OCCURRENCE OF QUARTZ-MONZONITE PLUGS AT BORLAI-KORLAI IN KOLABA DISTRICT, MAHARASHTRA

THE Deccan Traps in Maharashtra, excepting in Bombay Islands, are considered to be made up of different types of basalts with intrusions of dolerite at number of places. In Bombay Islands, differentiates like trachytes, andesites and intrusives like diorites and lamprophyres have been reported (Sukheswala and Sethna, 1962)[1]. However, there is no record of occurrence of any such rock types in other parts of Maharashtra excepting one occurrence of lamprophyre reported by Deshpande and Chakranarayana (1974)[2] near Murud-Janjira along the west coast. On further investigation in the nearby areas the authors discovered two intrusive plugs of a rock, which on detailed examination were found to be quartz-monzonite.

These two plugs are exposed on the western coast of Maharashtra between villages of Korlai and Borlai near Salav on an extensively spread out beach (18° 10′ N, 72° 55′ E). They show an alignment in a roughly north-south direction and are separated from one another by a distance of about 1·5 Km.

The outcrops of both these plugs are approximately oval and their longer axes are along N 15° W–S 15° E direction. The northern of the two is barely above the high tide line while the southern one is exposed only during low tide. The northern body is about 50 m in length and 25 m in width. The southern body stands about 3 m high during low tide. The northern body forms a low mound of about 6 to 8 m height above the beach level. These two bodies consist of a medium to coarse grained mesocratic rock. Towards the centre of the plugs the rock becomes coarser.

Under the microscope the rock shows hypidiomorphic granular texture. It is composed of feldspar, granophyre, pyroxene, amphibole and biotite with epidote, apatite and opaques as accessory constituents. Plagioclase is 30–33% by volume while percentage of orthoclase also varies within the same range. The content of plagioclase is between 52% and 66%. The feldspars in the marginal portion show protoclastic structure (Harker 1964)[3] and saussuritisation. Granophyre varies from 13–24% by volume and shows an increase towards the margin at the expense of the feldspars. The pyroxene is mostly subcalcic augite ($2V = 22°–30°$) and varies between 5% and 12%. It is changed to hornblende (upto 6%), which in turn is changed to biotite (2%–6%), sometimes exhibiting corona structure. The marginal portions of the plugs show an increase in the proportion of biotite and hornblende. Quartz in this rock is of two generations; one belonging to granophyre and the other represented by euhedral to subhedral crystals occupying the interstices between the early formed crystals. Epidote and chlorite are present in small amounts in the marginal portions. On the basis of the mineralogical composition and the modal analysis, the rock is identified as quartz monzonite.

These two quartz-monzonitic plugs occur in a region which is dissected by quite a large number of dykes of varying mineralogical composition, some of which are coarse grained and are lamprophyric in composition. They form dyke swarms with varying trends. None of these dykes cuts through these plugs and therefore the dykes are older than the latter.

The two plugs of quartz-monzonite pose a puzzling problem as to what they represent. The occurrence of dyke swarms of varying composition, including the lamprophyres, is considered to be indicative of the sites of ancient volcanic centres (Turner and Verhoogen, 1962)[4]. Deshpande and Chakranarayana have suggested this possibility while reporting the occurrence of lamprophyres from Murud–Janjira. It may therefore be suggested, that these two plugs represent the deep seated portions of the conduits of such volcanoes in which by differentiation of the basaltic magma which was being poured out to form the lava flows, quartz-monzonite was formed. However, a possibility that these two plugs could be the upward extended appendages of a deeper seated pluton cannot be ruled out.

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