THE AGE OF MALANI SERIES

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Introduction: The term 'Malani beds' was given by Blanford to a volcanic series of rocks in the Malani district of erstwhile Jodhpur State in western Rajasthan. The representatives of the Malani suite of the volcanics and the associated Jalar and Siwana granites are present as inliers of the basement in the Punjab alluvium and lie on the prolongation of the Aravalli zone in the northwestern portion of the Indian Peninsular Shield and at Tusham (Hissar) about 400 km northeast of Jodhpur and in the Kirana Hills (Sargodha district, Pakistan) about 450 km northwest of Tusham.

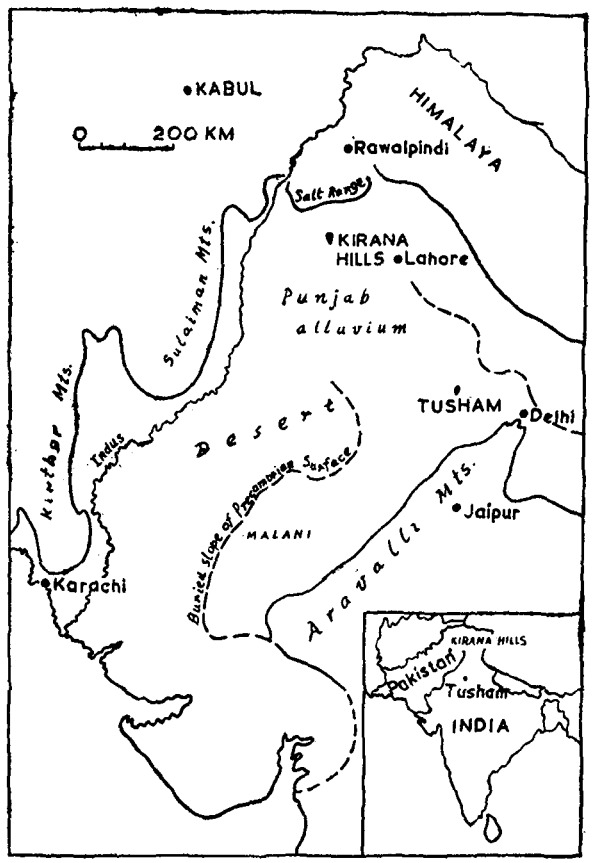

Figure 1. Location Map: Malani igneous suite.

Geological position: Because of the isolated and scattered nature of the outcrops of the Malani igneous suite, no definite idea can be formed about their geological position and age. Only at one locality, the lower boundary of the Malani volcanics is observed. This is at a point 4 km southwest of Miniari village (25°40' : 73°12') in the Pali district of Rajasthan, where they underlie red shales or slates of the Aravalli System. The upper boundary is observed in the scarp north of the city of Jodhpur

where the Malani lavas are overlain with erosional disconformity by the trans-Aravalli Vindhyan Jodhpur sandstone.

In the Kirana Hills (72°40′ : 31°55′), the volcanics are associated with quartzites, shales and slates, which have some resemblance to the Ajabgarhs of northeast Rajasthan. In the Tusham Hill (75°53′ : 28°54′) the felsites conformably overlie the quartzites, which probably belong to the Delhi or Aravalli System.

Auden (1933) provisionally correlated the Malani acid lavas with the Porcellanite Stage of the Lower Vindhyan Semri Series. He established that the Porcellanite Stage consisted largely of silicified tuffs. This identification has been challenged by Ahmad (1962) who regards the rocks of the Porcellanite Stage as varvites of glacigene origin.

Bose (1956) on a study of spores regarded the Basal and Porcellanite Stages of the Semri Series as Lower Cambrian.

Geochronology: According to Sarkar (1968), K-Ar ages of the Malani rhyolites and the associated granites indicate that their emplacement took place at about 600-780 m.y.

Vinogradov *et al*, 1966, obtained an age of 1100 ± 50 m.y. for zircons from the Siwana granite of the Malani igneous suite.

Recent Rb-Sr age determination of the rocks of north Peninsular India by Crawford (1970), Crawford and Compston (1970) and Davies and Crawford (1971) show that the provisional correlation of the Malanis with the Tusham rocks and Kirana rocks is no more valid and should be abandoned. The Malani rocks have been accurately dated at 745 ± 10 m.y.; Kirana rocks at 870 ± 40 m.y. and the Tusham rocks at 940 ± 20 m.y. (Crawford, 1973—personal communication). The Malanis can be correlated with the Upper Vindhyan; the Tusham rocks are Pre-Malani but Post Delhi and the Kirana rocks are late Precambrian. Material of Kirana age has been found in the Permocarboniferous boulder bed of the Salt range.

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