

And yet the picture is by no means completely clear. The chemical analyses (CaO, MgO, Al₂O₃, and SiO₂ percentages) showed no marked difference between the inland and coastal miliolite samples. Petrological studies were also not by themselves useful in this context, and even scanning electron microscopic results indicated that samples from well above sea level at Umrethi (84m AMSL) and Bhatchel (130m AMSL) Paradoxically showed subaqueous characters and no aeolian features. Consequently these studies cannot, either by themselves or together be used in support of any particular hypothesis. As someone who has faced similar problems, the reviewer is able to appreciate Marathe's quotation from Karl Butzer describing the present status of pleistocene studies as an "almost insurmountable morass of unintegrated and seemingly contradictory data, an unlimited number of alternate stratigraphic frameworks and a nomenclature so debased as to be worse than useless..."

Aimed at a geoarchaeological reconstruction of Quarternary events, this study does not sufficiently emphasise the nature of man-land relationships either in the Hiran Valley or Saurashtra in general. This may be partly the result of the paucity of archaeological material. The total number

of Lower Palaeolithic artefacts is 19, out of which only 3 from the Umrethi dam site and one from the base of Adi Chadi Wao are stratified. There are about 60 Middle Palaeolithic artefacts—an amorphous collection — out of which more than 40 are scrapers. None of these tools were found in a stratified context. Without the environmental background it would then be very difficult on the basis of the archaeological data alone to make any except the most generalised statement about the prehistoric cultures. The radiometric dates are based on ¹⁴C as well as ²³⁰Th/²³⁴U assays. With regard to the oyster shells from Badlapur it would have strengthened the case to have obtained some geochemical data on the type of shell material, degree of re-crystallization, if any, etc. The U/Th dates should, as even the dating laboratory maintains, be used with great caution at this stage, as much more work is necessary before we can accept such dates with any degree of precision.

In the Indian subcontinent new fields of research are being opened up and new techniques being applied. Despite its limitations Marathe's study marks an advance in the field of prehistoric archaeology in India and is a worthwhile contribution to the subject.

S. J. Guzder

D. M. Wagh

'Agricultural Planning A micro level approach with reference to Maval taluka Pune district' — a report of the I C S S R supported research project

It is rare to find a microlevel study of a taluka like the one presented by D.M. Wagh on agricultural planning of Maval taluka, an area nestled amidst the Sahyadri and straddling athwart to occupy the western fringe of the 'Desh.' The imperative for such a study in the context of contemporary Indian scene, when sustained self-sufficiency in agriculture is proving elusive, is only too obvious to need any justification. What

appears intriguing is the choice of the area having less than 20% of the land under cultivation and squeezed between invading forces of Indian's two major metropolitan centres, Bombay and Poona. Does one expect the study to induce a degree of agricultural development of the taluka or a model of agricultural planning to evolve in such an area?

The report (mimeographed), running

into 300 pages with 89 neatly drawn maps and arranged into 11 parts, is based on a detailed study of 42 villages which constitute one-fourth of the total number in the taluka, and incorporates in its analysis comprehensive data collected from 585 households, drawn from an universe of holdings stratified on the basis of their size—a truly herculean effort. The study underscores the importance of physical determinants in outlining the relief, slope, rainfall, drainage and soil which provide the underpinning to many of the subsequent observations. At places, this none-too-unfamiliar treatment turns monotonous and pedestrian. The idea of the relief of the area can be had from the fact that about half the villages have more than 11° and more than the $1/3$ rd the number not only has a slope higher than 11° , but also an annual rainfall exceeding 2000 mm.

A major preoccupation with the researcher has been the division, classification and regionalization of the taluka in the hope (perhaps) of seeing the processes at work more clearly, or at times as a device to simplify the details to a manageable proportion. The division of the taluka into physical land units numbering 77, on the basis of slope, rainfall, soil and grass cover, through a laborious and none-too-sophisticated technique hardly suggests a serious attempt at integration to produce a simplified picture. These physical land units appear to have been forgotten subsequently in the report and prove their redundancy. The exercise continues and the subsequent chapter produces yet another set of units, land-units for planning, this time 81, further grouped into 30 core and 51 marginal units, the core units being groups of two or more village and the marginal units being solitary villages. The underlying determinants of the land units for planning remain the same as in case of physical land units, the only change being the substitution of slope by the percentage of net sown area. The fiftyone units not conforming to the remaining thirty

have been left out as of no consequence and the sample is drawn from the 30 core units comprising 117 villages, on the basis of a hierarchical pattern of selection. The usefulness of this 'unit' making exercise is not adequately proved either by the application of its results in planning or by the adoption of these units as a spatial frame for the 'action programme.'

With three fourths of the land under forest and grass cover, agricultural land use attains only a low profile, rice being the principal crop, occupying less than 10% of the taluka.

The landuse has not changed perceptibly—not much shrinkage or expansion of land under crops. The villagescape, a generalized picture, with an analytical details of nine villages, followed by irrigation and irrigability brings the reader closer to reality and presents a live picture of agriculture and economy of Maval. The village studies with accompanying maps, undoubtedly stand out as the significant original work in the report. The Infrastructure, indispensable or incidental to agricultural planning, is considered at great length and occupies more space than one would normally expect. Here one finds every thing about Maval that did not find a place in the report earlier, from road density and fodder development to vaccination, transport, health and education.

Regionalization encore, this time agricultural, preceded by a cluster analysis, ten clusters and three agricultural regions, developed, potential and backward, the ones not related to others. The ten clusters, certainly valid to the extent that the discrete village units may have a fair degree of similarity with other members of the same cluster, are easily reflected in agricultural regionalization where the regions are based on raw scores of variables. Perspective on the man land relationship in the area gives an idea of population pressure (density per sq. km. of net sown area). position of agricultural labour, holdings and their fragmentation'

culturable waste, forest resources, biomass resource base, social forestry, commercial energy framing, forage resource and what have you. This is another section where one is encountered with the problem of sorting out grain from the chaff, the earlier one being the 'infrastructure.'

The study comes out finally with an action plan giving out regionwise (not villagewise) development plan in which the agricultural economy is related to 4 'F's, fruits fodder fuel and food. The suggestions that follow are not unfamiliar but make an impact when translated on a spatial plane. The proposed landuse and infrastructure for both backward as well as potential region - whatever the latter term may imply - are very specific and can prove very promising in the implementation of the plan. The recommendations are multifaceted and leap beyond the immediate objective of an agricultural plan, including in their fold, household industries, water-supply, market organization, besides agriculture, for each of the three regions.

The report, undoubtedly a micro level

study leans heavily on physical determinants. The picture of Maval that emerges out is rather static, without there being any hint of its socioeconomic evolution or a historical continuity. The underlying processes of change or stagnation, and the role of contemporary urban and industrial forces, to which the region is so submissively subjected, figure rather inadequately. The recommendations lack a pointed focus and appear diffused.

The observations of this reviewer notwithstanding, the study provides a mine of information collected from primary sources, and a vivid picture of the agricultural landscape of Mawal based on a laborious analysis of data, all too well compressed and accommodated in the report which is sure to be of immense value in the planning of the area.

One hopes that the study soon sees the light of the day and is available to wider interests.

K. R. D.

Subhash Chandra Mukhopadhyay

Geomorphology of The Subarnarekha Basin

The University of Burdwan Publication, 1980, pp 332 Price Rs. 50/-

There are only a few detailed Geomorphological studies pertaining to different areas in India. Mukhopadhyay's book is a commendable effort in this direction and this work is a remarkable contribution to the field of fluvial Geomorphology. The main objective of the study is to critically examine the fluvial environment of the part of Chota Nagpur, Orissa and West Bengal. The author's extensive field work in the area is reflected in his interpretations, deductions and conclusions. He has heavily relied on the statistical techniques which are appropriate and have yielded good results, though occasionally the inferences appear far fetched especially where they are

not tagged with the field observations. This is well illustrated in a technique where an exponential curve is fitted to a river profile. The deviations in the actual and computed thalwegs of River Subarnarekha are well supported by field evidences

It is also to be noted that the work is more or less representative of the drainage basin development over a single homogeneous lithology, since Subarnarekha with all its tributaries drains an area of uniform lithology underlain by archaeans.

The Chapter on general Geology which is of fundamental importance in such studies is well brought out. The discussion of Geolithology structure and tertiary uplifts