

**QUATERNARY GEOLOGY OF NARMADA VALLEY – A MULTI-DISCIPLINARY APPROACH.** Special Publication No.46, Geological Survey of India, Calcutta, 1997, 125p. Rs125/-, \$45, £14.50. –

This volume containing 11 papers deals exclusively with different aspects of the alluvial fill in the Narmada Valley of Madhya Pradesh extending between Jabalpur in the east and Harda in the west over a distance of about 400 km. The thickness of this fill varies from 10 to 130 m. Except for paper No.9, all others are by the Officers of the Geological Survey of India indicating that this is essentially the contribution from this organisation.

The paper (1) on geomorphology of the region, prepared using the imagery on 1:500,000 and 1:250,000 scales, presents a geomorphic map (Fig.1, p.2) with conventional units signifying denudational and depositional landforms aided by the earlier available geological maps of the region. Geomorphology of the alluvial fill in terms of 3 terraces,  $T_0$ ,  $T_1$  and  $T_2$  is recognised and forms the subject matter of the next paper (2).  $T_0$  and  $T_2$  are depositional and  $T_1$  is mainly erosional. Subsurface geology of the region (3) was facilitated because of the availability of data from 77 boreholes obtained from the erstwhile Exploratory Tubewells Organization (ETO) and the present Central Ground Water Board (CGWB). This study has enabled recognition of at least two major E-W faults, one on the northern side of the valley, affecting the Vindhyan and Mahakoshal, and the other in the south within the Mahakoshal, resulting in a trough in between, into which the Gondwana was deposited.

The next paper (4) may be considered as the major contribution in this volume dealing with Quaternary stratigraphy. A very good effort has been made to include the study of soils and their characteristics along with those of sediments, to arrive at a stratigraphic column consisting of 7 formations. This paper is well illustrated with a coloured geological map (Fig.4, Opp. p.40) and excellent photographs, sections and tables. This is bound to become a good reference paper for future studies in this region. Palaeomagnetic study (5), besides those on lithology and fauna, can provide data for purposes of correlation and age determination (Fig.10, p.77). It is established that the tephra horizon and the *Homo erectus* skull discovered earlier in this region belong to Brunhes normal polarity epoch and are hence younger than 0.73 m.y. and the Quaternary sedimentation in the Narmada Valley may date back to Lower Pleistocene.

Based on detailed petrographic and chemical studies of the tephra occurring in a formation here (Upper Pleistocene), it is tentatively inferred (6), that the material (of highly explosive, low viscosity, silicic volcanism) must have been derived not from any nearby source as normally envisaged, but far away from Mt. Toba (Sumatra) in Indonesia. Another interesting inference from this study is that since only one primary ash fall tephra bed is reported from other areas in the Peninsula, it is possible that all these are homotaxial and are of Upper Pleistocene age. Except for a thin layer of coarbonaceous clay in a couple of sections in the entire region of study, none seemed to contain palynomorphs (7). This near absence is attributed to intense oxidation of Early and Middle Pleistocene sediments. The paper on fossil mammals (8) is a good review paper on the status of our knowledge of these in the Narmada Valley indicating their affinities with others elsewhere in the world (Table 1, pp.100-101).

That all collections of mammalian fossils made in the years 1830-1880 AD from Narmada Valley and preserved in the Natural History Museum, London have not been fully recorded and described is evident from the next contribution (9) which is an attempt at systematic description of some of those. According to the author, the fauna of the Narmada alluvium is different from and advanced over that of Siwalik, and the zoogeographical affinities are more with Eurasian than with the African. A new subspecies of Indian wild dog is reported in the next paper (10). The last

one (11) is perhaps intended to recapitulate the known earlier find of *Homo erectus*, the only documented fossil of early man in this region.

By and large the material has been well presented with appropriate maps, sections, photographs, etc. A few errors have, however, crept in. It should be "plateau remnants of Deccan Traps" (Fig. 1, p. 2. Index) and not "remanents". The latter term is used in magnetism. Captions for figures 1 and 2 on pages 10 and 11 have to be interchanged. The scales represented on Fig. 2, p. 11 and Fig. 1, p. 20 are almost the same, but the geological details are a little different. The Lameta is missing in the latter. Facie (see item 5 of Index to Fig. 4, Opp. page 40) is not the singular of Facies. On page 66 in Fig. 2, E, F, G and H are missing. How does one get cubes of 2.5 cm length from a cylinder of 2 cm diameter of 2.5 cm length (p. 67)? In the first column on p. 69, Fig. Nos. 2 on lines 7 and 12 must be replaced by nos. 3 and 4 respectively. It may be mentioned that investigations made in the same belt by the scientists of the Physical Research Laboratory, Ahmedabad (Proc. Ind. Nat. Sci. Academy, 54A, No. 3, 1989, pp. 418-424) indicate that (i) based on the study of magnetic polarity the sediments are indeed younger than 0.73 m.y. and (ii) that preliminary examination of material suspected to be volcanic ash did not inspire any confidence on such an origin for the material.

This publication is a laudable attempt by the Geological Survey of India to focus on one area of study and marshal all the data available from that organisation, using different tools and methodologies. It is hoped that similar publications can be expected in the near future as well.

*Cuddalore*

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## ANNOUNCEMENT

**CONTACT PROGRAMME ON HIMALAYAN GEOLOGY AWARENESS FOR MASTER'S LEVEL STUDENTS: 7-17 June, 1999.** A short term contact programme sponsored by the Department of Science and Technology (DST), New Delhi, on the above topic will be conducted in WIHG Dehra Dun during 7-17 June 1999. This 11 day programme aims to expose students of M.Sc. and M.Tech. (those who are currently doing their post-graduation) in Geology/Geophysics to basic knowledge in Himalayan Geology and to motivate the young students to undertake researches in Earth Sciences. Besides lectures and interaction in various laboratories of the Wadia Institute of Himalayan Geology, the programme also provides an opportunity to visit the Himalayan terrain for field work for 4 days.

Applications on plain paper are invited from students who are currently pursuing their post-graduation in Geology/Geophysics, giving name, address (permanent as well as for correspondence), telephone, fax and email address (if available), date of birth and details of academic career from class 10th onwards, mentioning any prizes, scholarships and other distinctions received. In addition, they should also provide a brief (about 250 words) write-up on their research interests. The application recommended and forwarded by the Head of the Department, should reach The Director, Wadia Institute of Himalayan Geology, 33 General Mahadeo Singh Road, Dehra Dun - 248 001, U.P. Fax: 0135-625212; Email: wihg@nda.vsnl.net.in on or before 30th April, 1999. Selected participants will be informed by 15th May 1999. Second class to and fro train fare from place of study/residence, boarding and lodging during the training period will be provided to the selected candidates.