PRELIMINARY INVESTIGATION OF MUSCOVITE - PEGMATITES OF KHADANG BANDA NEAR TALASH, DIR STATE, (WEST PAKISTAN)

BY

S. MASOOD-UN-NABI

ABSTRACT

The pegmatites of Khadang Banda near Talash, Dir State, were mined by the locals for extracting muscovite. According to the informations, about 15 to 20 maunds of white mica had been extracted from the pegmatite veins which was sold at Lahore and Karachi, during the last five years. A party of M. Sc. Students under the supervision of the author conducted geological investigation of this area to study the mineralization in these veins and to asses their potential for large scale economical exploitation of muscovite.

INTRODUCTION

Talash village is situated about fourteen miles from Chakdara on Malakand - Dir highway. Khadang Banda is about three miles from Talash, towards south, and is approachable through a narrow trail. The mine is located along the southern slope of a ridge which has 6463 feet elevation. From Talash to the mine, there is an ascend of about 3600 feet which for the first one and half mile is gentle, and for the rest two miles is very steep.

GENERAL GEOLOGY

The country rocks exposed in this area are composed of slates, phyllites, various types of schists, gneisses and crystalline - limestone. Among the schists, the more common ones are mica - schsit, garnet - schists hornblende - schist. The limestone is light-gray on the weathered surfaces, and is white and coarsaly-crystalline on the fresh faces. The argillaceous formation appears to be older than the crystalline-limestone which overlies them and occupies the top of the ridges. The grade of metamorphism increases from north to south.

The country rocks are commonly invaded by basic and acid igneous intrusions which occur mostly in the form of sills. Close examination of these igneous bodies reveals that there are atleast two phases of igneous activities. During the earlier phase, basic sills had been intruded which consisted of dolerite and diorite. The later phase had more severe outbursts, and is represented by acid igneous rocks, consisting of granite, pegmatite, aplite, and vein quartz. Among them granite is more widespread and occurs as laccoliths. It is light in colour and medium grained in texture. Aplite and quartz form very thin veins and appear to be the youngest among the acid intrusions. The general strike of the rocks is east - west, with medium to high dip towards the south.

A few thin sections of the metamorphic rocks, collected from this area were examined under microscope. A short description of these slide is given below:—

Section: 1. *Dominant minerals:* Hornblende, Plagioclase.
Accessory minerals: Quartz, and Sphene.
Texture: Nematoblastic.
Name: Amphibolite.

Section: 2. *Dominant minerals:* Biotite, Garnet, Plagioclase and Quartz.
Accessory minerals: calcite, muscovite.
Texture: Porphyroblastic.
Name: Garnetiferous Schist.

Section: 3. *Dominant minerals:* Hornblende, Plagioclase and garnet.
Accessory minerals: Quartz, Sphene, and Chlorite.

Texture: Porphyroblastic.

Name: Amphibolite.

Section: 4. *Dominant minerals:* Hornblende, Plagioclase, and Garnet.

Accessory minerals: Quartz, Augite.

Texture: Shistose.

Name : Amphibolite.

Geology of Pegmatites.

Pegmatite veins are quite common in occurances in this area. The veins which have yielded muscovite are developed about half a mile east of Khadang Banda along the southern slope of a ridge of 6463 feet elevation. The other pegmatite veins are thin and some of them are not accessible. In this paper only those pegmatite veins are described which were mined for muscovite, and here for easy reference, these veins are termed as Khadang Banda pegmatites.

These pegmatites consist of two major east - west parallel trending viens which are separated from each other by about 30 feet thick schistose rock, with the same strike direction. They dip eastward into the hill at an angle of 30 to 35 degrees. Besides these two major veins (there are also some other pegmatite veins) which are thin and rarely show any muscovite mineralization, The thickness of the major veins is about 12 feet and in length they extend from 80 to 100 feet. Both the veins pinch out along the strike direction, and become thicker at dip depth than the surface exposure. The muscovite mineralization is concentarted near the middle part of the veins. They have been excavated from 6 to 10 feet along the dip depth.

The composition of these pegmatites is variable along the strike direction; in the middle they are usually rich in muscovite, whereas towards the end, quartz, and feldspars dominate. Two varieties of quartz are recognised in these veins; one is milky white and the other is gray. Both these varieties can be easily distinguished in the field. Milky white quartz forms thin veinlets which usually cut across the main body of the pegmatites.

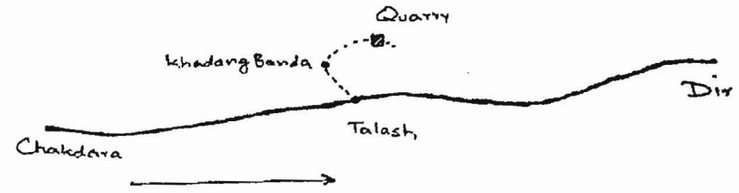


FIG. 1.

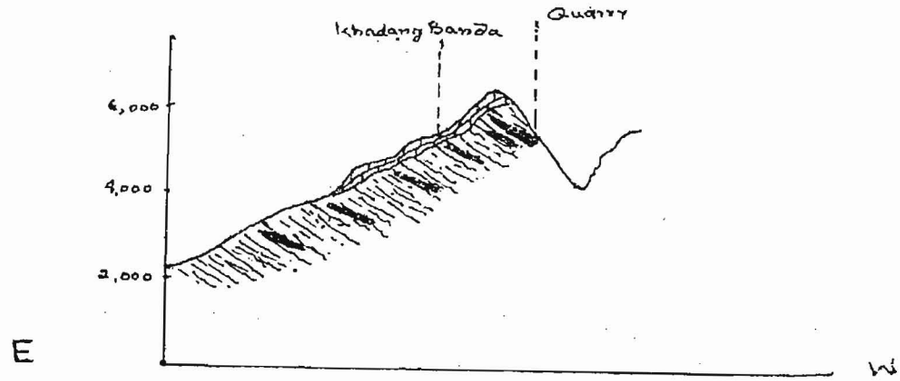
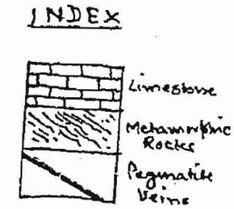


FIG. 2.



Diagramatic Sections : FIG. 1. - Location
FIG. 2. : Profile

A few other pegmatites in this area were examined which reveal sparse development of muscovite. In these veins, quartz and feldspars are the dominant minerals.

Economic Geology.

Most of the exposed parts of mica books have been scrapped by open pit (cut) mining. At present small rectangular books of 4″ × 3″ size are commonly excavated from these pits. Heamatitic concentration is prevalent which has imparted a pinkish-brown tinge to muscovite. Due to compression the muscovite books are disrupted and have become localized. The present exposures of mica in these pits do not contain any workable deposits. However, it is recommended that further work should be conducted at a few localities along the veins to ascertain the nature of muscovite mineralization at depth.

Note:—This investigation will continue in the ensuing field season.