SUMMARY

In the coastal plains of West Bengal and Orissa, a large area is covered by a series of Quaternary surface formations. In this investigation an attempt has been made to study the sequence of geomorphological evolution, Quaternary geology and stratigraphy of parts of Midnapur District, West Bengal, India, covering an area of about 8,500 sq km, bounded by latitudes 21°38' N - 22°30' N and longitudes 87°5' E - 88°15' E. The area lies in the south-western fringe of the erstwhile Bengal geosynclinal basin.

Detailed geomorphological study was carried on air photos in conjunction with topographic sheets followed by intensive field check. Finally, the geomorphic map thus prepared, was compared with the Landsat Imagery. The area is divided into six broad geomorphic divisions : (1) Kharagpur Laterite Upland (2) Older Deltaic Plain (3) Younger Deltaic Plain (4) Recent Coastal Plain (5) Terraced Plain and (6) Filled Valley-cuts. The geomorphic divisions exhibit mostly fluvial landforms, except unit 4 which is dominated by marine landforms.

The Kharagpur Laterite Upland, Older Deltaic Plain and Younger Deltaic Plain occur as three NNE-SSW trending belts, coming down stepwise towards eastsoutheast; the Recent Coastal Plain trending northeast-southwest occurs further south along the present coast line. The Terraced Plain represents three sets of alluvial terraces : (1) Older terraces (2) Younger terraces and (3) Recent terraces; these terraces are arranged stepwise towards the rivers. The Filled Valley-cuts (Older and Younger) are cross-drainage systems that developed along ancient slopes during the Quaternary low stands of the sea level. These valleys were carved on the plain on which they occur and were later partially filled up by the sediments of the next younger plain.

On the basis of soil characters, the six geomorphic divisions have been grouped into four bigger units. These are : (1) Kharagpur Plain now represented by the Kharagpur Laterite Upland and is characterised by a) laterite hardcrust and b) mottled clay soil,

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(2) Belda Plain comprising the Older Deltaic Plain, Older Terraces and Older Filled Valleys and is characterised by calcareous concretionary clay soil, (3) Contai Plain consisting of the Younger Deltaic Plain, Younger Terraces and Younger Filled Valleys and is characterised by a brown mottled soil and (4) Digha Plain consisting of the Recent Coastal Plain and Recent Terraces and is characterised by negligible soil development.

The Recent Coastal Plain and the Khajuri Coastal Plain (a coastal plain corresponding to the Younger Deltaic Plain) have been established as coastal plains by their surface morphology. These coastal plains are characterised by a series of beach ridges and dune ridges along with fluvial landforms. The deltaic nature of the Younger Deltaic Plain and Older Deltaic Plain has been established both by surface morphology and subsurface sedimentary sequences; continuous belt-like nature of these deltas is due to coalescence of individual deltas. The Kharagpur Laterite Upland whose surface is totally masked by the lateritic soil, also represents a series of coalesced deltas.

On the basis of (1) antiquity of landforms (2) thickness of soil profiles (3) superposition and (4) valley-cut and fill relation, the sequence of landform belts has been established from oldest to youngest : Kharagpur Laterite Upland - Belda Plain - Contai Plain - Digha Plain. These four landform divisions represent four Quaternary alluvial formations, each of which has originated during a high stand of the Quaternary sea level. In subsurface each of these formations is represented by a definite sedimentary sequence, occasionally capped by specific soils. Following the code of the stratigraphic nomenclature, these units are given the status of Formations for which formal names have been proposed. The four Quaternary Formations established within the area are, from oldest to youngest : Kharagpur Formation, Belda Formation, Contai Formation and Digha Formation. The four landform belts established on the surface represent the exposed top portions of these four series of sediments deposited in an offlap sequence during four highstands of the Quaternary.