

Swadesh Adhyayan

A Textbook for Higher Secondary Second Year



Assam Higher Secondary Education Council

Bamunimaidam, Guwahati-21

Swadesh Adhyayan : *A textbook for study of the geography and history in English medium for class XII of Assam Higher Secondary Education Council (Effective from 2019-2020 Academic Session) prepared and approved by Assam Higher Secondary Education Council and Published by the Assam State Textbook Production and Publication Corporation Ltd. (ASTPPCL), Guwahati, on behalf of Govt. of Assam.*
Free Textbook

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Dr. Ranoj Pegu, MBBS.
Minister, Assam



Education, Welfare of Plain
Tribe & Backward classes



MESSAGE

Textbooks are the key components of scholastic education. Students gain knowledge that flows through the pages of the textbooks. Students, enriched with knowledge, are the wealth and future of our State as well as our Nation. The Renaissance of human civilization had been influenced by Education only. With this realization and foresight, the present Government has accorded the highest priority to the development of the Educational sector in the State.

The present State Government, in a bid to complement the untiring efforts of the student community to achieve success and fulfil ones' ambition and contribute to the welfare of the State, has been implementing various educational assistance programmes under "Pragyan Bharati". Under this programme, Free Textbooks are being distributed to the students from Pre Primary, Class I to Class XII which is now extended up to degree level since 2020. The benefits have been further augmented by waiving admission fees for the students of Secondary and Degree level. The State Government has also waived examination fees at the Secondary level for the students from the economically weaker section. Free uniforms are also being provided to the students up to the High School level. Under the "Anundoram Borooah Award Scheme", free laptops and at times, substituted with cash rewards, are being provided to meritorious students who excel in the HSLC examinations.

The Free Textbook component of the noble programme -"Pragyan Bharati" comprises printing, publication and distribution and, it is implemented with concerted efforts of the Assam State Textbook Production and Publication Corporation Limited (ASTPPC Ltd.), State Council of Educational Research and Training (SCERT), Board of Secondary Education, Assam (SEBA) and Assam Higher Secondary Education Council (AHSEC). I thank all these wings of the education department and appreciate their sincere hard work to make the scheme successful. My best wishes remain to all the Students - the human resources of the Nation for relentlessly pursuing their studies with all dedication and sincerity to gain a successful foothold to a bright future.

(Dr. Ranoj Pegu)
Education Minister, Assam

**FREE TEXTBOOKS:
A FLAGSHIP PROGRAMME OF THE GOVERNMENT OF ASSAM.**

The Assam State Textbook Production and Publication Corporation Limited (ASTPPC Ltd.) is a Government Undertaking of the Government of Assam and was established on 1st July, 1972 under the Indian Companies Act, 1956 with the aims and objectives to ensure the standardized and quality Textbooks, to the student community of Assam, on time. The Corporation is under the administrative control of the Department of Education (Elementary), Government of Assam.

Prior to 1950, a committee known as the Central Textbook Committee which was attached to the office of the DPI (Directorate of Public Instruction), Government of Assam It used to look after all the matters relating to production of textbooks. In the year, 1950, the name of the Committee was changed to Assam Textbook Committee, constituted with 10 members, nominated by the Government of Assam. In the year 1968, the Government of Assam reconstituted the said committee as "Board of Textbook Production and Research".

The Board was rechristened as Corporation by a notification dated 26th July, 1972 w.e.f.1st July, 1972, constituted as an autonomous body under the direct control of the Elementary Education Department of Assam. Md. Umar Uddin and Vishnudev Sharma were respectively the first Chairman and Managing Director of the Corporation.

In the year 1986 the Government of Assam had made the textbooks free for all the students studying in Government and provincialised schools of the State. The scheme of Free Textbooks continued till 1991. From 1992-2002 the books were printed and published at subsidies rate with 50% Government contribution. Again from 2003, the scheme of free textbooks distribution was revived and it continues till date.

ASTPPC Ltd. is responsible for printing and publishing 3.18 crores Textbooks from Ka-Shreni to Class XII in eight mediums and nineteen languages. The distribution of free Textbooks is undertaken by the Inspector of School of 34 districts and BEEOs of 149 Educational Blocks to approximately 61,00,000 numbers of students of the State.

The mandate of the ASTPPC Ltd. involves, collection of enrollment from different authorities, calculating the requirement of textbooks, procurement of paper and printing. Then, dispatch of the Books to the Districts and Blocks and to the students within a very short time frame. It is possible only due to the co-ordinated and untiring efforts of all the stakeholders starting from the dedicated and limited staff members of ASTPPC Ltd. along with the Department of Elementary and Secondary Education; Department of Finance; SSA, Assam; Directorate of Secondary and Elementary Education, SCERT; SEBA; AHSEC; Assam Rastrabhasa Prasar Samiti, Inspector of Schools; DEEOs; BEEOs of Educational Blocks; all Principals and Head Masters of Govt./ Provincialized /Recognized schools; Empanelled Printers; Paper mills; Transporters and Godown Staff and other Agencies. Our prime objective is to make this flagship programme of the Government, a success.



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THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a **SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC** and to secure to all its citizens :

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity, and to promote among them all;

FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.**

Syllabus

FIRST PART : GEOGRAPHY			
		Marks	Class
CHAPTER ONE	ASSAM IN NORTH EAST INDIA: ITS ENVIRONMENT, PHYSIOGRAPHY, CLIMATE, SOIL AND THEIR RELATIONSHIP	08	14
CHAPTER TWO	DEMOGRAPHY OF ASSAM	08	14
CHAPTER THREE	BIODIVERSITY	08	14
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SECOND PART : HISTORY			
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CHAPTER SEVEN	POPULATION GROWTH OF ASSAM AND THE FOREIGNERS ISSUE	08	15
CHAPTER EIGHT	(A) CRAFTS AND INDUSTRIES IN ASSAM: PRE-BRITISH AGE (B) CRAFTS AND INDUSTRIES IN ASSAM: BRITISH AGE	12	20
CHAPTER NINE	ENVIRONMENTAL MOVEMENTS OF INDIA AND ENVIRONMENTAL CHANGES IN ASSAM	08	15
Total		80	140
CHAPTER TEN	PROJECT PREPARATION GEOGRAPHY HISTORY	10 10	

Total Marks : 100

Marks Distribution

First Part : Geography – 40

Second Part : History – 40

Project Work : Total – 20 (10 + 10)

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PART-I

GEOGRAPHY

CHAPTER : 1

ASSAM IN NORTH EAST INDIA: ITS ENVIRONMENT, PHYSIOGRAPHY, CLIMATE, SOIL AND THEIR RELATIONSHIP

Important points

- States of North East India- Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim
- Foreign countries surrounding the North East India- Nepal, Bhutan, China, Myanmar and Bangladesh
- Location of Assam- 24⁰⁷' N and 28⁰⁰' N Latitude, and 89⁰⁵' E and 96⁰¹' E Longitude
- Climate of Assam- Wet sub-tropical
- Population of Assam as per 2011 Census- 31,205,576
- Specialities of the Brahmaputra –
 - Sixth biggest river in the world
 - Second biggest sediment carrying river (420 Million Tons per year) in the world.
 - Habitat of rare species of Dolphin, “Platanish Gangetica”
 - Brahmaputra route is one of the main global routes of migratory birds
 - World largest river island Majuli is amid the Brahmaputra
 - On 1st September 1988, the Government of India declared 891 kilometre river course of the Brahmaputra, from Sadiya to Dhubri as the second national waterway of the country.

Assam is an important state of the eight states of North East India. The eight states included in North East India are Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim. Excluding Sikkim, the seven states together earlier were known as Assam.

These seven states are popularly known as ‘Satbhanee’ among the people of North Eastern states. The states and the union territories which formed the erstwhile ‘Bar Asom’ (Greater Assam) has been divided into seven states in course of time. Combining all the seven states of the North Eastern Region, the North Eastern Council has been formed and taken up certain economic development measures. Later, the North Eastern Council included the state of Sikkim with North Eastern Region.

Prior to signing of the historic Yandabu Treaty between the British and the Burmese in the year 1826 the erstwhile Satbhanee were divided into three political units; Ahom Rajya, Tripura and Manipur Rajya. After the independence of India in 1947, these three territories known as the states of Assam, Tripura and Manipur. Later, on 1st December, 1963 the Nagaland, on 2nd April 1970, the Meghalaya were declared as states and on 20th January, 1972 Arunachal Pradesh and Mizoram were recognised as the Union Territories. The erstwhile Union Territories Manipur and Tripura formed at the time of independence were given the status of full-fledged states on 21st January 1972. Sikkim has been included in North Eastern Region in 2002 as the eighth state of the region. (Saraighat Year Book 2019)

Located far away from the seas and oceans, each states of North East India share their boundaries with at least one foreign country. Around 5182 kilometres i.e. about 99 per cent of the total length of boundary is shared with the foreign countries. A narrow land corridor of 21 to 40 kilometre located in the northern part of West Bengal connects North Eastern Region with rest of the country. As the region is bounded by five foreign countries viz. Nepal, Bhutan, China, Myanmar and Bangladesh, the North Eastern Region becomes very sensitive from strategic point of view.

Physiographically the North East India is formed by the mountains of eastern Himalayas and the Brahmaputra and Barak valleys. Excluding the extensive plain areas formed by the tributaries of the Brahmaputra and the Barak, the Manipur valley and the scattered plains amidst the hills of Meghalaya and Mizoram, two third of the total geographical area of the region is covered with hills. The altitude of the region ranges from a few metres to more than 7000 metres above the sea level. The Kanchenjunga with the altitude of 8586 metres situated at the border areas of Sikkim and Nepal, is the third highest peak of the world.

The North Eastern Region is located at the trijunction of Indo- Malayan, Indo-China and Indian Zoo Geographical Regions. The region primarily belongs to wet subtropical climatic zone. The climate of North East India particularly Assam is primarily influenced by the factors like–

- (1) The location of Assam as well as North East and its physiography
- (2) Presence of the lofty mountains of the Himalayas and

(3) The influence of vast waterbody of the mighty river Brahmaputra.

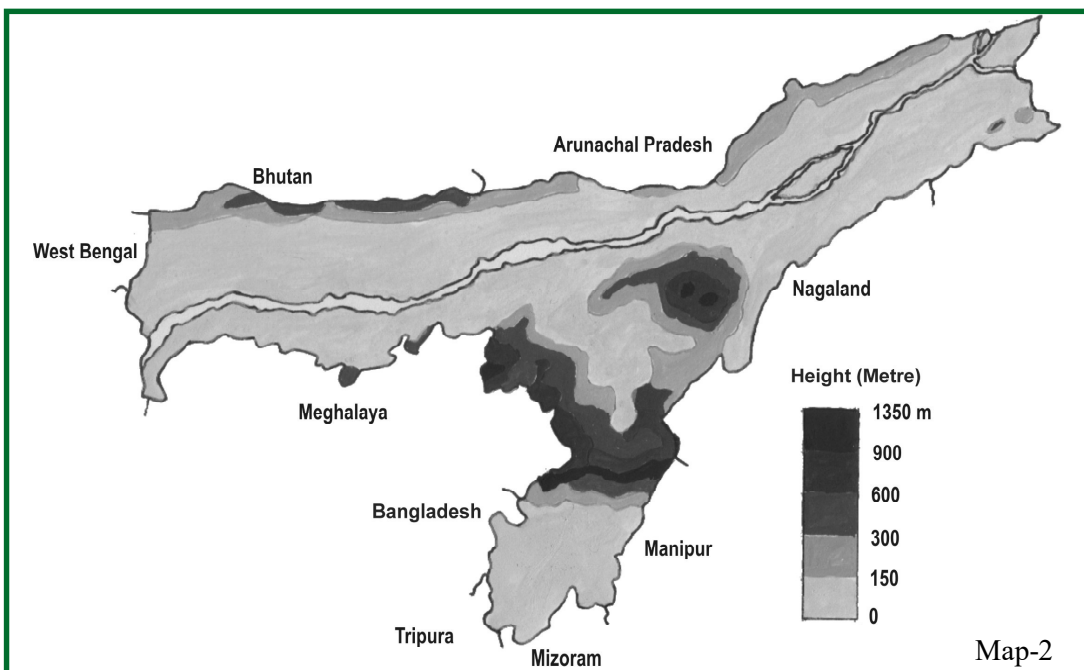
The location and the physiographic characteristics of Assam highly influenced the physical, economic and political environment of the state. Located on the globe between the latitude $24^{\circ}07'N$ and $28^{\circ}0'N$ and between the longitude $89^{\circ}5' E$ and $96^{\circ}1' E$, and also surrounded almost all sides by the hills and mountains, the climate and biodiversity of Assam is quite different from other states of India (Map-1).



Mainly for the climatic characteristics, different types of plants and animals are found in both winter and summer seasons. As a result Assam becomes a rich region from biodiversity point of view.

Assam is the only plain state of North Eastern Region. Only three districts, Dima Hassao, Karbi Anglong and West Karbi Anglong are hilly. Other districts are almost plain. However, the border areas of Bhutan and Arunachal Pradesh fall in Kamrup (Metro) and southern part of Morigaon districts of Assam have some hills and hillocks (Map-1). For the presence of the hilly terrain covered with green vegetation of the surrounding states keep the climate of the state different from other states of India located between the same latitudes. For this, the summer temperature found in the state is relatively lower. But because of the presence of high

amount of water vapour the real feel of summer temperature found to be more than the actual. Except Sikkim, other states of North East India receive water mainly from heavy rainfall that occur in the region which drained to the Brahmaputra and to the Barak rivers by the tributaries of both the rivers. The fast flowing tributaries and streams rush down over the steep slopes of the hills and mountains carrying huge amount of sand, silt and clay, deposit at the bottom of the Brahmaputra and thereby reducing the depth of the river and as consequence floods and bank line erosion occur, which are increasing day by day.



The lofty Himalayas is protecting the entire region from severe cold waves from the north. Snow covered steep slopes of the Himalayas and the deep gorges also protecting the region from possible attacks by the foreign countries. The snowmelt water keeps the Brahmaputra and its all north bank tributaries with full of water throughout the year. Many varieties of plant and animal species have been seen in the rivers for having enough water throughout the year. It has also given opportunity to provide enough water supply to the crop fields in every season. The hills and mountains of Arunachal Pradesh, Nagaland, Manipur, Mizoram surround the valleys of the Brahmaputra and Barak. In the monsoon season due to the presence of the hills and mountains of the region, heavy orographic rain occurs. As consequence, the rivers overtop and create floods in many places. On the other hand, the flood water helps in maintaining forest cover and crop cultivation. For the presence of many varieties of fishes,

tortoise and other aquatic species in the rivers, their tributaries and wetlands, the state of Assam becomes rich in biodiversity. Right from Sikkim in the west to Arunachal Pradesh in the east many places are there which are naturally very beautiful. Only a few places of these have been developed as tourist spots so far. If adequate transportation and accommodation facilities could be made available many new spots in the region could be developed into very attractive tourist spots, which will open the ways to provide employment to many youths of the region besides earning of foreign currency.

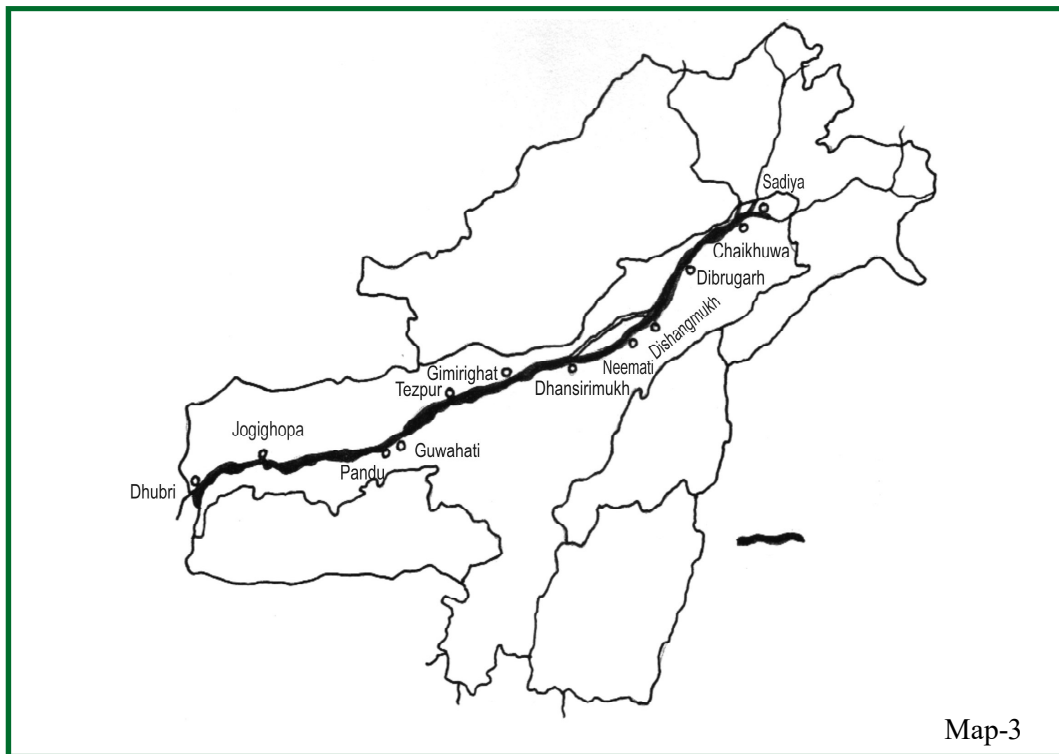
The Brahmaputra :

The mighty Brahmaputra is often called as the lifeline of Assam. The impact of the river Brahmaputra on the natural environment, economic condition and the livelihood of the people of Assam is enormous. The source area of the Brahmaputra is north of the Himalayas. The river flows southward through Himalayas in Arunachal Pradesh and enters the Assam valley. The Brahmaputra is a trans Himalayan river which flows through the region comparatively higher altitude than its source area. It is the sixth biggest river of the world. The total catchment area of the Brahmaputra is around 5,80,000 sq. km. Of the total basin areas of Brahmaputra 50.5 per cent falls in China, 33.6 per cent in India, 8.1 per cent in Bangladesh and 7.8 per cent in Bhutan. Of the total basin area of the Brahmaputra within India, around 41.88 per cent falls in Arunachal, 36.33 per cent in Assam, 6.0 per cent in Meghalaya, 5.55 per cent in Nagaland, 3.75 per cent in Sikkim and 6.47 per cent in West Bengal. The Kailash mountain, the source of the Brahmaputra from where it flows 1700 km with the name Yarlung Tsangpo and then turn southward to enter the Arunachal Pradesh. After entering Arunachal Pradesh, it is known as Siang. Flowing 278 km through mountain terrain Siang enters the plain area near Pasighat where it got the name Dihang. About 52 km downstream of Pasighat, Dihang confluences with Dibong and Luhit. From this confluence point (Parasuram Kund) the westward flowing river is nothing but the Brahmaputra. Carrying about 402 million tons of sediments per year the Brahmaputra becomes second biggest sediment carrying rivers of the world. Due to huge sediment load and its flow over the land with very low gradient, the water course of the Brahmaputra splits into several divisions and again join in downstream areas. This type of river is called as the braided river. Due to such flow, around 600 river islands have been formed. As a result, the width of the river in some areas become more than 7 km. The Brahmaputra has some other characteristics for which it becomes one of the most special rivers of the world. Amid the Brahmaputra the world's biggest river island, the Majuli is situated. Majuli covers about 645 sq km of area where 155 inhabited villages are there. Majuli is very rich in biodiversity. This river island is the heart of the Sattriya culture. The mask

making culture of Majuli is also world famous. The presence of rare species of freshwater dolphin in Brahmaputra is another speciality of the river. In the whole world, freshwater dolphin species are only four, out of which the Platenish Gangetica, an endangered species among freshwater dolphins are found in the Brahmaputra. However, their number has reduced to only 200 at present. This rare species of dolphin is an attraction of many researchers and the tourists.

The Brahmaputra river course is one of the globally important routes of the migratory birds. Right from Europe and Siberia the migratory birds flew through this route upto South-East Asia. Many of such migratory birds take rest in the wetlands of Assam. Usually in the winter season such migratory birds stay in Assam for two to three months and then return to their own places.

In the year 1988 on 1st September the government of India declared 891 km of the river course of the Brahmaputra, from Sadiya to Dhubri as the second national waterway of the country. As the river is perennial and ships can run throughout the year the route has been declared as the national route (Map-3).



Climate :

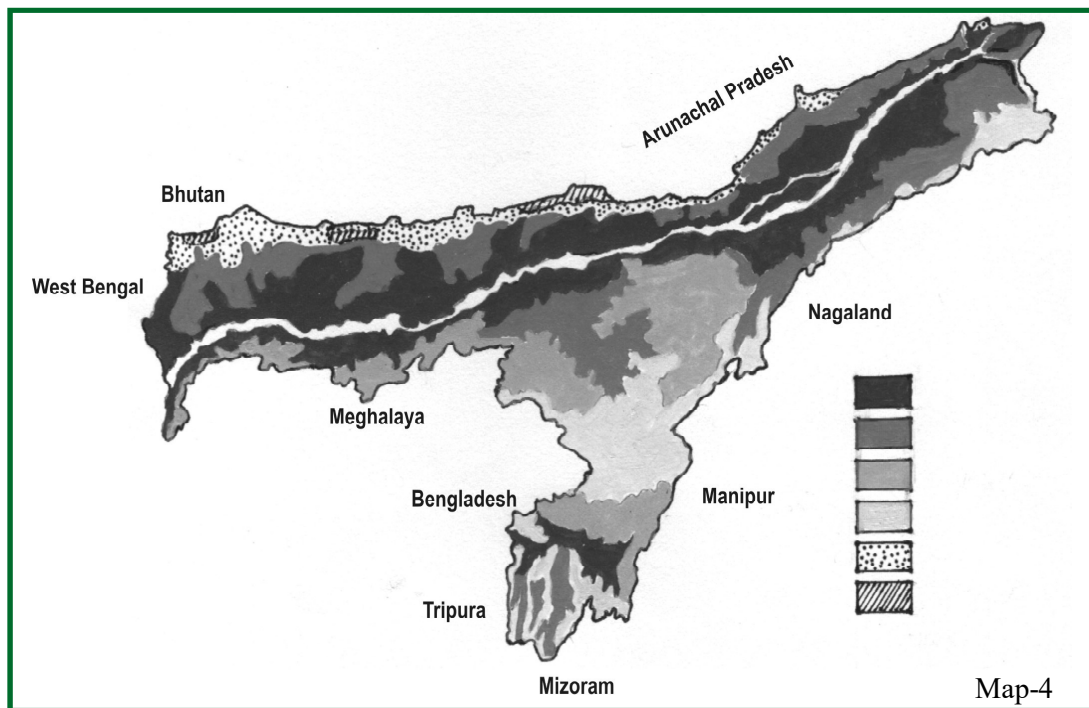
The climate of Assam is highly influenced by monsoon wind. The weather condition varies in different months of the year for which the climate of Assam has been divided into four seasons: rainy, winter, autumn and spring. Rainy season often called as the monsoon season. Of the four seasons rainy and winter seasons are comparatively longer. In between winter and rainy seasons, and between rainy and winter seasons two seasons are there, spring and autumn respectively. These two seasons are of short duration. The winter season prevails from the mid November to middle of February. During this season the average temperature drops to 15°C. The morning and evening time in winter generally remain foggy. Sandy wind increasingly blows with increase of temperature from March onwards. The strong wind blows from end of March and continue till April, is locally known as 'Bardoichila'. During this period the trees become green with new leaves and for a short period prevails the spring season. After that, in the first week of June, monsoon arrives and heavy rain occurs, which continues till the month of September. Before this season particularly in the month of May temperature becomes very high. In this period temperature increases from 30°C to 35°C. In the last part of September, the rainy season ends, and the temperature decreases substantially. Gradually the sky become clear and autumn season starts.

In between the winter and rainy seasons, particularly from the start of November the autumn season starts, which continues for a short period. Gradually temperature falls and between later part of December and throughout January temperature reduces to the lowest level. At that time the average temperature becomes 13°C; sometimes it drops below 8°C.

Significantly it has been noticed that there is some difference in climatic condition in between eastern and western Assam. The climate of the districts like Goalpara, Bongaigaon, Kokrajhar, Dhubri etc. is almost like the climate of the northern part of West Bengal. In the districts of the Barak Valley, usually rainfall occurs little more and humidity is found to be higher for which the real feel of temperature is usually higher than the actual. The southern part of Nagaon district and Hojai district of central Assam fall in rain shadow area. Therefore, these districts are comparatively dryer than other districts. The overall climate of the districts of Golaghat, Jorhat, Sivasagar, Charaideo, Tinsukia, Dibrugarh, Dhemaji and Lakhimpur is almost same as that of central Assam but during the winter the region becomes comparatively colder.

The economy of Assam mainly depends on agriculture. Around 86 percent of the people of Assam are involved in primary activities such as crop cultivation, fishing, extraction of forest products etc. The favourable climate makes these activities possible in the state. But the recent meteorological information proves that the climate of Assam is changing. On one hand temperature is increasing and on the other rainfall is decreasing and becoming irregular.

The scientists have projected that in coming years there will be more change of climate in the region. Such change will adversely affect the agricultural activities, fish and other aquatic resources of the wetlands, tea production, forest produce etc. In addition, the general health of the people of the state as well as the animal health will deteriorate and may suffer from various types of diseases.



Soils of Assam

For the geographical location, physiography and climate, and the soil characteristics of Assam greatly influence the economy of the state. The characteristics of soil influence the types of vegetation, their growth, structure etc. to a great extent. As the animal kingdom is dependent on plants, so the influence of the soils on biodiversity richness of Assam is enormous.

The acid content in the soils of Assam is generally high. Depending on the characteristics, the soils of Assam could be divided into four types. These are- alluvial soil, hill soil, coarse grain soil of the foothills zone and red or laterite soil (Map-4).

Alluvial soil :

The Brahmaputra and the Barak valleys are mainly composed of river built alluvial soils. This alluvial soil could be divided into two categories; new alluvium and old alluvium. The

frequent flood affected areas of both the banks of the Brahmaputra and the Barak are mainly composed of new alluvium. The colour of this type of soil ranges between medium to dark grey.

The old alluvium soil is found mainly in Kokrajhar, Chirang, Baksa, Udalguri, Barpeta, Nalbari, Kamrup, Darrang, Sonitpur, Lakhimpur and some parts of Dhemaji districts. In between the new alluvial zone, near the river banks and the foothills zone generally the old alluvial soils are found. The old alluvial soil belt of southern bank of the river Brahmaputra is comparatively narrower than that of the northern bank. But it is very wide in Mankachar, South Salmara, Goalpara, Nagaon and Hojai areas.

In the Barak valley, parallel to the hill ranges of Mizoram a good number of narrow but elongated older alluvium belts exist. The colour of the old alluvium ranges between dark grey to greyish-yellow.

Hill soil :

This soil is generally found in the southern hills of Assam. The fertility of this type of soil varies in different places. This type of soil is rich in nitrogen and organic matters. Depending on the physical and chemical composition, the hill soils can be divided into two: sandy and loamy. The red soils are found in the border areas of Assam and Meghalaya, Karbi hills, Barail range of the Dima Hasao district and the eastern part of Cachar district. In the red sandy soils, the acid content is generally less. Nitrogen, phosphoric acid, humus and lime content in this type of soil is negligible.

Coarse grain soil :

A narrow belt between the mountain ranges of the Himalayas and the Brahmaputra plain coarse grain soils are found. This type of soil is generally known as Bhabar and Tarai. From the western boundaries of Assam and Arunachal Pradesh to the Subansiri river, an elongated narrow belt is there, which is composed of large and small rocks and pebbles and coarse sands derived from the mountain slopes. The characteristics of this type of soil is different from the other types of soils of Assam. This type of soil is called as Bhabar. The soil characteristics of the Tarai zone of the Brahmaputra valley is like that of the Bhabar zone. However, this Tarai soils are found south of the Bhabar zone parallelly up to the Dihang river. Presence of tall grass and presence of many wetlands are the important characteristics of this soil zone.

Red or Laterite :

In the red and laterite soil the iron particles and aluminium are found in large proportion. Usually this type of soil is found in wet tropical region. For high content of iron particles, the

colour of this type of soil looks red. This type of soil is mainly found in the Dima Hasao district and Hamren area of the Karbi plateau. In the southern margin of Golaghat district and the foothill zone of Barail range of Barak valley laterite soil is found. The colour of this soil is dark. Nitrogen, potash, phosphoric acid and lime content in this type of soil is very little.

By and large the soils of Assam are suitable for production of varieties of crops but having high amount of sand particles the riverside soils are susceptible to erosion. As a result, the riversides of the Brahmaputra and most of the large rivers and tributaries suffer from bank line erosion for which thousands of people lose their houses and other properties every year. The damage to the croplands is also enormous.

Assam being located at the central part of North East India; the people of entire region travel to other parts of the country through Assam only. Assam has the connection through roadways, waterways, railways and airways with other parts of the country and with some foreign countries. Such advantages are there only in Assam; not in other states of North East India. Due to suitable climate, fertile soils and as most parts of the state are plain areas, Assam becomes suitable for agricultural activities and hence population density is very high. It becomes clear from the Table No. 1 how Assam is important from different angles among the North Eastern states.

Table-1

Position of Assam amidst the states of North East India

State	Land area (Sq Km)	Population (2011 Census)	Population Density (per sq. km.)	Literacy Rate
Tripura	10,486	3,673,917	350	87.2
Sikkim	7,096	610,577	86	81.42
Nagaland	16,579	1,878,502	119	79.55
Mizoram	21,081	1,097,206	52	91.33
Meghalaya	22,429	2,966,889	132	74.43
Manipur	22,327	2,570,390	122	79.21
Assam	78,438	31,205,576	397	72.19
Arunachal Pradesh	83,743	1,383,727	17	65.38

Source : 2011 Census, Govt. of India

EXERCISE

1.
 - (a) In which year the North Eastern Council was formed?
 - (b) When the state of Sikkim was put in North Eastern Region?
 - (c) In which climatic zone the Assam is included?
 - (d) What is the density of population per sq km in Assam as per 2011 Census?
 - (e) What is the percentage figure of the Brahmaputra basin area that falls in Assam to the total area of the basin in India?
 - (f) How many types of soils are there in Assam?
2.
 - (a) How many states are there in North East India and what are the states?
 - (b) What are the prime aims and objectives of North Eastern Council?
 - (c) When and between whom the Yandabu Treaty was signed?
 - (d) Which two states of North East India remained as the union territories from 1949 to 1972?
 - (e) Which foreign countries surround the North East India?
 - (f) Why the Brahmaputra river is called as the trans- Himalayan river?
3.
 - (a) Give a short description of the Brahmaputra river course after entering India.
 - (b) Describe the role of the Himalayas in controlling the climate of Assam
 - (c) Describe the specialities of the Majuli island
 - (d) Give a brief description of the Brahmaputra as a national river route
 - (e) Give a description in how many and what are the climatic seasons Assam has been divided
 - (f) Describe the influence of Monsoon wind in Assam
 - (g) Describe the distribution and characteristics of Laterite or Red soils in Assam
4.
 - (a) Explain the reasons for which Assam becomes rich in biodiversity
 - (b) Write a note on the distribution and characteristics of alluvial soils of Assam
 - (c) Having plain physiography what are the advantages of Assam compared to other states of North East India? Discuss
 - (d) How the location peculiarity of Assam increased its importance in North Eastern region?



CHAPTER : 2

DEMOGRAPHY OF ASSAM

The first ever census in Assam held in 1872, during British regime, a total of 22 lakh population was recorded in Assam. At that time the present North-East India was considered as one entity i.e. Assam. According to the census of 2011, the total population of Assam was counted to be 3,12,05,576. According to a pre-census estimate of March, 2019 the total population of Assam has been calculated to be about 3.50 crore. It accounts for about 2.6 per cent of the total population of India. Assam covers about 2.4 per cent of the total land area of India. It means 2.4 per cent of the total land area of India gives home to 2.6 per cent of the total population of India. During first two decades of 20th century the population growth in Assam is 8.1 per cent. On the other hand, during this period the population growth in India was only 4.3 per cent. Urbanisation in Assam is also slow only 14 per cent. Total number of districts are 33, of which 3 are hilly districts. Total number of administrative subdivisions are 56 (2011) and the whole state has been divided into 184 revenue circles.

There exists diversity among the indigenous people in respect of anthropogenetic, linguistic, social and religious elements. The overconsciousness on such diverse elements of population sometimes try to influence the unity of the people of Assam in negative way.

There is an inertia in respect of development of industries and commerce and hence, people engaged in different sectors of the economic activities have also differed as follows—

Primary activities	52.4	per cent (agriculture 40 and agricultural labour 12.4 p.c.)
Secondary activities	14.0	per cent
Tertiary activities	24.3	per cent
Quaternary activities	6.3	per cent
Quinary activities	3.0	per cent

Literacy rate in Assam as a whole is 72.2 per cent (2011 census). Woman literacy is only 66.3 per cent. For development of female education various plan, projects and programmes have been made both at government and voluntary organisation levels but the result is not upto desired level. As a result the level of development have not achieved as expected.

The Human Resource Development is also low in Assam. The skill development process although underway but in comparison to the available resources, the level of development is below expectation.

There is a marked variations in respect of population concentration in the plains and the hilly districts. In the thirty plain districts of Assam, on average, the population density is 397 per km². On the otherhand, the three hilly districts have only 12 persons per km² i.e. sparsely populated (dispersed pattern of settlement)

A British officer as long back as 1830, estimated the population of Assam to be about seven lakhs. After about fifty years i.e. in 1872, the first ever census of Assam, recorded its population of about 22 lakhs, which rose to 33 lakhs in 1901.

The population growth (both positive and negative) in a region may occur mainly due to (i) birth rate, (ii) death rate and (iii) Migration (immigration ~ emigration). Therefore, to calculate the population growth in general the formula generally followed is–

Population growth (Pg)=(birth rate ~ death rate) ± Migration (Immigration ~ emigration)
or $Pg = (B \sim D) \pm M$

Since 1901, along with India, census of India completed its census operation in Assam and published the census record and is continuing its census activities after every decade.

According to the official census, the population of Assam in 1901 was recorded to be 3.29 million which rose to 31.1 million in 2011. It means during this period the size of the population rose 9.5 times.

Table 2.1
Population growth, density in Assam (1830 – 2019)

Year	Population in lakh		Density (per km ²)		Growth (in percentage)	
	Assam	India	Assam	India	Assam	India
1830	7 approx	NA	9	NA		
1872	22 approx	NA	28	NA	5.5	NA
1901	33	2384	42	77	18.1	NA
1911	38	2521	49	82	17.0	5.8
1921	46	2513	59	81	20.5	0.3
1931	56	2789	71	90	19.9	11.0
1941	67	3189	85	103	20.4	4.2
1951	80	3611	102	117	19.9	13.3
1961	108	4392	138	142	35.0	21.5
1971	146	5881	186	177	35.0	24.8

1981	180 (app)	6833	230	230	23.4	24.7
1991	224	8463	286	267	24.2	24.7
2001	266	10,270	340	326	18.9	21.5
2011	312	12,106	308	368	17.1	17.7
2019	330 (appr.)	14,000 (appr.)	421	388	19.0	NA

Source : Census of India, 2011

During pre-independence period (1901–1947) the population growth rate in Assam was 144 per cent as against 51 per cent for India as a whole. On the other hand, in post-independence period (1951-2011), the growth rate of population is 232 per cent as against 184 per cent for the nation as a whole. This high growth rate of population is due mainly to two reasons – (a) high birth rate and declining death rate, (b) Migration (Immigration). Expecting better opportunities, a large number of migrants have entered into Assam from the neighbouring foreign countries mainly Bangladesh, Nepal and Myanmar both legally and illegally. Besides a large number of people from different states of India have entered and finally settled in Assam in the form of labour (worker) and businessmen and mainly engaged in tertiary, quaternary and quinary sector of activities. These people have highly influenced the demographic structure and composition of Assam.

In all the 33 districts of Assam there is a spatial variation so far the distribution and the density of population is concerned. On the south bank of Brahmaputra, east of Golaghat district of Assam and in the north bank east of the Bornadi all the districts (except the town areas) exhibit sparse population. On the other hand, in the central Brahmaputra Valley region districts (except the BTC districts) are densely populated. All the three hilly districts are sparsely populated due to the terrain character of the land and other amenities of life. In BTC the three districts namely Chirang, Baksa and Udalguri, except Kokrajhar, are sparsely populated. All the districts of Barak Valley are densely populated. As on today no district of Barak Valley is having less than 300 people per square kilometre. Maximum concentration occur in the Karimganj District. Assam, comprising of both the Brahmaputra and the Barak Valley and the three hilly districts have a total of 26,395 number of villages. Head counted on average in each village is of 880 people. It is interesting to note that about 66 per cent of these villages are having population below 1000. In the three hilly districts, on average there are only seven families per village. Majority of the villages inhabited mostly by the Karbis and the Dimasa practise shifting cultivation and, hence, the villages also shift their location after every 5-6 years. Permanent villages are small in number. Hamlet type of settlement are more

in number. Due to the lack of modern facilities, the standard of living is also not satisfactory. The youths have in most cases, the tendency to migrate to the nearby towns. The facilities provided by the authorities through District Rural Development Authority (DRDA) and also by the District Councils are meagre.

The Indian towns are categorised on the basis of population size. The number of class I towns in Assam (population having more than one lakh) are 4 in numbers. They are - Guwahati, Silchar, Dibrugarh and Nagaon. While Guwahati is looked after by the Guwahati Municipal Corporation (GMC) and Guwahati Metropolitan Development Authority (GMDA), the other three are run by the Town Committee authorities. The population of Jorhat and Tinsukia has now almost touched the level to declare them as class I town.

Besides the marked difference in respect of population density between the districts of Assam there exists variations in population growth rate among the districts. According to 2001-2011 census the over all growth rate of population in Assam is 16.93 per cent. Among the 33 districts of Assam the growth rate in 14 districts are higher than the state's average growth rate. The districts having higher growth rate than the state's average are – Dhubri (24.4%), Morigaon (23.4%), Mankachar (23.3%), Goalpara (22.8%), Nagaon (22.1%), Hailakandi (21.5%), Barpeta (21.4%), Karimganj (20.8%), Cachar (20.2%), Darrang (19.5%), Kamrup Metro (19.5%), Dhemaji (20.3%), Karbi Anglong (10.4%) and Lakhimpur (17.1%). While the growth rate of population in Kamrup Metro, Dhemaji, Karbi Anglong and Lakhimpur have been ascertained to be the result of inter-district and inter-state migration, the other ten district's unnatural growth rate may be termed as suspected illegal migration from neighbouring countries mainly Bangladesh and Nepal. The Bengali speaking Hindus and followers of Prophet Mohammed speaking Bengali both are there. The Muslims have outnumbered the Hindu immigrants in most cases. These illegal migrants have entered Assam in search of better opportunity of life. The vast barren wastelands comprising of mainly the charlands and the riverine islands are the destinations for a large section of the immigrant labourers. They settle down in the charlands and riverine islands and are associated with the production of Rabi crops. Another section unorganised, untrained labourers works generally in the construction activities. These labourers are cheaper and ready to work and mainly resides temporarily in city slums. They are generally protected by troop commander called 'Matabbor' on commission basis against daily wage. A section of such immigrants deals in vegetables and poultry in the form of vendors visiting door to door in the city areas. The Nepali communities migrated from Gorkha dominated areas of West Bengal and Nepal after independence are mainly engaged in dairy farming sector both in production and distribution of milk. In the BTC area, except in Kokrajhar district, in all other three districts the population growth rate is below 10 per cent.

In Assam at present the density of population is 397 per square kilometre. There exists spatial variations. The Kamrup Metro district has the highest density of population (2010 persons/km²) Goalpara, Dhubri, Hailakandi, Darrang, Baksa, Cachar, Lakhimpur, Kamrup, Sivasagar, Bongaigaon and Mankachar records population density higher than the state average. On the other hand, Jorhat, Sonitpur, Tinsukia, Golaghat, Kokrajhar, Chirang and Dhemaji have sparse population and density is also low. In the three hilly district Karbi Anglong (93 persons/km²), West Karbi Anglong (89 persons/km²), Dima Hasao (44 persons/km²) and the newly created districts of Charaideo, Nazira and Majuli are sparsely populated districts.

Table 2.2
District wise density of Population and Literacy rate
Assam, 2011

Districts	Area (in .000 km ²)	Population in lakh (2011 census)	Density km ²	Literacy rate	Decadal growth (2001-2020)
Kokrajhar	3.17	8.87	269	65.2	5.19
Dhubri	1.66	19.49	896	58.3	24.40
Goalpara	1.82	10.08	553	67.4	22.74
Baksa	2.01	9.50	387	69.3	11.17
Barpeta	2.68	16.94	742	63.8	21.40
Bongaigaon	1.73	7.4	676	69.7	19.58
Chirang	1.97	4.8	251	63.6	11.26
Udalguri	1.67	8.32	413	65.4	9.76
Darrang	1.89	9.3	586	63.1	19.51
Sonitpur	2.28	19.3 (UD)	370	67.4	1567
Lakhimpur	2.28	10.42	458	77.2	17.06
Dhemaji	3.23	6.86	212	72.7	20.30
Tinsukia	3.79	13.28	350	69.7	14.51
Dibrugarh	3.38	1.33	392	76.1	12.04
Sivasagar	1.73	11.50	431	80.4	9.37

Jorhat	1.97	10.92	383	82.2	9.21
Golaghat	3.50	10.7	305	77.43	11.88
Nagaon	2.29	28.24	711	72.4	22.09
Morigaon	1.60	9.57	617	68.0	23.39
Kamrup (M)	6.27	12.54	1313	88.7	18.95
Kamrup	3.48	15.54	489	75.6	15.67
Nalbari	10.10	7.72	733	78.6	11.74
Hailakandi	1.33	6.59	497	74.3	21.44
Karimganj	1.81	12.29	679	78.2	20.74
Cachar	3.79	17.37	459	79.4	20.17
Charaideo	.94	–	–	71.0	11.5
Majuli	.88	2.50	300	68.2	11.62
Karbi Anglong	7.4	9.56	92	69.3	18.69
West Karbi Anglong	3.04	2.00 (app)	66	62.0	18.69
Dima Hasao	4.89	2.14	44	77.5	13.53
South Salmara	.57	5.55	977	67.6	18.86
Mankachar	3.0	12.0	400	67.6	15.7
Biswanath	1.69	9.31	552	64.5	18.8
Hojai	78.44	311	397	73.2	16.93

Source : Assam Year Book 2018

Migration :

Migration is a continuous process. The process is continuing since time immemorial. Migration from negative prospective (–ve) to positive prospective areas (+ve) for better facilities of livelihood is generally accepted globally. But from the political perspective of the indigenous residents of the destination it is not acceptable at all.

In Assam, migration at inter-regional level occurs from rural to urban and from the small urban and service centres have little impact on the urban environment and the negative impacts are negligible. But the negative impacts from the illegal migrants and refugees from the

neighbouring states and countries are beyond tolerance level. The social, political, cultural and economic life of the region have been greatly affected by these migrants.

According to the census of 2011, there are a total of 1.6 crore followers of Prophet Mohammed in Assam. Out of these 32.6 percent Muslim's mother tongue is Assamese. Like the indigenous Assamese, these Assamese-speaking Muslims also restrict their children only by two or three. There has been a drastic change in the population structure due to the large scale migration and high birth rate among these people leading to unnatural change in the population structure and composition in Assam. During 2001-2011 the Hindu population has increased in Assam by 80 percent. This of course, has included Bangladeshi illegal migrants and the refugees and also the migrants from Nepal. During this period, the Muslim population has increased by about 197 percent. During last four decades (1971-2011) the Muslim population in Assam has increased 250 percent in comparison to the Hindu population. During this period, the percentage of Hindu population has increased by 72.5 per cent (growth rate 10 percent). Political patronage along with the negative opportunities in the source region of immigrants origin have contributed to a large extent to move from the source (Bangladesh, Nepal etc.) to the destination (Assam). This has resulted in the unnatural and rapid growth of population in Assam. (Table 2.3). In certain areas of specific districts, the demographic structure and the composition are given below –

Table 2.3
Religious Demographic Change, Assam

Year	Hindu			Muslim		
	1991	2001	2011	1991	2001	2011
Dalgaon (Darrang)	53,678	80,141	53,065	1,54,179	3,23,309	4,18,012
Baghbor (Barpeta)	14,112	10,949	10,789	2,31,242	2,84,151	2,94,993
Kalgachia (Barpeta)	3,186	1,516	1,391	1,21,431	1,46,516	1,94,456

Table 2.4
Linguistic Change : Assam

Year	Assamese Speaking			Bengali Speaking		
	1991	2001	2011	1991	2001	2011
Dalgaon (Darrang)	1,73,288	92,923	74,138	1,15,120	2,97,120	3,86,595
Baghbor (Barpeta)	1,33,449	45,022	15,728	1,11,441	2,50,091	2,90,158
Kalgachia (Barpeta)	68,982	33,970	56,363	55,539	1,14,345	1,39,178

Source : Census of India, 2011

There has been a change in linguistic composition with the change in the religious composition in the demographic scenario of Assam. The number of people with Bengali as mother tongue has increased in number in as many as 17 districts of Assam. All these have occurred due to large-scale migration from Bangladesh to Assam. The three regions of Assam located in Barpeta and Darrang districts reveal a remarkable change so far the religion and language are concerned.

Except Barak Valley districts none from the indigenous Hindu or the Muslim community people under any circumstance like to reveal their identity as Bengali as mother tongue. These indigenous Muslims have immense contributions to the social, political and cultural fields of Assam.

During pre-independence era, the Mongoloids, Aryan, the associates of Mughal soldiers (artisans, warriors); discovery of tea bushes in the Singpho dominated land and later practising of cultivation in the form of Garden and Estates demanded a large number of labourers hailing mainly from the Chhottanagpur plateau. The British had also brought some petty bourgeois (Junior Assistant) to assist in the activities of courts and offices from Bengal and also some Nepali ex-servicemen to man the posts. The Indian National Army (INA) formed by Netaji Subhas Chandra Bose in the later period settled in Assam and became an integral part of the great Assamese mainstream. These waves of migration never have negative impact on Assamese society and culture and contributed a lot in the gardening of colourful glorious Assam. The changing political scenario of Pakistan in 1971, i.e. political separation of East Pakistan and promotion with recognition as a separate state called the Bangladesh, compelled some of the religious and linguistic minority communities to migrate to India specially to Assam across the open international border.

Table 2.5
Decadal variation of Religious Composition, Assam

Religion	Population in per cent		Decadal variation
	2001	2011	
Hinduism	80.05	61.47	-18.61
Islam	13.04	34.22	21.18
Christianity	2.30	3.78	1.44
Sikh	1.90	0.07	-1.83
Buddhism	0.80	0.18	-0.62
Jainism	0.40	0.40	Constant, no change
Others	0.70	0.25	-0.45

These people have created a gross negative impact on the char land, riverine islands of as many as 14 districts and 17 Legislative Assembly Constituencies of Assam specially in the social, economic and political sphere. Even the lands allotted to the Neo-Vaishnavite Satra by the authorities concerned have been under large-scale encroachment by these unruly immigrants. Grabbing barren government lands is a common scenario and even in the periphery of National Parks and Wildlife Sanctuaries including the 'wetlands' are in large-scale encroachment of such illegal migrants. In fact these people are land hungry. A section of illegal migrants commit antisocial deeds thereby harassing the indigenous peaceloving honest Indians. Another section in the form of disguised labour who regularly visit to the nearby towns and also the villages inhabited by indigenous people and requisitioned by the builders and contractors through the Matabbors and engage them to perform any works. These labours are untrained and unorganised.

There exists diversity among the indigenous residents in respect of social, cultural, anthropological, religious, linguistic differences but long time co-existence has led to the intermingling revealing 'unity in diversity' an ideal need of the hour.

The self identified and so called 'New-Assamese' (Na-Asamiya) have threatened not only the social and cultural heritage and integrity of Assamese society but also the age-old unity prevailing among the indigenous Assamese society. Therefore, these epiphite-like people with different (*exsitu*) geographical background should be identified using National Register of Citizens (NRC) processing under the direct supervision of the Apex Court of India. Illegal migrants are to be detected (identifide) their names should be deleted from the voters list and

should be deported to their bonafide state of origin without delay. The Govt of India accepting the demand i.e. foreigners issue made by the organisations (NGO's) of Indigenous people signed an accord popularly known as 'the Assam Accord' in the eve of 1985 where besides other demands detection, deletion and deportation of illegal migrants got top priority. Completion of the correct NRC has been considered as one of the powerful safeguard of the indigenous citizen of Assam. The NRC, under process free from inclusion of illegal migrants will help the indigenous people from many problems and the developmental schemes undertaken by the central and the state governments will help the land and people to grow at the expected or targeted level. Different developmental schemes under education, health, 'Asom Mala' (transport and communication network reciprocal connectivity), Skill Development (for employability and enhancement) etc. have been given top priority by the government for a speedy Human Resource Development (HRD) and overall welfare of Assam targeting to develop Assam as one of the five top ranking states of India.

IMPORTANT POINTS

- Total Population of Assam (2011 census) – 3,12,05,576.
- Estimated total population 2019 March-3.50 crores.
- Assam gives home to 2.6 percent of the total population of India
- Assam covers 2.4 percent of the total area of India
- During 20th century the growth rate of population in Assam: 8.1 times; In India: 4.3 times.
- Decadal growth (2001-2011) 16.9 percent.
- India 17.7 percent
- Total number of District – 33 (of which 3 are Hill district)
- Sub Division – 56 (2011 year)
- Revenue Circle – 184
- Among the indigenous (son of the soil) residents Anthropological, indigenous, social, religious, linguistic elements there exists diversity.
- Diversity in the agglomeration of social elements oversensitivity in the minds of the indigenous communities has affected the social and cultural unity in Assam.
- Inertia in the industry and trade sector development about 52.4 percent of the total population are still engaged in primary activities.
- Agricultural occupation – 40 pc.
- Agricultural labour – 12.4 pc
- Secondary - 14.0 pc

- Tertiary - 24.3 pc
- Quaternary – 6.0 pc
- Quinary – 3.0 pc
- Literacy rate – 72.2 pc
- Female Literacy rate – 66.3 pc
- Human Resource Development : Low level, (Speed : slow/inertia)
- Population density : 397 per km²
- In three Hilly districts : 12 per km²

EXERCISE

1. According to the census of 2011, the total population of Assam is–

(a) 3.21 crore	(c) 3.12 crore
(b) 2.13 crore	(d) 3.39 crore
2. The decadal growth of population during 2001-2011 in Assam is –

(a) 19.6 per cent	(c) 17.1 per cent
(b) 17.7 per cent	(d) 16.9 per cent
3. The percentage of population engaged in primary sector in Assam is about–

(a) 68.2%	(b) 60.4%	(c) 65.0%	(d) 52.4%
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4. As per 2011 census, the literacy rate in Assam is –

(a) 74.2%	(b) 70.4%	(c) 73.3%	(d) 72.2%
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5. The percentage of population engaged in Quinary activity in Assam is –

(a) 6.0%	(b) 3.0%	(c) 7.2%	(d) 12.4%
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6. The population density in Assam as per 2011 census is –

(a) 390 per/km ²	(c) 379 per/km ²
(b) 397 per/km ²	(d) 297 per/km ²
7. The female literacy in Assam according to 2011 census is –

(a) 36.6 per cent	(c) 71.6 per cent
(b) 66.3 per cent	(d) 63.6 per cent
8. The first ever census in Assam was held in which year?

(a) 1901	(b) 1872	(c) 1830	(d) 1951
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9. Show the percentage of population engaged in different sector of the occupation.
10. What are the pillars of HRD? Name them accordingly.
11. What is skill development? How it can be achieved?
12. Name the hilly districts of Assam. State atleast four causes of low density of population in the hilly districts.



CHAPTER : 3

BIODIVERSITY

What is biodiversity?

The word biodiversity is a contraction of the phrase “biological diversity”. Although different people have defined this term differently, yet, it was only in the 1980s that its use became more common. The term biodiversity or biological diversity refers to the variety and variability of species on earth. It encompasses from the microorganisms, animals, plants to ecosystems like coral reefs, grasslands etc. Biodiversity also refers to the number or abundance of different species living within a particular region. The environment on the earth is very complex and its evolution and character of the landscape & diversity are dependent on many interconnected features. The amount of biodiversity in any place is, therefore, be seen as a result of the complex interaction of these factors. For e.g. we can mention about sunshine, climate, soil types, morphology of the earth surface etc. It is noteworthy here that species evolution and extinction is part of the natural process. Till now five major mass extinction events have been passed in the geological past. However, since the appearance of homo sapien or the man the process of extinction has been accelerated and there has been a probability of 6th extinction in near future.

From its interaction with physical factors of the environment, the human being has experienced the following –

1. Climate, topography and interactions with other organisms play a role in the distribution of species over the earth.
2. Species diversity is more in tropics and lesser toward the poles.
3. There are some isolated regions of the world having very distinctive species range.

The science of Biodiversity is comparatively a new science. However, people like Charles Darwin, Philip Lutley Sclater, Alfred Russel Wallace with their extensive travel based field works around the globe set the base for understanding biodiversity. In modern days the term biodiversity or biological diversity has been used by different authors in different ways. Therefore, to coin a definition which have a wider acceptance is a difficult task.

The 1992 United Nations Earth Summit held in Rio de Janeiro defined “biological diversity” as “the variability among living organisms from all sources, including, ‘inter alia’, terrestrial,

marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems". Compared to the wisdom of biological diversity human beings possess, the science or the subject of biodiversity evolved in very recent times. The Earth Convention 1992 is one of the major milestones for creating a universal understanding of biodiversity.

Scientists have recognised primarily three types of biodiversity

Species diversity

Species diversity is the number of different species that are represented in a given community. The effective number of species refers to the number of equally abundant species needed to obtain the same mean proportional species abundance as that observed in the dataset of interest (where all species may not be equally abundant). Species diversity consists of three components: species richness, taxonomic or phylogenetic diversity and species evenness. Species richness is a simple count of species, taxonomic or phylogenetic diversity is the genetic relationship between different groups of species, whereas species evenness quantifies how equal the abundances of the species are.

Genetic diversity

Genetic diversity refers to the diversity within species. Each individual species possesses genes which are the source of its own unique features: In human beings, for example, the huge variety of people's faces reflects each person's genetic individuality. The term genetic diversity also covers distinct populations of a single species, such as the thousands of breeds of different dogs or the numerous variety of roses.

Genetic differentiation within species occurs as a result of sexual reproduction, in which genetic differences between individuals are combined in their offspring to produce new combinations of genes or from mutations causing changes in the DNA. Genetic diversity is usually mentioned with reference to agriculture and maintaining food security. This is because genetic erosion of several crops has already occurred leading to the world's dependence for food on just a few species. Currently, a mere 100-odd species account for 90% of the supply of food crops, and three crops – rice, maize, and wheat – account for 69% of the calories and 56% of the proteins that people derive from plants.

Ecosystem diversity

Ecosystem diversity is a type of biodiversity. It is the variation in the ecosystems found in a region or the variation in ecosystems over the whole planet. Biodiversity is important because it clears out our water, changes our climate and provides us with food. Ecological diversity

includes the variation in both terrestrial and aquatic ecosystems. Ecological diversity can also take into account the variation in the complexity of a biological community, including the number of different niches, the number of trophic levels and other ecological processes. An example of ecological diversity on a global scale would be the variation in ecosystems, such as deserts, forests, grasslands, wetlands and oceans. Ecological diversity is the largest scale of biodiversity, and within each ecosystem, there is a great deal of both species and genetic diversity

Besides these above mentioned biodiversity, Campbell in 2003 added another diversity i.e. molecular diversity.

Molecular Biodiversity

Biodiversity involves a diversity of species, genetics and habitats. But there is a fourth source of biodiversity – molecular biodiversity – without which evolution cannot occur, either in the origin of a new species, its survival and development, or its eventual extinction.

Molecular biodiversity is distinct from genetic diversity, though both ultimately depend on inheritable DNA. It occurs within one individual, between individuals of the same species, between related species, within and between phyla and ecosystems, and throughout evolution.

How to measure biodiversity

Mathematically the two components of biodiversity are richness and evenness. Richness is a measure of how many organisms exist in a given area. Evenness measures whether each species in a community is represented by about the same number of individuals, or whether one or two species have very large populations and other species have smaller populations. Two communities could be equally diverse in numbers of species but differ greatly in terms of evenness. A variety of mathematical techniques have been developed, but it is often most convenient for a scientist to use an index based on the proportional abundance of species that produces a single number that can represent both richness and abundance. The most widely used of these indices is the Shannon index H and Simpson's index D . Both of these indices were developed in the 1940s but gained in popularity when their use was promoted by ecologists Margalef and MacArthur in the 1950s.

Parallel use of species diversity indices in ecological studies is a general practice, and a typical case is the parallel application of the Shannon–Wiener and Simpson index. However, while the Shannon–Wiener index is strongly influenced by species richness and by rare species, the Simpson index gives more weight to evenness and common species. The effect of the sample size is generally negligible for both of them.

Diversity Indices

A diversity index is a mathematical measure of species diversity in a given community. This is measured based on the species richness (the number of species present) and species abundance (the number of individuals per species). The more species you have, the more diverse the area. In general, there are two types of indices, dominance indices and information statistic indices. To measure dominance indices we use Simpson index and to measure information statistics indices we use Shannon index.

The Simpson index is a dominance index because it gives more weight to common or dominant species. In this case, a few rare species with only a few representatives will not affect the diversity.

The Shannon index is an information statistic index, which means it assumes all species are represented in a sample and that they are randomly sampled. In the Shannon index, p is the proportion (n/N) of individuals of one particular species found (n) divided by the total number of individuals found (N).

Besides these indices to explain biodiversity we use Alpha diversity, Beta Diversity and Gamma Diversity index. These indices are put forwarded by a biologist named R. H. Whittaker.

Alpha diversity

Alpha diversity refers to numbers of species in a single community at a particular time. Alpha diversity can also be called as species richness. Alpha diversity is used to compare a number of species in different communities.

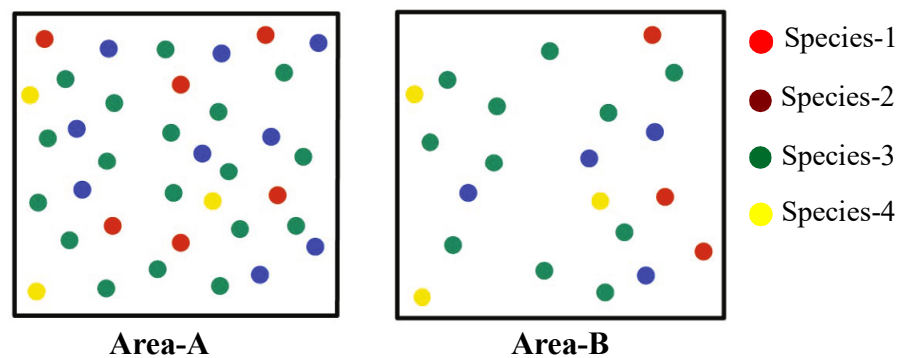


Fig 3.1 : Alpha diversity

Beta Diversity

It is the measure of the degree of change in species composition along with an environmental gradient. For eg. Beta diversity is high if the species composition of mass communities changes successively at higher elevation on a mountain slope. Beta diversity is low if the same species of mass occupy the whole mountainside. Other formulations for beta diversity include “absolute species turnover”, “Whittaker’s species turnover” and “proportional species turnover”.

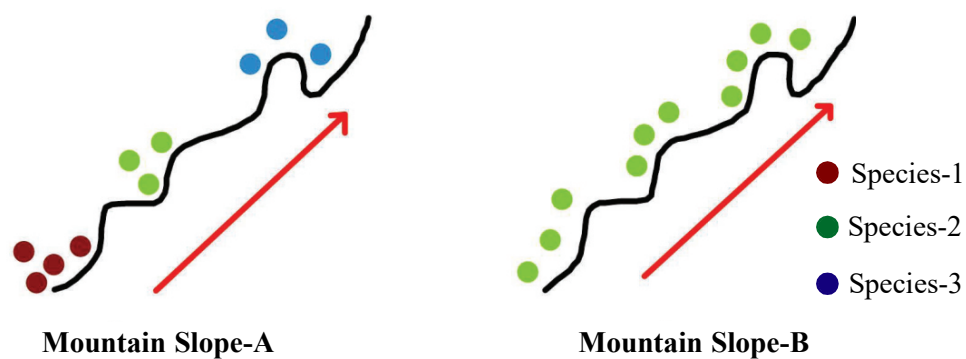


Fig 3.2 : Beta Diversity

Gamma Diversity

Gamma diversity applies to large geographical scale. Gamma diversity is the rate at which additional species are encountered as a geographical replacement within a habitat type in different localities. Gamma diversity is a species turnover rate with the distance between sites of similar habitat or with expanding geographical areas. Whittaker’s idea was that the total species diversity in a landscape ($\hat{\alpha}$) is determined by two different things, the mean species diversity in sites or habitats at a more local scale ($\hat{\alpha}$) and the differentiation among those habitats ($\hat{\beta}$). According to this reasoning, alpha diversity and beta diversity constitute independent components of gamma diversity.

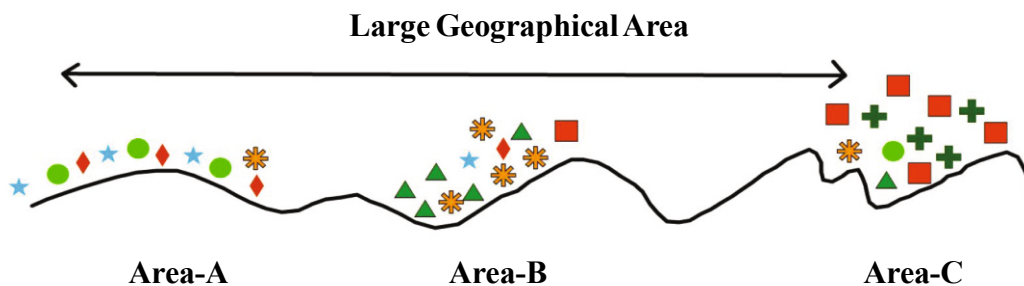


Fig 3.3 : Gama Diversity

Present status of Biodiversity in Assam

With its unique location amidst states of northeast India, physiographical diversity like mountains, floodplains rivers and marshes and plateaus etc. the state of Assam is one of the rich biodiversity states in India. It is one of two biodiversity hotspots that are in India- i.e. Western Ghat biodiversity hot spot and Northeast India. Unique physiography, climatic conditions and soil types help the region to harbour a rich diversity of species. Some of the important characteristics of biodiversity in Assam are:

- a. Abundance of forest
- b. The network of River Brahmaputra and its tributaries.
- c. Wetland ecosystem
- d. Grassland ecosystem
- e. National parks and sanctuaries.

A Glimpse of National Parks & Wildlife Sanctuaries in Assam :

National Parks

Name	Location (District)	Area (in km ²)
Kaziranga N.P.	Golaghat, Nagaon, Sonitpur	858.9
Manas N.P.	Chirang, Baksa	500.0
Dibru - Saikhowa N.P.	Dibrugarh, Tinsukia	340.0
Nameri N.P.	Sonitpur	200.0
Rajiv Gandhi Orang N.P.	Udalguri, Sonitpur	78.81

Wildlife Sanctuaries

	Location (District)	Area (in km ²)
Garampani W.L.S.	Karbi Anglong	6.00
Laokhowa W.L.S.	Nagaon	70.1
Bornadi W.L.S.	Udalguri	26.2
Chakrasila W.L.S.	Kokrajhar	45.6
Burachapori W.L.S.	Sonitpur	44.1
Panidehing W.L.S.	Sivasagar	33.9
Hollongapar Gibbon W.L.S.	Jorhat	20.9
Pabitora W.L.S.	Morigaon	38.8
Sonai Rupai W.L.S.	Sonitpur	220.0
Bherjan - Borajan - Padumoni W.L.S.	Tinsukia	7.2

North Karbi Anglong WLS	Karbi Anglong	96.0
East K. Anglong W.L.S.	Karbi Anglong	221.8
Nambor W.L.S.	Karbi Anglong	37
Marat Longri W.L.S.	Karbi Anglong	451.0
Nambor - Doigrung W.L.S.	Golaghat	97.2
Amchang W.L.S.	Kamrup (Metro)	78.6
Dehing Patkai W.L.S.	Dibrugarh and Tinsukia	111.2
Borail W.L.S.	Cachar and Karimganj	326.3
Deepor Beel W.L.S.	Kamrup (Metro)	4.1

Source : Forest Department, Assam

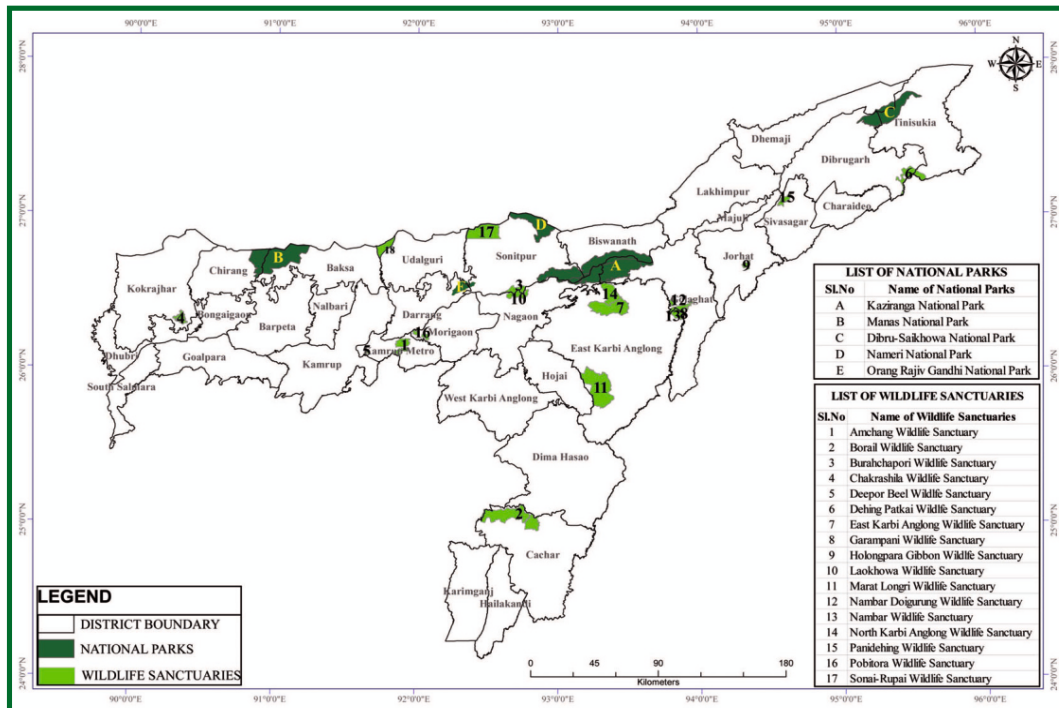


Fig 3.4 : National Park and Sanctuaries in Assam

Plant Diversity

Favourable geographical location, diversified topography and ideal climatic conditions have made Assam very rich in biodiversity. The vegetation of Assam is primarily of a tropical type covering areas of evergreen, semi-evergreen, grasslands, deciduous forests, grasslands

and riverside forests. Some important tree species found in Assam are Holoong (*Dipterocarpus macrocarpus*), Gurjan (*Dipterocarpus tubinatus*), Mekai (*Shorea assamica*), Kurta (*Palaquium polyanthum*), Nahar (*Mesua ferrea*), Sia-nahar (*Keyea assamica*), Sissoo (*Dalbergia sissoo*), Khair (*Acacia catechu*) etc.

The large scale exploitation of forests both legally and illegally and the encroachment of forest land for settlement, agricultural use and others, the productivity as well as the area under forest, is decreasing at an alarming rate in the state. Many dense forest areas of the state have already come to the list of degraded forest. Many of the environmental problems facing by the people such as flood, soil erosion etc are directly related to the reckless exploitation of forest resources of the state. It also leads to the serious ecological crisis in the state.

General Statistical analysis of Flora of Assam:

Name of the Plant Group	No. of Families	No. of Genera	No. of Taxa	Remarks
Fern Allies	4	6	10	Fern and Fern Allies with 315 and 40 species respectively in Assam represent 25.45% and 35.84% of Indian Pteridophytes.
Ferns	28	91	315	
Angiosperms				This represent about 22.68% of the Indian flora
Gymnosperms	7	14	22	
Dycolyledous	189	1012	2752	
Monocolyledons	40	368	1080	
Total	236	1394	3854	

Source: ENVIS, Assam

Assam harbour a good amount of medicinal plants which have been used traditionally by the people for curing common ailments. There has been a comprehensive list prepared based on traditional, classical and modern medical uses by, (Bhagabati et.al 2006). According to this list 347 plants has been identified to have medicinal use in the state. Assam is rich in bamboo diversity where 10 genera and 42 species of bamboo have been recorded so far in the state

The orchids of Assam with 71 genera and 193 species are distributed in the plains and hilly areas. Most of them are found in the reserve forest areas and in the hill districts.

Due to the presence of numbers of wetlands, the aquatic plant species of Assam belong to diverse habitats and have distinctive characteristics. There are seven categories of wetland plants found in Assam

- Free-floating hydrophytes
- Suspended submerged hydrophytes
- Anchored submerged hydrophytes
- Anchored hydrophytes with floating shoots
- Anchored hydrophytes with floating leaves
- Emergent amphibious hydrophytes
- Wetland hydrophytes

Out of these different types of flora found in Assam as many as 102 species belonging to the 75 genera are endemic to the state.

Animal Diversity

Northeast India is one of the most diverse biogeographical regions of South East Asia, the forest of the region is extremely rich in a variety of species. The state of Assam alone recorded about 164 species in 85 genera of mammals out of the total 400 species of mammals found in India. Similarly, 958 species and subspecies of birds have been recorded so far in Assam. Another is of the richness in the non-human primates. Out of the fifteen species found in India, nine are found in Assam. The species are slow loris, Hoolock Gibbon, Golden leaf monkey, Capped leaf monkey, Phayre's leaf monkey, Assamese macaque, Rhesus macaque, stump-tail macaque, pigtailed macaque. Among them, 3 are in a vulnerable group and 4 in the endangered group of IUCN red data list (2003).

Avian Diversity

Assam is one of the endemic bird areas of the world. There are 950 species belonging to the 302 genera and 68 families, out of the 23 endemic bird species belonging to the 5 families found in north-eastern states, Assam harbours 17 endemic species belonging to the 3 families. Besides these a large number of migratory birds come to Assam every year.

Reptilian Diversity

The state of Assam with its varied topography, climate, vegetation support a species-rich reptilian fauna. Members of three living orders namely Crocodylia (crocodiles & Gharials), Chelonia (Turtles and Tortoises) and Squamata (Snakes and Lizards) are found in the state. There are 1 species of Crocodylia, 19 species of Chelonia and 77 species of Squamata are found in Assam.

Amphibian Diversity

The three modern orders of amphibians are Anura (the frogs and toads), Urodela (the salamanders), and Apoda (the caecilians). The number of known amphibian species is approximately 7000, of which nearly 90% are frogs. Out of the 215 species found in India, 70 species are recorded in Assam so far.

Fish Diversity

The Brahmaputra and Barak river system along with its tributaries, large floodplain wetlands and swamps provide unique habitat for the fish and Assam is one the hot spots of freshwater fish biodiversity. In Assam so far 185 species belonging to the 98 genera under 34 families have been recorded out of which 33 are endemic to the region.

Molluscan Diversity

Molluscs are one of the important species in the ecosystem. Although there are 800 species of snails have been reported until now, yet the information on these species in Assam is very rare. Only 10 species of freshwater snails have been recorded based on their uses as food by different tribal communities.

Butterfly and Moth Diversity

In India, 1500 species of butterflies have been identified so far and about 50% are found in India. Altogether 405 species of Butterflies and 347 species of moths have been identified by the researchers over different periods.

The above description is only to give us a general idea of biodiversity of the state. The data are not conclusive in nature and the list may include many other areas like a honey bee, mosquitoes, insect diversity etc.

Problems and potentialities

The state of Assam although identified as one of the diverse regions of the world, it has been facing a severe threat to its resources due to unplanned development, anthropogenic activities, urbanisation etc. The traditional rich knowledge on biodiversity as well as conservation measures has been decreasing at a very faster and alarming rate. The problems of conservation need to be addressed as soon as possible to arrest the decreasing biodiversity trends. Some of the identified problems of biodiversity conservation in the region are as follows

1. Population growth and density
2. Habitat destruction by anthropogenic causes
3. Overgrazing

4. Poaching
5. Flood and bank erosion
6. Application of agro-chemicals
7. Biopiracy
8. Loss of traditional technology

However, despite the problems identified the rich biodiversity region also provide the state with scope for economic progress and development. Some of the areas which show promise are

1. Ecotourism
2. Fish production
3. Ornamental fish
4. Bamboo-based industries
5. Traditional food and medicine
6. Traditional knowledge research
7. Prospect of tourism infrastructure

Need for conservation

The population of human beings has grown enormously in the past two centuries. Due to constant human intervention, the resources that are on the earth are decreasing day by day. We have long ago crossed the carrying capacity of the mother earth. It is, therefore, felt globally to conserve our resources and wildlife. The conservation need have many rationals. The first one is a human-centric view. Since our survival depends on the availability of resources like food, medicine, materials, water supply etc., therefore, the conservation of biodiversity is a must. Besides, there are ethical views of biodiversity conservation. Since every species have a right to exist, we have obligations for the other species as well as future generations. What is more important is that the damage to biodiversity is irreversible. So there is a constant need for biodiversity conservation so that mother earth can maintain the diversity of organisms, ecological complexity, which help in the evolution of species and thereby reducing extinction of population and species.

The need to conserve resources often conflicts with other needs. For some people, a forest area may be a good place for agricultural expansion. A timber company may want to harvest the area's trees for construction materials. A businessman may want to build a factory or a highway on the land. All these needs are valid, but sometimes the plants and animals that live in the area are forgotten. The benefits of development need to be weighed against the harm to animals that may be forced to find new habitats, the depletion of resources we may want in the future (such as water or timber), or damage to resources we use today.

Development and conservation can coexist in harmony. When we use the environment in ways that ensure we have resources for the future, it is called sustainable development. So the very essence of conservation is living with harmony with nature [11].

Pollution

Through our actions, we add many contaminants to the natural environment. This is known as pollution. For example, we dump garbage and wastewater to rivers making water pollution, by adding gases from industries and cars to the atmosphere making air pollution etc. This pollution of water, air, soil etc again jeopardizing our life with increasing diseases, deduction in soil fertility and food production, harming biodiversity etc. Although we can divide pollution into many types some of the major pollutions are

1. Air pollution: the release of chemicals and particulates into the atmosphere. Common gaseous pollutants include carbon monoxide, sulfur dioxide, chlorofluorocarbons (CFCs) and nitrogen oxides produced by industry and motor vehicles. Photochemical ozone and smog are created as nitrogen oxides and hydrocarbons react to sunlight. Particulate matter or fine dust is characterized by their micrometre size.
2. Noise pollution: which encompasses roadway noise, aircraft noise, industrial noise as well as high-intensity sonar.
3. Plastic pollution: involves the accumulation of plastic products and microplastics in the environment that adversely affect wildlife, wildlife habitat, or humans.
4. Soil contamination occurs when chemicals are released by spill or underground leakage. Among the most significant soil contaminants are hydrocarbons, heavy metals, herbicides, pesticides and chlorinated hydrocarbons.
5. Radioactive contamination, resulting from 20th-century activities in atomic physics, such as nuclear power generation and nuclear weapons research, manufacture and deployment.
6. Water pollution, by the discharge of wastewater from commercial and industrial waste (intentionally or through spills) into surface water; discharges of untreated domestic sewage, and chemical contaminants, such as chlorine, from treated sewage; release of waste and contaminants into surface runoff flowing to surface waters

Sustainable development

Sustainable development centres on improving the quality of life of human beings. It is designed to enhance the ability of humans to meet their socio-economic needs without damaging the environment. The three main important goals of development in any society are to

- Raising people's living levels i.e. income and consumption, levels of food, medical services, education through relevant growth processes

- Creating conditions conducive to the growth of people's self-esteem, through the establishment of social, political and economic systems and institutions which promote human dignity and respect.

- Increasing people's freedom to choose by enlarging the range of choice variable, e.g. a variety of goods and services.

However, the development process must not endanger the ecological systems that support life on earth. The concept of sustainable development has emerged as an important concept after the world summit held in Stockholm in 1972. Many countries including India participated in this conference and voiced global concern for the status of the environment. The committee under the chairmanship of Brundtland published a report titled Our common future in 1987 also known as Brundtland report. The following strategies for sustainable development have been outlined in our Common Future (Brundtland Report, 1987)

- Reviving economic growth in developing countries as a means of meeting a basic need

- Changing the quality of growth. The aim is to achieve an improved distribution of income, equity, reduced vulnerability to the economic crisis and more or less, to make growth less dependent on energy and materials

- Meeting the essential needs like jobs, food, energy supply, water health care, education and sanitation of most of the world population.

- Enabling sustainable levels of population.

- Conserving and enhancing the natural resource base through waste management, cleaner technology, use of substitutes such as alternative sources of energy etc.

- Reorienting technology and managing environmental risks

- Merging environmental issues and economics in decision making. Environment and development are no longer opposites, they are inter-related and must be considered complementary.

In brief, sustainable development is a development which aims to improve our present socio-economic condition while at the same time, protecting or adding to environmental resources in the interest of safeguarding the socio-economic condition of future generations.

Sustainable development goals

In September 2015, the General Assembly of the United Nations Organisation has adopted the Agenda for Sustainable Development that includes 17 Sustainable Development Goals (SDGs) to be realised by 2030. Building on the principle of "leaving no one behind", the new Agenda emphasizes a holistic approach to achieving sustainable development for all.

The 17 sustainable development goals (SDGs) to transform our world are as follows

- Goal 1: No Poverty
- Goal 2: Zero Hunger
- Goal 3: Good Health and Well-being
- Goal 4: Quality Education
- Goal 5: Gender Equality
- Goal 6: Clean Water and Sanitation
- Goal 7: Affordable and Clean Energy
- Goal 8: Decent Work and Economic Growth
- Goal 9: Industry, Innovation and Infrastructure
- Goal 10: Reduced Inequality
- Goal 11: Sustainable Cities and Communities
- Goal 12: Responsible Consumption and Production
- Goal 13: Climate Action
- Goal 14: Life Below Water
- Goal 15: Life on Land
- Goal 16: Peace and Justice Strong Institutions
- Goal 17: Partnerships to achieve the Goal

The goals are nicely crafted and aims to eradicate many evils of human society. Many of these goals have particular importance to the developing countries of the world. However, the success of these goals is dependent on our actions. Youth especially students can create the difference by actively involving themselves in creating awareness, spreading the messages among the masses.

EXERCISE

1. What do you mean by biodiversity? What are its various types? Explain citing suitable examples.
2. How can we measure biodiversity? Describe its different procedures.
3. Prepare a note on the biodiversity of Assam.
4. Explain about the problem and prospects of biodiversity of Assam.
5. Prepare a note on the need of conservation of biodiversity.
6. What is pollution? Explain its various types.
7. What is sustainable development? Explain the development of the concept of sustainable development.



CHAPTER : 4

ECONOMIC STRUCTURE AND POTENTIALITIES

Elements which are necessary for human life are commonly termed as resource. Three essential characteristics are to be possessed by any object to call it a resource - (a) Utility (b) Functionability and (c) Dynamism.

According to the theory propounded by Zimmerman, a social scientist who was pioneering in providing concept of resources, the resources may be divided into the following types.

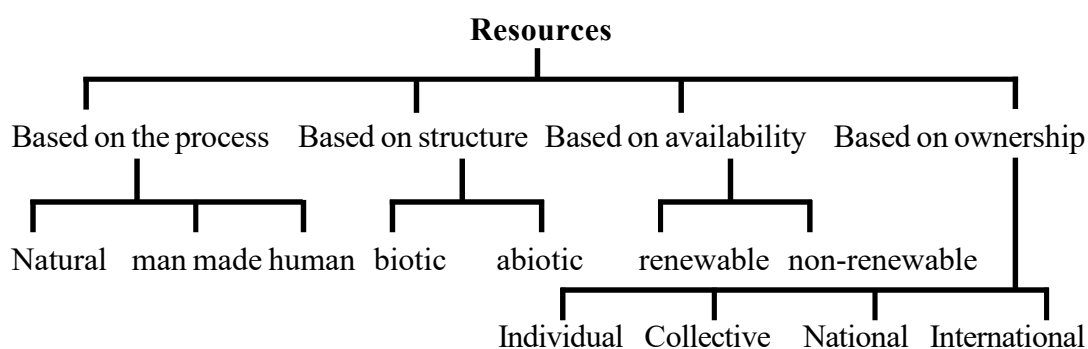


Fig 4.1 classification of resources

The evaluation of resources depend mainly on our depth of knowledge, social, technical and level of skill development. Although resources of Assam have been classified in Fig No. 4.1. the same can be included in more than one categories. For example, plant is a natural resource. Thus plant is biotic resource and at the same time it is renewable resource. Association of plants predominantly trees i.e. forest may again be individual, co-operative or national or international resource. Thus gold the lucrative resource, is natural in origin but at the same time it may be included under individual or natural resource based on ownership. Applying human skill gold in jewellery shop may be converted to different forms (like ring, dholbiri, jonebiri, chain, neckless, ear-ring etc)

Assam is rich is natural resources specially mineral, forest, water etc.

The Resource base :

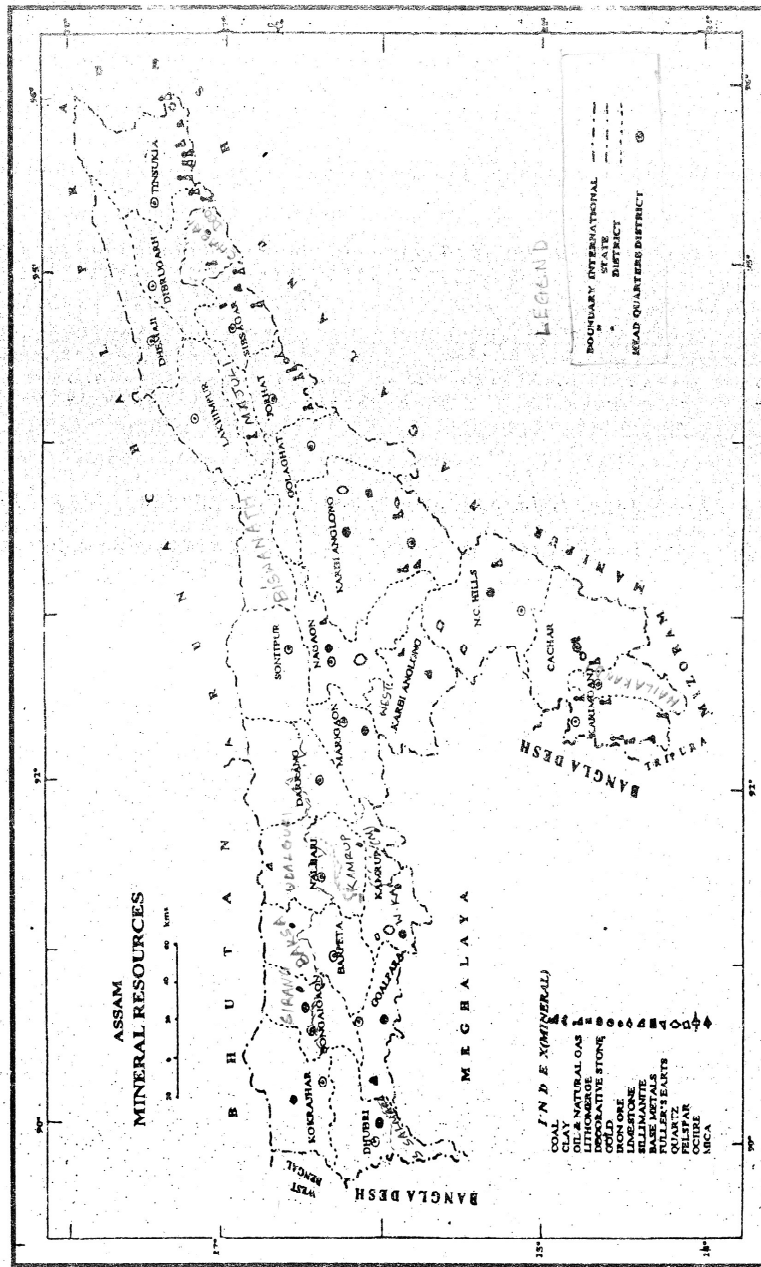
Assam is fairly rich in mineral resources. Hence, Assam may be called as the **Treasure House of Minerals**. The Geological Survey of India (GSI) and the Geology and Mining Department, Government of Assam through their survey using drilling (exploring and assessing) and the most modern technology i.e. the Remote Sensing and the Geographical Information System (GIS) have traced not only the location but also the amount of reserve of different minerals. Besides, the Oil India limited (OIL), Oil and Natural Gas Corporation (ONGC) are engaged in exploration and assessing activities of reserves of crude oil (liquid gold) and natural gas reserve in the interior of the earth. The Coal India Limited is associated with the exploration of the 'Black Diamond'. Limestone and iron ore are two precious very important mineral resources of Assam for which Assam has developed substantially in respect of production of high quality of different varieties of cement of national standard. Gondwana series of rocks found mostly in the outlier of the lower Brahmaputra Valley region and the plateau areas of the three hill districts of Karbi Anglong, West Karbi Anglong and the Dima Hasao of Assam. There are some other economic minerals found in sporadic parts of Assam. But their reserves have not yet been accessed because of their inaccessibility. The minerals whose locational reserves have been detected in the region include fire-clay, asbestos, graphite, kaolin, sulphur, alum, mineral salt, shale, mica, copper, gold, gypsum etc.

Table 4.1

Reserve of some minerals, Assam

Mineral	Estimated reserve (in million tonnes)
Coal	1000.0
Petroleum	156.0
Natural gas	208.7 (Cu.m.)
Limestone	227.5
Iron ore	23.0

Map : 4.2
Distribution of Minerals, Assam



Coal

Coal, popularly nicknamed as 'Black Diamond' was discovered and mined in Assam in Makum in 1865 at the initiative of H. B. Mellicott, a British investigator. Carbon content in the coal is between 50-60 per cent and is categorised generally as Bituminus variety. Both the Gondwana and the Tertiary coals are found in Assam. Impurities like sulphur content is high (above 3 per cent, carbon content is moderate (i.e. around 55 per cent). Gondwana coals are found in the Himalayan foothills from the Bhutan Duars to the Sadiya-Arunachal foothills. But it has so far not been explored because of the thinness of the seams. But the Tertiary coals are found in thick and workable seams. Therefore, being mined in several places of Assam. But the impurities and moderate level of carbon content have hindered the optimum exploration. The congenial geological beds for economic exploration of coal in Assam are (i) Lower Tertiary deposits (found in Karbi Anglong), (ii) Middle and Upper Tertiary deposits (Found in Ledo-Jaipur-Naginimara areas).

Geographical distribution of coalfields and reserves are –

(a) Upper Assam region which includes Assam-Arunachal border south of Changlang district to Assam-Nagaland border south of Dimapur which includes important coalfields like– Makum in Margherita area, Jaipur-Dili fields, Naginimara fields etc. The seams of these areas have a thickness on average 17 metre and explored in large-scale.

(b) Karbi Anglong fields include Longloi, Koilayan Silbheta, Kharbhaman etc. The present coal of this region is explored to a large extent and is used mainly by the railways, tea-factories, brick-kiln industry and cement factories.

Petroleum

Assam has rich deposit of crude oil. The traces of crude oil was detected in the forest areas, as long back as 1822 and at the advice of Mr. H. B. Medicott and initiative of Mr. Goodenough in 1889 it was extracted with the help of Assam Railway and Trading Company at Digboi. Later, Assam Oil Company was formed and setting a mini plant at Namdang for oil refining. Then in 1921 the Digboi Refinery was established which is the best oil refinery in India. Later ARTC, AOC, Burma Oil Company (BOC), started exploring crude oil. After independence, Oil India Limited (OIL) in 1958 and Oil and Natural Gas Commission (ONGC) in 1959 were formed and using high level of technology including the Geographical Information System (GIS) and Remote Sensing (RS) using satellite data have assessed the reserve of crude oil and the locations. Assam now contributes about 17 per cent of the total production of crude oil in India.

The crude oil of Assam is mainly carried using pipeline transport system not only to the refineries within Assam but also abroad. Trend of crude oil production from the oil fields in Assam since last 38 years ranges between 3-5 million tones (Source : Basic statistics of NER, 2016-'17) and are refined in Digboi , Noonmati, Bongaigaon (BRPL) and Numaligarh refinery. Haldia in West Bengal and Barauni in Bihar import crude oil from Assam through pipeline transport. Bongaigaon Refinery and Petro-Chemicals Limited, Numaligarh and Barauni produce kerosene, petrol, diesel, grease, wax, paraffin, naphtha, DMT, Synthetic rubber, plastic, polyvenyle chloride (PVC), Synthetic fibre, xylene and many other byproducts.

The crude petroleum from the oilfields of Assam is sent by a 24 cm diametre pipeline to different refineries. The pipeline connects Lakwa-Rudrasagar field with Barauni covering a distance of 1152 km; The Moran-Naharkatiya field with Noonmati (NR) and Bongaigaon (600 km). Similary another pipeline with 12 cm diametre takes the crude oil from Naharkatiya-Hoogrijan fields to Digboi refinery continuously.

Natural Gas

Like crude oil, Natural Gas is a valuable source of power and other chemical by-products. It is a gaseous mineral of organic origin lying locked underground generally associated with crude oil. Natural Gas contains a high proportion of methene (80-90%), some proportion of ethane (8-9%), propan (2-4%) and buten (0.7-1.7%). Natural Gas found associated with crude oil is known as 'associated natural Gas' and that found independently is called 'free natural gas'. The Barail group of rocks of Oligocene and Miocene period generally contains a rich reserve of natural gas at a high pressure and temperature.

Assam Gas Company, OIL and ONGC are producing the natural gas. The vast source of natural gas producing almost on average 3000 million cubic metre are yet to be utilised fully. Nearly two billion Cu.m of Gas has already been flared up. Assam alone boast for 25 per cent of the total gas produced by the nation (India). Liquified Petroleum Gas (LPG) mostly used for domestic cooking, can also be used for generating power, raw materials for production of fertilizer, petrochemicals and other by-products.

The important major industries established based on natural gas produced in Assam are Namrup Thermal Power Project, Namrup Fertilizer Factory, Assam Gas Company, Assam Gas Cracker project etc. At present a major proportion of Gas produced in Assam are utilized by ONGC, OIL, BRPL, the fibre plant, tea gardens, medical plants etc. Once the gas cracker project functions as proposed, a large number of industries can be set up based on it.

Limestone

Assam is rich in having high quality limestone deposit. All the limestone bearing vast areas of Karbi Anglong and the Dima Hasao districts reveal that during Mesozoic time these areas were under intermediate sea condition. The limestone found in this region is mostly organic originated from nummulitic shell in those areas.

Important limestone occurring areas are Dilai, Koilajan, Silbheta, Sainilangshu of Karbi Anglong and Umrasgchu and Garampani of Dima Hasao district. There are at present a total of about 280 million tonnes of limestone reserves in Assam and annual production on average for last 10 years is around 38 million metric tonnes.

Limestone has a very good demand in the market. It is used as raw material in cement industries, as flux in iron and steel production, as raw material for many chemical industries and white washing of buildings and walls mainly in rural areas, chalk pencil used by teachers to write on blackboard and the godowns of perishable goods use chalk dust as watervapour suckners.

Siliminite

Siliminite is a valuable mineral found in Karbi Anglong and in small quantity in Nagaon district. It is used in the manufacture of refractory materials, sparking plugs for automobile and in glass industry. Siliminite found in Assam is of high quality. Siliminite in Karbi Anglong is mostly concentrated in Chippilangso, Samelangsu, Ingtigaon, Cheilangso, Upper Chelaber and Amtereng. A small amount of reserve has also been found it Bumuni in Nagaon district.

Forest Resources

Assam is very rich in forest resources. The geoenvironmental condition is congenial for growth of tropical forest in natural habitat. Tropical evergreen, tropical semi-evergreen and tropical deciduous vegetation including the grasslands are common in occurrence in Assam. In wetlands swampy and marshy vegetation grow vigourously.

Officially, at present the forest cover in Assam is 27 percent of the total land area. But the recent (January/2019) data obtained from the land-sat imagery has revealed that the forest cover in Assam is about 21 per cent. It was about 64 per cent in 1970. Within a span of about 48 years the forest cover in Assam has declined by 33 per cent. From 1987 onwards plantation of sapling through the social forestry division and from 1993 the ban imposed by the Apex Court of India immediately after UN Rio-de-Janerio conference (Earth Summit) in 1992, the general awareness against indiscriminate felling of the trees and plantation of saplings has improved the situation of forest area declining process. Forest are the store-house of precious resource given by nature. Forest is often termed as multipurpose resource. It supplies

us raw materials for construction of houses, buildings, bridges, boats, railway sleepers, body of trucks, furniture etc. Forests are also the store-house of herbal medicines. Fuel-wood used in rural areas of Assam are collected from forest. Forest in Assam supply to some extent food for man and herbivores. Forests are also important because it controls the environment as it controls climate and also the immense source of oxygen essential for man, animal and organisms.

Hard wood for construction and soft wood for plywood and safety match stick manufacture bamboo and grasses for pulp and paper, natural resins, lac, Khoir, thatch, natural gum, cane, honey, fruits natural organic vegetables etc are some of the resources obtained from the forest. Sanchi pat obtained from sanchi tree were used to write by the scholars (Pandits) of Vaishnava and other cult (now preserved in many of the sattras and museums) and Agar or Agar obtained from a rare plant are used for manufacture of essence containing perfume and some drugs. Forest areas of Sivasagar, Golaghat, Jorhat and Nagaon (Hojai, Lumding, Lanka area) are rich in Agar plant full of essence. Pinewood provides turpentine and resin besides using it after sawing as shuttering for building and decorative purposes. Many other herbal medicinal plants and orchids grow in the forests of Assam. Tea plant provides tea-leaf apart from terpin and other colours.

The common valuable species found in the forest of Assam are sal, teak, gomari, khoir, sisu, siris, jack fruit, ou tenga, kadam, bhomore silikha etc.

Besides flora, Assam is rich in faunal resources. The mammals include various types of herbivores, carnivores and primates. Assam is the home of Asian one-horned rhinoceros. Besides Assam a few number of one horned rhinoceros are also found in the Tarai region of Nepal. Wild water buffalo, four-horned antelope, barking deer, mask deer, deer bison and wild boar are some of the herbivores found in Assam. The endangered species included in the Red Data List prepared by International Union for Conservation of Nature (IUCN) i.e. the pigmy hog is found only in Assam. One of the four types of monkeys endangered living on the earth i.e. Hoolock gibbon occurs in this region. There are eleven varieties of monkeys including rare golden langur and capped langur are found in Assam.

Assam is rich in reptile population. It given home to marsh crocodile, fresh water crocodile (ghorial/kumbhir), tortoise, turtle, mongoose, lizards and snakes, krait, viper, cobra and python.

Assam is rich in avifauna. Peacock, hornbil, stork, pelican, vulture, eagle, kite, pheasant, various types of ducks, doves and parrots, tit, linnet etc are common birds of Assam.

Assam is very rich in fress water fish fauna found in the master streams of Brahmaputra, Barak and their tributaries and subtributaries thereof. Wetlands like the Deepor, Tamranga, Kapla etc are congenial for growth and development of indigenous fish fauna including variety of ornamental fish species. These have got very high commercial value.

In Assam there are at present 5 national parks, 18 Wildlife Sanctuaries and one bird sanctuary, some more wildlife sanctuaries and another two bird sanctuaries have been proposed and yet to be notified. Besides the non-renewable source of energy like coal and petroleum Assam produces electricity mainly from three sources – (i) hydel power (ii) thermal power and (iii) solar power. The generation of power using technology and human skill is included under renewable source and hence inexhaustible. This has helped in establishment of various industrial units and manufacturing of variety of products. Solar plates have now been used to produce solar energy in various places of Assam. Application of science and technology for generation of renewable source of energy, Assam is lagging far behind in comparison to other states like Gujarat, Maharashtra, Goa, Kerala, Punjab and Chandigarh.

The concept of Human Resource Development (HRD) in India started four decades after the independence of India and the income was considered as the indicator of development. Mehbul-ul-Hoque and Prof Amartya Sen while developing the concept of HRD added education, health, mental satisfaction etc. Equality, production, durability and rights are the four pillars of HRD. In Assam HRD can best be achieved through increasing level of income, education (both male and female), ability and capacity to fulfill basic needs, skill developing among indigenous people and capacity building. In urban areas of Assam, the health and the education scenario including the level of income, since independence, under different planning, although to some extent are satisfactory but in remote rural areas of the state the condition is poor. Therefore, it is necessary to pay more importance on these facilities by the authorities concerned with an aim to make Assam to find within 5 top ranking states of India.

Connectivity

Connectivity is as important element of infrastructure based on which the progress of a region may take place. Connectivity includes various types of transport and communication. Road, railways, waterways, airways, ropeways and pipeline transport are some of the types and means of transport in Assam. But unfortunately, because of the low level of development some of the villages located not only in the hills and the plateau region but also in the two master plains of the Brahmaputra and the Barak, the progress is slow in comparison to some other states of India. Resources are yet to be utilised up to desired level. Endowed with a vast bulk of resources the region is yet remaining economically backward. There are some physical, social and economic causes for the poor connectivity of Assam. The major causes are –

- (i) Hills and plateaus cover about 20 per cent of the total geographical area of Assam. A very high cost is involved in construction of road and railway transport on steep slope and deep gorges and ravines.

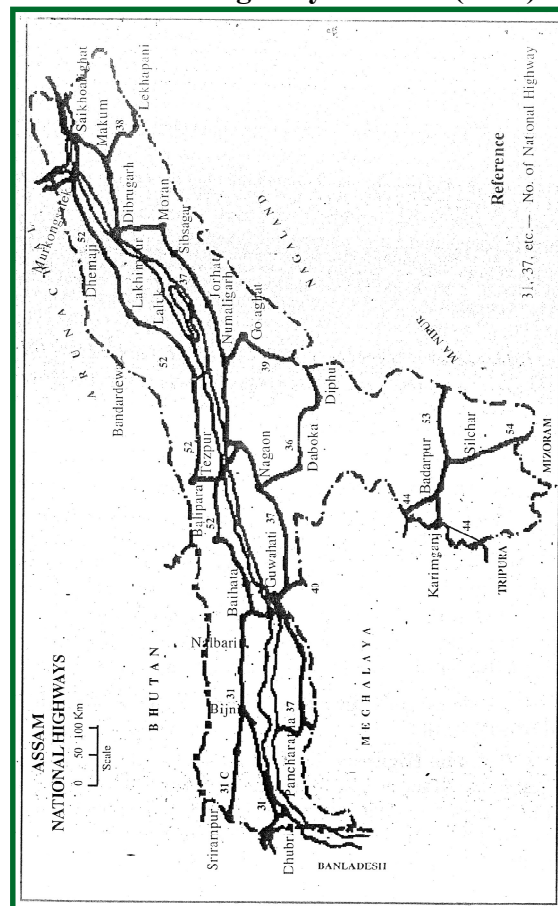
- (ii) Entire north east India of which Assam is a part is surrounded almost on all sides by foreign countries and is far away from the major industrial areas of the country and the lines of transport has not been developed to the desirable extent.
- (iii) Assam receives heavy downpour from monsoons at least for three months during summer season and one month during winter days and the roads and railways suffer from surface and gully erosion. The situation deteriorates by loose-soil base. The roads and railway lines, therefore, to be constantly repaired and maintained in serviceable condition, which require additional huge expenditure.
- (iv) The recurring floods often breach and damage roads, railways and sometimes overflow even the airports. Landslide and soil-creep in the hill regions sometimes damage and block the roads. This again necessitates repair and renovation incurring additional expenditure.
- (v) The turbulent tributaries and the sub-tributaries thereof flow with fury. Some of them even change their course very often. The roads and railways, therefore, need to be frequently bridged and many culverts, spurs, retention walls etc have to be constructed needing huge fund which the state (Assam) without special grants from the central government and other sources cannot afford.
- (vi) Apart from the tea, and the plywood-crude oil based industry no major industry has so far been established. The 'Namami Brahmaputra' and 'Namami Barak' like that of 'Namami Ganga' tried to inspire the industrialists not only from India but also from abroad. But the result seems to be static.
- (vii) The resource generation (financial position) of the state government and the North Eastern Council is not so sound to afford sufficient expenditure to materialise the vision of 'Asom Mala (linking all villages with the Highways) under 'Pradhan Mantrir Gram Sarak Yojana' yet to be materialised due to paucity of fund to be released in proper time.

Roadways

Assam has at present (Jan/2019) a total of 57516 km long roads, surfaced and unsurfaced. National Highways (NH) including fourlane has 2,385 km length. State Highways 2530 km, Major District Road 4379 km, Urban Roads 1409 km, Rural Road 36,546 km and the rest are Panchayat and other Non-PWD Roads. Presence of a large number of submersible stretches and semi-permanent timber bridges have hindered the all season road connectivity in many areas. State PWD is at constant endeavour in the process of conversion of timber bridges to RCC bridges on missing links and the unsurfaced roads to surfaced road, but it is not upto desired level due to paucity of funds.

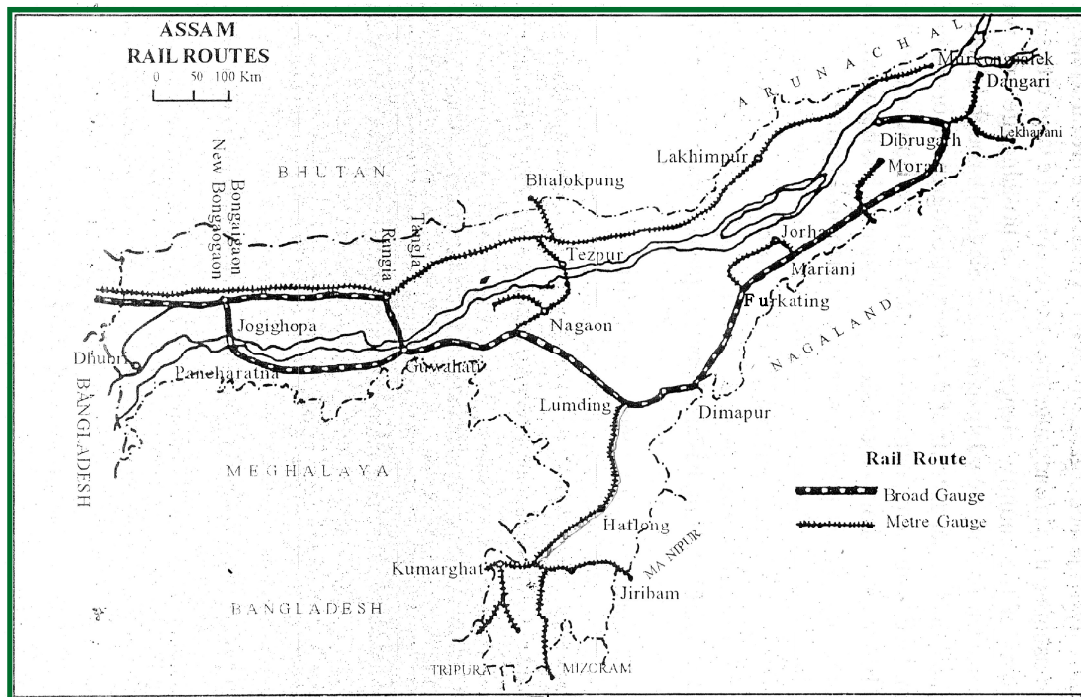
The Koch king Naranarayana of historical fame constructed a road along the foothills of Himalaya connecting Cooch Behar with Narayanpur (Lakhimpur) known as Gohain Kamal Ali. Later the British renamed it as North Trunk Road and after the independence of India, the road east of Baihata Chariali has been renamed as NH 52 and the western part has been divided into NH 31 and NH 31 C. Another parallel road on the south bank of Brahmaputra was constructed during World War II connecting Goalpara with Saikhowaghat called South Trunk Road and renamed after independence of India as NH 37. In the Barak Valley the connectivity system was earlier linked with Sylhet district (now Bangladesh). But the partition adversely affected the transport system. Silchar now has a good road connectivity with the "Gateway of North East (Guwahati) via Meghalaya.

Map 4.2
National Highways : Assam (2019)



Railways

The railways in Assam started by the British to serve their interest (between 1881-'84) only after about 30 years of the first railway line that was constructed connecting Pune with Thane (Mumbai) in 1853. Assam has at present a total of 2500 km railway tract of which Broad Gauge covers 2092 km, Meter Gauge 379 km. The percentage of Broad Gauge line to the total railway tract is about 83.7 per cent. The density of railway tract in Assam is only 1 km per 100 km² area. Goods, services and passengers, light and heavy machineries etc are carried to Assam via North Bengal plain using the broad gauge railways not only to Assam but to almost all the other six states of North East India. After the laying down of the meter gauge line the British government and the British Companies started extracting mainly tea, wood, coal and petroleum resources of the region. They were less interested in economic development of the region rather than taking away the products as evident from the fact that only the producing areas were connected with the river ports; later to be carried to the Bay of Bengal using waterways.



Map 4.3 : Railways in Assam

Waterways

The two major rivers of Assam i.e. the Brahmaputra and the Barak and their tributaries within plain parts provide facilities for water transport. While the Brahmaputra is fed from two sources i.e. the rainwater and snow water, the later is fed only by rainwater. During summer season for about 4-5 months both the rivers and their tributaries especially in their lower parts provide congenial condition for navigation by ships, ferry services and machine boats (bhut-bhuti). The riverine islands (chapories) are connected with charlands and the trading centres generally carrying constantly the people and the rabi crop products at the cheapest cost.

The British entered north east India from Kolkata initially using the water route of Meghna-Padma (last parts of Brahmaputra) via the Barak-Surama waterway. The alternative waterway was later found out using the Brahmaputra waterway from Mankachar to Parasuram Kund. The Brahmaputra although has been declared as National Inland Waterways, the infrastructures are yet to be installed. The Directorate of Inland Water Transport (IWT) department is currently operating 74 ferry services, out of which 54 ferry services plying in Brahmaputra and 20 in the Barak Valley. The IWT department has now introduced 61 numbers of Cargo-cum-Ferry Services. At present the IWT department has 240 numbers of Passenger Ferry vessels, 17 numbers of commercial vessels of its own. The private operating agencies and individuals ply ferry services. Recently the water transport department has procured a modern ship (worth Rs. 10 crore) that is plying between Guwahati and North Guwahati having the most modern facilities to the life and proper security system on board at the time of disaster also ('Ro Ro'). River cruise facilities using water vehicles like 'Jalpori' are in constant service generating resource. The largest riverine island Majuli and also a district of Assam is connected with the rest part of Assam only by waterway steamer and ferry services are providing transport facilities even during dry season.

Airways

Air transport in comparison to other connectivities is slightly more developed in Assam. The region is almost isolated and more marginally located and, hence, from the strategic perspective a strong air-base is essential.

During World War II a few aerodromes were built up in the region. The Allied Forces built up some aerodromes at Kahikuchi (near Azara at the outskirts of Guwahati), Salonibari (Tezpur) Rawraiya (Jorhat), Lilabari (Lakhimpur), Mohonbari (Dibrugarh). After independence these airports are used by private companies like Indian Airways, Bharat Airways etc. for commercial service. Commercial air transport in India was nationalised and Indian Airlines

Corporation took over the services. New airports were opened in Kumbhirgram (near Silchar). The Kahikuchi airport was shifted to Borjhar at the cost of rich paddy land. From 1946 regular air transport services continued from Kolkata. The Borjhar Airport was renamed as Lokapriya Gopinath Bordoloi International Airport and upgraded to international standard.

The air transport from Kolkata, New Delhi, Mumbai etc are operated to and from LGB airport not only by Indian Airlines but also by Jet Airways, IndiGo, Air Asia, Spice Jet, Go-Air, Jetlite etc. These airline operating agencies handle, on average 7000 passengers per day. Average number of flight per day in Assam is 83.

In Guwahati sector movement of air traffic as well as passenger traffic (both domestic and International) has been rapidly increasing during the last 8 years.

Ropeways have been found in operation in Assam in inaccessible areas for carrying goods like limestone, coal etc. Limestone found in large reserve in Dillai in Karbi Anglong is carried by ropeways to Bokajan Cement Factory (ACC). Another ropeway connecting Guwahati with North Guwahati has been constructed for easy movement of people, goods and services across the Brahmaputra river.

Pipeline transport in recent years have gained importance in Assam especially in carrying industrial raw materials like crude oil and natural gas. The first pipeline in Assam was laid in 1964 to carry crude oil from Naharkatiya and Moran oil fields to Noonmati and Barauni refineries. Since then more pipelines with enhancing capacities continue to carry crude to Haldia (West Bengal), BRPL, Numaligarh refineries. Now the finished products like petrol, diesel, refined kerosene etc are carried to different destinations including Siliguri. Pipelines also carry natural gas. Natural gas from Naharkatiya fields to Namrup covering a distance of 16 km is transported for Assam Gas Company. Numaligarh refinery also receive natural gas from upper Assam field through pipelines. The Gas Cracker Project at Lepetkata (Tengakhat) and the thermal power plant at Amguri are to receive natural gas from the upper Assam oil fields. LPG bottling plants are also to be connected by pipelines in order to avoid heavy casualty from any probable disaster that may occur due to surface transport of the gas using railway and roadways and tankers.

In spite of having resource potentialities locally there seems to be inertia in respect of industrial development in Assam. Apart from a few agro-based, tea based and mineral based industries it has only a few manufacturing industries. The region is very rich in natural resources. There are in the region—

- (i) Vast reserves of minerals like crude oil, coal natural gas, limestone, siliminite etc.
- (ii) the huge forest resources which can provide bamboo, cane, soft wood, hard-wood, seeds, barks, medicinal plants, decorative plants etc., which can be used for industrial and commercial purposes;

- (iii) the vast wetland supports many amphibians, mammals and fishes including the ornamental fishes;
- (iv) numerous perennial streams which may be used for generation of not only the hydroelectric power but also for multipurpose use;
- (v) rich fertile soil where all types of monsoonal crops can be grown and can be used as raw materials for agro-based industry including horticultural products;
- (vi) the foothill region with dialuvial soil and congenial climatic condition is ideal for tea plantation;
- (vii) a good human resource with high percentage of literacy, engineering, medical, business organiser craft and other technical and non-technical skilled persons which may be used as trustworthy potential resource.

In spite of having all these potential resources Assam has remained industrially backward in comparison to many other states of India. The major geographical causes behind inertia and backwardness are—

- (i) Locational disadvantages i.e. located in the north-eastern corner of India, connected with the rest part of India by a narrow corridor of 32 km wide known as the 'Bengal Duars'. Moreover, Assam (India) is bounded in north and north-east by hills and mountain which cut it off from China and other South-east Asian countries. The 'Silk Route' and 'Steel-well Route' are yet to open.
- (ii) Transport and communication system is poorly developed because of uneven topography, numerous streams and rivers many of which flow on loose soil, deep gorges, steep slope and difficult to be bridged. The climate of the region is 'tropical monsoon', heavy deluge in the summer season causes floods in the riverine tracts. Landslide, soil erosion, rock-slips etc are common in the hilly part. All these have largely hindered the desirable growth of road and railway connectivity. So far the waterway is concerned, the Barak and the Brahmaputra passes through Bangladesh. Both the waterways are yet to be declared and executed as 'International Waterways'. Both the drainges are seasonal, not all weather waterways.
- (iii) The numerous national resources that Assam possesses are yet to be accessed (resource) using the contemporary technology for sustainable use.
- (iv) Paucity of capital requirement has hindered the infrastructural development for industrial purposes. State government's initiative along with central aid is a must to draw the attention at both the International and National level. 'Namami Brahmaputra and 'Namami Barak' were held in the line of 'Namami Ganga'. The intension was good but result was far from expectation. The capitalists from outside the state do not

venture to invest in the region because of various reasons, especially uncertain socio-political environment prevailing since last four decades.

- (v) Power which is one of the essential infrastructural requirement for industrial development has not been adequately tapped. The region is rich in energy resources - like coal, crude oil and natural gas. Hydro and thermal power (electricity) have been generated but fails to supply even domestic use at peak hours and hardly can spare to supply to the large industrial units 24×7 hours time. The 'Bijulee Bhawan' purchase power regularly to meet the deficit from NEEPCO and other hydro-power generating organisations. This has enhanced the rate of consumers bill. Industries will grow up if only power is adequately generated and ensured supply to the industries to be established. It has discouraged industrial development in Assam.
- (vi) The region lacks entrepreneurial attitude of indigenous youths. The youths in group must come forward and be prepared to take risk of initial setback if any. Unfortunately Assam has not been able to produce such people with entrepreneurship attitude as expected. Absence of industrial climate and paucity of capital may be overcome by an entrepreneur-friendly Industrial policy with proper subsidy and tax-holidays for a specific period of time.
- (vii) A large local market for the finished product with competitive price and required connectivity environment. Low priced substandard materials marketed by the unscrupulous traders are to be checked in order to safeguard and encourage the local entrepreneurs.

As stated, industrial development in Assam is insignificant. However, whatever the industrial development has taken place in Assam may be categorised under the following heads :

- (1) The major industries that are found in Assam are based on local mineral products. On the basis of local mineral oil five refineries have come up. Based on the good quality of limestone available locally, a few cement industries have come up. Besides coal mining activities are continuing on local reserves.
- (2) There are forest based industries like plywood, hardboard, bamboo and cane industry, paper mills, saw-mills etc.
- (3) There are some chemical industries based on the products and the byproducts (petrochemicals) of the refineries. Synthetic fibre, plastic, lubricant, plastic goods, dyes, drugs, pipes etc are downstream industries of petrochemicals, Gas based plants have also flourished in recent days.
- (4) There are some agro-based industries like tea manufacturing, rice and flour mills, jute

mills, sugar mills, cotton spinning mills, spun-silk mills. Besides these, there are also some small and medium food-processing industries for baking, fruit preserving, fruit processing and fruit canning etc have come up in recent days.

- (5) Sericulture is an old tradition in Assam which produces three types of silk– viz eri, muga and pat. Eri worms are fed on the leaves of era and kecheru, muga worms on those of som and pat worms are fed on the leaves of mulberry. Eri, muga and pat worms are raised mainly in Assam. Pat or pure silk (also known as natural silk) is raised only in Assam. Soalkuchi in Kamrup also known as 'Bastranagari' is traditionally famous for and expertised in Pat and Muga cloth. Both handloom and powerlooms are in operation in Soalkuchi. Bell and brass metal as industry has flourished in Sarthebari and Hajo area upholding the tradition of Goria-Moria community making Assam a pride in cottage industry. But the paucity of raw materials have compelled the artisans to recycle the old materials. On the other hand the door to door collection of old and damaged utensils are in the hands of the traders from outside the state. Sub-standard and machine-made substitute commodities at a much lower rate attract even by chemical coating, have overflowed the market of brass and bell-metal products of Assam. To protect this industry the concerned departments should come forward with a bold policy without delay. Ivory industry should be banned to protect the tuskers from the verge of extinction as the raw material is derived legally or illegally from elephant only.

Weaving is another cottage industry of Assam there are about 14.3 lakhs looms including a few Assamese rural society almost all the families possess loom, mainly footlooms and about 20 per cent use handlooms. Weavers extension service and handloom production centres produce gamocha, mekhela-chador etc using cotton thread and pat upholding the rich Assamese tradition not only at home but also during typical ideal festivals and rituals. The Assamese Gamocha occupies a very high position and value in welcoming 'New year' and legendery figure, as a mark of respect to elderly person and the other places of worshipping Gods and Goddesses. The Assam Khadi and Gramodyog Board and the Brahmaputra Weavers Society are some of the organisations looking after the development of Khadi and Gramodyog sector of Assam. Safeguard and protection of all these is of utmost need of the society. Goldsmithy, solopith, kuhila kot (mat), toy and doll making, wood-carving, musk making etc are some of the industries of traditional nature which have a very good demand not only in local market but also are 'tourism product' which generally are demanded by both the domestic and the International tourists.

Proper training for skill development should be given top priority along with infrastructural facilities in co-operation with financial organisations and Banks and subsidy including tax-holiday will encourage the entrepreneurs and the traders for market and finally economic development in Assam.

EXERCISE

1. Which one of the following characteristics are essential to consider an object as resource?

(a) utility	(c) functionability
(b) mobility	(d) (a), (b), and (c) all of the above
2. In which place of Assam coal (black diamond) was discovered first?

(a) Naharkatiya	(c) Margherita
(b) Ledu	(d) Makum
3. In which year traces of crude oil was found?

(a) 1822	(c) 1884
(b) 1901	(d) 1989
4. What percentage of crude oil production of India is shared by Assam?

(a) 27%	(c) 34%
(b) 22%	(d) 17%
5. To which of the following refineries crude oil from Assam has not yet been sent?

(a) Noonmati	(c) Haldia
(b) Mathura	(d) Barauni
6. The percentage of methane gas contained in the natural gas is –

(a) 8 – 9%	(c) 1 – 1.7%
(b) 2 – 2.4%	(d) 80 – 90%
7. Recent land-sat-imagery has proved that the percentage of forest cover in Assam is–

(a) 17%	(c) 21%
(b) 27%	(d) 37%
8. Which major projects utilise the natural gas produced in Assam? 1
9. Name five places of Karbi Anglong possessing limestone. 1
10. In which city the Earth Summit was held 1992? 1
11. Which two faunas of Assam have been declared as endemic and endangered by IUCN and enlisted in the Red Data List? 1
12. How many National Parks are located in Assam? 1
13. Give an example of foot-loose industry. 1
14. Which are the major pillars of Human Resource Development? 2
15. Name the two agents of erosion that affects the roads and the railway lines in Assam during summer? 2

16. The rope-way is in operation in between which two places of Assam? 2
17. Name the two places on either ends of Gohain Kamal Ali constructed by Koch King Naranarayan. 2
18. Name the two major cities connected by National Highway 40 (NH 40). 2
19. Write within 30 words the importance of wetlands in Assam. 3
20. Write within 50/60 words about the 'Silk Route' and 'Steel-Well-Route'. 5
21. Explain at least 5 factors leading to industrial inertia in Assam. 10
22. Explain any five problems faced by the bell and the brass-metal industry in Assam. 10



CHAPTER : 5

MAP READING AND GEOGRAPHICAL DATA PRESENTATION

Introduction :

Geography is an elementary subject. It is a field of social science which concentrates on the phenomenon of the earth, the land, the temperature, the features, the inhabitants and so on. It aims to understand the nature of Earth including human and nature. It is the study of earth's landscapes, peoples, places and environments.

Geography is concerned with the earth's atmosphere and physical surface, including how humans affect those things and in turn are affected by them. A subject that studies physical phenomena and interaction between different elements.

It is difficult to acquire complete knowledge of the subject without practical. As there are many sub fields of Geography, so it is not just a social science, it is science with a social element to it. Effective analysis of the subject is necessary.

During ancient times geographers, tried their best to make the subject more understandable, through drawing sketches or imaginary lines. They did not use any scale or measurement units. In 2500 BC, Sumerians, produced the first map with correct directions and proper measurements.

Maps are vital tool for geographers. Geographers use a variety of maps, photographs and Earth scans to help them study and better understand our planet.

Because of the many modern technologies available today, geographers are able to depict the earth more accurately than has ever been possible before.

Map :

Our Earth is round and map diagrammatically represent the Earth's surface, or part of it. In other words, representation of the whole planet or any of its part in a smaller size with appropriate directions and distance on a plain surface or pieces of paper is called Map. It is a symbolic representation of selected characteristics of a place, usually drawn on a flat surface. They teach about the world by showing sizes and shapes of countries, locations of features and distances between places. Maps are graphic representation drawn to scale. There are a few elements entangled with Maps such as –

- (1) Title of the map
- (2) Location (absolute location in respect of other regions, Geometric latitudes and longitudinal extension).
- (3) Configuration and direction of a Map,
- (4) Scale,
- (5) Shape and sizes,
- (6) Distances,
- (7) Area,
- (8) Conventional legends and
- (9) Time of a Map.

Map is an indispensable part of Geography students. A large scale map is one that shows more detail, but usually over a smaller area. For example a town or a building, will appear larger on a large scale map compared to a small scale map. Small scale refers to world maps or maps of large regions such as continents or large nations. In other words, they show large areas of land on a small space. They are called small scale, because the representative fraction is relatively small.

Difference between simple sketch and a map: A map is a visual representation of an area either real or imaginary, while sketch is a rapidly executed freehand drawing, which is not produced as a finished work, often consisted of overlapping lines.

A map is drawn to scale while sketch is a rough drawing. A map of smaller or bigger area can be drawn easily on a piece of paper while you can draw a sketch of only small area. A map has far more accuracy than a sketch. A map gives; much more details of a place while sketch cannot. Maps help you to travel from one location to another and even can help you to organize information. A street map will show you roads, their names and various locations along those roads. A topographic map will inform you about land elevations and features.

Someone who makes maps is called a cartographer. Cartography is making of maps. The cartographer has to consider the aim or purpose of his map. The source material from which it is to be constructed and the most effective and striking method to be used. He selects carefully his base lines, the scale and the size of the finished map or the desired reduction. Because on this depends the degree of simplification and generalization of the data presented.

Some common features of maps include: scale symbols or legends and grids

Scales: Scale has come to be employed in two distinct senses. Firstly, it denotes the relationships which the distance between any two points on the map bears to the corresponding distance on the grounds. It can be expressed as either in one inch to one mile. We can relate map and ground with three different types of scale (a) Graphical or linear scale, (b) Statement

scale and (c) Representative fraction or R.F.

(A) Graphical or linear scale : A graphical scale is a ruler printed on the map and is used to convert distances on the map to actual ground distances. The graphical scale is divided into two parts. To the right of the Zero, the scale is marked in full units of measure and it called the primary scale.

Example : Construct a graphical scale showing 1 inch = 4 miles.

$\therefore 1'' = 4 \text{ miles}$ $\therefore 5'' = 5 \times 4 = 20 \text{ miles}$.

Draw a straight line of '5' inches, which will show '20;' miles. This distance can be divided into five sub-divisions of '1' inch each. The first primary divisions of '1' inch each. The first primary divisions can be divided into 4 sub-divisions of 1 mile each.

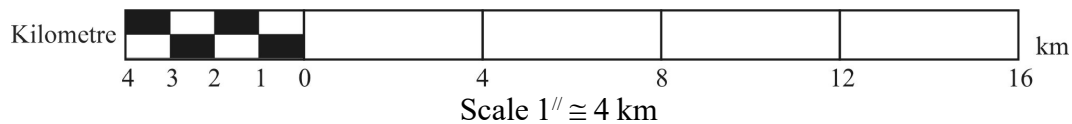


Fig 5.1 : Graphical Scale

(b) Statement scale : It is a type of map scale, where scale is expressed in form of a written statement. For example one centimeter on the map represent 1 kilometer on the ground. This can be expressed in short as 1 inch represent 4 miles etc.

(c) Representative Fraction or R.F.: It is a map scale in which figures representing units (as centimetres, inches or feet) are expressed in the form of the fraction. As such $\frac{1}{1000,000}$ or the ratio 1 : 1000,000 to indicate that one unit on the map represents 1000,000 on the earth's surface.

Example: Convert the given statement of scale into representative Fraction (R.F.)?

1 inch represent 6 miles.

Here, 1 mile = 63,360 inches

$\therefore 6 \text{ miles} = 6 \times 63360 = 380,160 \text{ inches}$

$\therefore \text{R.F. } 1 : 380,160$

Another Example:

Convert the statement 4 cms = 1 kilometre into a R.F. scale?

$\therefore 1 \text{ km} = 1,00,000 \text{ centimetres}$

It means distance on the map is 4 centimetre = 100000 centimetres on the ground.

$\therefore 1 \text{ cm} = \frac{100000}{4} = 25,000 \text{ centimetres}$

Or R.F. = 1: 25,000

Diagonal Scales: Linear or Graphical scales show, primary and secondary divisions only. But for greater accuracy it is desired to sub-divide the secondary divisions into tertiary divisions. This can be achieved by the use of a Diagonal scale. It is an engineering measuring instrument, which is composed of a set of parallel straight lines which are obliquely crossed by another set of straight lines. Diagonal scales are used to measure small fractions of the unit of measurement.

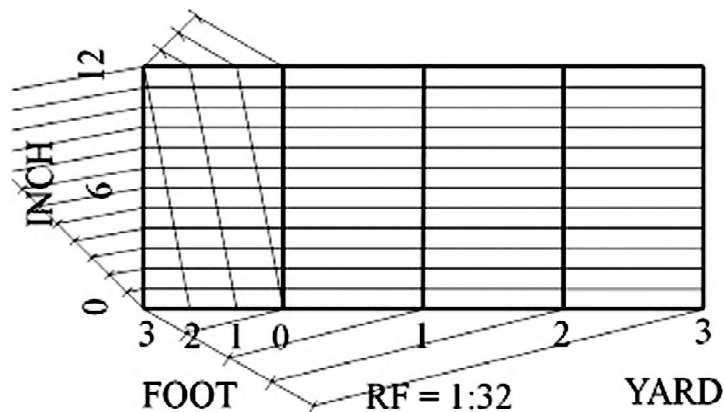


Fig 5.2 : Diagonal Scale.

Example construct a Diagonal scale for the R.F. 1: 100,000 to read up to 50 metres.

$$\text{Now, R.F.} = \frac{1}{10,0000}$$

It means 1 centimetre on the map represents 100,000 centimetres = 1 kilometre.

Draw a plain scale of 10 centimetres, which represents 10 kilometres. It divides the first primary division into 4 sub-divisions then, each subdivision will show $\frac{1}{4}$ kilometre = 250 metres. As we are to measure 50 metres, we have to divide into 5 tertiary divisions. Each will

mean $\frac{250}{5}$ metres = 50 metres Now by drawing diagonals of vertical rectangle joining the sub-divisions of the first primary division. (Fig Diagonal scale)

Grids: It is a system of squares or rectangles that are drawn on a Map, So that the position of any place can be described or found. A grid is a network of evenly spaced horizontal and vertical lines used to identify, locations on a Map. (Fig Map of Assam within Grids)

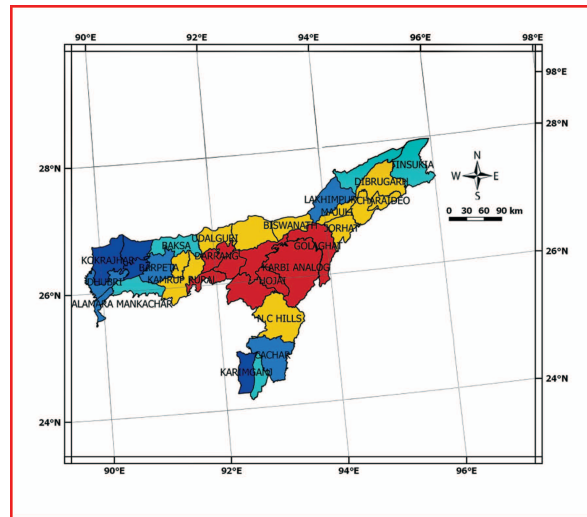


Fig 5.3 : Map of Assam within Grids

Besides these, there are a few essential components of a Map. Data Frame, Name of the cartographer, direction and index history, source and legend or symbols, they remain as complementary to each other in a Map.

Data Frame is the portion of the map that displays the data layers. For example an ancient historical Map of Assam with the data's of Barman Dynasty from 350 to 650 AD can provide information about that era or period, Again the four cardinal directions are the directions North, East, South, West which can be shown by the Index.

Conventional Symbols or legend : A Map with its key and legend, should be complete in itself and self explanatory. An immense variety of symbols can be used to show the distribution of products and anything else.

The simplest form of symbol is the 'DoT': A very useful form of distribution Map is one, on which quantities or values are represented by 'Dot' of uniform size. Some symbols can provide quantitative information, if they are drawn to scale. Circles, spheres, squares, rectangles, columns, triangles and cubes may be used. A wide variety of these symbols may be used to describe population or economic distributions.

Let us see, how we can calculate proportional symbols :

If a quantity say 10,000 is to be represented by a circle, first the square root of the number must be found say '100'. We know that the area of a circle is πr^2 , where ' π ' is a constant and so it can be ignored. A circle can be drawn with a radius of '1' inch. Now

circles with '1' inch of radii could be drawn to use as legend or symbol. If another quantity e.g. 50,000 has to be represented, then its square root will be 223.0. So on the same scale a radius of 0.223 inch can be taken to draw the circle for that quantity.

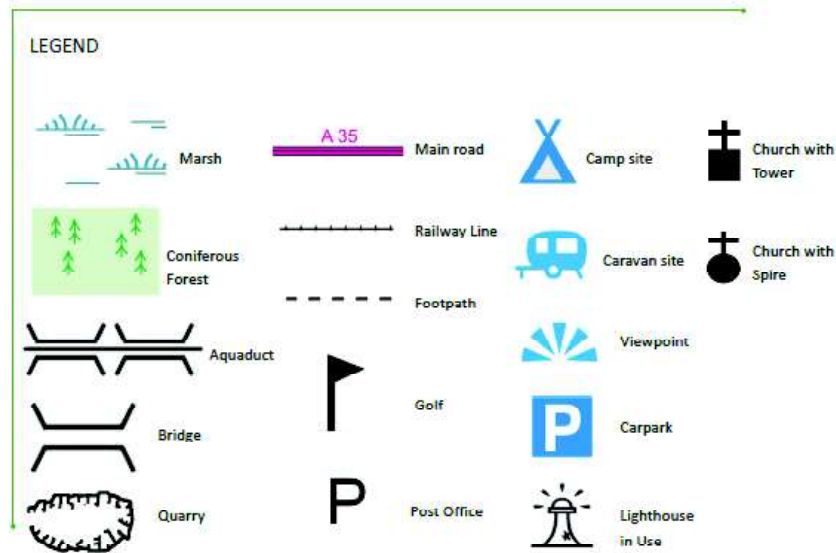


Fig 5.4 : Conventional Symbols used in Maps

Moreover Graphs ('Pie' diagram or wheel graphs), 'unit graphs', 'bar graphs or column diagrams can also be used to reveal information, to illustrate the development of some theme or product.

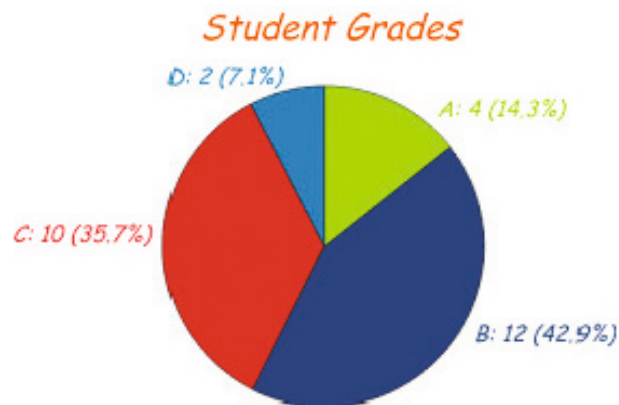


Fig 5.5 : 'Pie' diagram.

How to Create a Map :

‘Maps’ present information about the world in a simple, visual way. Map makers are known as ‘cartographers. They create maps for many purposes. Before making a ‘Map’, cartographers decide, what are they want to display and what type of information they want to present. They consider the needs of their audience and the purpose of the Map. Moreover, cartographer must consider about the language of a Map. For example a blind reader needs a Map that has information in ‘Braille’. Again, a map might use Red and Green symbols to show the location of Maple or pine trees. But color blind people can’t use these kind of maps. So, through mathematical calculation lines of latitudes and longitudes are plotted on a flat surface and features are drawn – as their appropriate location.

Before the development of advanced computer and printing techniques, Maps were drawn by hand. Cartographers would draw or scribe the Map on a sheet of coated plastic with a special itching tool. Several different plastic were layered on top of each other add shading and place names, to represent hills or plain features.

Today, most mapping is done with the help of computers. The coordinates of every point are entered into a computer. By feeding new data into the computer or deleting old data, Map changes can be made quickly and easily. Colors can be changed, new roads added and topographic features, such as flow of a river can be altered. The new Map can then be printed out easily.

Types of Maps

Cartographers make many different types of Maps, which can be divided into two broad categories.

Maps

Reference or Representative type : It shows general geographic information about an area, including the locations of cities, boundaries, roads, mountains, rivers and coastlines. Government agencies such of National geological survey, makes Maps. Many are topographic

Thematic Maps or maps drawn with reference to the subject. Thematic maps display distributions, or patterns over earths surface. They emphasize one of them or topic. These themes can include information about people, other organisms or the land. For example about people’s average income, where different languages

some general reference Maps, meaning that they show changes in elevation. They show all the hills and valleys in an area. This is useful to every one, from hikers trying to choose a route to engineers trying to determine where to build high ways and dams etc.

are spoken or average annual rainfall in a place etc. Many thematic maps are now made with the help of geographic information system (GIS) technology, GIS are computer systems that capture, store and display data related to positions on Earth's surface. This technology combines information from maps with other data about people, the land, climate, farms, houses, business and many more.

Many industries and government offices use GIS technology for analysis and decision making. For example GIS data helps to determine which streams are most in danger of being polluted.

History of Map Making :

Through the ages, Maps have taken many different forms. The earliest maps were probably sketches made in the ground that showed the surrounding area. One of the world's oldest Map was found on a stone tablet in Spain. It dates back nearly 14,000 years.

Eratosthenes, who lived from about 276 to 194 BC, calculated the size of the earth using mathematics, and observation of the sun. Claudius ptolemae or Ptolemy, was an Astronomer, mathematician and Geographer at a stretch in the second century. He brought Map making to a level of precision. He combined all his knowledge about the world into a book called "Geography".

During the middle ages, cartographers, drew maps reflecting their religious beliefs. These Maps are generally simple and sometimes fancy types. The city of Jerusalem holy to Jews, Christians and Muslims was sometimes placed in the Centre. Many medieval European Maps with Jerusalem at the centre are called 'T' in 'O' maps. The mass of land was represented as a round wheel encircled with a single round Ocean, the 'O' of the 'T' in 'O' . The land encircled by the Ocean was divided by a 'T' into the three continents, known by medieval European Cartographers.

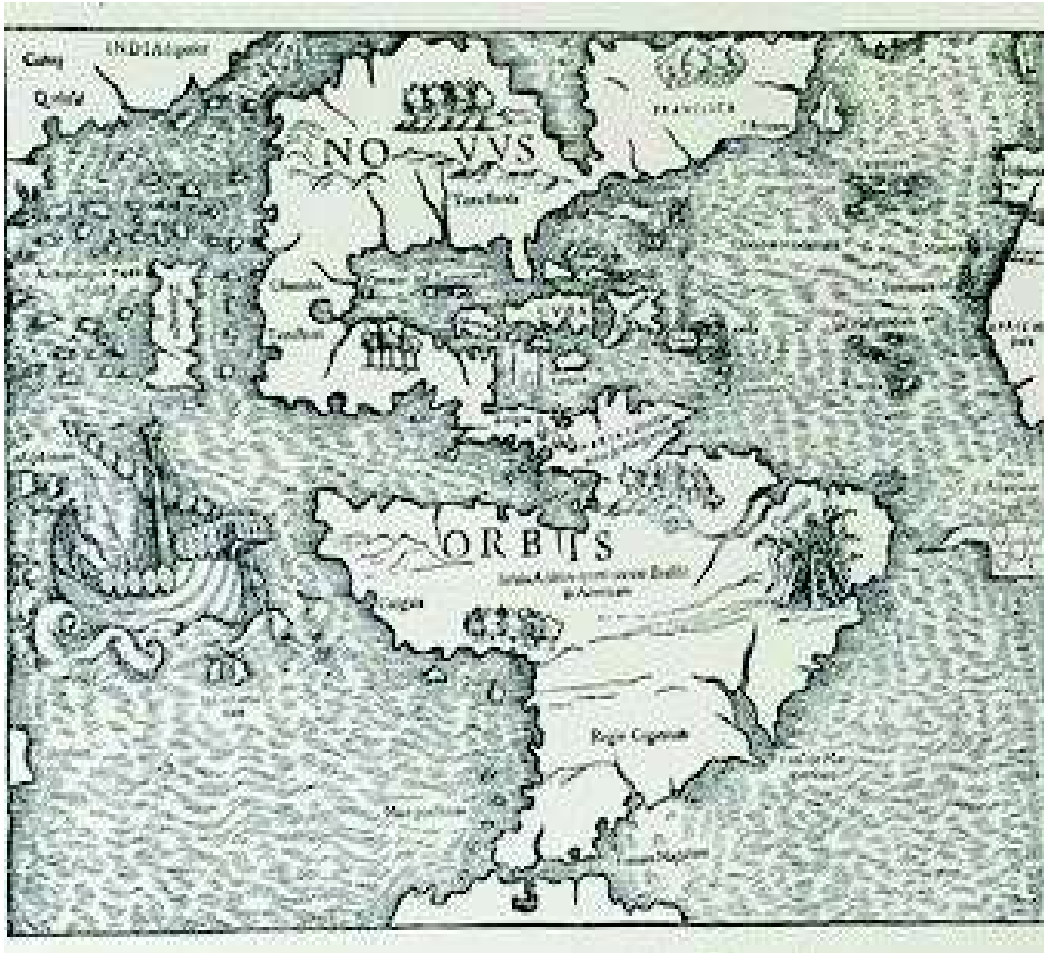


Fig. 5.6 : Ancient Sumerian Map

Asia was the large land mass above the 'T' - Africa and Europe were the two smaller sections on either side of the 'T' shape. The 'Nile' River between Africa and Asia and the river 'DON' between Europe and Asia. The 'Nile' and 'DON' meet in a single line to form the top of the 'T'. During these dark ages Arab scholars, kept scientific cartography alive. They preserved the works of Ptolemy and translated them in Arabic. They produced the first reliable Globe of the western world.

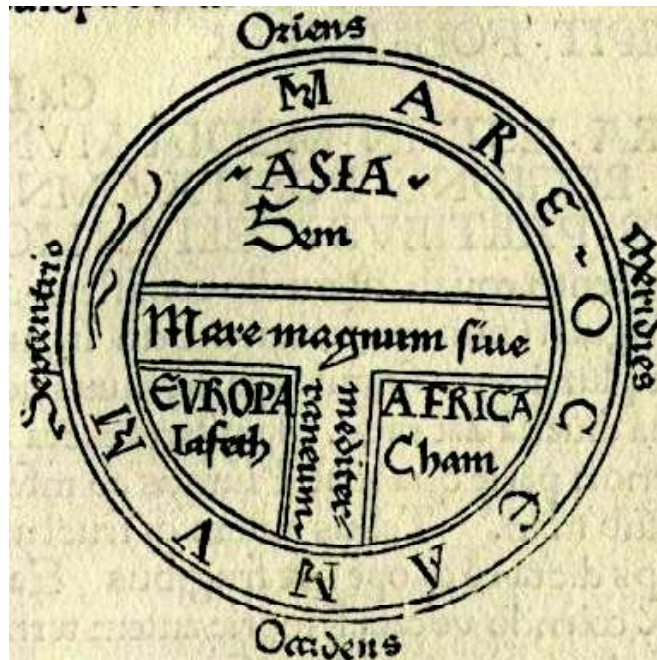


Fig. 5.7 : 'T' in 'O' map.

During the Islamic Golden Age, Arab Cartographers used complicated mathematical and astronomical formulae to help them determine different Map Projection. In 1154, the scientist and cartographer 'Al Idrisi, made a map of the world that was better than the world maps produced by Europeans.' 'Al Idrisi's' map included a representation of the Entire continent of Eurasia, including Scandinavia, the Arabian sea and peninsula, the Island of Sri Lanka and the Black Sea and Caspian Sea.

In the 19th century, cartography become more advanced with the development of a printing process called 'lithography'. This allowed the cartographers to make many accurate copies of maps with less labour and expenses.

Photography, color printing and computers, all improved map making more. In just a few decades, the relationship between people and maps changed drastically. For example instead of using paper sheet maps, many people navigate using GPS units that communicates with satellites to determine their exact location on Earth. Digital version of Maps can represent the Earth in three dimensions, defying the limitations of the flat maps of the past. Almost the entire surface of the Earth has been mapped with accuracy and the information is available instantly to anyone with an internet connection.

Map Projection

A map projection is a systematic transformation of the latitudes and longitudes of locations from the surface of the sphere into locations on a plane. Maps cannot be created without map projections. Every distinct map projection distorts in a distinct way. Therefore a map projection is any method of 'Flattening' a continuous curved surface onto a plane. Our Earth is round and its actual representation is a globe which maintains all other geometric relationships say, relative distances, angles, relative areas etc. excluding the size. In true sense, a projection is considered as a network of parallels of latitudes and longitudes.

Basically, three types of projections are used to draw maps of our earth.

(a) Cylindrical Projection, (b) Conical and (c) Zenithal projection.

(a) Cylindrical Projection : A cylindrical projection can be imagined in its simplest form as a cylinder that has been wrapped around a globe at the equator. The points on the spherical grid are transformed to the cylinder which is then unfolded into a flat plane. Here equator remains in the middle and the poles at the top and bottom. Latitudes and longitudes appear as straight lines that intersect each other, at right angles in a grid pattern. The longitudes or meridians are equally spaced and latitudes or parallels spaced progressively furtherer apart moving away from the equator.



Fig. 5.8 : Cylindrical Projection

Distortion of shape and scale, in a whole world cylindrical projection is minimal in equatorial regions and maximal at the poles.

The common examples of cylindrical projections are the Mercator's projections.

(b) Conical Projection : The equidistant conical projection can be based on one or two standard parallels the parallels of latitudes are arcs of concentric circles and the meridians or longitudes are straight lines, radiating from the common centre. Conical projections are typically

used for mid-latitude zones with an east-west orientation. For example we can draw a conical projection with one standard parallel for an area lying between 40° North and 60° North latitudes and 15° west and 5° East longitudes.

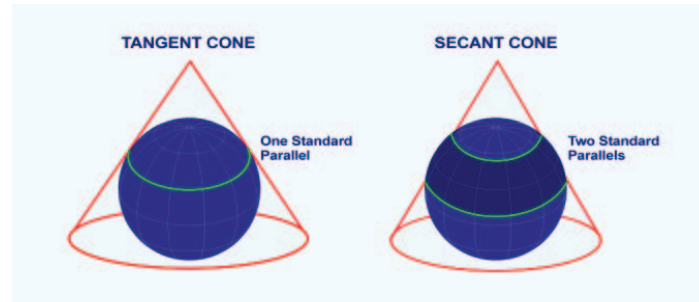


Fig. 5.9 : Conical Projection.

(c) Zenithal Projections : Zenithal projection is a type in which part of the Earth surface is projected on to a plane tangential to it, either at one of the poles or at the centre or between.

These projections are also called Azimuthal projection, because they have true bearings from the centre. On the basis of the position of the tangent plane, there are three types of zenithal projections.

(i) Polar Zenithal projection : When the plane is tangent to one of the poles (North or South)

(ii) Polar Equatorial Projection : When the plane is oriented perpendicular to the equatorial plane.

(iii) Polar oblique : For the oblique aspect, the plane surface has an orientation between polar and transverse aspects.

These projections are named Azimuthal, due to the fact that they preserve direction property from the centre point of the projection.

Again, the light source can be emitted from different positions, developing different Zenithal map projections.

(1) Gnomonic Zenithal projection : When the light is placed at the centre.

(2) Stereographic Zenithal projection : At the opposite end where the tangent plane touches the reference globe is the light source for the stereographic projection.

(3) Orthographic Projection : When the light is placed at infinity. Typically, an orthographic projection drawing consists of three different views- a front view, a top view, and a side view.

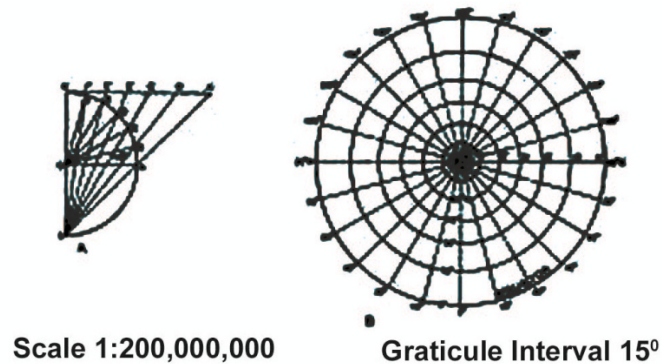


Fig. 5.10 : Zenithal Polar Projection

In these projections, the pole is a point forming the centre of the projection and parallels are concentric circles. The exaggeration and distortion of shapes increases away from the centre of the projection.

All those projections indicated above can show the real picture of whole earth or any portion of it. Without preparing the grids of latitudes and longitudes, a map cannot be drawn. That's why projections are known as systematically drawn grids, where the map of our earth could be expressed neatly and correctly.

Surveying :

Surveying is the systematic process of making measurements on the field, from which maps are drawn. Surveying is the technique, profession, art and science. They also provide advice and data for geographical information system that record land features.

Types of Surveying :

(1) Land Surveying : A boundary survey to determine the actual property lines, and corners of a particular parcel of land. These are often used to apply for building permits, resolve neighbourhood disputes and for the purpose of erecting fences.

(2) Mining Surveying : Mine Surveying is the practice of determining the relative positions of points on or beneath the surface of the Earth.

(3) Hydrographic Surveying : It is the science of measurement and description of features which effect marine navigation, construction, dredging etc.

(4) Geodetic Surveying : A survey of a large land area in which corrections are made for the curvature of the Earth's surface.

(5) Photogrammetry : This is the science of making measurements from photographs.

Methods of Surveying :

There are two methods of surveying

(1) Triangulation method and (2) Traversing method

(1) Triangulation survey method, is the tracing and measurements of a series of triangles to determine distances and relative positions of points spread over an area. By measuring the length of one side of each triangle and deducing its angles and lengths of other two sides by observations from its baseline. It is the process of determining the locations of points.

(2) Traverse Method : It is a method in the field surveying to establish control network. This network involve placing survey stations along a line or path of travel, and then using the previously surveyed points as a base for observing the next point.

It is a popular method of surveying. It can again be sub-divided into

(i) Closed or (ii) open traverse

(i) Closed traverse : A surveying traverse whose accuracy can be checked by the fact that, when it is closed, the angles should add up to 360 degrees and which ends at its starting points.

(ii) Open traverse : A surveying traverse that fails to terminate where it began and therefore does not completely enclose a polygon.

Besides these methods, there is a simple method of surveying which is know as chain surveying. In this survey only measurements are taken in the field, and the rest work, such as plotting calculation etc. are done in the office. This is most suitable adapted to small plane areas with very few details.

Though various 'chains' are used in surveying a field; basically "Engineers chain" and "Gunters chain" are most commonly used. The length of Engineer's chain is 100 ft and consist of 100 links of equal length. Every 10ft is marked by a brass tag. The length of Gunters chain is 66 ft subdivided into 100 links, each of which is a short section of wire connected to the next link by a loop. It was designed by English mathematician Edmund Gunter.

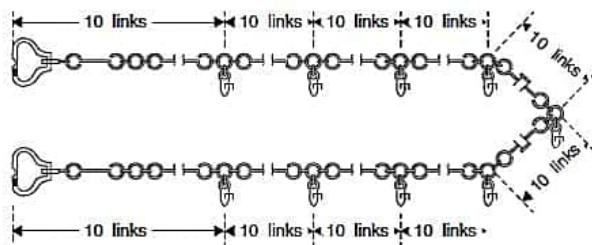


Fig. 5.11 : 'Chain' Surveying

Instruments used in surveying include: Theodolite, Measuring tape, 3D scanner, GPS/GNSS level and Iron rod. Arrows are used to counting the number of chains in chaining. Arrows are made of steel wires of diameter 4mm length is 400mm. Generally measuring tapes are commonly used.

Another technology used for Geographical study is “Remote Sensing.”

“Remote sensing” is the acquisition of information about an object or phenomena without making physical contact with the object and thus in contrast to on site observation of the Earth. The term “remote sensing” generally refers to the use of satellite or aircraft based sensor technologies to detect and classify objects on Earth. The scanning of the Earth by satellite or high flying aircraft in order to obtain information about it. Special cameras collect remotely sensed images of the Earth, which help researchers “sense” things about the Earth.

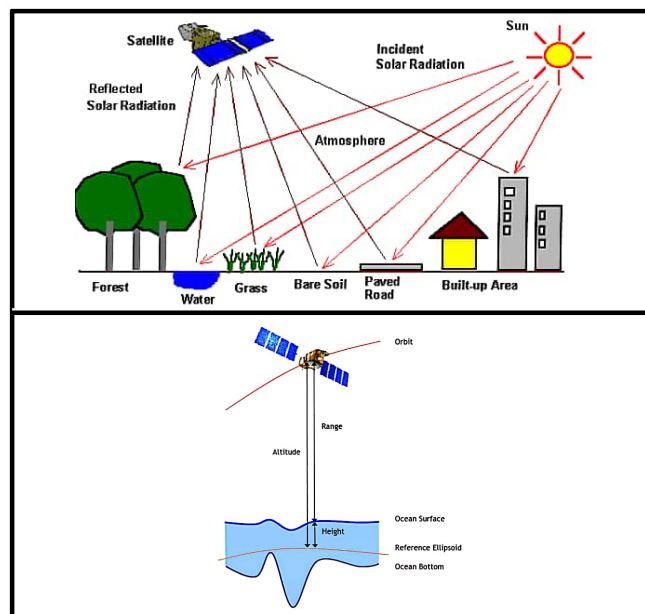


Fig. 5.12 : Remote Sensing through the artificial satellite.

Cameras on satellites and airplanes take images of large areas on the Earth’s surface, allowing us to see much more than we can, standing on the ground.

Sonar systems on ships can be used to create images of the ocean floor without needing to travel to the bottom of the Ocean.

Cameras on satellites can be used to make images of temperature changes in the Oceans.

Some specifics used to remotely sensed images of the Earth include :

Large forest fires can be mapped from space, allowing rangers to see a much larger area than from the ground.

Tracking clouds to help predict the weather and of the storms like, “Phailin”, “Chinook wind storm”, “Bordoisila storm”, Kalbaisakhi storm”, “Phani tufan” etc. for people’s concern. It can help watching eruption of volcanoes and help watch for dust storms too.

Mapping the ocean bottom : Discovery and mapping of the rugged topography of the ocean floor for example, about the huge mountain ranges, deep canyons and the “magnetic stripping” on the ocean floor.

Geographic Information System (GIS) : GIS, is a computer system. It is a system designed to capture, store, manipulate, analyze, manage and present geographical data. GIS applications are tools that allow users to create interactive queries, analyze spatial information, edit data in maps, and present the results of all these operations.

There are four elements of GIS :

- (i) **Input :** The data input function is the means by which a GIS communicates with the world outside. The procedure of encoding data into a computer readable form and writing the data to GIS database various sources for data input may be text piles, existing maps, aerial photographs, satellite imagery, airborne scanners, field measurements etc.
- (ii) **Storage :** The different types of information required for a GIS require storage which allows the information to be updated, and queried for analysis by the user. Two types of information to be stored, spatial data and attribute data, and retrieval operations are also performed as per requirements.
- (iii) **Analysis :** GIS is a tool for managing data about where features are (geographic coordinate data) and what they are like (attribute data) and for providing the ability to manipulate, query and analyze those spatial analysis, seeks to explain patterns of human behaviour and its spatial expression in terms of locational analysis.
- (iv) **Output :** The most common form of output from a GIS is a map. Other non cartographic forms of GIS output are charts and tabs, containing spatial and non-spatial theme. The other types of outputs are cartograms, for example graphs, diagrams, geometric figures, line diagram, report etc.

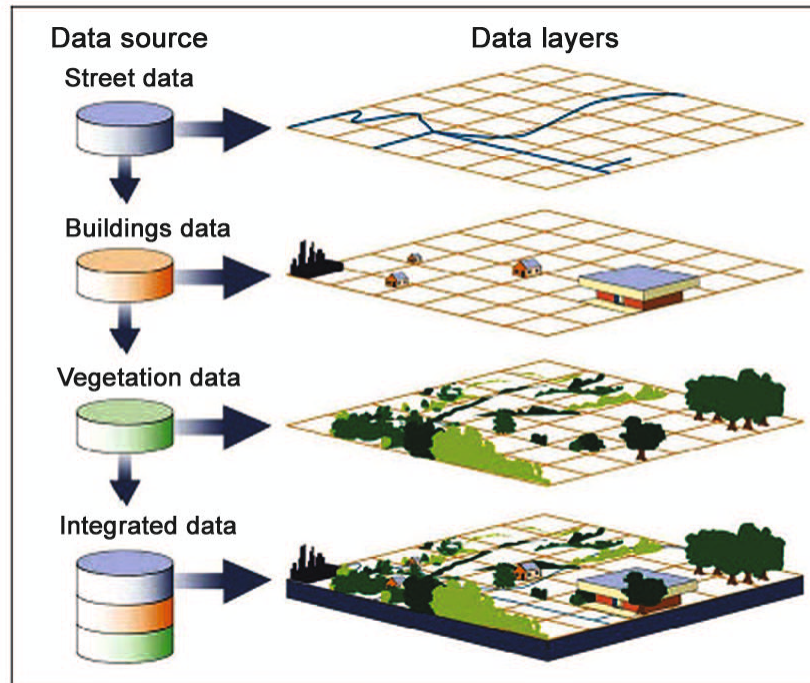


Fig 5.13 : Geographic information system.

It is important for you, to know the person who has been acknowledged as the “father of GIS”. He was an English geographer, named Roger F. Tomlinson. He was the primary originator of modern computerized geographic information systems (GIS).

EXERCISE

1. Give the answers of the following in a word . 1×6=6
 - (i) _____ is the main tool of Geography.
 - (ii) A map can be drawn with the help of _____.
 - (iii) _____ calculated the size of the Earth for the first time.
 - (iv) In 1154, during the Islamic Golden era the famous cartographer _____ prepared the best Map.
 - (v) Latitude and Longitude intersects to form a _____.
 - (vi) _____ is a simple system of surveying a field.
2. Write short answers of the following questions : 2×7=14
 - (i) What is a ‘Scale’? How many types are there?
 - (ii) Convert the statement into R.F. 2 miles = 63360.
 - (iii) How can you differentiate Graphical Scale and Diagonal Scale?

- (iv) What is “Remote Sensing”?
 - (v) How many elements are there in a “Map”?
 - (vi) Write about different types of “Map”?
 - (vii) What is “surveying”?
3. Give brief answer of the following questions : 3×3=9
- (i) What is a Projection? How many types do you find in your text book?
 - (ii) Name the activities, that can be acquired from ‘GIS’ software?
 - (iii) Write a short note on “Remote Sensing”.
4. Give a description of the following. 3×5=15
- (i) Write a note on the history of “Map”.
 - (ii) What is a “chain surveying” and what kind of equipments are needed?
 - (iii) Write a note on “Cylindrical Projection”?

Activities :

How can you ‘survey’ the school field? Discuss everything with a teacher or a resource person clearly and go for it. In this aspect get the knowledge about “chain surveying” from the resource person. Take the measurement and after that calculate the ‘length’, ‘breadth’ of the field in your classroom.



PART-II

HISTORY

CHAPTER : 6

THE POLITICAL DEVELOPMENT OF ASSAM (1826-1985)

IMPORTANT DATA

- The British rule had begun in Assam after the Treaty of Yandaboo. The administrative, revenue and judicial reforms were taken in the state under the British Rule. A group of Ahom nobility in Upper Assam revolted against the British Rule.
- Assam witnessed a series of Peasant Uprising against the increasing land revenue.
- The plan to send back the British from Assam during the Revolt of 1857, under the leadership of Maniram Dewan had failed.
- Many organizations were formed under the British Rule to spread the socio-economic consciousness.
- In Assam anti-imperialist awareness had emerged during the freedom struggle.
- A state government was formed under the leadership of Gopinath Bordoloi after Independence. The state witnessed socio-economic, industrial, railway and transport-communication development after 1947.
- The Sino-Indian war, the plain tribal politics, India- Pakistan war had affected Assam.
- The Assam Agitation (The Assam Movement) for deportation after the illegal immigrants came to an end with the signing of Assam Accord. In 1985 for the first time State government of Assam was formed under the leadership of a regional party, *Asom Gana Parishad*.

THE TREATY OF YANDABOO; BACKGROUND, PROVISIONS AND RESULTS HISTORICAL CIRCUMSTANCE: THE END OF AHOM RULE

The Background of the Treaty of Yandaboo : In the beginning of nineteenth century, before the coming of the British, the Ahoms ruled Assam for more than six hundred years. The Ahom kingdom covered an area of about eight hundred kilometres from the Patkai Hills in the east to the Manas River in the west. In north of the River Brahmaputra were inhabited by the Bhutiyas, Akas, Dafalas, Misings, Misimis and Singphous. In the south, the Ahom kingdom was expanded to Nagaland and also touched Manipur and the boundary of Burma as well. Although the Ahoms mainly ruled in the Brahmaputra valley, these small chieftains played an important role in strongly establishing the Ahoms in North East India.

Ahom kingdom had been separated from the mainland of India for a long time due to its geographical location. Moreover the Ahoms also adopted a policy of isolation.

It seems that the Ahom rulers after Rudra Singha were weak and inefficient. There was chaos and conflict among the claimants of the throne. Due to the weaknesses of Ahom monarchy, anarchy among the nobles and officials as well as the clash between the Shakti worshippers and the Vaishnavites, the Moamariya rebellion took place in Assam thrice and the Moamariya Rebellions weakened the very foundation of Ahom monarchy. Gaurinath Singha was compelled to settle in Guwahati as the Moamariya rebels tried to capture the Ahom capital. Ultimately Gaurinath Singha requested Lord Cornwallis for military assistance to well down the rebellion.

Since the East India Company had made an announcement in 1784, Governor- General Lord Cornwallis was unwilling to interfere in the internal affairs of the state. But the Collector of Rangpur and the Commissioner of Koch Bihar made the Governor- General aware about the fact that the political instability of Ahom kingdom may diminish the commercial relationship between Assam and Bengal. On the other hand Gaurinath Singha agreed to maintain the army of the East India Company in his kingdom and Cornwallis ultimately agreed to send Captain Thomas Welsh 'to understand the internal condition of Assam' and also 'to look after its trade and commerce'.

Captain Welsh was sent to Assam in September, 1792. Welsh informed Cornwallis about the commercial prospects of Assam, especially the possibility and potentiality of salt trade. Captain Welsh successfully reinstated Gaurinath Singha on Ahom throne, brought the Barkandazes, a kind of hired sepoy back to Bengal from Kamrup and defeated the

Maomariya rebels. But Sir John Shore, the next Governor-General followed the policy of non- interference in the internal affairs of the native state and instructed Captain Welsh to return back from Assam. Taking this opportunity, the Barkandazes entered and started disturbing again in Kamrup and Darrang. The Moamariyas, Khamtis and Singphos also became rebellious against the Ahom rule.

Burmese Invasion : After untimely death of Gaurinath Singha, there was a tussle among the successors of the Ahom dynasty and on the question of succession, the dynasty was divided. Kamaleswar Singha and Chandrakanta Singha became the puppet in the hands of Purnananda Burhagohain. Badan Barphukan, who was the in- charge of Lower Assam openly opposed the political interference of Purnananda Burhagohain. Purnananda was offended and sent soldiers to arrest Badan Barphukan from Guwahati. Badan fled to Calcutta as he had got the news in advance. Badan, unable in getting British assistance against Purnananda finally sought help from the Burmese representatives, stationed at Amarpur. The Burmese rulers were also looking for an opportunity to extend their boundary to the west. In 1817, responding to the call of Badan Barphukan, a group of Burmese soldiers came to Assam and installed Chandrakanta Singha in the Ahom throne and they returned back. As soon as they departed Chandrakanta Singha had been dethroned and Purandar Singha was given the responsibility of Ahom kingdom. On the request of Chandrakanta Singha, the Burmese again entered into Assam in 1819. Purandar Singha could not resist the Burmese commander Alia Mingi and took shelter in Guwahati and later he stationed at Silmari in Bengal. The Burmese announced Chandrakanta Singha as the next Ahom monarch.

Chandrakanta Singha got to know about the aggressive policy of the Burmese soon after he came to power because the Burmese planned to annex Assam at the time of their second arrival. The Burmese king Ba-gi Daw was thinking about merger of Assam with Burma. Due to such attitude of the Burmese, Chandrakanta Singha became the puppet at their hands. Chandrakanta felt helpless and was compelled to take shelter in Bengal from where he tried to restore the Ahom kingdom. The Burmese took the political events in Assam seriously and in 1822 commander Mingimaha Bandula was sent to Assam along with 30,000 soldiers. The arrival of Mingimaha brought the Ahom rule to an end. Mingimaha although allowed Jogeswar Singha to continue as the ruler of Ahom throne, the actual power was rested on his hands only and it opened a chapter of repression in the history of Assam.

David Scott, the Civil Commissioner of Rangpur constantly reported the higher authority of the East India Company about the political events of Assam. In a report, written to the

higher authority in 1822, Scott referred that the Burmese had established full control over Assam and also had appointed one of their representatives to hold supreme power which in turn reflected that Assam was under the control of the king of Burma.

During this time, the relationship between the East India Company and Burma had been deteriorated. The Burmese looted Habraghat area of Rangpur and also entered into British occupied Goalpara. Rumour spread that Mingimaha Bandula was preparing to attack Goalpara. In 1823 the Burmese occupied the Sahpuri Island in Chittagong frontier. At the same time they demanded Gambhir Singh, the king of Manipur to expel from his kingdom Govinda Chandra, the king of Cachar. The administration of British East India Company got aware of observing the military preparations made by the Burmese to attack Bengal from the three sides.

The Burmese not only threatened the security of the areas occupied by East India Company but also disturbed the commercial interests of the company in North East India. Under this circumstance British East India Company was compelled to reconsider the policy of non-interference in the internal affairs that they followed in case of other states.

First Anglo- Burmese War : In November 1823, along with the responsibility of being the Commissioner of Rangpur, David Scott was entrusted with the additional responsibility of being the agent of North East to the Governor General. After going through the reports sent by David Scott, the Governor General's council of East India Company decided to severely punish and get the Burmese out. It is believed that the situation which the Burmese created in Arakan, Assam and Cachar made it conducive for a war between the East India Company and the Burmese and in 1824 the company announced war against Burma.

Under the commandership of Lieutenant Col. Richards, a British army proceeded towards the Brahmaputra valley and occupied Rangpur. The Burmese were out from Cachar and Manipur too. Simultaneously the British continued military campaign in Arakan, Tenaserim, Pegu and Upper Burma, as a result of which Burma was heavily affected. In April 1825, Mingimaha Bandula died and by 1826 the Burmese failed to resist strongly against the British. Under the leadership of General Archibald Campbell, the main British force was present at a village named Yandaboo near Burmese capital Abha. Under the situation Burmese king Ba-gi- Daw offered the proposal of peace treaty with the British. As a result of this on 24 February, 1826 the historical Treaty of Yandaboo was signed between Ba-gi Daw and Archibald Campbell.

The Provisions of the Treaty of Yandaboo : A number of significant provisions were included in the Treaty of Yandaboo that affected Assam and its peripheral states.

In the beginning of the Anglo- Burmese war the British East India Company decided to return back as soon as they could save Assam from the menace of the Burmese invaders. But with the aim of establishing British imperialism in south-east Asia, to settle the competition among the representatives of Ahom dynasty to seat in the throne and also to acquire the vast natural resources of Assam the East India Company concluded a peace treaty with the king of Burma without any discussion with the representatives of Ahom dynasty and that's how they decided the fate of Assam. The terms of the treaty were as such-

- (1) A permanent relationship of peace and friendship would be maintained between Burma and the East India Company.
- (2) Assam, Manipur and Arakan these areas went under the control of East India Company and the company also asked the king of Abha to stop the behaviour he had shown to Kachari and Jayantiya kingdom.
- (3) The Burmese ruler agreed to pay rupees one million pounds to the East India Company as war indemnity.
- (4) Representatives of East India Company were allowed to station at the Burmese capital Abha.

Although the second clause of the treaty refers that Assam was transferred to the hands of East India Company, but it is not mentioned clearly in the treaty of Yandaboo. The second clause says- "The king of Abha has withdrawn his demand over Assam and in the future also he will not interfere in the matters of Assam, its tributary states and its neighbours like Cachar and Jayantiya."

It was also mentioned in the treaty that if the King of Manipur, Gambhir Singh wished to go back to his state, the Burmese king would have to recognize him as the king of Manipur. Nothing else was mentioned in the treaty except this regarding Assam, Cachar, Jayantiya and Manipur. The second clause of the treaty offers equal status to Assam, Cachar and Jayantiya and nothing significant was included in the treaty as far as Assam was concerned.

The Results of the Treaty of Yandaboo : It is important to note the political decisions East India Company resolved about Assam, Cachar, Jayantiya and Manipur as a result of the Treaty of Yandaboo. The company allowed Govinda Chandra and Ram Singh to rule Cachar and Jayantiya kingdom respectively but stayed away from offering such rights to the representatives of Ahom kingdom.

Cachar : The King of Cachar Govinda Chandra agreed to pay sum of rupees 10,000 annually to the company and he also accepted the company's interference in the internal matters of his kingdom.

Jayantiya : Ram Singh, the Jayantiya king did not have to pay annual tribute to the East India Company but he promised to assist the Company in their military campaigns. He also agreed to seek advice from Governor General's council in running the internal administration of his kingdom.

Manipur : The British policy was somehow different in case of Manipur. Although the British suspected the allegiance showed by Gambhir Singh, the King of Manipur during Anglo-Burmese war, yet his role in eliminating the Burmese from Cachar and Manipur was praiseworthy. Hence, British recognized Gambhir Singh as the King of Manipur through the Treaty of Yandaboo but did not clearly explain the relationship between Gambhir Singh and the ruler of Burma in the future. According to the report of British representative Major Barni who was stationed at Abha, the Burmese would never demand their right over Manipur. Hitherto Gambhir Singh had to return Kabaw valley back to the Burmese that he annexed. The British was convinced in such resolution of the matter.

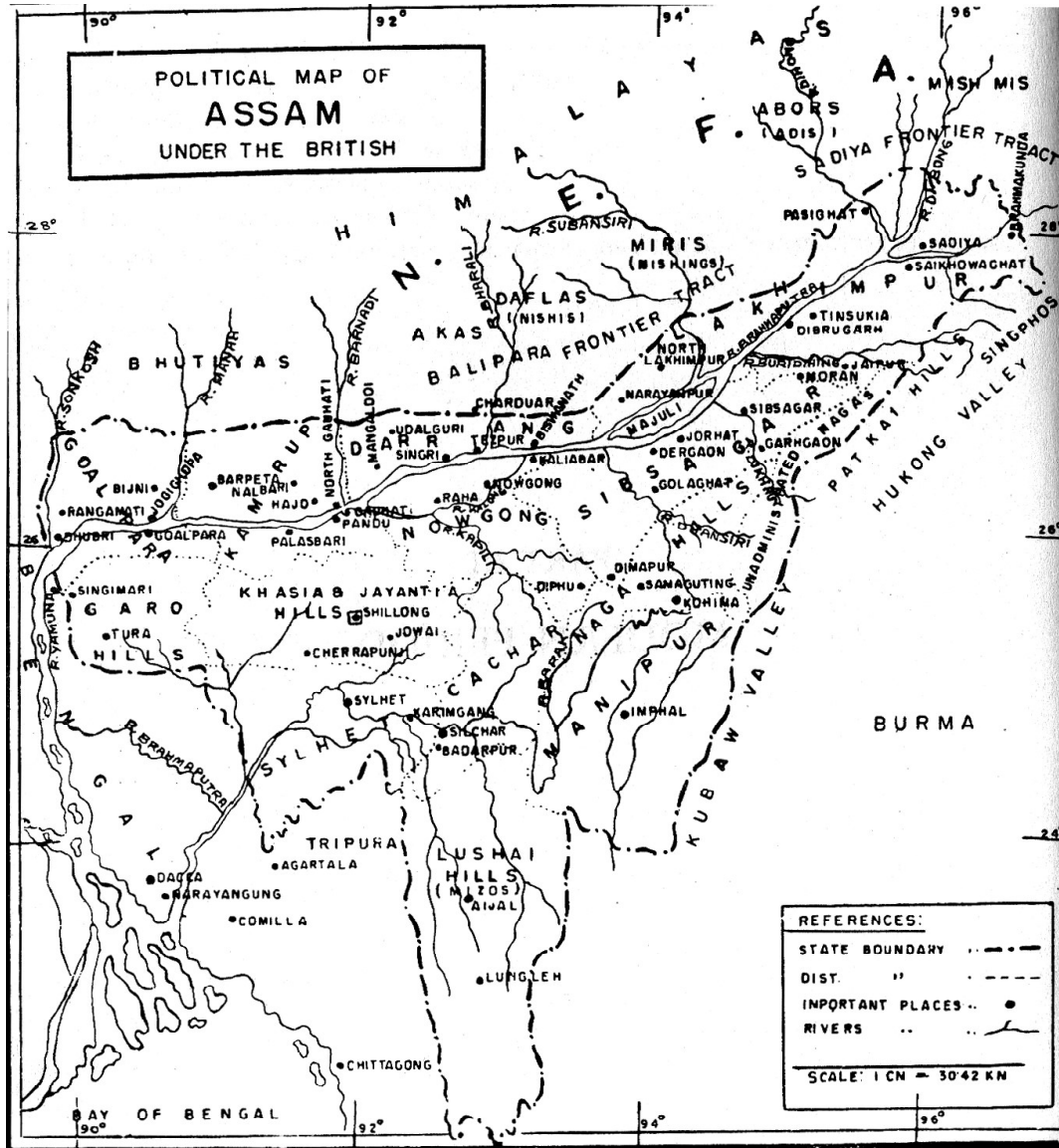
Assam : The impact of the Treaty of Yandaboo was completely different in case of Assam. Although Assam and Cachar were included in the second clause of the treaty, yet the representatives of Assam were not added to the treaty. That was why British did not face any complexities in capturing Assam after the Burmese returned. In 1823 David Scott offered a proposal of giving responsibility to a representative of the Ahoms to govern Assam. He also thought that even if Ahoms would have given the chance to govern Assam once again, the British should keep the right at their hands to interfere in the internal affairs of the state. Instead of listening to David Scott the East India Company informed him that the Company would rather give the responsibility of governing Assam to the Ahom in coming time. Prior to the Anglo-Burmese war although the British announced not to annex Assam but after the Treaty of Yandaboo they changed their decision providing two arguments. Actually through these arguments they tried to reflect their imperialist attitude. These two arguments were to protect Assam from Burmese attack in the future and to remove the lawlessness in the border areas of British that had took place due to the anarchy of Assam. The possibility of exploiting the newly discovered resources in the area encouraged the East India Company to annex Assam permanently. The company was mainly a commercial body and it was mostly influenced by commercial interests. This was the background why the East India Company brought Assam into the orbit of their political control.

The British Rule, India's Struggle for Independence and Assam :

The condition of the Brahmaputra Valley became degenerated at the time of eliminating the Burmese from Assam. Thousands of people from Assam were brought to Burma forcefully as slaves. The condition of the rest of the population was terrible due to the loot and plunder by the Burmese. These exploited gentry had to live life in a situation of internal conflict and anarchy. Instead of staying in a permanent location they used to take shelter in the jungles and hence, famine and epidemic became a common phenomenon. In this atmosphere the British emerged as saviour for Assamese folk. Even an independent minded person like Maniram Dewan too showed allegiance to the British rule initially. The British at first decided to rule Assam for a short period of time through their military administration as the people of the state looked relieved. David Scott was entrusted with the responsibility of administering Assam.

The Governance of David Scott : The Company's government had a firm faith on David Scott, the agent of Northeast to the Governor-General that he would be able to re-structure the administration of Assam.

The most important matter for David Scott was to nominate a representative from the Ahom dynasty for the vacant throne of Assam. Jogeswar Singha died in 1825 who was taking shelter in Jogighopa running away from Assam. The company's administration exiled Chandrakanta Singha and allowed Purandar Singha to return back to Guwahati. The Company's government was not responsible to restore any representative at the Ahom throne. Till February 1824, the Governor General's council of East India Company was not willing to bring Assam under the control of British rule. David Scott offered two advices to mitigate the political crisis of Assam. First, to re-establish the Ahom representative as a tributary king under British and to provide him security. This step would give a chance to the British government to interfere in Ahom administration. Second, as an alternative to the first step British wanted to keep the lower Assam under their control till Biswanath and to restore an Ahom representative to govern upper Assam excluding the areas occupied by the Moamariyas, Khamtis and Singphous. But the Company's government did not listen to David Scott and ordered for re-consideration. For a smooth conduct of the administration British divided Assam into two parts- western or lower Assam and eastern or upper Assam. Biswanath was marked as the middle point. David Scott was appointed as the senior commissioner for lower Assam and his head office was at Guwahati and the junior commissioner for upper Assam was Col. Richards and his head office was at Rangpur.



Map 6.1

Reforms of David Scott : David Scott designed the revenue system of Assam based on the Khel system, introduced by the Ahoms. He was not interested in making great transformation by introducing new revenue system in Assam. According to the planning of David Scott, Khel system continued in upper Assam with a little exception. In lieu of rendering personal service

every Paik had to pay three rupees annually as poll tax. A former official of Ahom aristocracy, Janardan Barbaruah was appointed as the in charge of revenue collection. To assist him in revenue collection, a number of Kheldars were appointed. David Scott reformed the revenue system of lower Assam on the model of Bengal. Instead of Barphukan the responsibility of revenue collection was entrusted upon a Shirastedar and this responsibility was carried by a member of Duwariya family, Haliram Dhekiyal Phukan. Rubekar, Nawis, Peshkar these lower officials helped the Shirastedar in collecting revenue. Like the Choudhurys of Bengal, in the 24 paraganas of Kamrup the Choudhurys hereditarily made land settlements. They were honoured, granted land and were served with a certain number of Paiks. The Patowaries and Saikias used to help the Choudhurys in collecting revenue. With the rulers of smaller chieftains like Darrang, Raha and Nowgong, David Scott made separate arrangements for revenue collection.

David Scott levied two rupees to every Paik as they were allotted three Puras of cultivable land. Two different taxes Kharikatana and Sarukar were introduced in Kamrup and Darrang. In Kamrup, one rupee was imposed on every plough. Tax were also collected from Lekhraj land, pat and muga weavers, hearth, goldwashers, fishermen, blacksmiths along with hats and ghats meaning market place and river port.

Judicial System : David Scott was interested in introducing an easy judicial system for the common people. One of the important features of this system was- a box was kept in the court where people could drop application for justice. In upper Assam Lambodhar Phukan, a relative of Chandrakanta Singha and Janardan Barbaruah (civil) were given the responsibility of settling the cases. The criminal cases were handled by the junior commissioner.

In lower Assam, the senior commissioner gave judgement of every case except death sentence. For the justice of important cases a tribunal was set up under Col. Richards. To make the judicial system convenient David Scott formed Panchayats in Nowgong, Kaliyabar and Chariduwar. For the special situation in Assam, the British higher authority was not willing to establish Nizamat Aadalat in lower Assam.

Thus David Scott initiated British rule in Assam with the reformations in revenue, tax and judicial system.

Anti- British Uprisings : After the annexation of lower Assam by British, the Ahom aristocracy feared about annexation of upper Assam. That was why the Ahom aristocracy who was holding important offices during Ahom rule could not accept the British who were alien to them. New bureaucratic system was introduced in judicial and civil administration instead of appointing old officials. Bengali was used as a medium of instruction in the courts and offices and it made a cause of serious grievance against British. The newly introduced

British system paved way for loot and corruption. These reasons ultimately led to an anti-British sentiment among the Ahom aristocracy. The grievances against the British resulted in a series of anti-British uprisings to overthrow them from Assam.

First Anti- British Uprising: In 1828 under the leadership of former Bargohain Dhananjay arrangements were made to reinstate Gomdhar Konwar, a prince of Ahom royal blood as the king of Assam. It led to the outbreak of first anti- British uprising. With the support of some Ahom aristocrats, priests and Satradhikars Gomdhar Konwar was prepared to be the king. During that period of time British soldiers had been removed from most of the places of upper Assam. And the Singphous and the Bhutiyas started loot in north. Gomdhar Konwar was formally announced as king at Bassa that was located in south west of Jorhat. Dhananjay Bargohain formed an armed force; collected money for the uprising and made secret plan to capture Rangpur. The rebels proceeded towards Jorhat. As soon as the British administration got the clue of such agitation they sent Lieutenant Rutherford to suppress the rebels with a British army, Rutherford intercepted and encountered the rebels in Mariyani. The rebels could not resist before Rutherford and fled away and Gomdhar Konwar had to surrender. British arrested Dhananjay Bargohain along with his two sons. He was tried in Jorhat and he was sentenced to death for rebellion against the government. In the following time Captain Neufville reconsidered the decision and Gomdhar Konwar was punished with seven years of imprisonment. Although Dhananjay was sentenced to death he fled away and took shelter in Nagaland.

Captain Neufville did not much concentrate on such uprisings but David Scott could realize that if steps would not have taken to remove the dissatisfaction of Ahom aristocracy towards the British there was possibility of another uprising in the future.

Second Anti- British Uprising: In 1829 under the leadership of Young Bumendao alias Gadadhar Singha second anti- British uprising was started. For such kind of an uprising Gadadhar Singha tried to gather support of the soldiers stationed at Sadiya. But Subedar Jalim Khan made his planning failed and Gadadhar Singha was arrested and sent to Guwahati. Later on British was informed about the hidden cooperation of Burmese king in the rise of Gadadhar Singha.

Third Anti- British Uprising: Third anti- British uprising was led by Dhananjay Bargohain again. During the last days of 1829 Dhananjay without letting the British know, entered into a Moamariya village named Legee. Along with two sons Harkanta and Harnath, his son in law Jiuram Duliya Barua supported him in leading a strong anti-British uprising. Dhananjay unified the powerful Ahom nobles like Piyali Phukan, Deuram Dihingiya Barua and Krishnanath etc. He also sought support from Singphou, Khasi, Garo, Naga and the Moamariyas to expel the

British from Assam. Rupchand Konwar was declared as the future king of Assam and the rebels proceeded towards Rangpur that was guarded by a small army under the leadership of a Jamadar. The strength of the rebels was about four hundred. But this time also the uprising could not achieve success and Dhananjay and Harkanta fled away.

Captain Neufville reached Jorhat with a reinforcement and in the mid of 1830 this uprising was crushed. Rupchand Konwar, Jiuram Duliya Barua, Harnath, Piyali Phukan, Dihingiya Barua and Boom Singphou were tried in Bar Panchayat of Jorhat. They were sentenced to death for going against the authority. The judgement was sent to David Scott and he confirmed the judgement for Piyali Phukan and Jiuram and others were sent to Dacca jail for life time imprisonment.

Ahom Monarchy in Upper Assam : The British did not take any decision regarding their rule in upper Assam for seven years. The British neither annexed the territory nor allowed the Ahom representatives to rule. Lord William Bentick at first agreed to give the responsibility to govern Upper Assam to an Ahom representative as David Scott reported the higher authority. Bentick realized that Ahom administration must contain some strong features since they ruled six hundred years. Henceforth it was decided to announce Purandar Singha as the ruler of Upper Assam in 1832. Although Chandrakanta Singha appealed before the British government as claimant of Ahom rule but his claim to the throne was rejected by the government. A treaty was signed between Purandar Singha and Robertson, a political agent of the British on 2 March, 1833 in Guwahati. The main terms of the treaty were—

1. Purandar Singha was entrusted with the responsibility of governing the area that laid in the south east of the Brahmaputra between Dhansiri to Biswanath.
2. It was assumed by East India Company that Upper Assam would produce a revenue of sum of rupees 1,20,000 and Purandar Singha was accordingly ordered to pay rupees 50,000 annually to the company.
3. The new king Purandar was supposed to strictly follow British law and order as well as judicial system and was not allowed to render capital punishment.
4. Purandar Singha had to take permission from political agent of British and the agent to the Governor General of Northeast.
5. The British ordered that the criminals taking shelter in Purandar's place would have to surrender at the hands of the company.
6. The Moamariya area under Barsenapati and the region under Sadiyakhowa Gohain would be excluded from the area under the control of Purander.
7. Company would render security to Purandar as long as he accepts allegiance of the company. If he breaks trust or become autocratic to his subjects, the Company's

government would either choose another representative or annex upper Assam.

8. Purandar would have to cooperate British in the cultivation and buying and selling of opium.
9. Purandar would have to agree to abolish Sati system in his state.

Purandar Singha formally ascended to the throne in April, 1833 AD. He established his capital at Jorhat and adopted the title Sri Sri Maharaja Purandar Singha Narendra.

After a few days of the conclusion of this treaty British started to think about their decision of restoring Ahom monarchy in upper Assam. Pemberton and Jenkins in their census report clearly revealed the economic potentiality of Upper Assam. In order to gain economic benefits the Company re-considered the treaty and wanted to restrict Purandar. Accordingly in June 1833 the Company's government abolished the power of Purandar and announced him as the ruler of Jorhat only. Company's board of Directors also questioned on the matter of restoring the Ahom monarchy. Board of Directors were concerned about whether Purandar Singha would be able to make annual contribution to the company and whether the company would be able to interfere if anarchy prevails in the state.

On the other hand in the administration of Purandar, the Ahom nobles and officials showed grievances as they were deprived of the comforts they were enjoying earlier. Moreover the Ahom aristocracy considered him Bengali rather than Assamese as Purandar spent a long time in Bengal and appointed Bengali umolahs in his administration. Since it became difficult for him to make annual payment of rupees 50,000 regularly, Purandar requested the British authority in November, 1833 to include the other areas of upper Assam into his state. The people belonging to Dom and Mariya community migrated from Purandar Singha's area to the neighbouring Nowgong and Darrang in order to get tax relaxation there. It created a problem for Purandar Singha in making annual contribution. Shortage of currency created another crisis in Upper Assam and British ignored Purandar's appeal to deal with this crisis. Under this condition also Purandar paid the annual sum for two years. Later on cholera and epidemic spread in his state that affected the collection of revenue. This situation became conducive for British to let Purandar free from the governance of upper Assam. On 16 October, 1838 British East India Company dethroned Purandar and brought Upper Assam under their rule. Purandar Singha although protested the British decision but the authority rejected his appeal and decided to pay him rupees 1000 as monthly pension. With this the historic Ahom rule came to an end forever.

The form of British Governance : The annexation of Upper Assam created a number of problems for Francis Jenkins, the then Commissioner and agent to the Governor General. Anarchy in administration, corruption and weak transportation system etc. created hindrances in the governance of Assam. In order to eliminate these drawbacks, Jenkins made various

reforms in judicial, police and revenue administration as well as in the education system.

Mill's Report: In 1853 the Lieutenant Governor of Bengal was willing to visit Assam and he ordered to submit a report based on investigation done on the region. This responsibility was entrusted upon A. J. Maffat Mills, Judge of Sadar Diwani Court. Mills reached Sibsagar in the same year and travelled different districts and in the last days of 1853 he submitted the report based on the survey done. This important document is known as Mill's report. This document includes detailed information on land settlement, revenue system, judicial system, demographic pattern, transportation system, education, productions of industries etc. of the districts like Goalpara, Kamrup, Darrang, Nowgong, Sibsagar and Lakhimpur. Many people applied before Mill and most of them were Ahom nobles. Anandaram Dhekiyal Phukan with his personal knowledge and experience made some suggestions to Mill in order to reform the contemporary British rule. These suggestions were- to decrease the tax, to increase the number of courts and to appoint local people as judge, to develop agriculture, to establish technical and English medium institutions in Assam, to inspect the religious and voluntary organization and to reinforce Assamese language in Assam.

Maniram Dewan also applied two petitions to Mill. In the first petition he applied for obtaining personal benefits and in the second he furnished information on British rule in Assam. In this petition Maniram showed his grievances towards the injustices that were brought by opium cultivation, decline of local art, towards Satras and appointment of Bengalis and Marowaris as Mouzadar. At last he demanded to re-instate Ahom monarchy by announcing either Ghanakanta Singha, son of Chandrakanta Singha or Kandarpeswar Singha, the grandson of Purandar Singh as king. But instead of being sympathetic to the appeal of Maniram, THE British gave harsh comment on him.

Sepoy Mutiny in Assam : After taking the regular army of East India Company back in 1828, Assam Light Infantry Battalion was formed in Dibrugarh in 1857, another such battalion was stationed at Guwahati. In addition to these some small groups of soldiers were placed in the places important from military perspective. The two battalions and the groups of soldiers in the Brahmaputra valley remained loyal to the British even after the outbreak of Sepoy Mutiny in some parts of India in 1857. The British mostly had to depend on locally recruited labourers because of the difficult terrain and topography of Assam. In Assam, the strength of soldiers from other parts of India were very less and army was mostly comprised of Gorkha, Manipuri and Singphou soldiers. Hence the situation in Assam was quite peaceful during the mutiny.

Maniram Dewan : The situation of Assam changed soon after the outbreak of the mutiny. The sepoys of the Brahmaputra Valley were also affected by the spread of the rumour that

the British rule would come to an end and Bahadur Shah Jaffar would be announced as the emperor of India. Under this circumstance, Maniram Dewan planned for a revolt to establish Kandarpeswar Singha at the Ahom throne. In the initial days of the British rule, Maniram Dewan served as Barbhandar Barua. Later on he was dissatisfied with British administration and started two tea gardens- Senimara and Chinglou. Maniram Dewan was an influential and wealthy person of Ahom aristocracy. Nirmal Hazari and Piyali Barua were sent by Kandarpeswar Singha to the armoury at Golaghat, Sivasagar, Dibrugarh and Saikhuwa. These two leaders tried to influence the sepoys to take part in the mutiny. Maniram laid the foundation for the revolt with the help of Madhumallik of Bengal along with Piyali Baruah, Naobaisa Phukan etc. There was not a single European soldier in Assam at that time. After the outbreak of the revolt although British authority at Calcutta sent an army but it was not easy for them to reach Assam. The soldiers of Assam thought it to be easy to eliminate the British from Assam and hence they joined hands with the planning of Maniram Dewan. Maniram decided to start the revolt at the time of Durga puja in October, 1857. It was expected that the success of the revolt would make Kandarpeswar Singha the king and Maniram Dewan the prime minister.

It was not easy to organise a revolt against the British. As the news of planning a revolt spread, the Europeans in the tea gardens and missionaries took shelter in Guwahati. Major Hanna at once in association with Captain Lothar arranged the armoury in the places of military importance. The assistant officer of Nowgong Morton pulled down the bridges on the rivers Misa and Diju so that the rebels could not reach Jorhat. Captain Jenkins applied to the higher authority to send European army to Assam. A European army consisting of 104 soldiers reached Dibrugarh. The letters that Maniram Dewan sent to Kandarpeswar Singha in September, 1857 were received by Commissioner of Jorhat Captain C. Holroyd. Captain Holroyd got information about the upcoming revolt through these letters. Holroyd arrested Kandarpeswar Singha and Madhumallik near Jorhat as ordered by Jenkins. Kandarpeswar was sent to the central jail of Alipur. In the last days of 1857 Maniram and Piyali Baruah faced trial in the court of Jorhat and were sentenced to death for going against the authority. Madhumallik, Dutiram Baruah, Farmud Ali, Bahadur Gaoburha and several others were exiled to Andaman. Kandarpeswar Singha applied to the British authority at Calcutta to make him free and the authority also considered him being used by the rebels as a weapon. Hence he was freed from jail and was permitted to live in Bardhaman in Calcutta. Through Queen's Proclamation in 1858 the exiled criminals of sepoy mutiny were released. Kandarpeswar Singha requested the British authority to allow him to return back to Jorhat. But British permitted him to stay in Guwahati and in 1880 he died.

This is how the sepoy mutiny planned in Assam was failed. Nevertheless Maniram Dewan achieved recognition as the first freedom fighter of struggle for independence.

Peasant uprising : Due to increase in land revenue and other taxes peasants were discontented during British rule. Because of the adverse effect of British economic policy, the peasantry had to suffer from extreme poverty. Poverty in the rural areas became so widespread that the rural peasantry protested against increase of taxes every now and then. In the grass root level the peasants unitedly tried to protest against increase of taxes. Through meetings or Raij Mels the peasants collectively showed their dissatisfaction and grievances. Earlier the rural folk settled the social and religious issues through Gosain, Doloi and influential people of the village. Later on these gatherings assumed a broader perspective and developed as Raij Mel or popular assemblies. Different cases were settled in Raij Mels. The riots discussed how to reduce economic burden through these Raij Mels. The peasants had to pay a large amount of their income as revenue. In addition to this they suffered financially since the government carried on opium trade single handedly. As a result the peasants had to borrow money from wealthy landlords at high interest rate which caused great difficulty to them.

Peasant Uprising at Phulaguri : In 1861 the peasants of Phulaguri in Nowgong revolted against British revenue policy. In 1860 British banned opium cultivation and this decision affected the domestic economy of many places of Assam including Phulaguri especially its tribal population. This area was comprised of highest opium consuming people. People considered this decision of British as interference in their social tradition and habit. During this time the peasants became aware since they received the news of imposing tax on permits by British government. The peasants belonging to Tiwa and Kachari community were influenced by the rumour that British would impose tax on property and betel nut and betel vine. Thus they adopted the path of a rebellion. On 17, September 1861 about one thousand peasants protested against British revenue policy in Nowgong. Deputy Commissioner Herbert Sconce failed to control the peasants and some of them forcefully entered into his office. For such an illegal act on the part of the peasants, Sconce arrested the peasants who entered into his office and issued penalty. After four weeks of the commencement of this episode, the peasants took up a protest programme on ban on opium cultivation and other exorbitant taxes. Since the peasants did not get any positive reply from the administration they decided not to pay taxes and for future action also plan to organise a Raij Mel. This Raij Mel was organised for five days so that the peasants from far and near could take part in it. On the first day of the Raij Mel, Deputy Commissioner sent a police force to arrest the peasant leaders and 1000 peasants present there. The riots rejected government order and the Darogah was forced to take the police force back. As a result the situation became hostile and Deputy Commissioner

Lieutenant Singer was sent to Phulaguri to control the situation along with a police force. More than 3000 peasants gathered at Phulaguri with Spears etc. Singer ordered the peasants to go back. The excited mob killed Singer and flowed him in the river Kalang. At last Deputy Commissioner himself arrived and controlled the situation.

The peasant uprising at Phulaguri was not pre-planned in nature. The peasants belonging to Tiwa, Kachari and other communities also took part in it. The unnecessary interference of Deputy Commissioner fuelled the grievances that existed amongst the rural peasantry. The peasant uprising at Phulaguri paved way for a line of peasant uprisings in Assam.

Peasant Uprising at Patharughat : The increase of taxes created great dissatisfaction among peasantry during British rule. The peasants of Kamrup and Darrang organised Raj Mel and protested against British revenue policy. In 1893 the Chief Commissioner of Assam Sir William Ward increased the taxes to 70-80%. Hence the peasants also unitedly prepared themselves to protest against this policy. Arrangements were made by the peasants of Patharughat in Darrang district to organise a Raj Mel. After getting this news Deputy Commissioner J. D. Anderson and Superintendent of Police Barrington reached Patharughat with armed force at night on 28 January 1894. The number of peasants' attendance started to increase as they received the news of coming of the Deputy Commissioner. They expected that the Deputy Commissioner would make some tax relaxation. But he ordered the gathered mass to return back to their homes. The peasants got offended and refused his order. The police force was ready to attack the mob. The peasants became excited. They started throwing to the police and some of them tried to defend themselves with sticks. Many peasants died in firing. 'Dali Purana' contains information on peasant uprising at Patharughat.

Peasant Uprising at Rangia : The peasants of Rangia like that of Patharughat revolted against British taxation policy. During the months of December 1893 and January 1894 a strong peasant uprising took place in Rangia. With the help of police, the government tax collectors harrassed the poor peasants. Even they took their cattle. The peasant rebellion became so extensive that the assistant superintendent of police hesitated to take action against peasants in spite of having police and military with him. From Guwahati the Deputy Commissioner of Kamrup took his force but stopped to see the strength of the peasantry. The peasant uprising at Rangia largely affected the areas like Patidarang, Nalbari, Barama, Bajali, Barbhag etc. The peasants were ready to prevent the British if they would try to confiscate property in the crime of non-payment of revenue. On 10 January, 1894 thousands of peasants gathered in front of Rangia police station. The peasants gave slogan against increase of taxes. The Deputy Commissioner McCabe ordered the peasants to go back. But the peasants refused to pay taxes at higher rate and hence the Deputy Commissioner ordered firing. Due to McCabe's provocation a number of peasants lost their lives in police firing.

Peasant Uprising at Lachima : The British employed soldiers of Gorkha Rifles from Shillong in Assam as they saw the extensive peasant uprising in Rangia. In fact many people were recruited as constables. On 21 January, 1894 the peasants assembled at the PanagaonTup field of Aai Than on the banks of Aaltha Jaan in Lachima had beaten the Mauzadar and Mandal who came to collect taxes. The sub divisional officer of Barpeta arrested about 75 peasants for this crime and as a result more than 8000 peasants gheraoed the sub divisional officer. He escaped from his camp at night and requested higher authority to send more police. On 25 January, 59 leaders of different Rajj Mel were arrested and they were engaged in the construction of a jail. As a protest to this action 6000 peasants signed an application and submitted it to McCab. McCab ordered the police force to disperse the mob as he suspected that this mob might fire the police camp. The leader of the Rajj Mel, Gosain, Doloi and village headman were forced to work at the field as punishment. This disgraceful action of the British could not suppress the uprising at Lachima. This uprising in Sarthebari is popularly known as peasant uprising at Lachima.

The British government crushed the serial peasant uprisings with a heavy hand but these uprisings played a crucial role in the growth of political consciousness among masses against imperial rule. Even the national news agencies published on these uprisings and showed the faulty land policy of the British to bring it into the notice of the people. As a result leaders like Rambihari Basu portrayed the peasant uprisings in Assam in central legislature.

Socio-political organizations during pre-independence era : The social organization called Rajj Mel played a decisive role in the peasant uprisings in Assam and during pre-independence time these Rajj Mel were converted into Riot Sabha. The Educated class of Assam also participated in these Riot Sabha. In 1893 such an organization sent memorandum to the Chief Commissioner of Assam and the Viceroy to protest against increases of taxes. Unlike Rajj Mel, the educated class of Assam did not adopt anti- government attitude. They protested against revenue policy of the government within the orbit of constitutional limitations through prayer, petition and memorandum. The Riot Sabha were mostly leader based platform. Although most of these public organizations exercise literature and culture, they reflected the expectations of Assamese society that ultimately gave birth to the unity and harmony among people.

Jorhat Sarbajanik Sabha : Jorhat became the centre of social and political activities. With the alertness of Jagannath Baruah Jorhat Sarbajanik Sabha was established in 1884. Jagannath Baruah was the son of a tea planter and he received his higher education from Presidency College in Calcutta. He was influenced by the organisations that were very active in Bengal like Atmiya Sabha, Bengal British Indian Society, Patriots Association, Indian

Association etc. He reflected the hope, expectations and grievances of the people of Assam and also played a significant role in designing the socio- economic policies of the government. The basic three objectives of Jorhat Sarbajanik Sabha were-

1. To represent the expectations of people before the government.
2. To explain the government policies before common masses.
3. To improve social condition of the masses.

The founder president of Jorhat Sarbajanik Sabha was Raja Naranarayan Singh and secretary was Jagannath Baruah. This Sabha protested the Assam Land and Revenue Policy introduced by British in 1886. Jorhat Sarbajanik Sabha sympathised with peasant uprising of 1892- 1893 and criticized the financial policies of the government. The Sabha demanded long term land settlement and right to own land by the Aadhiyars without increase in taxes. In 1893 it submitted a memorandum before Royal Commission on Opium. Jorhat Sarbajanik Sabha even appealed to the government for reformation in education sector and sufficient employment generation.

Jorhat Sarbajanik Sabha played a major role in the formation of Indian National Congress in Assam. It strongly protested the decision of partition of Bengal of 1905. Jagannath Baruah protested against merging Assam with East Bengal and demanded to protect the interest of people of this region and recruitment of local people as well. In this way Jorhat Sarbajanik Sabha took a strong step in the growth of social and political consciousness in Assam. Its members like Devicharan Baruah and Lakshminath Bezbaruah participated as representatives in the annual session of Indian National Congress. Jagannath Baruah died in 1907 and after his death there were contradictions among its members and the activities of the Sabha also stopped gradually after his death.

Assam Association : To fulfil the expectations of the common people of Assam, one of the leading persons of educated Assamese society Manik Chandra Baruah realized the necessity of forming a regional organization. In 1903 about 40 leading people gathered in Guwahati and tried to visit Denjil Ebbartson, the member of viceroy's executive council. Thus a process started to form Assam Association in Assam on the model of Indian Association in Calcutta. A temporary executive committee was formed and Prabhat Chandra Baruah, Jagannath Baruah and Manik Chandra Baruah were entrusted with the responsibilities of president, vice-president and general secretary respectively. In the first session of Assam Association in 1905 at Dibrugarh they were nominated at their respective posts permanently. Its head office was in Guwahati and sub-divisional branches were set up in different parts of Brahmaputra valley.

During the first two decades of the twentieth century, Assam Association emerged as a leading organization in the Brahmaputra valley. Like Jorhat Sarbajanik Sabha, Assam Association protested the government decision of partition of Bengal. The Association was afraid of losing the historic name of Assam and thought that it would threaten the existence of Assamese language. Assam Association also suspected that the little concentration Assam received from the Government would be transferred to Dacca. Since some of the members of the Association were also the members of legislative council, they were successful to draw attention of the government.

The Important Steps of Assam Association : Assam Association protested the hegemony of government officials and European authority of tea gardens in municipal committee and local administrative committee respectively and also wanted to democratize these autonomous administrative units. Assam Association criticized the excise policy of the government. It protested increase of taxes and demanded ban of opium. The Association was interested in the expansion of education in the state. Assam Association emphasised on representation of Assam in syndicate meeting of Calcutta University, recruitment of Assamese teacher in Cotton College and proper utilisation of 'Williamson Fund' for the establishment of the institutions of technical education to promote technical education in Assam.

Initially Assam Association emphasised on the regional issues but gradually it assimilated itself with main stream Indian politics. The members of the Association Nabin Chandra Bardoloi, Chandranath Sharma, Prasanna Kumar Baruah and Tarunram Phukan participated in Indian National Congress and shook hands with the aim and objectives of National Congress. In 1921, Assam Association was merged with Assam Provincial Congress Committee.

Growth of Political Consciousness in Surma Valley of Assam : Like Brahmaputra valley of Assam, there was a rise of political consciousness in Cachar and Sylhet districts of Surma valley. Since these two districts shared linguistic and cultural similarities with Bengal, the national principle and sentiment of Bengal influenced the formation of a number of public organizations in Cachar and Sylhet. Suhrid Samiti, Anusilan Samiti, Suhrid Sevak Samiti were the organizations that laid stress on extremism and were involved in terroristic activities. There was a massive protest in Surma Valley against Lord Curzon's decision to partition of Bengal. The people of the valley protested this action through writing in newspapers and pamphlets. To strengthen the force of Swadeshi movement in Surma valley, Cachar Swadeshi Sabha and Srihatta Swadeshi Sevak Samiti were formed and to boycott foreign goods a political conference was held in the valley on August, 1906. This conference was two days long and was presided over by Kamini Kumar Chand and Bipin Chandra Pal delivered lecture in the public meeting attended by thousands of people.

During the end of nineteenth century and beginning of twentieth century there was a growth of political awareness in Brahmaputra and Surma valley. The British governance through their exploitative policies created a feeling of unity and integrity among people and a same kind of administrative system, developed mode of communication and influence of western education resulted in the growth of consciousness against British in Assam. This consciousness joined Assam with mainstream Indian politics.

Anti- British Freedom Struggle in Assam (1905- 1947) : In spite of a massive protest announcement of partition of Bengal was made on 16 October, 1905. A new province was declared including East Bengal and Assam in an area of about 1,06,540 square kilometre and Lieutenant Governor of Dacca J. B. Fuller was appointed as Chief Commissioner of Assam. To win the goodwill of the people of this region, Fuller made an extensive tour of Assam. He tried to influence public opinion through announcing students' scholarship and other schemes. The promises made by him could not satisfy the people of Assam and except the owners of the tea gardens and a section of Muslim population of East Bengal and Surma valley everyone rendered support to the movement against partition of Bengal in Assam. Protest meetings were held in Tezpur, Barpeta, Dhubri, Gouripur, Guwahati, Dibrugarh, Silchar and Karimganj. People belonging to different caste and community actively participated in these meetings and they showed example of unity and brotherhood through community prayers and celebration of Rakshabandhan. The protesters protested against partition of Bengal by 'Bande Mataram' and thus they protested against the British policy of 'Divide and Rule' and appealed to boycott foreign goods, schools, courts etc. In various places schools with national sentiment also started to flourish.

Swadeshi Movement : The anti- partition movement that was started in the Brahmaputra valley was limited to cities and towns mainly. The people who took part in the movement appealed to boycott foreign goods and use indigenous products. In the towns of Assam people started using Khar instead of salt manufactured at Liverpool in England; they used sugar manufactured at Baranasi instead of foreign; they started spinning and weaving instead of using the clothes manufactured in Europe. The head priest of Kamakhya temple appealed to the pandas and the nearby shops not to use foreign goods. Under this circumstance shops run by local people were opened in Assam and buying and selling of indigenous products began. Ambikagiri Raychoudhury along with Gobinda Lahiri tried to strengthen the concept of Swadeshi among students. In 1905 the famous dramatist of Bengal Mukund Das performed patriotic songs and plays in Guwahati and was successful in spreading the message of Swadeshi Movement.

British government adopted harsh steps to suppress Swadeshi movement. Through Curley and Rishley circular British made it clear that the school administration had to assure that no student, studying in the school could be a part of Swadeshi movement. Disciplinary actions were taken against the students and the teachers who participated in the anti- partition movement. The meetings and processions were banned and political leaders were sent to jail. Restrictions were made on news agencies. The people who took part in the movement either had to pay penalty or had to go to jail or were exiled.

Secret societies were formed in Bengal against exploitative measures adopted by British to suppress Swadeshi movement. Ambikagiri Raychoudhury gave birth to an organization named Seva Sangha on the model of Anushilan Samiti of Bengal. But these small Samitis could not achieve much success in preventing imperial exploitation.

The President of Assam Association Raja Prabhat Chandra Baruah submitted a memorandum to British Secretary of State protesting the British decision to partition of Bengal. This memorandum criticised British's policy of division instead of adopting policy of welfare.

There had been emergence of liberalist in the politics of England already. The next Governor General after Lord Curzon, Lord Minto realized that the problems of India could not be solved through exploitative policies. He believed in weakening the anti- partition movement by skilfully making division among the participants. In order to weaken the growth of Indian nationalism Lord Minto started to flatter the Muslim community. The Government of India Act, 1909 or Morley- Minto reforms allowed separate electorate for Muslims and provided additional membership to the minorities in legislative council. But it failed to solve the political problems of India. The extremists opposed this act and the moderates were worried about the hazardous consequences of 'divide and rule' principle of government. Viceroy Lord Hardinge informed British Secretary of State about the political anarchy prevailing in India due to partition of Bengal and the decision of partition of Bengal was finally cancelled on December 1911 at Delhi Darwar. As a result Assam got the chance to get back to her earlier status. A new Chief Commissioner was appointed for Assam and new location of legislative assembly was confirmed at Shillong.

Montague-Chelmsford Reform and Assam : The process of constitutional reform was interfered because of the outbreak of First World War. The condition of the state became perilous because of shortage of food supply, inflation, epidemic etc. The demand for constitutional right became stronger than ever before in India. Under this circumstance British Secretary of State E. C. Montague decided to visit India personally in order to understand the political condition of the country. He along with Viceroy Lord Chelmsford met a number of representatives of the society while they toured India. Montague- Chelmsford reform was mainly interested in introducing autonomous institutions in India gradually. A section of Indian National Congress welcomed this reform, but others wanted the implementation of this reform at once.

It was not clearly mentioned whether Assam would be a part of Montague Chelmsford reform. There was a great deal of controversy on this issue amongst the Chief Commissioner Bitsan Bell, the European community living in Assam and other socio-political organizations. Assam Association entrusted responsibility on Nabin Chandra Bardoloi to inform parliamentary committee situated at Calcutta to include Assam in Montague-Chelmsford reform. On May 1919 Montague Chelmsford reform was proposed at British parliament and Nabin Chandra Bardoloi and Prasanna Kumar Barua were presented there among India representatives. Although the demand made by Indian representative to introduce self-governance was rejected by British parliament but on the request of the representatives from Assam, the state was included in the reform.

The spread of Swadeshi and Home rule movement in the country, revolutionary activities, events occurring in the contemporary world and the speeches delivered by Gokhle, Tilak and Bipin Chandra Pal aroused political awareness among the younger generation. As a result of this awareness, an organization named Assam Students Conference was formed in 1916. Later on this organization came to be popular as Assam Chatra Sanmilan. Although this organization was non-political in nature, it gave birth to the personalities like Chandranath Sharma, Omio Kumar Das, Hemchandra Barua, Padmadhar Chaliha etc. who strongly led anti-British struggle later on.

Non-Cooperation Movement :

During the last days of the second decade of twentieth century, the political condition in India became complex. The common people had to carry heavy burden of taxes to meet the economic crisis, caused by First World War which infused grievances among them. This circumstance was the background behind the launch of non-cooperation movement in India. The factors responsible for non-cooperation movement were-

1. Montague-Chelmsford reform could not satisfy the people of India since it rejected the Indian demand of self-governance.
2. The Indian Muslims were dissatisfied with British planning to divide Turkish Empire after the First World War. They started Khilafat agitation to gain British support in order to provide safety and security to Ottoman Empire of Turkey.
3. The Indians could not take the Rowlatt Act of 1919 easily that allowed to arrest the people and put them behind the bar without trial for two years. There was a massive protest against this Act and many Congress leaders including Mahatma Gandhi opposed this Act.
4. Thousands of people died of brutal firing by General Dyer at Jallianwala Bagh who assembled there to protest Rowlatt Act and this cruel incident is known as Jallianwala Bagh massacre in Indian history.

These incidents created a sense of discontentment against British among the Indians. Since British disagreed to accept the demands through constitutional means, Indian National Congress in its annual session at Calcutta in 1920 decided to launch non-cooperation movement under the leadership of Mahatma Gandhi.

Non-Cooperation Movement in Assam : After the announcement of non-cooperation movement under Mahatma Gandhi's leadership Ganga Govind Baruah, Tara Prashad Chaliha, Ghanashyam Baruah and Chandradhar Baruah wanted Assam Association to stay away from non-cooperation movement to discuss the local issues with British and to solve them. But majority of members of Assam Association stood in favour of participating in non-cooperation movement. In the seventeenth annual conference of Assam Association held at Tezpur on December, 1920 the association decided to accept the propaganda designed by Indian National Congress. Thus Assam Association had to sacrifice its unique identity as it joined hands with mainstream anti-British politics. On 30 June 1921 Assam Provincial Congress Committee was formed and it was limited to the districts of the Brahmaputra valley only. Kuladhar Chaliha and Nabin Chandra Bardoloi were entrusted responsibility as President and Secretary of Assam Provincial Congress Committee.

Impact of non-cooperation in Assam : Assam had witnessed the spread of Non-Cooperation movement widely. M.K. Gandhi had visited Assam in 1921 to spread the anti-British political awareness among the common mass of Assam. Despite the resistance from the government to the Gandhi's visit to Assam, the people had participated in the meetings held in the main towns of Assam. The foreign goods were boycotted and burned in different places. Chandradhar Sharma, Hemchandra Baruah, Amiya Kr. Das, Mohibuddin Ahmed organized the youth of Assam and successfully boycotted the Government Educational Institutions. The National Educational Institutions were established in Guwahati, Nalbari, Jorhat, Tezpur, Sivasagar, Nagaon etc. These Educational Institutions became awareness spreading and training centre for the Congress workers. Nabin Chandra Bardoloi, Kuladhar Chaliha, Tarun Ram Phukan boycotted the court practices and participated in the active politics. Many lawyers, teachers and government employees had left their respective work places and joined organizational work of Congress in the different levels. With the spreading of the Non-Cooperation Movement wide, the local panchayats were set up in the villages to solve the issues of the locality. The people began to use Khadi clothes because of the impact of Non-Cooperation Movement. On the contrary the business of salt was also adversely affected by the Movement. After the appeal of Gandhi to the Congress workers to spread awareness against the opium, the Congress workers took steps to reduce the use of opium which resulted in the decrease of opium trading and brought awareness regarding the use of

opium. The Congress workers went to the tea gardens to spread the Non-Cooperation Movement. In May, 1921, Congress had organized *hartal* with 8000 tea- garden workers in Chargol and Langai tea garden of Karimganj. The main demand of the *hartal* was to increase the wages of the tea garden workers. The tea workers of the Chargol left the tea garden and gathered in the railway station. The European tea planters had to fire on the gathered workers to bring them again to the tea gardens. To protest this event, the railway and steamer workers refused to work for 6 months.

The Role of Assamese women in the Non- Cooperation Movement : Responding to M.K. Gandhi's appeal to participate in the Non-Cooperation Movement, large number of Assamese women had joined the Movement shouting the slogans like *Mahatma Gandhir Joy, Bande Mataram*. Gandhi had regarded the womenfolk as the symbol of bravery, intelligence and unstoppable force. The women had participated in the protest during the movement equally to the men and became active workers of the anti-British Movement. Some of them were Bidyut Prabha Devi, Girija Devi, Hemanta Kumari Devi, Nalini Bala Devi, Pushpalata Das, Guneswari Nath, Chandraprava Saikiyani. These women went to the villages to organize the village women to participate in the anti British Movement. The urge of Gandhi had influenced not only the elite women but also the women from the lower strata of the society. For example, the Mungri Ma'am or Malati of Lalmati Tea garden can be mentioned. This common woman was killed by the tea planter because she organized picketing against wine in the tea garden. Mungri was the first unrecognized martyr of Non- Cooperation Movement. Bhanumati Talukdar from village named Garoimari of Kamrup district left her home to join actively the Congress party who was later known as "Voluntariny Baai" and she was called "Sarojini of Assam" by M.K. Gandhi. A Mising woman named Pramila Med was boycotted by the society because of her participation in the Non- Cooperation Movement but she did not restrict herself from the participation in the Movement.

On 17th November, 1921, during the Non- Cooperation Movement a hartal was organized to protest against the visit of Prince of Wales to India and in Assam also hartal was organized to support the cause. The British Government had adopted 3 strategies to suppress the hartal-

1. Some leaders were given special privileges and honoured.
2. Dominating measures were taken to suppress the movement.
3. By spreading communal elements among the Hindu- Muslims to divide them.

Swaraj party in Assam : Gandhi had called off the Non- Cooperation Movement suddenly which resulted mixed reaction among the people of the country. Gandhi was arrested and sent to the jail for 6 years and this incident led to the differences of opinion among the

leaders. Chittaranjan Das and Motilal Nehru opined that to continue the anti-British political spirit among the common masses they should join the legislature to oppose the activities of the British instead of boycotting the legislature. Swaraj party was formed on 1st January 1923, under the strong leadership of these two.

In Assam also Swaraj Party was formed with Tarun Ram Phukan as its president and Rohini Kumar Choudhury as secretary. The formation of Swaraj Party also led to the possibility of the division between the Congress leaders in Assam. But, in 1923 the National leaders had united the Swaraj Party with them in the Congress session held in Delhi for the greater cause of fighting against the British.

Civil Disobedience Movement : Although, the Congress leaders were working in the grassroot level but they were not in active mood. But with the appointment of the Simon Commission in 1927, the Congress became active. After the formation of Simon Commission feeling of strong dissatisfaction and hatred had arose among the Indians. Because, the people of India felt insulted as no Indian was appointed in the Simon Commission and united to boycott the commission irrespective of parties and opinions. The boycott programme against the commission turned to popular movement. In November, 1927, a public meeting was organized in Shylet of Assam to protest the Simon Commission. The Assam Student Association had taken political decision for the first time by boycotting the commission. Government became disappointed to this act of the student organization and threatened the educational institutions saying that the Government would curtail the aid to the institutions if their students join the movement. Despite this the students joined the movements against Simon Commission actively. On December 1929, in Lahore Congress Session the demand of *Purna Swaraj* was raised. For the first time tricoloured flag was hoisted in the midnight of 30th December to declare the desire for *purna swaraj*. The 26th January was declared as the Independence Day on the demand of *purna swaraj*.

The rejection of 11 paragraph demand of Gandhi by Lord Arwin had led to the Non-Cooperation Movement. The leadership for the movement was vested on Gandhi by the Congress. Gandhi had started the movement with the Dandi March from Sabarmati to Ahmedabad from 12th March to 6th April. The activities of breaking the Salt law, boycott of foreign good and intoxication were taken. Gandhi had urged the Nation to participate in the movement on the principle of truth and non-violence.

Civil Disobedience Movement in Assam : Though the common mass of Assam showed support to Gandhi's urge for Civil Disobedience Movement but the Assam Provincial Congress had opined that Assam was not ready for Civil Disobedience Movement. Tarun Ram Phukan

opposed the Civil Disobedience Movement along with Rohini Kr. Choudhury and Nabin Chandra Bardoloi who did not encourage the movement in Assam. But Bishnu Ram Medhi, Hem Chandra Baruah, Sidhinath Sharma, Ambikagiri Rai Chaudhury had shown their support to the Movement but because of economic crisis they could not prepare the Congress volunteers for the Movement. In Assam there was no salt source which made it impossible to start the Movement in Assam.

The Congress Party of Assam was reorganized to start the Civil Disobedience Movement in Assam. With this objective a new Congress committee was formed by appointing Bishnu Ram Medhi as its president. To reactivate the Congress party various committees and sub committees were formed. In Guwahati, Chaygaon, Nalbari, Tihu and Rangia five Block Congress committees were formed. Bishnuram Medhi and Hem Chandra Baruah had visited different places of Assam and organized public meetings to urge the people to protest against violent acts, ordinance and to boycott opium and foreign goods. Rayot Sabhas were reorganized in Kamrup, Nagaon and Darrang.

The students of Assam were not influenced by Civil Disobedience Movement. But on May, 1930 Director of Education, J.R. Cunningham declared a circular which brought awareness among the students. According to the Cunningham Circular the parents or guardians of the students of Government schools had to confirm the Government regarding the non participation of the students in Civil Disobedience Movement. If Students take part in the strikes, *hartals*, or any political programs or disobey the school authority had to pay penalty and the scholarship and the hostel seats of such students would be withdrawn. The students engaged in major offence would be rusticated from the school. The Cunningham Circular created strong opposition in Brahmaputra and Barak Valley. The students decided to protest on road against this disrespectful circular. A special session of Asom Satra Sanmilan was held to organize movements against the Circular. The Sanmilan had decided to block the Government Educational Institutions. According to Government data 15,186 students had left the schools between the period of July to August of 1930. The students had blocked the wine shop and opium shops also. The peasants also showed their support to the students by demanding the reduction of land tax. In different places the Forest Act was violated. The Government schools were burned and appeal was made not to give the Chowkidari tax.



Pic. 6-2

Pushpalata Das, Punya Prava Baruah, Jyotshna Mazumder formed “*Mukti Sangha*” to organize women during the Civil Disobedience Movement and contributed towards popularizing the demand of Swaraj. The Government became aware with the increasing women member and Pushpalata Baruah, the General Secretary of Panbazar Girls High School was rusticated from the school. Initially the British Government thought that the Civil Disobedience Movement under the leadership of Gandhi would not be able to attract the common mass. But after the arrest of Gandhi, common mass had joined the movement largely and the Government took oppressive measures against the mass. The civil rights of the masses were withdrawn and the provincial governments were given the charge to ban the organizations which had violated the laws. The Assam Pradesh Congress and the Assam Youth League were banned because there were charges against these organizations of provoking the students to join the Civil Disobedience Movement. Under the Crime Act the non-violent satyagrahees were brutally punished and the thousands of protesters were sent to jail. The oppressive measures of the Government compelled many Congress leaders to underground themselves.

The Round Table Conference : In 1930 the report of Simon Commission was declared. The circumstances became tense as in the report India was not given *Purna Swaraj*. Viceroy Arwin had suggested a round table conference to discuss on the matter of *Purna Swaraj*. In November, 1930 the first round table conference was held in London and a few Indians joined the conference. It was clear that without the participation of Congress the discussion over the providing constitutional right to India became meaningless. Therefore, Viceroy directed to free Gandhi and other Congress leaders from the jail.

In 1931, Gandhi-Arwin Pact was signed and the public had reacted to it. Because Gandhi failed to restrict the death sentence of Bhagat Singh, Rajguru and Sukhdev.

The Civil Disobedience Movement was called off because of the Gandhi-Arwin Pact and Congress assured to join the next round table conference. The person who were not involved in the terrorist activities were released from the jail. The unsold lands were returned to the owner and the freedom fighters were exempted from the taxes collected.

The British Government declared communal representatives in the centre and provincial legislature to divide the Indian people. Gandhi started fasting to protest against the declaration of providing separate electorate to the Dalits of Hindu Society. This eventually led to the Poona pact between Gandhi and Ambedkar. After this treaty Gandhi devoted his two years to remove the untouchability from the country and also visited Assam with this objective.

The background of Quit India Movement :

In 1935 the Act of India was introduced. Some important characteristics of this Act were-

1. To form federal system in India including the states under the control of British India and princely states.
2. The franchise was given to adult of $\frac{1}{6}$ % only .
3. The representatives of the British States would be selected through election and the representatives from princely States would be selected by the King to join the federal system.
4. In the federal system the defence and foreign ministry would be under the Viceroy and the power of the elected minister would be limited.
5. Though the provinces were given the self rule but in reality the Governors of the provinces were given immense authority to practice.

The Act of 1935 also vested the political and economic power of the country to the British. The Congress totally protested against the Act. Instead of this Act, Congress had proposed to form a constitutional legislature on the basis of adult franchise and demanded a constitution for independent India. Denying this demand the Government had announced to conduct election in provincial legislatures in 1937. Congress decided to join the election in Lucknow session of 1936.

The Act of India and Assam : The Act of 1935 had given Assam a bicameral legislature - the upper house and the lower house. In Legislative Council among the 22 members 18 were elected and 4 were selected as member. In Legislative Assembly the total seats were 108 and the members could represent different communities. In the election of 1936 Congress won with the majority of 33 seats and Gopinath Bardoloi was elected as the leader of Congress in the Legislative Assembly. Though, Congress was able to form a coalition Government, but Bardoloi preferred to act as opposition leader which paved the way for the formation of Government under the leadership of Syed Mahammad Sadullah who was a leader of Muslim group in Brahmaputra Valley. Sadullah formed the ministry with support of Europeans and other representatives.

Sadullah Government : From 1st April to 18th September the Government was under the ministry of Sadullah. In 1937, to secure the power Sadullah Government had joined the Muslim League of Surma Valley to receive the support from the Muslims of Surma Valley and brought changes in ministry by including Munowar Ali, Abdul Motin Choudhury and Akshay Kumar Das were given the ministry. But this change in ministry could not save the Sadullah Ministry. On 21st February, 1938 no-confidence motion was raised and the Government was saved by the differences of one vote only. But on 18th September, Sadullah resigned from the Ministry to avoid the no confidence motion again and Gopinath Bardoloi was permitted by the Governor to form the new Government.

The Coalition Government of Gopinath Bardoloi : The coalition Government of Gopinath Bardoloi was formed with the support from Tribal League, Independent members and 22 members who were outside the Muslim League. There were differences of opinion among the Congress leaders. But the enthusiasm of Congress President Subhash Chandra Bose, Abdul Kalam Azad and Tarun Ram Phukan paved the way for the formation of Bardoloi Ministry. On 19th September, 1938 The Congress Government was formed with Gopinath Bardoloi as Chief Minister. Some remarkable works conducted by Bardoloi Ministry were- action against the ban on opium, reduction in land tax and reestablishment and reinstatement of the poor people in the land which were acquired by the Government due to the failure of land tax, prohibition in migration to protect the right of the indigenous people, development of primary, technical and higher education and development in health sector.

In 1939 the Second World War broke out and the Congress decided not to support the British Government for the war. As a result the Bardoloi Ministry had resigned.

The Second ministry of Sadullah : On 17th November, 1939 Sadullah formed government for second term by assuring the British to help them during the Second World War. Sadullah had contributed one lakh rupees to the War fund to help British and also

formed an armed force called “Assam Regiment”. Congress opposed to the Sadullah’s approach of providing helping hand to the British and the elected members had stopped attending the session of Legislative Assembly after the resignation of Bardoloi Ministry. Taking advantage of this situation Sadullah Ministry had announced a plan of land development by establishing some indigenous poor people and the migrated people who had come to Assam before 1938 in specific areas. This plan was highly opposed by the people of Assam and the Congress representatives had opined to participate in the legislative session to oppose the plan. The Congress decided to join the legislative assembly again and to raise no-confidence motion against Sadullah Ministry.

During that time the students opposed a science based exhibition which was held at Cotton College to collect money for war and a student was beaten by a member of the organization committee had fueled the circumstances. Rohini Kumar Choudhury, the then Education Minister had resigned because of his dissatisfaction with the Government which compelled Sadullah to resign on 12th December, 1941 with the fear to face no motion.

Quit India movement in Assam : On 7th and 8th August, 1942 the session of Indian National Congress was held and in this session it was decided to start a non-violence movement for indefinite time under the leadership of Gandhi. This phase of freedom struggle against the British is known as Quit India Movement. Mahatma appealed the countrymen to do or die for the freedom of the nation. On the morning of 9th August Gandhi and other chief leaders of Congress were arrested by British from the session.

In Assam also the key leaders of the Congress were sent to jail and the Assam Pradesh Congress Committee, District Committee, Santi Sena, and other organizations under the Congress were declared illegal. *Sabha-Samiti*, gathering, procession, hartals were banned. Under these circumstances it was quite clear of Sadullah’s return to power. On 25th August, 1942 Sadullah was invited to form ministry and by showing inclination towards British, Sadullah accepted the responsibility of Ministry of Assam.

Initially, In Assam also the Quit India Movement was started with non violence principle but the brutality of police had created fear in the minds of the fighters. The fighters attacked the government offices. The rail lines were destroyed and the supply of goods for the military were restricted and participated in the terrorist activities. In Nowgong and Darrang districts the government officials were attacked, the shops were burnt, and the roads and offices were destroyed. The rail lines of Sahabi Bazar of Habiganj, Borpathar of Golaghat, Panbari of Kamrup, Rangia were destroyed. The British hanged Kushal Konwar by accusing him in the Rail Accident of Barpathar. All over India Kushal Konwar was the only martyr who was hanged. The British had fired on the fighters during procession in Patacharkuchi of Bajali,

Fakiragram of Goalpara, and Gohpur of Darrang district that resulted in the death of Kanaklata as Martyrs. Mukunda Kakati was martyred. Manbar Nath of Dhekiyajuli, Maniram Bodo, Ratan Kachari were killed by the bullet of British. This brutal killing of Dhekiyajuli is compared to the Jallianwala Bagh massacre.

The brutal activities of the government to suppress the Movement could not resist the protest of the masses. To get rid of the brutal activities of the Government many leaders like Sankar Chandra Baruah, Mahendra Hazarika, Jyoti Prasad Agarwala, Gahan Chandra Goswami and Laxmi Goswami had to underground themselves. They were influenced by the revolutionary activities that had grown on the other parts of India. These underground revolutionaries had engaged in the activities like destruction of bridges, rail line, telephone line, telegraph connection etc. Brajanath Sarma of Barnagar in Barpeta district tried to destroy the Airdrome established by British.

The Congress leaders tried to establish parallel Government in villages. In the places like Bajali, Hatisong, Dhakuakhana, Raha, Jamuguri, Bahjani the freedom fighters planned to establish *Panchayati Raj* through *Panchayat*. In villages propaganda was spread not to pay the revenue. In many places businessmen had stopped to supply food to army, police and administration, the government market were boycotted and in many places Congress had established *hat*- market.

The students had played vital role in Quit India Movement. The students actively participated in protest meetings, processions, strikes. The new generation had played important role in the formation of *santi sena*. They were successful in inspiring the common masses of the villages to join the Quit India Movement.

The women also played active role in Quit India Movement but it was noticed that women folk were kept away from the organizational activities. The women leaders demanded for separate women wing to spread the freedom struggle. In 1940, the women wing of Congress was formed in national and provincial level. In the same year in Assam also the women wing was formed. Pushpalata Das and Amalprabha Das were given the charge of secretary jointly. In the next year *Asom Satri Samiti* was established in Shillong.

The women played glorious role during the Quit India Movement when the men were in jail. Among the women leaders Chandra Prabha Saikiyani played the key role. The women joined not only in the “Santi Sena” but also in the “Mrityu Bahini” which was formed to work against the government systematically. Martyr Kanaklata, Ratnabala Phukan, Budheswari Hazarika, Kahuli Nath and Damayanti Bora were the members of “Mrityu Bahini”.

The Second term of Bardoloi Ministry : The end of Second World War in 1945 brought relief to the people. In England Labour Party formed the government and the Atlee

Government showed interest to solve all the problems of India. Atlee had withdrawn the ban on the Congress and election was declared. In Assam Congress won 58 seats and Gopinath Bardoloi formed ministry on 10th February, 1947 with the support of some independent candidates. Bardoloi ministry had to concentrate many issues caused by the war and mainly had to concentrate on illegal immigrants. Sadullah had reintroduced the Land Development Scheme that was banned by the Governor and established the illegal immigrants from East Bengal in the gazing fields and forest lands. This settlement was opposed by the indigenous people. Even in many places immigrants and the indigenous people had conflict. The Congress ministry's decision to evict the illegal immigrants was opposed by the Muslim League. During that period the politics of Muslim league was Pakistan centered and in 1946, Jinnah came to Assam to raise the demand to include Assam to East Bengal.

Cabinet Mission and Assam :

In 1946, British sent Cabinet Mission to India with the objective to form a self Government and providing a Constitution to India before their departure from India. There were three members in the mission - Secretary of State Pethick Lawrence, President of Board of Trade Stafford Cripps, and First Lord of Admiralty A.V. Alexander. Cabinet Mission had rejected the demand of separate Pakistan and suggested the proposal of three grouping system. These three groupings were-

1. Madras, Bombay, Uttar Pradesh, Bihar, Central Province and Orissa.
2. Punjab, North-West province and Sindh.
3. Bengal and Assam

Each group would be gathering separately for separate constitution for respective group. In each grouping there would be common center for defense, foreign affairs and communication department. After the first general election if the states want they could leave from grouping they had selected previously and they could demand for changes in each field and central constitutional amendment at least for ten years. The Congress and Muslim League had differences regarding the group and grouping. Congress and League had explained about the Cabinet Mission by holding their own opinion. On the contrary, the Mission did not give any clear explanation whether the grouping was compulsory or not.

The grouping system was opposed by the Assam Pradesh Congress. If Assam would join the same group to the Bengal then Assam had to lose its identity and Muslim League would become the pieces of chess game. Gopinath Bordoloi had sent Bijoy Chandra Bhagawati and Mahendra Mohan Choudhury to meet Gandhi in Shrirampur to inform him about the situation. Hareswar Goswami, Deva Kanta Baruah, Hareswar Nath Baruah, Pushpalata Das

and a few other Congress leaders were compelled to go to Patna, Kolkata and Delhi to visit the leaders of Nikhil Bharat Congress Committee. Gopinath Bardoloi raised a proposal in Legislative Assembly against the Cabinet Mission.

On the other hand British invited Nehru to form interim Government. Mohammad Ali Jinnah opposed this proposal threatening for direct protest and started to shout the slogan “*Larke Lenge Pakistan*”. The provoking appeal of Jinnah created communal unrest in the country. Communal riot had outburst in the places like Kolkata, Punjab, Noakhali etc. League participated in the interim Government to continue its struggle by staying within the Government. Congress demanded that the Muslim League should stop the protest programme or resign from the interim Government. In return League demanded to dismiss the Legislative Assembly. At that time, Atlee announced that on 30th June, 1948 British would transfer the power to India and for that purpose Lord Mountbatten was appointed as viceroy replacing Wavell.

When Mountbatten came to India the circumstances were not favourable for transfer of power. Muslim League was holding its demand for Pakistan strongly. According to Mountbatten’s proposal India was divided into two parts and to satisfy Congress and League decision was made to divide Punjab and Bengal and whether Sylhet would include to Assam or not would be decided by the vote of masses. Thus, the Mountbatten plan had assured the possibility of creation of Pakistan. According to the Mountbatten proposal of dividing India prepared on 3rd June, it was decided to grant freedom to India on 15th August 1947. On 18th July, 1947, Queen had signed on the Bill of India. In Assam the movement for grouping was called off because of the Mountbatten proposal. On 6th and 7th July, 1947, mass voting was conducted in Sylhet and 56% people had supported it to be the part of Pakistan and 43% people had voted for undivided Assam to be the part of India. Thus, Sylhet district was included to East Pakistan. Cyril Radcliffe was given the responsibility of marking boundary line between East Pakistan and Assam.

Indian Politics of Independent India and Assam :

After independence Assam was formed with other parts excluding Sylhet. But three police station of Sylhet namely Pathar Kandi, Ratabari, Badarpur and half part of Karimganj police station were included in Assam. In August, 1950, after the death of Gopinath Bardoloi, Bishnu Ram Medhi took the responsibility of Chief Minister. In 1958, Medhi was appointed as the Governor of Madras and Bimala Prashad Chaliha became the Chief Minister of Assam who held this post till 1970. In 1969, at the time of division in Indian National Congress, the Assam Pradesh Congress was also divided in two groups. Mahendra Mohan Choudhury became Chief Minister of Assam for next 2 years after the death of Bimala Prashad Chaliha.

In 1972 Sarat Chandra Sinha won the election and ruled the state as Chief Minister till 1978. In 1978 Janata Party won the election held after the emergency period and Golap Chandra Borbora took oath as Chief Minister. But Janata Party couldn't complete the term of 5 years. In 1980, during the movement against the foreign nationals Jogendra Nath Kalita became the Chief Minister for a few months and President's Rule has started in Assam after the dismissal of Assam Ministry. Anowara Taimur and Keshav Chandra Mahanta became Chief Ministers during the period of adjournment of Assam Legislative Assembly. From 1980 to 1982 Assam was under President's Rule for three times.



Pic. 6.3

Immigration problem in Assam : After the partition of India thousands of refugees came to Assam as immigrants. On 13th February, 1950 India Government had passed

Immigration Act in Parliament and according to this Act, Assam was vested the power of deporting the illegal immigrants. Despite of this Act illegal immigrants were coming to Assam. On the contrary, the India-Pakistan agreement was signed on 8th May, 1950 and in the agreement it was mentioned that Indian Government was responsible for reinstating the immigrants in India. Naturally, the issue of reinstating the immigrants in Assam was also raised. According to Government data till September of 1954, two lakhs seventy three thousand immigrants had been established in 1.5 lakh *bigha* lands of Assam. Data are also available bearing the information that during this period more than 10,000 indigenous people had lost land. In reality, there is a possibility of higher the number of immigrants as in 1941, the population of Assam and Sylhet together was 66,44,000 but in 1951 the population had increased to 80,29,000 despite of the separation of Sylhet from Assam in 1951. The new immigrants came from East Pakistan was dominantly Bengali speaking Hindus. They began to live in both towns and villages of Assam. The educated section among the immigrants received the opportunity to hold government jobs also.

The Socio-Economic condition of Assam : After Independence, Assam had to face the difficulties in communication. In political field of Assam unrest was there because of Labour strike in Industries and peasant uprisings. The economy of Assam was also largely affected by the earthquake of 1950. On 26th January, 1950 the central government had declared India as Federal Republic and fundamental rights were given to the countrymen by implementing a new Constitution. The Indian citizens could participate in election because of granting universal franchise to the mass. In March, 1950 Planning Commission was formed and objective was set to utilize the wealth of the nation properly for developing the living standard of masses and to increase National Income. Before that, on 1st April 1948, Opium Prohibition Act was introduced and 500 honorary officials were appointed. From 1948 *Panchayats* and *Samabay Samiti* had tried to implement the rural development schemes. Proposal for establishing new industries were sent to the central government. The Motor Transport was nationalized and in 1948 *Assam Adhiyar Surakshya Niyamok* Act was implemented. Gauhati University, Veterinary College in Khanapara of Guwahati, Agriculture University in Jorhat and Medical College in Dibrugarh were established along with Gauhati High Court. In 1951 Labour Act was implemented for the welfare of the Tea garden Labourers.

In 1948 Hill Sub *Samiti* was formed to secure the right of the ethnic groups of hills under the presidentship of Gopinath Bardoloi. This *Samiti* had emphasized on granting right to the hill's people of solving their own issues according to their tradition. The desires of the hill people have also been respected by the 6th schedule of the Constitution of India and according to the schedule it is mentioned that special self rule have been provided to the hill's people. All

hill areas of Assam except Nagaland came under the provision of Indian Constitution. On 14th August 1947 only Naga National Council had declared Independence of Nagaland under the leadership of Fizo. In 1953 Naga National Council declared revolt against Indian Government and formed a parallel Government. Though, Fizo and his supporters were continuing their revolutionary activities but on 1st December 1963 Nagaland was declared separate state. Like this on 2nd April, 1970 a new State was formed named Meghalaya combining Khasi, Jaintia and Garo Hills. On 20th February, 1987 Arunachal Pradesh was given the status of statehood. After that Mizoram was also given the status of state in course of time. (source- Saraighat Year Book, 2019). The Union Territory of Manipur was also given the status of separate state. As a result, North Cachar and Karbi Anglong only remained with Assam as hilly areas.

In 1950, new Railway lines were constructed to connect Assam with the other places of India. During the First Five Years Plan many roads and bridges were constructed. In 1953-54 Zamindari System was abolished from Cachar and Goalpara. During the Second Five Year Plan emphasis was given on constructing primary and heavy industries. In 1957, Guwahati Refinery was constructed. During this period the construction of Saraighat Bridge over Brahmaputra River was started and it was inaugurated in 1960.

The Land Ceiling Act of 1956 was implemented in the year 1958 and according to this Act a person can't hold land more than 150 *bighas* without any reason. During this period the *Samabay Samities* were revitalized and 2361 numbers of *Samabay Samiti* and 31 numbers of *Samabay Chanchay Samiti* were formed. In 1960 the Umiyam Hydroelectric Power Project was completed under the Assam State Electricity Board.

Language Movement : In 1960 Assam witnessed unrest centering the identity of Assamese language. According to the census of 1951, though the Assamese speaking people were 75% but the fear in the minds of Assamese middle class and *Asom Sahitya Sabha* of getting its linguistic identity overshadowed by that of the non- Assamese took such a serious turn that it led to communal riots. The students played active role in the linguistic movement. At last in the 6 districts of Brahmaputra Assamese was recognized as medium which brought some relief to the movement. In 1972, movement was started again demanding to recognize Assamese as medium for pre degree and degree courses.

Sino-India War : In 1962 Assam was indulged directly in Sino- Indian War which broke out centering border issue. The troops of China captured Bomdila and marched to Darrang that frightened the high officials of the district who left for Nagaon, Guwahati etc. by leaving behind the people in war. The common masses had criticized the officials for this act. After the Sino-India war the price of food had increased which brought consciousness among the students and

in 1964 the students organized a massive movement against the increasing price. Sino-India war compelled the central government to concentrate on the strategic military importance of the North East. That's why due importance was given to the development of transport and communication during the Third Five Year Plan. Many roads and bridges were constructed and the railway department had constructed the rail line to Murkongchelang. The Chinese troops returned after the one day war, which ended the Sino-Indian war.

Plain tribe politics : The unrest had begun to rise among the plain tribes especially the Bodos, who began to show revolutionary attitude from the 60s of twentieth century. In 1946, *Assam Plain Tribal League* was formed. After the independence the tribes of plain also started to organize themselves to fulfill their desire. The plain tribes showed their interest to enjoy the democratic rights and the privileges given by the 6th Schedule of the Constitution but they thought that government was reluctant towards their desire. The representatives from higher caste dominated the ministry in the three elections held after the independence because of that the thought had grown on the mind of plain tribes. In reality, though Government had worked for the spread of education but importance was not given to the rural economic development or agriculture which was the main livelihood of the tribes. According to them the political parties became active in the tribal areas during the election only to get votes. But Government was inactive in the welfare scheme for the ethnic groups. Though, inactive *Samabay* were revitalized through the Second Five Year Plan but the governance and works of the *samabay* could not put more impact on the development of the tribes. The ethnic groups were also influenced by the insufficient irrigation system, the reinstatement of the refugees in the reserved land and the increasing price of the foods. Many organizations were formed with the objective to bring these grievances to the government. The recognition of Assamese as medium in the educational institutions had also brought new crisis in the political arena. The government formed a linguistic minority committee to discuss on the demand of separate state *udayachal* raised by tribal league and this committee tried to solve the issues cooperating with the *Plain Tribal Parishad*.

The India-Pakistan War : In 1971-72 a war broke out between East Pakistan and Pakistan. The economy and history of Assam was affected by the war known as freedom war of Bangladesh. After the emergence of Bangladesh separating from Pakistan, the head of the two countries India and Pakistan, Indira Gandhi and Sheikh Muzibur Rehman respectively, concluded a historic treaty of mutual friendship, cooperation and peace for 25 years on 19th March, 1972. In the same year another treaty of cultural exchange was signed between these two countries. During the war Assam witnessed the coming of Bengali immigrants in lacs in numbers and only a small part of them returned to Bangladesh. In 1974 for the first time All

Assam Students' Union raised the issue of foreign nationals. The socio-economic life of Assam was worsen because of slow development of industries, scarcity of land, unemployment etc. Even in the Government jobs the number of non Assamese people had increased. In 1975-76 data was declared stating that almost 80,938 hector of land was illegally held despite of the *Land Ceiling Act*.

Assam Agitation : In July, 1978, All Assam Students' Union had started a movement on the 16 point charter of demands. During the movement against the foreign nationals, the normal life of the masses was effected by the programm of picketing, *Satyagraha*, Hunger strike, *Asom Bandh*, etc. In 1977 and 1978 *Purbanchaliya Loka Parisad* and *Assam Jatiyatabadi Dal*, were formed respectively. These two parties also participated in the movement. On 24th October, 1978 the issue of immigration of foreign nationals was mentioned by the Chief Election Commissioner which gave legitimacy to the issue. On 16th March the Chief Minister of Assam also mentioned the issue of the immigration. Assam Movement was started from April, 1979 in reality. During the by-election of Mangaldai constituency, a huge number of foreign nationals were included in the voters list which spread the movement for deporting the foreign nationals started by All Assam Students' Union. In the same year on 7th June the ministry of Golap Borbora of Janata Party declined. In 1985, the historic Assam Accord was signed between Rajiv Gandhi, then Prime Minister and representatives of All Assam Students' Union and *All Asom Gana Sangram Parisad*. The remarkable provision of the accord was that the illegal immigrants who had entered Assam after 25th April, 1971 would be deported. In 1985 the signatory student leaders formed a new regional party named *Asom Gana Parisad* in Golaghat town.

In 1985 for the first time State Government was formed under the leadership of a regional party named *Asom Gana Parisad*.

LET US KNOW

1. On 24th February, 1826 the Treaty of Yandaboo was signed between Burma and the representatives of East India Company.
2. David Scott reorganized the administration, revenue and judiciary.
3. Anti-British uprising emerged from the period 1828 to 1829.
4. In 1853 A.J. Mafat Mills submitted a report to enquire the administration of Assam.
5. From 1869 to 1893 Assam witnessed peasant uprising in Phulagiri, Patharughat, Rangia and Lachima.
6. Maniram Dewan tried to organize Revolt of 1857 in Assam like the other parts of India.

7. Jorhat Sarvajanik Sabha, Assam Association had played vital role in bringing political consciousness in Assam.
8. Assam was also influenced by the Swadeshi movement against the Lord Curzon's partition of Bengal.
9. After the visit of Gandhi, the Non Cooperation Movement had spread in Assam.
10. In Assam also Swaraj Party was formed under the leadership of Tarun Ram Phukan and Rohini Kumar Choudhury.
11. The contribution of Assamese women towards Civil Disobedience Movement is remarkable.
12. British applied the divide and rule policy in Assam also to weaken the anti imperialist movement.
13. On 1st April, 1937, Government was formed in Assam under the leadership of Sadullah.
14. On 19th September, 1938 Congress Government was formed under the leadership of Gopinath Bardoloi.
15. The second ministry of Sadullah had declared Land Development Scheme to reinstate the immigrants.
16. On 8th, August 1942 the proposal for Quit India Movement was announced in the Congress Session held in Bombay.
17. During the Quit India Movement Kanaklata, Kushal Konwar and many other freedom fighters were martyred.
18. On 10th February, 1946 Bardoloi Ministry was formed for second time.
19. Gopinath Bardoloi adopted the proposal against the Cabinet Mission's plan to adjoin Assam with Bengal in grouping.
20. On 18th July, 1947 the Queen signed the Bill of India.
21. On 16th August, 1947, India attained *Purna Swaraj*.
22. On 13th February, 1950 Government of India passed Immigration Act.
23. In 1960 Language Movement had started.
24. In 1962 a one day war was broke out between India and China.
25. All Assam Plain Tribal League was formed.
26. On 1971-72 Bangladesh had emerged out of Indo- Pakistan war.
27. The Assam Accord was signed on 15th August, 1985 between the leaders of Assam Movement and Rajiv Gandhi.
28. In 1985 for the first time government was formed under the regional party A.G.P.

EXERCISE

Answer the following Questions:

1.
 - A. In which year the treaty of Yandaboo was signed?
 - B. Write any one provision of Yandaboo Treaty.
 - C. In which year first Anglo-Burmese War broke out?
 - D. Who was Gomdhar Konwar?
 - E. In which year Mill's Report was submitted?
2. Write Short Notes :
 - A. Yandaboo Treaty.
 - B. David Scot.
 - C. Mill's Report.
 - D. Jorhat Sarbajanik Sabha.
 - E. Swadeshi Movement.
 - F. Non-Cooperation Movement.
 - G. Break of Salt Law Act.
 - H. Round Table Conference.
 - I. Gopinath Bardoloi.
 - J. Plain tribe politics.
 - K. Language Movement.
 - L. Assam Movement.
 - M. Patharughat Uprising.
3. Answer the following questions :
 - A. Discuss the provisions of Yandaboo Treaty and its result.
 - B. Write the causes of Anglo-Burma war.
 - C. Who was Purandar Singha? Write a short note on the administration of Purandar Singha.
 - D. Write critically about the peasant uprising of Phulaguri.
 - E. Discuss the plan of partition of Bengal and its impact.
 - F. What was the impact of Montego Chelmsford Reform in Assam
 - G. What do you understand about Jallianwala Bagh massacre?
 - H. Write on the participation of students in Civil Disobedience Movement.
 - I. Explain the role of women in the freedom movement in Assam
 - J. Discuss the impact of Cabinet Mission plan in Assam.
 - K. Narrate the background of Indo-China War.



CHAPTER : 7

POPULATION GROWTH OF ASSAM AND THE FOREIGNERS ISSUE

Although no data of population growth are found in the history of the middle ages as well as North-Eastern region, the history of modern Assam is full of population growth data. The history of modern population growth is not like that of the age old immigration system over the world. The contemporary political cycle of India, the political phenomenon of Assam emerged from the 19th century and wide immigration for economic reasons from former East Bengal and later on the neighbouring country Pakistan as well as Bangladesh at present is responsible for population growth in Assam. So, the problem of foreigner's immigration is unavoidably associated with the problem of population growth in Assam.

Immigration means coming and going of people from one place to another in search of food, shelter and security or to get rid of flood, hunger, earthquakes, epidemics and other natural calamities or seeking life security against battles, wars, ethnic, religious clashes as well as convenience for sound living. Human immigration has an integral relationship with human civilization. In other words the growth of human civilization and immigration both are two sides of the same coin. There are two types of immigration : Interstate Immigration and International Immigration. The people who move from one place to another one to live within the country are interstate or internal immigrants while immigration from one country to another is called International Immigration. International Immigration may be divided into two kinds legal and illegal. Those who migrate from one country to another with necessary documents are called legal immigrants, on the other hand many people migrate illegally to neighbouring or other countries without legal documents to get rid of serious economic crisis of their own country, clashes, such people are called intruders. In a nutshell immigration and intruders may be defined in these ways. While discussing the issue of immigrants and intruders to Assam we should remember that those people who came from East Bengal or any part of undivided India and Nepal are immigrants. While those who came and are coming afterwards are intruders. Of course India has managed to give shelter to those people who came to India from Pakistan voluntarily or being victims of religious intolerance. Besides, this according to Indian Citizenship Act 1955 any religious immigrants including the Hindus and Muslims can have Indian citizenship by fulfilling some certain conditions of the Constitution of India.

A sketch of immigration to Assam : With the fall of Ahom regime the economy of Assam went down, population growth decreased and the people had to live a life of fear and doubt as they failed to understand the nature of new English regime. There was strict restriction on immigration to Assam from any part of India including East-Bengal and vice-versa during the Ahom administration (1228-1826).

Hadirachowki between Bengal and Assam was the chief centre to look into such immigration. Yet, there are examples of establishing some selected artists, artisans, religious teachers and others by the Ahom administration for some political and economic reasons. Permissions were granted to travel to Jagannath, Varanasi, Kurukshetra and other religious places and to Parashuramkunda, Kamakhya, Haygrib-Madhav etc. shrines from other parts of India. Some historians of Assam say that Swargadeu Suhungmung (1497-1539) sent a party of pilgrims to Jagannath to dig a pond for the Jagannath Temple and offered Puja with 40 gold coins. Likewise a lot of historical data say that Sri Sankardeva too visited various shrines of India two times with his followers. During the regime of Swargadeu Rudra Singha Krishnaram Nyaybagish was brought in and adorned in the position of Parvatia Gohain bestowing the responsibility of the Kamakhya Temple, is also historical truth. Earlier to this there are evidences of establishing the forefathers of Sri Sankardeva in accordance with the deed between the King of Kamrup-Kamat Durlabh Narayan and the King of Gourdesh (Presently Sylhet under Bangladesh) Dharmanaryana. King Naranarayana and his brother Chilarai were educated in Varanasi. The Minstrels during the Ahom regime visited many places over India with the disguise of saints and collected information regarding education, civilization, culture, business, politics of the places they visited. From all these discussions it is seen that as many people think Assam was not a locked territory till the British occupied Assam in 1826. Of course immigration from and to Assam were strictly restricted. This was one of the chief reasons the Ahom administration had to fight against Mughal seventeen times. Some Mughal captives were established in Assam with shelters and jobs. No restriction were exercised against Shah Milan who is believed to have come from far off Persia for spreading Islamic religion like Ajaan Peer. Of course, during that time there was nor political, economic, social, cultural environments like today to use the words like – ‘citizen’, ‘indigenous’, ‘intruders’, ‘illegal foreigner intruders’ etc. The tribes like Moran, Borahi, Chutia etc were addressed ‘Thalagiri’ by Swargadew Sukapha, on the contrary those tribes did not consider the Ahoms as foreigners. They showed respect towards them. It was because at that time all the immigrants that came to Assam contributed to form one common Assamese race through assimilation with the society, culture, language and nature of the Thalagiris of Assam. All of them felt proud to be the sons and daughters of Assam and had a deep relationship with

Assam. The famous battle of Saraighat in 1671 between the Ahoms and the Mughals is the best example of this fact. Earlier to that Sihabuddin Tallish who came with the Mughal Senapati Meerjumla mentioned in the book 'Taarikh-E-Assam' that the Muslims of Assam cannot be differentiated from the Assamese except their names. They came as invaders but later on assimilated with the environment of Assam. The same case happened with the Assamese Sikhs, Samurias of Assam.

It is seen that during the reign of the Ahoms all the people irrespective of creed, caste and religion that came to Assam owing to various circumstances accepted Assam as their motherland and moulded the greater Assamese race. But this process came to an end as the Britishers entered.

The Britishers invaded Bengal in 1757 by gaining victory in the Battle of Palashi. For the very reason in comparison to other states of India the people of Bengal become acquainted with English education, administration and nature. Taking this chance the Britishers had already established some English educated people from Bengal in Assam for the purpose of assistance in administration. Along with these office clerks some English officers introduced Bengali language in the schools and courts of Assam because of the lack of knowledge about the Assamese people and the language. As a result a number of Bengali people came to Assam to meet up the need of teachers and office clerks etc. The English government later on reintroduced Assamese in 1872; although flow of migration from Bengal did not stop.

Following them some traders from Bihar, Rajasthan, Uttar Pradesh etc. came to Assam. Some Nepali people established their cattle in the hilly areas away from their indigenous people.

During their time of migration to Assam, Robert Bruce discovered tea plants in Assam and C.A. Bruce introduced tea plantation in a planned manner for the first time. The British government used to allot thousands of bighas of land to the tea planters for nominal revenue. Many tea estates grew in no time. The local people of Assam were not sufficient to provide adequate number of labourers in the tea estates. Besides many people were killed in the Mowamoria rebellion, invasion of the Maan, battles between the Britishers and the Burmese various epidemic etc. and the handful survivors too were not willing to work in the tea estates.

On the other hand, the British government adopted various means to snatch the traditional rights of the people of Bihar, Odisha, Uttar Pradesh, Himachal Pradesh and other Southern states of India.

For all these reasons the inhabitants of the region - the Saotal, Kol, Munda, Kurmis, Bhumijis etc. rebelled against the British regime. The clever Britishers brought these people to Assam promising good jobs and benefits. The British government on one hand mitigated the

rebellion of those tribes, and on the other hand fulfilled the need of labourers in the tea estates. Many a times the Britishers deceived and oppressed these people to bring them to Assam.

C.A. Bruce sent the first twelve boxes of tea to London in 1837. Through examination it was seen that the quality of Assam tea was the same to that of China. The European traders formed. "Assam Tea Company" with a capital of five lakh pound. The Government of India passed an order to local administration to allot land to the other companies according to the Waste Land Grant Rule, 1838. In this way during the period 1858-59 the tea companies were allotted 59,860 acres of land. On the contrary tea plantation was done only in 7,599 acres.

It means government did not get the expected revenue. Yet, allotment of land to the tea estates was going on. Even after that a large quantity of land remained unused in Assam.

The large unused land brought danger to the indigenous tribes of Assam. The imperialistic British Government used to give stress on cultivating the unused land to increase revenue. On the contrary the local people of Assam did not show any eagerness to increase harvest or cattle. In such a situation the British government allowed some industrious Muslims to migrate from East Bengal (now Bangladesh) to Assam. The district administration of Cachar wrote letter to the Deputy Commissioner of Dhaka, Tippera and Maimon Singh requesting that industrious farmers would be given the privilege of cultivating land without revenue to a certain period of time and later on they would be allotted land patta for payment of certain revenue.

Coming of the tea workers: It is already said that the British government took every step to widen tea cultivation in Assam and thereby to earn more revenue. They allotted hilly arable land to the tea companies introducing the Wasted Land Grant Rule, 1838. The Old Assam Rules 1838, the Wasteland Grant Rule 1854 and the Fee Simple Grant, 1861.

To grow an industry four conditions must be fulfilled – (i) Land (ii) Capital (iii) Labourers (iv) Organisation. The European and Indian tea cultivators were not without capital. The governments too introduced the cited land rules to meet up land problems. The European and Indian tea cultivators showed their interests for tea cultivation. The only need was of industrious labourers. To fulfill this problems the tea cultivators took help from the imperialistic government. Many poor people from Jharkhand, Odisha, Bihar, Uttar Pradesh belonging to the tribes like Chawtal, Kol, Munda, Bhumij, Kurmi etc. were brought to Assam through some brokers as tea labourers.

According to the District Gazette data in 1903 there was a high increase of land allotment to the tea estates and migration of tea labourers. In Kamrup district all total 23 tea estates were established. These tea estates were allotted 18642 acres of land and 3472 outsider tea

labourers were appointed. Likewise in the Darrang district 1,37,829 acres of land were allotted to 97 tea estates and there were all total 53,563 tea workers there. In Nowgaon district 49 tea estates occupied 48,775 acres of land and 14,435 workers were brought there. In Sibsagar and Lakhimpur districts 164 and 152 tea estates were established respectively. The Sibsagar tea estates occupied 2,44,653 acres and Lakhimpur tea estates occupied 1,92,419 acres of land. Workers from outside Assam were appointed - 95,954 in Sibsagar and 1,39,996 in Lakhimpur. The total number of tea workers in 1921 were 1.5 million, i.e. 30 per cent of the total population of Assam during the time. Famous historian, Herambakanta Barpujari proved on record that during the period the tea cultivation and the companies used to compete for more and more profit. Under special agreement tea workers were brought from Tamil Nadu, Kerala etc. There was agreement of returning back as soon as the terms of agreement finished. In this way the number of appointed migrants were 4,23,194 in 1891 and increased to 6,54,000 in 1901. Migration of tea tribes increased and in 1931 they were 14 lakhs and 19 lakhs in 1971.

It is noteworthy that C.A. Bruce established the first two tea estates in Jaipur and Sadiya and only 400 workers were brought from outside. Later the number of tea-estates and workers increased. According to the census of 2011 in about 800 tea gardens there are about 65 lakh tea garden labourers and ex-tea garden labourers.

Coming of the East Bengal Agricultural Land Seekers : Under the leadership of David Scott, the British administration tried to increase revenue through allotment of land to the local people introducing many schemes.

But these schemes did not succeed at all. The British Government was in a fix to collect revenue from the thousand acres of unused land. Therefore the British government encouraged industries farmers to migrate to Assam.

At the beginning of the British regime some Assamese people belonging to middle class too supported this migration to Assam. Anandaram Dhakial Phukan in one of his letters to the British government requested to bring well experienced farmers to Assam, Gunabhiram Baruah was one of the enthusiastic supporters to establish the outsiders in Assam. Balinarayan Borah too supported the migration of the educated Bengalis to Assam.

On the other side, the landlords of west Assam's Goalpara, Bilasipara too saw their ways to establish the Muslim farmers hailing from East Bengal. The Assam Banking and Query Committee reports published in 1929-30 show that the local people in Barpeta district as well as the established Marwari's used to lend money on interest for cultivation. The low and arable lands of Assam were very useful for jute production. The more East Bengal Muslim farmers migrated to Assam the more jute factories were established in West Bengal. Famous

Economist Dr. P.C. Goswami in his research book 'The Economic Development of Assam' (1963) has mentioned that during the period 1901-02 all total 5,000 acres of land in Assam were covered by jute production. During 1941-42 this figure increased upto 277 thousand acres. Dr. Ramesh Chandra Kalita in his research paper 'the problems of Immigrants and Assam' points out the relationship between the increasing jute industries in Calcutta and migration of East Bengal farmers to Assam. Dr. Kalita comments that jute was supplied to foreign countries too. In such a situation some traders of Barpeta region started to sell their land to the outsider migrants at high rate. Some opportunists even provided the government and reserve forest land to these migrants. It is already mentioned that in 1905 the British government formed a new state Viz. 'East Bengal and Assam' for some political and economic reasons. As a result no barrier existed for the farmers of East Bengal to enter Assam. Already during the period of 1891-92 rail connectivity was started between Assam and Bengal. This helped the East Bengal people to establish in Assam.

During the time there prevailed landlord system in East Bengal and more than ninety per cent farmers did not have own land. The landlords oppressed the farmers for collecting revenue. On the contrary in Assam the farmers could directly pay their revenue to the government as rayatwari system prevailed at that time. So, there was no chance of oppression on farmers here. The East Bengal farmers were eager to migrate to Assam to get rid of the oppression of the East Bengal landlords. The migrants who came to the neighbouring districts of East Bengal, Goalpara and Kamrup district used water ways. In the census of 1931 A.C. Mulan was afraid that if migration to Assam went on then whole of Assam would fill with migrants except Sibsagar district. One of the major reasons for migration to Assam was the starvation in East Bengal in 1893, 1897 and 1898.

85% of the East Bengal migrants that came to Assam belonged to Islam religion, the Hindus and other indigenous people felt that their language and culture would be at stake as the migrants were increasing day by day. The government of Assam supported migration to Assam for economic benefits and managed to take a middle void to mitigate the dissatisfaction of the local people, Accordingly useful land were divided into three categories by introducing 'Line Pratha' in 1920 – (a) Separate land for the migrants (b) Land not to be used by the migrants (c) Same land that can be used by both migrants and local people. The local people started selling their land to the migrants at high rate. Some corrupt revenue officers gave the migrants mutation of land taking bribes. Experiencing these phenomenon Ambikagiri Raichaudhury, Mahadev Sarma, Basanta Kumar Das and some other alert citizens tried to draw attention of the governments to such danger and consciousness among the local people. For this purpose Ambikagiri Raichaudhury formed 'Assam Sangrakshini Sabha'. Congress

leader Dr. Rajendra Prasad in 1926 saw the situation in Assam and proposed to bring Hindus from Chapra district of Bihar to Assam. Mahadev Sarma proposed against migration in the Assam Legislative Council in 1927. Basanta Kumar Das and Nabin Chandra Bordoloi tried to solve this problem to save the interests of the local people. In 1928 government formed a committee comprising of five all party members headed by A.W. Botham. Nabin Chandra Bordoloi and Muhammad Sadulla were also the members of the committee. As a member of the committee Bordoloi commented that according to line pratha no migrants could widen their inhabitation from the certain area. Under this line pratha during the period of six years from 1930 to 1936 government allotted 59 grassland fields to the migrants. This scheme was applied in Mangaldai of Darrang district and in Barpeta division of Kamrup district. According to one survey during 1920-21, 3,299 thousand bighas of land were allotted to the Hindu migrants while 30,106 thousand bighas of land were allotted to Muslim migrants. Sadullah validated the law and encroachment of the Muslim migrants through regularisation of settlement rules.

In 1942, many Congress leaders were sent to prison and in 1945 many of them were released and in 1946 Congress formed government with the leadership of Gopinath Bardoloi. This government formed 38 indigenous belts and blocks to preserve the interests of the local people. On the other hand, the British government tried to divide India as Hindustan and Pakistan on the basis of religion. For this proposal they divided the Indian states as a, b and c units.

Gopinath Bardoloi, Rupnath Brahma, Bhimbar Dewri and other local leaders opposed this division and saved Assam from becoming a part of Pakistan.

On 14 August 1947 India became independent. As a result those lakhs of Muslim migrants who had already entered Assam automatically became Indian citizens. Of course, during the time of division both the Hindus and Muslims were given freedom to choose any one of the two countries. Taking this chance many Bengali Muslims returned to East Pakistan. Likewise many Hindu people too came from East Pakistan. But the numbers of people coming from East Pakistan were more than the number of people leaving from here. Not only the Hindus but also Muslims too came here. As a result there started clashes between the local farmers and the migrants. This phenomenon excelled the land problems in Assam.

Migration from East Pakistan :

The Britishers quit India in 1947 acknowledging defeat in the mass movement of the Indians, But the shrewd British government gave independence to India only after dividing India as Hindustan and Pakistan on religious basis. Many Muslims went to East Pakistan for

religious ground and many Hindus came to Assam. All the refugees from East Pakistan were established in various districts of Assam according to the decision of the central government of India. Many ethnic clashes took place in both the countries because of that. But migration to Assam from East Pakistan was going on. There originated a possible threat of Pakistani migration. The central government enquired through C.B.I and all total 2,23,000 Pakistanis were found out and in 1946 their names were cancelled from the voters list. Besides, 1, 97,000 were expelled. Some leaders created chaos considering this to be oppression on the minorities and again some expelled Pakistanis entered Assam.

Bangladeshi Foreigner's Migration :

There was difference between East Pakistan and West Pakistan regarding their language and culture. Though they belonged to same religion the Urdu language of West Pakistan was the National language of Pakistan. But East Pakistan language was Bengali. As the capital was situated in West Pakistan, East Pakistan was considered an empire. As economic exploitation increased East Pakistan protested against West Pakistan with the leadership of Sheikh Mujibur Rahman and announced Bangla as the National Language of East Pakistan. India provided military help to East Pakistan. West Pakistan was defeated in the hands of joint military force of East Pakistan and India and on 24th March in 1971 East Pakistan became independent. In no time one new country was formed as Bangladesh. The first Sheikh Mujibur Rahman government announced Bangladesh as a secular one. Being affected by the war and battles of Bangladesh many refugees entered India. Indian government too accepted them as refugees and provided all facilities on humanitarian ground. Even after formation of Bangladesh the territories of India and Bangladesh were open. Government of India has adopted schemes to install barbed wires lately. Yet, Bangladeshi immigrants are coming to India.

The immigrants come from East Bengal in the age of colonialism cannot be termed as immigrants. It is because during that time East Bengal and Assam both were the parts of India. After independence in 1947 all the political and social upheavals needed to be settled. So, during the period those people who entered Assam from East Pakistan were called refugees. But those who entered after 26th January 1953 are undoubtedly immigrants. It is seen that from 1880 Hindu and Muslim immigrants entered Assam in large numbers which had a great impact on the demography of Assam. Historians like Dr. Ramesh Ch. Kalita, Dr. Amalendu Guha, Dr. Herambakanta Barpujari propounded detailed explanation of growth of immigrants on the basis of this graph J.N. Das, the Director of Research Institute of Gauhati High Court shows the numbers of people who were living in Assam but were born in Bengal as follows :

Districts	1911	1921	1931
(a) Goalpara	77,000	1,51,000	1,70,000
(b) Kamrup	4,000	44,000	1,34,000
(c) Darrang	7,000	20,000	41,000
(d) Nowgaon	4,000	58,000	1,20,000
(e) Sibsagar	14,000	14,000	12,000
(f) Lakhimpur	14,000	14,000	19,000
Total	1,20,000	3,01,000	4,96,000

According to one newspaper namely Dainik Assam (1971, 16 April issue) during the period from 1901 to 1971 total population of Assam increased from 32.9 lakh to 146.3 lakh. At the same time the total population of India increased from 23.8 crore to 54.8 crore. This unnatural population growth in Assam is not possible through natural birthrate. So, undoubtedly the numbers of immigrants increased in a dangerous manner. In 1980 on 18th January, All Assam Students' Union wrote a letter to the Prime Minister of India. In which they alerted that till 1981 the total numbers of illegal immigrants would be 50 lakh.

Lately, under the leadership of All Assam Students' Union an agreement was drafted (15th August 1985) between the Indian government and the protesters to put an end to the movement that existed from 1979 to 1985. This agreement is called 'Memorandum of settlement' in English.

According to this agreement arrangements have been made to provide Indian citizenship to those immigrants who came before 25th March, 1971 and to consider as illegal intruders who came thereafter.

Impact of the immigrants on Assamese culture and life : It is already discussed that number of inland and outsider migrants have increased dangerously. The impact of migration may be discussed as follows:

- (a) **Population growth of Assam :** The flow of migration of Assam either inland or interstate, migration from Nepal have increased population growth up to three crore. This dangerous population growth has contributed to the problems of food and shelter. Assam is lagging behind in comparison to other states of India in matters of education and others.
- (b) **Destruction of Natural Balance :** There is always a need of land because of population growth. So, people specially foreign intruders have been lessening reserved forests, sanctuaries and river banks. As a result there arose problem of food scarcity for the wild animals. Many species of wild animals have become extinct. There are

news about human and animal clashes. Besides flood has brought danger to the localities. For example it can be mentioned that during the period from 1995 to 1960 landslide had completely destroyed the Palasbari town and Mariahola region.

- (c) **Ethnic clashes :** Measures were taken to save cultural and social interests of the local people of Assam against the problem of migration and immigration. For example Linepratha, formations of tribal belt and block in 1946, Prevention of Infiltration from Pakistan (PIP) etc. But these measures did not succeed because of many reasons. Besides the agreement signed between the Government of India and All Assam Students' Union and All Assam Gana Sangram Parishad has not been executed as expected.

For these reasons the local tribes feel that their culture, language and economy are at stake. As a result tribes like Rabha, Tiwa, Bodo, Sonowal, Mishing, Karbi etc. have started demanding separate privilege. For these reasons ethnic clashes are growing.

- (d) **Beginning of reciprocal doubt and fear :** The Assamese culture, language as well as formation of the Assamese race have been impeded because of some legal and illegal migrants. According to the 1951 census the migrants from East Bengal too considered Assamese as their mother tongue. Consequently the number of Assamese speaking people increased more than 73 per cent. But later on because of some factors many doubts and fear arose. It is because even after the Indira-Mujib agreement some people started to doubt the people who came since pre independent India upto March 25, 1971.

Besides, it is noteworthy that in many districts of Assam the local indigenous people have become minorities owing to unlimited migration and infiltration .

- (e) Whether legal or illegal a large number of migrants living in Assam are below the poverty line and live in a very unhealthy state. They lack education. Child marriage and polygamy are very common among them. Taking the chance of such negative environment some fanatics have kept them away from modernity and civility enforcing superstitions. For these reasons birth rate in such society is very high. It is one of the major factors of population growth in Assam. Population growth means destruction of environment and destruction of environment means challenge to human civilizations.

It is learnt from our discussion that population growth of Assam has crossed more than 3 crores and it has become indispensable to control birth rate. There is no respite to think as it is high time. So, legal or illegal, internal or international all migrations should be stopped immediately. Government should take necessary steps as well as citizens too should be cautious then only Assam will become rich as poets say Assam is Asoma Suchama Nirupama.

EXERCISE

Answer the following :

- What is the difference between Internal and International Migration?
 - Define immigrants and infiltrators?
 - Through which Act can a foreigner get Indian Citizenship?
 - Which King of Assam dug pond for use of which temple in Odhisha ?
 - Who discovered tea plant in Assam and in which year ?
- Discuss briefly the discovery of tea plant in Assam and migration to Assam.
- Discuss the historical background of migration of the East Bengal farmers to Assam.
- Who protested first against migration to Assam and when ?
- Write short notes on
 - Policy of harvest growth
 - Linepratha
 - Tribal Belt and Block
 - Impact of migration on socio-cultural and economy of Assam
 - Relationship of jute factory with migration of Assam

Specimen projects :

- Discuss the historical data of demography of your village.
- Find out the reasons of population growth in Assam and its impact on nature.
- Make a field study on food habits and life style of the migrants to Assam and the impact on indigenous people of Assam.
- Make a field survey on relationship between economic problems and population growth in Assam.
- Find out some remedies to control population explosion and suggest how to execute them.



CHAPTER : 8

(A) CRAFTS AND INDUSTRIES IN ASSAM: PRE-BRITISH AGE

Important Notes

In the context of Assam, the time period prior to the Treaty of Yandaboo in 1826 A.D. is referred to as the Pre-British Age. We can simply call the time periods from the Pre-historic time to the coming of the Ahoms in 1228 AD as Ancient Age and from 1228 A.D. to 1826 A.D. as the Medieval Age of Assam.

All works or institutes related to production are generally called crafts and industries. In the Pre-British age, the crafts and industries of Assam were mainly cottage industries. The growth of modern crafts and industries in Assam during this era was impossible because capital as well as modern scientific and technological knowledge required for it were not developed at all. So, the people of Assam established cottage industries in their houses based on traditional lore. In order to be self sufficient, they produced necessary commodities of daily life with the help of traditional skill and implements. In the later period, the English gradually conquered Assam and consolidated power over it through the Treaty of Yandaboo, 1826 A.D., started establishing modern crafts and industries like oil, coal, tea, etc. with the help of advanced scientific and technological knowledge derived from the Industrial Revolution of their own country.

In this chapter, a brief discussion has been made on the crafts and industries grown in the Pre-British Assam.

Silk-worm Rearing and Spinning and Weaving :

Assam has been famous for rearing silk-worm and spinning and weaving since the days of *Ramayana* and *Mahabharata*. In the epic *Ramayana*, Assam is called “the land of rearing silk-worm’. Silk cloth was also one of the gift-items sent by Bhaskara Varman, the King of Varman Dynasty of Kamarupa to Emperor Harshavardhan of Kanauj as a friend. The foreign travellers also highly praised the silk-worm industry of Assam. As for example, Ralf Fitch, the English traveller stated about the production of cloth like silk, cotton etc. in the Koch kingdom. Although rearing of *Paat*, *Muga* and *Eri* (Endi) or the *Paat* (Silk) industry and weaving or

Textile industry had been prevailing in different kingdoms of Assam since ancient times, these two industries gained popularity with the royal patronage of the Ahom Swargadeos, because the Ahom Swargadeos popularized the use of *Paat-Mejankari*, *Kingkhap*, cloth embroidered with silver and golden thread in Assam during their reign.

Moreover, to produce thread for preparing cloth, cotton was cultivated in Assam or collected from the neighbouring hills. To produce cloth, the seeds were extracted from the cotton pod with the help of a contrivance called *Neothoni* (cotton-gin); then the threads were prepared from the remaining fibres of the cotton pod.

Mainly three varieties of silk worm have been reared in Assam since ancient times – *Paat-polu*, *Muga* and *Eri-polu*. The people engaged in rearing *Paat-polu* (silk-worm) and trading thread were called *Jugi* or *Katoni*. *Paat-polu* eat the leaves of *Nuni* tree, *Muga* eat the leaves of *Chom*, and *Sowaloo* tree and *Eri-polu* eat the leaves of *Era* tree, *Kecheru* tree etc. Threads prepared from the *Muga* that eat the leaves of *Mejankari* tree, were called '*Mejankari Huta*'. Likewise, threads were also produced from *Kutkura muga* and *Deo muga* that live on *Kutkura* tree and *Futuka* tree respectively; although the quality of such threads was not good. The craft of rearing *Muga* has been very attractive. Both men and women were engaged in this craft, but men were mainly engaged in rearing *Muga* in the '*Chomonis*' situated outside their residences; while women were engaged in looking after this craft inside the dwelling house. The male and female silk moths called '*Chokora-Chokoree*' of various species are collected for rearing in different seasons of the year. The male-female pairs of these *Chokora-Chokorees* are tied up on a *Ugha* with a view to enable them for laying eggs and after having born to feed the young ones of the silk worm with the tender or mature leaves of the trees like *Kecheru*, *Nuni* and *Era* etc. according to their age and varieties and to keep the grown up silk-worm in the *Jalee* or enclosure made with bamboo or dry branches and leaves to enable them to form cocoons; in doing almost all these works, mainly the Assamese women were engaged. Again, separating the *Muga* silk-worms from the *Jalee*, boiling them in hot water and then separating the threads from these cocoons with the help of contrivances like *Takuri*, *Ugha*, *Letai*, *Chereki* etc. were also done by the Assamese women. More or less these works are being done by Assamese women till date.

Textile Industry:

The hand-loom which is used for weaving the threads to produce cloths is an extraordinary craft work of Assamese women. The names of the apparatus made of bamboo or wood are also attractive – *Taator Khuta*, *Tolotha*, *Raanch*, *Durpoti*, *Chali-mari*, *Bandoree*,

Nachonee, Goroka, Maku, Mohura, Chiri, Holi, Chipkathi, Gereli-Kathi etc. are various apparatus with which Assamese hand-loom is made. Weaving and spinning both are together called '*Bua-Kota*'. For every Assamese woman, '*Bua-Kota*' has always been a work that exhibits her talent. The girls are imparted training in this craft at their own residence either by mother or grandmother or by some other skilled women. It is mentioned in the *Buranjis* that the Queens *Bor Raja Phuleswari Konwari, Sarbeswari Konwari* etc. managed to impart training on spinning and weaving to the girls in the capital premises of Rangpur. Girls without the knowledge of spinning and weaving were laughed at by the society using a derogatory word "*Thupori*" (unskilled).

Although spinning and weaving was done by all Assamese women, yet there were two professional guilds called '*Jola*' and '*Tanti*' who were directly involved in spinning and weaving for their livelihood.

In addition to weaving cotton cloth the women of Assam used to weave three types of cloth, *Eri, Muga* and *Paat*. Among them the *Paat Mejankori* cloth was thin, smooth, beautiful to look at and durable. *Eri* cloth is rough, warm and also durable. The *Chola-Chureea, Mekhela, Riha, Chadar, Gamucha* etc. made of *Paat-Mejankari* cloth were used by the higher class and the cotton and *Eri* cloth were used by all other people of the society. It was considered a matter of pride for every Assamese woman to present a *Bihuwan* to the members of the family as well as to others on the day of *Bohag Bihu*. Likewise, it is mentioned in the *Buranjis* that Assamese women prepared the '*Kobach-Kapor*', an armour cloth purified with incantation by ginning cotton, spinning and weaving within a night so that her husband could go to the battlefield wearing that '*Kobach-Kapor*' which would protect the warrior. *Buranjis* say that Ahom woman Mula Gabharu was unable to give the '*Kobach-Kapor*' to her husband Phrasengmung Borgohain for which he was unable to resist the attack and was ultimately killed by Turbak Khan, and to avenge this she herself went to the battlefield and sacrificed her life fighting against the enemy.

The textile industry was kept under keen observation by the Ahom Swargadeos. Spinning and weaving on daily basis was made mandatory for every Assamese woman by Momai Tamuli Borboruah. Overall, ancient Assam was self-sufficient in producing cloth and in this respect, contribution of the women power of Assam was the highest.

Bamboo and Cane Craft :

Almost all Assamese people have been working on bamboo and cane craft since ancient times. An Assamese man who did not know how to braid up a *Bichoni* (hand-fan) or a *Jeora* (bamboo fencing) was looked down upon by the society. The forests of Assam were full of

bamboos of varied species like *Jati*, *Bholuka*, *Mokal*, *Kutuha*, *Bijuli* etc. With the help of them the Assamese people made their houses, fencing and gates (*Jeora-Jopona*), *Nongola* (pole bar of a gateway), *Bhoral* (granary), *Dolong* (bridge), *Saku* (pole bridge) etc. and other daily used household commodities like *Hua Chang* (bed), *Pani Chang* (raised bamboo platform to keep water), *Aakhol Chang* (bamboo platform for keeping food and utensils), *Dhora* (bamboo mat), *Jopa* (bamboo basket), *Bichona* (wooden bed), *Khang* (bamboo basket), *Petari* (big bamboo basket) etc.; various implements of *Dhenkisal* (rice pounding pedal) like – *Dala* (bamboo tray), *Kula* (bamboo winding fan), *Salani* (bamboo sieve), *Pachi* (bamboo basket), *Khorahee* (bamboo basket), *Bakhoru* (bamboo cornbin); various implements of catching fish like *Jakoi* (bamboo scoop), *Chepa* (bamboo fish trap), *Khooka* (conical fish trap), *Thuha* (cylindrical narrow fish trap), *Ubhoti* (fish trap), *Baan* (bamboo fence fish trap); various implements for agriculture like *Moi* (harrow), *Juoli* (yoke), *Dilamari* (shaft of a plough), *Shalmari* (bamboo pin of a yoke), *Biria* (split bamboo for carrying load on the shoulder), *Baoka* (flat piece of split bamboo), *Echari* (a whip), *Tum* (a wicker basket for holding grain); weapons like – *Jathi* (lance), *Joong* (spear), *Dhonu – Kaar* (bow and arrow), *Tukoon* (club), stockade; materials for *Bhaona* like, *Mukha* (mask), *Soo* (effigy) etc. were made. Again some materials like *Mukhura* (muzzle for oxen), *Telpera Beteri* (oil-presser), *Khaloi* (creel), *Bichoni* (hand fan), *Khatang* (a ring like contrivance for tying together the forelegs of an elephant) were made of cane. Moreover, various manners of braiding or weaving like *Kachari-mor*, *Jali-mor* etc. and various knots like, *Mota-gathi*, *Maiki-gathi*, *Hamukeea-gathi*, *Ajala-gathi* were used in the bamboo and cane works. The knowledge of bamboo and cane work was inculcated generation after generation in their houses where the elders imparted the knowledge to the younger ones. This craft or industry helped the Assamese people to be self-sufficient. This craft is being practised in full swing even today in most of the families of agricultural background. The adorability and popularity of bamboo and cane industry still remains intact.

Gold Washing Industry :

Gold washing or producing gold from river sand has been an ancient industry. Collection of gold and silver from washing of river sand in Assam is found in old literature, chronicles, accounts of foreign travellers etc.

Method of Gold Washing :

Lucid descriptions of gold washing are found in the various chronicles, foreign travellers' accounts etc. which are given below:

Whenever the strong current of the river caused erosion of the bank and threw sand on to the opposite banks, the skilled *Sonowals* (gold washers) examine the sand banks if they would find gold dust in it, then they decided to make camp at that place for washing gold (*Hun Komuwa* or *Hun Khopa*).

Four *Sonowal Paiks* constituted a 'got' (group) for washing of gold (*Hun Komuwa*). These four *Paiks* were called 'Pali' and their supervisor was known as 'Pati'. Each group used a 'Durunee' for washing gold. One of these four *Palis* dug sand, two of them carried sand to the 'Durunee' and the last one used to engage in gold washing. At first, they used a sharp pointed bamboo and pierced it into the depth of the sand bank to find out at which place the gravelly sand was; then they took it up in a split bamboo and examined whether there was any gold dust in it. If they saw gold dust in it, they immediately built their camp at that place and started gold washing. At first, the *Sonowals* bund up (*Bheta*) at the deep part of the stream. If the stream was a small one the bund was made with sand and when it was large they made a bund with stakes and grass. The stream of the river then took a different direction over the sand, washing away the upper surface exposing the surface with gold dust. The *Sonowals* then disbanded the bund and collected the sand with gold dust with a wooden implement called 'Leheti' and then kept in a 'Pachi' (basket). The sands were then thrown to a 'baan' (a bamboo strainer). Then, water was poured on the sand with one hand while the other hand was employed in moving the sand and sweeping off the particles like straw and grass. During the course of washing, the *Durunee* was filled with sand and water. Then the *Durunee* was inclined to one side from where the remaining straw and grasses run off through the hole and the sand mixed with gold dust remained at the bottom of the *Durunee*. When about 50 baskets of sand have been thus washed, the *Sonowals* called it a 'Shea'.

After this, keeping a leaf of *Koupat* (a kind of leaf) at the end of the *Durunee*, water was poured again on the sand through the hole of a pitcher as a result of which, the sand went away and the gold dust remained on the *Koupat*. Then the gold dusts were collected from the *Koupat*, put into a container and kept tied-up. They poured out the gold dust collected in the containers on the *Durunee* and mixed *Para* or *Parod* (quick silver) with it and then poured water on the mixture. As the mixture came into contact with water, the gold dust and quick silver formed a lump. The lump was then put in a shell of snail and heated on red charcoal of *Nahar* wood. Subsequently, the quick silver evaporates, shell became lime and the gold remained intact.

Gold washing in Assam was done in the months of *Maagh*, *Fagun* and *Chot*. But in some places it was done in *Ahin*, *Kati* and in other months also. The *Sonowals* did not engage themselves in gold washing in the days of *Aaoshi*, *Ekadashi*, *Purnima* and *Sangkranti*.

There were some other methods of gold washing also, viz. keeping the hide of otter in water and thereby washing gold. As the river rushes down from a hill, the force of water leads to the formation of a pond on the surface, and at the point where the water takes another course from that pond, the hide was placed at that point with the help of four stakes. The hide was left to dry in the sun on a smooth *Dala* and then properly shook. In this way, the sands fell down on the *Dala* and the gold dusts were adhered to the hairs of the hide. The gold dusts were collected with pointed tongs and melted to form gold lumps. Gold washing was vigorously done in the kingdoms of Chutia, Kachari and Koch also.

People in ancient Assam operated gold washing in the sands of the rivers Brahmaputra, Suwansiri, Dikrang, Dihing, Dibang, Digaru, Dichang, Dibru, Jhanji, Borgang, Bhoroli, Burhigang, Dichoi, Jagolu, Manah etc.

It is mentioned in the *Buranjis* that, the *Sonowals* used to give from 2000 *tolas* to 6000 or 7000 *tolas* of gold every year to the Ahom royal exchequer.

Gold Craft :

Gold craft includes the making of ornaments as well as other commodities of gold and silver.

The literary sources of pre-Ahom period inform us about various gold ornaments but not about the gold craft itself. But we have plenty of information about this craft in the chronicles or in the foreign travellers accounts during the Ahom period.

In ancient Assam, the professional guild called '*Sonari*' (goldsmith) was engaged in the gold craft. The goldsmiths made various ornaments such as *Keru*, *Dugdugi*, *Bana*, *Kharu*, *Lokapar*, *Gejera*, *Madoli*, *Golpota*, *Gamkharu*, *Anguthi*, *Kanphuli*, *Junbiri* etc. in the smithy established in their own houses. Various implements like *Maathonee*, *Noronee*, *Muhi*, *Bhaati* (bellow made of goat's hide), *Horah*, *Reti*, *Haan*, *Pochrongee* (brush made of pig's hair) etc. were used by the goldsmiths at their goldsmithy. The goldsmiths of ancient Assam made *Thuria* by melting gold in *Muhi* adorning the concave of *Jhangphai Keru* with gold and *Bakhor*. '*Paat hun*' was used to insert *Bakhar* into the ornaments. Commodities like gold, silver, *Bakhar*, beads and pearl, *powal*, *jhangphai*, *gondhok*, *laa* etc. required for the goldsmithy were generally found locally or imported from neighbouring hills and other kingdoms.

Assamese goldsmiths were famous in India. Besides making the ornaments mentioned above, they made golden umbrella, *Jaapi*, idols, *Bhogjora*, *Maihang*, *Dhowakhowa* (hubble-bubble), *Horai*, *Hophura*, *Bota*, utensils, golden *Choria*, gold engraved cannon, *Hengdang*, sword, *Chaki* (lamp), *Gocha* (lamp stand), *Temi* (lime pot) *Hunor Moloma Kora Kotari*

(gold coated knife) etc. Gold works were done in the dresses by decorating with golden flower, *Guna poti* (golden thread) etc. Likewise, golden *Jama* (trouser), *Paag*, *Uroni*, *Potuka* etc. were ornamented with gold. It is mentioned in the *Buranjis* that even in the *Moidams*, things like canopy with golden beads, *Chalpeera* (raised stool) with golden mirror, silver mat, pillow decorated with gold and *Bakhor*, golden *Bota*, golden container for betel leaf, golden *Daab* (scabbard) of knife, golden *Dhowakhowa* (hubble-bubble), *Bhogjora*, various ornaments, *Cheng* (false hair decorated with gold) etc. were buried. The Ahom Swargadeos imported goldsmiths and persons skilled in making floral design with golden thread (*guna*) to Assam and settled them creating a professional guild called '*Gunakatia*'.

Silver Washing Craft :

Assam was rich in silver craft also. It is mentioned in the copper plate, Sanskrit and ancient Assamese literature, chronicles, *Charit puthis* etc. of ancient Kamarupa about the use of silver.

The rivers like Dhansiri, Doigrung, Doiyang, Dichoi etc. were famous for silver washing in ancient Assam. People from the *Ropowal* or *Thengal Khel* (guild) were engaged in producing silver by washing sand of these rivers and collecting silver dust from the sand.

The method of silver washing (*Roop Komowa* or *Roop Khopa*) was almost the same as gold washing or *Hun Komowa*. The *Ropowal Paiks* constituting a group or '*Got*' of five or six persons examined the river sand and when they found silver dust in the sand they started operation for silver washing at that place. The leader of their group was called '*Doloi*' and others were called '*Pali*'. Just as gold washing, in silver washing also the implements like wooden *Durunee*, *Lehetee*, Wooden *Charia* etc. were required. The *Palis* dug sand, carried sand with *Lehetee*, washed sand in wooden *Durunee* and separated silver dust from where silver was produced.

Thus, silver was produced within the state and was imported from the territory of Borkhamti and imported through the Singphos from China also. The hill tribes like Mishimi, Nichi and others also supplied silver at different times.

The Assamese craftsmen made various ornaments, various utensils, idols and other materials from silver. Ahom Swargadeos minted silver coins of various denominations in the royal mint. The silver '*Narayani Mohar*' was minted in the Koch Kingdom also. Moreover, like gold, various articles were made with setting of liquid silver and fine flat-silver sheet. Silver *guna* (thread) was used in cloths also. Silver decorated *Bhogjora*, *Horai*, *Hophura*, *Gamkharu* were also manufactured. Floral designs were carved with silver on the pots of metals like copper, brass etc.

The smithy of the silversmiths or silver craftsmen was like that of the goldsmith's; only the apparatus like *Bagee*, *Kundsals* etc. were additionally required.

Iron Smelting Craft :

The iron smelting craft or iron industry was one of the major industries of ancient Assam. In medieval Assam, the people of the '*Tirowal*' or '*Loo-Soleea*' *Khel* (guild) were engaged in producing iron.

Loo-sals (iron-shed) were situated in the undivided Sivasagar district or in the south of the city of Rangpur in the Ahom age covering areas of the slope of Naga Hills from Jaipur to Tirupahar, Bocha – Daiyang etc. in Upper Assam.

The method of iron smelting is found in various chronicles and in the accounts of the foreign travellers. Precisely, the method involved in the process is as follows :

The people of '*Loo-Saleea*' or '*Tirowal*' *Khel* (guild) were associated with the craft of producing iron or iron smelting. In the rainy season, when new waves occurred in the rivers, the strong water currents abraded '*Loa-maati*' or soil mixed with iron ore from the hills and create *Chot* (sand bank) in different places of the river. The silt covers these sand banks and in winter season, the soil with iron ore of these sand banks become hard. The *Loo-Soleea* (iron maker) *paiks* then came to know about the existence of *Loa-maati* or the soil mixed with iron ore. They dug out these soil and deposited them in a pit. There were five *Palis* and a *Uja* in a 'got' of *Loo-Soleea Paik*. In the winter season, they came with necessary materials and poured water on the heap of soil deposited in the pit. They trampled the heap with their feet and separated the iron-mixed soil. Thereafter, they kept the iron-mixed soil in a *Jaali gaat* (furnace) installed in a big roofed-house. Then the iron-mixed soil was burnt using fire wood of reeds. The bellow is used to increase the heat of fire.

Thus, during the course of burning, the iron ore started melting. The foams of wastes appeared on the melted iron-ore which were subsequently separated and thrown off and the iron ore got turned into soft lumps. Then, after stirring and picking with ladles like '*Loronee*' and '*Koronee*', the iron ores were pounded by '*Dhurmus*' (hammer) or placed in moulds, and thereby given them different shapes and forms, solid or flat. On being pounded frequently, the unnecessary substances got removed, leaving the piece of iron pure.

Likewise, steel was manufactured by burning the pure iron in fire. The charcoal of hard timbers like *Nahar*, *Koroi* etc. was used to burn the pure iron. After having finished the burning, the piece of iron that turned into steel was dipped in water by an experienced *Uja* to temper the steel. While tempering, the hot, red, sharp edge of *Dao* or knife was dipped into water and immediately taken out. It was done repeatedly till the sharp edge gets actual

colour. Not only in water, the tools like *Chenee* (chisel used to cut iron) and *Bena* (chisel used to make hole through iron) were tempered in oil also. Only skilled and experienced blacksmiths could temper iron properly.

Most of the *Hengdangs*, *Tarowals* (spear) etc. manufactured in medieval Assam were adorned with gold, silver and brass. This work was known as '*moloma kora*' (gilded) with gold and silver. Moreover, floral design was done on *Tarowal*, *Haat-hiloi*, *Bonduk* (gun) etc. with an alloy of silver, lead and zinc. This work was called '*mina kora*' (enamelled) also. Tools used in a black-smithy were *Bhatee* (bellows), *Engaar* (charcoal), *Niyari* (anvil), *Haturi* (hammer), *Chenee* (chisel), *Horah* (tongs), *Bena* (chisel), *Baagee* (chisel), *Reti* (file), *Pochrongee* (brush), *Shaanshil* (whetstone), *Aakhol-sal* etc. Although the iron work was done by the *Komar Khel* (guild of blacksmith) in medieval Assam, there was a skilled *khel* (guild) of blacksmith to manufacture '*Dhekor*' called '*Dhekor gorha komar khel*' (guild of blacksmith to manufacture '*Dhekor*'). '*Dhekor*' means two iron-bars adjoining both the upper and lower ends of an Assamese palanquin. In addition to so many joints, there were images of Lion, *Mayur* or some other pictures on the '*Dhekor*'. Especially the *Dhekor gorha Komars* engaged in this craft.

Bell-metal Industry :

There are scanty of sources to know about the bell-metal industry of ancient Assam. Of course, it is known about the use of plenty of materials made of bell-metal. The musical instruments like *Borkanh* (gongs), *Kanh*, various types of cymbals, bell, *Nupur* (rattle), *kingkinee* (girdle with small bell) etc. are found in pre – Ahom age of Assam. We come to know about various bell-metal materials in ancient literature like *Charjyapad* and also in *Kalika Puran*, *Yoginitantra*, Madhab Kandali's '*Ramayana*' etc. In the *Charit Puthis* also, the mention of various materials of bell-metal is found.

Bell-metal industry got considerable expansion in medieval Assam and at that time craftsmen related to this industry were settled in various places of the country. The bell-metal workers of Assam mixed copper and tin to make bell-metal. Sometimes, silver was also mixed up. In this age, various bell-metal utensils were used mainly for eating food. Places like Sarthebari, in the present district of Barpeta, Koronga, Titabor in the present district of Jorhat etc. became famous for producing various materials of bell-metal. Tools like *Juisal* (fire place), *Kundsals* (turner's workshop), *Mathonee* (small hammer), *Haturi* (big hammer), *Niyari* (anvil), *Horah* (tongs), *Chachoni* (scraper), *Chenee* (chisel), *Chepena* (forceps), *Bhaatee* (bellows) etc. were required for bell-metal industry.

To make various materials of bell-metal, a craftsman at first gets the pieces of bell-metal

melted soft in a fire place. Then these were taken out from there with iron tongs kept in *Niyari* (anvil) and then given desired shape by pounding with *Haturi* and *Maathonee* (big and small hammer). If the shape is a desired one, it is kept in *Kund-sal* (turner's workshop) fixing with lac with the axle and then smoothen with scraper. At last, the material was decorated with floral design with sharp chisel and then properly washed. The various materials made by the bell-metal workers in the pre-British era of Assam were *Kanhee* (dish), *Baan Kanhee* (dish with a foot), *Bor Kanhee* (big bell-metal dish), *Bera Kanhee* (round bell-metal dish), *Paandhowa* (bell-metal dish with floral design on the edge), *Horu Kanhee*, *Maihang* (dish with a foot), *Borbati*, *Harubati*, *Tou*, *Thali*, *Choria*, *Luta*, *Kolah*, *Bhogjora*, *Bota* etc.

The *Dholowa Kohars* (founder bell-metal craftsmen) of Assam manufactured various materials of bell-metal by pouring the hot liquid metal on the format of bee-wax and thereby giving desired shape. It is heard that, the Ahom Swargadeos brought *Kanh-mati* (bell-metal soil) from Bhutan and managed to produce the '*Asomeea-Kanh*' (Assamese bell-metal). This business was conducted by the officer called Ujir Baruah.

Brass Industry :

It is presumed that brass has been used in Assam since ancient times. Brass industry was an important industry during the Ahom rule. Almost in all occasions brass materials were used during this age. *Choria*, *Horai*, *Tou*, *Khorahi*, *Koloh*, *Hophura*, *Heta*, *Toleea*, even the *Doba* (drum) used in *Namghar*, *Doul-Dewalay* (temples) etc. were made of brass. It is mentioned in the *Buranjis* that, during the Ahom age the important brass industry was developed in Assam by the craftsmen of the *Moreea Khel*.

The alloy metal brass was produced by mixing zinc with copper. The brass workers or craftsmen manufactured various materials by cutting and joining pieces of brass by melting in furnace and pounding the pieces of brass in anvil. Preparing particular earthen mould or format and pouring melted brass in it various materials of brass were manufactured. Tools used in *Komar-sal* (smithy) were used in brass industry also.

Copper Industry :

Copper industry was also one of the oldest industries of Assam. Various materials made of copper including copper plates used by the kings of ancient Kamarupa are mentioned in various ancient literary works. It is known that the roof of the temple of Tamreswari of ancient Sadiya was made of copper. Various materials like *Tamor Koloh*, *Bhogjora*, *Horai*, *Hophura*, *Tema*, articles needed for worship in the temples etc. were made of copper.

In addition to making materials of pure copper, the craftsmen gave new shape to the

copper materials like *Kalashi*, *Horai* and *Hophura* etc. covering those materials with gold and silver sheets. Likewise, these craftsmen were also engaged in enameling various copper materials with gold and silver.

In medieval Assam, copper was mainly collected from the neighbouring hill-tribes. It has been known that copper was imported from China also. Skilled craftsmen from the professional guilds like *Kohar*, *Komar*, *Moreea* etc. were engaged in copper industry.

Pottery in Ancient Assam :

Pottery is a very old industry in Assam. Various utensils and other materials of pottery discovered from the excavation works at Guwahati, Nagaon, Tezpur, Golaghat and other places of Assam establish that Assam has been rich in pottery since the pre-Ahom era. In ancient Assam, the professional people *Kumbhokars* were engaged in pottery.

During the Ahom age, pottery was developed with the royal patronage of the Swargadeos. Likewise, pottery was developed in the kingdoms of Koch, Kachari, Chutiya etc. with the royal patronage. People from the guilds (*Khel*) like *Kumar*, *Heera*, *Khonikar* etc. were engaged in pottery.

The soil used by the potters for pottery was called 'Potter's clay'. This type of soil was generally collected from digging the silt found near the mouth of the river. After having sufficiently collected this type of blackish clay soil, the same was properly trampled and smeared on mould or effigy to give desired shape of various vessels. Then the vessels were taken out from the moulds or effigies and kept in the sun to dry, and then again stocking on fire of *Paagsali* or *Peghali* to burn and to give temper. At last, floral design was inscribed on the vessels with a kind of colourful soil called '*Rangon Maati*' to give the vessels a beautiful look. This work was beautifully done by the women. The *Heera* artisans did not use *Paagsali* or *Chaak* (potter's wheel). The *Kumar* artisans prepared '*Chaak*' by making round shaped structure with bamboo or wood and filling it with soil. In addition to it, they made mould called *Aafori* with burnt soil or *Aathali* with wood to manufacture various *Choru* (cooking pot), *Koloh* (pitcher) etc. *Chaak*, *Aathali*, *Aafuri* or *Aafori*, *Chaaki* or *Majoni*, *Bolia*, *Pitonee*, *Paagsal* or *Peghali* etc. were the tools used by the potters in pottery.

In addition to the artisans like *Kumar*, *Heera* etc. there was a class of professional guild called *Khonikor* in medieval Assam to make earthen image, doll etc.

The main earthen materials were *Ghot* (earthen pot), *Tekeli* (earthen pot with a neck), *Koloh* (pitcher), *Mola* (small earthen cup), *Choru* (cooking pot), *Motheea* (earthen pot), *Dhunadaani* (censer), and various utensils.

The 'Terracotta art' where various images were engraved on the plates of terracotta and

fitted to the notches on the temples was one of the crafts included in pottery in medieval Assam. Floral design and other images were engraved on the unburned earthen plates after having the soil trampled. The potters and *Khonikars* make this craft alive.

Brick-making was another craft included in pottery. A guild of *paik* called '*Itahojeea*' was found during the Ahom age.

The method of brick making was interesting. The soil collected for making brick was pounded to minute particles with a *Dhurmus* (pounder) and were properly sieved and mixed with spices before pouring water on it, and then the mixture was poured on a brick made flat surface and cut into proper sizes. In another method, miniature particles of *Maatimah* and *Laali Gur* (treacle) were mixed with trampled soil fitted in mould and thus brick was made.

The bricks were of various sizes – *Epholeea*, *Tinikunee*, *Kordoisireea*, *Ghuroneea* etc. It is heard that after having burnt in the kiln, the bricks were coloured with the blood of *Chelapeti Jook* (a species of water leech). According to the description, buffaloes were sent down for grazing to the *Jooktoli pothar* (a submerged field full of water leech) situated near the Ahom capital Rangpur to eat *Dolghah* (a kind of aquatic grass). The water leeches in that field sucked the blood of the buffaloes and fell down; then the leeches were cut with razors and the bricks were given red colour after dipping into the blood collected from the leeches. This colour lasts for long time.

The bricks were used in making temples, *Kareng* (royal palace), *Nola* (drain), *Nador Paat* (brick wall for wells), *Haku* (bridge) etc. A locally made substance called '*Koral*' (cement) was used for cementing the bricks. *Koral* was prepared with the ingredients, - *Gur* (molasses), *Maatimah* (a kind of pulse), *Shon* (sunhemp), *Shil choon* (limestone), *Mithatel* (mustard oil), *Boralimaach* (a species of fish), *Hamuk Choon* (snail lime), *Choka Choon*, *Dhuna* (rasin) etc. *Koral* was known as '*Choon-Churki*' (a sticky mixture of lime and brick dust) also.

In addition to this, for the use of more smooth work, the mixture of animal fat, faeces of worms and insects, dust of metals, plants etc. was also used. A particular guild under the officer called *Koralor Borua* was engaged to prepare *Koral*.

Wood Craft :

Assam has been famous for valuable trees since ancient times. Plenty of trees like *Sal*, *Jamuk*, *Aajar*, *Chaam*, *Bon bogori*, *Koroi*, *Tita Champa*, *Bonchom*, *Bola*, *Maifaq*, *Gondhsoroi* etc. were found abundantly in the forests of Assam. In addition to making houses, the *Barhoi-Khonikor* (wood craftsmen/carpenters) of Assam used to make various types of *Peera* such as *Chal Peera*, *Tamuli Peera* etc.; *Khat*, *Pera*, *Dhenki*, *Horai*, *Asana* of *Naamghar*, wooden image, *Ural*, various tools of handloom from these trees.

In case of houses, the royal palace (*Kareng*), *Holong ghor*, *Paat ghor*, *Shingori ghor* etc. were made of wood, prior to building these with brick. Likewise, it is described by Shehabuddin Talish, the writer who had come to Assam with Mirjumla that, the Ahom royal palace *Holong Ghar* situated in the capital city of Gargaon was also nicely built with timber.

The flowers and leaves, Gods and Goddesses, images of animals etc. engraved on wood reveal the expertise of the Assamese artisans. During the Ahom age, the *Habiyal Paiks* were also engaged in woodcraft. *Habiyal Barua* and *Kathkotia Barua* were their supervising officers. Likewise, *Khonikar Barua* was the supervising officer over the professionals like *Barhoi-Khanikar* etc.

Craft of Preparation of Sachipaata and Mohee :

Craft of preparation of *Sachipaata* and *Mohee* or ink was an important craft in ancient Assam.

To prepare *Sachipaata*, at first the barks of matured *Sachi* trees were removed in strips of particular sizes and the strips were rolled up separately with the inner part of the barks outwards and dried in the sun for several days. The dried barks were then rubbed to smoothen, keeping on some hard substances and then exposed to the dew for one night. Next morning, the outer layer or the '*Nikori*' of the barks were removed and the proper barks were again cut into pieces in particular sizes and put in cold water for about an hour, so that the alkali gets removed. After taking out from water the barks were scraped smooth with a knife. A paste prepared from *maatimah* is rubbed properly and then the bark is again dyed yellow by rubbing *Hengul-haital* (a colouring material). This act was followed again by sun drying after which the strips were again rubbed to smoothen and made suitable for writing on them.

Indigenously prepared '*Mohee*' or *Chiyahee* (ink) was used for writing. Juices of bark and fruit of the trees like *Silikha*, *Aamlokhi*, *Keharaj*, *BorJamuk* and *Elandhu* (shoot) were used to prepare the *Mohee* (ink). The writer after having made pen with the feather of goose wrote on *Sachipaata* with this *Mohee* (ink). The manuscript having this type of letter was called '*Sachipoteea Puthi*'. It is seen that the manuscripts have been lasting and remaining intact over centuries till date in the institutions like *Satras*, Museums, *Namghars* and even in personal preservations. Sometimes, lac was also mixed with *Mohee* or ink to write with. Likewise, in addition to *Sachipaata*, *Bhujapatra* (Indian paper birch), hides of animal, *Taal paat*, Ivory-sheet, *Muga Kapor* (*Muga* cloth), *Tulapaata* (ginned paper made of silk cotton) were also used to write on. Moreover, plates of rock, copper, brass, bell-metal etc. and cannon made of iron were also used to write on.

The guilds like *Lekharu*, *Aakhorkotea* etc. were mainly engaged in writing.

Boat Building Industry :

Assam is a land of forests full of valuable trees. People collected wood from the forests in plenty; so, boat making was a very important industry here. Since ancient times, the water ways have been mainly used in Assam for travel and communication. About 25 types of boats were built in ancient Assam for various purposes like – travelling, trading, naval warfare, fish catching etc. The *Buranjis* and other works inform us about various types of boats like *Tulunga Nao*, *Maar Nao*, *Bojra Nao*, *Jaap Nao*, *Jureea Nao*, *Hoikoli Nao*, *Paanchoi Nao*, *Mogorchora Nao*, *Hiloichora Nao*, etc. Provisions for boarding and lodging were available in the big boats while, the *Hiloichora Nao* was used to carry army, food and provisions and arms like *Bortop* (cannon). The wood craftsmen (*Khonikor-Barhoi*) of Assam made a kind of small boat hollowing the trunk of a tree and then making pointed the both ends suitable for doing trifling works and travelling areas of short distance. Again, for the purposes of trade and commerce, warfare, travelling long distance etc. big boats were built by splitting timber wood, and making long flat- shaped timber and then joining the timber sheets with various methods. When required two such big boats were joined parallel and made a kind of strong boat called *Juria Nao*. To join the timber sheets and to make them watertight, a kind of adhesive substance was prepared by mixing Lac, resin, bee-wax, etc. Moreover, a kind of very high quality gum called *Ahom Etha* and adhesive substance collected from the fruits of *Kendu* tree were also used to smear the timber sheets to make watertight.

In the Ahom age, the craftsmen of the *Naosaleea khel* were mainly engaged in boat building industry. Two officers called Naosoleea Phukon and Naosoleea Borua were in charge of looking after *Naosal*, *Naosoleea Khel* and the boat building work. Boat building factories were situated at Gargaon, Sakbaree near Rangpur, Lotashil, Pandu, Guwahati, Koliabor, Biswanath etc. With the help of the warboats manufactured in these factories the Assamese army under the leadership of *Borsenapotri* (commander-in-chief) Lachit Borphukon, defeated the Mughal invaders of Assam under the Rajput commander Ram Singha in the naval battle of Saraighat in 1671 A.D

Craft in Dyeing and Painting :

Ancient Assam was developed in the craft of dyeing and painting also. The tribal people of Assam in the pre – Ahom age were experts in dyeing and embroidering on various clothes. It is mentioned in the *Buranjis* that, the *Chureeas* (*dhoti*) of the Borahees of upper Assam were decorated with red and black colour threads. The members of the Ahom nobility wore head-gear called '*Kuhum-buleea paag*' coloured with the juice of yellow flower of the '*Kusum*' tree. The *Buranjis* inform us about a professional guild called "*Kuhum Jugoneea*" which was engaged in plantation of '*Kuhum*' or '*Kusum*' flower and supplying the same to

the royal granary. Likewise, it is known from the sources that cloth was coloured with yellow or red colour with the juice of *Mojathi* (Indian madder) or with the yellow colour extracted from the roots and stem of *Aanchu* tree. It is known that in ancient Assam colour was prepared from the roots and stems of the trees like- *Kendu*, *Jamuk*, *Aamlakhi*, *Joroth*, *Tepor tenga*, *Teteli*, *Thekera*, *Silikha*, *Haladhi* etc. The *Barhoi-Khonikors* (artisans) beautifully coloured the wooden *Choti* (coller beam), *Monikautor Aason* etc. of *Namghor* with *Hengul-Haital* (a colouring material).

In addition to the crafts of making *Mukha* (Mask) and *Choo* (effigy) for displaying in *Bhaona*, the two *Mahapurusas* (Sankaradeva and Madhavadeva) had given rebirth to the crafts of dyeing and painting in Assam. The *Satras* were another nerve centre for cultivation of these crafts. The *Sachipoteea Puthi*, *Bhaona's Mukha*, *Choo* etc. were beautifully painted and added floral design to them. During the Ahom age, the *Khels* (guild) like *Chitrakar*, *Khonikor*, *Rohon Kora* etc. were directly engaged in the crafts of dyeing and painting.

Salt Industry :

The salt springs were situated in the neighbouring hills of Assam. During the Ahom age, the people of the *Khel* called '*Loonpureea*' erected camp near such salt springs and in winter season they collected salty water in bamboo pipes and boiling the same had produced salt. The salt spring situated in Mohong was well known. Several battles had occurred between Ahoms and the Nagas to occupy the salt spring in Mohong. During the Ahom rule, Loonpureea Barua was appointed as the caretaking officer of the salt springs. The neighbouring hill tribes like Naga, Mishimi, Khamti etc. were engaged in salt-trade with Assam. Later, the English made huge profit in salt-trade in Assam. As the salt was not easily obtainable and its production was limited at that time, so the proverb "*Loon dane Hoon dane homan*" (donation of salt is equal to the donation of gold) was popular among the Assamese people. At that time, the Assamese prepared some salt-like alkaline substances to use as alternative of salt. *Kolbakoli* (rind of banana), *Kolgochor Modhuna* (the bottom of a plantain), *Punee* (duck weed), *Dimaru gach* (Fig tree) were used by the Assamese people as *Khar* (alkali) in washing out clothes. It is still used in preparation of some food items.

Industry of Gunpowder :

During the Ahom rule, the people from the *Khels* like *Kharghoreea*, *Jokhoreea* etc. were directly engaged in producing gun powder for preparation of bullet for guns and cannons. They were producing gun powder under the supervision of *Kharghoreea Phukan* and *Jokhoreea Barua* respectively.

It is mentioned in the *Buranjis* that, gunpowder was prepared from the urine of cow from the cowshed by adopting a particular means. Likewise, it is mentioned in the *Buranjis* that gunpowder was prepared from the *Bhimkol* (a species of banana) tree, peeling, drying and burning the barks of the tree and making *Khar* (alkali) from there.

Ivory Craft :

Another craft of ancient Assam was ivory craft. Various materials viz ornaments, utensils, *Peera* (stool), *Phoni* (comb), box, handle of *Dao* and knife, *Kakoi*, *Pashoti* (dice) etc. were made of ivory. Ivory after thickly besmeared with soil was softened by giving heat and peeling out like *Tomal* or *Tongal* and then woven to make *Dhari*, *Patee* etc. The existence of book written on ivory sheet is also heard of. Various materials were made from the bones of elephant also. The craftsmen who prepared materials of ivory were called '*Boktar Khonikar*'. It is found in the *Buranjis* that they belonged to Muslim community. The Ahom Kings made them settled with rentless land with a view to keep this craft alive. The *Boktar Khonikars* made various materials from deer horns also.

Preparation of Lime :

Collecting limestone from the hills and producing lime thereby was an important industry of ancient Assam. Lime was an important ingredient in producing *Koral* during the Ahom rule. In winter season, the *Paiks* who were engaged in producing lime, used to collect limestone from the hills; they then by installing *Bhota* (kiln) in the *Chunsali* (lime factory) at the inclined areas prepared huge amount of lime working for several months. Likewise, lime was produced from the snails found in the rivers by burning their shells. *Khels* like '*Chun Jogoneea*', '*Chunor Bhota Kora*' etc. were engaged in producing lime during the Ahom age.

Production of Lac :

Production of lac was also an important industry in ancient Assam. In addition to collecting lac from the neighbouring hill tribes, lac was cultivated by rearing '*La-porua*' (lac insect) on the lac trees. Lac was used to make colours durable and to emboss seal on royal documents, records etc. Likewise, lac was used to prepare moulds or format for making utensils of various metals. In the Ahom kingdom, a *Khel* (guild) called '*La-shungi*' was engaged in producing lac.

Craft of Producing 'Roh' :

During the Ahom age, a kind of substance called '*Roh*' was produced to purify water of big and small tanks. It is known that '*Roh*' was generally produced from the gum of wood

apple tree by adopting a particular method. During the Ahom rule, people engaged in producing 'roh' under the supervision of one officer called Rosendra Borua'.

Other Crafts and Industries :

In addition to the above crafts and industries, the other crafts and industries in the pre-British Assam used to produce incense resin from *Dhuna tree*, *Gandh Kolai* (musk) from musk deer, *Agoru* (incense *Aator*) from *Sachi* tree, various fragrant substances from various flowers, trees etc. Gum was collected from various gum yielding trees and various poisons viz, *Bar bih*, *Koni bih* etc. were brought about from Mishimi Hill, Bhutan, Tibet etc. Likewise, it is heard that poison was extracted from cobra also having tied up the snake with the leaf of *Keteki* flower. These poisons were used in producing medicine and making arms poisonous. People of the '*Bihia Khel*' were engaged in producing and collecting poison.

Likewise, various materials like, fibre from fibre plant; *Baru* (shield) from rhino hides; production of oil from animals' fat etc; leather from hides of animals; *Dhari* and *Patee* from *Kuhila*, *Maduri* grass, *Paatidoi* (Mat-rush) etc.; roofs, various types of *Japi*, (wicker umbrella) *Arowan* (royal umbrella), hand fan, *Choi* (covering of boat and bullock cart made of palm leaves), various types of sheds, were prepared from *Kher* (thatch), *Tokoupaat*, *Jengu paat* (a kind of palm tree) etc.

Moreover, Oil mill was made to produce mustard oil by pressing mustard in *beteri* or cane basket; Sugar mill with *bheem* (iron rollers) was made to produce molasses (*Gur*); various tools for *Taatsal* (hand-loom) and implements for agriculture were prepared in this age. Again, a kind of implement called *Tingiri* to produce fire was prepared during this period. Likewise, various commodities from animal hairs were also produced under the supervision of the officer called Nomalor Barua in the pre-British era. Some of these crafts are still alive and most of them are extinct in oblivion.

Important Information

- In the true sense of the term, the crafts and industries during the pre-British age were the cottage industries.
- After having taken Assam to rule over, the English had established modern crafts and industries in Assam to produce commodities like oil, coal, tea etc.
- In the epic Ramayana, Assam is called the "land of rearing silk worm".
- The girl having no knowledge of spinning and weaving was called '*Thupori*' in Assamese society.
- Assamese women used to give her husband who set out to the battle an armour made

of cloth called '*Koboch Kapor*' which was purified with incantation and prepared by spinning and weaving within a single night.

- The methods of producing gold and silver from the sand of river were called '*Hun-Komowa*' or '*Hun-Khopa*' and '*Roop-Komowa*' or '*Roop Khopa*' respectively.
- During the Ahom rule, the *Tirowal* or *Loo-saleea Khel* was engaged in producing iron; *Sonowal* and *Roopowal Khel* were engaged in producing gold and silver; *Loonpureea khel* in producing salt; *Itahojeea Khel* in producing brick; *Bihia Khel* was engaged in producing poison etc.
- The soil used by the *Kumars* (potters) was called '*Kumar mati*' and the soil used by the *Heeras* was called '*Heera mati*'.

EXERCISE

1. (a) In which epic, Assam is called "the land of rearing silk worm"?
 (b) What is "Thupori"?
 (c) To which profession was the guild called "Jola" engaged during the Ahom rule?
 (d) What was the name of the cloth which was prepared by spinning and weaving within a night by the wife and given to her husband setting out for battle during the Ahom age?
 (e) What is 'Hun Khopa'?
 (f) What is 'Gunakoteea'?
 (g) What is 'Loa -mati'?
 (h) What is 'Dhekor'?
 (i) What is 'Khatang'?
2. Write short note
 - (i) Bell-metal industry
 - (ii) Copper industry
 - (iii) Brass industry
 - (iv) Lac producing craft
 - (v) 'Roh' producing craft.
3. Give a description of the spinning and weaving industry of medieval Assam.
4. Describe the method of gold washing in medieval Assam.
5. Give a description of silver craft prevalent in ancient Assam.
6. Write briefly about the iron smelting craft in ancient Assam.
7. What do you know about the pottery in Ancient Assam?
8. Give a description of the crafts and industries in ancient Assam with the help of your textbook.



(B) CRAFTS AND INDUSTRIES IN ASSAM: BRITISH AGE

Important points

- In the context of Assam, industrialization in modern sense was initiated in the colonial period. The entire process was closely integrated with the systematic survey of natural resources and its commercial utilization. Significant changes were brought in the socio-economic sphere of Assam in the wake of industrialization. Medieval economic and social system changed in an unprecedented way. Linking of Assam to the capitalist system of production needs to be borne in mind. Industrialization had been a catalyst in the process of change. This trend had been a factor in strengthening world imperialism. Gradual demographic change and emergence of a modern society happened simultaneously in the wake of this process. Industrialization had been a catalyst in this process of change happening in society and economy.
- Late 18th century England witnessed a great transformation in economic strength through a spectacular growth in industry eventually leading to a shift from an agro based to an industrialized economy in England.
Gradually a process of rapid industrialization started in Europe in the form of large capitalist industry on a scale that was unprecedented. Land, labour, capital and organization are essential elements in such industries. Tea, mineral oil and coal-based industries initiated in the colonial period in Assam are examples of modern industry. In this context Railway system can also be referred as industry. Through this process colonial Assam was linked to the global economy.
- From the ancient period industries like cane, bamboo, weaving were prevalent in Assam. In the Ahom period gold, salt, irons were collected, but methods were primitive. Ahom rulers used to collect revenue from these kind of activities. Sonowals (gold washers, a tribe of Assam) worked at different sites of Dikrong, Sowansiri and Dhansiri rivers to collect gold dust.

Groundwork for advent of a new modern era had been carried out in the colonial period. In the Ahom period cultivation of rural arts prevailed only to enter to the local need of the state. In such a subsistence level of production the concept of commercial profit making cannot be seen. But in the British period some large capitalist industries were set up. These

industries not only proved to be profitable for the British rulers in an otherwise backward economy but subserviently made significant contribution to the economic life of the state.

Some of the important industries initiated in the colonial period are discussed below.

Tea-Industry :

One of the primary industries in contemporary Assam that has been integral to the process of industrialization in Assam is tea-industry, basically an agro based industry. The idea behind the establishment of this industry was conceived in the early part of the 19th century to be precise in 1834. Then Governor General of India Lord William Bentinck appointed a Committee to initiate the process of introducing tea cultivation in India. Even before this, exploratory missions were sent to study several Himalayan regions for the same purpose during the time of Lord Hastings.

At that time the Chinese monopolized the tea trade, that proved to be a lucrative one. Since the Chinese government followed an almost closed door policy against English traders and the mutual distrust between the government and the Chinese resulting from various political reasons' East India Company had to look for alternative sources within their territorial control. Hence, the importance was given to experimental tea cultivation. Bentinck placed before the council a plan of action to be considered immediately for the purpose. As per this plan Tea committee was formed with GI Gordon heading the committee as secretary. Immediate task before the committee was to conduct experimentation at the Himalayan foothills, the Nilgiris and the valleys as well as at the hill slopes of N E Frontier. Besides the committee had to look into the feasibility of obtaining cuttings from China along with skilled workers for manufacture of tea leaves.

The Tea committee without wasting time collected required information from the regions mentioned above. In the meanwhile Gordon headed for China for procurement of good quality plants and skilled workers. Jenkins, then Commissioner of Assam and Lt. Charles the officer in charge of Sadiya jointly carried out an investigation and revealed the existence of tea plants from Sadiya to the Chinese frontier province of Yunan in early 1835. Immediately they prepared a report and sent it to the tea committee. This revelation naturally drew the attention of Tea committee towards Upper Assam.

The Tea Committee considered the matter in right earnest and sent a letter to the Governor General urging upon the necessity of sending a Scientific Mission for the collection of required botanical, geological and other details necessary for cultivation of tea plants in Upper Assam.

As per the recommendation of Tea Committee, Government of India despatched a scientific Mission to Assam headed by N. Wallich, the Superintendent, Botanical Garden, Calcutta

(Kolkata) a Botanist and a Geologist. Meanwhile a nursery had already been prepared under the supervision of C.A Bruce, brother of Robert Bruce who was given credit of discovering tea plant in Assam way back in 1823.

Jenkins made persistent appeal to the higher authority for immediately getting into the venture of tea cultivation extensively without restricting the plantation. Jenkins' argumentation in favour of extensive tea cultivation finally made the government budge. In July 1836, the entire scheme of tea cultivation received the approval of the government of India along with the retention of service of C.A Bruce as the superintendent of the experimental garden with a salary fixed at Rs 400/- per month. Under his supervision experimental tea cultivation started after a detailed survey. By this time, G.I Gordon arrived accomplishing his task of collecting Chinese planters and tea makers. Immediately on their arrival some of the skilled Chinese personnel were despatched to Upper Assam.

First year's yield of 12 boxes of tea were sent in December 1837 to London via Calcutta for quality test. After a proper quality test it was found that the quality of Assam tea was as good as that of China. It possessed, 'great strength, pungency and astringency'. After an analysis of the cost of production, the tea committee found that it was perfectly viable for commercial production. The committee announced in no uncertain terms that in distant future Assam would be a competitor to China in the production of 'so indispensable' an article of consumption (tea).

Government of India now convinced with the profitability of tea cultivation as reported by the tea committee proceeded for tea cultivation. Initially Chinese experts and workers were employed in the tea industry and Lum Qua was such an interpreter and expert attached to the establishment of Robert Bruce.

This is how the agro based industry was established in Assam by the colonial authority accentuated by the necessity of finding an alternative source of tea as also by the lure of profit.

The whole venture of tea cultivation created a stir in the speculation of the world. In February 1828 a group of Indian and European capitalists formed a private association called Bengal Tea Association with a capital investment of Rs ten lakh.

Their idea was to acquire share in the emerging tea industry of Assam. British Government by this time realizing the immense possibility of this industry proceeded for extensive tea cultivation. In the meanwhile some commercial enterprise like Messers Cockrell and Co. Messers Boyd and Co. and Bengal Tea Association merged into another newly floated company called, Assam Tea Company. Initial investment in Assam Tea Company was 5,00,000 pound sterling in 10,000 shares of 50 pound each. Maniram Borbandar Baruah

was appointed as Dewan of this company. Subsequently he opened two gardens on his own. Experimental tea gardens started by government were then transferred to Assam Tea Company.

In the year 1852, Maijan Tea Company was formed under Messers Warren Jenkins. The gardens and factories of this company were concentrated in undivided Lakhimpur district. In 1858, Williamson along with Willam Robertson an officer of the Assam Tea Company jointly formed Jorhaut (Jorhat) Tea Company. During 1858-59 the total area under tea cultivation was 7,599 acre.

The pioneers of tea Industry had to face formidable challenges like supply of workers and communication, which were essential for smooth running of the industry. Imports of Chinese workers were terribly expensive and shortage of workers was the most formidable for the planters.

Gradually tea planters started procuring workers from other parts of India like Andhra Pradesh, Telangana, Madhya Pradesh, Chhattishgarh, Odisha etc. Their arrival enriched Assamese culture with new and varied elements. Tea community now comprises a big chunk of the total population of Assam.

At present there are 765 tea gardens in Assam and is famous as the biggest tea producing area in the world. Scenic beauty of the lush green tea gardens is a treat to our eyes along with the heritage buildings. Moreover, there are approx. 1,00,000 small tea gardens in Assam. Total annual production of tea leaves in Assam is nearly 570 million kg. Varieties like CTC, Orthodox, Green tea, White tea are produced that fetch good value in world market. The small tea growers are an emerging factor in post colonial period and they are getting benefitted from this industry. (The Botanical Name of Assam Tea is *Camellia Sinesis* var. *Assamica*)

Mineral Oil Industry :

Like other natural resource, mineral oil is very important resource for the economy of any region or country. It's importance can be seen and felt every day. The huge transportation sector of the economy is to a large extent dependent on this resource. Although we are now moving towards non-conventional energy sources considering the availability of such resource only for a limited period and for increasing focus on green environment, still mineral oil is important in any economy.

Colonial government from the very beginning had keen interest in natural resources and extensively searched for such resources. Existence of mineral oil was known to them in and around the coal bearing areas of upper Assam from the early part of 19th century as early as 1825 Captain Wilcox discovered oil and coal at Supkong (Sibasagar district) in the coal bed of Buridihing.



Fig 8.1 : Digboi Refinery

Mineral oil based industry is considered as one of the primary industries in the economy of Assam and has been playing a crucial role since its inception in the colonial period. For purification of mineral oil. Assam has now four refineries at Digboi, Noonmati, Bongaigaon and Numaligarh. Among these, Digboi, Refinery (first in Asia) was established in colonial period.

Commissioner Jenkins while on an official tour of Upper Assam noticed a number of oil springs near a coal outcrop at Borhat. Moreover, Captain Hannay, Captain Delton (Administration officer of the company) mentioned about noticing oil springs at Namchik, Naharpung, Makum etc. It is worth mentioning here the report of one British officer, "I am told by the Singphos that at times there is an internal noise as that of a distant thunder, when it burst forth suddenly with a loud report and then for a time subsides." (Journal of Asiatic Specially Bengal XIV 817)

Existence of mineral oil and natural gas in and around Jaypur (Sibasagar district) and Bapu Borpung (present Digboi) were also known to the company officers.

In early part of 1854, Wagentriber a speculator applied for a lease of oil springs in Lakhimpur district to the government of Bengal. His idea was to ascertain the quality and commercial viability of the functioning of the oil springs. Commissioner of Assam as directed by the Board of revenue furnished all particulars about the springs of Bapu, Makum and Namchik. Government finally decided to lease out Makum. Captain Dalton made an estimate that the annual yield from Makum would not exceed twenty to thirty seers. (Seer: Unit of measuring liquid)

However, nothing had been mentioned by Medlicott or Mallet about the experimentation by Wagentriber. Mallet made a reference about another speculator called FA Goodenough, who applied for a grant of lease of oil springs on a twenty years term. Though Board of revenue was not very interested, Lt Governor of Bengal Cecil Beadon insisted on granting the lease. As a result, Goodenough got a rent free lease of oil springs in the neighbourhood of Jaypur and Makum. By that time, no government initiative can be seen in operational part of such undertakings.

Goodenough made an initial investment of Rs one lakh and started operation. First systematic boring for oil commenced at Naharpung in November 1866. It proved to be unsuccessful and was abandoned. Goodenough eventually failed to establish a petroleum industry even after successful results at Makum. This initial operation by Goodenough made it clear that there was an abundant supply of mineral oil in Makum field. Main hurdle for these early entrepreneurs were absence of a proper transport system and lack of skilled workers. Towards the end of 1882 Assam Railway and Trading Company got a lease in Lakhimpur district. ARTC started operation in 1884 and their lease period was for 25 years with the option of renewal for another 25 years. As per the lease agreement, ARTC could extract 10,400 barrels of oil. Their initial endeavour proved to be very expensive because of the communication problems.

Even then, Board of Directors of ARTC applied for another lease of about six square miles at Digboi. On recommendation of D Fitzpatrick, the chief commissioner of Assam who had been very much sympathetic to the company, was granted another lease of four square miles for a term of five years in 1892 at a royalty of eight annas per hundred gallons of oil produced. In the meanwhile, Balmer Lawrie as the agent of Assam Oil Syndicate got a concession of four square miles at Digboi on same terms and conditions.

In 1888 another significant development took place and R.H Townsend, Superintendent of Petroleum works, Beluchistan as directed by Government of India made a survey of Makum oil field. He submitted a detailed survey report to the revenue department wherein the immense potentiality of the industry was conveyed. Townsend is credited with the first successful boring at Digboi in 1888. He predicted the future importance of the Assam oil field in the world. An official letter sent to the then Chief Commissioner Charles Eliott dated 20 September 1890' Townsend reported the discovery of a big well by ARTC at Digboi. By 1898, ARTC had been working in as many as ten wells of various depths but the quantity of oil extracted was very less. Experts were almost certain that oil would be found abundantly at Digboi. ARTC established a small refinery at Margherita.

Until January 1921 boards of ARTC and AOC were functioning jointly. Shares of the

ARTC were then sold to the Burma Oil Company (BOC) in 1921. From then onwards BOC functioned as the technical and commercial managers of the Assam Oil Company. AOC and BOC had to pay a royalty of eight annas and ten annas respectively per hundred gallons of oil produced.

Initial phase of the petroleum industry in Assam was marked by various difficulties in respect of communication and skilled workers. For these earlier attempts to start this industry failed. However, situation altered to some extent towards the end of the 19th century with the opening of the Dibru Sadiya Railway with its connectivity to river Brahmaputra.

Petroleum industry played an important role in an otherwise backward economy of Assam. Realizing the huge potentiality of this industry, then Chief Commissioner of Assam Henry Cotton recommended to the Government of India to sanction the establishment of a company in the interest of oil industry. In the meantime, Assam Oil Company was launched in London with a capital investment of 3,10,000 with the objective of taking over the lease and plants of the ARTC. As the first Petroleum company of Assam AOC played a significant role.

Accordingly, the company proceeded to work. Govt. of India approved the establishment of the new company with the same terms and conditions as with ARTC. The new company took over the responsibility of Makum and Digboi. Lord Ribblesdale, Chairman of the ARTC was appointed as Chairman of AOC. The head quarter of the company was established at Digboi along with a huge refinery and started production of lubricants, illuminating oils, candles and wax. In the post-colonial period, various public sector companies like Oil and Natural Gas Commission, Bongaigaon Refinery and Petro-chemicals Limited etc. are engaged in this sector. The Gas cracker project established at Tengakhat (Dibrugarh district) a Government of India initiative, is in fact an effort to give a boost to this sector. Assam has an abundant source of mineral oil and new oil fields are being explored through experimental drilling. Modest beginning of this important industry was made in the colonial period through the efforts of some entrepreneurs and in post-independence period, more developments can be seen in this sector considering the commercial importance of this precious natural resource to enhance production.

Commercial utilization of such resources must conform to the principle of sustainable development since these resources are limited.

Railway-Industry :

Introduction of railway communication was a colonial phenomenon. British administration felt the necessity of developing transport and communication as it was essential for administering a vast country like India.

Territorial expansion and possession of political powers in India made the British administration realize the necessity of improvement in transport and communication. Railway communication received utmost attention from authority for transport of freight and passengers through the length and breadth of India. From 1831-32 onwards some initial proposals



were considered for introduction of railways in the Deccan. The most famous and historic decision was taken through the Minute of Lord Dalhousie (Governor General 1848-1856) in 1853. This Minute was reflective of the political, social and commercial importance of railways as emphasized by Dalhousie. Eight private companies were entrusted by Dalhousie administration with the responsibility of introduction and managements of railways. In this way, private capital investment was made in this venture. On 16th April 1853, first train line was opened between Bombay and Thane. That was the beginning of great Indian Peninsula Railway destined to revolutionize the transport sector and to emerge as the biggest public sector undertaking.

A trend of political and socio-economic changes started in Assam from the early part of the 19th century, to be precise 1826, as Assam came under East India Company's rule. EIC being a trading concern initiated various steps for exploration and commercial utilization of the natural resources of Assam. One of these steps was the introduction of railway in Assam. History of N.E Frontier railway had its Origin in Assam Railway and Trading company, Assam Bengal Railway and Eastern Bengal Railway in colonial period. Railways eased the transport of large quantity of coal and tea leaves at a cheaper rate and were the prime objective behind opening railways in Assam.

ARTC opened its first time connecting Dibrugarh and Dinjan in 1882 connecting a distance of 15 miles mainly to transport tea leaves. Two years later (1884) the same line was extended to the Makum oil field of Margherita. First railway line for passenger traffic was launched through Dibru-Sadiya railway in 1884. Eastern Bengal railway company by 1900 constructed Haldibari, Siliguri, Barasoi, Kisanganj and Manihari section. Subsequently railway connectivity was extended and Hasimara, Alipurduar, Gitaldaha, Bamanhat, Golokganj, Amingaon Rangiya-

Rangapara and Dhubri section were constructed (1900-1911). As a result more areas were covered under railway communication. ARTC, Eastern Bengal Railway and Assam Bengal Railway Company gradually extended the connectivity to Barak valley. These three companies merged during World War-II and henceforth came to be known as Bengal Assam Railway. Subsequently some privately owned railway line like Bengal Duar Railway, Jorhat Provincial Railway, Saparmukh Silghat Railway, Katakhal Lalbazar Railway were merged by Assam Bengal Railway.

Assam Bengal Railway got divided as a result of partition in 1947. By then Assam Railway with its HQ at Pandu was formed. Darjeeling Himalayan Railway was taken over by Government of India and attached with Assam Railways in 1948. Formation of East Pakistan severed the railway connection of Assam with the rest of India that had been reconnected through Assam rail link project.

North-East Frontier Railway now looks after the entire management of railway service in Assam. NF Railway was formed as a zone in 15 January 1958 when it was separated from North Eastern Railway with its HQ at Maligaon. Since then NF Railway has been playing an important role in connecting people and places and in economic development.

Coal Industry :

Coal is one of the primary industries established in Colonial Assam. From very ancient period existence of coal was evident in different parts of Assam. Wayback in April 1825 Lieutenant Wilcox of 46th Assam Regiment and a number of his Regiment personnel while proceeding up river Disang reported noticing Coal beds near Borhat and the neighbouring hills. Moreover, he also observed a seam of coal on the bed near Burhidihing at Supkong and South-West of Dimapur. In 1828 C.A. Bruce as instructed by David Scott (then agent to the Governor General of India) raised about 5,000 mounds (mound unit of measure, about 40 kg) of Coal on Safrai, a tributary of Disang, a good quantity of which was transported to Calcutta for quality test. After conducting the quality test, coal from Assam was found to be as good as English Coal and also the best quality in India. In 1837, Captain Brodie reported the existence of coal on Nambor river bed (an affluent of river Dhansiri) but the exact location remained unknown.

Colonial rulers immediately after taking over the administration of Assam as per the Treaty of Yandaboo embarked on an investigation and survey of natural resource of Assam. In this, they were largely motivated by commercial interest as to ascertain the commercial utility of natural resources. In 1838 Commissioner, Jenkins in his official tour of upper Assam did a

proper identification of all the locations reported by Wilcox and expressed his opinion that considering the favourable location of the coal beds it would be easy for transportation through Disang river. In the same year Captain Hannay noticed several coal outcrops at Jaypur and as ordered by Governor General in Council raised over thousand mounds of coal and a small



quantity was dispatched to Calcutta for quality test. After his transfer to Sadiya his endeavour came to an abrupt end. On 26th March 1842 a significant development took place with regard to the coal industry in Assam. Governor General in council accorded its approval to a scheme prepared by Jenkins for successful working of the coal beds in upper Assam. Even after this, no effective steps were initiated. Speculators were also not interested in investing because of low demand in Assam and high transportation cost involved. Coal committee observed that inspite of having superior quality transportation of Assam coal to the Presidency (Calcutta) would entail high cost.

In early 1860' situation however changed with a surge in demand for coal. Introduction of commercial navigation on the Brahmaputra and extension of tea cultivation resulted in a growing demand for coal.

In January 1861, a coal contractor made an agreement with the government and started working in the Tirap field with the condition that he was to keep a readily available stock of one thousand mound coal each at Dikhowmukh Tezpur and Guwahati. After the expiry of this lease in 1864 Sir Cecil Beadon then Lt. Governor of Bengal, sought to lease out not only Tirap but other coalmines also on a term of 99 years. Lease would be granted on condition of payment of an annual rent of six anna an acre, plus a royalty of rupee one for per hundred mounds of marketable coal mined from the leased territory. Henry Hopkinson, Commissioner of Assam on taking charge of office firmly opposed the idea of leasing of existing mines to a single firm or individual contractor as might lead to a monopolistic control of the entire market by the lessee (who gets lease). Lt. Governor Beadon agreed with the Commissioner and instructed him to continue with existing system of contract to get the supply of Government coal without payment of revenue. At the same time, Geological Survey of India was entrusted with the responsibility of conducting a scientific survey of the coal fields of upper Assam.

Accordingly H.B. Medlicot, Deputy Superintendent Geological Survey of India, arrived at Dibrugarh towards the end of 1864. Along with the Deputy Commissioner of Lakhimpur Medlicot surveyed the coal beds of upper Assam and divided this into two groups: Jaypur in Sibsagar (Sivasagar) and Tirap in the near of Makum. In his report Medlicot considered the Jaypur coal field more convenient in view of its connectivity to the river Dikhow and Dhansiri. Coal from Namchik section of Tirap field as observed by Medlicot was of excellent quality having crystalloid structure. The entire supply of coal for Government navigation of Brahmaputra came from Tirap field. Medlicot in his survey report recommended the terms and condition of leasing out coal field in addition to the nature, extent and commercial use of coal found in upper Assam. He suggested the continuation of previously fixed rate of six anna per acre annual rate and a royalty of one rupee for per hundred mound of marketable coal produced.

In the midst of all these developments, the Revenue board gave a serious consideration to the matter and referred it to the Commissioner of Assam seeking suggestions about granting coal bed in Assam. Hopkinson was totally against the idea of granting coal lands recklessly without a scientific survey of geographical and topographical aspects of the coal mine. Lt. Governor Beadon on the other hand disagreed with Hopkinson and stressed that coal mine should be thrown open for private enterprises without wasting time. In his view the object of the Government should be to produce cheap and good coal through private capital investment. Accordingly, Lt. Governor of Bengal officially directed that coalfields of upper Assam be advertised as recommended by Medlicot. In granting coalmines a condition was imposed restricting one grant area not exceeding one square mile or 640 acre. On 14th Feb. 1866 terms and conditions of granting coal mines in Assam were advertised in the Calcutta Gazettee. Response towards this advertisement was very encouraging and on May 18, 1866 F.A Goodenough, a member of the Messers Killop Stewart and Co. bought some grants from Tirap field. Then R.C Noble purchased Namdang field. These were the initial steps in the direction of establishing coal industry in Assam. Both of these ventures proved to be unsuccessful and their grants were revoked. Two of these grants were then transferred to J Haly at Lepatkata near Dibrugarh in 1877. J Haly faced the biggest problem of communication and he transferred the coal grants to Assam Railway and Trading Company.

In the absence of a proper infrastructure, initial commercial ventures in coal were not very successful. In the meantime, Col. R. H Keating, the Chief Commission of Assam, formulated a new set of regulations. Since he was against the creation of a monopoly in coal trade, grants were limited to 50 acres for a period of three years. Moreover holding more than one



grant was prohibited by the new regulation. These regulations were to some extent relaxed by Commissioner Elliot as he found the earlier regulations discouraging to the speculators. Accordingly on his recommendation government of India cancelled earlier regulations in February 1880 and a decision was taken that tenders for lease should be dealt with strictly on respective merits.

Messers Shaw Finlayson, a representative of Assam Railway and Trading Company was granted a lease for 20 years an area of 30 square miles in the Makum and Jaypur coalfields. Finlayson got this grant on very liberal terms; rupees fifty per annum for every square mile and a royalty of rupees three per ton coal mined.

Entrepreneurs in this sector had to confront immense difficulties and of which biggest was the absence of communication network connecting the coalmines. Shortage of skilled workers posed another problem. As a result workers were recruited from outside and trained by skilled workers imported from abroad.

Subsequently, Assam Railway and Trading Company initiated some energetic steps and was able to overcome the difficulties gradually. In early 1882 Ledo Colliery started production and the first coal laden train was flagged off in 1884. There was an increasing demand for coal with the introduction of navigation of Brahmaputra and also the extension of railway network. To meet the growing demand one after another new collieries came up like Namdang, Tirap, New West Ledo, New East Ledo, Borgolai etc. With this coal output rose steadily. In 1887, best quality coal was produced from Kokilamukh and the cost of production was only 7 anna per mound.

Coal produced in Assam met the local requirement and large quantities of coal were exported to Calcutta for industrial use.

T.R Mallet conducted a scientific survey of the coal fields in Lakhimpur and Sibsagar (Sivasagar) during 1874-75 and 1875-76. In the report he mentioned that at the foot of the Naga Hills there were six coal fields in an area extending about 110 miles. Among these from Makum 9 lakh ton excellent quality coal could be extracted as per Mallet's report. He also mentioned Nazira coalfield.

All the track the mentioned situated in the south of the Inner line. And entrepreneur named Malcolm, proprietor of Assam Coal and Timber Company decided to work in Nazira field

after taking permission from the Nagas and subsequently Malcolm transferred his rights to Assam Company. Under Inner Line Regulation (1873) it was difficult to start commercial venture involving possession of land between British subject and Nagas as it was not valid without Government approval.

Considering the smooth conduct of operation by Assam Company Government relaxed the Inner Line Regulation on condition of paying a royalty of four Annas per ton of coal extracted. On this condition, the Assam Company held a portion of the Nazira field. Later on their fields were abandoned since working on these were not commercially successful.

British Government also started commercial production of coal in Garo, Khasi and Jaintia Hills. Mostly they focused on Darangiri in Garo hills, Cherrapunjee in Khasi and Lakadong in Jaintia Hills. Cost of production was very high in these areas because of the communication problem and shortage of workers. British Government therefore concentrated in upper Assam for the development of coal industry.

Coal as one of the primary industries in the economy of Assam had its modest beginning in the colonial era and some entrepreneurs in this sector made pioneering efforts.

Inner Line : It is a system introduced in the British period to maintain political relation with the frontier hill regions. According to this system demarcation line is fixed called Inner Line between the hills and plains areas. People from plain had to take permission to enter into the hill areas.

Impact of industrial development in life and culture :

The economic changes introduced in the wake of Colonial administrations eventually led to a substantial change in the socio-cultural life of the people. In the year, 1826 Assam (lower Assam to be precise) came under East-India company's rule. A new phase, a phase of transition occurred in the wake of the introduction of colonial rule in Assam. British rule carried in its trail a new trend of political and social-cultural transition. The historic phenomenon's of 1826 and its implications are subject of in-depth study in the light of new evidences and interpretations. Changes that the colonial rulers introduced covered wide ranging areas like revenue, beginning of tea, coal and oil industry, an improved transport and communication system. These changes substantially increased the population of Assam after years of turmoil in the wake of Burmese invasion. Establishment of peace and order was followed by freeing of a large number of Assamese people from Singpho enslavement. Captain Neufville freed them from the Singphos, 'Captain Neufville, thanks to his exertions, had succeeded in emancipating several thousands of Assamese from the clutches of the Singphos' (H.K Barpuzari, Assam in the Days of the Company p 292). As per the report submitted to

A.J Moffat Mills by the district officials of Assam in 1853 the population of Assam was 12 lakh and there was a steady increase as it reached the number of 15 lakhs in 1872.

Increase in population can be explained in terms of steady growth in peaceful condition and influx of outsiders to Assam. As per the census of 1901 the break-up of outsiders are as follows - 65% from Bengal, 14% from united province and 10.8% from central provinces. Most of them were farmers, tea garden workers and businessmen. Apart from these Sikhs, residue of the Burmese soldiers, Chinese workers and experts engaged in tea industry, Hindustanee soldiers, Europeans also constituted a sizeable portion of the population of Assam.

People coming from Bengal in large numbers greatly influenced the socio-cultural and economic life of Assam. A portion of North Eastern Bengal constituted a part of the ancient Kingdoms of Kamrup and Kamata. Frequent contacts amongst the people of these regions resulted in linguistic and cultural affinities. Advent of the company in the political sphere of Assam imported significant element as the trained Bengali amlahs (clerks) replaced the erstwhile aristocracy engaged in administration. This replacement was caused by the latter's unfamiliarity with British administrative system. In 1831, the Government of Bengal made Bengali the court language of Assam in place of Persian. In this way, the newcomers from Bengal were engaged in revenue and judicial department. Apart from this, they were also engaged in the schools of Assam, as there was a shortage of loyal teachers. In 1836, Bengali was declared as the medium of instructions in Assam. In fact the entire administration of Assam became a domain of the immigrants from Bengal.

Likewise, the new elements in the cultural and religious sphere became apparent that tended towards a process of assimilation. Among the high caste Hindus worship of Durga, Kali, Chandi, Annapuana were introduced in public (Barowari) and in private households. Observations of such festivals as also dress habits of the people were experiencing changes. Jatra parties, musicians, Dhak (musical instrument) and dances were added to the festivities and social ceremonies of aristocrat families. Dresses like Punjabi, shawl, Santipuri dhuti were introduced and the Assamese gentry developed a liking for such dresses. Even in cuisine new delicacies were introduced. Emerging educated class from Assam not only started subscribing newspaper and periodicals like Samachar-Darpan and Samachar Chandrika some of them also contributed local news and other write-ups.

Advent of the Missionaries in the colonial period is another important aspect of the history of Assam. This is integral to spread of Christianity, education and the resultant intellectual awakening in Assam. As recommended by David Scott a branch of Srirampur Mission was set up at Guwahati in 1829 under James Rae. Subsequently William Robinson joined this

Mission. Commissioner Jenkins perceived that to pacify the tribes of NE Frontier especially the Singphos could be done by the spread of Gospel and accordingly an invitation was sent in early 1835 to the American Baptist Foreign Mission Society.

The Mission Society considered the matter and sent a mission under Reverend Nathan Brown and Oliver T. Cutter with a printing press. They arrived at Sadiya in 1836 and proceeded to work. Miles Bronson started missionary work initially at Jaypur and then at Namchang. He opened a school at Namchang to work among the Nagas. Bronson baptised the first Assamese convert Nidhiram later known as Nidhi Levi Farwell. First Baptist Church was established in Guwahati in December 1845 followed by two more branches at Nowgong, (Nagaon) and Sibsagar (Sivasagar). Although their early endeavours for conversion were not successful missionaries started schools (both literary and vocational), opened hospitals and orphanage.

Orunodoi became a vehicle of disseminating western thoughts and knowledge among the younger generation and prepared the ground for an intellectual awakening.

An expanding economy, emerging ideas had its impact on the social life of the people. Rigidity of the caste system and the haze of some old traditions and prejudices were removed by the spread of education.

Historic decision taken in 1835 regarding the introduction of English education resulted in far reaching changes in the education system. (Government sanctioned Rs 1 lakh for English education in India)

Spread of English education, emergence of a middle class and urbanization were the most visible trend of that period. Calcutta (Kolkata) was then the education hub for aspiring Assamese students. A group of young energetic students studying at Calcutta formed a literary society called Axomiya Bhasha Unnati Sadhini Sabha in 1888. Pioneering efforts of this organization is seen in the publication of a monthly journal, "Jonaki" in 1889. Jonaki initiated an era in the history of Assamese literature and opened an avenue for enrichment of Assamese literature. Lakshmi Nath Bezbaroah, Chandra Kumar Agarwala, Hem Chandra Goswami, Satyanath Borah were the leading individuals in social and intellectuals field of Assam. In the meanwhile, Jorhat Sarbajanik Sabha formed in 1884 is reflective of the collective social consciousness of Assam. A class of newly educated Assamese people pleaded with the government for establishment of a college in Assam. Manik Ch. Baruah made some pioneering effort in this direction. The persistent endeavour of these people eventually bore fruit and the historic Cotton College was established in Guwahati in the year 1901. Named after the Commissioner of Assam, Henry John Steadman Cotton, FW Sudmersen was the first Principal of this historic educational institution. Far reaching socio-economic and cultural changes brought

in the wake of the colonial rule by the time gradually emerged as a collective national consciousness. Growth of nationalist thinking in Assam is closely linked with the emerging collective consciousness. Manik Ch. Baruah was instrumental in the formation of Assam Association in 1903, the first political organization of Assam. Raja Prabhat Ch. Baruah, Jagannath Baruah and Manik Ch. Baruah worked as the first President, Vice President and Secretary respectively of this organization. Formation of Axom Chatra Sanmilan and subsequently Axom Pradesh Congress Committee (APCC) organized the resistance movement against the British. Through APCC's involvement with the Non-Cooperation movement, as per the resolution of Nagpur Congress Session (1920) Assam merged with the stream of great Indian Nationalism. In this way, Assam merged with the great stream of anti imperialist movement and played a very significant role culminating in the attainment of independence in 1947.

Important Information

- Assam is a state rich in natural resources.
- Iron ores were spread in the mountains of undivided Assam.
- Limestone's were collected from quarries that existed on the southern face of Khasi-Jayantia hills.
- Sonowals obtained gold from Dikrong, Subansiri and Dhansiri rivers in Assam.
- Tea committee was formed in the Governor Generalship of Lord William Bentinck to ascertain the possibility of tea industry and to prepare a detail plan of action for the same (1834).
- Bengal Tea Association was formed in Calcutta (Kolkata) in the year 1838. Assam Tea Company is the first Tea Company in Assam.
- In the year 1826 Captain Wilcox, East India Company officer observed mineral oil and natural gas in upper Assam.
- The first systematic borings for mineral oil was initiated in 1866.
- Assam Railway and Trading Company obtained a lease in Lakhimpur district to extract oil for a period of 25 years.
- In 1888 successful boring to extract mineral oil was done at Digboi.
- The first oil company in Assam was the Assam Oil Company (AOC).
- Digboi is the first oil refinery in Asia.
- From 1866 onwards coal beds in Assam were granted on lease to various companies.
- Assam Railway and Trading Company was one such company.
- Excellent quality coals were produced from the coalfields of Namdang, Tirap, New

East Ledo, New West Ledo, Borgolai etc.

- A scientific survey of the coal tracts of Lakhimpur and Sibsagar district was conducted in 1874-75 and 1875-76.
- The Historic Treaty of Yandaboo was signed between the King of Burma and East India Company (EIC).
- As per the provision of the Yandaboo Treaty Assam came under EIC's rule.
- A.J Moffatt Mills prepared a detailed report on the overall state of affairs in Assam.
- In the year 1853, Mills prepared this report known as Mill's Report.
- In the year 1836 Bengali was declared as the medium of instruction in Assam.
- American Baptist Missionaries published in January 1846 '*Orunodai*', the first Assamese monthly from Sibsagar press.
- As instructed by David Scott, a branch of Srirampur Missionary was set up at Gauhati (Guwahati).
- Nidhi Levi Farwell was the first Assamese to convert to Christianity.
- Axomiya Bhasa Unnati Sadhini Sabha was formed by the students from Assam in Calcutta (1888).
- Asomiya Bhasa Unnati Sadhini Sabha published *Jonaki* a monthly journal from Calcutta in 1889.
- In 1884 Jorhat Sarbajanik Sabha was formed.
- Cotton College was established in the year 1901.
- In 1903 Assam Association, the first political organization was formed.
- Axom Chatra Sanmilan, a student organization was formed in 1916.
- Asom Pradesh Congress Committee (APCC) was formed in 1921.

EXERCISE

- A. 1. Who is the author of 'A Geographical Sketch of Assam'?
2. When did the British rule start in Assam?
3. What is the name of the first tea company in Assam?
4. In whose governor generalship the 'Tea Committee' was formed?
5. When was the first systematic boring for mineral oil done in Assam?
6. What is the scientific name of Assam Tea?
7. What is the name of the first petroleum company in Assam?

8. What historic decision was taken by Lord Delhousie in 1853?
 9. When was the first railway line opened in Assam?
 10. From where Arunodoi was published?
- B. Write Short Notes on :
- (a) Tea Industry
 - (b) ARTC
 - (c) Petroleum industry
 - (d) H B Medlicot
- C. Prepare a note on the beginning of petroleum industry in Assam.
- D. Write briefly about the contribution of the British Missionaries to Assamese language and literature.
- E. Discuss the changes initiated by British rule in Assam.



CHAPTER : 9

ENVIRONMENTAL MOVEMENTS OF INDIA AND ENVIRONMENTAL CHANGES IN ASSAM

Important points

- Names of different Geographical regions of Ancient Assam : Ratnapith, Kampith, Swarnapith and Saumarpith.
- Three earliest physiographic divisions of Assam : *Uttarkul, Dakshinkul and Majuli*
- Two tribes Moran and Borahi of Assam were expert in managing forest and forest products grown in their habitat areas.
- Seven different classes of land under the Ahom administration were *Bârimati, Rupit, Faringati, Kathiâtoli, Jalâtak, Doloni, and Hâbiyani*
- Tea plant was first discovered in upper Assam in 1823 A.D. Robert Bruce, a Scottish officer discovered the Tea plant.
- Production of *Pât* and *Mugâ* have been procured from the plants of *Muga, Mejengkori* and *Eri* grown in wilds of Assam
- Three different type of taxes imposed on Forest wealth were *Garkhâti* (Wood) *Bangkur* (Reeds) and *Khasuri* (Grazing land)
- For protection and providing safe habitat of Rhinoceros three chief forest area namely Kaziranga, Laokhowa and Manas were declared as the earliest Game Forests in Assam.
- Two massive earthquakes in 1857 and 1950 with 8.7 and 8.6 magnitudes had caused serious impact on environment of Assam
- Arthashastra of Kautilya records of the appointment of the first director of forest of Ancient India
- Some of the significant Environmental movements of India : Bishnoi , Chipko, Appiko, Silent Valley, Jungle Bachao, Narmada Bachao and Tehri Dam Movement

Environment in Assam: Pre-colonial Time

The word ‘environment’ is derived from the French word ‘environ’ – which means to ‘surround, enclose, and encircle’. It refers to an aggregate of conditions or surroundings in which all the living beings live or survive and non-living things also exist.

All living beings including man and their environment are mutually reactive, affecting each other in a number of ways. It is generally equated with nature wherein physical components of the planet earth such as earth, air, water, etc. support and affect life in the biosphere. Environmental Studies is a multidisciplinary academic field which systematically studies human interaction with the environment in the interests of solving complex problems.

In ancient times Assam was known as Pragjyotish and later as Kamrupa. The Pre colonial Assam is but a part of the erstwhile kingdom of Pragjyotisha. The Mahabharat calls Bhagadatta the ancient king of Pragajyotish a *Sailalya* (dwelling among the mountains), Parbata pati (Lord of Mountains) and Purvasagarvasi (inhabitant of the eastern sea). This reference clearly indicates the earliest natural and geographical location of the state. Some scholars give a far and wide boundary of Pragjyotisha which included the modern districts of Purnea in Bihar and extended on the north west as far as Kasi. Yogini tantra, another religious literature divides early Assam into four distinct parts marked by river boundaries.

- (i) **Ratnapitha** (between Karatoya and Swarnakosh)
- (ii) **Kamapitha** (between the Swarnokosha and the Kapili)
- (iii) **Swarnapitha** (between Pushpika and Bhairabi)
- (iv) **Saumarpitha** (between Bhairavai and Dikrang river).



Fig 9.1 :

It is understood from the above source that the erstwhile kingdom included present Brahmaputra valley, Bhutan, Rangpur, Koch Behar, and adjacent regions. It may be concluded that the erstwhile Pragjyotish-Kamrupa covered the major geographical portion of Eastern India.

Location and Geography :

The state of Assam lay within 28° 15' 24" latitudes and 89° 46' 970 4 'longitudes. The physical geography of erstwhile Assam can be broadly divided into two broad divisions: Plains and Hills. The valley of Brahmaputra is a long alluvial plain, about 450 miles long, and average width of 50 miles. The Brahmaputra flowing through its entire length from east to west, and bifurcated by countless tributaries, big or small, falling into the main channel from bordering mountains on either side. The low lying area both sides of the river throughout the valley are subject to inundation for a width ordinarily of about six miles on each sides of the stream. In Surama valley which comprises two districts Sylhet and Cachar is intersected by the Surma or the Barak River. On the north the valley is enclosed by the Khasi and Jaintia hills and Naga hills on the east by Manipur hills, on the south lie the Lushai and Tipperah hills, the Naga hills, Khasi Hills, and Garo Hills.

Tree and Forest :

The word 'forest' is derived from a Latin word *forist* meaning 'out of doors', the reference being to a village boundary that included all uncultivated and uninhabited land. Since ancient times besides enhancing beauty to the land, Assam contains valuable flora and fauna and natural and forest resources. Assam's forest region is estimated 16,514 square km. which contain timbers like Sal (*shorea*), Khoiar (*Acacia*), Sisso (*Dalbergia*), Gamari (Gmelina), Sonaru (Cassia), Cham (*Artocarpus*), Bonsom (Phoebe), Maz (*Albizzia*), Simalu (Bombax), Hollock (Terminilia). In Assam forest oil producing plant are also grown in large numbers include Lal and Agaru. Wide variety Citrus fruits like orange, lemon, outenga (Dilena) and the kara (Garchina) along with betel nut and betel lime are also grown in large numbers.

In pre-colonial period, the forest of Assam was not totally untouched and there were also trade in forest resources. However, the forest was not considered a significant source of revenue. Several wars were fought over natural resources on natural boundaries between Ahom and Mughal powers. Revenue was collected on varieties of forest produce viz.; Cotton, elephants and birds. The state exchequer mostly relied heavily on the exploitation of various forest resources like elephants and different classes of timber for constructing boats. Elephants were procured in large numbers not only to strengthen the Ahom military system but also for

everyday uses of the royal palaces. It may be said that the forest management during pre-British rule in Assam had little to do with the market economy.

Rajiv Handique, hold that there was limited use of forest resources before the establishment of British rule when the state before British was limited to the collection of revenue from a few forest products. Handique is of the view that the British forest policy was primarily formulated to earn as much revenue as possible at the wanton destruction of forest wealth. The British forest administration favoured the growth of a few commercially viable species of trees neglecting the ecological context of Assam, he said.

Kaziranga National Park lies partly in Golaghat district and partly in Nagaon district of Assam. It is the oldest park in Assam it covers an area of **430** sq kms along the river Brahmaputra on the North and the Karbi Anglong hills on the South. British Governor General Lord Curzon first proposed for the creation of a reserve in Kaziranga and on June 1, 1908, Kaziranga was formally declared as a game reserve. Now Assam possesses a total of 18 wildlife sanctuaries including the Manas National Park, which is now a UNESCO Natural World heritage site.

Climate of Assam :

Climate of Assam is usually very damp in nature. Moisture laden winds from the Bay of Bengal sweeps the state. There is a wide variety of temperature between summer and winter months but neither summer is extremely hot. With the 'Tropical Monsoon Rainforest Climate', temperate is in summer max. at 95–100 °F or 35–38 °C and winter min. at 43–46 °F or 6–8 °C and experiences heavy rainfall and high humidity. Spring begins in March–April and autumn falls in September–October is usually pleasant with moderate rainfall and temperature.

The climate of Assam in both the valleys is noted for its extreme humid condition. The Brahmaputra valley has a far better temperate than is generally found throughout India, the warm weather being very moderate and nights throughout the year cool and refreshing. Yet the climate has always been far from salubrious.

Land :

The lands of Assam may be divided into three broad categories. The first division consists of mountain and hills ranges which again may be subdivided into three sections, the great mountain chains, independent group of hills and hillocks. The second category consists of hills lying in groups, small and large in the plains of the Brahmaputra valley. The third categories of land may be called as the alluvial plains of the Brahmaputra which are in general free from the inundation of the Brahmaputra and its tributaries. The soil of the valley is on the whole exceedingly fertile, and well adapted to all kinds of agricultural purposes.

Wilson's account, (1827) compiled after the Burmese war gives the picture of the Eastern frontier of India under Colonial period is worth reproduction –

‘.... On the most northern portion of the boundary, the valley of Assam, watered by the converging branches of the Brahmaputra was immediately contiguous to the province of Rungpoor, when it stretched for three hundred and fifty miles in a north easterly direction to snow clad mountains separating it from China. Along its southern limits, a country of hill and forest, tenanted by a number of wild tribes, with whom no intercourse had ever been opened, spread towards the east and in its central portion under the designation of Kachar, was conterminous on the west with the British districts of Sylhet and was bounded on the east by mountain- girdled valley of Manipur.’

Ahom Policy Towards Land, Forest and Rivers :

Assam, situated at the foothills of the eastern Himalayas, lies in the middle of the river Brahmaputra and Barak. The humidity is brought by the southwest monsoons; shower an average annual rainfall of 120 inches or more on the Brahmaputra valley and the surrounding region. The topography and the warm and humid climate are conducive to plant and vegetation growth. Assam is the home to 51 forest and sub-forest types, and the confluence of diverse widely grown patterns of vegetation.

The river Brahmaputra originates in the Tibetan plateau, flowing from west to east over a length of approximately 650 kms. Its main branch as the Tsangpo River, and then turns south through the eastern Himalaya as the Dihang River to enter Assam, where it is joined by other branches to form the Brahmaputra. Another large river Barak originates in Nagaland and passes through Manipur over a length of nearly 400 kms.

We do not have any comprehensive account of the Ahom land system and its management system. Vast tracts of land have remained waste throughout the medieval times before the arrival of the Tai Ahom race in 13th century. The Tai Ahom group headed by Sukapha found that the country around Dihing was uncultivated and wild, full of deep jungles. He enquired about the local tribes Moran, Borahi and Kacharies which hold over the vast clusters of local forests full of various large and valuable trees and wild animals, mainly wild elephants and buffaloes. These two indigenous tribes were expert in proper utilisation of the forest resources by adopting traditional methods. Ahom state formed an elephant force under a guild called Hatichungi with the Moran tribes to catch and train wild elephants.

Momai Tamuli Barbaruah, established settlement of these tribes in two places Bacha and Dayang for clearing bamboo and cane jungles for setting up military camp for the Ahom soldiers. Shihabuddin Talsih writes, ‘from Kaliabar to Gargaon houses and orchards full of

trees stretched in an unbroken line and on both sides of the road shady bamboo grooves raise their heads.”

The evolution of the Ahom revenue organization was a matter of slow growth on which indigenous chronicles and reports of British officials Captain Welsh; John Peter Wade, Hamilton Buchanana and Franchis Jenkins, the commissioner of revenue (1826) sheds some new lights. Under the Ahom administration all land was considered as the property of the king. At the early stage Bargohain and Burhagohain managed the affairs, but with the subjugation of more and more territories three special high officers Barpatra Gohain, Barbaruah and Barphukan were appointed.

Classification of Land :

In early and medieval Assam, the people had no specific right in the soil; the land was distributed among them under certain regulations. Classification of land under the Ahom was always an important prerequisite. Old land grant Inscriptions described how the land was classified on broad principles based on their purposes.

Classes of Land:

- i) *Bari* or Homestead land (with tank or barren homestead)
- ii) *Rupit* or *ropit* or rice lands
- iii) *Faringati* , dry rice land
- iii) *Kathiatoli* (Land for raising seedlings)
- iv) *Baotali* (for producing a kind of paddy grown in spring)
- v) *Jalatak* (watery land)
- vi) *Dalani* (low lying or marshy land)
- vii) *Habi or habi tali* (forests)

During Ahom rule every individual was termed as a *paik* under a specific management system called *paik pratha* or Paik system. Each adult individual or *paik* was allowed to hold a sizeable economic holding of 2 puras (about 3 acres) of best agricultural land (*rupit*) to grow rice and other cereals, to maintain his family. A few officials namely Rajkhowa, Hazarika, Bora, Saikia etc. were appointed to conduct the Paik system.

Theoretically, all lands were heritable provided the inheritor adhered to the rules of the existing *paik* system. In addition to the agricultural land much larger tracts of land called *bari* or homestead lands were allowed to the *paiks* for house farming.

Any *paik* might cultivate further land rented out at a uniform rate of 8 *annas* a *pura* (5877 square yards). No tax was levied on forest, graziers and other uncultivated land.

The main sources of cash revenue were the commutation money realised from *paiks* who were exempted from personal services. On the other hand Artisans and some occupational

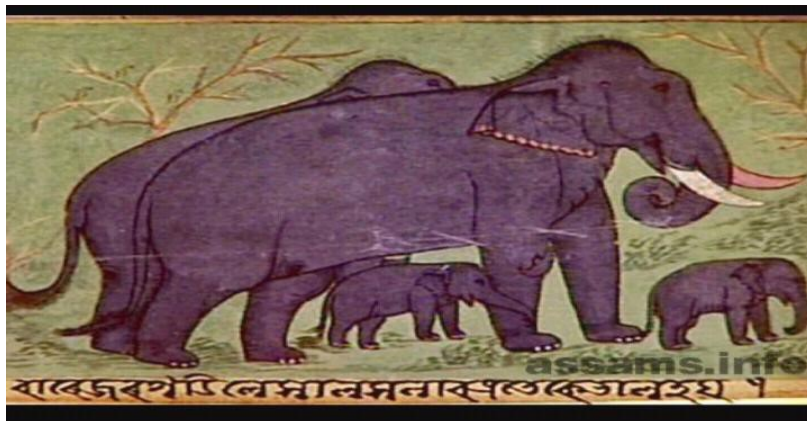
classes were heavily taxed. Thus gold-washers and brass-founders paid Rs. 5 per head, Oil pressures and fishermen paid Rs. 3 per annum. Silk-waivers paid Rs. 2 per head annually. Revenue-free lands were classified as **Brahmattar, Devottar, Dharmottar**. Ahom kings made a grant of a plot of land called *pirpal* land to Muslims for the support of mosques.

Moffat Mills' Report of 1851 records the total cultivated land alienated to religious and charitable purposes, in the form of revenue-free estates had been estimated to be 7,75,468 puras.

It was not until the reign of Pratap Singha (1603-1641) that regular survey of land was undertaken. Forest land of Assam is full of resources such as timber, bamboo, cane thatching grass, lac, pepper and other such products. Shihabuddin Talish in his treatise *Fatfeh-i-ibbriya* narrated how its trees were exceedingly tall, thick and strong and well built. Early British records also contain lists of as many as ninety types (90) of valuable timbers grown in the jungles of Assam.

Forest officials :

Ahom administration appointed different officials to manage the vast forest and natural resources. Since the mythological times, elephants occupied a significant place in the royal households of Assam. An officer designated as **Hati Barua** was in charge of about 125 elephants that looked after their well-being. Hieun Tsang, the Chinese pilgrim who visited Assam in the 7th century praised the size and quality of the elephants found in the jungles of Assam. Shihabuddin Talish appreciated the high spirited and well-proportioned elephants found in the hills and wilderness of Assam. It was under the patronage of Siva Singha (1714-1744) and his queen Ambika Devi a treatise on elephants '*Hastividyarnava*' was written by



Assamese Elephant depicted in *Hastividyarnava*

Sukumar Barkaith. It provides interesting information on nature, characteristics, and types of

elephants, the elephant catching operations, construction of stables, ailments, medical treatment for ailing elephants etc.

Elephant was an important item of trade and commerce, elephant fetched considerable amount to the royal treasury. According to a British Chronicler John M. Cosh, around seven hundred to one thousand elephants were yearly exported from Assam with an average value of Rs 300. A duty of Rs. ten was levied on every elephant thus exported. Elephants were killed in massive scale for ivory and were granted to nobles and the number generally depended on their official and social status. Various types of Boxes, pots, handles and decorated items were made out of ivory. Ahom King Pratap Singh (1603-1641 AD) assumed the dignified title of '**Gajapati**' after taking the possession of thousand elephants.

In a similar way, Ghora or horses were also well taken care of. 'Ghora Barua' was appointed in charge of around fifty horses. Hawks were trained for military and political uses and an official called Sensuwa Barua was appointed for that purpose. A *khel* was created for hunting tigers to contain threat to people and to the royal officials.

The Ahom Secretariat appointed a Khel to supervise the collection of good quality timbers sought for architectural works, boat building etc. An officer entitled 'Kath Barua' supervised the duties of the Khel assigned for this purposes. Trees yielding timbers with commercial, architectural and military potential were brought under the Ahom conservation policy and a separate Khel was appointed for the purpose. An officer designated as Habiyal Barua was in overall charge of forests and forest revenues. Products like elephants, ivory, lac and timbers like aloes and agar wood fetched handsome revenue to the royal exchequer. As per the details provided in the commercial treaty concluded in February 1793 between Captain Welsh, the representative of the British government in Assam and the Ahom king Gaurinath Singha (1780-1795), a pair of elephant teeth fetched around Rs 50.00 as export from Assam. The duties levied on the forest products were strictly implemented and any person found to defraud the Ahom king of the duties were liable to be confiscated of his/their property and were debarred from the privileges of trade. The Ahom monarchs preserved nature on religious grounds.

Forest and forest-based resources occupied an important position in the religious, social, and economic life of the Ahom community. During the coronation ceremony the Ahom Swargadeo accompanied by their queens mounted on male elephants, planted banyan trees (*ficus religiosa*) and advanced the first Ahom capital Charaideo. The planting of banyan tree was considered auspicious during religious ceremonies.

Rivers and Ponds :

Rivers and water bodies were considered sacred and excavation of ponds, building of water reservoirs and dams within the kingdom was regarded as one of their sacred duties of the rulers. Jayadhvaj Singha (1648-1663) offered special prayer to the river gods before excavating a tank at Bhatiapur. Water bodies were created in the commemoration of kings, queens and ministers. An officer called Barbarua was appointed with the responsibility of digging ponds.

Under the Ahom reign architectural use of forest products gained importance. The Ahom palace was constructed of wood and bamboos. Other buildings were often constructed with the unique combination of wood and bamboos. Shihabuddin Talish, the Persian historian became astounded by the workmanship of the wooden works visible in the Ahom kingdom and observed that the royal structure was supported by 66 pillars and each of them was 4 cubits round with highly polished and beautiful wooden works. In his words 'My pen fails to describe in detail the other works and rare inventions employed in decorating the wooden works. Probably nowhere in the world can wooden houses be built with such decoration. Wood was also used profusely in the boat building industry. The war boats manufactured by the Ahoms were mounted with guns and cannons. The boats that moved speedily and did not easily sink were mostly constructed from Cambal wood.

It is because of numerous rivers and rivulets that the Ahom naval force became the foremost and there was a department attached to it to look into the civil communication system. At the absence of rivers for proper supply of drinking water and travel route Gaurinath Singha (1781-1795) excavated Bhogdai River at its source that connects the capital Jorhat. Including Brahmaputra and numerous other rivers on both of its bank served as waterways. These rivers also formed political boundaries of Ancient Assam territories. River Kartoya is the earliest mentioned geographical boundary of Assam recorded in Yogini Tantra and Kalika Puran. These provided easy migratory routes for foreigners and invaders since ancient times. Changes of river courses were a regular phenomenon in Ahom Period. Majuli the largest river island was created due to the change of the courses of Dihing and Brahmaputra.

The Brahmaputra with its numerous tributaries, forest on both the banks, the hillocks scattered here and there were major considerations in the formation of the Ahom military force. Namrup in the South west was selected as exile because of its thickly forested wildlife and damp climate.

Tea Industry :

Historically, Assam has been the second commercial tea production region after southern China. Tea was discovered in upper Assam in 1823 A.D. and successfully produced in 1833 A.D. by Mr. C. A. Bruce, a Scottish adventurer, who apparently encountered it in the year 1823 A.D. The Tea committee formed by the Britishers and paid similar tribute to the Captain Jenkins and Lieutenant Charlton' which led to the introduction of a new industry in Assam of such worldwide importance.

Silk :

The famous Silk industry was in a highly flourishing condition under the Ahoms. Montgomery Martin refers how queen and other women weave four kinds of silk; *pat*, *muga*, *mezangkari* and *eri*. The woman of every household spent their leisure time in weaving and dealing in silk. Assam is known for Pat silk which was more valuable than other two popular forest products *eri* or *muga*. The price of thread varied from Rs 16 to Rs 24 per seer. Jenkins writes, 'silk either wrought ceased to be an important article or produce and even plantation of different trees on which worms were fed were neglected.'

Woodcarvers and carpenters were employed not only for making boat and other weapons but implements of agriculture, posts, beams and doors of the few houses and satras which were built in a magnificent style. Assamese woodcarvers were designated as *Khanikars*. There existed no caste or community whose sole occupations was carving except in towns, and in their vicinity persons engaged in carpentry depended mainly on agriculture for their livelihood. Assamese carvers worked on wages but generally they worked independently at home after attending their cultivation.

British Environmental Policy on land, forest and rivers and its impact

Conservation of forests formed an integral part of the Vedic tradition of India as early as 300 BC. The Maurya kingdom recognized the importance of forests, and the first emperor of the dynasty, Chandragupta, appointed an officer to look after the forests. Asoka (268-232 BCE) prohibited hunting on certain days and made it mandatory to plant medicinal herbs and shade-trees along the roads and fruit plants on water lands. Kautilya's Arthashastra gives an account of a separate Forest Department under a *Kupy// dhak* (Director of Forest Management). It is said that during Maurya period the king had to protect the—forests produce (*dravyavana*), elephant forests (*hastivana*), irrigation works and mines.

The arrival of British and their perception about forest resources created enormous change in the forest cover, forest resources and the rights of tribal people in India. The forest policy in India changed over a period of time. In later period, the forest management and conservation practices in India is primarily divided into the following two broad periods Colonial and Post-colonial.

Colonial Period :

During colonial rule in India, the forest policy gave much importance to exploitation of forest resources without concerning conservation. Huge quantity of natural resources was exploited in the name of development. However, the reality behind this was commercial exploitation by the state. The colonial British Administration realized the demand for timber and potential monetary benefits from the forests, strict rules were enforced by compulsion to bring all these forests under the state control. The over exploitation of forest resources during British period marked a new phase in the use of forest produce in India. Since 1855, the establishment of railway network required large quantities of wood for sleepers and low cost engine fuel, and the expansion of railways and deforestation positively related. In 1855, Lord Dalhousie framed the Forest Charter which led to regulation of wasteland by changing its status into government property in India. **The Forest Charter of 1855** put the Indian forestry on a solid scientific basis which introduced new environmental interventions.

Indian Forest Act, 1865 : In India, the organized forestry activity began in 1864, when the Imperial Forest Department was established. The Imperial Forest Department attempted to establish its control over forests, by various legislations with the help of German Forester Dietrich Brandis, who was brought to look into the process of forest resource management in India.

With the objective of asserting state monopoly on forest resources the Indian Forest Act, 1865 was legislated. Brandis advocated the influence of forest on climate, rainfall, and irrigation sources as a strong tool to the imposition of state control over forests. This structure was in line with the colonial government's requirements. The Indian Forest Act, 1865 was declared the British Administration's monopoly over the forests of India.

By the **Forest Act of 1878**, the British Administration acquired the sovereignty of all wastelands which by definition included forests. This Act enabled the administration to demarcate reserved and protected forests. The local rights were refused in the case of protected forests while some privileges which were given to the local people by the government which can be taken away anytime. This Act classified the forests into three – reserved forests, protected forests and village forests. It was attempted to regulate the collection of forest

produce by forest dwellers and some activities declared as offence and imprisonment and fines were imposed in this policy to establish the state control over forests. National Forest Policy, 1894, The Forest Policy 1894, the first formal policy in India gave much importance to commercial exploitation of forest products, state custodianship and permanent cultivation. This policy is primarily based on recommendations given in a report on 'Improvement of Indian Agriculture', 1893. Through this policy the British Administration encouraged the Zamindars to convert the open forests into agricultural land for enhancing the revenue earning of the state. Forests are treated as a source of revenue to the state and not to meet the needs of the people.

Forests were divided into four classes:

- (i) The first class generally situated in hill slopes and essential to protect the cultivated plains from landslides and they played a conservation role for the benefit of cultivated plains and assured revenue to the state.
- (ii) The second class of forests consisted of valuable timber trees like devadharu (*Cedrus deodara*), Sal (*Shorea robusta*) and teak (*tectona grandis*), and due to commercial interest natural regeneration of devadharu and sal are promoted and artificial regeneration of teak was developed.
- (iii) The third class of forests under this policy meant for minor forests, which yields low quality timber, fuel wood and fodder and for meeting the demands of the people.
- (iv) The fourth class covered the pastures and grazing lands, the local people were allowed to use them with restrictions.

The introduction of the Indian Forest Act, 1927 left immense impact on the life of forest dependent communities. When British annexed Assam in 1826 they immediately started the process of expansion of tea estates in Assam. The British levied taxes on forests products in the form of *gorkhati* on timber, *bankur* on reeds and *khasurry* on grazing area. They collected highest amount of taxes from timber which stood as Rs.344.4 in 1847-48. Rs.1227.8.10 (1851-52) and Rs. 1638 (1852-53). In Goalpara district forests were owned by the zamindars and managed by their own traditional mechanism. It was Major Hopkinson, the Commissioner of Assam who first asked his officials to furnish a report on the actual state of the forests under the British jurisdiction in 1859. In absence of a proper management system anyone was at liberty to enter a forest and cut or destroy anywhere in Assam.

Management and Forest Laws :

According to Shruti Dev Goswami the conservancy of the Assam forests was an imperative necessity of time when the imperial administration assumed the charge of Assam . A new era

in the management of vast tract of wastelands started with the growth and development of a vast stretches of tea estates particularly in eastern Assam. On the other hand, the growing commercial interests of the British required conservation of forests at a equal pace.

In 1863, it was recommended that the earlier farming system existed in Kamrup be retained and in Darrang, Lakhimpur and Kamrup districts, the fiscal officers of mouzas were instructed to protect forests from further exploitation. At that time there were two types of forests in Assam, Reserve and Open. The reserve forests were managed by the Government and open forests the protection of such reserved trees as may be notified with the approval of the local government. This selection was made in accordance with the Forest Act of 1865.

In view of the mass exploitation of the trees as a conservancy measures the plantations programme of three classess of trees Teak, Rubber, and Caoutchouc (Indian rubber) were introduced.

Elephant catching was a state monopoly. This practice was not allowed to continue further as the forests were framed out by the Colonial Government and license issued to catch elephants within a specified boundary on payment of fixed revenue. In 1866 the amount of Revenue derived from the catching operations are 1623 in Cachar, 200 in Khasi and Jayantia hills, 220 in Darrang, 340 in Goalpara, 60 in Lakhimpur, 180 in Kamrup, 340 in Nowgong and 1558 in Sibsagar

This necessitated complete control over the forest resources- thus began the classification of forests into different zones viz. reserved forests, open forests or protected forests. Forest Departments of individual states continued to regulate forests as per the regulations set by the Indian Forest Act of 1927.

The British forest policy was more intensely implemented when they penetrated deep into the forest areas of Assam and its adjacent areas. In 1874 Assam forests were broadly divided into two divisions each headed by an assistant conservator of Forests with a deputy conservator having overall charge of the entire province.

Arupjyoti Saikia opined that tea plantations have played an important role in deciding the fate of Assam forests that eventually led to clashes between the colonial government and the local communities leading to expansion of agriculture and tea gardens with consequent deforestation of existing forest lands.

Within the British India many reserved forests were divided and reserved under different categories meant for hunting, sport etc. Many of these Reserves have been converted to national parks and sanctuaries. Among them Kaziranga, Laokhowa and Manash reserves are prominent.

A small group of the British planters took the leading role in the preservation of the rich fauna of Assam. There was rampant killing of rhino and the threat of rhino killing had been increased alarmingly. Forest officials noticed the declining population of rhinoceros and decried the killing. By 1905, it was found that the rhinoceros had completely disappeared from some jungles of North Lakhimpur. Knowing the gravity of the situation the Officiating Commissioner wrote a letter to the Chief Commissioner about the ongoing wanton killing of wild animals. This led the government to seriously take up the measure of protection. This situation forced the Colonial government to consider the formation of an asylum, which would help the rhino to take shelter during the times of crisis. This led to the setting up three game reserves Kaziranga, Laokhowa and North-Kamrup in 1905. The history of the Kaziranga National park in the Golaghat and Nagaon district can be traced back to the beginning of the 20th century. Lord Curzon, the Viceroy of India, who showed concern about the dwindling numbers of rhinoceros proposed for the creation of a forest reserve and thus the reserve forest was created on June 1, 1905. Kaziranga was formally declared as a game reserve in 1908. Laokhowa Wildlife Sanctuary located in the northern part of Nagaon District was declared as the game reserve in 1907. In western Assam Manas was declared as a forest reserve in 1907 which was previously preserved as royal hunting ground.

Environmental Changes in Assam after 1947: Causes, Nature and Impacts

Assam is extremely vulnerable to climate change due to its geographic proximity to the delta region and poor socio-economic conditions. The state is characterised by high rainfall and a subtropical climate. It gets annual floods and frequent droughts, both of whose severity has risen due to adverse climatic conditions. According to the State Action Plan for Climate Change the annual mean temperature in the state has increased by 0.59 degrees Celsius over the last 60 years (1951 to 2010), and is likely to increase by 1.7-2.2 degree Celsius by 2050.

Assam comprises 2.39% of total geographical areas in the country and is considered as a rich treasure house of natural resources like soil, water, minerals, flora and fauna. The actual forest cover to the total geographical area of the state has now decreased from 26.50 percent in 1969-70 to 24.58 percent in 2003.

In general there are many factors which led to the environmental change and degradation in Assam in post colonial period. The most essential factors are agricultural intensification, industrialization and rising energy use. In Assam, in upper Brahmaputra valley which harbours wet alluvial grasslands and lowlands tropical; evergreen forests, regarded among the most

threatened forest types in the world.

Climate change leading to natural disasters, particularly flood and erosion, has affected the livelihood options of thousands of people across Assam. It has been observed that during the last few decades since independence there has been a significant change in the livelihood options of people due to climate distortions. Many people, who were earlier dependent on agriculture, had been forced to take up other avenues of employment due to change in climatic pattern. Situation forced people to shift themselves from their original homes and workplaces to seek livelihood somewhere. Assam's devastating floods have had a major impact on the economic conditions of several households.

The unique geo-climatic conditions of the regions make Assam and the entire north-eastern region very prone to natural disasters like flood, earthquake and landslide. The state of Assam experiences perennial floods, river bank erosion, landslide and other environmental catastrophes.

A review of the past disasters indicates that the state had to bear the devastations of two natural disaster - floods and earthquake more frequently.

Earthquake : The North-eastern region of India is an earthquake prone area. The region has experienced a large number of earthquakes of tectonic origin. Two major earthquakes have occurred in 1897, 1950 with magnitude of 8.7 and 8.6 caused large scale damages of lives and properties in this region including Assam.

Sir Edward Gait (1933) gave an account of several devastating earthquakes occurred in this region in 1548, 1596, 1607, 1642, 1663, 1696-1714, 1869, 1882, and in 1897. In the bygone century a series of destructive earthquakes occurred in 1918, 1923, 1930, 1932, 1938, 1943, 1947 and two of them in post independence period 1950 and in 1988 were most devastating in nature.

In Majuli, the third geographical area and the largest river island of the state the impact of climate change is easily noticeable. The island is vulnerable to flood and bank erosion which has resulted in the shrinking of the large tract of land area every year. As a result, the marginal people particularly the Mishing communities who live and depend on the river island for their livelihood have been worst affected. Some of the major causes are bank erosion, rainfall pattern, drainage discharge of the Brahmaputra River. The impact of the changes became acute from the 1950 earthquake. Due to flood and recurrent erosion in three years 1914, 1949 and 1963 land areas (in square km) 733.79, 588.79 and 513.89 were eroded

Flood : Flood is the most frequent natural calamities faced by India. Assam is no exception to it. The Brahmaputra, the primary river is one of the largest rivers in the world. Another important river system of Assam is the Barak, the head stream of the Meghna. The Brahmaputra

and Barak River is subjected to frequent heavy floods, drainage congestion and bank erosion resulting in extensive submergence of land, loss of life and property at a massive scale. Bank erosion of the Brahmaputra and its tributaries has become a matter of serious concern to both people and the Government consuming large annual exchequer of the Government in erosion control works. This also led to forced migration of people living in rural areas whose livelihood mainly depends on agriculture and daily wages. In Assam, a large number of people are displaced every year due to floods and drought in most of the areas likely to increase in the coming years.

Mass scale Deforestation : Once vast stretch of contiguous forests of the upper Brahmaputra valley dwindles gradually. The wet alluvial area less than a quarter of the upper Brahmaputra valley remains under forests today. Forests in Assam are dwindling and the main reasons attributed to the gradual depletion are:

The *jhum* (Shifting) cultivation in which massive ‘slash’ and ‘burn’ of forest area and natural vegetation is done is a major cause of forest depletion. Initially, *jhum* cultivation had a long *jhum* cycle period which allowed elapsing before the same plot of land was cultivated when the forest cover was not much affected. In this process, the forest cover remained intact. With the increase of population demanded more cultivable land, thereby shortening the period to about 4-5 years, earlier extended up to 20-25 years.

During Ahom period forest product especially timbers were used for revenue earning purposes. Although Ahom rulers did not follow any well-conceived rules for the management of forests, they valued forests and considered them as the royal property and realized royalties on them. The government also appointed officers to look after forest products especially timbers. They did not interfere with the traditional *jhum* cultivation practiced by the tribal population and the communal forest lands were left outside the revenue system.

Effects of deforestation on climate : The rainfall has become erratic, the temperatures have risen and in many places, desert like sign has set in. Because of the loss of water retention capacity of the soil, rain in the upper reaches of the rivers have led to heavy soil erosion, leading to siltation of the river beds thereby causing flash floods. Such floods destroy more forest, creating a vicious cycle, and destroying a large number of varieties of precious flora and fauna, including medicinal plants.

Climate change has resulted in increase of 1.4 degrees Celsius and a loss of 22.1 cm of annual rainfall within the last 100 years. Certain varieties of vegetables and edible ferns traditionally eaten by the indigenous population are fast disappearing due to increasing temperature and erratic rainfall. Varieties of ferns have fast disappeared and become vulnerable. Rapid growth of harmful and invasive weeds like *parthenium* affected the growth of other

plants and vegetation. Excessive rains and frequent floods have forced tribal communities of the state to change their food habits.

Landslides : Landslide becomes another common environmental hazard all over the world. The rate of landslide is increasing day by day. This natural hazard occurs either due to increase of load on its head or decrease of support in its downstream. But it became more hazardous as soon as the settlement process started on the hills. The landslide in the recent years was primarily man induced, the slopes of the hills of Guwahati in Assam are naturally prone to landslides for its structural peculiarities and prevailing climate of the region. The hills of the Guwahati city are coated with a thick layer of immature soil with low permeability which naturally became more landslides prone during rainy season. Growth of population and construction of houses on the steep slope zones and innumerable roads and footpaths caused removal of support at the toe of steeper part further deteriorate the situation. The frequency of landslides increases with the increase of settlement. Unauthorized rapid growth of settlement on the hills is said to be the root cause of most of the landslides.

Open Cast Mining : The open cast mining is another threat to the environment of Assam. The open cast mines in Margherita, Tinsukia by North Eastern Coalfields rendered large farming areas unproductive due to its coal particles. Elephant Menace is another climate related hazards of Assam. Lack of food in their natural habitat must have driven herds of wild elephants to human locality. There have been widespread reports of coming inside human habitation in search of food, and damaging paddy fields and properties, trampling huts and even killing people. Unless the depletion of forest area is checked, this problem will grow in future, and ultimately it will cause extinction of this great wild species.

Environmental Consciousness and Environmental Movement in India :

Concept of Environmental movement : The green or environmental movement is a global movement. The beginning of modern global environmental movement can be dated back to attempts made in 19th century Europe and North America to show the costs of environmental degradation, especially disease, and air as well as water pollution. King of England Edward I banned the burning of sea coal in 1272 after its smoke became a major health problem. In United States, awareness began when Benjamin Franklin as well as other Philadelphia residents requested the



Rachel Carson

Pennsylvania Assembly to stop or restrict waste dumping in 1739. The first large scale, modern environmental laws came into being in the form of British Alkali Acts adopted in the year 1863. Many historians cited the publication of **Rachel Carson's 'Silent Spring'** an epoch making book in 1962 to be an appropriate indicator for the start of the modern environmental consciousness.

The birth of environmental protection movement in India 'can be traced back to the beginning of twentieth century when people demonstrated against the commercialization of forest resources during the British colonial period.' A brief history of the major Environmental Movements in India, will enhance our knowledge about how the mass movement can save the atrocities against the environment.

1. Bishnoi Movement : Bishnoi is a religious sect, an inhabitant of the Western Thar desert and northern states of India. It was founded by Guru Maharaj Jambaji in 1485 AD in the Marwar (Jodhpur) desert region of western Rajasthan. They are non-violent community who worship nature. This movement was started by sage Sombaji around 1700 AD against wanton destruction of forest and forest wealth. Their pioneer and leader Amrita Devi led the movement initially. Altogether 363 people from the Bishnoi community were killed in the protest. When the king of this region came to know the protest and dastardly killing of his subjects then he rushed to the village and apologized the community and declared the region as protected area. It is noteworthy that this legislation still exists today.

2. Chipko Movement : Chipko movement (Hug the Trees Movement) was launched from Gopeshwar in Chamoli district, Uttarakhand in 1973. It aimed to prevent illegal cutting of trees in the Himalayan region (Uttarakhand). Sunderlal Bahuguna and Chandi Prasad Bhatt were the leaders of this movement. It was a movement of women of Reni village in Garhwal, who hugged the tree trunks preventing the contractors from felling the trees. This Andolan quickly spread to other parts of the country and forced the government to rethink their priorities in the use of forest produce. Bahuguna is also known for coining the Chipko slogan 'ecology is permanent economy'. The most notable features of this movement were the involvement of women.



Women Folk Protect a Tree in Chipko

3. Appiko Movement : The word '*appiko*' means one's affection for a tree by embracing it. Following the lines of Chipko Movement, one green activist Pandurang Hegde launched this green movement which has come to be known as Appiko Movement in Karnataka in 1983. Its' main objectives were afforestation as well as development, conservation and proper utilization of forests in the best manner.

4. Silent Valley Movement : Silent valley is an area of tropical evergreen forests in Kerala. Locally known as *Sairandhrivanam* this park is one of the last undisturbed tracts of South Western Ghats mountain rain forest and tropical moist evergreen forest in India. The British named the area Silent Valley because of a perceived absence of noisy cicadas. It is very rich in biodiversity. The environmentalists and the local people strongly objected to the Hydel power project being set up there in 1973. Under pressure, the government had to declare it the national reserve forests in 1985.

5. Jungle Bachao Andolan : The tribal community of Singhbhum district of Jharkhand agitated against the forest policy of the Government in 1982. The Government wanted to replace the natural soil, forests with the high-priced teak. Many environmentalists refer to this movement as "Greed Game Political Populism"

6. Narmada Bachao Movement : The environmentalists and the local people started protest against the building of Dams on the Narmada for the production of hydro-electricity since 1985 which was popularly known as Narmada Bachao Aandolan. Medha Patkar has been the leader of this aandolan who got support from the Arundhati Roy, Baba Amte and Aamir Khan.

7. Tehri Dam Conflict : This movement was started by the local people around 1980s and 1990s because the dam project would be constructed in the seismic sensitive region and people think that it causes submergence of forest areas along with Tehri town. Despite of protest, the construction of the dam is being carried out with police protection as Sunderlal Bahuguna is sitting on fast unto death.

Thus, various environmental movements was started throughout India to protect nature and environments. The principal aim of these movements are mainly to protest against the environmental problems, awareness to the common people, to publish the rules and regulations to the inhabitants to save their surrounding nature etc.

The main environmental movements in India have been shown in the map below :

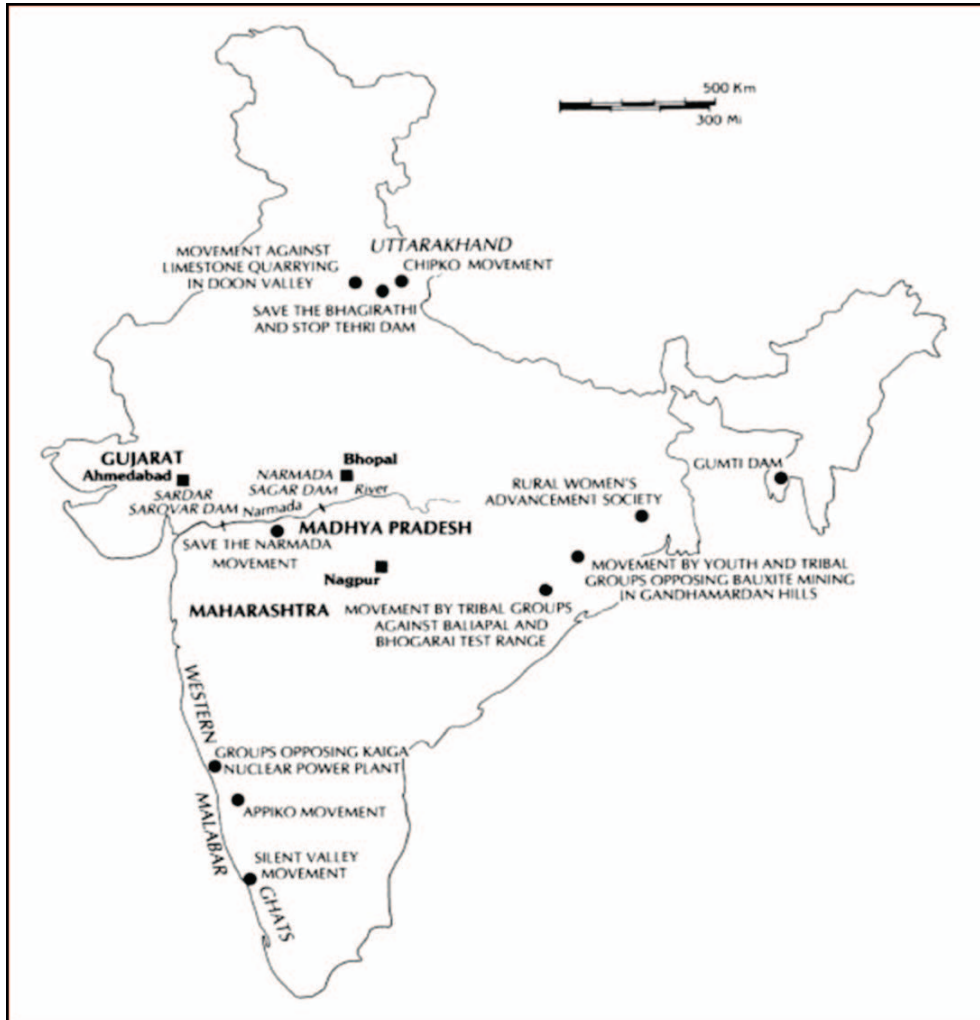


Fig. 9.5 : Environmental movements shown in Map of India

Environmental Protection and some NGO's of Assam :

There are near about 200 Non-Government Organisations in Assam, which has been working for the environmental issues. According to Centre for Environment Education, North East (CEE-NE), there are 152 such type of organisations. Kaziranga Wild Life Society is the first such type of organisation, which has been working to protect the wild animals of Kaziranga National Park and to spread the awareness for the save of the environment.

According to WWF, there are 66 such type of NGOs working in Assam. Several leading NGOs are –

Natures' Beckon, 1982

Centre for Environment Education, North-East (CEE-NE), 1984

Aranyak Nature Club, 1984

Early Birds, 1992

Natures' Foster, 1995

Ed-En, 2000

Environ, 2003

EXERCISE

1.
 - a) What is the last phase of life observed by an Arya?
 - b) What was the earliest name of Assam?
 - c) Where did the word forest come from?
 - d) Who was the first director of Forest in India mentioned in Kautilya's Arthashastra?
 - e) When did the forest department establish in India?
 - f) Mention a name of the tax that was imposed by Britishers on forest resources.
 - g) What were the three different types of trees planted in mass scale by the Britishers?
 - h) When was the Kaziranga Wild Life Sanctuary established?
 - i) When did the great earthquakes occur in the Post Independent Assam ?
 - j) Which is the oldest book published in Assam about Elephant?
 - k) Mention two names of forest officers employed at the time of Ahom kingdom.
2. What was the nickname of King Bhagadutta of Ancient Assam?
3. What was the natural boundary of Assam depicted in Kalika Puran ?
4. What was the measurement of the Brahmaputra River?
5. What are the three different divisions of Assam land ?
6. Write two names of the British writer mentioned about land management system in Assam?
7. What amount of land was declared rent free in Assam? Who provided this information?
8. When and where did the Tea cultivation begin in Assam?
9. How many ancient Geographical divisions existed in Assam ?
 - (a) One
 - (b) two
 - (c) three
 - (d) four
10. Who is the author of the book 'Silent Spring'?
 - (a) Rachel Carson
 - (b) Madhav Gadgil
 - (c) Arundhuti Roy
 - (d) Medha Patekar

11. What is the average highest and the lowest temperature recorded in summer and winter?
12. What were the main aims of the Indian Forest Act, 1865 ?
13. Give a brief description on environment of Assam in Post Colonial period.
14. What were the main aims and objectives behind the establishment of the Indian Forest department?
15. Write a note on the forest management policy adopted by the Britishers.
16. Give the main reasons of climate changes in Post-Colonial Assam
17. Write a descriptive note on the Environmental movements of India.
18. What are the main vegetations derived in the jungles of Ancient Assam.
19. Write short note on the following :
 - (a) Kaziranga National Park
 - (b) Majuli
 - (c) Deforestation
20. Write a note on different forest officials appointed in Assam
21. Discuss about the various activities of different organisations of Assam on environmental protection



CHAPTER : 10

PROJECT PREPARATION

In Swadesh Adhyayan, it is extremely important for the students to select a topic for a project and after doing a scientific analysis on it writing a report incorporating the findings of the study. A project is not an essay. In true sense a project is a research following scientific procedure. For the students of Swadesh Adhyayan, a project is just like a very small research work. The experience gathered by completing such small projects will generate confidence among the students to take up higher level of research projects in future. Therefore, with full dedication, right from selection of a project topic, scientific writing of the report based on the outcomes has been considered as an essential part of education.

The questions usually come to our mind what the project topic should be, how to write or what should be its length etc. Many examples are there at international level to get recognition by writing a brief and simple report on very difficult topics. The students of geography can take up a project topic on any geographical issue or in the same way the students of history can select a topic on historical issues. In the same way, the students of other subjects can also select a topic which have some relation to respective subjects they pursue. There is no bar in selecting a topic for a project by a student of other subject, but if they take up a topic on their own subject, they may find it easier and will be able to complete on time. Though there is lot of freedom in selecting a topic, it is essential to consider the following aspects by the students in selecting the topic.

We all have observed in our surroundings many environmental and socio-economic problems and we are facing their bad effects. Almost all the people of every parts of the world are facing such problems. These problems may be of global level or may be local one. It is not the responsibility of governments, international organisations, religious or political organisations only to solve the global problems like climate change, pollution, world war, epidemic, terrorism etc. Every person may take part in solving such global problems. Little contribution of everyone may solve such big problems. It has been observed in many a times that a single person may create a big social problem, and on the other hand one individual can take the lead role in solving a big problem. For example, one extremist may disrupt the peace of mind of millions of people. On the other hand, 'Chipko Movement' like the environment protection movement started by handful of women shown the whole world how environment could be protected and thereby man and animal can live a peaceful life. Different types of

tools and gadgets which we are using in our day to day life are the results of some individual researchers or the outcome of some research projects taken up by different research organisations.

In solving any environmental problem or any socio-economic problem the book knowledge is not always found adequate. To understand a problem or to realise the various aspects of a situation a person or the students should practically see and familiarise with the situation. The students can solve many problems by themselves in a better way if they can see and realise the problem rather than depending only on book knowledge. If a problem is clearly understood, it is not only becoming easy to give a better description or better analysis on the problem but can also give a realistic solution on the issue. Therefore, the students should be encouraged to take up either a geographical or a historical problem of an area for writing a project on it.

How to proceed while writing a project :

Selection of a topic is the first task. The following aspects have to be considered while selecting a topic

1. Whether a scientific study is possible on the topic or not?
2. The required data and information to study on the topic are available or not?
3. From the stage of selection of the topic, collection of data and analysis, and up to writing stage whether the required time will be sufficient or not?
4. Whether it becomes too costly for the students in collection of data and presentation of the project, and
5. The aims and objectives of the project is positive or not?

The aims and objectives of the project as well as its findings should be for the improvement of the environment or for betterment of the society. The topic of the project should not be selected in such a way that the outcome may negatively affect the natural environment or human society, or may encourage the anti-social or anti-development elements or may encourage anti-national people.

After selection of an appropriate topic, in the first chapter a note should be written introducing the problem so that if any reader goes through it he or she can get an overall idea what is going to do in the project, which geographical area or which historical period it covers. After this, in the same chapter the aims and objectives have to be written so that the readers can clearly understand which aspects specifically covered in the project.

In the same chapter the methodology of the study has to be written from which the readers can know about the sources of data and how analysis has been done and findings have been presented. With this, the significance of the study has to be written briefly so that the readers

can understand the importance of the project. In the last part of the first chapter, it has to be written briefly the aspects covered in different chapters.

In the second chapter, the students of geography will write a geographical account of the area covered in the study. It will cover the location of the study area, a description on physiography, climate, plants and animals, human population, agriculture, transportation, industry etc.

In this chapter the students of history will write in detail about the historical background of the area covered in the study, the past and present condition, changes with time, administration system etc.

In the third chapter, the relevant primary and secondary data, the statements of selected individuals and organisations etc. have to be presented after proper tabulation, systematic analysis and drawing maps, line graphs, histograms etc. so that the issues could be understood easily.

The fourth chapter will be an analytical chapter, where it has to be systematically written how and what purpose the data have been analysed and what findings have been found out.

In the fifth chapter of the project, the summary has to be written. The experience gathered from the project activities, own comments could also be written by the students. From this, the readers will be able to know the results and inner idea of the project. The chapter will be summed up by writing a summary note.

What is written from the first chapter to the fifth chapter is the main part of the project. Here, though only five chapters have been mentioned to write a project report, depending on the type of project the chapters could be made more or less in number. If feels necessary, end of the summary i.e. after the fifth chapter the appendices could be written. It may look odd if long tables, long statements, sample of questionnaires etc. presented in the main chapters of the project. Therefore, these should be placed in the appendices.

At last the sources of data, name of books, research works used in the project have to be written systematically mentioning the name of authors, publishers, page number etc. To make the project more meaningful, the chapter nine entitled 'Field Study' of first year book 'Swadesh Adhyayan' could be consulted particularly for preparation of questionnaire and presentation of data using maps and diagrams.

The persons or the organisations who have extended help in preparing the project by providing data and information should be duly acknowledged by putting a brief note, which could be placed after the content page of the project or at the end of the project report. This type of acknowledgement note is always considered a courtesy in academic exercises.



