Structural history as a clue to crustal evolution

K. NAHA

Laporan (Report)

Professor K. Naha gave the above talk on the 26th April 1994 at the Geology Department, University of Malaya. Prof. Naha who is Emeritus Professor at the Indian Institute of Technology at Kharagpur India, as well as a CSIR Emeritus Scientist, is presently in Malaysia as External Examiner for Geology, University of Malaya.

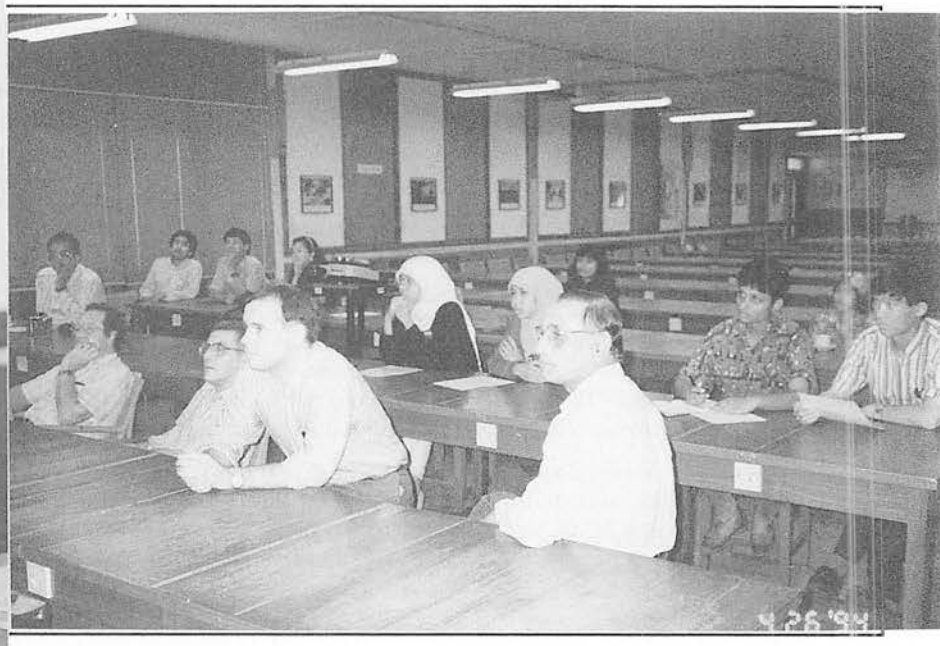
Abstrak (Abstract)

The interrelation between the supracrustal and the gneissic rocks in the Precambrian terranes all the world over has been a contentious issue for a long time. Detailed structural studies in association with other investigations can solve this problem and thus help in tracing the history of crustal evolution. The gneiss — supracrustal relations as gleaned from structural history in the Precambrian of southern and western India provide such an example.

Granitic gneisses covering a large tract in the Precambrian terranes of Karnataka in southern India and Rajasthan in western India bear ambiguous relationship with the metamorphic suite of rocks. Foote considered the Peninsular Gneiss of Karnataka to be the basement on which the supracrustal Dharwar rocks lie unconformably, whereas Smeeth thought the gneisses to be younger. Likewise, Heron took the Banded Gneissic Complex of Rajasthan to be the basement of the supracrustal rocks of the Aravalli Group, while the gneisses were believed by Crookshank to be the migmatized product of the Aravalli-Raialo rocks. Analysis of structures of all scales has shown that in both these terranes the supposed gneissic basement has reacted by ductile deformation during the earliest folding of the cover rocks. The basement-cover contact is marked by conglomerate at some places, particularly in Rajasthan, but this interface is extensively blurred by migmatization synkinematic with the first deformation of the supracrustal rocks. Identical style and orientation of structures due to superposed folding in the gneisses and the cover rocks, presence of a fabric truncated by and earlier than the structures of the first phase in the cover rocks within small enclaves in the gneisses, and wide range of radiometric dates of the Peninsular Gneiss and the Banded Gneissic Complex, can be best explained if the gneisses **in their present state** are taken to form an extensively remobilized basement.

K. NAHA

G.H. Teh



Mar-Apr 1994