CHAPTER III

GEOGRAPHICAL FRAMEWORK OF THE STUDY REGION

Physiography

Physiographically United Khasi and Jaintia Hills may be divided into three distinct Units (Fig.).

1. The Northern undulating Hills
2. The Central upland zone
3. The Southern Precipitous face of the upland.

The Northern Hills with accordant Summits (170-820m) gradually slope down towards the Brahmaputra Valley and form, therefore, the Submontane region of the Central Meghalaya., called the "Bhoi" country by the Khasi and Jaintia people. There are two prominent terraces indicating two peneplain surfaces, one from Khanapara to Jorabat and the other from Burnihat to Nongphoh. The Northern Hills are separated from the higher central upland by an important fault line. The alignment of the hills from Nongholi to Burnihat is from North East to South East. Above 490m most of the hillocks are conspicuous by their flat-top-character.

The Central portion running east and west consists of the plateau proper and covers more than one third of the central and eastern Meghalaya. Its outer limit is defined roughly by the 1,500m contour. "This zone consists mostly of rolling grassy downs, intersected with river valleys
and dotted all over by soft rounded hills with fresh soft turf which from a distance looks as soft as a Velvet."

The central upland zone contains remanents of seven Penep- laned surfaces, ranging in height from 1,500m to 2,083m. Thus preserving several traces of erosion cycles in this part alone. The Shillong Peak, the highest peak of the area, is located just South of Shillong proper, with an altitude of 1,961m, it is in fact a hill top rising above the gentle range of such hills which on the Northern side disappear into the Laithkor Plateau where the Laithkor Peak is another similar Hill top (Fig.3). Towards the West of Shillong, there is a hill range called Diengie which rises upto 1,823m.

The Southern face of the plateau locally known as "War" country consists of the steepest parts of the region. Constant erosion on the face of the scarps by winds and rain water have led to the formations of structural platforms. Notable among these platforms are the Cherrapunjee Platform, the contour height being 1,377m and Mawsynram Platform (1,305) and Langkyrdem Platform.

Drainage

The drainage pattern in the region represent a most spectacular feature revealing extraordinary straight courses of the rivers and streams, evidently along joints and faults.
The magnificent gorges scooped out by the rivers in the Southern Khasi and Jaintia Hills, are the result of massive headward erosion by antecedent streams.

The mountain ranges in United Khasi and Jaintia Hills run from West to East. These are not continuous, as they are being separated by deep gorges carved through millennia by wide and fast flowing rivers such as "Myngngot" and Umiam (Barapani). The mountain system stretching from West to East comprises what is perhaps the oldest geological formation in the North East India. In fact the Khasi and Jaintia Hills are much older geologically than the Himalaya and are a part of the Penunsular system. In comparison with other hills, mountain features that are more rounded, and the extent of the Central plateau is considerable. The presence of many rapids and water falls in the neighbourhood of Shillong indicates that this region has a youthful topography due to a recent uplift.

The Southern face of the plateau in its Northern fringe, to the South of the Shillong hills, has a typical granitic topography with rounded hills and shallow valleys composed of Mylliem granite. Further South, beyond Mylliem there is a vast structural platform on which stands Cherra-punjee. This part is built of gently dipping sandstones of cretaceous age, and over its edge is located the Magnificent Mawsmai Water Falls.
CLIMATIC GRAPH OF SHILLONG

FIG. 4
HYDROGRAPH OF SHILLONG

TEMPERATURE (°C)

RAINFALL (1 in. mm)

FIG. 41
MEAN ANNUAL HUMIDITY (in °/o)
YEARS
Fig. 42

ANNUAL RAINFALL IN SHILLONG

Fig. 42
MEAN ANNUAL RAINFALL

KHASI AND JAINTHA HILLS

RAINFALL IN MM:

- OVER 10000
- 8000-10000
- 6000-8000
- 4000-6000
- 1600-4000
- BELOW 1500

FIGS
Climate:

The climate of the Khasi and Jaintia Hills is conducive for development. It differs from Brahmaputra Valley mainly due to its elevation. At the foothills of the Southern Slopes and sub-mountain regions in the North and East, the climate is slightly humid and warm. The Shillong region in the Central upland zone experiences very cold nights in winter where the temperature goes down to about 1.7°C. The temperature seldom rises above 26°C in any part of the year. During deep winter (December-January) one usually experiences frost in the Shillong plateau although snowfall is unknown in the area. The most interesting climatic characteristic of this part is the very high rainfall with an average annual of 7,196mm which distinguishes this area climatically from other parts of the Meghalaya (Fig. 5). However, there is a great variation of rainfall within this region from South to North (Fig. ). This is primarily because the higher part i.e. the central upland zone having an East-West alignment renders a rain shadow effect on the areas lying to the North. Consequently the rainfall in Cherrapunjee which is located in the structural platform on the South is as high as 12,033mm, while Shillong being located only 50 Km to the North with a rain-shadow effect gets only 2,296mm. Mawsynram, a village situated on a similar plateau as the Cherra Plateau, about 16 Km. west of Cherrapunjee, records world's highest rainfall with 13,923mm
(based on the recent average). The highest rainfall in Cherrapunjee-Mawsynram region is due to the fact that South-West Monsoon laden with great amount of moisture from the Bay of Bengal blows over Bangladesh and is suddenly obstructed by the cliffs of the table land in the south with an average elevation above 1,200m. which just out like a Peninsula into the surrounding gorges about 600m. deep on either side. As a result, the monsoon having reached the heads of the gorges ascends vertically upwards and causes very heavy rainfall. Jowai which is located on the ridge of the Eastern section of the Central upland receives greater amount of rainfall than Shillong with 3,077mm (as it does not experience a rainshadow effect). This figure, however, is much below the average for Khasi and Jaintia Hills mainly due to the high rainfall figures in the Mawsynram-Cherrapunjee region. The rainfall decreases further North due to significant rainshadow effect and as such the Northern slopes experience 1,270mm to 2,032mm rainfall only. (Fig.4.1 & 4.2)

Soil:

There are two main types\(^8\) of soils found in United Khasi and Jaintia Hills - viz. (i) The Red Loam Soils or Hill Soils (ii) Old alluvium (Fig.6).

The Red Loam covers almost the entire region except a part of its Northern region where old Alluvium is found.
KHASI AND JAINTIA HILLS

CONIFEROUS PINE VEGETATION RHODODENDRON & CHAMPACA

ORCHIDACEAE

TEMPERATE FOREST & GRASSLANDS

SUB TROPICAL FOREST & GRASSLAND

TROPICAL FOREST

TEAK & SAL

ALTITUDINAL SUCCESSION OF VEGETATION

FIG. 7
The eastern region has Laterite Soils. These soils are loamy - varying sometimes between clayey to sandy loam and are rich in organic matter and nitrogen. These are usually acidic and are good in hill slopes and terraces. The soil is however, deficient in Phosphate and Potash.

Vegetation:

United Khasi and Jaintia Hills is endowed with rich natural vegetation. Most of the rainfall here is caused by Monsoon and rainfall is assured. Even then, it differs in intensity and density from region to region and from altitude to altitude. We find here a clear Bonalian of Vegetation. The following diagram illustrates (Fig.7 & 7.1)

Depending upon the rainfall and altitude the hills are clad with tropical and temperate vegetations, and are grouped into four classes:

1. The Terai or Plain Region
2. The lower hill region from 300m to 600m altitude.
3. The middle hill region from 600m to 1,200m altitude.
4. The Upper hill region from 1,200m to 1,500m altitude and above.

As variations in rainfall are considerable even in comparatively small areas, they cause noticeable changes in distribution plant and flora species.
In the Upper hill region from 1,500m and above especially in the central plateau of Khasi Hills, Conifereous Pine Vegetation are prominent. This extends further east to Jowai. On the slopes of Shillong Peak, especially the Northern slopes, a few species of Champaka and Rhododendrons exist along with other species. The trees in the upper reaches of Shillong Peak are stag-headed and covers with moss and lichens. The undergrowth is dense. In the middle hill slopes between 900m and 1,200m altitudes, temperate forests and grasslands are abound. Vegetation in these altitudes differ according to the variations in slopes that are found in different regions of the area. The random 'jhum' agriculture are often responsible for destruction of these rich forests and forest wealths. Many areas are now totally devoid of trees and scrubs. The presence of forest in an area is necessary for maintaining the ecological balance of the region. The Khasi flora is rich both in extent and number. There are upward of 2,000 flowering plants, within a radius of ten miles from Cherra. There are 150 species of ferns and a profusion of mosses, fungi and lichens. More than 250 species of orchids, 25 species of Balsams, 20 species of palms, 150 species of grass are available.

Rural and Urban Composition:

No statistical study of Urbanization is possible
unless adequate note is taken of the definition of an Urban area, or city or town, which varies from country to country and from one census year to another. To-day, urban studies forms a distinct branch of Geography. Ratzel (1903) defined, a city as a continuous and dense agglomeration of people and dwellings occupying a large area and laying at the focus of great trade route. An analysis of the definition explain that cities develop through trade and transport - which is also confirmed by Wagner (1923) who defines, cities as a concentration point of human commerce. Von Richthofen (1938) says that a town consists of an organised group in which people are concerned with commerce and industry as opposed to agricultural pursuits. But with the passage of time the definition of "Urban" has changed and the concept of Urban includes generally environmental considerations. As such the uniform definition of "Urban" can not be found. Another difficulty is that several discipline, apart from Geography have attempted to study urban problems. To-day, what is Urban? What is Rural? Are the burning questions which echo in the halls of international seminars and conferences. Every new seminar or conference only adds to the confusion. One wonders if it is possible to have a consensus between the demographer and sociologist; the geographer and the historian; and the town planner and the administrator, for the city is like a mirror and each person sees in it the image of his own discipline.
The definition of Urban in 1981 census was adopted from 1971. The definition of "Urban Area" as defined by census is as under:

1. All places with a municipality corporation or cantonment or notified town committee.

2. All other places which has - (a) minimum population of 5000 (b) at least 75% of its male working population is engaged in non-agricultural pursuits, (c) and has a density of population of at least 400 person per square km.

Thus by adopting the above definition of urban area, the rural and urban composition of population in the study region is represented in Table-1. It may be mentioned here that in 1971, out of 6 towns in Mewghalaya, 5 were in United Khasi and Jaintia Hills. The town includes as shown in Table-2.(Also Fig. 9)

Table 2

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shillong Municipality</td>
<td>87,659</td>
</tr>
<tr>
<td>Shillong Cantonment</td>
<td>4,730</td>
</tr>
<tr>
<td>Mawlai</td>
<td>14,260</td>
</tr>
<tr>
<td>Nongthymmai</td>
<td>16,103</td>
</tr>
<tr>
<td>Jowai</td>
<td>8,929</td>
</tr>
</tbody>
</table>


In 1981 census - 6 more new towns were added in Meghalaya state out of which 4 were added in United Khasi Jaintia
Hills. The towns include as shown in table-3.

Table 3

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Madantring</td>
<td>6,160</td>
</tr>
<tr>
<td>Pynthor Umkhrah</td>
<td>10,735</td>
</tr>
<tr>
<td>Cherrapunjee</td>
<td>6,104</td>
</tr>
<tr>
<td>Nongstoin</td>
<td>3,876</td>
</tr>
</tbody>
</table>


On strict application of definition of Urban area - the Nongstoin town does not qualify to be treated as town. The census authority had included it under the classification of town mainly because of the fact that Nongstoin happens to be district headquarter of West Khasi Hills. Generally all district Headquarters are considered as towns. In 1971 the Urban population was 1,47,170 in the state which stands 2,39,501 in 1981 census, giving an absolute increase of 92,331 over the decade, the percentage of growth being 67.24%.

Jowai town in Jaintia Hills has shown an increase of 3,979 persons over the decade from 8,929 in 1971 to 12,908 - the decadal growth rate being 44.56% compared to 44.09% in 1961-'71.

In East Khasi Hills, the Urban population shot up
from 1,22,752 in 1971 to 1,79,168 in 1981. The decadal variation is 45.95% compared to 19.88% of 1961-71. This increase is due to addition of 3 new towns, viz. Madanrting, Pynthor Umkhrah, Cherrapunjee. For the sake of comparability if we take the population of Shillong Municipality, Cantonment, Mawlai and Nongthymmai the increase is only 33,490 persons and decadal rate of growth is 27.28%. This analysis reflects that East Khasi region of Meghalaya is more advanced in respect of Urbanisation as compared to other parts of the study region. This is quite obvious - as the state capital, Central University, educational institution, Central Government offices, Defence Headquarters etc. are all located in this region.
REFERENCES


2. The Khasis and Jaintias call this plateau section Ri-Khasi and Ri-Jaintia respectively.


5. So called by the people of "Jaintia Hills and 'U mngot' by the Western Khasis".

6. Siman, I.M., "Meghalaya" - Publication Division, Govt. of India, New Delhi, 1980, p.3.


14. Quoted from Census of India 1981, Series-14, Meghalaya Provisional Population Table Meghalaya, Shillong 1981.