$\xrightarrow{\text{Rearranges}}$ Cu(II) salt. x H_2O + diaminehydroflouride + diisopropylphosphoric acid.

It may be concluded that anion plays a vital role in Cu(II) chelate-catalysed hydrolysis thereby changing the Lewis acid character of the central metal atom. The bulk of the diamine also governs the catalytic activity. The Cu(II) perchlorate complexes of TMEN and TMPD are the most effective catalysts studied so far.

The authors thank Dr P. K. Ramachandran for his keen interest and Dr R. V. Swamy for constructive criticisms. One of the authors (USS) acknowledges financial support from CSIR, New Delhi.

5 November 1987

1. Gellman, S. H., Petter, R. and Breslow, R., *J. Am. Chem. Soc.*, 1986, **108,** 2388.
2. Wagner-Jauregg, T., Hackley, B. E. Jr., Lies, T. A., Owens O. O. and Proper R., *J. Am. Chem. Soc.*, 1955, **77,** 922.
3. Courtney, R. C., Gustafson, R. L., Westerback, S. J., Hyytiainen, H., Chaberek, S. C. Jr. and Martell, A. E., *J. Am. Chem. Soc.*, 1957, **79,** 3030.
4. Gustafson, R. L. and Martell, A. E., *J. Am. Chem. Soc.*, 1962, **84,** 2309.

MID-HOLOCENE SEDIMENTS OF WARNA BASIN, SANGLI DISTRICT, MAHARASHTRA (INDIA)

T. D. TANDALE
Irrigation Projects and Water Resources Investigation Circle, Central Building, Pune 411 001, India.

ALTHOUGH a few riverine alluvial deposits of the Krishna basin of western upland of Maharashtra State have been dated, data on the age of alluvial deposits along the major tributaries of the Krishna river are lacking due to non-availability of detable material. Recording the occurrence of the carbonized fossil wood from alluvial deposits of Warna river for the first time seems to be significant from palaeogeomorphic and archaeological point of view.

The geology of the Warna basin in the area around Chandoli is marked by a series of Creteceous-Eocene flows of Deccan Trap flood basalts. They are capped by laterite duricrust at higher level and by the riverine deposits in the valley sections. Along either banks of Warna river near Chandoli (73°52′5″—17°8′55″), the basal semiconsolidated conglomeratic bed is overlain by fine red lateritic soil. The contact of these two horizons is marked by (about 0.30 m thick) blackish red soil containing organic matter in which fossil wood has been encountered during the foundation excavation of the Warna dam (figure 1). The lower portion of the red fine lateritic soil is devoid of gravels, pebbles, cobbles, etc. while the upper portion of

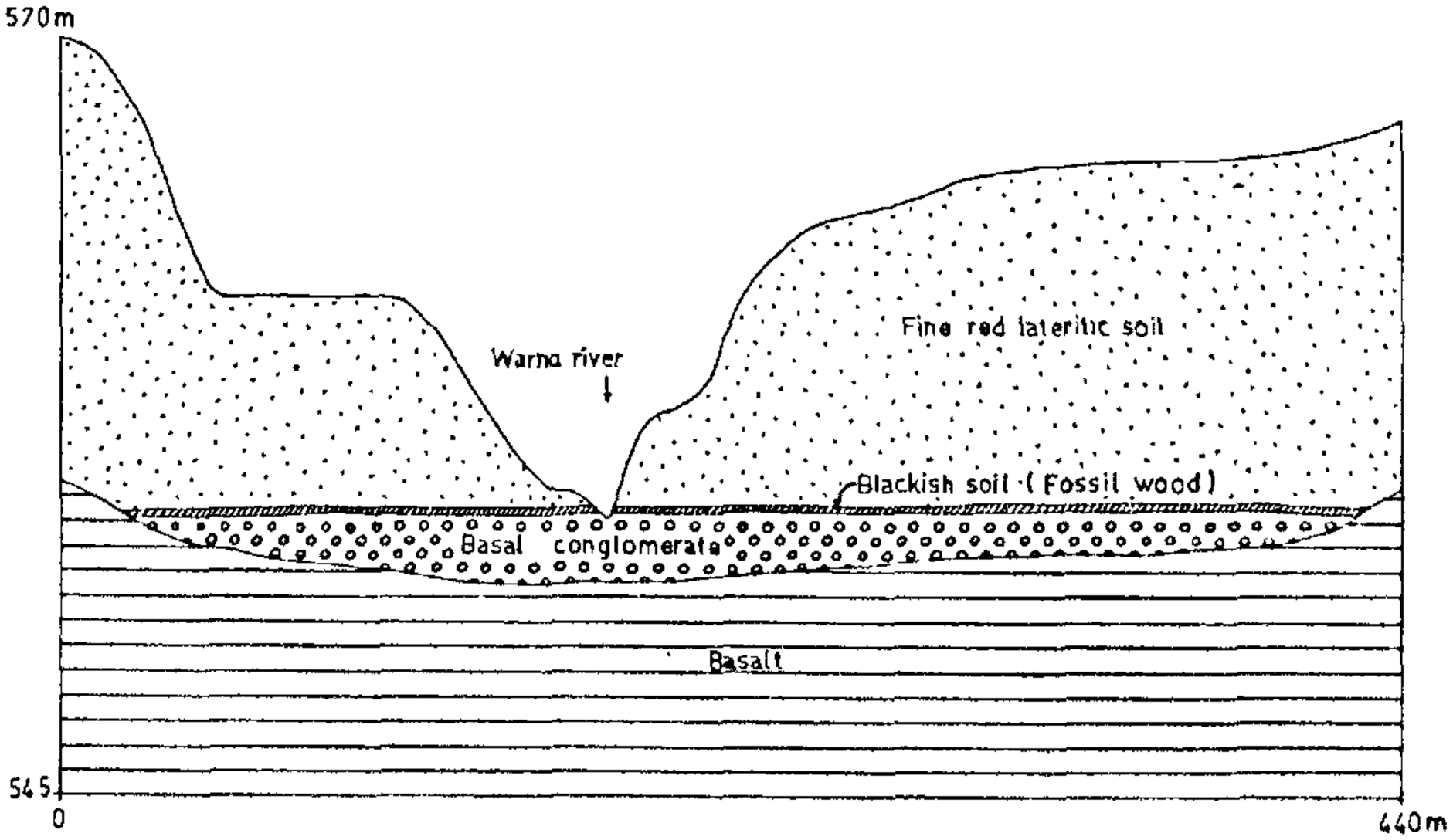

Figure 1. Geological section across Warna valley at Chandoli.

the soil (about 1.5 m thick) contains gravels and pebbles.

The carbonized fossil wood was dated at the Birbal Sahni Institute of Palaeobotany, Lucknow by carbon-14 dating method. The age is furnished as 3580 ± 110 years B.P. (BS – 616). The age of the fossil wood encountered in the foundation excavations of the Dhom dam near Wai has been reported to be 38480+8940−4125 years B.P.[1]

It is noted that the fossil wood from Dhom dam was encountered at 8 m below the present river bed level and is about 10 times older than the one from the Warna dam encountered at 2 m above the present bed level. It is also noted that both the localities fall in almost identical geologic, geomorphic and climatic environments. The laterite duricrust levels in the Dhom dam vicinity (i.e. Mahabaleshwar) are above the laterite levels in the Warna dam vicinity. The difference in altitude is about 520 m. The notable difference in age of the deposits and laterite duricrust levels appears to be due to post-trappean tectonic activity in the area.

18 July 1987; Revised 14 December 1987

1. Rajguru, S. N. and Kale, V. S., *J. Geol. Soc. India, Bangalore*, 1985, **26**, 16.

FELSIC VOLCANICS FROM THE KHETRI COPPER BELT, RAJASTHAN

R. C. GATHANIA and P. R. GOLANI
Geological Survey of India, D-23, Saraswati Marg, Banipark, Jaipur 302 016, India.

THE Delhi Supergroup of rocks (1600 m.y.) covers an area of about 36,000 km^2 over a NE-SW strike length of about 800 km from Delhi in north to the Rajasthan-Gujarat border in south. It consists of 10,000 m of thick pile of meta-sediments and meta-volcanics grouped into three distinct lithofacies viz. lower calcareous (Raialo group), middle rudaceous and arenaceous (Alwar group) and upper argillaceous (Ajabgarh group). Definite indications of volcanism towards the end of sedimentation are provided by basic flows. After Heron's[1] regional work on north-east Rajasthan, Das Gupta[2] gave a fair account of the geology of Khetri Copper Belt where members of Alwar and Ajabgarh groups are well-developed. Although Das Gupta briefly mentioned about a 'possible andesite' near Udaipur (27°44′ : 75°29′), the association of felsic volcanics

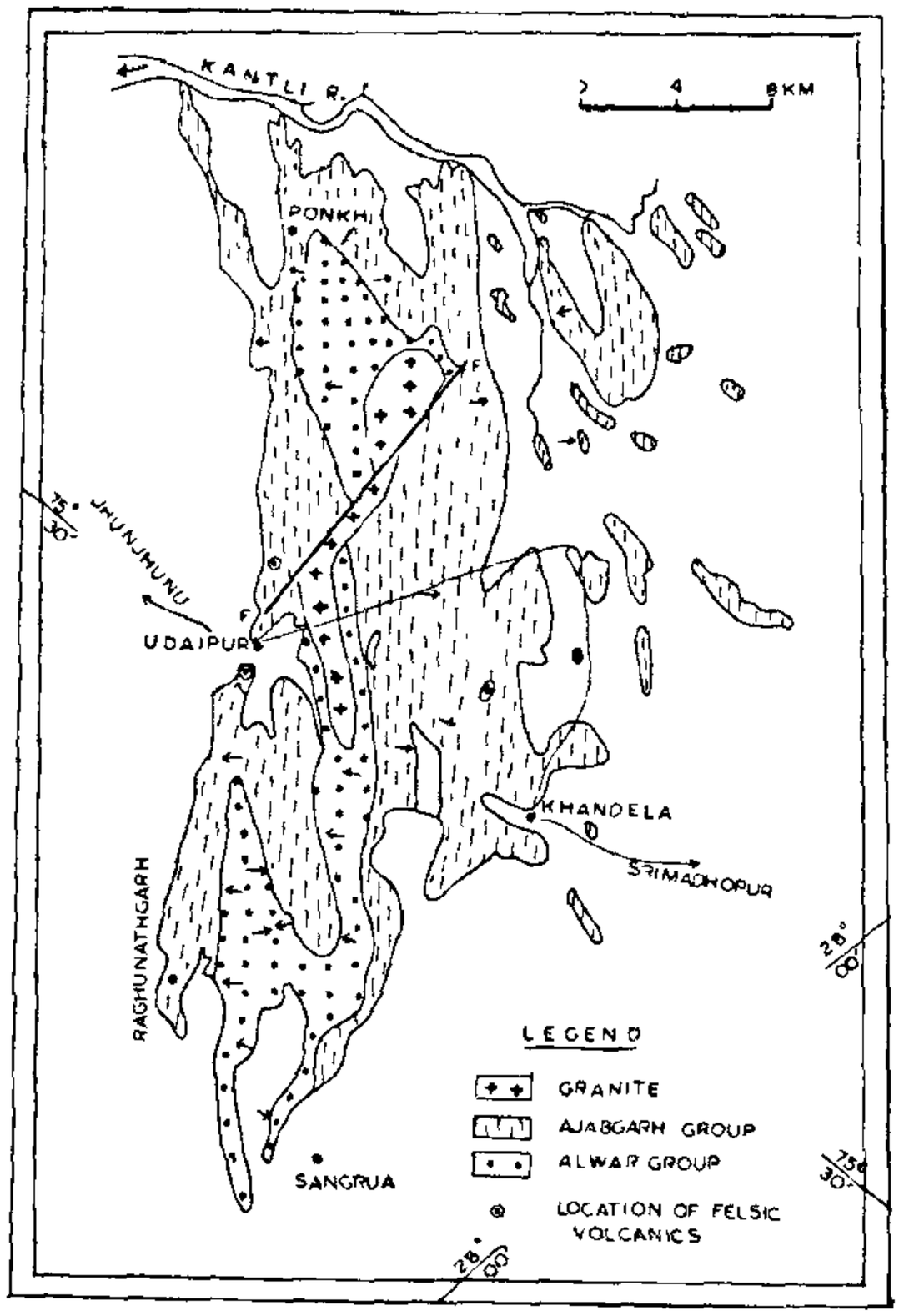

Figure 1. Generalized geological map of the central part of the Khetri Copper Belt, Rajasthan (modified after Heron[1]).

in Delhi Supergroup is described for the first time from the central part of the Khetri Copper Belt (figure 1).

The metamorphites of the central part of the Khetri Copper Belt are disposed in the form of a large scale antiformal anticline, the core of which is occupied by granitoid bodies. The felsic volcanics, represented by fine-grained tuff, crystal tuff and lithic tuff, are located on the western part of the above mentioned regional fold and occur as conformable beds within the grey-banded phyllitic quartzite and carbon phyllite of the Ajabgarh group. A maximum thickness of about 25 m is recorded in the volcanics 3 km north-east of Udaipur. Crystal tuff and lithic tuff occur as thin layers, rarely exceeding 1 m, within the fine-grained tuff having sharp as well as gradational contacts. The volcanics show imprints of Delhi deformation in the form of tight folds and a penetrative axial plane cleavage. Vesicles and amygdules, well-developed in fine-grained tuff, are stretched in the cleavage planes. In less-deformed areas, however, a high