CHAPTER II

GENERAL DESCRIPTION OF THE BRAHMAPUTRA VALLEY

1. The River Brahmaputra

The river universally known as the Brahmaputra, traversing a distance of about 2900 Km through Tibet, India and Bangladesh, having a catchment area of about 5,80,000 sq. Km and yielding approximately 0.053 cumecs (m³/sec) per square kilometer of the catchment area is one of the most beautiful fascinating and intriguing waterways of the world. It originates from a great glacier in the northern most chain of the Himalayas in Kailash range at an elevation of about 5,150 meter south of Lake Kanggyen Tsho in Tibet. At the source, many small tributaries merge into the river from near the Mariam La Pass which separates it from the Manasarower lake.

The river Brahmaputra belongs to the family of east flowing rivers of Asia. From its source flowing about 1700 Km eastward through the southern Tibet, almost parallel to the main Himalayan range in the name of Tsangpo, a Tibetan name, cuts the Himalayas and veers south-east with a 'hair-pin' bend at a few kilometers east of Namcha-Barwa, and enters in the Siang district of Arunachal Pradesh where it is called Siang.
and then the Dihong. The Dihong enters Assam on the north-west side of old Sadiya town where it meets two more trans-Himalayan tributaries, the Dibong and the Lohit. The combined water from this confluence of the three rivers is known as the Brahmaputra, which after traversing a distance of about 720 Km in the south-west and west direction enters Bangladesh near Dhubri. Then the river bends towards south and meets the Ganges at a distance of about 240 Km north of the Bay of Bengal.

2. Location and Boundaries of the Brahmaputra Valley

Generally, the plains of the catchment area of the river Brahmaputra from Sadiya to Dhubri is known as the Brahmaputra Valley or Assam Valley. It is located in the north-eastern corner of Indian Union between longitudes 89° 46'E and 97° 04'E, and latitudes 25°00'N and 28° 18'N (the inset of Figure 1.1).

The valley is almost surrounded by high mountain barriers except the narrow neck to the plains of Bengal. Its northern side is covered by the Eastern Himalayas below which there lies a series of Sub-Himalayan hills - Bhutan, Aka, Dafla, Miri, Abor, Mishmi, etc. These hills form the Bhutan kingdom and Arunachal Pradesh. To the further north, the highest plateau of the world, Tibetan Plateau is located. This plateau plays an important role in the occurrence of Asiatic Monsoon. At the north-east, the Himalayas make a sharp bend forming a 'syntaxis' and extend further southwards to Arakan located on the eastern boundary of North-East India. The Patkai and Naga Hills form
the eastern and south-eastern boundary of the valley. These hills form parts of Arunachal Pradesh and Naga Land. The southern border is bounded by the Khasi and Jayantiya Hills and the Garo Hills forming Meghalaya state. The western boundary is a narrow plain connecting the valley to the plains of Bengal. There are seven districts in the valley, as of 1982, and their boundaries are shown in Figure 1.1.

3. Physiography of the Valley

The valley has a length of about 722 Km and an average width of about 80 Km. It covers about 72% of the total area of Assam and is built up by the deposition of alluvium, about 1,524 meter thick, upon a sag formed during the period of Himalayan upliftment. The alluvium is divided into old (called 'Bhanger in the Ganges valley) and new (called Khadar in Punjab) alluvium. The old alluvium is dark coloured and generally rich in concretions and nodules of impure calcium carbonate known as 'kankar' in Northern India. The 'kankar' concretions are of all shapes and sizes from small grains to lumps. The older alluvium forms slightly elevated terraces, generally above the flood level. It is of Middle to Upper Pleistocene age.

The new alluvium is observed in the entire areas of the active flood plains and 'charlands', and also the middle plains of the north and south banks of the river Brahmaputra. It is light coloured and poor in calcareous matter. It contains
Fig.1.1 Map of the Brahmaputra Valley (including Karbi Anglong and North Cachar Hills districts) with district boundaries as of 1982. The inset shows the location of the valley in India.
lenticular beds of sand and gravel, and peat beds. It merges by insensible gradations into the recent or deltaic alluvia and should be assigned an Upper Pleistocene to recent age.

The Mikir Hills is situated almost at the middle of the valley reducing its breadth to about 55 Km. On the east and the west side of these hills, the valley has an average width of about 100 Km and 85 Km respectively. To the west of the Mikir Hills, the valley is dotted with numerous isolated hillocks upto Dhubri of Goalpara district. These scattered hillocks are the parts of Meghalaya plateau, both structurally and geologically.

The gradient of the valley slope is not uniform and increases to the east. It is about 0.09 meter/Km between Dhubri and Gauhati, 0.13 meter/Km between Gauhati and Neematighat, 0.17 meter/Km between Neematighat and Dibrugarh, and 0.26 meter/Km between Dibrugarh and Sadiya. On average, the east-west slope of the valley is about 0.13 meter/Km. Besides this slope, the plains of the valley on both sides of the river slope down to it from the northern and the southern boundary of the valley.

The northern margin of the valley merges with the outer rampart southern of the Eastern Himalaya having high gradient. But the margin of the valley slopes up southward with low gradient. The surrounding hills and mountains, and the drainage system of the valley is shown in Figure 1.2.

Two distinct sets of tributaries are observed on both banks
Fig. 1.2 Physiography of the Brahmaputra Valley and its neighbourhood. (An overlay in the pocket is also enclosed.)
of the river Brahmaputra. The tributaries on the north bank of
the river are of larger catchment area and have greater runoff
than those of the south bank. The major north bank tributaries
are Subansiri, Ranganadi, Dikron, Buroi, Barnadi, Puthimari,
Pagldia, Beki, Manas, Champamati and Sonkosh, Noadihing, Dibru,
Buridihing, Disang, Dikhow, Phogdoi, Dhansiri, Kapili, Kulshi,
Dudhmai and Krishmai are the principal south bank tributaries.

The velocity of the water current in the river Brahmaputra
decreases downwards, as a result of which so many river islands
called 'Chaparis' or 'Chars' are formed by the deposition of
enormous load sediments in the middle of the river course,
specially in the lower part of the valley. Most of the 'Chaparis'
are washed away by flood every year creating alternate 'Chaparis'.
There are also some permanent marshes in the flood plains of
the river, known as 'beels'.

\[ \sum_{i=1}^{n} x_i \]