

## IMPLICATION OF EARLY CARBONIFEROUS (LATE TOURNAISIAN) CONDOTS FROM THE TABAI FORMATION, SOUTH KHYBER REGION, NORTH PAKISTAN.

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Apart from information on a traverse of the Bazar Valley- Tirah region by [11] and observations on igneous rocks of the Spinkai area of Tirah by [3], very little published data have been available on the geology of the Bazar Valley- Tirah area of the southern Khyber region of northwest Pakistan since a traverse by [2] in which he noted the occurrence of an unexpected and interesting Permian sequence from which he collected fossils identified with well-known forms from the Salt Range.

The bedrock of the Khyber region was formerly thought by [8,9,10] to be largely Ordovician (Landikotal Slates), by analogy with Ordovician clastics reported from farther west in Afghanistan, Silurian (Shagai Limestone), or Carboniferous (Khyber Limestone) because of an unpublished report of arenaceous foraminifers. On the basis of extensive mapping, As lam and Ashraf of the Geological Survey of Pakistan have concluded these units are Precambrian and that all prior reports of fossils from them should be discounted. This opinion coincides with the results of acid-leaching numerous samples of all three of the above units from outcrops along and near the Khyber Highway [6] though, admittedly, not from the substantial areas of these units north and south of the Khyber Highway.

Unequivocal Devonian- Early Carboniferous (Tournaisian) sequences, unconformable upon the above Precambrian units and structurally preserved, nevertheless occur in limited areas, for example west of Tauda Mela [6,8,9] and in the vicinity of Ghundai Sar [1] from which a single sample from the superb sequence there has produced Famennian Conodonts [7].

Silurian- Triassic sequences, identified from conodont data, are known from the northeast margin of the Peshawar Basin and from the Nowshera region [6], though [4] report of Early Carboniferous rocks at Nowshera does not accord with the Silurian-Early Devonian (Emsian) conodont data from that particular area [6,7] Unsuspected Ordovician-Triassic sequences have recently become known from many areas of northernmost Pakistan, especially in Chitral [5,12].

Conodonts recently discovered in the Tabai Formation (new stratigraphic name) in the Bazar Valley- Tirah region of the South Khyber region indicate the presence of an Early Carboniferous (Tournaisian) sedimentary interval (chronologically controlled by the zonally.

Important Conodonts genus *Gnathodus*) within the largely Proterozoic bedrock (Landikotal Slate, Khyber Limestone, Shagai Limestone) of the southern Khyber region of northwest Pakistan.

The discovery is important because it, and recent discoveries of Early Carboniferous sequences (with limestones) in the eastern Khyber region, in the Turikho and uppermost Yarkhun regions (Chitral), in the upper Hunza valley (Gilgit) and, though metamorphosed, among the metamorphics of the northwestern margin of the Peshawar Basin, provide evidence of a formerly widespread marine Early Carboniferous sedimentary wedge extending over much of northwestern Pakistan (Indo-Pak and Karakorum Blocks). Such sediments, and the generally associated latest Silurian- Devonian sequence (Nowshera, "Ali Masjid" and Kuragh Formations or their equivalents) extending southwestwards beneath the Mesozoic- Cenozoic blanket, may have been source rocks for petroleum. What is sobering in this regard is that rocks of similar age are widespread in central and southern Afghanistan and central Iran. In central and eastern Iran, Color Alteration Indices (CAI) of Devonian-Permian Conodonts fall within the oil and gas windows.