Rajasthan is an important segment of the Indian shield, containing varied geological and tectonic features. Its Precambrian geology is typified by multistage reworking of the Archaean basement (BGC), a feature that has created problems concerning basement-cover relations and has led to repeated development of Mesoproterozoic and Neoproterozoic fold-thrust belts of the Aravalli and the Delhi Supergroups, having cr.ustal rifting and probable suturing history. The extensive Malani Magmatic Suite is a unique feature of Indian geology. Rajasthan has a special place in the metal scenario of India, for it contains world class deposits of lead, zinc and copper (Agucha, Zawar, Dariba, Khetri etc.), and a host of non-metallic mineral deposits, all contained in the Proterozoic fold belts. The Proterozoic paratectonic cover sequences of the Vindhyan and evaporitic Marwar hold promise for defining the Precambrian-Cambrian boundary. The Precambrian geologic and tectonic polarity in this region was toward west, which appears to have persisted in the Phanerozoic, since the truncated Mesozoic and the Cenozoic sequences are developed only in the western part of Rajasthan. The Quaternary and Recent geology is characterised by the frequent climatic fluctuations, disorganisation of the drainage systems (lost Saraswati river) and development of the Thar desert. All these and other features make the geology of Rajasthan interesting on many counts. The book under review contains papers dealing with some of these aspects covering regional geology, boundary problems, Proterozoic plate tectonics, magmatism, Neoproterozoic basin evolution, Phanerozoic and Quaternary geology of western Rajasthan, and the economic mineral resources. The book is a collection of nine papers presented at a seminar organized by the Department of Geology, M.L. Sukhadia University, Udaipur on 30th June 1998.

In a review paper on the Precambrian geology of the Aravalli mountain, A.B. Roy and P. Kataria have discussed the problems and nature of the basement rocks, tectonostratigraphy of the Aravalli and the Delhi Supergroups and Neoproterozoic evolution of the trans-Aravalli region. It is clear that much of the confusion is primarily because of lack of adequate and crucial data-sets, particularly on systematic geochronology and stratigraphy. The geochemical changes across Archaean-Proterozoic boundary in the Aravalli fold belt and the adjoining BGC have been studied by B. Sreenivas, R. Srinivasan and A.B. Roy who concluded that Cr, Ni and sc •show less concentration in the volcanics and quartzites of the Palaeoproterozoic Delwara Group (Lower Aravalli) than that in similar rocks of the Archaean BGC, and that the ô ^{13}C excursion exists in the dolomite of the Jhamarkotra Formation which they conceive to be Palaeoproterozoic in age. While these are useful data, the contention that the Aravalli is totally Palaeoproterozoic. in age (p.59) is questionable. The localities of the samples are therefore crucial in defining the Archaean-Proterozoic boundary solely on geochemical criteria. The consideration on palaeosol at BGC-AravaIIi contact for sampling is confusing. It is mentioned that the sericite schist, representing metamorphosed palaeosol, is the product of kyanite-grade metamorphism at > 1.7 Ga (reference not given), and subsequent K-metasomatism. The Lower Aravalli rocks are in greenschist facies, and hence kyanitegrade regional metamorphism was not attained by these rocks. Obviously, an alternative interpretation for the sericite schist (the supposed palaeosol) at the Aravalli-BGC contact may be required.

An overview of Neoproterozoic magmatism represented by the Erinpura granite, the volcanics

of the Sindreth and the Punagarh Groups, and the Malani Igneous Suite has been given by S K. Bhushan. The author has rejected plate tectonic setting (p. 107), but has confusingly suggested that the Erinpura and Abu S-type granitoids resulted from collision tectonics and continental under-thrusting (p. 106). The model of magmatic event (p. 107) does not indicate such a situation. There is also no evidence that the emplacement of the Erinpura granitoids and the Malani Igneous Suite, separated in time, are unrelated events, as suggested. The contention that the Erinpura and Abu granitoids have been generated by "underthrusting of continental material"

does not agree with their "calc-alkaline affinity". Fig. I does not depict this situation, where the disposition of the Delhi fold belt and its relation with these granitoids and the upper[lower crusts are confusing.

In a related paper D.S. Chauhan has discussed the Neoproterozoic evolution of western Rajasthan involving Malani volcanism and Mar-war sedimentation. The author considers that these two events have cause-and-effect relationship in that the Malani thermal event caused crustal thinning and subsequently the formation of the Marwar sag basin. Neither S.K. Bhushan nor D.S. Chauhan consider plate interactions for explaining the Neoproterozoic geology of western Rajasthan, but their models do not seem to contradict plate tectonic evolution of the terrain. Such an evolutionary model for the Aravalli and the Delhi fold belts has been outlined by S. Sinha-Roy in which two Proterozoic ophiolitic suture zones, namely, the older Aravalli suture (RakhabdevJharol) (ca. 1.5 Ga) and the South Delhi suture (Phulad) (ca. 1.0 Ga), have been identified. The timing and the sequencing of crustal interactions and suturing events are, however, constrained by inadequate geochronology.

Anil Bhandari has given an account of the Phanerozoic geology, particularly the biostratigraphy of the different sedimentary basins, namely, Barmer, Bikaner, Nagaur and Jaisalmer basins of western Rajasthan. The author has also briefly discussed the evolution of the Jaisalmer basin and the hydrocarbon potential. It is a useful and fairly exhaustive account, based on the information on sub-surface geology studied by the Oil and Natural Gas Corporation. In a review paper, Amal Kar describes the geomorphic processes and their responses during the Quaternary period in four major geomorphic terrains of Rajasthan, particularly in the Thar desert region. Emphasis has been given to drainage network evolution as affected by climatic fluctuations during the last ca.600 ky, aeolian processes and neotectonism in western Rajasthan. The landform map of Rajasthan is quite informative, but the value and utility of the map would have increased if the scale was larger and the symbols more legible.

Two papers have been included on economic geology. Mihir Deb succinctly describes the metallic mineral deposits of Rajasthan which may serve as a framework for preparing a database, so far lacking for the base metal, gold, uranium, tin-tungsten and other metallic mineral deposits and occurrences in Rajasthan. It is a good attempt to provide a genetic classification and deposit types of the above metal commodities occurring in Archaean and dominantly Proterozoic rocks of Rajasthan. M.K. Pandya, P.S. Ranawat and T.K. Pandya briefly describe the types and the distribution of industrial minerals and decorative stones of Rajasthan. A map showing the locations of the major deposits would have been useful.

The book compiles thematic and synthesis-type papers which are useful in evaluating the present status of knowledge and in identifying problems for further work on geology and metallogeny of Rajasthan. The cumulative reference list is fairly exhaustive, covering ca.20% of the book pages. The book will serve a useful purpose for the students and research workers.

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