

## Contribution to the Geology of Eastern Ladakh – the Upshi – Sangtha Section

TALK

M. LINNER\* & G. FUCHS\*\*

The Indus Molasse consists mainly of continental conglomerates, sandstones and shales. The anticline of Miru brings up the Eocene flysch (Jurutse). At the base of the younger molasse red pelites are significant. Along the Indus Suture the Dras-Nindam and Ophiolitic Melange zones are partly squeezed out. There are only lenticular bodies composed of serpentinites, lavas and tuffs of an alkali basalt series, carbonates, flysch sandstones and shales (eg. E Rumtse).

In the Lamayuru Unit we found an anticline, where the Mesozoic euxinic pelites and limestones are stratigraphically underlain from top to bottom by a chlorite-arkose schist horizon, carbonates and dark phyllites, and the Karsha Formation. This shows that the Lamayuru Unit, at least in its southern parts, is still underlain by Zanskar rock series. Thus the Lamayuru series were deposited on the continental slope. The chlorite schists may indicate the Panjal volcanic event - STUTZ (1988, p43) also mentioned chlorite schists in the fossiliferous Kuling Formation. To the latter the marbles and quartzites of Taglang La correspond, which form the core of a syncline. In the Debring region the Haimanta (Phe) Formation is overlain by thick quartzite or carbonate-dark phyllite series, which are interfingering in various ways. This resembles the Devonian series of Dolpo (Nepal), where mature sands (Muth) were deposited side by side with platform carbonates and even basin sediments (Tilicho Pass Fm.). Thus we suspect Devonian series also in Zanskar, whereas the upper part of the carbonate series probably represents the Lipak (Lower Carboniferous). A conspicuous horizon of basaltic metavolcanics corresponds geochemically to the Panjal Trap. Also the doleritic dikes which occur in different formations show affinity to the Panjal Trap and may be understood as feeders.

The metamorphism of the Nimaling sedimentaries increases from WNW towards ESE. In the metapelites the chlorite zone is succeeded by the biotite zone and the garnet zone. In the latter two zones blasts of plagioclase, biotite respectively garnet occur. For the garnet zone metamorphic conditions of  $T = 450-480^{\circ}\text{C}$  and  $P = 3-3.5\text{kbar}$  were determined from the paragenesis Gar-Bi-Chl-Mu-Ab-Cc-Q. Towards the SW the metamorphism decreases.

Along a counter thrust the granites from the core of the Nimaling Dome override the described sequence and divide the dome into two wedges. This deformation is younger than the regional metamorphism. In the southern wedge the granite is succeeded by Haimantas (Phe), Parahio (Karsha) Formation, Devonian-Carboniferous carbonates, Po, Kuling and the Mesozoic series. This succession shows metamorphism only of the chlorite zone.

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\*) Institut für Petrologie, Universität Wien, Dr. Karl Lueger-Ring 1, A-1010 Wien, Austria

\*\*) Geologische Bundesanstalt, Rasumofskygasse 23, A-1030