

# SCIENTIFIC CORRESPONDENCE

## Geochronology at N.G.R.I. Hyderabad

In a recent review (*Jour. Geol. Soc. India, Vol. 36, p. 95*) of the work of the National Geophysical Research Institute as given in its Annual Report for 1988-89, Dr. Ramakrishnan has questioned the usefulness of our Rb-Sr geochronological results on the volcanic rocks of the Chitradurga Group. Considering the general audience for which annual reports such as ours are intended and space limitations, individual project progress reports do not include sufficient detail on scientific justification, objectives, stage of completion and interpretation of data on-hand to justify a serious review of their scientific merit. So, it is not clear how the reviewer could reach sweeping conclusions on such meagre and incomplete information.

Our Rb-Sr work on different suites of Dharwar volcanics has been summed up as geologically meaningless just because the Rb-Sr results of Crawford on a few such rocks more than 25 years ago could not be meaningfully interpreted. The reviewer has overlooked more recent Rb-Sr works such as by Hawkesworth *et al.* (*Earth Planet. Sci. Lett.*, 25, 251, 1975) on the Rhodesian greenstone belts, Jahn *et al.* (*Contrib. Miner. Petrol.* 80, 25, 1982) on komatiites of the Onverwacht Group, South Africa, and Weis and Wasserburg (*Geochim. Cosmochim. Acta.* 51, 973, 1987) even on cherts of the above formation. In our report, we have presented Rb-Sr dates on carefully selected samples from several metavolcanic suites (Ingaldhal, Mardihalli, Gadag, Sandur and Shimoga) and the Chitradurga granite that is believed to intrude the volcanics, as part of our effort to estimate the duration of deposition of the thick volcano-sedimentary sequence and to set a lower limit to the age of the stromatolitic cherts in the Sandur Schist belt. Parallel efforts on their Sm/Nd dating are not yet complete. Though the Rb-Sr isochron for each suite was sufficiently well-defined to infer a corresponding date, the dates were invariably younger than that of the Chitradurga granite at 2.6 Ga. We have explained this seemingly inconsistent age relationship between the granite and its host volcanics as due to resetting of Rb-Sr systematics selectively in the volcanics due to post-extrusion processes like hydrothermal interactions. Wholerock-mineral isochron age of the granite (Fig. 20) does indicate the response of the granite on a mineral scale to such a secondary thermal event long after its emplacement. So the apparently younger dates on the volcanics are not geologically meaningless but do point to a hitherto unknown early Proterozoic thermal event experienced by the greenstone-granite complex.

The reviewer has completely overlooked our other immediately succeeding report (Fig. 21) on the dating of mafic dykes for the first time in this country through the internal isochron approach demonstrated recently by R. L. Armstrong as one of the very few techniques available for dating mafic dykes. As for his recommendation that we should have selected other unstudied areas, it is unfortunate that he has failed to scan the Appendices I and II of our Annual Report listing quite a few of our papers presented in national and international conferences on the dating of late Cretaceous mafic dykes in the Dharwar Craton, alkaline complexes and selected Peninsular gneisses.

With a little more care in reading our report, the reviewer would have avoided a biased and grossly misleading evaluation of our work.