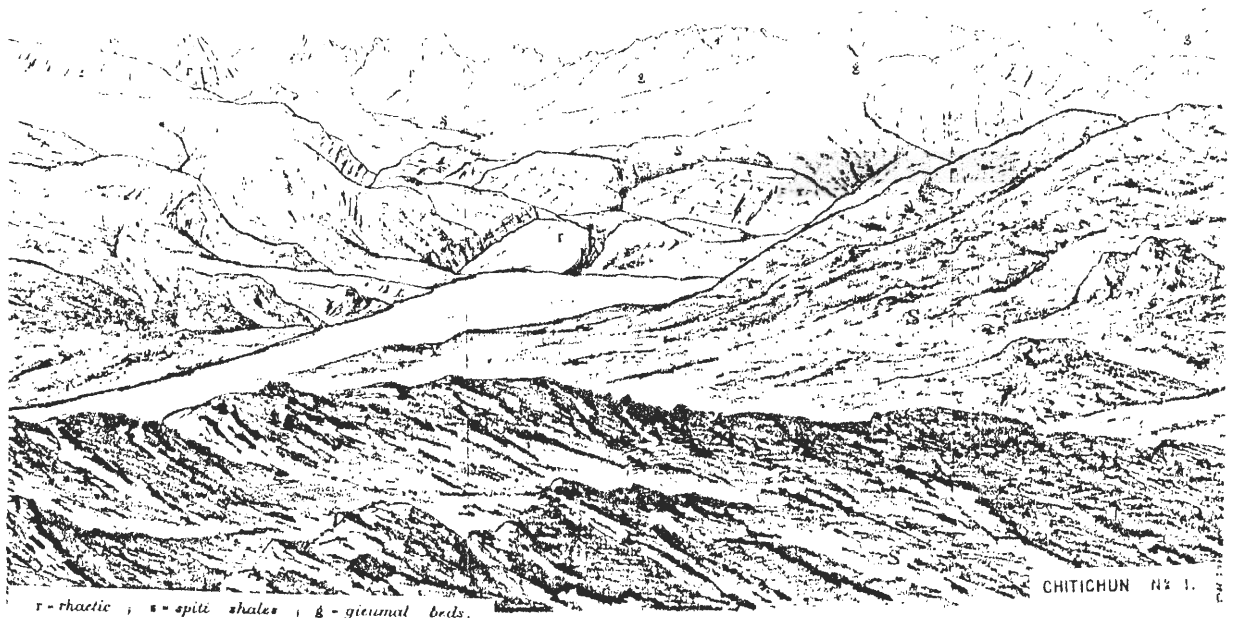


Permophiles



No 14 June 1989

A NEWSLETTER OF SCPS



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CHITICHUN No 1.

SUBCOMMISSION ON PERMIAN STRATIGRAPHY

INTERNATIONAL COMMISSION ON STRATIGRAPHY

INTERNATIONAL UNION OF GEOLOGICAL SCIENCES (IUGS)

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Editor's Note

The 28th International Geological Congress is to be held soon in Washington D.C., and so is a meeting of the Permian Subcommittee in Room 3/Convention Center from 6:00 to 8:00 p.m. July, 12 (Wednesday). The agenda of this meeting are correlation of the Upper Permian, Chairman's work report for a term of 4 years and working plan of the Subcommittee for the next four years. The Working Group on the C/P Boundary will have a meeting in Room 3/Convention Center from 6:00 to 9:00 p.m., July 14 (Friday) to discuss the issue of theoretical boundary. All members participating in the Congress are invited to the meetings. Please note that a meeting scheduled for July 11 has been cancelled as the International Commission on Stratigraphy is to meet at the same time.

A Field Symposium on Boundaries of Stages of Lower Permian in the Urals will take place in late August or early September next year (see page 7). It should be clarified the concepts of some conventional stages.

In 1991, the XIIth International Congress of Carboniferous-Permian Stratigraphy and Geology will open from Sept. 22 to 27 in Buenos Aires, Argentina. The Subcommittee is planning to organize symposia on special topics and hold business meetings during the Congress. Suggestions on organizing such symposia are most welcome.

The result of election of new officers of the Subcommittee will be announced as soon as it is approved by the Executive Committee of ICS.

Problems of the continental Permian:
Symposium on Rotliegendes in Central Europe

Rotliegendes, introduced by early German miners and geologists, is a collective term for continental deposits that make up the lower part of the Permian in Central Europe. The Rotliegendes occurs in many greater and smaller basins within and around the Hercynian fold belt. These basins are filled with intricately organized stratigraphic successions. Sedimentary sequences with narrow-spaced facies changes and interfingering with volcanic complexes have accumulated under more or less continuous synsedimentary tectonic control. This entails many geological problems among which stratigraphic ones take precedence.

A series of relevant international meetings in the past was continued by the Symposium on Rotliegendes in Central Europe which was organized by the Academy of Sciences of the GDR in Erfurt, May 25-30, 1987. The symposium was attended by 90 geologists from 11 European countries and also by the secretary of SCPS, Dr. Jin Yu-gan (People's Republic of China). On two conference days 37 papers and 18 posters were presented, afterwards 3-day excursions were guided in the intramontane basins of the Saale trough. The main part of the papers has been published in Zeitschrift für geologische Wissenschaften, vol. 16 (1988), issue 9-12 and vol. 17 (1989) 6.

The upper boundary of the Rotliegendes with the overlying marine Zechstein is based on lithology or facies. The basal Zechstein deposits approximately correlate with the Abadehian/Dzhulfian boundary, the conodont and ostracod faunas of the Z1 limestone indicating basal Dzhulfian age (KOZUR)⁺. Starting from the lithologically predefined upper boundary some authors prefer to understand Rotliegendes as a lithostratigraphic unit (KOZUR). However, by this means one cannot escape the biostratigraphic problem to define the upper boundary of the Stephanian or the Stephanian/Rotliegendes boundary, respectively. French researchers repeatedly demonstrated that Stephanian coal basins are sporadically invaded by alluvial blankets containing a meso-xerophilous flora of Autunian character before Autunian plant associations occur in crowds, i.e. progressive plant communities evolved in the margins or apart from the basins in which earlier ecosystems over a considerable period succeeded to survive (DOUBINGER, BROUTIN et al.). The current reclassification of the genus Callipteria (KERP, HAUBOLD) is hoped to re-evaluate some plant index fossils formerly used but called in question in recent years.

Concerning subdivision and correlation of particular Rotliegend basins much progress was achieved in spite of the fact that a generally accepted stratigraphic scale was not available. For the time being Autunian and Saxonian as stratigraphic stages remain to be a problem (CEOLONI et al., GAND & HAUBOLD). Magnetostratigraphy is an important tool, if the

⁺) Citations refer to publications and abstracts of the symposium

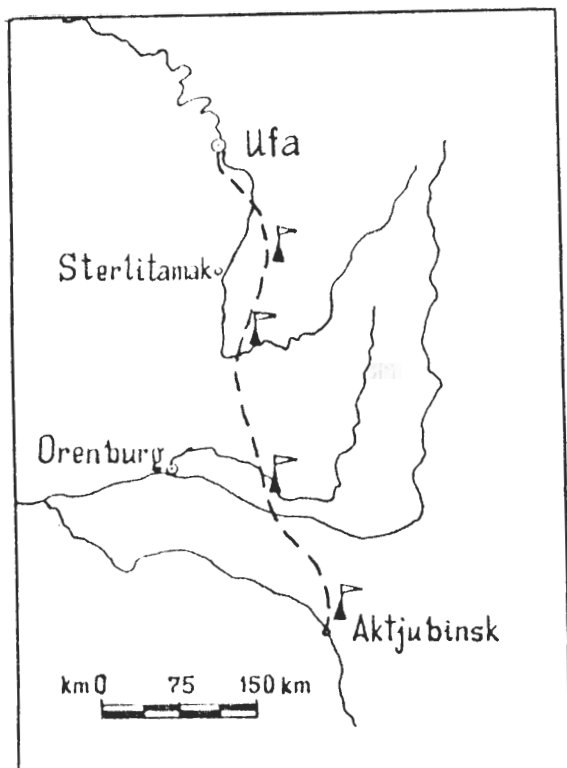
applied methods provide sufficient magnetic cleaning (KRS et al.). The Illawarra Reversal, situated in the Lower Tatarian of the Russian Platform, has been traced in most Rotliegend basins (DACHROTH, MENNING et al.). Up to now it is the only stratigraphic marker which can be correlated world-wide (MENNING et al., see also *Permophiles* 13, p. 12-16). Biostratigraphic research concentrates on fossils which evolved progressively during the Rotliegendes. Tetrapod foot print associations are now in broad use (GAND & HAUBOLD, BOY & FICHTER, CEOLONI et al.). The preference of zone fossils based on evolutionary lineages is emphasized by SCHNEIDER et al. and is applied to insect wings, fish teeth and amphibians. Furthermore, it is important that systematic research has provided much fossils from red beds, which predominate in the Upper Rotliegendes and which were considered mainly unfossiliferous. This applies especially to conchostraca, tetrapods and invertebrate trace fossils (MARTENS, and others).

The present stage of knowledge enables tentative correlations between the main intramontane basins. However, conformity between different authors is limited to few stratigraphic levels, mainly near the base of the Rotliegendes and in the lower part of it. The fitting into the orthostratigraphic scale of marine realms depends on regions with transitional environments. The open questions of the Permian orthostratigraphy are not promotive for the continental Permian. However, progress of correlation within the continental facies was not hindered. So,

there is general agreement that e.g. the Stephanian/Rotliegendes boundary should be discussed independently of the Carboniferous/Permian boundary.

The sedimentology of the Upper Carboniferous/Lower Permian manifests an increasing aridization of the climate which rules the sedimentary development of the Rotliegendes as a whole (LÜTZNER). The basin development is also strongly controlled by synsedimentary fault tectonics and volcanism, both increasing during the Lower and fading out during the Upper Rotliegendes. This was elucidated by many regional contributions (ANDREAS, CASSINIS, JANEV, LÜTZNER, SCHRÖDER, SITTIG and others). These factors are very important as background conditions of the evolution of organic life and ecosystems. In the continental Permian stratigraphers are not only confronted with sedimentary gaps and facies dependence of fossil content but also with questions of preservation potential, of interdependence of fossil groups (food chain), restriction of life districts by morphotectonic changes and expansion of hostile environments or with the problem of evolution under the steady environmental stress of aridization. Thus, further progress requires an integrated approach from the viewpoint of palaeontology, palaeoecology, sedimentology and morphotectonics. This needs deepened investigations in particular basins as well as improved international cooperation which should be profitably organized under the SCPS (cp. remarks of Dr. Jin, Permophiles 13, p. 25).

H. LÜTZNER



FIRST CIRCULAR
FIELD SYMPOSIUM
"THE BOUNDARIES OF THE
LOWER PERMIAN STAGES
IN THE URALS"

This is a **cordial** invitation asking you to join the Field Symposium "The boundaries of the Lower Permian stages in the Urals", to be held on the Western Slope of the South Urals in the Late August and Early September, 1990.

The Symposium will be co-sponsored by the Institute of Geology and Geochemistry of the Urals Section of the Academy of Sciences USSR and Interdepartmental Stratigraphic Committee of the USSR.

ORGANIZING COMMITTEE:

Chairman- V.A.Koroteev - Corresponding-Member of Ac. Sci. USSR
Director of the Institute of Geology
and Geochemistry of the Urals Section
of Ac. Sci. USSR (Sverdlovsk)

Vice-chairman- A.I.Zhamoida - Corresponding-Member of Ac.Sci.USSR,
President of the Interdepartmental
Stratigraphic Committee of the USSR
(Leningrad, VSEGEI)

Vice-chairman- B.I.Chuvashov - Dr., Chairman of the Interdepartmental Stratigraphic Commission of the Urals (Sverdlovsk)

Vice-chairman- G.V.Kotljarskiy - Dr., Chairman of the Permanent Stratigraphic Commission of the Interdepartmental Stratigraphic Committee on the Permian system (Leningrad, VSEGEI)

Dr. L.Z.Akhmetshina (Aktjubinsk)

Dr. M.A.Dankibaev (Aktjubinsk)

Dr. V.I.Davydov (Leningrad)

Dr. M.V.Durante (Moscow)

Dr. A.Ja.Gayov (Orenburg)

Dr. M.A.Kamaletdinov (Ufa)

Dr. G.A.Misens (Sverdlovsk)

Dr. V.V.Chernykh (Sverdlovsk)

The field excursion would commence in Orenburg or Aktjubinsk and will end in Ufa. During this trip there would be shown five sections from Upper Carboniferous to Upper Permian on the Aidaralash, Sakmara, Ural and Belaja rivers. Amongst these sections there are the stratotypes of the Orenburgian, Asselian and Sakmarian stages. Travel would be by coaches throughout. Accommodation would be organized in some field camps in picturesque places of the West Urals. Dead line for answer for First Circular - 1 November, 1989. Second Circular would be sent on receiving answer on the First one.

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CURRENT PROPOSALS ON THE CARBONIFEROUS-PERMIAN BOUNDARY

As early as in 1963-1965, Dr. Ross, Chairman of the International Carboniferous-Permian Boundary Working Group in 1983-1987, made a great contribution to the latest Carboniferous-earliest Permian fusulinids, with comments on the C/P boundaries suggested at that time. He noted that to define a boundary, it is necessary to consider the evolution of the main fossil groups and their depositional environment in geological times. His indication is very important for us to improve the process of the Carboniferous-Permian boundary work.

In 1987, the International C/P boundary Working Group held a meeting in Beijing, with about 15 palaeontologists from U.K., Canada, West Germany, Spain, USSR, the United States, Australia and China participating in the meeting to exchange their views on the position of the boundary and on some other problems or business.

In contrast to the Permian-Triassic Boundary, which generally shows a stratigraphic gap and massive changes in biotic composition, the transition from Carboniferous-Permian is relatively stepwise. Therefore, it is difficult to draw a C/P boundary as distinct and concise as the boundary between Permian and Triassic.

In this case, the procedure to formalize the boundary, as advocated by the Working Group and most members of the C/P boundary Working Group, is first to decide the stratigraphical level indicated by available biostratigraphic data, and then to examine the potential stratotype. Presentations illustrating the proposed boundary definition in potential stratotype sections have been contributed by specialists from North America, Austria, USSR and China after distribution of Circulars No. 2-3 in 1988 to all members. It is our obvious task during the 28th IGC to make an extensive discussion on the C/P boundary meeting in order to recognize an acceptable boundary line which not only can be used in the Tethyan and Boreal realms,

but also reflects, insofar as possible, the major changes affecting the Gondwana realm in the latest Carboniferous and earliest Permian times. However, it should be noted that those equivalentes can be only approximate ones.

Grouped in the following are recommendations of main principles for drawing the C/P boundary line based upon biostratigraphical references informally suggested by some members:

1. The International Carboniferous-Permian boundary should be recognized by making use of the more widely distributed fossil group, specially the fusulinids. It is recommended that the stratigraphic level marking the first appearance of the genus Occidentoschwagerina should be used for selecting the C/P boundary stratotype. This level also marks the entry of the genus Praepseudofusulina as well as a significant renewal of species in their composition.

2. Like the fusulinids, the conodonts play a primary role in defining the C/P boundary within the lineage of the genus Streptognathodus. For example the conodont Streptognathodus alius gives rise to its successor Streptognathodus barkovi, S. gracilis to S. wabaunsensis. The latter is approximately at the same stratigraphical level with the fusulinid Occidentoschwagerina.

3. The evolutionary appearances of some other fossil groups should be utilized as auxiliaries to recognize or approximate that boundary independent of Occidentoschwagerina and Streptognathodus wabaunensis. Currently, these auxiliary fossils include the ammonoid Svetlanoceras-Juresanites fauna which is geographically restricted, and the coral Kepingophyllum fauna.

After submission fo the proposed C/P boundary, the Working Group should be responsible for urging the discussion to reach a boundary definition acceptable to most members. Meanwhile, it is also of importance beginning to solicit for candidate stratotype sections and to encourage intergrated and detailed biostratigraphic investigations into all potential section. For these reasons, all members of the Group are expected to their comments on all the proposals with suggestions on the candidate stratotype sections.

Wu Wangshi

A SYMPOSIUM ON PERMIAN STRATIGRAPHY AND PALAEOONTOLOGY
IN WUHAN, CHINA

A Symposium on Permian Stratigraphy was held on April 22 in Wuhan, China, in conjunction with the Annual Meeting marking the 60th anniversary of the founding of the Palaeontological Society of China, with about 40 paleontologists and stratigraphers including 8 members of SCPS taking their part. Prof. Sheng Jinzhang presided over the symposium.

At the meeting discussions were centering on the P/T boundary and its related events. B.F. Glenister (USA) made a report on his recent studies of Late Paleozoic ammonoids to test catastrophic extinction hypothesis. Among the other topics were "A significant level of decline and fall of biota below the P/T boundary in South China and its cause" by Yang Zunyi and Wu Shunbao (China), "P/T volcanic activities and the relationship to mass extinction in South China" by Yin Hongfu (China), "Restudies on potential stratotypes of the P/T boundary in South China" by Chen Chuzhen (China), "The position of P/T boundary in the Shangsi section of Guangyuan, Sichuan Province" by Rui Lin (China) and "The violent change of ecosystem in South China during the latest Permian and the earliest Triassic" by Xiu Guilong (China). Some speakers attached primary importance to the definition of the P/T boundary. Wang Yigang (China) set forth his viewpoint on this question.

One more interesting topic was the Carboniferous-Permian boundary, in which Zhang Zhenghua and Dong Wenlan (China) demonstrated the Lower Permian biostratigraphy and the C/P boundary respectively in southern Guizhou, China. As suggested by more participants during the discussion, there is an urgent need to work out a widely accepted theoretical boundary before examining the potential stratotype.

Other presentations cover such topics as subdivision of the Permian System and paleoclimate of the Late Paleozoic, including "The overlape of stages in the Permian Stratigraphic Scheme" by Zhou Zuren (China), "The Permian System in China" by Zhang Zuqi (China), "C-P Glaciation in Gondwana Land" by J.M. Dickens (Australia) and "Biological Studies of Morden Nautilus" by D. Spinosa (USA).

Li Chun

J.V. Kotljar:

CORRELATION CHART OF UPPER PERMIAN

Ural-Russian Platform	Tethyan Realm	Transcaucasus	Abadeh	Pamir	Salt Range	Kashmir	South China	Abadeh	Pamir	Salt Range	Kashmir	South China
Upper	Dzhulfian	Dzhulfian	Dzhulfian	Dzhulfian	Dzhulfian	Dzhulfian	Dzhulfian	Dzhulfian	Dzhulfian	Dzhulfian	Dzhulfian	Dzhulfian
Lower	Middian	Middian	Middian	Middian	Middian	Middian	Middian	Middian	Middian	Middian	Middian	Middian
KAZAKHIAN	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian
UPERMIAN	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian	Kurgabian
Lower	Dolorian	Dolorian	Dolorian	Dolorian	Dolorian	Dolorian	Dolorian	Dolorian	Dolorian	Dolorian	Dolorian	Dolorian

