Chapter IX

PHYSICAL FEATURES

The ancestral home of the Tangkhuls is the Manipur East district which comprises an area of 4409 square kilometres. The region extends from 94°7' E to 94°45'E and 24°35'N to 25°41'N. It is bounded on the east by Burma, on the north by Nagaland, on the west by the Manipur North and Manipur Central districts and on the south by the Tengnoupal district.

The district is entirely hilly. The important ranges are the Mapithel, the Siroi, the Malain and the Khombisching. The Mapithel starts from the east of the central valley running upto the extreme northeast beyond Jasamdi village. This range is crossed by the Lanier (Laniya) river at 25°20'N and 94°20'E. The Mapithel forms the water parting of this region. Ukhrul (1854 m) the administrative headquarters of this region is located on this range. The next range east of the Mapithel is the Siroi range starting from the south of Makokchhang and extending upto the Chinga river on the north. The Siroi peak (2568 m) is the home of the world famous species of lily known as Siroi lily. The third important range viz. the Malain range runs along the border between Manipur and Burma. Some of the highest points along this range are Khanyangbung (2333 m) and Kachabung (2498 m). Another
important range known as Khambiching range is located in the south-central region of this area, on the eastern side of the Maghungr river. This range runs from south to north starting from Sarathen village up to Shangsak, south of Ukhrul. On this range is located Phungyar (2073 m), the sub-dvisional headquarters. The Shangsak-Phungyar road runs on this range.

Geology

Three main groups of rock can be found in Manipur East district. These are: the limestones belonging to Cretaceous age (90 million years), the Disang group of rocks consisting of shale, sandstone, siltstone etc., and arenaceous rocks of the Tipam group. An inlier of the elder axial formation (cretaceous) consisting of sandstone, shale and limestone is exposed around Ukhrul. Limestone occurs in a narrow belt near Ukhrul where it attains a maximum thickness of 80 metres. Various types of marine fossils such as Lamellibranchia and Castropoda of cretaceous rocks are found in Somdal village (1707 m) which lies about 18 kms to the west of Ukhrul. Then dykalike bands of highly sheared and altered serpentinite are seen within the axials. The prominent thick bed of conglomerate in the northern part of Ukhrul is
probably equivalent to Chini conglomerate forming the base of the Disang in the Naga Hills. Fossil remains of marine fauna that flourished 60 million years ago occur in the Disang group of rocks. An ultramafic suite of rocks was subsequently emplaced within the Disang. These are hard, massive, green rocks consisting of heavier ferromagnesian minerals and a host of oxide are particularly magnetite and chromite containing cobalt and nickel in various proportions. These ultramafic rocks are confined to the eastern border of the district in the form of a long and narrow belt extending from Chalow, Munghar, Sirol, Maekel to the eastern side of Chassad up to Burma.

The Tipam group of rocks represented by sandstones, shale and clay contain fossil imprints of plants that grew abundantly about 17 million years ago. The rock groups cover the north Kharasem, west Chingjaroi, east Heiyang and south Marem. The occurrence of a narrow belt of the Surrials in the eastern part of Manipur valley flanked on its east by a line of salt springs appears to indicate a thrust fault by which the younger barrails have been down faulted. This group extended from Nagaland towards Semra tract along the eastern
border of Manipur up to Burma and some area along the edge of Manipur valley. The positions of the axial in the Ukhrul region surrounded on all sides by the Disang shale also indicate some complications in the structural dispositions of the rocks. All these rocks were subjected to organic movements at least thrice in their geological history resulting in their emergence above the sea as land mass which was subsequently reshaped giving them the present geomorphological deposition.

**Minerals**

The Manipur East district appears to be rich in mineral resources, specially in limestone, asbestos, evaporite, nickel and mineral water specially of the brine spring. Unfortunately, a thorough geological and minerological survey of this region had not been done in the past due to general lack of communication facilities, poor accessibility and other environmental hazards. During recent years, however, systematic geological study of the district has been undertaken and a number of mineral sites have been located. Still informations about the quantity, quality and varieties of these minerals are far from satisfactory.
A substantial deposit of limestone of good quality having the feasibility for establishing a small cement plant in Manipur, has been located near Ukhrul. Limestone is also located at a number of other areas, viz. Hundung, Lembui, Meta and Khangoi. At T'Bundung, the limestone is found exposed along the Tuyunghbi river bed. In Ukhrul area, limestone occurs in two bands close to east of Ukhrul. A reserve of 5.79 million tonnes has been discovered by drilling to a depth of 105 metres in this area. The limestone contains very low magnesia (less than 1 per cent) and is suitable for manufacture of cement. Besides, a reserve of 0.26 million tonnes is estimated at Khangoi about 18 km south-east of Ukhrul and 1.88 million tonnes at Bandung. The total estimated deposit is 7.93 million tonnes which is sufficient enough to sustain a cement plant of modest capacity of 300 tonnes a day for about 45 years. Near Kasem and at Sokpow, the deposits of limestone are estimated at 0.08 and 0.02 million tonnes respectively.

*These limestones show generally CaO above 45%; 8-15% insolubles, below 0.5% MgO, and less than 5% R2O3. The Lembui limestone is milky white high grade limestone containing 50% CaO, less than 1% MgO, below 3% R2O3, and less than 5% insolubles.*
Chromites:

Two small deposits of chromite have been located by the Geological Survey of India at Sirol peak containing partly metallurgical grade ore that is of a very limited occurrence in the country as a whole. The occurrences are important indications of possibility of locating larger quantity of deposit in the future.

Evaporite

The evaporite includes a number of mineral salts which are used in fertilizer, chemical, drug and building industries. Minor occurrences of magnesium and other salts in Kangai area of Ukhrul North Subdivision have also been located recently.

Asbestos

Only minor occurrences of this useful mineral have so far been known from the ultramafic suite of rocks occurring in the eastern part of the district.

Mineral Water

A number of salt springs can be found at Chingai, Challao, Namrei, Luchai-Khullen, Marangphung & Kharasam. The local people make salt cakes by evaporating the brine water. Marangphung is famous for the indigenous salt cakes. The production of salt is approximately 480 kg per day.
**Soil**

The hilly region of the Tangkhuls is dominated by red sandy loamy soil. This soil is deficient of nitrogen in general. It contains a fair amount of phospherous, potassium and other plant food ingredients. Such soils are generally poor in plant nutrients, low in water-holding capacity and possess excessive internal drainage. When Soil Testing Unit of the Department of Agriculture of the state government analysed samples from the Ukhrul and Phungyar Farms it was found that both the soils were highly loamy. The characteristic of this soil occupies intermediate position in respect of content of plant nutrient, water holding capacity and drainage. The average of two samples of Ukhrul Farm is found to be Ph-6.0 Nitrogen % - 0.163, Phosphate (P$_2$O$_5$) % - 0.060 and Potash (K$_2$O) % - 0.0445. Again the average of two samples of Phungyar Farm is found to be Ph-5.85 Nitrogen % - 0.1315, Phosphate (P$_2$O$_5$) % - 0.0135 and Potash (K$_2$O) % - 0.051.
Drainage

The main rivers which drain this region are the Iril and the Thoubal - both originating from the northern part of this region. These two rivers flow through the valley of Manipur. In the cold season, they are shallow and fordable at places. The water is crystal clear streaming at the bottom of deep gorges. During the monsoon, the current is extremely fast rolling down many big boulders and rocks. Generally the water level rises immediately after rainfall. The other drainages are the Chamon, the Tuyungbi, the Maklam, the Khunoukong and the Sanalok. These rivers are tributaries of the Yu river in Burma.

The Chamon originates from Mts Sihairon near Siroi peak and runs northward near Wanhang village on the north-east corner of this region. This river does not flow in the plains. During rainy season the current is extremely swift and during the winter, the river bed is almost dry.

The river Tuyungbi originates from near Yungphu village east of Litan village and comes down southward near Asangkhullen. It then turns eastward upto Khangle village from where it again moves southward. But at
Fig. 3
Phunghong village it runs eastward direction. The river goes through deep gorges and it is risky to cross it during the rainy days.

The Maklong river has its source near Datum village and it runs southward and joins the Tuyungbi river at Khonglo village. The Laniya and the Chinga are the other rivers worth mentioning.
TEMPERATURE VARIATION IN UKHRUL
1969-79

TEMPERATURE VARIATION IN UKHRUL
1969-79
Climate

The dominant factors that control the climate of this region are (a) the orography, (b) the alternating pressure cells of north-west India and the Bay of Bengal, (c) the predominant maritime tropical air mass, (d) the roving periodic western disturbances and (e) local mountain and valley winds. Besides these five important controls, the subtropical location, local depressions and forests play important roles in shaping the variable weather conditions.

The climate of this area may be divided into four primary seasons, viz. (a) Winter, (b) Pre-monsoon, (c) Monsoon and (d) Retreating monsoon.

Winter

The period of December, January and February comprises the winter season. The coldest month is January. The lowest mean temperature during the period from 1969 to 1979 is 11.2°C in the said month. On a further yearwise observation, it has been found that in the year 1974, the lowest temperature with 0.4°C was recorded in the month of February. Cool and gentle northerly and north-easterly winds blow during January and February. The cool, fair and pleasant weather is
interrupted casually by driving showers, associated with western wind which lowers the temperature and brings cold spell. Heavy mist covers the surface which clears only in the late morning. Even ice sheets are formed in some marshy areas. The average annual rainfall during this season is 45.29 mm.

**Pre-monsoon**

This is a transitional season (March and April) between cold winter and wet monsoon. Casual showers occur in association with western wind disturbances. However, most of the time the weather during this season remains rainless and windy. The season is one of the most pleasant one and it is during this period that the people prepare their fields by felling down trees and burning them. The special characteristics of this season is that in the afternoon very often the wind blows fast. The average annual rainfall during this season is 140.50 mm.

**Monsoon**

The monsoon occupies a period longer than any of the seasons. It begins during the month of May and continues upto September. During the period from 1969 to 1979 the season recorded the hottest degree (42.9°C) in September 1979. The average highest temperature during the period from 1969 to 1979 is 21.5°C. The
HYETOGRAPH FOR UKHRUL
1969-79

Fig. 5
later part of the season is followed by incessant and heavy rains. The rainfall is heaviest during the months of June and July and thinning gradually thereafter. The rainfall is mostly associated with storms. Ukhrul receives 1197.75 mm of rainfall during this season which accounts for about 76.33 per cent of the total annual rainfall it receives. This is the busiest period for agricultural operations in this area.

**Retreating Monsoon**

Beginning with October and culminating in November, this season of a very short period is marked with decreasing rainfall and falling daily temperature. Fair and sunny days prevail during the later part of the season. Harvesting of food crops begins during this season which is considered to be one of the most pleasant seasons.

Figures relating to temperature and rainfall in respect of these seasons have been shown in the statement below.
### Average Rainfall and Temperature

**Uphrul Station (1969-1979)**

<table>
<thead>
<tr>
<th>Rainfall <em>in mm.</em></th>
<th>J</th>
<th>F</th>
<th>M</th>
<th>A</th>
<th>N</th>
<th>J</th>
<th>J</th>
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<tr>
<td></td>
<td>13.31</td>
<td>22.33</td>
<td>56.13</td>
<td>39.32</td>
<td>121.29</td>
<td>316.90</td>
<td>330.31</td>
<td>260.05</td>
<td>169.21</td>
<td>111.34</td>
<td>68.93</td>
<td>9.55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temp. <em>min.</em> in °C</th>
<th>4.9</th>
<th>6.7</th>
<th>9.0</th>
<th>12.4</th>
<th>14.7</th>
<th>15.3</th>
<th>15.4</th>
<th>16.0</th>
<th>15.6</th>
<th>13.1</th>
<th>10.1</th>
<th>6.2</th>
</tr>
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</table>

| Temp. *max.* in °C | 17.5 | 17.9 | 21.2 | 25.3 | 24.9 | 25.4 | 25.0 | 25.5 | 26.5 | 24.7 | 23.3 | 20.2 |
Vegetation

This region has a luxuriant growth of trees flowering and fruiting at different periods of the year. There is no distinct seasonal fall of leaves. Broad-leaved evergreens characterize the landscape. Forests are scattered all over the hills - pine (Pinus Khasya) oak (Quercus) and walnut (Juglans regia) trees growing side by side in large numbers. Probably owing to biotic interference, climbers, epiphytes and orchids are common.

An area of about 1380 square kilometres or 85% of the region is under forest. The pinewood forests lying at altitudes varying from 1219 metres to 2438 metres cover about 250 square kilometres. The rich cellulosic raw material resources of this area are derived from soft wood. Among the variable minor forest products mention may be made of cinnamon (Cinnamomum zeylanicum), agar, cane (Calamus) etc. Bamboos including the giant type are also found at some places. Uningthou (Phoche hensiana) is an important timber which is highly in demand for making furniture and other construction works. Wild tea grows in the eastern part of this region. Siroi lily which has been acknowledged universally as a rare plant species grows in this region.
The finest specimen of ash, which it is principally used as shafts for their spears by the local people is found. Wild apricot, cherry, plum, apple and pear are common and willow is found in many places. Toon wood (Cedrela toon), silk cotton tree (Bombax malabaricum) and emblic myrobalam (Emblica officinalis) are widely available in this region.

Wild animals

Since the area, that is the Manipur East district, is predominantly hilly having thick and dense forests, it is but natural to find varieties of wild animals in this area. About a decade ago, there were cases where tigers lifted domestic animals mostly at night. Nowadays such cases are very rare. Leopard is found in the distant eastern part of the region. Strangely enough no elephant appears to have been noticed in this region. The details of other common wild animals found in the region are furnished below:

Bear: There are two varieties - small and large. The larger variety is fierce and dangerous. Both are black and are found mostly in the northern part of the region.

Sambur: (Rusa aristotelis): This species which is said to be rare, is found in small numbers only.
Deer: Three varieties are found: reindeer, barking deer (*cervulus muntjac*) and small red deer. The barking deer is found in plenty.

Wild pig: With upward pointing long tusks, this animal is big in size and dangerous.

Wild cat: There are several varieties found in this region.

Monkey: *Hoolook* is found in plenty. *Langoor* is said to inhabit the northern part of this region while the common brown monkey which hides its face from onlookers is also found in this region.

Flying lemur (*galeopithecus volans*): This species appears to be small in number.

Besides the above, there are game birds like wild fowl (*gallus ferrugineus*), pheasants including the horned variety (*tragopan brythii*) and wood cock.

*Raticulus* and *Morulus* varieties of python are found in the dense jungle and swamps. There are the venomous green gill snake, cobra and other small harmless non-venemous snakes also. Two types of honeybees are found in this region and these are locally known as "haying khoi" and "kheibi ningthou". Though bee-keeping has not been practised widely in this region, hunting for the bee-hives is a favourite pastime of the people.
Road communication

The expansion in the field of road communication in the state is of a recent origin specially after independence. Since Imphal is the urbe prima of the state and also its capital, development of road communication in different parts of the state is based on maintaining a linkage with this capital city. Since the central valley of Manipur comprises about one-tenth of the total area of the state and the major portion of the state being hilly, the expansion and maintenance of road communication have been posing not only an expensive but also a hard task for the authorities concerned. In spite of the difficult terrains of the region, the network of road communication available in the Manipur East district which is the traditional home of the Tangkhuls is commendable, if not satisfactory.

The general characteristics of road communication in the region follow the course of the mountain ranges that run from north to south. Most of the roads do not remain in good condition throughout the year. Landslides and monsoon have done more harm than
good to the roads, and in some cases, the road communication is paralyzed for vehicular traffic for days during the rainy season. The following are the main roads of the region.

(i) **Imphal Ukhrul Road:** With a length of 82 kilometres, this road is the life line of the people of this region. Almost all the essential commodities required to be brought from Imphal come through this road. This is an all-weather motorable black topped road improved in 1956 by changing courses in search of better alignments. However, the width of the road is only 4 metres which is narrow enough for only two big vehicles to cross at a time. Hence for passenger-buses, the road is opened for a one-way traffic only.

(ii) **Mahadev-Tolloi Road:** The total length of this road is 58 kilometres. Starting from the 29th km. of Imphal-Ukhrul road, it runs up to Tolloi village. This is a kutcha road constructed in 1958 and taken over by the state Public Works Department in 1965 for its maintenance. The entire length of the road is jeepable and in due course of time the road will be open to heavy vehicular traffic as the consolidation and widening of the road are in progress. After the completion of this road,
it will be used for heavy vehicles to serve Tolloi, Somdal, Phadang, Tuinem, Sirarakhong and Molnom villages, to mention a few. Many other neighbouring villages on the northern side of this region will get facilities to be linked with Imphal. Since the northern side of the region is rich in forest resources, this road will help to transport for products like potato, lemon, soyabin etc., to Imphal.

(iii) Sancsak-Chassad-Humine Road: With a total length of 99 kilometres, this road starts from the 45 km. of Imphal-JTkhru road and runs up to Humine village situated near the Indo-Myanmar border. This road was made jeepable during the World War II and unfortunately since then there has been no proper maintenance of this road for quite a long time. Only recently the widening of the road to 6 metres has been carried out, and in spite of the lack of proper drainage and curvets, one bus is plying on this road three times a week.

(iv) Sancsak-Phungyar Road: With the opening of Phungyar as the subdivisional headquarters of Phungyar has become essential. The construction of a motorable road was started in 1962. Though the condition of the road is far from satisfactory, one bus is plying three times a week since 1974 though the
service is often interrupted during the rainy days. For want of road communication, the Phungyar region has remained one of the most backward regions of the Manipur East district.

(v) Chingmeikhullen-Tolloi-Ukhrul Road: Starting from Chingmeikhullen on Imphal-Ukhrul Road it runs upto Kharasom village. The total length of the road is 71 kms. Till now this road is a fair-weather road and during the monsoon and heavy rainy days, vehicular traffic is often suspended. However, this road is an important life line as it provides a link between Manipur East district and its western neighbour Manipur North district. Other essential food crops and forest products of the northern parts of this region are transported through this road to Ukhrul and Imphal.

(vi) Tengnoupal-Sangsak Road: This is an important road in Kasom Khullen subdivision which lies in the southernmost portion of the district. Since this subdivision borders on Tengnoupal subdivision of the state, the road serves as an important link between the two subdivisions. Till now the road is a kutcha road which is suitable for small vehicles during the dry seasons.
(vii) Chassad-Maokot Road: This is one of the youngest roads in the district. Completed during 1969-70, the road is significant from the strategic point of view as it runs north-south near Indo-Burma border.