

PART – ONE
GENERAL

CHAPTER – ONE

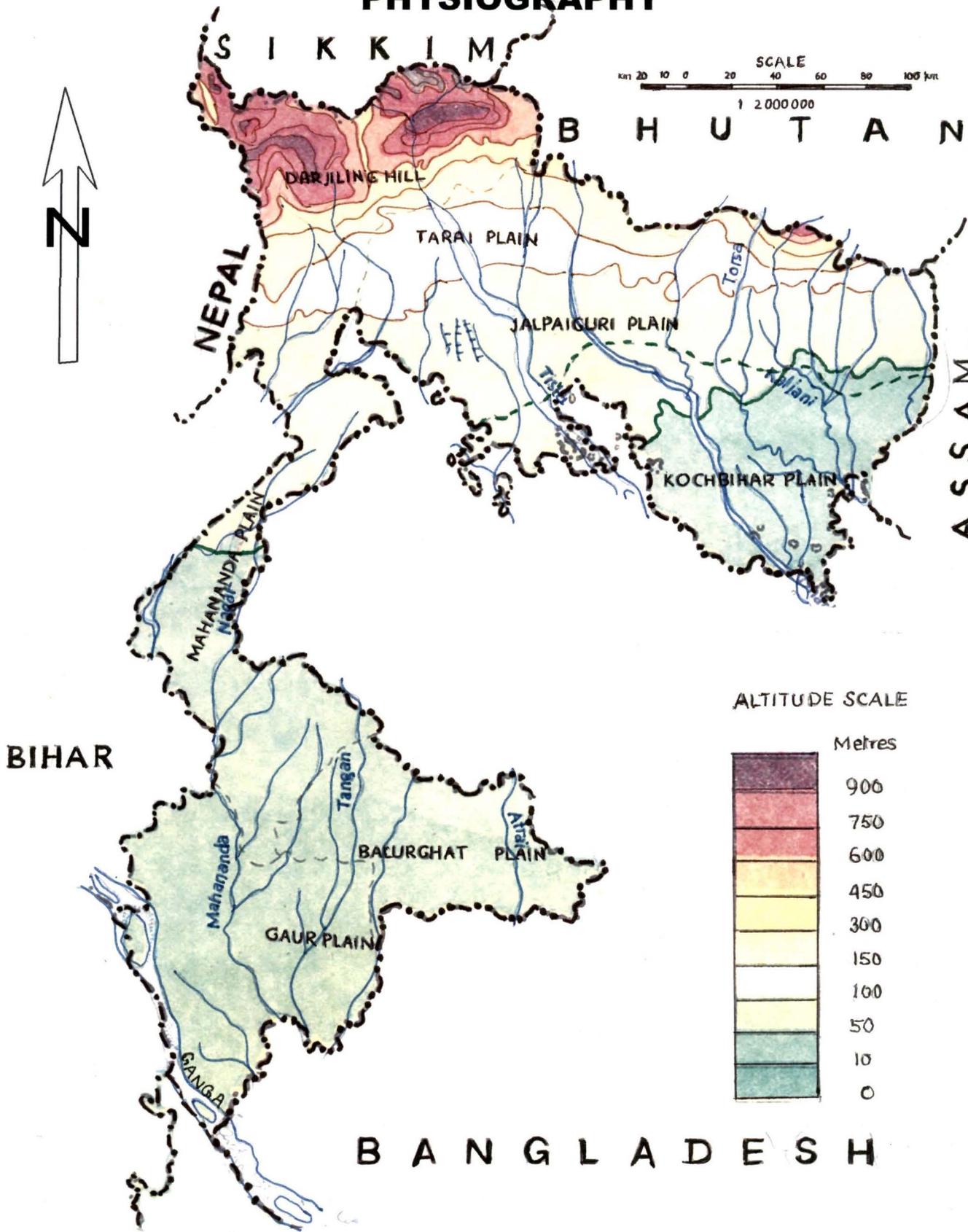
1.0 Geology

North Bengal is covered by diverse rock types ranging from the oldest Archaean metamorphics to sub-recent and recent alluvium. This region lies partly in the extra peninsular region and partly in the plain. The stratigraphic succession of the rock units in the area is indicated below :

Quaternary	Sub-recent to recent	Newar alluvium
	Pleistocene	Older
 Unconformity	
Tertiary	Mio-Pliocene	Siwalicks
		Coarse grained sand stone silt stone and conglomerate
 Main Boundary Fault	
Palaeozoic	Permo-carboniferous	Gondwanas
		Feldspatic and micaceous quartzitic sandstone carbonaceous slates with thin seams of crushed coal and pebble/boulder bed.
 Tectonic / Erosional contact	
Riphean (Algonhian)	Buxa formation	Ortho-quartzite variegate phyllite inter bedded with quartzite and dolostone (stromatolitic locally)
	Darjeeling formation	Garnet, biotite schist, staurolite- Kyanite sillimanite schist, garnet- biotite sillimanite gneiss and migmatites.
Pre-cambrian (Riphean)	Daling Darjeeling Group	Slates and phyllite phyllonite epidiorite chlorite sericite schist carbonaceous mica schist and quartzite
	Daling formation	

NORTH BENGAL PHYSIOGRAPHY

SCALE
km 20 10 0 20 40 60 80 100 km
1 : 2 000 000



ALTITUDE SCALE

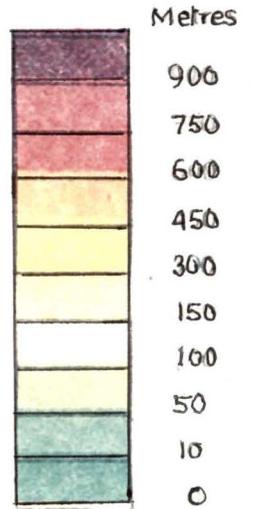


FIG 1.1

Source-NATMO, Kolkata

Fig. 1.1 Shows the physiography map of North Bengal.

The various rock formations of North Bengal is given below :

1.01 Daling Darjeeling Series

The mountainous tract of the Himalaya extends over the hilly areas of districts of Darjeeling and Jalpaiguri. This tract is characterized by folding thrusting and metamorphism with resultant inversion in stratigraphy. The siwalik formations are overlain by the Gondwanas along the main boundary fault followed by the Darjeeling formations. The Dalings are represented by slate phyllite, phyllonite, epidiorite, quartzite and schists of different grades of metamorphism while the Darjeeling comprises of migmatites and variety of high grade schistose and gneissic rocks. The Daling series always underlies the Darjeeling series. The grade of metamorphism part over the Daling series.

The Dalings occupy a large area of about 13 kilometer wide in the Tista valley. Presence of graphitic material emplaced mostly within shear zones has been reported from Rakti river.

The Darjeelings are represented by golden and silvery mica schists, garnetiferous staurolite-kyanite mica and coarse mica gneisses and migmatites graphitic material has been reported to occur in these rocks along shear zones. The experts are of the opinion that both Darjeeling and Daling series belong to a Riphean age and a lower Paleozoic age.

1.02 Buxa Formation

It comprises predominant by of dolostone, phyllite and quartzite etc. occupying the northern part of Jalpaiguri district around Buxa and Jainti Hills. North of Buxa series lies the Daling series. A clear cut contact between the Daling and the Buxas cannot be demarcated even though the Dalings are argillaceous in nature while the Buxas are an admixture of argillaceous, arenaceous and calcareous facies. Besides, the presence of

hematite schist and banded hematite jasper in the Buxas are also very distinctive feature. The rocks are assigned a Riphean age and some geologist consider them to be of a younger age.

1.03 Gondwanas

The Gondwana formation occurs in the district of Jalpaiguri and Darjeeling. These rocks as a tectonic unit sandwiched between the tectonically underlying Siwaliks and the overlying Dalings or Buxas. The thrust plane between the Gondwanas and the siwaliks is known as the “Main Boundary Fault”. Gondwana rocks consist of pebbles, boulder slates, quartzites, quartzites slates and carbonaceous slates and coal seams. The whole assemblage of the Gondwanas including the coal has undergone intense metamorphism giving rise to sandstones. The Gondwana sandstone shows normal bedding, but the upper part of it is interbedded with clay slates. Coal occurs in the band of Gondwana rocks, which runs from near Pankhabari to Dalimkote and with small gap up-to the Jaldhaka river. The Gondwana series is also noticed near Tindharia in Darjeeling district.

1.04 Tertiary Rocks

The Tertiary rock formation is noticed in the “Terai” region of Darjeeling district and northern part of Jalpaiguri district. These rocks consist of detritus material of coarse hard red sandstone, siltstones shale and pseudo conglomerate, belonging to the “Siwaliks”. This formation occupies the foothill areas of Himalayas. It consists of fine grained sandstone at the lower level and basal red clay stone and pebbles in the upper layers. The lenses of lignite and fossil wood are commonly present in this formation.

1.05 Older and Newer Alluvium

The older alluvium is the Pleistocene deposit. It comprises generally unconsolidated sediments and consists of boulders pebbles and gravel along with sand silt calcareous and limonitic concretions. The older alluvium generally occupies high grounds forming raised-terraces and mostly covers the southern portions of foot hills and

forms part of the Gangetic alluvium in the area known as "Terai" Many such terraces have been identified in the "Terai" region.

The newer alluvium is of recent origin. The newer alluvium is mostly confined to the southern part of raised terraces and gradually merges with deltaic plains of south-undivided Bengal. It occupies the northern and western part of Uttar Dinajpur and Dakshin Dinajpur, western part of Malda.