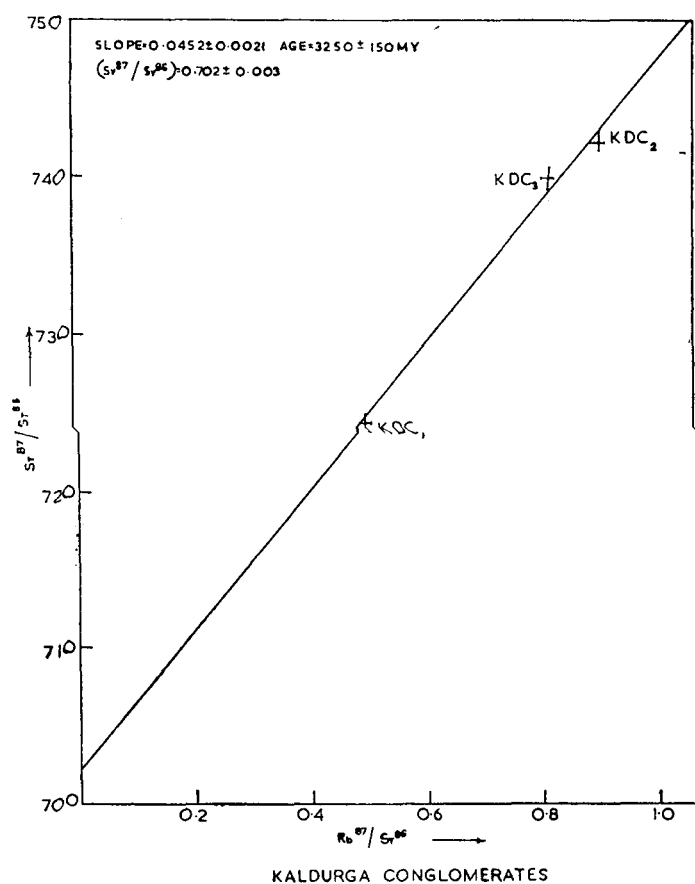


# THE AGE OF SOME GNEISSIC PEBBLES IN KALDURGA CONGLOMERATE KARNATAKA, SOUTH INDIA

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Conglomerates of Precambrian age occur in several parts of Peninsular India and both sedimentary and autoclastic origins have been proposed for them. It has also been suggested that some of these are possibly relicts of the Dharwar basement. In view of the high ages obtained for Precambrian gneisses in other continents e.g. 3600-3900 m.y. for the amphibolite facies gneisses from Greenland, (Black *et al*, 1971) a measurement of their ages is of great importance. In the present note, Rb-Sr isochron studies on granitic pebbles in the conglomerates of Kaldurga are described.



The conglomerates from Kaldurga in Tarikere valley (75°45'E, 13°45'N), forming part of the Shimoga belt of the Dharwar schists were selected for study. The conglomerates weather into large rounded masses and tors, standing out boldly in the midst of the chloritic schists, spilites and keratophyres. The boundaries between the pebbles and the matrix are well marked. The specimens analysed are listed below.

KDC 1—Granitic pebble containing albite or acid oligoclase (with little orthoclase or microcline), quartz and a small fraction of biotite altering to chlorite.

KDC 2—KDC 3—Gneissic pebbles with distinct foliation containing albite, quartz and biotite.

The Rb and Sr contents were measured with the home-made Nier type mass-spectrometer while the ( $\text{Sr}^{87}/\text{Sr}^{86}$ ) ratios were measured with the AEI MS 702 mass spectrometer using peak switching and integration of ion currents, the output being read on a DVM. The analytical data are given in Table I.

TABLE I

Specimen	Rb <sup>87</sup> (ppm)	Sr <sup>86</sup> (ppm)	(Rb <sup>87</sup> /Sr <sup>86</sup> ) at	(Sr <sup>87</sup> /Sr <sup>86</sup> ) at
KDC 1	9.5 ± 0.1	18.6 ± 0.2	0.505	0.7243 ± .0007
KDC 2	14.7 ± 0.1	16.0 ± 0.1	0.908	0.7422 ± .0006
KDC 3	13.6 ± 0.1	16.4 ± 0.1	0.820	0.7390 ± .0007

The accompanying figure shows that the three conglomerates define an isochron of age ( $3250 \pm 150$ ) m.y. with an initial ( $\text{Sr}^{87}/\text{Sr}^{86}$ ) ratio of ( $0.702 \pm .003$ ).

Field observations by Pichamuthu (1935) reveal chlorite schists at the base with interbedded spilites, keratophyres and banded ferruginous quartzites passing upwards into grits and conglomerates. While the observation of crush conglomerates in some locations led early workers to postulate an autoclastic origin for all the conglomerates of Mysore State, Pichamuthu (1935) has referred to the different lithology of the gneissic and granitic pebbles from the surrounding gneiss, especially the absence of potash feldspar in the former. The high age (the highest obtained in the Rb-Sr studies of this laboratory on the Precambrians of Karnataka) of 3250 m.y., lends support to the idea of these conglomerates being derivatives of older rocks – the Dharwar basement referred to by workers of this area. There appear to be only two instances of age values higher than 3000 m.y., for this area, in literature, viz: Crawford's isochron of 3065 m.y. for gneisses (1969) and K-Ar dates for hornblende schists from Hutti gold mines (Sarkar, 1968). Further work is in progress.

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