

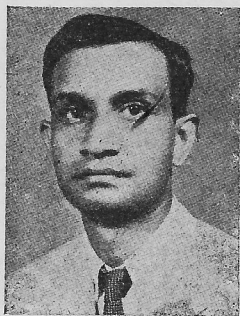
NARMADA PLEISTOCENE DEPOSITS AT MAHESHWAR*

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ABSTRACT.—The Joint Universities' Narmada Valley Expedition recently organised (1952-53) by the Deccan College Research Institute, Poona, facilitated the study of the Narmada Pleistocene deposits between Mandaleshwar town and the Sahasradhara Falls in the Nimar District of Madhya Bharat (now M. P.). A short account of the observations made at that time is presented in this paper.

THE Narmada is famous for its fossil-bearing implementiferous deposits of the Pleistocene age. Its stratigraphy near



Hoshangabad and Narsinghpur has been studied in fair detail by De Terra and Paterson in the year 1935. They recorded two gravel beds (Lower and Upper) separated by sandy and/or clayey deposits. Both the gravels yielded early palaeolithic hand-axe and flake industries. The faunal evidence suggests the Middle Pleistocene age of these deposits.

The sites investigated by De Terra and Paterson (1939: *Studies in the Ice Age in India and Associated Human Cultures*, pp. 313-326) lie in the middle course of the river, while those studied recently, are further downstream from Hoshangabad (Fig. 1). Here the conglomeratic gravels and their associated deposits are exposed on both the banks of the river between Mandaleshwar and the Sahasradhara Falls, though they are best displayed opposite Mandaleshwar up to the Falls.

The river-bed in this tract lies on the Deccan Trap and is much entrenched along the right bank where the depth of the water is over 60 ft. At several places between Mandaleshwar and Maheshwar, outcrops of

rock are visible in the midst of the river above the water level, while the bed is extremely rocky near the falls.

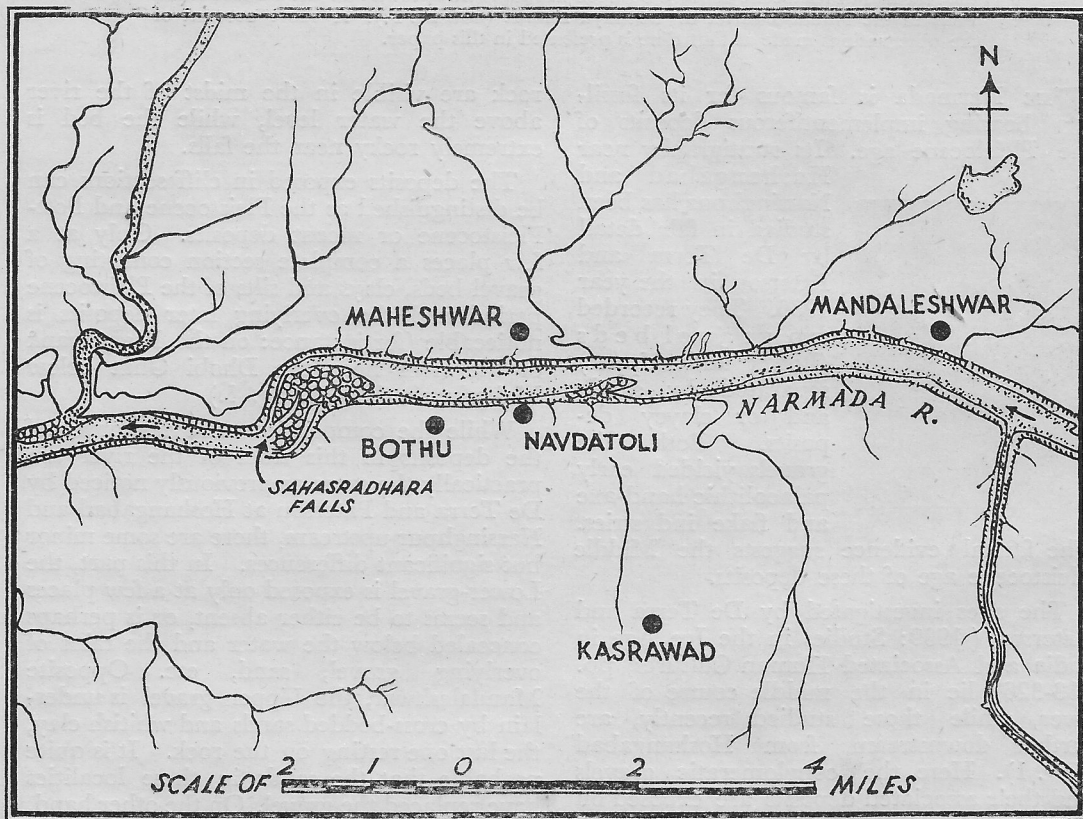
The deposits exposed in cliff sections can be distinguished as the Pleistocene and Post-Pleistocene or recent deposits. Only at a few places a complete section consisting of gravel beds, clays and silts of the Pleistocene period and the overlying later deposits is noticeable (for instance: on the Right bank of the river near the Dhobi Ghat below Maheshwar. (Pl. 36. fig. 1.)

While the composition and the order of the deposits in this tract of the river are practically the same as previously noticed by De Terra and Paterson at Hoshangabad and Narsinghpur upstream, there are some minor but significant differences. In this part, the Lower-gravel is exposed only at a few places and seems to be either absent, or is perhaps concealed below the water and the talus of overlying gravel, sand, etc. Opposite Mandaleshwar, the Upper gravel is underlain by cross-bedded sands and whitish clay, the last one resting on the rock. It is quite probable that the sands in these localities have replaced the gravel. On the other hand, the gravel and the associated clays and silts of the Upper Group, are well exposed at all the sites studied recently. In some sections they rest on the rock with a thin intervening layer of whitish clay. At some places, for example, a little down the Dhobi Ghat, the sand belonging to the Upper group being cemented, forms distinct cliffs 10 to 20 ft. high. Overlying the Upper gravel is

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a brown or yellowish-brown silty deposit 20 to 30 ft. thick. This material is extremely gullied and barren wherever it is not covered by the recent alluvia (area behind the bank near Dhobi Ghat and also near the Bothu nullah shows this feature). The right bank of the river between Maheshwar and Mandaleshwar and the left bank near the village Navda Toli consist entirely of this silty deposit. At none of the places laterite below the Lower-gravel was noticed and the deposits did not yield any fossils, save for a few gastropod shells collected from the

fig. 2.) These mounds in excavation have yielded archaeological material dating from the Proto-Neolithic to the Muslim-Maratha period and thus are a great asset in the reconstruction of the protohistory and history of this region. The mounds present a hummocky landscape and are barren; on the other hand, the adjoining terrace over which the villages are situated is under cultivation. (Pl. 36, fig. 2.) A good number of water-worn pebbles, similar to those belonging to the gravel-beds mentioned above, were noticed on the slopes of the



Text-fig. 1—MAP OF THE MAHESHWAR AREA

whitish clay of the Upper group, a little above the falls.

The present village sites of Maheshwar, Navda Toli, etc., are on the terrace developed on the alluvial deposit mentioned above. A mile or less from the banks of the river several mounds consisting of almost similar deposits rise above this flat plain. (Pl. 36

alluvial mounds. In a nullah, about a mile and a half, west of the village Navda Toli, such pebbles are bigger in size and in this respect they are comparable with the gravel of the Lower group. They form a distinct bed over the weathered trap rock and are superimposed by a very thick pale yellow alluvial deposit,



Fig. 1

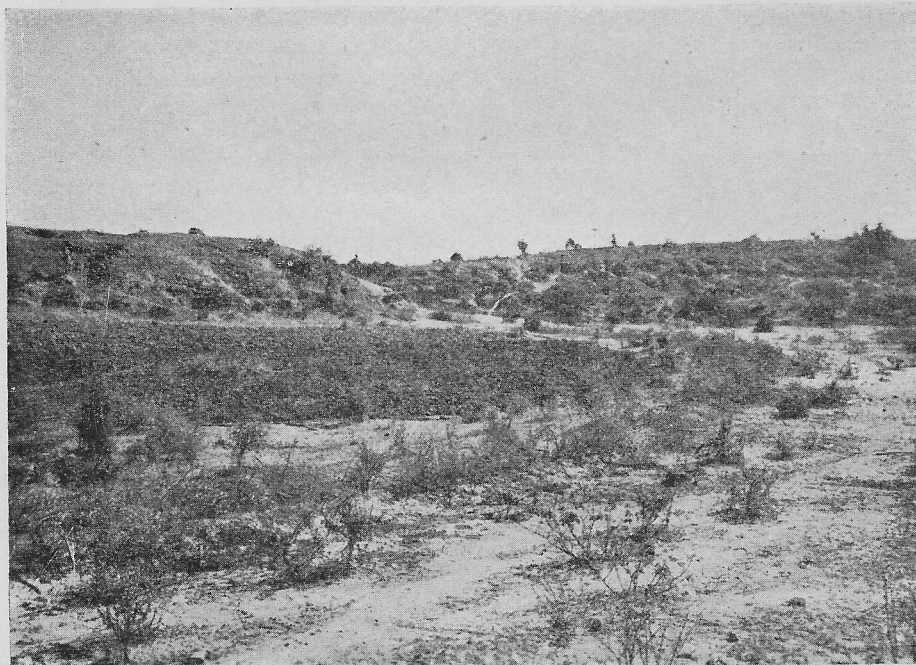


Fig. 2

JOSHI: NARMADA PLEISTOCENE DEPOSITS AT MAHESHWAR

Surprisingly enough, they have yielded a large number of palaeolithic artefacts exactly of the same type as those obtained from the gravel beds referred to above. The height at which these pebbles occur is 63 ft. above the present water level. Their occurrence at this altitude might be explained as due to any of the following three possibilities.

1. Probably they represent high level remnants of the Lower or Upper gravel-bed belonging to the Pleistocene period; for both of them rest directly on the bed rock and contain identical pebbles and the stone implements.

2. The pebbles in the gravel-bed in the nullah might have been brought to this higher level by river floods. But this seems to be less probable as there is no evidence, so far available, for their occurrence at some other place and at the same level above the river bed.

3. In the excavations of mounds at Navda Toli, structures (wells and bastions) belonging to the Muslim period were noticed. The pebbles similar to those obtained in the nullah and in the Pleistocene gravel-beds were found to have been used in their construction. It is very likely that these pebbles were picked up from the lower level near the river and brought up for building purpose. This reasoning might hold good for the pebbles occurring on the flanks of the mounds but cannot explain the presence of the cemented gravel-bed observed in the nullah.

Thus, on the evidence available at present, the first possibility seems to be more correct.

The two groups of the Pleistocene deposits at Hoshangabad and Narsinghpur have been distinguished by De Terra and Paterson on the basis of their fossil contents, characteristic implements and their stratigraphical position. But the deposits noticed at Maheshwar and near about, being devoid of fossils, have to be differentiated taking into consideration the latter two aspects only.

Complete sections having similar deposits, as recorded by De Terra and Paterson at Hoshangabad, are rare at sites studied recently. Though the gravel-bed and its associates are well exposed opposite Mandaleshwar, it becomes difficult to identify whether a certain set represents Lower or Upper group, as much mixing of pebbles, sands and clays belonging to both the gravel-beds has taken place here.

Judging from the stratigraphy of these deposits, the physiographic and other changes in this part of the basin can be summarised as follows:—

1. The deposition of gravel of the Lower group marks a beginning of the Pleistocene history of this part of the river basin. Large-sized, well-rounded pebbles of the gravel-bed indicate very moist condition of climate and great transportation of the debris by running water.

2. Aggradation culminated after the deposition of overlying silty clay. In some sections at higher levels the sands have replaced the pebbly beds. Cross-bedding in the sands further suggests their deposition in shallow water.

3. After an intervening dry climatic phase, the river again entrenched its bed due to increase in precipitation, whereby the previously deposited gravel of the Lower group was partly disturbed. The duration of moist climate does not seem to have been a longer one to facilitate complete washing out of the clay of the Lower group. The entrenchment of the channel provided necessary space for the increased volume of water.

4. The succeeding change from moist to dry condition introduced a second cycle of aggradation. During this period the deposits of the Upper group were laid down. The gravel of this group is less coarse and comparatively loose. In some cases the gravel is not resting on the clays of the Lower group but lies directly on the rock.

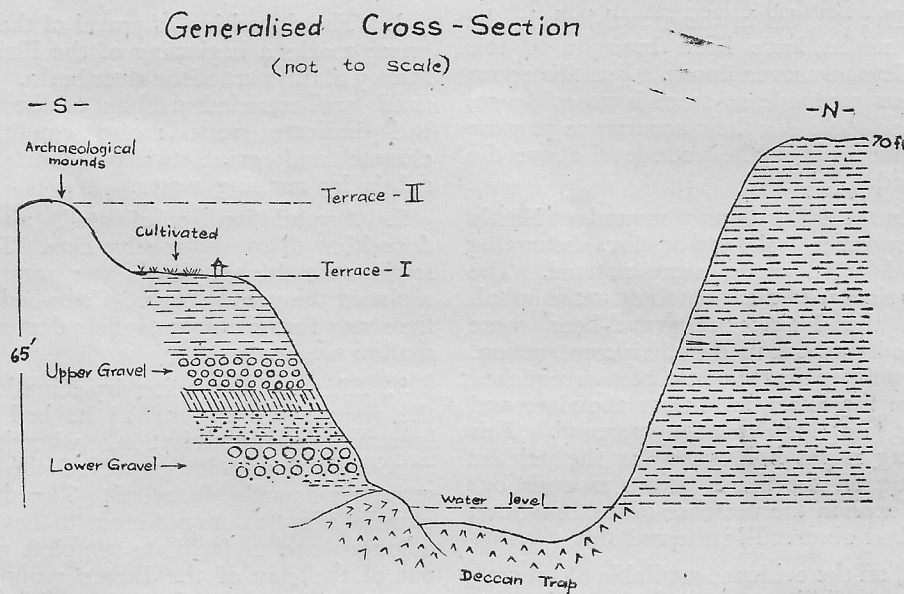
EXPLANATION OF PLATE 36

Fig. 1—A complete section showing the Lower gravel in the foreground, the Upper gravel in the middle, superimposed by alluvial deposit. (Right bank of the Narmada near the Dhobi Ghat below Maheshwar.)

Fig. 2—The archaeological mounds are in the background. The field in the front shows the terrace 1-2 on which the villages are situated. (Near the village Navda Toli.)

5. It has been suggested above that the gravel-bed encountered in the Bothu nullah is a high level counterpart of the gravel of the Lower or Upper group. Most probably it belongs to the Lower group. The Sahasradhara Falls suggests the former knick point in an ungraded river bed. There is a possibility of having a gravel deposit near the river in the same line of the Bothu nullah and similar to the one observed in the sections in the Bothu nullah, but washed away when the barrier at the falls was broken in the succeeding wet phase.

and there are records of rise of water level almost to a height of 70 ft. or more, i.e. at the height of the village sites. There is every reason to believe that during the early historic periods the floods were of a high magnitude. The mounds, where excavations were carried out recently, owe their material to the flood-deposits. As the floods became less and less intense, river water shrunk with the result that the sites of the the historic periods were abandoned, and the new establishment took place in the present area near the bank. Thus, the archaeologi-



Text-fig. 2 — SECTION ACROSS THE NARMADA NEAR MAHESHWAR

6. After the aggradation of the deposits of the Upper group, again a slight change in climate took place whereby the river deepened its bed exposing both the groups on the cliffs. The valley got widened during this period, and in this operation the river partly removed the material from the deposits and redeposited it at lower levels near the water surface in the form of a gravel spread which is visible wherever the water is shallow.

The river is susceptible to seasonal floods

cal mounds indicate an old alluvial terrace and the present site of the village, the new terrace (Fig. 2). Both these terraces contain deposits of post-pleistocene or sub-recent age. These are the main terrace levels observed in this part of the river but there are also some subsidiary benches at several places where the gravels and sands of the Lower and Upper groups are hardened into conglomerate and thus have resisted the erosive action of the river.