

## The Permian Succession of the Baroghil Area (E Hindu Kush)

POSTER

L. ANGIOLINI\*, M. GAETANI\* & A. NICORA\*

During the 1992 Pakistani-Italian expedition from Chitral to Karambar a complete Paleozoic succession was discovered and analysed. In particular the Permian part of the succession is extensively exposed in the Baroghil-Showar Shur area. There was the great opportunity to visit the Baroghil section, which was studied by Hayden in 1914 and then only shortly visited by Talent and Takhirheli in 1973. The area was then strictly closed because of the Afghan war.

Three stratigraphic sections for about 2000 m of development have been measured along the Permian part of the Paleozoic succession, with at least 250 samples collected.

The Lower Permian overlies Lower Carboniferous crinoidal packstones and it is represented by a quartzarenitic to litharenitic unit, at least 600 m-thick. This unit has been named Gircha Fm., because of its correlatability with the Gircha Fm. of the Hunza region.

Then a mixed carbonate-terrigenous succession, several hundreds m-thick follows, named Lashkargaz Fm. It consists of four members; the first, mostly terrigenous, contains Sakmarian conodonts (*Adetognathus paralautus*) and brachiopods (*Globiella* cf. *G. rossiae*, *Elivina tibetana*, *Spirigerella* sp., *Cleiothyridina ailakensis*) at the top. The second member consists of fusulinids packstones and limestones locally crowded with oncolites, corals and gastropods. The third member is only 40-50 m-thick and consists of siltites and arenites. The fourth member chiefly consists of limestones with chert rich in fusulinids, conodonts (*Sweetognathus whitei*, *Gondolella bisselli*, *Gondolella* cf. *G. idahoensis*, *G. intermedia*, *Anchignathodus* sp., *Iranognathus* sp.), brachiopods (*Costiferina* sp., *Marginifera* sp.), corals and bryozoans. Marly limestones may be present. The age of the fourth member is Artinskian to Bolorian on the basis of conodonts.

At the top of the Lashkargaz Fm., above an erosional surface, the Gharil Fm. crops out. It consists of red microconglomerates and arenites with phosphate nodules.

Then a huge peritidal dolomitic formation, 700 m-thick follows. In the lower and middle part of this formation Upper Permian small foraminifers (*Dagmarita chanackiensis*, *Paraglobivalvulina* sp., *Globivalvulina* sp., *Langella* sp., *Climacammina* sp.) have been detected, whereas in the upper part foraminifers and algae are present and may suggest an Early Jurassic age.

\*) Dipartimento di Scienze della Terra, Via Mangiagalli 34, I-20133 Milano, Italy

The Paleozoic succession is repeated at least three times within three thrust sheets, with slightly different facies in the Baroghil area. On the contrary we have poor informations about most of the Mesozoic.

In contrast to the Upper Hunza and Shimshal valleys (Karakorum), where deep-water sediments are present from the Midian upwards, in the upper Yarkhun-Karambar area the shallow water environments seems to persist throughout the Permian. Correlations may be inferred with the Helmand Block in Central Afghanistan.