

Chapter I : Study Area.

CHAPTER - I

Location

Tripura, a small state in the North Eastern rear of India is a remarkable region of the country covering an area of 4116 sq. miles or 10,477 sq. km. This selected study area is a irregular shaped territory lying between 22°56' and 24°32' North Latitudes and 91°18' and 92°21' East Longitudes. Tripura is bounded on the north, west, south and south east by Bangladesh and in the east it touches Cachar district of Assam and Mizoram State. It has an international boundary of 850 kilometres. Tripura measures about 183.5 kilometres in length from northeast to west and 112.7 km in width from south to north¹³. It accounts for 0.32 percentage of the total land area of India and occupies the 22nd position in terms of the area among the States and Union territories of India¹⁴.

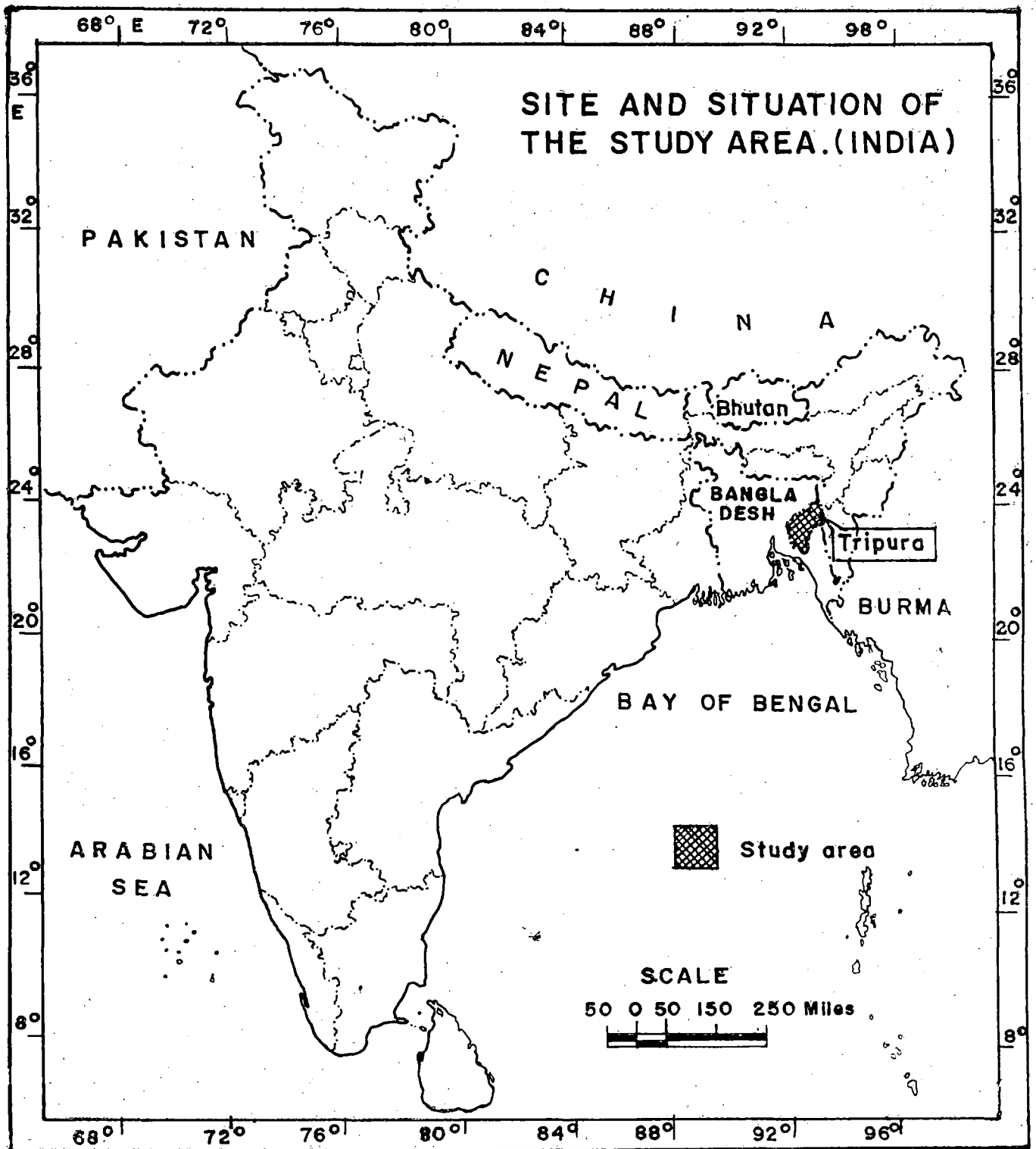
In the eastern boundary, the river Longai divides Haichek range of Mizoram and Jampui range of Tripura. The river Fenny marks the south eastern border of Tripura and Bangladesh. Tripura is almost isolated-surrounded on three sides by Bangladesh and it is connected with the rest of India by only 201 km road to the border of Cachar district of Assam.

Geology

Geologically, the territory is not very old. It is assumed that this territory was rising from sea bed about 40 million years

13. Jagadis Gqn Chaudhuri, "Tripura", p. 2.

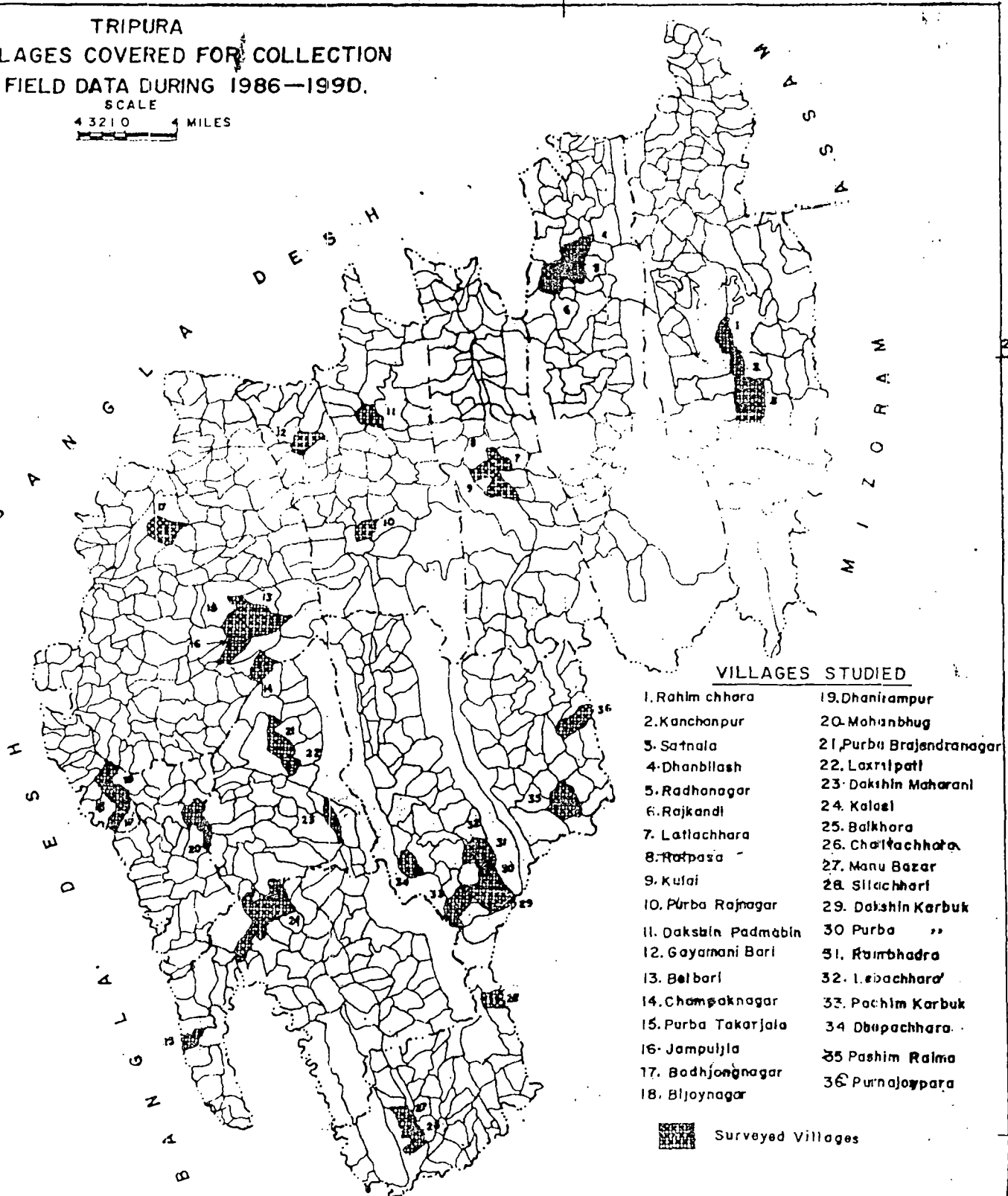
14. S.N. Chatterjee, "Tripura Profile", p. 1.



Map No-5


TRIPURA
VILLAGES COVERED FOR COLLECTION
OF FIELD DATA DURING 1986-1990.

SCALE
4 3 2 1 0 1 MILES



VILLAGES STUDIED

- | | |
|----------------------|--------------------------|
| 1. Rahim chhara | 19. Dhanirampur |
| 2. Kanchanpur | 20. Mohanbhug |
| 3. Satnala | 21. Purba Brajendranagar |
| 4. Dhanbilash | 22. Loxripati |
| 5. Radhanagar | 23. Dakshin Maharani |
| 6. Rajkandi | 24. Kalai |
| 7. Latlachhara | 25. Bakhora |
| 8. Ratpasa | 26. Chaitachhara |
| 9. Kulai | 27. Manu Bazar |
| 10. Purba Rajnagar | 28. Silachhari |
| 11. Dakshin Padmabin | 29. Dakshin Karbuk |
| 12. Gayamani Bari | 30. Purba " |
| 13. Belbari | 31. Rambhadra |
| 14. Champaknagar | 32. Lebachhara |
| 15. Purba Takarjala | 33. Pachim Karbuk |
| 16. Jampulja | 34. Debapachhara |
| 17. Badhjoynagar | 35. Pashim Ralma |
| 18. Bijoynagar | 36. Purnajoypara |

 Surveyed Villages

Map No. 5A

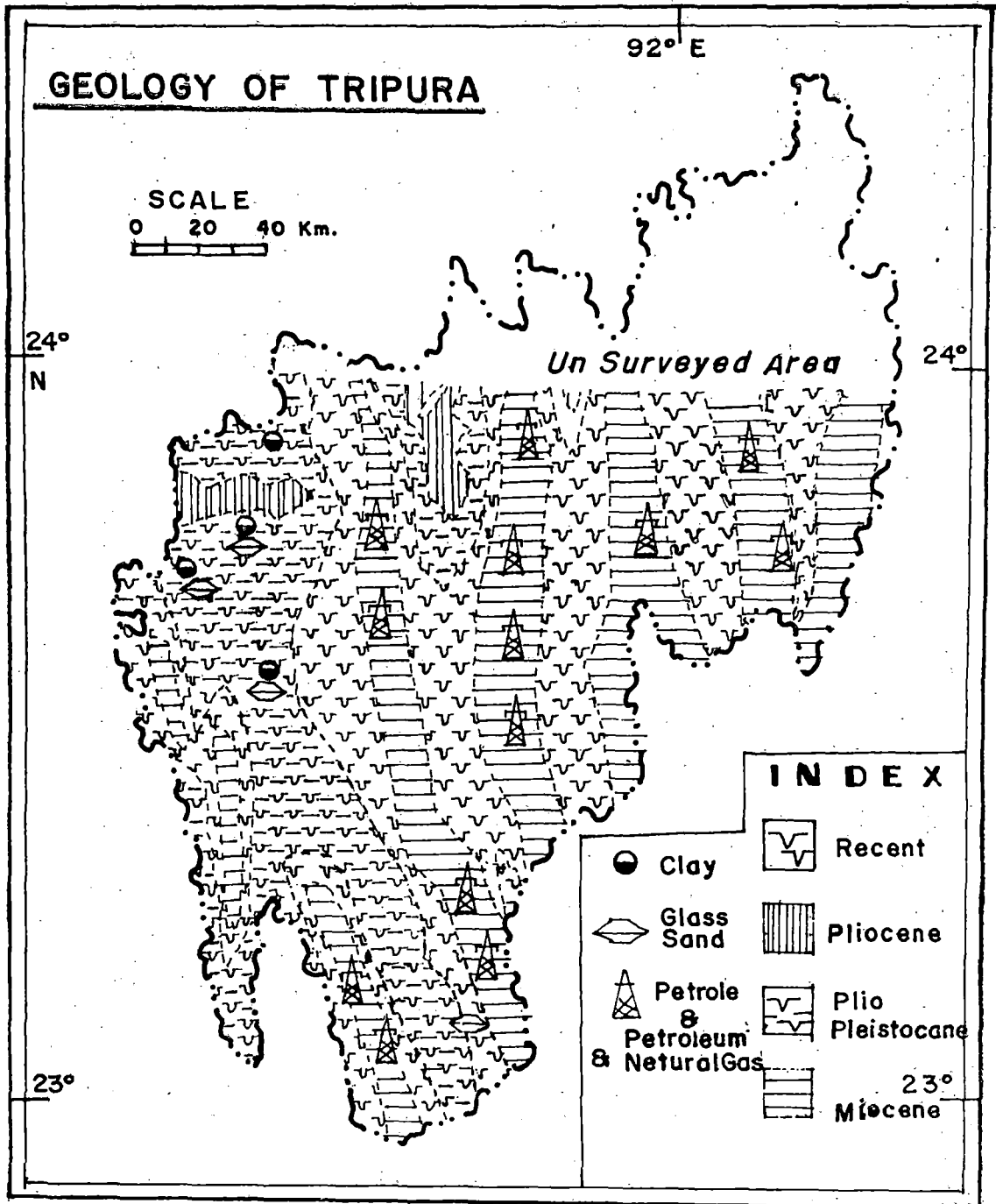
ago. Originally Tripura was a part of Assam and Arakan Geological province. Lithological bases of the rocks of Tripura are broadly divided into four age groups- (1) Miocene (2) Pliocene (3) Plio-Pleistocene (4) Recent.

The table No. 1 and map No. 5 shows the rock types of Tripura in order of sequential formation.

Table No. 1

Age	Groups	Lithology
Recent	Alluvium	Clay, silt, clay with silt, sand, etc.
Plio-Pleistocene	Dupi Tita	Clay, clayey sand, and sandy clay, Ferruginous sand-stone.
Pliocene	Tipam	Sands, silt, shale, alternations of shales with fossil wood and lignite
Miocene	Surma	Sandstone, shale, Mudstone, sandsilt alternations of conglomerate sandy shale with lignite.

Geological structure of Tripura is conveniently described under the three groups namely (I) Alluvium (II) Agartala group and



Map No-6

(III) Gumati group. They are also divided into some sub groups based on several strata.

Table No. 2

No.	Groups/Sub Groups	Age
I)	Alluvium	
	(i) Sand and Gravels	
	(ii) Silt	Recent (Alluvial)
	(iii) Deposit in Swamp and Marshes	
II)	Agartala Group	Plio- Pleistocene
III)	Gumati Group	
	(a) Upper Gumati groups	
	(i) Ompi calcarious sandstone	Pliocene
	(ii) Deotamura sandstone	
	(iii) Dharmanagar Carbonaceous Sandstone and Shale	
	(iv) Gajalia Shales (Lignite Coal)	
	(v) Fossil-wood bearing strata	
	(b) Lower Gumati Group	
	(i) Hrishyamuk Sandstone	Miocene
	(ii) Gumati Sandstone	
	(iii) Silicified fossil wood	
	(iv) Bisalgarh clays	
	(v) Champamura Kaolin clay	

Ompi calcarious sandstone is mainly composed of quartz in a calcarious matrix and frequently contains chloritised biotite with white mica. This is hard massive and olive coloured. These rocks are mainly found in Gogracharra, Balaicharra, Taibaichara, Sindhu Kumarpara and other places.

Deotamura sandstone group consists of grey micaceous on yellow hard fine grained sandstone and hard laminated bluish slaty shale, fine grained and often highly jointed and less compact grey shale showing spheroidal weathering and thin beds of limestones. These types of rocks are found North of Deo river, west slope of Atharamura and East slope of Barmura, southern part of Longthari and Slopes of hillock north-west of Pacharthal.

The Gajalia Shales occur in the Fenny valley on the base of the Tulamura range and also occur between Udaipur and Maharani hills area. These rocks are composed of a large percentage of sand and also of 40% of limestone. Duchari gorge is composed of sandy shales mainly with bands of limestone. Stalactite and Stalagmite are also found in the area. The lignite coal deposit are not extensive anywhere and occur more sparingly, than similar lignite coal in the sandstone formation in Hrshyamuk.

The fossil wood bearing strata group composed of yellow loose coarse feruginous sandstone with fossil wood, white and grey shales. These rock groups' colour gradually changes to green, yellow and light brown. The shales are dirty white and to light grey in colour. Fossil wood occurs in Bagabasa, Belung, Dungchara, Halan, Kalagang, Pabiacharra and other location.

The Hrshyamuk sandstone forms the base of the Gumati sandstone, occurs in massive iron-grey sandstone, soft and friable without any distinct bedding. Sometimes limestone beds have been seen sticking out in the water falls. Gumati sandstone, a soft yellow and grey sandstone overlies the Hrshyamuk sandstone.

Silicified fossil wood is found in the upper portion of Gumati sandstone. In the Bisalgarh area fragments of silicified fossil wood occur scattered in loose sand. The sandy strata occurs below the Bisalgarh clay.

Thus Gumati sandstone groups are mainly found in the left bank of Fenny river, Bairagi tilla about 3 miles east of Sonamura and are prominent in Sonamura and surrounding area.

The Bisalgarh clays are mainly composed of red and yellow clays. The colour of the clays depends on the amount ferruginous matter taking part in the composition.

The Champamura kaolin clay among comparatively younger rocks is difficult to explain. It lies below the Bisalgarh clays.

In Agartala groups is found laterite and ferruginous concretions laterite. Tripura laterite is not an original product but derived most probably from the mass of red and yellow ferruginous clays and ferruginous sandstone.

This group's concentration occurring on the top of the Bisalgarh clays.

All the recent deposits are included within Alluvium group. It covers all the surface of the territory. This is divided into following sub groups.

(I) Silt (II) Sand and Gravels (III) Deposits of swamp and Marshes.

Alluvium is mainly composed of sandy homogeneous clay, black carbonaceous clay usually sandy and mixed with ferruginous matter.

Alluvial deposits are of recent origin. The red and yellow clays are ferruginous sandstone which occur at the base of the laterite and are probably of Pliocene age. The lower Gumati sandstone with silicified fossil wood is of Pliocene age. The rocks comprising the upper Gumati group in Tripura are probably of Miocene age. The Surma groups of rocks are mainly formed in the antisyncline structure. Timpam-Dupi Tiua groups are markedly folded structure with synclinal valleys. Alluvium groups make up the low lands.

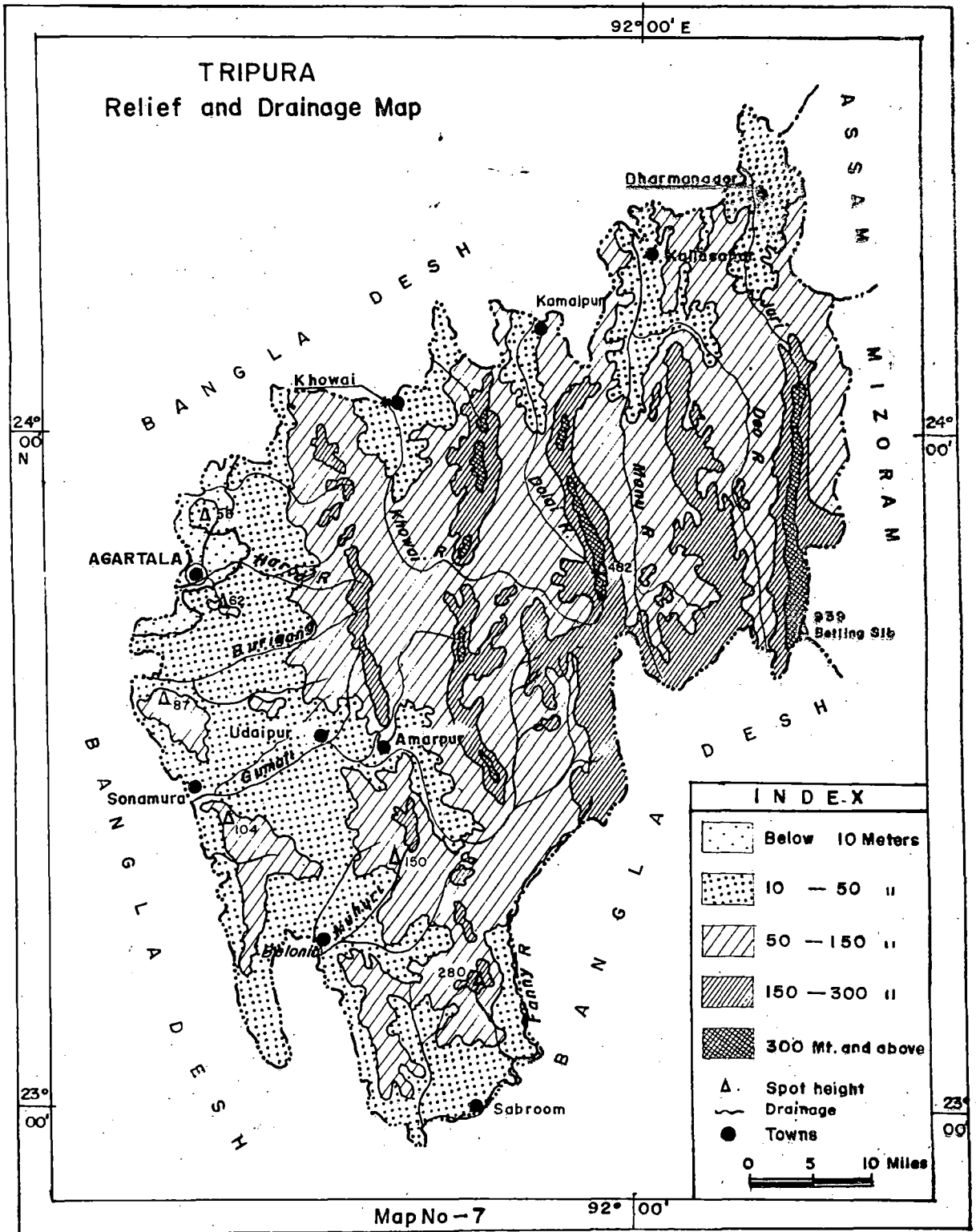
PHYSIOGRAPHY

Tripura is an essentially hill State in India. The land surface is mountainous undulating and the whole terrain is covered by rivulets, brooks, rivers, hills, plains, valleys and lakes. About 60% of it's land is hilly and only 40% is plain land in the State.

Topographically Tripura may be divided into (I) Hill areas (II) Hill slopes (III) Hillocks or tillas (IV) Valleys or lunga (V) Low lands (VI) Rivers and lakes.

In between two ranges lies on river valley which expresses a topography of anticlinal hill and synclinal valley.

(I) Hill and Hill Slopes: In Tripura, there are six long ranges and numerous hillocks. The important ranges of Tripura are Deotamura, Barmura, Atharamura, Longtharai, Sakhantong and Jumpui Hill. It is most significant that all the ranges run in parallel manner in north south direction (Map No. 7). The elevation of hill ranges are higher in the south and lower in the north. The hills are narrow ridges, sometimes so narrow at the top that the knife-edged



rock is hardly covered with forest and thinner along the edges and spurs but close and enlarged and often impenetrable in the ravine valleys¹⁵.

The Jampai range is the highest range in Tripura. It runs in north to south direction between the rivers Deo and Longai. Betling Sib (939 meters) is the highest peak in this range and lies in the south. This range is situated in the border of Mizoram. This range spreads over 74 kms from south to north and its important peaks are Banghurun (616 metres) Jampui (567 metres).

The Sakhastong range runs 78 kms in north-south direction to west of the Jampui range. It is standing between Dharmanagar and Kailashar sub division boundary. Deo river has cut these ranges from Kumarghat, called "Unokoti range" "Sakhan" is the highest peak (786 metres) and other peaks are "Thanguimaman" (410 metres) 'Cobet' (384 metres) and "Kamunta" (239 metres).

The Longtharai range forms the boundary of Kailashar and Kamalpur sub divisions and its length 48 kms The highest peak is 'Dolajari'. The Assam-Agartala road cuts the Longtharai range and is the high altitude artery.

The Atharamura range mainly starts from the Amarpur sub division and then spreads into the southern part of Khowai and Kamalpur sub divisions. This range is marking a boundary line between Khowai and Kamalpur sub divisions. The length of the range

15. H.W. Hunter (Vol V) Statistical account of Bengal, p. 467.

is 106 kms Neungwamura (481 m) is the highest peak and other important peaks are Atharamura (436 metres), Tarimura (457 metres) and Tulamura (244 metres).

The length of the Burmura range is 47 kilometres in north-south direction and demarcating the boundary of Sadar and Khowai sub divisions. The highest peak of this range is Saisum Sib (248 metres). Near Saisum Sib range branches off to Baramura in the South-West direction to the tri-junction of Sadar Sonamura and Bangladesh. Other important ranges are Baramura (175 m), Champamura (154 m), etc.

Deotamura range is situated between boundary line of the Udaipur and Amarpur sub divisions. The length of this range is 85 km, the important peaks are Deotamura (247 kms) and Sahalemura (150 metres).

The Buramura and Deotamura are two distinctive ranges that stand to the west of Atharamura ranges.

River: Tripura has nine important river basins. The rivers are Gumati, Haora, Juri, Deo, Manu, Dhalai, Khowai, Muhuri, Fenny and Burigang. The drainage pattern of the northern part of the territory is merely a function of the topography and hence longitudinal streams and dendretic pattern is observed in the West and South. All these rivers are rainfed and they carry a huge quantities of water in only rainy season. The upper part of all these rivers pass through narrow gorges while their lower parts become a broad sluggish river. River beds are shallow, which causes heavy floods during rainy seasons¹⁶.

16. S.N. Chatterjee, Tripura a Profile, p.8.

The Gumati is the principal river fed mainly by two tributaries 'Raima' and 'Surma'. The Surma rises in the Atharamura ranges of hills and the Raima rises in the Longtharai range. These tributaries meet near Nutan Bazar and then this river flows as Gumati in a singularly serpentine course upto Dumbar fall of Amarpur sub division. The Gumati runs across Amarpur, Udaipur and Sonamura sub divisions and finally falls into this river which is about 133 kms and it has a total catchment area about 2492.28 sq. kms. The important right bank tributaries are 'Kasigang' the Pitmagang and Maialakcherral.

The Haroa, a small river rises from the Barmura Hill range, runs through Sadar sub division westward and finally meets with river 'Titas' in Bangladesh. The length of it is 53 kms and catchment area occupies 487.62 sq. kms.

The 'Juri' river is a small river, only 79 kms in length and catchment area is 482.46 sq. kms. It rises from the 'Jumpai' hill range and flows northerly over the Dharmanagar sub division and lastly merges with the river 'Kusiyara' in Bangladesh.

The Deo rises from Jumpai ranges, 20 kms South of "Betling Sib" and flows in northern direction and meets the 'Manu' rivers near 'Kumarghat'. The length of the river and catchment area are 132 kms and 2278.14 sq. kms. This is a ferocious river during the rains and causes great erosion on its banks.

The river 'Manu' rising from the Kchoisib peak of the Sakhontang range meets with the 'Kusiyara' river in Bangladesh. Deo and Dhalai are main tributaries of Manu on right bank. The length of this river is 79 kms and catchment area is 2278.14 sq. kms.

In the rainy season this river also overflows its banks and create heavy floods.

The Dhalai river rises in the 'Dolojari' peak and runs 80 km towards north and then merges with Manu near Kadamtala village in Bangladesh. Its length does not exceed 117 kms and catchment area is 629.52 sq. kms.

The Khowai river is emanating from different springs of Longtarai and Atharamura ranges, flows towards the north-western direction upto Teliamura and then turns in north direction and meets with the river Kusiyara in Bangladesh. The length of it is 166 km and catchment area is 1328.70 sq. kms

The length and catchment area of the river 'Muhuri' are 64 km and 1013.94 sq. kms. The main source rises in the Deotamura range and flows in westward direction through Belonia town and finally merges with the river Fenny in Bangladesh. Its right bank tributary Lowgang is a principal stream.

The river Fenny washes the Indian and Bangladesh border. It serves as an international boundary between the two countries. It rises from the Deotamura ranges and runs south westernward and lastly enters Bangladesh through Subroom town.

The Buriganga river is a very small stream emerging from Barmura range and meets with river Gumati in Bangladesh. Its length is 35 kms and catchment area is 194.25 sq. kms. The Rangapani is the main tributary.

All the rivers are neither broad nor deep enough for navigation. In the rainy season all of them become full of water

with tremendous current. The upper part of these rivers have made narrow gorges. River beds are shallow which causes heavy floods during rainy seasons. The rivers are distributed towards the south west, the west and the north in zigzag way and lastly they fall into the Bay of Bengal.

Rudrasagar and Dumbur lakes are the main big lakes.

Rudrasagar is situated at about a distance of 53 kms from Agartala town and about 8 kms from Sonamura town. The name of the place is 'Melagarh'. Maharaja of Tripura Bir Bikram Kishore built a spectacular edifice on an island in the centre of the lake and named it 'Nirmahal' or palace in the water. The lake itself is very beautiful, affords good sports for rowing and rears a good stock of delicious fishes.

Dumbur Lake - It is a water reservoir of the Gumati Hydel project covers an area of 40 Sq. kms. This lake is situated near Tirthemukh in Amarpur, sub division. Dambur lake is about six miles away from 'Nutan Bazar' in Amarpur. It is a famous fishing centre.

The Relief and drainage patterns are clearly found from Map No. 6.

CLIMATE

The climate of Tripura is almost similar to that of other six north eastern States of Bangladesh. The climate is moderate. The tropic of cancer passes through the middle of this State. Climatically a year is divided in main three seasons i.e. Winter, Summer, rainy season from November to February, March to May and June to September. Other three seasons, the Basanta (spring), Sarat and Hemanta (autumn) have very short duration.

Temperature: The cold weather starts from about the middle of November-December and January is the coldest time, when the mean temperature varies from 10°C to 25°C. Sometimes the temperature falls to 5°C in this period. The average maximum temperature is 35°C in May and June. The day temperature is highest in the month of April and from this time night temperature continuously rises till July and August. The South West Monsoon arrives over the territory by about the last week of May when the day temperature drops 3°C or 4°C. After the withdrawal of southwest monsoon in the first week of October, temperature gradually decreases.

The average maximum temperature recorded at Agartala was 42.2°C and minimum temperature was 13°C.

In general relative humidity is between 50% to 75%, but it is increased to 85% in monsoon seasons.

The table No. 3 shows the maximum and minimum temperature in different months in Tripura.

Table No. 3

The average monthly minimum and maximum temperature in Tripura

Name of the months	Minimum temperature °C	Maximum temperature °C
January	9.3	27.0
February	11.1	28.8
March	15.4	33.8
April	19.8	35.2
May	22.5	39.6
June	23.8	32.2
July	23.7	32.2

Contd..

Table No. 3 (Contd..)

August	23.2	32.2
September	23.2	32.2
October	21.0	31.6
November	15.0	30.90
December	9.4	26.9

Source: Tripura District Gazetteer (Climatological Summaries, Directorate General of Observation, Climatology and Geophysics).

Rainfall

The average rainfall in Tripura is 2100 mm (82.70"). Most of the rainfall (about 63%) is received from south-west monsoon. It comes in the last week of May and continues to the last part of September. During the summer season rainfall is mostly in the form of thunder shower and storm. The rainfall slightly varies from sub division to sub divisions. In table No. 4, we find that Dharmanagar receives highest rainfall and Amarpur the lowest.

Table No. 4

Distribution of average rainfall in Tripura by Sub Divisions.

Sub divisions	Average rainfall
1. Sadar	202.6 cm
2. Sonamura	203.0 "
3. Khowai	212.8 "
4. Kamarpur	220.7 "
5. Kailashar	247.0 "
6. Dharmanagar	252.8 "
7. Amarpur	142.5 "
8. Udaipur	190.4 "
9. Belonia	212.4 "
10. Sabroom	227.0 "

Source: Tripura District Gazetteer.

The rainfall generally increases from the southwest to northeast and decreases towards South and West. The alignment of the hill ranges affects both the temporal and spatial distribution of rainfall and hence in the season of southwest monsoon while one part of the region or a river basin may experience deluge and consequent floods, another may experience drought¹⁷. The year to year rainfall variation is not striking.

Cloudiness:

The sky remains heavily clouded in the monsoon seasons and in the winter season, the sky is almost clear, but sometimes it has light clouds and cloudiness gradually increases in summer.

Wind:

Winds are slow and moderate in most summer and monsoon months. Sometimes in the post monsoon period, strong wind blows for short period combining with thunder storms. Table No. 5 shows the mean wind speed at Agartala month-wise.

Generally cyclones appear in the summer months of April and May and post monsoon months of August and September caused by the depression on the Bay of Bengal. These cyclones mainly affect Bangladesh and also greatly affects this territory. Fogs are formed from later part of October to beginning of March.

Soil:

The nature of the parent materials, topography, past and present geomorphological processes, climatic and biotic factors

17. S.N. Chatterjee, Tripura Profile, page 11.

Table No. 5

Mean wind speed in Km/mm (Agartala)

January	February	March	April	May	June	July	August	September	October	November	December
4.0	5.1	6.6	11.0	13.1	10.1	9.7	8.3	6.3	4.3	3.4	3.0
Annual ^{av.} speed								-	7.1		

Source : Tripura District Gazetteer.
(Climatological Summaries, Directorate General of Observation, Climatology and
Geophysics, Poona 5, 1968).

all play important role in shaping the nature and types of soil in a particular area¹⁸.

Detail soil survey of Tripura have not yet been made. Generally soil of Tripura can be divided into two broad types e.g. (i) upland soil (ii) low and soil. Basing on their morphological characteristics and chemical composition, they are sub divided into further series and types.

About 68% land of Tripura is hilly and undulating uplands. Upland soils are developed through the processes of weathering under the influence of heavy rainfall and fluctuations of temperature in wet and dry seasons. The upland soil is sandy loam to sand, clay loam to pure clay or lateritic. For the disintegration from sandstone, soils are coarse in texture reddish brown to brown in colour, poor in humus and lime content. It is very deep, well-drained, acidic and have high infiltration capacity. pH value of the soils varies from 4.2 to 4.8 percent¹⁹. The soils are deficient in nitrates, phosphorous element and potash.

Soil developed from the disintegration of shales are medium to fine grained texture - dark brown to dark grey brown in colour, acidic and poor in permeability and lime content. These soils are found in Subroom, Belonia, Sonamura and south western part of the sadar sub divisions. The colour of these soils are yellow and red which is a result of diffusion of iron content.

The complex factors of undulating topography, steep hill side, slopes and exposed upland of gentle slope, have given rise

18. S.N. Chatterjee, Tripura Profile, page 13.

19. Dr. Manika Nandi, Anthology of Tripura (Geographical Account).

to loose and porous types of soils.

The lowland consisting of the valleys and river beds are mostly composed of alluvial soil. Valley areas are fully composed of transported materials carried by different rivers and charres (drainage). This soil is fine grained and light grey in colour. This colour varies from light grey to dark grey, depending on the humus content and drainage conditions. The composition of these soils are sand, silt and clay in different proportions. A compact alluvial soils zone are found in Sadar, Udaipur, Khowai, Kanalpur sub divisions. Purely sandy soil is found in the river bed and bank of the rivers; clay loam to pure clay soil is confined in the lungas. Forest soils are mainly well drained and deep.

As a result, the soils of high land includes series A (Podzolic at above 85 m) series B (Red loamite 50-85m) at series of C (lateritic at 15-50m).

It is important to mention that soil of series 'A' is protected from erosion hazards due to dense vegetation cover. But the soils of series 'B' and 'C' are not free from erosion hazards due to having less vegetal cover, higher percentage of slope, good interval drainage and practice of shifting cultivation. The series D including aluvial and colluvial soils (at above 10m) and series E (at below 10m) are found cultivated land in valley and low lands are almost free from erosion except the river banks and Lunga areas. Both of the soils are acidic and low in humus and lime content²⁰.

20. Dr. Manika Nandi, Anthology of Tripura (Geographical Account).

Natural Vegetation:

Luxurious natural vegetation grows abundantly in Tripura. It is supported by suitable physical and climatic conditions, heavy and well distributed rainfall, sufficient heat and good soil cover.

According to 1983-84 statistics, forests occupied about 6395.76 sq.km area in Tripura. It covers 61% of the total land area of Tripura. The forests generally cover hill ranges, hillocks, high lands and also flat lands.

The forest areas belong mainly to three categories like Reserved forest, proposed Reserved forest, Protected forest (shows on Table No. 6 and Map No. 8).

Table No. 6

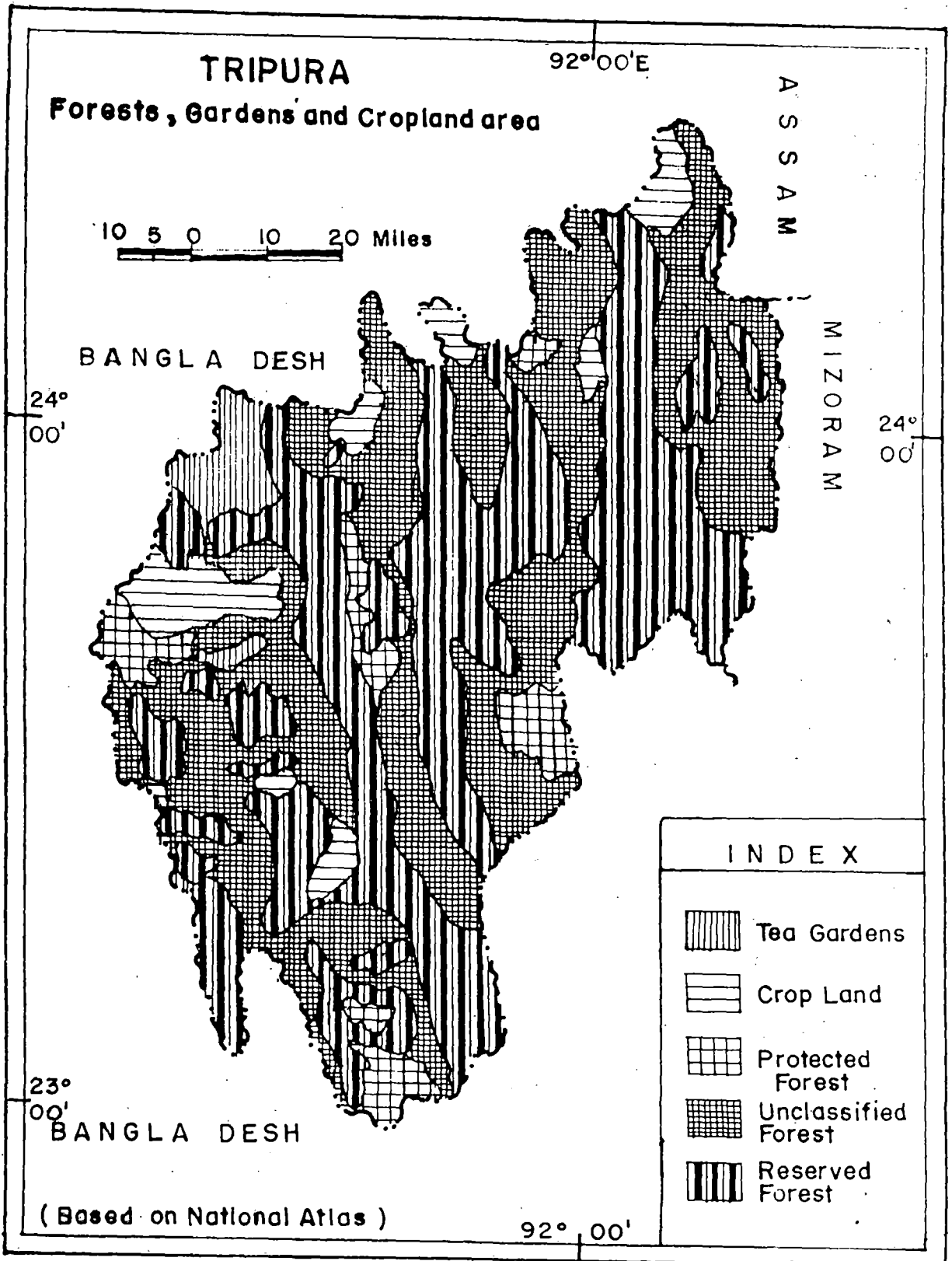
	Total % of land
1. Reserved Forest 3571.38 sq.km.	55.84
2. Proposed Reserved Forest 291.40 sq.km.	4.55
3. Protected Forest 2532.98	39.60
Total Forest area 6395.76	100%

(In 1983-84)

Source: Forest Department of Tripura.

In Tripura, forests consist of four types:

1. Sal Forest (Sharearobusta)
2. Garjan (Dipterocarpaceae turbinatus)
3. Bamboo forest (Melocana bandesoides)
4. Miscellaneous Forest.



Map No. 8

All these types are found growing either exclusively or mixed together in some locality.

1. Sal forest:

Most of sal forests are standing in a narrow belt in the State in Udaipur, Sonamura and Belonia sub divisions and some sal forests are also found in Sadar sub division. There are two types of sal species. One is high land type and other species is paddy field type. The high land species is found in Garji and Chandpur reserve forest of Udaipur sub divisions and also in the 'Radhapur' and 'Pathalia' reserve forest of the same sub divisions. The paddy Sal species is mainly found in Udaipur, it generally grows on undulating land higher than the paddy land. Sal tree attains a height of about 50 to 70 feet and usually have breadth of from 1 to 3 feet. Sal trees are mainly used for house posts and as fire wood.

2. Garjan Forest:

Garjan forest exists in a scattered manner in the Belagaludhua, Muhuripur, Trishna, Talakalibani, Unakoti, Manuchheragata, Deo, Juni, Ujan-Machmanu and Damcherra areas. The Garjan wood is very much suitable for making railway sleepers and also for producing one type of oil which is used in paint and varnish industries. These forests mainly spread out on exposed slopes.

3. Bamboo forest:

The bamboo forest occupies 541.01 ha. and widely occurs in hilly tracts and thick jungles with other miscellaneous forest. Three types of Bamboo, namely 'Muli', 'Bari' and 'Barak' are found here. The Muli variety of bamboos are grown maximum in Tripura.

But Bari and Barak varieties do not grow well in the State. So these varieties are not able to fulfil the local demands.

The Bamboo can be utilised as important raw materials for paper and pulp industries. Now it is being used for handicrafts in small scale industries. The bamboo is also used for umbrella handles, etc.

4. Miscellaneous forests:

Miscellaneous forests are found all over Tripura. Kanak, Karai, Jam, Gamir, Chamal and Sonali trees are included in this miscellaneous group. These trees occupy an important position as fast growing species and also to be used as timber and furniture making.

Table No. 7 shows the different types of species and their land coverage. Now some new species of trees like Rubber, Cashewnut, Teak, Eucalyptus have been planted at different places in Tripura. There is bright prospect for the development of rubber plantation.

The forest areas are divided into nine divisions to take advantage of forest developing programmes.

Table No. 8 gives a picture of different forest divisions and their land coverage.

The programme of forest development in Tripura had been taken from 1956 to till now aimed at maintenance of forest integrity, forest regeneration, forest management, demarcation of reserve forests and construction of forest road and to restrain the widespread shifting cultivation because much of the valuable forest resources have been destroyed by such cultivation.

Table No. 7
Species wise plantation area as in 1983-84

Sl. No.	Name of species	Area in hec.
1.	Sal (<i>Shorea robusta</i>)	18138.57
2.	Garjan (<i>Dipterocarpus turbindus</i>)	2486.84
3.	Teak (<i>Tectone grandis</i>)	36291.40
4.	Bamboo	541.01
5.	Cashewnut	1474.75
6.	Gamar (<i>Gnelina arborea</i>)	10955.15
7.	Citronella	10.50
8.	Karai (<i>Albizzia procera</i>)	2003.25
9.	Sundhi (<i>Michelia mentana</i>)	69.95
10.	Sonal (<i>Cassia fistula</i>)	334.16
11.	Simul (<i>Salmalia melabarica</i>)	102.74
12.	Rubber	687.03
		(Out of which 418.60 hec. handed over to MDTE D & D.C.)
13.	Chamal (<i>Artocarpus clapsala</i>)	626.99
14.	Jarul (<i>Lagerstoeckia blosreginea</i>)	38.60
15.	Jam (<i>Engenia jambalame</i>)	581.02
16.	Khemta (<i>Chukressia tabularis</i>)	101.60
17.	Mehagony (<i>Srieteria muhaguni</i> Linn)	35.70
18.	Misc. wood	12452.53
19.	Other Misc. (other than wood)	264.40
20.	Coffee	224.23
Total		84420.92

Source: Development section of Chief Conservation of Forest Office and record vide page 68 of Register, Vol. 4.

Table-8.

Sl. No.	Name of the Forest Division	Reserved Forest (in hec.)	Proposed Reserved Forest (in hec)	Protected Forest (unclassified Govt. land)(in hec.)	Total in hec.
1.	Kanchanpur	485.21	-	421.88	907.09
2.	Kailasahar	153.68	-	146.71	300.39
3.	Manu	638.60	-	129.27	767.69
4.	Ambassa	483.37	-	635.42	1118.79
5.	Telimura	568.02	-	340.89	908.91
6.	Sadar	136.64	70.30	52.45	289.39
7.	Udaipur	300.50	59.66	190.45	550.64
8.	Bagafa	340.66	161.41	266.32	768.39
9.	Gumati	464.70	-	263.25	727.95
Total		3571.20	291.37	2446.64	6309.21

Source: Working plan division Tripura, Agartala, page 48 of Register Vol. 4

According to forest department the estimate of the total income from forest products was 190.25 lakhs (1984-85).

For milling, the growing needs of timber, fire wood and industries and also to serve as the main soil conservation and Joomia rehabilitation measures, development of forest almost holds the key to achieve a steady socio-economic development of the forest²¹.

But unfortunately till today the forest wealth is not used properly in Tripura.

The collection of important information from "Amrita Bazar Patrika" dated the 21st November, 1987 speaks that "The Tripura forest department is seriously disturbed over the increasing interference in the State's forest wealth by the Chakma refugees now camping in different areas of the south Tripura,

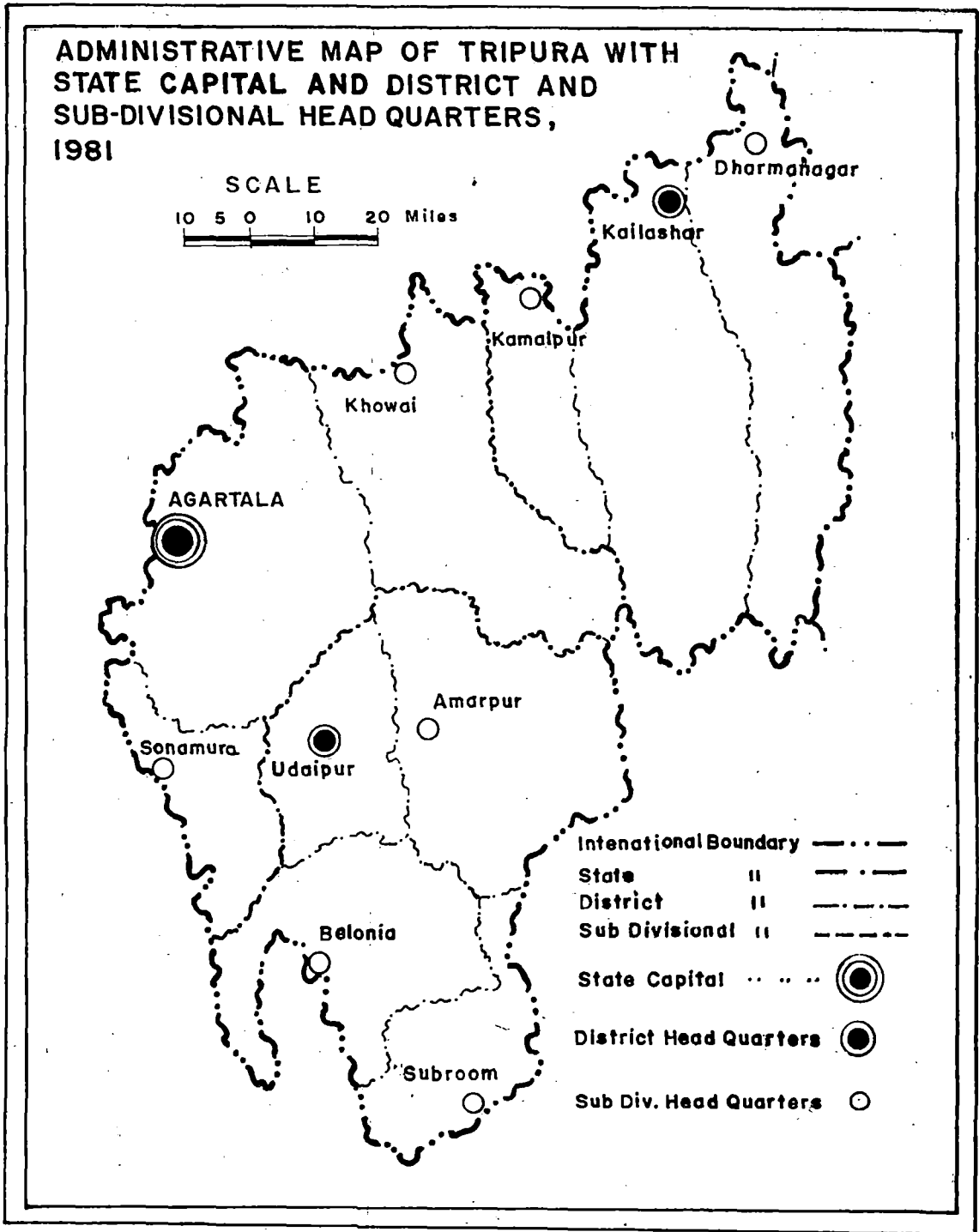
In repeated complaints to the Rehabilitation Department, the forest department alleged that a section of refugees have started plundering the forest by cutting growing plantation and other timbers.

A large part of the forest close to the five refugee camps have already been denuded. A large portion of the bamboo groves had already been destroyed.

People

According to 1981 Census the total population of Tripura is 20,60,198 over a total geographical surface of 10,477 sq.kms. Out of this population 583,920 are tribal population and 310384

21. The Rich resources of Tripura - Jalad Baran Gangopadhyaya, Tripura, page 80.



Map No-9

are scheduled castes population. There are about 28.44% and 15.11% tribal and scheduled caste of the total population in the state. The majority of the population are Bengalee Hindus domiciled from Bangladesh. The table-9. and Fig. No. I will show the decadal growth rate of population in Tripura since 1872.

Table No. 9
Growth rate and Density of population in decadal

Year	Total population	Decadal variation in %	Density per sq.km.
1874-75	74,523	-	-
1881	95,637	28.33	9
1891	1,37,575	43.85	10
1901	1,73,325	25.98	13
1911	2,29,613	34.48	17
1921	3,04,437	32.59	21
1931	3,82,450	25.60	29
1941	5,13,010	34.14	36
1951	6,45,707	25.25	49
1961	11,42,005	78.71	62
1971	15,56,342	36.28	109
1981	20,60,198	32.37	149

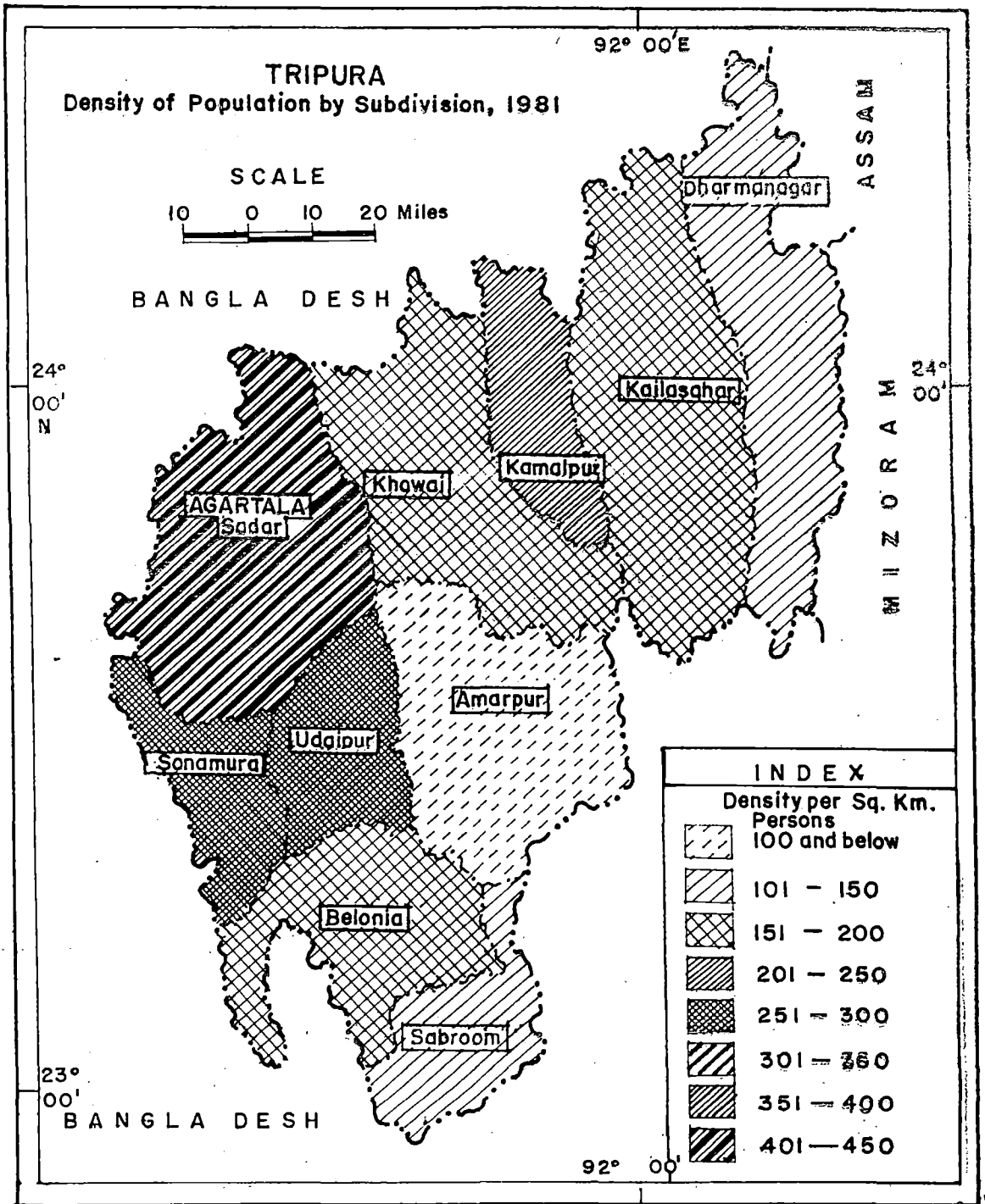
Source: 'Tripura' the land and its people, Edited by Jagadis Gan Chaudhuri, page 7 and 1981 Census of Tripura, Series 21.

The phenomenal growth rate during 1951 to 1961 is a proof of heavy immigration of population from outside. In 1947 a large number of Hindus came to Tripura from East Pakistan for Noakhali communal riot. So the population had increased 34.14% from previous decade.

The explosive increase of population by 78.71% in 1951-61 decade was directly attributable to the influx of refugees from East Pakistan. In one decade population increased by more than 5 lakhs, that is almost equal to the total population in 1941. Very recently about 50 thousand Chakma refugees again trekked to Tripura from Chittagong hill for shelter. The rush of heavy influx have upset the economic equilibrium of this small State.

The distribution of population in Tripura is uneven. In Table No. 9, we find the density of population in Tripura has been increasing with each successive census. In 1911 the density per sq. km. was only 22 persons whereas in 1981 it stood at 196 persons. This abnormal increase was not due to natural growth of population.

Table No. 10 and Map 9A gives a picture of population distribution and density in Tripura by sub divisions.



Map No. 9 A.

Table No. 10
Distribution of population and density by
subdivisions according to 1981 Census

Sub divisions	Area in sq. km.	Population	Density per km (in person)
1. Sadar (Agartala)	1559	630958	404.72
2. Khowaí	1393	211868	152.09
3. Sonamura	531	133426	251.27
4. Udaipur	537	159973	251.13
5. Amarpur	1365	113431	83.10
6. Subroom	616	79318	128.76
7. Belonia	1021	182836	179.07
8. Dharmanagar	1766	229483	129.94
9. Kamalpur	601	120978	201.29
10. Kailasahar	1171	190787	162.93

Source: In 1981 Census of Tripura.

By analysis of above table we find that about 30.62% of total population in Tripura lived in Sadar Sub division though it is not the largest sub division in area. The State Capital Agartala is lying in this sub division. So a large number of people come here for service purpose and also for enjoying others facilities. Amarpur sub division has recorded the lowest number of people which is due mainly to the absence of communication facilities.

Table No. 11

Distribution of total scheduled caste, scheduled tribes population block-wise in Tripura (1981)

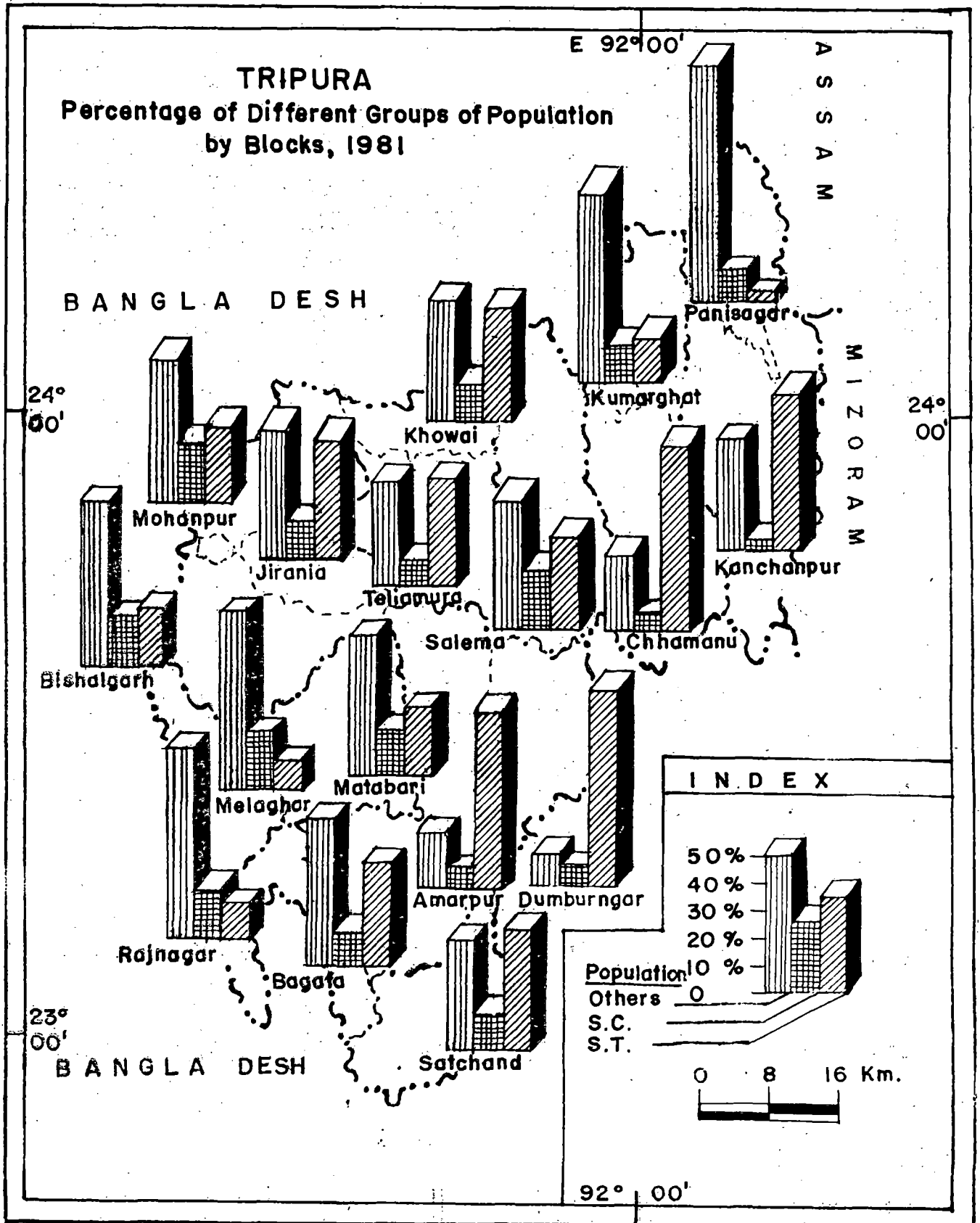
Sl. No.	Blocks	Total pop.	Other total pop.	% of other pop.	Total S.C. pop.	% of S.C. pop.	Total S.T. population	% of S.T. population
1.	Khowai	74550	33542	44.99	9928	13.31	21.08	41.69
2.	Telimura	126596	50115	39.59	25910	20.46	50571	39.95
3.	Jirania	114135	50491	44.24	15013	13.15	48631	42.61
4.	Mohanpur	135202	69955	51.74	28387	21.00	36860	27.26
5.	Bisalgarh	249435	148767	59.64	45128	18.1	55540	22.27
6.	Melagarh	127046	83270	65.54	28896	22.74	14880	11.74
7.	Kanchanpur	77149	30860	40	3698	4.79	42591	55.21
8.	Panisagar	131528	112171	85.28	13438	10.22	5919	4.5
9.	Chhamanu	63298	18181	27.14	4768	7.53	41349	65.32
10.	Kamarghat	114551	79841	69.70	16620	14.51	18090	15.79
11.	Salema	117270	53008	45.19	24977	21.30	39305	33.51
12.	Matabari	143669	77873	54.20	27162	18.91	38634	26.89
13.	Amarpur	80809	17860	22.10	10542	13.05	52407	64.35

Contd..

Table No. 11 (Contd..)

14.	Dharmanagar	25472	2991	11.74	2376	9.32	20105	78.92
15.	Bagafa	91578	45649	49.85	10975	11.98	34954	38.17
16.	Rajnagar	79204	54974	69.41	12934	16.33	11296	14.26
17.	Satchand	75978	31853	41.93	10080	13.27	34040	44.80

Source: 1981 Population Census of Tripura series 21.



Map No. 10

The above table and Map No. 10 indicate the distribution of total population, others, scheduled caste and scheduled tribes population Block-wise. The highest percentage of scheduled tribes population lives in Dharmanagar, Amarpur, Chhamanu, Kanchanpur Development Blocks. These blocks are situated in the hill regions. But scheduled caste population are distributed evenly all over the blocks. The highest percentage of other population are inhabitants of Panisagar, Kumarghat, Rajnagar, Melagarh, Mohanpur blocks. These blocks are located on the plain areas.

Sex ratio is an important demographic indicator which is defined as number of females per 1000 male. The large number of population, increasing in different sub-divisions in each successive census, are located near Bangladesh Border. There were a large number of refugees coming from neighbouring country of Bangladesh.

Table No. 12 shows the trend of sex ratio during 1901 to 1981. This table represents the sex ratio in its rural and urban areas during different decades. The sex ratio in urban areas was always less than rural area but only in 1981 the sex ratio became higher in urban areas than in rural areas. The tendency of growth in female population will remove inequalities in sex ratio after few decades.

In 1887, Tripura had only two schools and now there are 2699 educational institutions. About 95% educational institutions are under Govt. ownership and others are Govt. sponsored.

Table No. 12

Sex ratio (Females per 1000 males)

	1901	1911	1921	1931	1941	1951	1961	1971	1981
Total	874	885	885	885	886	904	932	943	946
Rural	887	894	889	889	891	909	936	944	945
Urban	595	836	787	727	754	836	884	935	957

Source: Tripura A Profile - by S.N. Chatterjee, page 45.

The literacy rate among the people of Tripura is 41.58% in 1981. This rate is fairly high for the country. Table No. 13 shows the trend of literacy rate since 1911.

Table No. 13

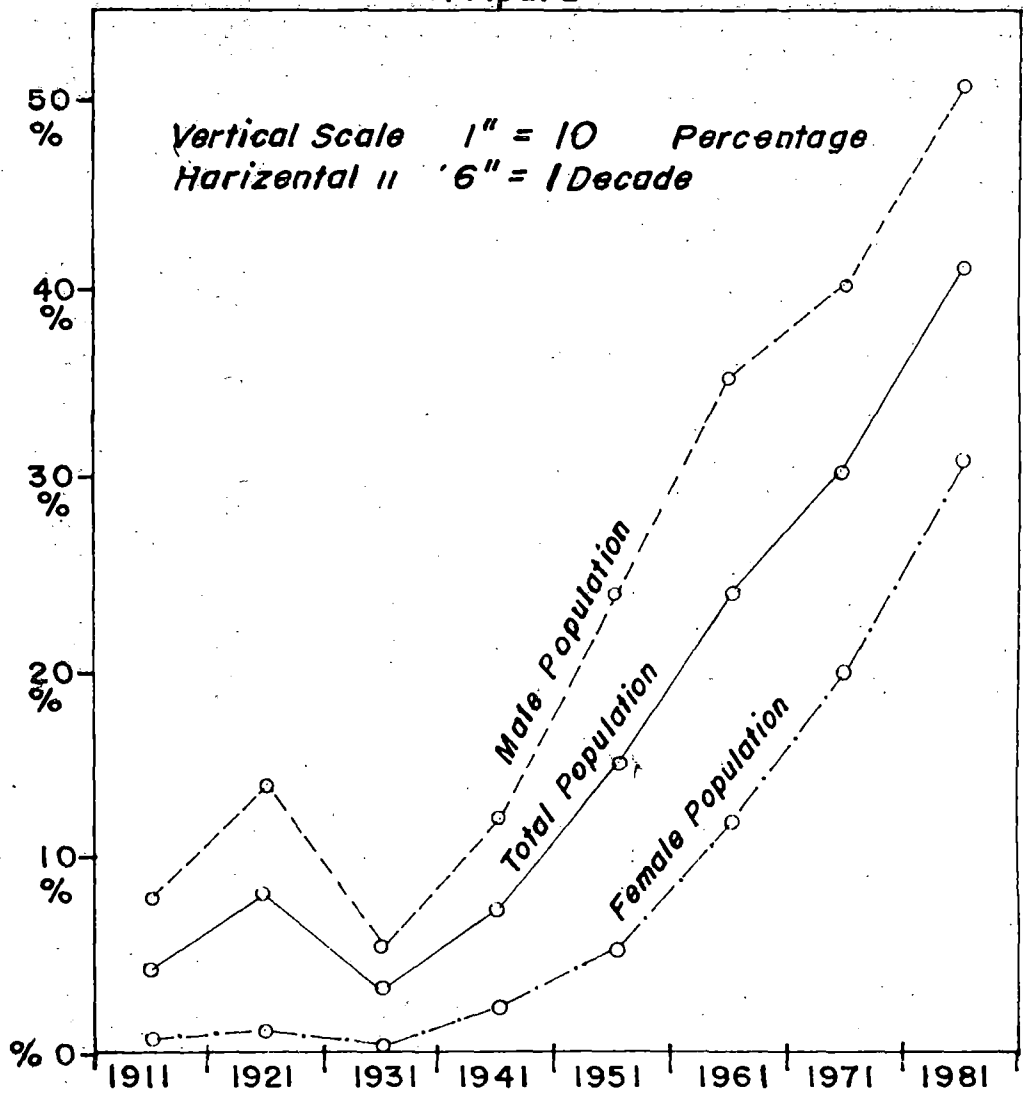
Growth of literacy rate in Tripura (Percentage of literates to total male and female population)

Year	Total population (%)	Male (%)	Female (%)
1911	4.76	8.06	0.92
1921	8.21	14.32	1.12
1931	3.43	05.93	0.52
1941	7.95	12.74	2.46
1951	15.61	24.63	5.58
1961	24.34	35.31	12.30
1971	30.98	40.20	21.19
1981	41.58	51.05	31.60

Source: The Behign Hills (population growth and problems) by J.B. Ganguli.

The above table and Fig. 2 shows that in Tripura literacy rate is higher than that of India as a whole which is 37.17%. Even the male and female literacy rates are also higher than total Indian male and female literacy rates. The percentage of literacy has rapidly increased from 15.61% in 1951 to 41.58% in 1981. The position at present is even better at all stages including the Undergraduate and Post Graduate levels. There are at present eight

Literacy Level of the Population of Tripura



DECADES

Fig. No. 2

degree colleges, one teachers' training college, one Engineering College, one Polytechnic College, one Law College and also a separate University was opened in the first week of November, 1988. There is no medical college in the State.

There are four major religious groups : Hindus, Muslims, Buddhists and Christians. Hindus constitute about 80% of the population. According to the religious affiliation, Muslims stand second numerically. In 1971 the Muslim population came down to 6.60% due to heavy influx of Hindu population in Tripura from Bangladesh in exchange of local Muslim peoples. So a large number of Muslim people migrated from Tripura to Bangladesh. The third large religious group is the Buddhists. The Mag and Chakma communities as well as a few people of other tribes were declared scheduled tribes. They profess Buddhism, Kuki Lushai and Garo tribes are the main followers of Christianity. It is also noteworthy that the Christians are increasing in number. The followers of Jainism and Sikhism are very negligible. They are not permanent residents of Tripura, but come here for purposes of services and trade. Hinduism has occupied a very important place and form an overwhelming majority of population.

Table No. 14 will show the trend of religious affiliation of the people of Tripura.

Table No. 14
Trend of religious affiliation of the people

Year	Total pop.	Hindu	Muslim	Christian	Buddhists	Others
1931	382450	261519	103702	-	14531	2698
1941	513010	347792	1233570	328	7724	33596
1951	639029	480662	136940	5262	15403	762
1961	1142005	867998	230002	10039	33716	250
1971	1556342	1393687	103962	15713	42285	695
1981	2060189	1834218	138529	24872	54806	633

Source: The Kukis of Tripura - Shri Ram Gopal Singh
Four Immigrant Tribes of Tripura - Sri O.S. Adhikari

In Tripura altogether 96 languages have been identified. The major languages are Bengali, Tripuri, Reang Chakma, Tanatia, Hindi and Manipuri²². About 80% of the population in the State use Bengali in the business of everyday life. The next important language is "Kakbark". This language is also called Tripuri language, which is Bodo group language of Tibet - having Chinese origin. Kakbark has been recognised by the Govt. It follows Bengali script. In daily life, different tribes speak their own mother tongue, like Riang, Lushai, Halam and Manipuri, etc.

In 1981, 10.98% of the total population of the State lived in urban area. There are only 10 notified towns in Tripura. Among them Agartala has acquired city status. The rural areas cover about 10,400 sq. kms. Sometimes the rural settlement grow in a linear pattern along major roads and rivers.

22. S.N. Chatterjee, Tripura Profile, page 44.

Economy

"The Tripura of yester year had a stagnatⁿ, semi-feudal and subsistence economy in the pre-independence period. But the princely State was free from economic stress and strains at that time, with a small population and still smaller economic aspirations. There was neither the pressure of unemployment on the social structure nor economic potential. Tripura was self sufficient in food and did not feel the need for industrial enterprise. Before 1949 it was all quiet on the economic front in Tripura despite a very backward economy"²³.

After partition of the country a large number of people trekked over from East Pakistan to Tripura for shelter. In 1949 with Tripura's merger with Indian Union, the neighbouring districts in East Pakistan and all the usual channels of communication were closed. There was no other way than to depend on air transport which is very costly. After joining India, the Govt. had made an uninterupted progressive schemes in all over Tripura to develop its backward economy. But till now, the State is suffering from serious economic problems. Rapid increase in population also put severe pressure upon the internal economy. Table No. 15 shows the occupation pattern in Tripura in 1981 Census and also comparison between 1971 and 1981.

23. Arun Kumar Ganguly, "Planned Economic Development Book", Tripura, page 89-90.

Table No. 15

Occupation structure of Tripura population in 1981 and also compared with 1971.

Year	Total main workers	Cultivation Total %	Agricultural labourers Total %	Household industry %	Other workers
1981	606153	264094	144910	9836	187313
1981		43.57	23.97	1.62	30.90
1971		54.41	19.96	1.40	24.23

Source : Census 1971 and Census 1981.

Compared to 1971, the number of cultivators decreased in 1981 but agricultural labourer, household industry and other workers increased. It is very encouraging to see that some people are attracted to household industries and other works.

According to economic and social standard, the people of Tripura are divided into following groups.

1. Member of the princely families
2. A small class of very well to do businessmen, doctors and pleaders.
3. Highly paid Govt. Officials.
4. Govt. Officials, teachers, middle class businessmen, lawyer, owners of houses and land, etc.
5. Clerk, small shopkeeper, washerman, Barber and other professional classes.
6. Owner cultivators in the villages
7. Landless tiller and agricultural labourers and Jhoomias.

These people including 1 to 3 groups, maintain a very high standard of living and lead a luxurious life. Middle class people maintain their living standard moderately. The poor people are leading a miserable life. The house rent at Agartala is very high, and the cost of living is high in Tripura.

In the hills and rural areas the peoples standard of living is extremely poor. They mainly depend on agriculture. The living standard in towns shows an upward trend. But this upward trend is observed in a small section of the total population.

Tripura's economy mainly depends on agriculture, small scale industries, and govt. services. Since 1949 Tripura was treated as a self-sufficient area in food, but gradually lost its self sufficiency. The agricultural output has increased but it does not match with rising population and their demands. The Govt. has taken up different schemes to increase the agricultural output in every plan period. They tried to encourage ^{the} use of fertilizer and to cultivate their lands by modern implements. Farming techniques must be modernized as far as possible. Thus cultivation is not doubt primitive and also extractive. So now it is proposed to settle the Jhumias on flat and hill land and encourage to change their shifting cultivation to settle cultivation.

Rapid industrial development is the key of economic growth in the State. There is good scope for industrial operations based on forest resources and possibilities of developing agro based industries. It is regrettable that there has been no attempt to setting up any large scale industries. All industrial economy is based on small scale industries. Small scale industries will

have an important role in Tripura's economy. The industrial development of Tripura is considerably backward as compared to the rest of the country due to its inconvenient geographical situation and consequent communication and marketing facilities.

In last few years, the Govt. employees have been surprisingly increasing. Due to large number of educated men and women, recruitment in junior basic, senior basic, high & higher secondary schools, as school teachers have taken place. Teaching profession is now the biggest profession in Tripura.

Govt. is encouraging the refugees and tribals to undertake daily wage under "food for work schemes". As a result a class of daily wage earners have grown from among the tribal and landless tillers.

Agricultural progress in Tripura is essential because majority of rural people depend directly and indirectly on agriculture. The tribal people practise a very primitive form of cultivation. The condition has now significantly changed with the displaced persons from Bangladesh. The Govt. have taken some schemes to encourage the use of fertilizer and better seeds and extension of the system of double or multiple cropping in agriculture. In 1981 Census 67.87% people were involved in agriculture. So agricultural development would have an important role in the economy of Tripura.

There are good scopes to develop industries, but it is true that geographical location of this State stand in the way of

development and progress of the industries. Therefore the Govt. should take steps to develop communication systems and take up training programmes for skilled manpower through the industrial institution. Govt. should also help them financially to encourage more involvement of people under small scale industries.

Finally it may be noted that capitals are concentrated in the hands of few rich land owners and business men. The rural farmers and artisans are being exploited by these few rich hands who have massive control over the rural economy.

The development of rural economy must be the focal point of economic planning in Tripura.