International Union of Geological Sciences

SUBCOMMISSION ON PERMIAN STRATIGRAPHY

**Chairman:**
**Dr. Brian F. Glenister**
University of Iowa
Department of Geology
Iowa City, Iowa 52242
U.S.A.

**Vice-Chairman, Secretary:**
**Dr. W. W. Nassichuk**
Geological Survey of Canada
3303 - 33 Street N.W.
Calgary, Alberta T2L 2A7
Canada

**Vice-Chairman:**
**Dr. S. V. Meyen**
USSR 109017 Moscow 17
Pyzhevsky per. 7
Geological Institute
of the U.S.S.R.
Academy of Sciences

**Newletter 6**
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# Contents

## NOTES FROM SUBCOMMISSION SECRETARY

Growing interest in Subcommission activities as expressed by a growing list of Corresponding Members is gratifying and clearly indicates that the Permian System is being carefully studied by highly competent scientists around the world. Work of the Subcommission is beginning to bear fruit and this Newsletter is proving to be extraordinarily effective as a vehicle for communication amongst the world community of Permian scholars. We have only begun a task that must be continued with increasing vigour and enthusiasm in the future. We must eventually establish a global definition for the Permian System and its internal divisions perhaps by establishing boundary stratotypes. We must continue to study and debate about Permian climatology, paleontology, stratigraphy, paleogeography and tectonism whereever Permian rocks are preserved and to do this we must continue to communicate about our research. Therefore, I join Chairman Glenister in encouraging Titular Members and Corresponding Members to submit articles for inclusion in coming Newsletters. Please do not assume that Permian rocks in your part of the world are sufficiently well known by scientists in any other part of the world. On the contrary, please be assured that any information on the Permian System anywhere in the world is anxiously awaited by the readers of this Newsletter. Please send me your submissions.

As indicated in several articles in this Newsletter, some activities of interest to Permian specialists will take place in conjunction with the Tenth International Carboniferous Congress to be held in Madrid in 1983. Following that, the Subcommission will meet during the 27th International Geological Congress to be held in Moscow in 1984. The Subcommission has requested space to hold two full-day scientific sessions in Moscow and will keep the memberships advised concerning the nature of symposia to be held in forthcoming Newsletters.

W.W. Nassichuk

## ESTABLISHMENT OF PERMIAN-TRIASSIC BOUNDARY WORKING GROUP

During the past year, I have been in communication with Professor Anders Martinsson (Chairman International Commission on Stratigraphy) and Dr. Carmina Virgili (Chairman Subcommission on Triassic Stratigraphy) regarding the desirability of establishing a Working Group on the Permian-Triassic Boundary. In accordance with established practise, primary responsibility for constituting any boundary working group lies with the Subcommission of the younger system, although both Subcommissions may nominate members. Accordingly, the Triassic Subcommission considered this matter at its meeting in Sarajevo, October 7, 1981. Nominations from both the Permian and Traissic subcommissions were presented, and Dr. E.T. Tozer (Geological Survey of Canada, Ottawa, Canada) was elected Chairman. Membership of the Working Group is not yet finalized but includes:

Lia Zhuo-ting
Nanjing Institute of Geology and Paleontology
Rui Lin
Nanjing Institute of Geology and Paleontology
Keiji Nakazawa
Kyoto University, Japan
J.M. Dickens
Bureau of Mineral Resources, Canberra City
S.V. Meyen
Geological Institute, Moscow, USSR
J. Utting
Geological Survey of Canada
W.C. Sweet
Ohio State University
B.F. Glenister (ex officio)
University of Iowa
A.N. Oleynikov
VSEGEI, Leningrad

H. Visscher
State University of Utrecht, Netherlands
A. Baud
miusee Geologique, Lausanne, Switzerland
A. Ramovs
Ljubljana, Yugoslavia
J. Marcoux
University of Paris
H. Kozur
Hungarian Geological Institute, Budapest
Sheng Jin-Zhang
Nanjing Institute of Geology and Palaeontology
Y. Bando
Geological Laboratory, Kagawa University, Japan

Brian F. Glenister

## PRE-CONGRESS FIELD TRIP TO PERMIAN OF CENTRAL SPAIN INTERNATIONAL CARBONIFEROUS CONGRESS (5-DAYS)

**Permian and Stephanian of the Iberian Ranges**

The Tenth International Carboniferous Congress which will be held in Spain in 1983 will include a 5 day excursion to the Permian of central Spain.

The excursion to the Permian and Stephanian of the Iberian Ranges will examine Lower Permian (Autunian), Red Saxonian Facies of unknown age, Upper Permian (Thuringian) and the only dated Stephanian outcrop in the Iberian Ranges; outcrops are of outstanding quality, and most of the known fossiliferous localities in the Iberian Branch of the Iberian Ranges will be visited.

Lower Permian will be visited the first three days, from the Central System North of Madrid to Molina de Aragon, 100 kms. east.

It lies unconformably on a Lower Paleozoic basement and consists of very variable continental facies: alluvial fans, fluviatile, distal alluvial fans and/or lacustrine sediments. Volcanic and volcanoclastic sediments...

Several macrofloral and palinofloral assemblages of Autunian age have been collected in the Retiendas and Rillo de Gallo localities.

Saxonian facies will be visited the first three days, although in very differenct tectonic situations and the problem of this term will be discussed.

Upper Permian sediments (Thuringian) are part of the Buntsandstein facies, and will be visited the third and fourth days. The problem of the limit Permian-riassic will be discussed and there will be several stops at fossiliferous localities.

The only fossiliferous Stephanian Outcrop will be visited - in Hanarejos, covered unconformably by Upper Permian.

Carmina Virgili

## CARBONIFEROUS-PERMIAN BOUNDARY TO BE DISCUSSED AT INTERNATIONAL CARBONIFEROUS CONGRESS, SPAIN, 1983

Dear Dr. Glenister:

Thanks very much for your letter concerning the Subcommission on Permian Stratigraphy. As you know the work concerning establishing a boundary between the Carboniferous and Permian systems is progressing, and we have had a number of rather interesting meetings not directly under the auspices of the Subcommission but in related geological gatherings. One of these, of course, was at the 1979 meeting of the Carboniferous Congress which met in Urbana where an afternoon session was devoted to papers concerning this boundary problem. Again, at the 1981 AAPG meeting in San Francisco, we had abbreviated sessions which looked at various viewpoints concerning this boundary. Both of these sessions brought to light the rather strong provincial feelings and perhaps provincial prospectives that are common in analyzing systematic boundaries that have a long and complicated history.

I have suggested to the organizers of the next Carboniferous Congress in Spain that they include a session dealing with this boundary question. They have already agreed to that and it appears to be a session that will be well attended in terms of viewpoints and in terms of presentations. If there is some way that the Subcommission could encourage papers for this forthcoming session, I would very much appreciate it being advertised as widely as possible.

Charles A. Ross

## NOTES ON PERMIAN-TRIASSIC BOUNDARY, SOUTH CHINA

During the latter part of 1981, four Japanese scientists (K. Nakazawa, Y. Bando, K. Ishii and K. Nakamura) spent 35 days examining and discussing the Permian-Triassic boundary at Changxing, Lungtan and other places in South China with staff members of Nanjing Institute of Geology and Palaeontology. General agreement was reached that the Permian-Triassic boundary there is conformable and the "Permian" fossils from the base of the Triassic are not derived. In an earlier issue of the Newsletter (4), Dickens also suggested that fossils at the base of the Triassic were not reworked. Tozer and Nassichuk examined the boundary at Changxing, Lungtan and elsewhere in 1978 and have suggested many times that fossils at the boundary have indeed been reworked; thus, a healthy controversy continues: see summary in Tozer 1979. Canadian Journal of Earth Sciences, 16, 1524-1532.

W.W. Nassichuk

## VISIT TO PERMIAN ROCKS OF CHINA

In August-September, 1980 four palaeontologists from Austrailia visited China as guests of Academia Sinica, John Roberts from University of New South Wales, Robin Helby, a consultinq geologist, Clinton Foster from Geological Survey of Queensland, who played a major role in organising the visit, and the writer. Apart from visiting institutions we were able to look at outcrops near Nanjing, Shansi, and Kiangsi. Mac Dickins in Newsletter 4, October 1980, has drawn attention to the merits of the section at Bao Qing as a contender for world stratotype of the Permian-Triassic contact. The section is superb, exposed very cleanly for several hundred metres, thanks to active quarrying of the limestone along the base. The Changxing Limestone is overlain by up to a metre of dolomite with 'transitional fauna' according to the Chinese, and then by soft claystones and then by soft claystones and siltstone with Triassic faunas. Gradation seems to be the order of the day, and the Chinese insist that the dolomite forms a natural base to the mudstone. Being contrary, I think it forms a natural top to the limestone. Fossils are not really so abundantly in evidence as in other parts of the world -especially the Himalayas of Nepal, but they are very diverse, and have been remorselessly hunted down and collected with great care and patience by large teams of Chinese palaeontologists. As a result of so much work, the sequence will become extraordinarily well known.

Mac pointed out in his article that sequences of south China are also very good, and we were fortunate enough to see several sequences in Kiangsi, not quite as impressive with regard to extent of clean fresh outcrop, but fossiliferous, and in a huge region replete with Permian and Triassic, not to mention earlier Palaeozoic faunas. Very impressive work is proceeding very rapidly on these sequences and faunas. The one disadvantage that would perhaps counter any suggestion that a stratotype be chosen in this region lies in its poorer accessibility.

I do hope that the Subcommission can proceed with plans to visit various sequences around the world, and assess as a body the merits of contending regions. It will certainly be impressed with Chinese sequences, and with the fine work done on them by teams of Chinese stratigraphers and palaeontologists.

J.B. Waterhouse

## ACTIVITIES OF MICROPALEONTOLOGY WORKING GROUP

Studies on marine ostracods, conodonts, holothurians and scolecodonts, as well as radiolarians, are continuing. A paper on Permian Radiolaria was published in the Geol. Palaont. Mitt. Innsbruck, 11, 1981.

Activities of the micropaleontological working group continue to extend into the continental Permian Here charophytes of the Rotliegend were described by Kozur, H.; Schneider, J. & H. Walter: Erster Nachweis vom Charophyten im Unterrotliegenden. - Frieberger Forsch. - H. C 375. In the $ru_2$ of Ilfeld Palaeochara, a typical Pennsylvanian charophyte was described. It is the first occurrence of Palaeochara outside of North America. This genus
supports a Carboniferous age for the lower part of lower Rotliegend. The conchostracans of the Rotliegend are being monographically studied. In several papers the conchostracan faunas have been revised:

Kozur, H. A E. Sittig: Das "Estheria" tenella roblem und zwei neue. Conchostracean-Arten aus dem Rotliegdnen von Sulzbach (Senke von BadenBaden, Nordschwarzwald). - Geol. Palaont. Mitt. Innsbruck, 11 (1981).

Holub, V. & H. Kozur: Revision einiger Conchostracen - Faunen des Rotliegenden and biostratigraphische Auswertung der Conchostracendes Rotliegenden. - Geol. Palaont. Mitt. Innsbruck, 11 (1981);(eight conchostracan zones were established in this paper from the Asselian to the Artinskian)

Kozur, H.; Martens, Th. & G. Pacaud: Revision von "Estheria" (Lioestheria). lallyensis DEPERET & MAZERAN, 1912 und "Euestheria" autunensis RAYMOND, 1946. -Z. Geol. Wiss. Berlin (in press)-.

Also arthropod trackways were investigated within the micropaleontological working group.

Holub, V. A H. Kozur: Arthropodenfahrten aus dem Rotliegenden der CSSR. Geol. Palaont. Mitt. Innsbruck, 11 (1981).

Because of the similarity of taxonomic problems, some tetrapod footprints obviously outside of the field of the micropaleontological working group, were studied in detail. A revision of papers by Haubold is presented and several tetrapod footprint zones or assemblage zones could be discriminated within the Rotliegend.

Holub, V. & H. Kozur: Revision einiger Tetrapodenfahrten des Rotliegenden und biostratigraphische Auswertung der Tetrapodenfahrten des obersten Karbon und Perm. - Geol. Palaont. Mitt. Innsbruck, 11 (1981).

As a summary of the paleontological investigations in the Rotliegend a paper about the correlation of the continental European Rotliegend is presented. This paper is thought to be a basis for discussion and further investigations:

Holub, V. & H. Kozur: Die Korilation des Rotliegenden Europas. - Geol. Palaont Mitt. Innsbruck, 11 (1981).

H. Kozur

## NEW ZEALAND PERMIAN

Speaking of visits to different areas with Permian, New Zealand should not be forgotten. Students and staff of the Department of Geology at the University of Otago have made several significant funds of very late Permian brachiopod-bivalve faunas in the Stephens and Countess and Wairaki Breccia formations, just below Triassic rocks and faunas, and Hamish Campbell at the New Zealand Geological Survey is writing up the systematic studies. We have also found goniatites in the underlying Greville Formation, accompanying the famous or infamous Durvilleoceras that has a suture said to be flemingoceratid in appearance.

J.B. Waterhouse

## PERMIAN ROCKS IN EASTERN CALIFORNIA

The Permian succession in eastern California between the Sierra Nevada and Death Valley is represented by approximately 3000 m of section ranging in age from early Wolfcampian to Capitanian. The commonly extremely thick Wolfcampian part of the section is composed of siltstone, and debris flows and turbidites Composed primarily of shallow water limestone clasts and transported fossils. Within a distance of a few hundred meters, the early and middle Wolfcampian section thins from about 2500 m to 0 m in the southern Inyo Mountains. These rocks are overlapped by latest Wolfcampian and early Leonardian rocks that were deposited primarily in shallow marine water indicating that late Wolfcampian tectinism occured in the area. Younger parts of the Pemian section were deposited in extremely shallow water or in continental environments.

I and many former and present students at San Jose State University and Paul Stone, Stanford University, have and are currently studying these rocks. We are trying to ascertain how many Permian basins were present, the limits of these basins, the provenance of the sediment, and the relationships between the various basins. In addition, we are trying to better document the Permian orogenic events which clearly were very significant.

Finally, we are in the process of documenting the fossil record. This work has resulted in many surprises. For example, the corals and some of the fusulinids show affinities with the sequence in Nevada, but some of the fusulinids are more closely related to the unusual fusulinid faunas of the Klamath Mountains in northern California. The most surprising discovery, however, is that Roadian or younger ammonoids occur with late Wolfcampian conodonts in beds overlain by beds containing late Wolfcampian corals and fusulinids. This problem and others are currently being investigated.

Calvin Stevens

## FUSULINACEAN RESEARCH IN CARNIC ALPS

Dear Dr. Glenister:

I wish to report progress in my research by indicating that the following papers are in press:

1) a description of 45 species of fusulinids from Upper Carboniferous limestones of the Carnic Alps (F. & G. Kahler).

2) a report on newspapers of fusulinid stratigraphy and paleogeography of the southern border of Eurasia during Carboniferous and Permian time.

I am working now on new fusulinids of the Carnics and the KarawankMountains mostly of Permian age, especially near the boundary between the Carboniferous and Permian. The first appearances of Pseudoschwagerina marks the base of Permian.

Franz Kahler

## PALYNOFLORAL STUDIES, BOWEN BASIN, AUSTRALIA

Dear Dr. Nassichuk:

As you may be aware, my research deals with Gondwana Permian to Early Triassic plant microfossils. I have recently submitted a MS to -Review Palaeobotany and Palynology dealing with palynofloral successions and the Permian/Triassic boundary in continental deposits of the Bowen Basin (Queensland), eastern Australia. The actual Pormian-Traissic Boundary seems, at least to me, to be fairly difficult to fix with certainty. The major floral change took place in the late Chhidruan, establishing a flora which persisted well into the Triassic. There is, of course, still much work to be done, particularly in attempting to relate the dispersed spores with the larger plant macrofossils and fructifications.

C.B. Foster

## RECENT PAPERS PERTAINING TO PERMIAN-TRAISSIC BOUNDARY

1. The Permian and Lower Triassic Systems in Abadeh; 1981,

* Iranian-Japanese Research Group, Hem. Faculty of Science, Kyoto Univ., Series of Geol. and Mineral., vol. XLVII, No. 2, pp. 61-133, pls. 1-6.

* Iranian-Japanese Research Group includes Hooshang Taraz (present address: San Diego, California, U.S.A.), and Farrokh Golshani of Geological and Mineral Survey of Iran; Keiji Nakazawa and Daikichiro Shimizu, of Kyoto University; Yuji Bando, of Kagawa University Ken-ichi Ishu, of Himeji Institute of Technology; Masafumi Murata, of Kumamoto University, Yuji Okimura, of Hiroshima University; Sumjo Sakagami, of Chi-a University; Koji Nakamura, of Hokkaido University; and Takao Tokuoka, of Shimane University.

W. W. Nassichuk

## RECENT PAPERS PERTAINING TO PERMIAN-TRAISSIC BOUNDARY

**Abstract**

The continuous sequence of the Permian and the Lower Triassic Systems was fully examined paleontologically and sedimentologically in Abadeh region, Central Iran.

Based on the correlation of the Permian in the Tethys province by means of fusulinid, ammonoid and conodont zonations together with brachiopod, coral and bryozoan fossils, it is concluded that the Upper Permian is reasonably classified into three stages, the Abadchian, the Dzhulfian, and the Dorashamian.

Biostratigraphical and sedimentolocical study indicates a paraconformable relation between the Permian and Traissic, and the equivalent of the lower half of the Otoceras woodwardi zone is missing as judged from the conodont zones. The Dorashamian is older than the Griesbachian or Gangetian, and not the equivalent of the latter.

2. The Changhsingian and Permian-Triassic Boundary of South China

*Zhao Jin-ke, Sheng Jin-zhang, Yao Zhao-qi, Liang Xi-luo, Chen Chu-zhen, Rui Lin and Liao Zhuo-ting.

On the Depositional Characters and Microfacies of the Changhsing.

*Formation and Permian-Traissic Boundary in Changxing, Zhejiang Yang Wan-rong and Jiang Na-yan.

*Both papers are in Bulletin of Nanjing Institute of Geology and Palaeontology, Academia Sinica, No. 2, April, 1981.

3. Stratigraphy and Correlation of the Marine Permian-Lower Triassic in the Surghar Range and Salt Range, Pakistan; by Pakistan-Japanese Research Group, Kyoto University, March, 1981.

## PERMIAN ACTIVITIES

Dear Dr. Glenister:

This will be a short report to you as Chairman of the Subcommission on Permian Stratigraphy, relating what I have been up to recently.

I have a cooperative project under way with Prof. Yu-gan Jin of the Nanjing Institute of Geology and Paleontology in the P.R.C., who also is a member of the Subcommission. In October and part of November, 1981, he guided me to Permian localities in Hubei, Guizhou, and Guangxi provinces in Central and South China. I have asked specifically to see places where there might be silicification, and he knew of many such localities. We collected 500 kg of rock that only recently has arrived here for processing. We are etching in formic and acetic acids in hope of obtaining phosphatic material, including conodonts, as well as the silicified brachiopods. Most of the collections are from the Late Permian, but we also collected crack-outs from the Carboniferous, and pick-ups from the Triassic.

Prof. Jin is now here at the Smithsonian, working on a project of his own on Permian brachiopods of Tibet. Later, this summer when more of our South China material has been etched, we will work together on that cooperative project.

The last 2 weeks were spent in the Glass and Guadalupe mountains of West Texas and New Mexico. Prof. Jin and I were joined in that venture by Dr. Bruce Wardlaw of the U.S.G.S. Wardlaw and I have a continuing project on the stratigraphy and conodonts of stratigraphic units in the Glass Mountains, which we began last year on the problem of the Road Canyon formation and the Roadian Stage. This year we sampled the China Tank Member of the Word, and got a start on the Willis Ranch Member. Our paper on the Road Canyon should appear within the year.

Dr. Merlynd Nestell, University of Texas at Arlington, led Jin, Wardlaw and me to outcrops in north-central Texas for one day. We saw localities in Waldrip that are being studied by a student at U.T. Arlington. In May, Nestell and I will return to our Permian localities in Greece. We hope to finish all field checking for the project on Hydra Island, and make additional collections from Khios. Our paper on Hydra is nearly finished, including a geologic map of the Permian section, and petrographic descriptions of the carbonates. My monograph on the brachiopods is moving too slowly, partly because of these other endeavors, some of which must be finished before the monograph can have much relevance.

Richard E. Grant