What Geology Says Of Kohat

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Part - I

INTRODUCTION

THE Kohat area covered here in this article extends from Kohat Pass to Hangu. On the way to Hangu from Peshawar, we come across ma -ny complicated structures. Though very little is known about these struc- tures and the Geological formations and their ages, yet I have tried my be -st to explain, what can be expected from me. The observatinns recorded in this article were made during the field study tours arranged by the Deptt. of Geology, under the guidance of our teachers Mr. Mohammud Attaullah Khan and Mr. Arif Ali Khan Ghauri. And specially I am very much thankful to Pro -fessor John Eliot Allen and Mr. Mohammud Attaullah Khan, for their help- im writing this article.

TOPOGRAPHY.

The Kohat region falls within the domain of the arid climate. It gives every indication by its topography and geomorphology of being a typical landscape carved out in arid regions which are rarely visited by torrential rains. As one might expect from the prevalent lithology and the abundance of caves, solution holes etc etc so characteristic of KARST TOPO -GRAPHY, may actually be disappointed when he visits the area. Kohat is - situated in the south-west of Peshawar. In between there is a vast plain, which might have been formed by the filling of the deeply cut valley during latter part of Pliestocene, gives every indication of the visitation by mighty floods. The floods might have been due to the then flowing stream or due to the supply of enormous quantities of waters from the melting gl- aciers of that time. As one travells from Peshawar to Kohat meets a flight of terraces. These terraces indicate either the various levels of inunda- tion of the valley by flood waters of the stream or the inundatinon of the valley by the overwhelming glacial melts and then their sbsiquent erosion. The erosion of the terraces in the first case gives an idea of rejuvinat: - on of that stream. This idea seems to be more plausable. Through out the area from the entrance to exit of the Kohat Pass , relatively high peaks are met, some of them attaining a considerable hight. Due to the uniformi- ty of the lithology of the area, no sharp undulations in the topography of the area are observed. Nullahs and gullies may follow the dip of the slop- es. The slopes of the hills through out the area are covered by scree and talus. This enormous deposit of scree and talus has resulted due to the process of physical weathering, which is the only dominant process of dis- integration in this area. This process seems to come into effect because of the changes in the day and night temperatutes. The organisms both the

animals and plants seems to have played an active role in the disintegration of the rock-material. The roots of the plants and trees have caused the rapture and removal of the rock-material apart from the main body of the rock. In short the area is fully under the control of the physical agents of weathering of which, as I have said earlier, diurnal changes of temperature seems to be the chief agent of weathering. The chemical weathering, if at all takes place is negligible, but its complete absence cannot be proved; because one observes the solution effects on the surface of limestones.

Further towards the south-east these ranges which form a part of Suleman Ranges, as a whole merge into what is known as the SAMANA RANGE. This is the loftiest chain of mountains near Hangu. On the way to Hangu from Kohat thick beds of gravel are found to lay Unconformably over Siwaliks Formation, near the Uster-Zai Pain bridge. These Siwalik Formations seem to be of Chinji Stage. The origin of the Gravel bed can be attributed to enormous flood-waters, which must have been supplied from the Samana Ranges, which probably were the Glacier-Fields in the early Pliestocene Period. I dare to say such things, because of the fact that the Gravel Bed consists of fragments varying from tons in weight and yards in size to a small pebble. For the transportation of these huge blocks enormous water with tremendous velocity is needed. The present Channel in which the river flows must have been occupied by a mighty river having its head-waters in and water-shed zone in Samana and the ranges of the N.W. of Parachinar. Probably extensive ice-fields existed in these areas, which in turn on melting supplied a tremodous quantity of water so as to cause the floods. These waters must have come roaring down ladden with the huge quantity of hetrogenous material, from these lofty ranges, which at present are not as lofty as they used to be in the past.

THE GEOLOGICAL STRUCTURE OF THE KOHAT AREA.

Geologically the area has not been worked out. However, the structure is extremely complicated. Pitching, Chevron and Recumbent folods are abundant. Due to the operation of severe tectonic forces, the sratigraphic order has also been disturbed at many places. Thrust Faults and localised faults are also abundant. The movements seem to have occured during the Himalayan Orogeny.

THE STRATIGRAPHY OF THE KOHAT AREA.

All formations met between Kohat and Hangu are unfossiliferous limestones. So far no megascopic fossils of any importance have been discovered. However in the Kohat pass near the entrance at the water tank about a foot thick bed of limestone is found to be composed of Cephalopods. These mostly belong to the Ammonoidea. These arefound only on the surface of the limestone bed.On the either side of this bed are shale formations which are highly cleaved. These are greenish coloured sandy shales. These contain some fragments of cephalopods. Turrilites and Belemnites are found.

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THE STRATIGRAPHY OF THE KOHAT AREA.

However it is yet to be determined wheather these fossils are in-situ or derived, but one thing can be inferred , inwhatever the case may be that these fossils belong to late Cretaceous period. Among all fossils, as I have said earlier, only a helicoid cephalopod i.e the Turr lites is recognisable. Besides this Scaphites is also found. The top of the limestone in which these fossils occur is actually the top of thick massive yellow coloured limestone.

The following is the Geological Succession of the section:

UP. GREEN Shales 3.	Hihly cleaved and fractured shales. Green in colour. BELEMNITES. BACULITES? found.
2. YELLOW MASSIVE LIMESTONE.	Thick bedded to massive. Yellow in colour. Top studded with the fragments of Turrelities and Scaphites.
3. LOWER GREEN SHALES.....	Highly cleaved and Fractured shales. Green in colour. Contains fossils belonging to Late Cretaceous Uncoiled genera of Ammonoidea.

No stratigraphic break is observed within the above section. Within the continuation of the same section but at a short distance the bluish grey limestone beds are met. These beds are different from the one mentioned earlier in being unfossiliferous and oolitic in texture. Probably this limestone belongs to the Oolites of Jurassic Period. I say this because of the fact that the oolites are the major characteristic of Jurassic period through out the world. Moreover the stratigraphic order renders this formation older to the first fossiliferous limestone of the yellow colour.

All these informations are based on the observations carried out on a limited and localised scale. Thus nothing can be said more definitely and specfically unless a full scale Geological exploration is carried out in the area.

ECONOMIC POTENTIALLITIES OF THE KOHAT--AREA.

THE Kohat area is of cosiderable economic importance as it contains huge resources of limestones. This limestone is presently beimg used for the construction of houses and roads. But with the industrial uplift of the area a day will come when this limestone will be utilised for the large scale production of portland cement which is so badly needed.

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