^{13}$C. Of course, 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 $\delta^{13}C$ 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 My r, i.e. within the ranges of the standard conodont zone Pa. transiens (= 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 $\delta^{13}C$ 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 $^{12}$C isotope and inevitably cause a rise in $^{13}$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 3rd 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.

References (** key data):


Fig. 1 - Conodont zones: comparison of the zones and their application in 1984 and 1996; time assignment of the positive the $\delta^{13}$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 δ¹³C and δ¹⁸O 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).
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 stratigraphry 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. Havlícek ~ 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. Aprox. 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 calciturbidite for which the lack of basal debris flows is typical. The best of the accessible sections are the Stydle 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 (Stydle 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 Parasriatopora corals. Fluctuating d13C and d18O 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 Zinzilbam Formation boundary in the Middle Asia, or higher with Walliser's Lower Emsian event (Walliser 1984).

References (** key data):  


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, 1977, 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 asnorm@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]

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[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.]

### PRELIMINARY REGISTRATION
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### ACCOMMODATION
- on-campus accommodation (single rooms only):  
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- please send details of off-campus motel/hotel accommodation (single, twin, double): bookings will be arranged for overseas registrants.
  - YES/NO
- 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,  
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University of Wollongong, Wollongong NSW 2525  
Tel:(042)213 329; Fax:(042)214 250;  
Email: t.wright@uow.edu.au
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—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, palaeobotany, 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).

N.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)
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Palaeontological 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. Grants will be selected by a committee of the Palaeontological Society on the basis of

Items of Related Interest

41
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 consider-
ation 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
tree 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, institu-
tional 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 equip-
ment 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 internation-
als 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 consid-
ered 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.
The fossil site of Miguasha was discovered in 1842 by Dr Abraham Gesner and promptly "forgotten" until its rediscovery in 1879 by R.W. Ellis 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 Örvig'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 lagostrine 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 Savh 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 stylomuroid 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, chondrichthysans 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 in stead of using the outmoded genus “Cladodus” they might have ascertained which cladodont teeth were represented in each fauna (e.g., Stehacanthus, Symmorium, Ctenacanthus, Cladoselache, Phoebodus, etc.) to give potentially clearer picture and biostratigraphic data from the chondrichthysans - the presence of phoebodont 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!
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:
Alexander Ivanov
Laboratory of Paleontology
Institute of Earth Crust
St. Petersburg University
16 Linija 29
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Attention: Information Division
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INFORMATION FOR CONTRIBUTORS

There are several ways to provide contributions to the Newsletter.

1. **Original typewritten copy** — No more than two pages are acceptable since this material will have to be either retyped into a computer file or scanned.

2. **Computer file on disk** — Text files in any DOS, WINDOWS or MACINTOSH word processing format are acceptable. Graphic files are acceptable in any standard format but if the desire is to retain the original appearance, it is better to convert the file to PIC/PICT or TIF/TIFF in order of preference.

3. **E-mail** — Text material is acceptable when contained within the body of the e-mail message. Formatted text material and graphics can be attached to e-mail messages after being encoded with encoders such as BinHex. Check with your systems administrator or computer guru if you are unsure how to accomplish the attachment of text or graphics.

4. **Anonymous ftp** — The File Transfer Protocol (ftp) allows for the transferring of text and graphic files between your computer (regardless of type) and the server in my laboratory. The required TelNet and FTP software programs are available at any computing facility. Please send an e-mail message following the transfer with details of what was sent, etc.

To reach "our" folder via any ftp program do the following:

1. Ask the ftp program to open a session with GEOLOGY.UTA.EDU or you use the Server's IP number of 129.107.18.20. This is the MAC in my lab and acts as an anonymous ftp site. Thus your USER NAME is ANONYMOUS and your PASSWORD is your e-mail address.
2. Type USER ANONYMOUS (once the computers are linked)
3. Type your e-mail address as the password (will not be displayed)
4. Type CD INCOMING to change directory to INCOMING
5. Type BIN to set data transmission to binary (will work with all file types)
   Please remember that filenames cannot contain spaces UNLESS the filename with spaces is enclosed within double quotes " ".
6. Use PUT command to transfer your file to the INCOMING directory.
7. Use GET command to transfer a file from the INCOMING directory to your computer.

BON CHANCE!!!
CURRENT AND ONGOING WORK .................................................. 25

NEWS FROM SIBERIA ................................................................. 25

NEW! SIBERIAN SCIENCE IS NOW AVAILABLE TO YOU! .............. 27

WILLI ZIEGLER (FRANKFURT/MAIN)
Courier volumes with Devonian and/or Lower Carboniferous Content ................................................................. 28

REPORTS FROM THE MEMBERSHIP ........................................ 30

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) ................................................................. 30

G. K. B. ALBERTI AND LORE ALBERTI
Zur Lithologie, Fauna und Stratigraphie des unterdevonischen Anteils der "Harzgerode Tongallen- und Kieselgallenschiefer—Formation "(Herzynische Beckenfazies Unterharz).—Senckenbergiana lehmanniana, 76; Frankfurt/Main.—In Press (1996) ................................................................. 31

ALAIN BLIECK (VILLENEUVE)

MICHAL GINTER (WARSAW)
Sharks from the Devonian/Carboniferous boundary beds of Thuringia ................................................................. 33

JINDRICH HLADIL, JANA HLADIKOVA & JAROSLAVA ZUSKOVA (PRAGUE)
Strong positive excursion in d13C values in the time-equivalent of the Pa. transitans Z. (Frasnian, Moravia): a local facies control is suggested ................................................................. 33

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 ................................................................. 37

TONY WRIGHT (WOLLONGONG)
Palaeobiogeography of Australasian Faunas and Floras ................................................................. 39

ITEMS OF RELATED INTEREST .................................................. 41

REX E. CRICK (ARLINGTON)
Palaeontologica Electronica .......................................................... 41

Palaontological Society International Research Program ................................................................. 41

SUSAN TURNER (SOUTH BRISBANE)
A new case study of an important Frasnian Site ................................................................. 42

DR. L. V. NEKHOROSHEVA (ST. PETERSBURG)
IGCP 406 “Circum-Arctic Palaeozoic Vertebrates” or “Circum-Arctic Lower-Middle Palaeozoic Vertebrate Palaeontology and Biostratigraphy” ................................................................. 44

M.R. HOUSE (SOUTHAMPTON)
Geodynamic Map of Gondwana Supercontinent Assembly ................................................................. 44

CURRENT SDS MEMBERSHIP .................................................. 45

INFORMATION FOR CONTRIBUTORS ........................................ 45

INSIDE OF BACK COVER