

SUBCOMMISSION ON PERMIAN STRATIGRAPHY

Newsletter 9

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SUBCOMMISSION ELECTIONS

Titular Members have voted unanimously in favour of the following slate of officers serving the Subcommittee on Permian Stratigraphy during the 1984-1988 interval:

CHAIRMAN	Professor Sheng Jin-zhang Nanjing Institute of Geology and Paleontology Academia Sinica Chi-Ming-Ssu Nanjing, People's Republic of China
VICE-CHAIRMAN	Dr. J.M. Dickins Geology and Geophysics Bureau of Mineral Resources Box 378 Canberra City, Australia
SECRETARY	Dr. Jin Yu-gan Nanjing Institute of Geology and Paleontology Academia Sinica Chi-Ming-Ssu Nanjing, People's Republic of China

W.W. Nassichuk, Chairman
Nominating Committee and
Newsletter Editor for 1985

26th INTERNATIONAL GEOLOGICAL CONGRESS

MOSCOW, AUGUST 1984

The Permian Subcommittee was associated with three scientific sessions and two business meetings in Moscow.

The first scientific session was largely about the sequences of the east European part of the USSR. An important paper by Professor D.L. Stepanov reviewed Soviet work and correlations with the northern region which is more marine than the Russian Platform Ural-Mountain Region. Other papers were those by V.P. Gorsky on the use of the east European scale as a basis for a general Permian scale and a paper on magnetostratigraphy.

The second session dealt with the northern region (Biarmanian Region) and the Tethyan Realm of the USSR. This session also contained papers on the French sequence as well as USA and Iran. The paper by R.E. Grant and B.R. Wardlaw provided some new interpretations of the Roadian; a twofold separation of the

Roadian was proposed which bears interesting implications for international correlation.

The third session contained the important Chinese contribution given by Professor Yang Zunyi on the Permian-Triassic boundary sequence in China as well as other Chinese works and interesting contributions on plants and conodonts.

The sessions were extremely interesting and useful. My comment is that, unfortunately, no time was allowed for discussion and many of the contributions quickly disappeared without an opportunity for other formal or informal discussion. Large congresses such as this often make chance meetings difficult and special steps are needed to ensure that satisfactory cooperative work can be developed.

The business meetings were largely taken up with informal discussion although some formal presentations such as that by Holser on carbon isotope stratigraphy were presented. In the discussion it was apparent that a substantial body of Soviet opinion favoured retention of the Soviet East European scale as a standard for the world Permian supplemented by information from the Tethyan region. This was despite the clear indication that workers in other parts of the world found the Upper Permian scale of the East European sequence unsatisfactory and would favour looking to Armenia, China or USA. This problem was not resolved. Other important problems that remain are the relationships of the Tethyan scale with the east European scale. The middle part of the Permian is crucial in this regard and requires attention. The position of the **Daubichites**-fauna is critical in correlating sequences in the USSR with those in Canada and USA as well as other parts of the world. The philosophy of stratotypes and the choice of stratotypes also needs consideration. Newcoming office bearers of the Subcommittee have a challenging task.

The field excursion to the Permian-Triassic boundary sequences of Siberia was, reported to be most successful by Canadian participants Dr. E.T. Tozer and W.W. Nassichuk. The field visit, which I myself attended, to Soviet Armenia was valuable and fruitful. We undertook the visit under the enthusiastic guidance of Dr. G.V. Kotlyar and A.T. Aslanian. The examination of the sequences confirmed published data and added further information. I myself have little doubt about a discontinuity between Dorashamian and Griesbachian. I felt that there are breaks in the sequence such as between the Khachik and the Dzhulfian. I also felt that the Dzhulfian and Dorashamian could be shallow - in the case of Dorashamian quite shallow - and that the ammonoids might represent a specialized development in a shallow harsh environment. This I am sure will represent a radical view compared with a perhaps more accepted interpretation that these kind of ammonoids represent a deep water environment. A.T. Aslanian regaled us with accounts of general Armenian geology as well as Armenian culture. One has to see Mount Ararat to understand what a prominent part it occupies in the minds of the people of this region.

J.M. Dickins

Future Projects for Subcommittee on Permian Stratigraphy

Dear Dr. Nassichuk:

During Professor Sheng's absence from Nanjing, I beg to inform you that the announcement of election of officers for SPS has been received with pleasure. Please accept our sincere thanks for your kindness and also for your friendly cooperation with us in shifting the general affairs of SPS.

To the entire memberships of the SPS we must express our gratitude for their confidence, and we would like to assure you that we will contribute our time and energy as much as possible to the objective reality while holding the office work of the SPS.

Looking back to the work done by the preceding officeholders we are very pleased to say that the working plan outlined by Professor Glenister in Paris in 1980 has been mostly fulfilled. Six issues of the Newsletters have been published, providing an important channel for exchanging ideas between Permian colleagues. An increase in the number of the SPS members from 23 to 66 and the admittance of new fellows will certainly make the subcommittee more and more active hereafter, we believe.

Our projects on the Permian have been carried on with significant progress. Although the Working Group on Permian-Triassic Boundary was founded in 1981, only four years ago, it has entered a stage of postal vote. The Working Group on Carboniferous-Permian was also organized in 1983.

In our consideration, the threefold programs proposed by Professor Glenister are still practicable in the succeeding four-year term. The issue of Newsletter should be continued; and some members of SPS might be replaced by new ones more suitable for putting our working programs into effect.

It is expected that in the next four years considerable headway must be made in the following projects:

- A. **Permian-Triassic Boundary.** A symposium on this boundary is planned to be held in China, and more research work to be done on the basal part of the Triassic in South China would be very desirable.
- B. **Carboniferous-Permian Boundary.** The organizing work of national working groups on this boundary in the areas with great potential is now under negotiation with departments concerned. A meeting to discuss this problem is requested to be held in 1987 during the XI International Congress on Carboniferous Stratigraphy and Geology.
- C. **Permian sequences in Tethys.** As Tethys is an intermediate area between Boreal, Gondwanan and North American Realms, the Permian sequences there are very important in correlation of the Permian all over the world. They are also very interesting in the study of tectonics. Studies of Permian sequences in Greece, Arax valley, Himalayas, Thailand, China, Japan and other regions

have already brought forth excellent results. This topic is proposed to be discussed during the XI ICCSG.

- D. **Subdivision of the Permian.** Dr. Dickins has moved that a symposium be organized during the XI ICCSG to exchange opinions on "a two- or three-fold major subdivision for the Permian and the boundaries and stages of the 'Middle' and 'Upper' Permian."
- E. **Permian meetings and excursions.** Any information and opinion concerning meetings and excursions are welcome. It is our great pleasure to offer as much help as we can in organizing same.

These are the main projects that we have considered. We would appreciate hearing your helpful advice and suggestions in order to do better work for our colleagues.

With best wishes,

Sincerely yours

Jin Yu-gan.

ANNUAL REPORT - 1984

During 1984 the principal activities of the Subcommittee were related to preparation of the Symposium on the Permian System which was held at the 27th International Geological Congress in Moscow. Thirty papers presented at the Symposium offered an excellent summary of stratigraphic and paleontological activities underway on the Permian System around the world, and in particular, activities related to definition of System and Series boundaries. It is now clear that the principal future activities of the Subcommittee must include aggressive resolution of these boundaries through nomination, debate and final selection of boundary stratotypes. During 1984 new efforts were made for the Subcommittee to review potential boundary and stage stratotypes for the Lower Permian in the Ural Mountains and it is hoped that the Subcommittee will meet in western North America during the next few years to visit potential stratotypes for the Lower and 'middle' Permian Roadian, Wordian and Capitanian stages.

The Working Group on the Carboniferous-Permian Boundary was rather inactive during the Report Year and the new Subcommittee Executive is anxious to press the Working Group for early selection of potential boundary stratotypes. The Permian-Triassic Working Group, however, worked vigorously during the year and, at a meeting in Moscow, indicated that final selection of a boundary stratotype in a marine sequence, probably at the base of **Otoceras** beds might be realized in the near future. An important meeting on the Permian-Triassic boundary is planned for China in 1985.

Important new advances were made by Subcommittee members during 1984 in correlating continental deposits with marine deposits, particularly in central Europe, through biostratigraphy and paleomagnetism. Correlation charts for marine and continental deposits were reviewed at the time of the IGC in Moscow and the preparation of correlation charts for all Permian deposits in the world must continue to be an important objective for the Subcommittee in the future.

Finally, it is important to note that the Subcommittee has attained a truly international representation in its membership and its Newsletter has become an effective medium for communication between active workers.

W.W. Nassichuk
Newsletter Editor for 1985.

PERMIAN CONODONT STUDIES, WESTERN AND ARCTIC CANADA

Recent research in southeastern British Columbia (49°50'N, 115°W) has demonstrated the potential conodonts have for refining the biostratigraphy of Permian strata in the Canadian Rocky Mountains. Conodonts have been obtained from the Johnson Canyon, Telford and Ross Creek Formations which had previously been dated, respectively, as Wolfcampian, Leonardian and early Guadalupian on the basis of brachiopods. However, the age assignments based on conodonts are considerably different. The conodonts from the Johnson Canyon and lower Telford Formations include **Gnathodus bassleri**, **Idiognathodus ellisoni**, **Adetognathus** cf. **A. lautus**, **Neogondolella** sp. indet. and a species of **Gondolella** indicating an (?)Asselian to early Sakmarian age (early Wolfcampian). The upper Telford Formation includes the conodonts **Adetognathus** cf. **A. lautus**, **Hindeodus minutes** and **Streptognathodus elongatus** indicating a late Sakmarian age (late Wolfcampian). Three conodont zones are present in the Ross Creek Formation, including in ascending order, **Neogondolella bisselli-Sweetognathus whitei**, **Nedostreptognathodus pequopensis**, and **N. ruzhencev-N. pnevi** which range from latest Sakmarian to early Artinskian (early Leonardian).

The material for the initial study, which was collected in 1975, included a few small samples collected specifically for conodonts, but most were either lithology samples or matrix from macrofossil collections. Conodonts were obtained from only 10% of the samples with an average of 15 elements per productive sample. Larger conodont samples (up to 5 kg) were systematically collected from the Ross Creek Formation during August, 1984. Conodonts were obtained from 50% of the samples with an average yield of 50 elements per productive sample. These results demonstrate the value of large samples (at least for the Permian) collected specifically for conodonts, despite early disappointing results from "matrix samples."

Conodonts have also been obtained from the Assistance and Troid Fiord Formations of northwestern Ellesmere Island (80°10'N, 81°45'W), Canadian Arctic Archipelago. **Neogondolella idahoensis**, **N.** cf. **N. serrata** and **Neostreptognathodus prayi** confirmed a late Leonardian to Roadian age for the Assistance and **Neogondolella bitteri-N. rosenkrantzi** substantiated the Wordian age for the Troid Fiord Formation, based previously on brachiopods and rare ammonoids.

During July of 1984 approximately 300 rock samples averaging 5 kilograms were collected for conodont investigations from the Belcher Channel Formation (Asselian-Artinskian), an unnamed formation (Artinskian) and the Van Hauen Formation (Roadian) of southwestern Ellesmere Island, Canadian Arctic Archipelago. Exposure at these sections is excellent (85%) and about 2200 metres of sections was measured. It is hoped that conodonts obtained from this research, in conjunction with those obtained from northwestern Ellesmere Island, will provide the basis for a standard marine biozonation of the Canadian Arctic Permian.

Charles M. Henderson

PERMIAN INVESTIGATIONS IN SOUTHERN BRITISH COLUMBIA, CANADA

Work is being completed on the mapping and study of Permian and Carboniferous limestones of the Harper Ranch Group near Kamloops, British Columbia. These limestones and their fusuline faunas are a key to the identification of the exotic non-Tethyan terrane known as Quesnelia. Permian fusulines of Wolfcampian and Leonardian age are abundant in many of the limestones. The Permian rocks are overlain with angular unconformity by clastic and volcanic rocks of the Late Triassic Nicola Group and underlain paraconformably by either coarse clastic rocks or limestones of Late Mississippian to Middle Pennsylvanian age. In part of the area large exotic blocks of Permian and Carboniferous limestones are interbedded in Triassic shales and sandstones.

Studies are also being made of the Permian rocks in the Cache Creek exotic terrane 100 kilometres west of Kamloops. These rocks form a Tethyan equatorial terrane with a unique stratigraphy largely composed of pure shallow water limestones, great thicknesses of bedded radiolarian chert, basaltic pillow lavas and breccias and argillites. The entire Permian section is represented in both a carbonate section and a chert, volcanic rock, clastic rock, limestone section. Large areas of limestone once included within the Permian are now known to be Triassic from conodont studies of Dr. M. Orchard of the Geological Survey's office in Vancouver and from my own discovery of rare Triassic bivalve fossils. It is believed that a complete section from the Permian through to the Late Triassic may be represented and since this sequence formed on an oceanic ridge there may not be an unconformity at the Permian-Triassic boundary. Further studies are planned to try and verify this theory.

Six Japanese paleontologists visited both areas in the summer of 1983 under the leadership of Dr. Hisayoshi Igo of the University of Tsukuba. They collected large quantities of rocks to study radiolaria and conodonts and compare them with the Japanese Tethyan faunas. Dr. Sumio Sakagami of Chiba University, Japan visited the University of British Columbia in September 1984 and was given some samples of the bryozoan faunas of these areas and Vancouver Island to study. He has expressed interest in studying the Permian bryozoa and may visit British Columbia for this purpose in 1985.

The Cordilleran section of the **Geological Society of America** will hold its **annual meetings on May 8-10, 1985 at the University of British Columbia** and a field trip and symposium on the Tethyan rocks and faunas of the Permian will be held.

W.R. Danner

PALYNOLOGICAL RESEARCH ON THE UPPER CARBONIFEROUS, PERMIAN AND LOWER TRIASSIC OF THE CANADIAN ARCTIC

In a previous newsletter (p. 6, no. 7, 1983) an account was given of palynological samples collected from Upper Paleozoic and Lower Triassic rocks from a number of localities in the northeastern part of the Sverdrup Basin on the western side of Ellesmere Island. Many of the sample localities are type sections and there is relatively good biostratigraphic control from other fossil groups. Unfortunately, the palynological results have proved disappointing. Palynomorphs are commonly present, but the thermal alteration is high and in some cases further deterioration has been caused by the growth of pyrite crystals on spore and pollen exines. A typical example of high maturation and pyrite corrosion occurs in palynomorphs from the type section of the Upper Carboniferous Otto Fiord Formation. This section contains striate and non-striate disaccate pollen, but only tentative generic assignments are possible. The colour of the pollen is very dark brown to black with a tinge of brown, the Thermal Alteration Index is estimated to be 4 on the 5 point scale of Hunt, 1979, where 5 is the highest level of maturation. Vitrinite reflectance measurements were %Ro 2.92 and 2.44.

Fortunately, this poor preservation is not a feature of the whole Sverdrup Basin. For example, in the southwestern part of the basin on the northern part of Melville Island, well preserved palynomorphs were found in samples collected previously by W.W. Nassichuk. In the summer of 1984, as part of a multi-specialty study of Melville Island, detailed palynological sampling was carried out on Permian and Lower Triassic rocks in the Sabine Peninsula of Melville Island. The results have been most encouraging and well preserved palynomorphs occur in ascending order in the Canyon Fiord (Lower Permian), Belcher Channel (Lower Permian), Sabine Bay (Lower Permian), Assistance (Lower Permian), Troid Fiord (Upper Permian) and Bjerne (Lower Triassic) formations. The data obtained from these outcrop samples will be supplemented with that from subsurface core samples available from drilling activity by oil companies in the vicinity, and should form a useful framework for a palynological zonation of Upper Paleozoic and Lower Triassic rocks of the Sverdrup Basin.

John Utting

OPEN LETTER TO PERMIAN SPECIALISTS IN SOVIET UNION

Dear Colleagues:

Since returning from the 26th International Geological Congress in Moscow where many of you participated in activities of the Subcommittee, I have received a number of letters expressing interest in the Subcommittee. This is heart-warming and I sincerely hope that the important scientific contacts that were made in Moscow can be continued in the future. All of you who presented papers at the Congress are to be congratulated and I sincerely hope that your Permian research that was established in Moscow continues through the Newsletter, which I have agreed to edit, at least through 1985. Accordingly, I invite all of you to prepare a short note, perhaps one or two paragraphs, describing your current research activities. This would be of great interest to the other members who will receive the Newsletter, some of whom may then communicate directly with you. Soviet contributions to the Newsletter have been extremely sparse for several years and I can only express the fervent wish that has been expressed by many Permian specialists around the world that contributions will increase in number in the future. Indeed, I sincerely hope that all Subcommittee Members and Corresponding Members from all parts of the world will make an effort to assure the life of the Newsletter in the future by submitting contributions.

A principle objective of the Subcommittee is to define the boundaries of the Permian System and its series and stages and to select boundary stratotypes so that universal agreement on correlation might be attained. Additionally, Permian workers must clarify relationships between marine and nonmarine sequences. For example, what are the relationships between the Tatarian of the Soviet Union and the marine and nonmarine Upper Permian rocks elsewhere in Europe and in China? A giant problem is the Carboniferous, Permian boundary in the Soviet Union. Where is the proper stratotype in the Urals to define the boundary? Which faunal associations should define the boundary? What is the relationship between Autunian and Asselian? The Permian Subcommittee is interested in the answers to all these questions and to hundreds of other questions. Any discussions on these subjects and many other subjects involving the Permian in the Soviet Union that you would like to contribute to the Newsletter will be appreciated around the world. Thank you for your warmth and hospitality at the Congress in Moscow and thank you for preparing and participating in an excellent Permian Symposium.

W.W. Nassichuk

SYMPOSIUM ON PERMIAN PHOSPHORIA FORMATION

Dear Dr. Nassichuk:

Enclosed is a copy of the schedule for a Symposium on the Permian Phosphoria Formation to be held at the Rocky Mountain Section of the Geological Society of America in Boise on April 22. Members of the Subcommittee might be interested in some of these presentations.

Sincerely yours,

Ernest H. Gilmour
Symposium Co-Chairman

- 1 James A. Peterson*: LATE PERMIAN SEDIMENTARY FACIES AND PALEOTECTONICS, WESTERN WYOMING SHELF AND SUBLETT BASIN, IDAHO
- 2 Bruce R. Wardlaw* and James W. Collinson: PALEONTOLOGY AND DEPOSITION OF THE PHOSPHORIA FORMATION
- 3 Daniel D. Tisoncik*: PERMIAN PHOSPHORIA FORMATION WESTERN OVERTHRUST
- 4 Kim J. Mettes and Donald W. Boyd*: THE CONTACT AND BOUNDARY BEDS OF THE LATE PALEOZOIC TENSLEEP SANDSTONE AND PHOSPHORIA FORMATION IN NORTHWESTERN WYOMING
- 5 Phillip L. Greer*: CYCLIC SEDIMENTATION IN THE PERMO-TRIASSIC GOOSE EGG FORMATION, SOUTHEASTERN WYOMING
- 6 Rachel K. Paul* and Richard A. Paul: EPILOGUE FOR THE PERMIAN--A RETROSPECTIVE VIEW FROM THE TRIASSIC IN THE WESTERN CORDILLERA
- 7 Robert C. Walker* and Ernest H. Gilmour: BRYOZOANS OF THE PHOSPHORIA FORMATION IN SOUTHERN IDAHO
- 8 Helen A. Kulas-Adler*: SILICIFIED PERMIAN GASTROPODS OF THE PARK CITY FORMATION IN WYOMING
- 9 Claude Spinosa*: PERMIAN AMMONOIDS IN THE PHOSPHORIA
- 10 Charles M. Henderson* and Alan McGugan: PERMIAN CONODONT BIOSTRATIGRAPHY, CANADIAN ROCKY MOUNTAINS (73598)

- 11 Fred H. Behnken*, Bruce R. Wardlaw, and Larry N. Stout: CONONDOT BIOSTRATIGRAPHY OF THE PERMIAN MEADE PEAK PHOSPHATIC SHALE MEMBER, PHOSPHORIA FORMATION, SOUTHEASTERN IDAHO (70197)
- 12 Knut A. Andersson*: PERMIAN TRACE FOSSILS OF WESTERN WYOMING AND SOUTHWESTERN MONTANA; SYSTEMATICS AND PALEOENVIRONMENTS (73505)

*Denotes speaker

IGCP PERMIAN PROJECTS

No. 211 LATE PALEOZOIC OF SOUTH AMERICA

A.J. Amos and S. Archangelsky, Depto, Co. Geológicas, Facultad Ciencias Exactas y Naturales, Univ. Buenos Aires, Pabellón 2, Ciudad Universitaria, 1428 Buenos Aires, Argentina.

Description. The main objectives of the Project are to: define the continental margins of the Gondwana in South America; determine the tectonic development of cratonic and pericratonic areas; and study the distribution of glacial sediments and climatic variations in order to reconstitute the paleogeographic and tectonic evolution of South America during the Late Paleozoic.

No. 203 PERMO-TRIASSIC EVENTS OF EASTERN TETHYS REGION AND THEIR INTERCONTINENTAL CORRELATION

Yang Zun-yi, Beijing Graduate School, Wuhan College of Geology, Beijing 100083, China.

Description. The Project, a successor to Project 4, is concerned with: (1) stratigraphic subdivision and intercontinental correlation of the Permo-Triassic strata in the Eastern Tethys region and their biotic evolution; (2) tectonic evolution at the Permo-Triassic interval; (3) conditions for the formation and distribution of mineral deposits containing some important commodities (such as coal, oil and gas, halides, etc.) during this time-span; and (4) selection and proposition of candidates of the Permo-Triassic boundary stratotype.

Summary of Activities. The first year was spent in organizing the work of the Project and in the preparation of the first meeting of the international working group.

Activities planned. The first meeting of the international working group was planned for early March 1984 in Beijing, China. A field trip to the Changjianggou section of Permo-Triassic sequences near Guangyuan, Sichuan Province (China) also was foreseen. Details of the meeting and field trip have not yet been released.

IMPORTANT PERMIAN VOLUME PUBLISHED

MAIN FEATURES
OF STRATIGRAPHY
OF PERMIAN SYSTEM
IN THE USSR.

Responsible editors
G.V. Kotljar, D.L. Stepanov

Ministry of Geology of the USSR

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References

CARBONIFEROUS-PERMIAN PALYNOLOGY, NORTHERN YUKON, CANADA.

Dr. Janina Jerzykiewicz is presently studying the microflora from the Upper Carboniferous and Lower Permian of the Ogilvie Mountains and Eagle Plains, northern Yukon Territory through an attachment to the Geological Survey of Canada. The purpose of this project is to determine the biostratigraphic distribution of palynological assemblages adjacent to the Carboniferous-Permian boundary in this area, and to compare the vertical distribution of palynomorphs with that of the associated marine fauna. The study also provides an opportunity for correlation of the Yukon palynological succession with that of the Canadian Arctic Archipelago. Research material includes samples used for an earlier palynological study of the Tatonduk River section in the western part of the area by Barss (in Bamber and Barss, 1969) and Barss (1972).

References

Bamber, E.W. and Barss, M.S., 1969. Stratigraphy and palynology of a Permian section, Tatonduk River, Yukon Territory, Geological Survey of Canada, Paper 68-18.

Barss, M.S., 1972. A problem in Pennsylvanian-Permian palynology of Yukon Territory. *Geoscience and Man*, vol. IV, p. 67-71.

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