

Quadrangle Surface Geological Maps published by the United States Geological Survey are produced to serve the needs of the community. Geological Survey of India has already initiated studies on these lines with the founding of the Quaternary Geology and Environmental Geology Divisions. The community stands to benefit immediately from studies in these Divisions, besides the studies of the type published in this volume, most of which have potential applications.

The Gondwana Geological Society, Nagpur is to be congratulated for planning this symposium, which was held during 19-20, February 1999 and the editors deserve full credit for the efforts made to bring out this volume. This publication is strongly recommended to be acquired by all institutions dealing with earth science.

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NEOGENE SEQUENCES OF INDIA: IGCP PROJECT-329, "PALAEOGEOGRAPHIC AND PALAEOECOLOGIC EVOLUTION OF PARATETHYAN BASINS DURING NEOGENE AND THEIR CORRELATION TO GLOBAL SCALES".

Compiled by A.C. Nanda and Anil K. Mathur, Geological Survey of India Miscellaneous Publication no.64, Hard cover, 80 pages. Inland: Rs.97/- (Foreign: US \$55, 33.5).

This book represents contributions made by the members of the National Working Group of IGCP Project-329. The objectives of the project alongwith a brief account on the geological setup of the northwestern and northeastern Himalaya is provided in the introductory part of the book. This is followed by eight contributions from the members of the National Working Group, which are mostly routine review papers.

R.K. Saxena begins the book by providing a detailed account of palynoflora recovered from the Kasauli, Upper Dharamsala, Upper Murre Formations, Indus Group of Ladakh and the Siwalik Group of northwest India. Enlisting of the palynoflora is followed by their biostratigraphic applications alongwith some comments on depositional environment and palaeoclimate. V.P. Mishra provides a very brief review of the megafloreal assemblages of the Neogene of northwestern Himalaya, indicating the locations of mega-plant fossil bearing beds.

A.K. Mathur presents a concise account of the reported occurrence of mollusks, ostracoda and charophytes from the Neogene sequences of northwestern Himalayan basins. It is only Mathur's contribution, which attempts correlation of the Indian Neogene continental faunal groups with those of the Paratethyan sequences and observes the appearance of *Candona (Candona) neglecta* in both the basins to be at the same stratigraphic level. The study also finds the ostracode assemblage to be very useful for broad correlation of the widely separated continental facies. R. Patnaik and A. Sahni report some very interesting data on the distribution of Upper Siwalik murids and gerbellids within and outside India. The great diversity of Mus and its palaeobiogeographic distribution led them to suggest an Indian subcontinental origin and later migration to the Asian continent. Atleast three migration events – starting from early Pliocene, then late Pliocene and finally during the late Pleistocene are postulated.

There are two papers dealing with magnetostratigraphy of the Siwalik Group. S.J. Sangode

provides very concise review of the magnetostratigraphic studies carried out in the Siwalik belt of the Indo-Nepal sector. The review points out the constraints in conducting the magnetostratigraphic studies in the Siwalik belt. A.C. Nada presents a somewhat detailed account of the recent advances that took place pertaining to the Siwalik especially in the fields of vertebrate palaeontology and magnetostratigraphy. Though very little magnetostratigraphic data are available for the Siwalik sections in the India sector, efforts are now being made to integrate the palaeomagnetic data with vertebrate fossil data (mega- as well as micro-vertebrates) to establish biomagnetostratigraphy for the Siwalik sequences. U.K. Mishra reports on the Neogene mega-plants, palynomorphs, vertebrate fossils, foraminifera and trace fossils from northeastern India. The last contribution by Alok Dave provides a good summary of the biostratigraphy of the Neogene marine sequences from Andaman-Nicobar, Krishna-Godavari and Western offshore basins of India. The data presented are based upon both surface and subsurface sequences.

One is always impressed with the diversity of studies that are presently being carried out on the Neogene sequences of India and this volume displays this divergence to some extent. It is highly regrettable that in spite of several independent studies on the Siwalik Group, an integrated study involving vertebrate palaeontology, magnetostratigraphy, sedimentology and fission track dating on selected sections of the Siwalik Group to establish a chronostratigraphic framework for the Indian Siwalik sequences is lacking. This is a pre-requisite for establishing type and reference sections for the lower, middle and upper Siwalik exposed in the Indian sector. This should be followed by the correlation of reference section of the Indian sector with the stratotype sections of Potwar Plateau in northern Pakistan. This would result in the better understanding of the climatic changes and the causes for extinction, immigration and evolution of the Siwalik mammalian fauna including the development of primates and hominids during the last few million years. Such an integrated study of the Siwalik Group will also provide a better perception of the relationship between the intensity of monsoon changes and uplift history of the Himalaya. At least some of these issues should have been undertaken by this National Working Group. Further, the problems pertaining to the age and correlation of the Siwalik and contemporaneous deposits in the northeastern Himalaya should have been addressed properly. It is very unfortunate that even after fifty years after Independence, our approach to these crucial issues has been very casual.

The title of the book "Neogene Sequences of India" is misleading and will disappoint the reader, as the papers in the book do not precisely reflect the title. Similarly the contents of most of the papers included in the volume, barring the one by A.K. Mathur, do not address the theme of the IGCP Project-329. It is distressing to find the duration of Neogene shown differently in different papers and the term has been used very loosely e.g. R.K. Saxena includes Early Miocene to Middle Pleistocene in the Neogene, whereas A.K. Mathur has shown (Table 2) the Neogene beginning from the Oligocene through Pleistocene. Again in the concluding section, the Table 1 shows the time span from the Eocene to Quaternary. This kind of time scale for the Neogene is highly misleading. Hence there should have been a section in the introductory part with regard to the definition of the Neogene before discussion other aspects. The only positive points of the book are good get up and low price.

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