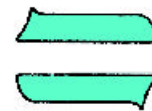




International Union of Geological Sciences

SUBCOMMISSION ON PERMIAN STRATIGRAPHY



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NEWSLETTER 4

October 1980

CONTENTS

Editorial	W.W. Nassichuk	34
Open Letter to Students of the Permian System	Brian F. Glenister ...	34
Minutes of IGC Meeting of Subcommission in Paris	Brian F. Glenister ...	35
Permian-Triassic Boundary and Tethys	Hooshang Taraz	37
Response to Taraz letter	H.M. Kapoor.....	39
Symposium on Tibet	J.M. Dickins	41
Permian in South China	J.M. Dickins	42
China in International Stratigraphy and Paleontology	A. Martinsson	44
China Participation Commission on Stratigraphy.....	A. Martinsson	44
Commissions and Working Groups - Geological Society of China	45
Polish Permian Activities	T.M. Peryt	45
Is the Three-fold Subdivision necessary?.....	E.V. Movshovich ...	46
Recent Permian Publications	47
Subcommission Membership	47

PLEASE MAIL NEWS AND CORRESPONDENCE TO YOUR SECRETARY
FOR INCLUSION IN THE NEXT NEWSLETTER
THE VIEWS EXPRESSED IN THE NEWSLETTER
ARE THOSE OF ITS CORRESPONDENTS

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EDITORIAL

Dear Permophiles:

All three previous issues of our Newsletter, prepared by Dr. S.V. Meyen, formerly Secretary and Vice-Chairman, and now Vice-Chairman of the Subcommittee, have proven to be extraordinarily useful in transmitting information. The format and style established for the Newsletter by Dr. Meyen have been complimented by Permophiles and will be followed in the future. Readers have indicated that they appreciate letters from colleagues published in the Newsletter as they provide a refreshing personal touch to Permian communications. All Members, Corresponding Members and others interested in the Permian are invited to send communications for the Newsletter to Secretary Nassichuk.

The present Subcommittee executive is currently dedicated to the task of revising and expanding the corresponding membership of the Subcommittee. It is hoped that a complete membership list will be published in the next Newsletter. As indicated in Commission Statutes, it may be necessary from time-to-time for Titular Members who have become inactive, for whatever reasons, to assume corresponding membership. This will provide an effective revitalization for the Subcommittee and will enable the Subcommittee to maintain a dynamic posture in science. The Subcommittee can be effective in dealing with the Permian System; of the world only if its membership is dedicated to the task. Ours is one of the youngest Subcommittees in the Commission on Stratigraphy. Thanks to the early dynamic leadership of Professors Meyen and Stepanov a sound foundation has been established for the Subcommittee. Now that we have established some principal objectives in dealing with the geology of the Permian System/, including definition and subdivision, it is time to get on with the job.

Yours sincerely,
W.W. Nassichuk

OPEN LETTER TO STUDENTS OF THE PERMIAN SYSTEM

"Dear Colleagues:

Upon my assumption of responsibilities for the Subcommittee on Permian Stratigraphy, I wish to express the belief that we collectively have both the obligation and opportunity to impose order and discipline upon Permian studies. Our obligation stems from the continued failure to establish an internationally acceptable framework for Permian correlations. Our opportunity results from advances in understanding of principles of stratigraphy in general, and also from the unprecedented increases in knowledge of biostratigraphy of the Permian System that have occurred in the past two decades.

A key to achievement of SPS objectives is more effective communication. We cannot hope for significant advances at our infrequent meetings unless the groundwork is laid through previous correspondence. This Newsletter series offers an economical vehicle, and all students of the Permian are urged individually to forward to Secretary Nassichuk or me any material that is suitable for inclusion in the Newsletter. We will undertake to distribute, to any colleague who welcomes its receipt, all available copy that is of general interest.

Membership of SPS is also critically important. Some current members have never participated in Subcommittee activities. Unless future participation is anticipated, inactive members are urged to consider resignation so as to facilitate new appointments. All Newsletter recipients are invited to submit to Secretary Nassichuk the addresses of any additional colleagues who would welcome receipt of the Newsletter. I will appreciate receiving nominations and supporting recommendations for appointments to Corresponding or Titular Membership of SPS.

The accompanying Minutes of the recent Paris meetings of SPS list projects that are ambitious but also provide prospects for progress prior to our next meeting, in conjunction with the 1984 International Geological Congress in Moscow. Your reactions to these proposals, and your eventual contributions to the projects are solicited.

In welcoming your participation in SPS activities, I look forward to international collaboration and the resulting better understanding of the Permian System.

Respectfully,
Brian F. Glenister"

MINUTES OF IGC MEETING OF SUBCOMMISSION IN PARIS

Minutes of the meeting held in the Palais des Congres, July 12, 1980.

Meeting convened 14:00 has. by Dr. J.M. Dickins. Attending were International Commission on Stratigraphy (ICS) Chairman Anders Martinsson, SPS Titular Members Dr. B.E. Balme and Dr. Dickins, Corresponding Member Dr. Carmina Virgili, and interested participants Prof. E.H. Gilmour, Prof. Brian F. Glenister, Prof. A.V.J. Gupta, and Dr. Yao Zhaogi. Apologies received from Titular Members, Dr. S.V. Meyen, Dr. W.W. Nassichuk and Dr. D.B. Smith. Dr. Dickins announced the election of the following officers for SPS, to assume responsibilities with the close of the 26th IGC.

Chairman Professor Brian F. Glenister

Vice-Chairman Dr. S.V. Meyen

Vice-Chairman, Secretary Dr. W.W. Nassichuk

Upon assuming the Chair for the business meeting, Prof. Glenister thanked the membership for their confidence, and expressed the hope and expectation that the succeeding four years will witness significant progress in achievement of Subcommittee objectives. He briefly outlined the history of the Subcommittee as follows:

1972 Subcommittee convened IGC, Montreal

1975 Inaugural meeting in conjunction with International Carboniferous Congress,
Moscow

1976 IGC meeting Sydney

He noted that separate working groups (WG) for the lower and upper boundaries of the Permian System had been authorized by the ICS, but that neither group had convened.

ICS Chairman Martinsson reported organization problems with the WG, noted that charges to convenors of both groups will be formally withdrawn, and stated that when at some future time the need for boundary WG becomes apparent, the SPS Chairman in collaboration with Chairs of the Carboniferous and Triassic Systems should propose authorization and membership of WG to the ICS.

Professor Glenister outlined achievements of the SPS as: development of an organization, publication of 3 newsletters, initiation of Dr. Meyen's Correlation Project, and sporadic communication between members. He expressed the opinion that the opportunity now exists for major rapid advances because:

- i. Basic stratigraphic principles have been established by the Silurian-Devonian Boundary Committee, and may serve to guide activities of other groups.
- ii. The past two decades have seen unprecedented increase in understanding of all phases of Permian stratigraphy.

He proposed a threefold program:

1. Improve Communication. Only frequent communication of members between meetings can provide a foundation for progress at infrequent meeting of SPS. Prof. Glenister urged timely response to correspondence, and pledged circulation of informative newsletters to any person actively interested in the work of the SPS. All Permian workers are urged to submit items of potential interest to Newsletter and SPS Secretary Dr. Nassichuk, or to the Chairman.
2. SPS Membership. Review of membership lists revealed that some Titular (voting) Members and Correspondents (not voting) have been inactive in SPS affairs to the extent of failing to respond to mail. Since SPS Titular Membership is restricted to 16 by ICS rules, Members who are unable to play a full role in SPS activities are urged to resign so as to permit appointment of active replacements. The number of Corresponding Members may be high, and Professor Glenister invited submission of names of persons actively contributing to SPS objectives.
3. Projects. Prof. Glenister invited attention to the following projects, each of which has potential for significant progress prior to our 1984 meeting at the 27th IGC in Moscow.
 - i. S.V. Meyen Correlation Project. Progress in some phases of this project are encouraging. Dr. Meyen is invited to restate the project and to clarify and circumscribe the objectives in the next SPS newsletter.
 - ii. Stratotypes. Prof. Glenister urged that, in the interests of economy of effort, SPS focus its attention on those sections judged to have greatest potential as either boundary or body stratotypes. He proposed that:
 - a. Any interested individual or national group be invited to sponsor Permian stratotypes.
 - b. SPS instruct members and national groups to sponsor and submit information on those stratotypes considered by SPS to have greatest potential for eventual adoption as world standard references. In explanation, it was stated that "a" above aims to limit the possibility that potentially important areas will be overlooked, whereas "b" is an attempt to focus on sections that approach the standards of an ideal stratotype (continuous sedimentation, maximum diversity and abundance of fossils, structural simplicity, accessibility). It was recognized that no single section meets all requirements for the entire Permian, so that a composite is necessary.

Stratotype proposal 3 ii b was approved unanimously, with subsequent discussion and approval of the following proposals:

- b.1 Lower Permian and Carboniferous - Permian Boundary. Academician V.V. Menner and Dr. S.V. Meyen to coordinate a proposal for the Southern Urals, and to explore the possibility of an excursion, preferably in conjunction with the Carboniferous Subcommittee and a possible boundary working group. Prof. E.H. Gilmour to coordinate presentation of data of the North American Southwest.
- b.2 "middle" Permian. Professor Glenister to organize a proposal for the North American Southwest (Guadalupian) with special emphasis on correlatives for its lower and upper boundaries (subsequently, Dr. R.E. Grant agreed to coordinate this presentation). Other areas of potential importance for the "middle" Permian are the Pamirs, Soviet and Iranian Transcaucasia

and South China: information on these areas is invited.

b.3 Upper Permian and Permian-Triassic Boundary.

b.3.1 Transcaucasia. Academician V.V. Menner and Dr. S. V. Meyen to coordinate a proposal for Soviet Transcaucasia, and to explore the possibility of an excursion, preferably in conjunction with the Triassic Subcommittee and a possible boundary working group. Information on the adjacent Iranian section is invited.

b.3.2 South China. Prof. Zhao Jinke to coordinate a proposal, possibly through Titular Member designate Prof. Jin Yu-gan.

b.3.2 Kashmir. Evaluation of these sections is requested, possibly by Corresponding Members H.M. Kapoor and Prof. K. Nakazawa. A problem exists in paucity of Permian fossils, but Prof. Gupta reported that new investigations are in progress.

EZ 82. Prof. Glenister reported communication with Corresponding Member Dr. D.B. Smith regarding the proposed Workshop on the English Zechstein (EZ 82), March 28-April 3, 1982, Nottingham, England. This field and discussion session was conceived as a follow-up to the successful 1978 meeting in Warsaw, and offers opportunity for discussion of matters of interest to SPS. The proposal that SPS accept the offer to joint sponsorship of EZ 82 was approved unanimously.

Following conclusion of this business, the meeting reverted to informal discussion. Meeting adjourned 17:00 hr., to be reconvened 08:30 hr. July 17.

Meeting reconvened 08:45 hr., July 17. Attending were ICS Chairman Professor Anders Martinsson, SPS Titular Members Dr. J.M. Dickins and Dr. R.E. Grant, Corresponding Member Dr. Carmina Virgili and interested participants Dr. N.M. Chumakov, Prof. E.H. Gilmour and Prof. Brian F. Glenister. The meeting was devoted to informal discussion of problems and of procedures to be followed in achieving SPS objectives. Meeting adjourned 10:00 hrs.

Brian F. Glenister

PERMIAN-TRIASSIC BOUNDARY AND TETHYS

"Dear Dr. Meyen:

I am highly grateful for your action to publish my letter to the SCPS Newsletter 2, however it was a personal letter to you and I had no intention to upset colleagues. After I received the Newsletter 2 I decided to keep quiet and wait for the oppositions. Surprisingly in the SCPS Newsletter 3 I found that I am not the only one who opposes the method of investigation. So probably it is now the proper time for me to express my view points and ask for comments. I really want to learn something. I highly appreciate if you would kindly publish this letter in the SCPS Newsletter 4.

Paleozoic - Mesozoic Boundary

The original definition for this Boundary is the gap between the Permian Zechstein and the Triassic Buntsandstein. Considering the fact that rapid change of facies in the Julfa section between the Paratirolites Beds and the Claraia Beds reflects the same gap between Zechstein and Buntsandstein, one can believe that this gap exists almost all over the world and consequently the original definition for the Boundary between Paleozoic and Mesozoic is still valid. In other words, conventionally the rock sequences below this gap (or below the sharp change of facies) are considered as Permian, and similarly the rock sequences above this gap (or above this sharp change of facies) are considered as Triassic. In this particular case I do not care about

paleontology because this Boundary is not defined by paleontology and paleontologists; it is defined by occurrence of a tectonic event. If I find a trilobite above this Boundary in the Claraia Beds, I am not going to say that the Claraia Beds are of Paleozoic age; I would simply say that trilobites pass the Boundary and some of them are of Triassic age. I simply reply on the conventional definition for the Boundary. I may ask paleontologists to check and tell us if this Boundary is contemporaneous all over the world or not, and they may tell us (certainly they can not tell) that it is not. But even in this case the Boundary between Paleozoic and Mesozoic is that non-contemporaneous gap or sharp change of facies between Zechstein (Paratirolites Beds) and Buntsandstein (Claraia Beds). Who said that this Boundary must be contemporaneous everywhere. Besides, we have no tools to check such a thing. The range and evolution of fossils at this Boundary is unknown because there is not a continuous marine fossiliferous Dzhulfian to Induan rock sequence found on the Earth that we can check confidently the range and evolution of fossils against that section.

So, if I find even Otoceras woodwardi in a formation below the gap, I am not going to call that formation as Triassic; I simply would say that Otoceras woodwardi occurs in the Permian too. In this particular case I check and correct paleontology by observing the type sections in field. I am not going to change the sound, solid, logical and practical definition of the Paleozoic - Mesozoic Boundary because of theoretical assumptions of paleontologists regarding paleobiological characteristics of a sub-species of a fossil along that Boundary.

Tethys and world-wide distribution of fossils

The writer accepts the idea that major faults associated with ophiolitic melange (or coloured melange) could reflect the contact line or collision zone between two continental plate at both sides of a "Red Sea type" sea (with oceanic crust) after approaching each other. The Main Zagros Fault (previously known as the Main Zagros Thrust) is a good example which indicates the location of the Tethys in the Middle East territory. The most logical image for the Tethys regarding the Middle East territory is a large sea with oceanic crust situated between the Arabian Plate at the south, and Central Iranian Plate at the north, extending at least as far as the East Mediterranean Sea to the west and as far as the Baluchistan region to the east. There had been a very large continental shelf at the south side of it. But at the north side the continental plate (Pakistan, Afghanistan, Iran and Turkey) had been extensively block-faulted and several shallow gulfs, bays and continental basins existed in the area, of which some have been connected to the Tethys sea and some could be isolated and disconnected. These conditions attract my attention to the point that at the existing time the Black Sea and the Caspian Sea have different faunas. This fact simply forces me to believe that similarly during Permian - Triassic time living conditions in these shallow gulfs, bays and continental basins in the Middle East territory varied so much from place to place that there is no basis to believe that a sub-genus or sub-species of any family of fossils of that time occurring in West Turkey must occur in Baluchistan too. In other words, considering paleogeographic conditions of Permian - Triassic time, I have tendency to oppose the idea that all the uppermost Permian rocks must necessarily contain Paratirolites kittli. The concept of world-wide distribution of fossils seems to be not applicable for that time.

Conclusion

The boundary between Paleozoic and Mesozoic had been originally defined by a tectonic event and that definition is still valid.

Distribution, range and evolution of some, if not all, of the Upper Permian and Lower Triassic fossils are poorly known. The SOPS should encourage geologists to find and describe in

sufficient details the Upper Permian and Lower Triassic sections. This opportunity will enable paleontologists to get more information about the unknown range, distribution and evolution of the Upper Permian and Lower Triassic fauna by observing those sections.

After these steps stratigraphy of the Upper Permian and Lower Triassic can confidently be established.

One more point; let us agree that paleontology should serve geology in the same manner as geology is serving economy and economy is serving humanity. Geology should furnish more reliable information to paleontologists for better services.

Sincerely yours,
Hooshang Taraz."

RESPONSE TO TARAZ LETTER IN NEWSLETTER 2 (LAZY PERMOPHILE)

"Dear Dr. Meyen:

Just now I received SCPS Newsletter 2. I also received its first number and other correspondence; but unfortunately I had to act as a lazy Permophile due to other assignments.

Now, in my present headquarters Calcutta, I can devote some time to the work of SCPS. Here I am looking at the publication of work on Permian and Triassic faunas of Kashmir which is being published in Palaeontologia Indica (Editors K. Nakazawa and H.M. Kapoor). I am also finalizing my work on Lower Permian floras of Permian Gondwana of Kashmir and Lower Permian fauna of Kashmir. These two contributions will be published in the Palaeontologia Indica. Most of the work involved in above projects will give sufficient time to look after the activities of SCPS, and now assure you full cooperation as a true Permophile.

The letter of Dr. H. Taraz is of much significance and value. The points raised by him are of importance. As a field geologist and laboratory worker I have faced such problems many a time and am a strong believer that analysis based on multidisciplines actually brings a clear picture. One group of fossils may be the main basis of defining a particular zone, stage of a system but it is the analysis of all the groups which will actually bring a clear picture. Other geological criteria such as sedimentation, palaeomagnetism, palaeoclimate, unconformities are also of value. It is true that all of a sudden every data can not be received or achieved but we have to think on those lines and make an attempt to work on those lines. I am sure the cumulative data and analysis will be satisfaction for all palaeontologists and geologists.

My experience with Permian correlations of Kashmir is so. We mostly indicate a particular stage of Permian, form a member just because it occupies relative position where one or two fossils of characteristic zone are found, in a layer or bed. Under normal conditions, it is not justifiable. It is only inferred - the bed in discussion may also be part of the zone on which analysis is made or there may be a number of probabilities. However, if we have control of other aspects, we may be close to analysis although characteristic life was not found. I quote example of the Unit E₁ of the Khunamuh Formation at Guryul ravine, Kashmir. This bed lithologically is quite different from Zewan, hitherto considered as Upper Permian. Unit E₁ has plenty of Permian brachiopods but unlike Zewan they are of stunted growth. In this bed we also get Claraia earlier considered only of Triassic.

Lithologically and by palaeocurrents, it appears to be part of Lower Triassic succession, while based on brachiopods it is Permian and by bivalves Triassic. It has been considered to be Dorashamian just because it is above the Cyclolobus horizon and below Otoceras Zone. If we take phylogeny of ammonoids, I think Permian limit can be raised up to the Dienerian stage. Breaks

(unconformities) are more puzzling -west of Kashmir they are evident near the Otoceras Zone and in the east above Cyclolobus and below Otoceras Zones. In the geocratic Permian, I think such variations/changes of lithology, fauna, unconformities etc. are very close both laterally and vertically. However, if cumulative analysis of all geological data is made the picture emerges much better. It is true with this effort many practical difficulties will arise, but slowly the goal will be achieved; it is only the achievement of results on a priority basis and defining them accordingly. Almost all the workers in brachiopods or cephalopods or fusulinids or bivalves realize the importance of other groups or of lithology or of palaeoclimates. As I understand Dr. Taraz's letter, he points to this anomaly and we as field and laboratory workers also feel this.

Besides this I would also like to inform about some of the recent progresses in India on Permian Stratigraphy. A group of geologists from the Geological Survey of India collected interesting fauna of Lower Permian from Lahul and Spiti regions comparable with that of Lower Permian Agglomeratic fauna of Kashmir and Bhalleesh. In Kashmir the youngest level is lower part of Lower Artinskian while in Bhalleesh upper limit is slightly younger than Kashmir, but Spiti fauna appears to be much younger than Kashmir. The marine gap between lower Artinskian and Abadehian is marked in Kashmir by volcanics and plant beds, but tracing the beds eastwardly now we feel that it may be possible to establish complete Permian succession in Himalaya. Many new Lower Permian horizons are coming to light in the eastern Himalaya. But all the evidences are favouring fauna to have marginal Gondwana marine nature.

I received letters from Dr. Dickins and Dr. Nassichuk for Symposium on Permian. I have written to workers in India for comments, views and contributions. I will be informing soon the outcome to Dr. Dickins on this subject.

I would also like to request you to send copies of SCPS Newsletter to our Director, International Wing, Geological Survey of India (27, JL Nehru Road, Calcutta 700016) (if possible 1st and 2nd too), to facilitate them to keep in touch with the progress in different geological commissions. I hope you will agree to this request.

Sincerely yours,
Hari Mohan Kapoor."

SYMPOSIUM ON TIBET

The Symposium on Tibet sponsored by the Academia Sinica held in the Jing Xi Guest House in the central part of Beijing (Peking) 25-31 May 1980 was attended by about 100 outside scientists together with about 200 Chinese registered participants. Other Chinese scientists attended sessions. The Symposium had ten sections: Geology, Geophysics, Geochemistry, Stratigraphy and Palaeontology, Zoology, Botany, Physiology, Geomorphology, Geography, and Meteorology. The official languages of the conference were Chinese and English and effective translation was made in all the sessions. In addition translation from other languages was made. The accommodation, the meeting rooms, also at the Jing Xi Guest House, and the arrangements made were particularly satisfactory.

Permian rocks are not particularly widespread in Tibet and most of the fossiliferous localities are not readily accessible but their interpretation is of considerable importance in understanding the structure and origin of the Plateau. In Nanjing (Nanking) I was able, however, to examine the collections which have been made. At the Symposium an interesting consensus was apparent among palaeontologists working on pre-Permian Palaeozoic faunas. At the species level, the marine faunas from the Himalayas and southern Tibet (no pre-Permian marine Palaeozoic faunas are known from Peninsular India) are so close to those of other parts of southern Asia that it

was concluded that India could not have been separated at this time from the rest of Asia by a wide sea. Consideration of Lower Permian (Upper Carboniferous of Chinese usage) marine faunas from Peninsular India affords further evidence for this conclusion. The cold and temperate Gondwana type faunas have now been identified not only in the Himalayas and southern Tibet but also in central Tibet north of the "Yarlung-Zangbo Suture Line". On the basis of my examination of the collections I can express agreement with the conclusions which have been made. In the Himalayas, southern and central Tibet the Lower Permian cold and temperate faunas are overlain by rocks with Upper Permian warm water marine faunas. This change of climate or geographic position may explain the occurrence of the Glossopteris flora in southern Tibet and the Cathaysian flora in northern Tibet the latter of which would indicate a warm climate.

Some palaeontologists have interpreted this data to indicate that an oceanic opening took place along the "Yarlung-Zangbo Suture Line" in the Triassic prior to continental collision in the Upper Cretaceous Tertiary in line with the views of one of the schools of plate tectonics. This ocean was considered never to have been very wide.

Field Visit to Tibet

Because of remoteness, height, shortage of facilities for visitors and the wide range of disciplines represented, the field visit to Tibet presented considerable organizational difficulties. Despite this the field visit was accomplished with success. There were about 70 outside participants. The height with lack of oxygen troubled most visitors -headaches, nausea, dizziness and shortage of breath were suffered by most at one time or another. The climate, however, was unexpectedly mild - the days were warm and sunny with rain sometimes at night. The nights were also mild and frost free. The threatened wind did not appear. The climate is dry and the bare mountainsides illustrate the geology in an ideal fashion. Travel over roads was by minibus brought to Tibet especially for the field visit. Bus was supplemented by four wheel drive vehicle.

The field visit was specially interesting for the Palaeozoic (with perhaps the exception of the Permian) and for the Mesozoic (Triassic, Jurassic and Cretaceous) with a profound unconformity between Lower and Upper Cretaceous. Igneous and structural geology was also well illustrated. By special arrangement I was able to spend a little time examining the Permian exotic blocks. The blocks comprise pieces from the size of small boulders to others many metres thick and as much as 1 km in length. They are emplaced in the Triassic and are accompanied by penecontemporaneous Triassic blocks. Both the Permian and the Triassic contain marine fossils. Permian blocks which are calcareous and dolomitic have a striking appearance and because of their resistance to erosion cap many of the hills. I saw Griesbachian and Norian fossils in Triassic which contained blocks. Doubtless these blocks represent large scale sliding in a tectonically active environment (olistostromes or "sedimentary melange"). They attest to strong tectonic movement in the some significance in understanding of the blocks the in the early Triassic, a feature perhaps of some significance in understanding the Permian-Triassic boundary. The fossils and lithology of the blocks seem to be close to that of the Wargal and Chhidru Formations of Himalayan Region. Permian blocks in Triassic rocks are recorded other places - Ladakh, Turkey and Sicily. Such olistostromes have been caught up in later tectonic movement to give rise to the famous tectonic and ophiolitic melanges. Study of the origin and nature of these blocks is undoubtedly important in understanding the development of the melanges associated with the ophiolitic belts of tectonically very active regions.

J.M. Dickins.

PERMIAN IN SOUTH CHINA

I was most fortunate to be invited to attend the Symposium on Tibet in Peking (25-31 May, 1980) and subsequent visit to Tibet organized by the Academia Sinica. Prior to the Symposium (May 14-23, 1980) I was able to visit the Nanjing Institute of Geology and Palaeontology of the Academia Sinica to examine Upper Palaeozoic and Lower Mesozoic collections, to visit field sections and to discuss problems, especially of the Permian, with Chinese colleagues. Nanjing Institute is the major centre for invertebrate palaeontological research in China with, I understand, about 250 workers.

In Nanjing are housed not only extensive collections from China but also fossil collections from Tibet where major geoscience work has been undertaken by the Academia Sinica.

In South China the Upper Palaeozoic sequences are of a stable platform type in mainly warm water environments. Formations are thin, carbonates are conspicuous and clastics present tend to be mature. Abundant and diverse marine faunas are present, indicating access to the open sea.

In South China all or most of the Permian is represented in marine deposits with abundant faunas. Plant fossils are also well represented. The boundary between Carboniferous and Permian is placed between Maping and Chihhsia. The boundary is distinctive, stratigraphically and in sedimentation. The Maping contains equivalents of the Asselian. In places a hiatus separates the Chihhsia from considerably younger (Artinskian) faunas. In other places intervening deposits equivalent to the Sakmarian are apparently present. The boundary thus differs from the conventional boundary placed at the base of the Asselian. The relationship in China requires further comparison with outside sequences.

The Lower Permian is made up of the Chihhsia and Maokou which include equivalents of the Artinskian, Kungurian and Kazanian and of the Leonardian and Guadalupian. The Upper Permian comprises the Lopingian (Wuchiapingian) and the Changhsingian. The boundary between the Lower and Upper Permian is thus also placed considerably younger than the boundary in other places where a two-fold subdivision of the Permian is used.

The base of the Triassic is marked by the incoming of Otoceras. The nature of the boundary has been discussed by Tozer (1979), by Nassichuk in SCPS Newsletter No. 3, and in a paper by Zhao, Sheng and Yao given at the recent Geological Congress in Paris. I was able to examine the boundary in the Bao Qing quarry near Changhsing and at Tangshan near Nanjing.

In my opinion the South China sequence constitutes a major candidate for choice as Permian-Triassic boundary strata type. Diverse and representative marine faunas are found in the Permian and Triassic. Spore assemblages might be expected although to my knowledge they have not so far been recorded. In places a relatively continuous sequence seems to be present. I am assuming that the base of Otoceras is to be taken as the base of the Triassic. I will not discuss this problem here but express my agreement with the arguments of many workers as expressed by Tozer (1979). Tozer's account of the ammonites indicates how fragile a boundary based only on ammonites is likely to be and the South China sequence has great advantage in the diversity of the fauna represented. I am inclined to agree with Chinese colleagues who believe that virtually transitional sequences are present. It has become increasingly difficult to believe that the brachiopods of "Permian-type" recorded from many places with Otoceras are reworked fossils as argued by Tozer.

Other possible candidates for the Permian-Triassic boundary stratotype are Kashmir and Transcaucasia (USSR). In Transcaucasia the Lower Triassic seems to be less well represented

and in Kashmir Upper Permian marine faunas are less well developed. Well preserved spore assemblages are doubtful in both. The presence of spore assemblages in the boundary stratotype is particularly important.

The South China sequence might also be considered as a candidate for the Upper Permian stratotype. There are, however, rival candidates. In South China diverse marine faunas occur in the Upper Permian in a manner which is perhaps unequalled elsewhere. Apparently details of the local stratigraphy, its lateral variation and correlation with sequences in other countries, require elaboration. In correlation of the South China sequence with other areas considerable reliance is placed on the fusulinids. Further work in other groups is necessary to supplement this information and improve precision in correlation. Ranges of some fusulinids are controversial and work is needed on comparison of ranges in actual sequences in different parts of the Tethyan region. Fusulinids and some other important forms such as conodonts, calcareous algae and colonial corals are confined to the Permian warm water regions and to obtain a stratigraphic and time scale which is applicable to the whole world further attention to other elements of the fauna is required.

Reference

Tozer, E.T. (1979). The significance of the ammonoids Parathirolites and Otoceras in correlating the Permian-Triassic boundary beds of Iran and the People's Republic of China. Canadian Journal of Earth Sciences, 16, 1524-1532.

J.M. Dickins.

CHINA IN INTERNATIONAL STRATIGRAPHY AND PALEONTOLOGY

The following is an abstraction of an article by Anders Martinsson, Chairman of the JUGS Commission on Stratigraphy, which appeared in *Lethaia*, Vol. 12, 1979, p. 2~30: "China in international stratigraphy and paleontology".

In the autumn of 1977 a delegation from the International Union of Geological Sciences (IUGS) visited China. The ten members of the delegation included representatives of the main scientific bodies of the IUGS and the Board and Scientific Committees of the International Geological Correlation Programme (IGCP), the cooperative IUGS-Unesco enterprise with governmental participation. The IUGS is the first international (non-governmental) scientific organization with which the People's Republic of China has established relations.

The main task of the JUGS delegation was to negotiate with its national adhering organization, the Geological Society of China, about the initiation of concrete scientific cooperation. The negotiations extended over a whole month and were interspersed with most hospitable and instructive visits to geological institutions and field areas between the famous oilfield Daqing (Taching) in northern Manchuria and the mountains bordering the Red River basin in the south. Participation at a state banquet hosted by Chairman Hua Guofeng (then Hua Kuo-feng) and a audience with Vice Premier Ku Mu the manifestative highlights of the visit, and the discussions involved a wide spectrum of the geological elite of the country. The main sessions were held in Beijing (then Peking) on 30th September and in Guangzhou (Kwangchow, Canton) on 12th October.

On the latter occasion the initial Chinese interest was defined as comprising one of the IUGS Scientific Commissions (the International Commission on Stratigraphy), one of its Affiliated Organizations (the International Palaeontological Association, IPA) and the IGCP. Within the Commission it was the Subcommissions on Ordovician, Silurian, Devonian, Carboniferous, Cretaceous and Quaternary Stratigraphy and the Working Group on the Precambrian-Cambrian

Boundary which attracted interest.

CHINA PARTICIPATION - COMMISSION ON STRATIGRAPHY

"Dear Colleagues:

I am pleased to announce to you that the Geological Society of China, which is the Chinese National Adhering Body of the IUGS and hence of our Commission, has decided on Chinese participation in the work of no less than sixteen of our bodies in addition to the seven included in our initial agreement after our negotiations in China in 1977.

For the practical details as a consequence of this message I refer to my circular letter of 1977 11 03. The essential item is that until Chinese members (voting or/and corresponding) of your respective bodies have been elected, all correspondence should be channelled through the Geological Society of China. Please note that Mr. Meng has now retired and been succeeded by Mr. Wang as Secretary General of the Society and that the Pinyin type of romanization, in exclusive official use since 1979 91 91, leads to modification of its address as follows:

Mr. Wang Zejiu, Secretary General

Geological Society of China

Baiwanzhuang Road

Beijing (Peking)

People's Republic of China

Yours sincerely,

Anders Martinsson"

COMMISSIONS AND WORKING GROUPS - GEOLOGICAL SOCIETY OF CHINA

The Geological Society of China, Peking, China

I. COMMISSIONS

1. Commission on Stratigraphy

- a. Subcommittee on Permian Stratigraphy
- b. Subcommittee on Triassic Stratigraphy
- c. Subcommittee on Jurassic Stratigraphy
- d. Subcommittee on Neogene Stratigraphy
- e. Subcommittee on Palaeogene Stratigraphy
- f. Regional Committee on Stratigraphic Correlation for the ESCAP Region.
- g. Subcommittee on Stratigraphic Classification
- h. Subcommittee on Geochronology
- i. Subcommittee on Magnetic Polarity Time Scale
- j. Working Group on the Devonian-Carboniferous Boundary
- k. Working Group on the Carboniferous-Permian Boundary
- l. Working Group on the Permian-Triassic Boundary
- m. Working Group on the Jurassic-Cretaceous Boundary
- n. Working Group on the Cretaceous-Palaeogene
- o. Working Group on the Palaeogene-Neogene Boundary
- p. Working Group on the Neogene-Quaternary Boundary

2. Commission on Systematics in Petrology

3. Commission on Experimental Petrology at High Pressures and Temperatures

4. Commission on Tectonics
5. Commission on Meteorite

II. COMMITTEES

1. Committee on Geology Teaching
2. Committee on Storage, Automatic Processing and Retrieval of Geological Data: (COGEO DATA)
3. Committee on the History of Geological Sciences (INHIGEO)

POLISH PERMIAN ACTIVITIES

In 1979 the Permian-studying group at Instytut Geologiczny, Warsaw (see Newsletter 1) continued their studies. In Wrocław, J. Jerzykiewicz (Instytut Geologiczny) conducted palynological examination of the Upper Carboniferous-Lower Permian section in the Intra-Sudetic trough that yielded a rich microflora, and also some well sections from the Fore-Sudetic area. In Poznań, J. Fedorowski (University) continued his extensive study of Permian corals from Greenland (collected by K. Birkenmayer), Svalbard, and also a very rich collection by G.A. Cooper, with collaboration of R.E. Grant.

Other Polish activities include the publication of some results of mainly paleontological investigations, in the Zechstein of western Poland (J. Klapcinski, L. Karwowski, University, Wrocław) and the Permian of Svalbard (K. Malkowski, Polish Academy of Sciences, Warsaw).

T.M. Peryt

IS THE THREE-FOLD SUBDIVISION OF THE PERMIAN REALLY NECESSARY?

Recent advances in the Permian stratigraphy of the Tethyan province (belt) resulted in attempts of some stratigraphers to take certain versions of the three-fold subdivision of the Tethyan Permian as an international standard (Kahler, Kozur, Leven, Waterhouse). On the other hand some authors concluded that in the Fore-Uralian scheme, currently used as the international standard, there is an equivalent of the Tethyan 'Middle Permian', i.e. Kungurian and Ufimian (Gorsky, Guseva, Stepanov, Ustritsky).

Further discussion on the problem may be fruitful only if reliable correlations between sections of Tethys, Fore-Urals, North America, Angaraland, Central Europe and Gondwanaland is attained. However, the correlations between Tethys and these areas is even more difficult than the tracing of units established in Fore-Urals. In the latter region the Permian section consists of alternation of fully marine, lagoonal (brackish) and freshwater (continental) beds. The high proportion of the nonmarine deposits in the Fore-Urals is currently established as an essential defect of the stratotype area of the Permian. In reality, however, this very feature of the stratotype area provides possibility for correlations with both marine successions of the Tethys and North America, and continental ones of Central Europe and Angaraland.

The conodont studies of the Permian of Fore-Urals (Movshovich et al., 1979; Trudy Inst. Geol. i Geokhim, UNC AN SSSR, vyp. 145, Sverdlovsk:94-131) and Tethys (Kozur) allowed to conclude that the Tethyan 'Middle' Permian roughly corresponds to the lower Upper Permian of Fore-Urals (see also: Movshovich, 1979; Izvestia Akad. Nauk SSSR, ser. geol., No. 2:56-60). It seems evident that such local units of the Tethyan Permian cannot serve as standard units. This does not mean the rejection of its usage for the provincial Tethyan scheme. However, the subdivisions of this regional unit would be hardly useful in other provinces.

To the author's mind the further progress would be impossible on the basis of a radical

change of the already existing Fore-Uralian scheme which should be kept as the standard scale. But this scheme is to be improved by means of the selection and investigation of hypostratotypes in the type area (throughout the Fore-Urals including its northern part). The hypostratotypes should be reliably correlated with (1) known parastratotypes and (2) sections yielding ammonoids, conodonts, ostracods, forams, insects, vertebrates, miospores and plant megafossils. This will allow a reliable correlation with other provinces.

Only special integral studies for mutual coordination and correlation of tonal schemes based on different faunal and floral groups (based on the fundamental theoretical principle of the chronological interchangeability of stratigraphical characters, as established by S.V. Meyen) will permit to maintain an international (standard) integrated zonal scheme of the Permian which will serve as the basis for global correlation. An experience of such studies of the Lower Permian has shown (Movshovich et al., 1979, l.c.) a real possibility to recognize stratigraphical units of the Fore-Uralian Permian in Tethys and North America.

Of course, the international status for the Fore-Uralian scheme may involve the necessity of some changes in its units. But this should be done only after a detailed substantiation and comprehensive discussions. For example, it is possible that the Sterlitamakian and Lower Artinskian together will form an independent stage. However, correlations need larger units (superstages, subseries, rather than stages) without essential changes in stages, series and their boundaries.

Only this way will lead to success in global correlation of the Permian without permanent rearrangements of both standard and provincial schemes. Provincial schemes should be established or modified irrespective of the standard scale.

E. V. Movshovich, Rostov-na-Donu, USSR

Recent Permian Publications

Permianland, D.L. Baars (Ed.), A field symposium - guidebook of the Four Corners Geological Society; ninth field conference, 1979.

Seventeen important papers dealing with Permian stratigraphy, sedimentology, climate, and economic geology of the Colorado Plateau are contained in the volume.

Proceedings of Symposium on Qinghai-Xizang (Tibet) Plateau (Abstracts) Symposium on Qinghai-Xizang (Tibet) Plateau, Beijing, China May 25-June 1, 1980; Organizing Committee, Symposium on QinghaiXizang (Tibet) Plateau, Acad. Sinica.

Some 300 abstracts dealing with geology, faunas, floras, geography of the Tibetan Plateau are included. About 15 abstracts are of interest to Permophiles.

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