CHAPTER II

GEOMORPHOLOGY

INTRODUCTION:

The physiographic, climatic and other geographic aspects are presented in this chapter for the proper understanding of the nature of the terrain under study.

PHYSIOGRAPHY:

The area under investigation has been subjected to prolonged subaerial denudation. Therefore, its physiographic features are simple in detail. The terrain around Pakkanadu can be classified physiographically into three divisions. They are western, the central and the eastern. Roughly, Long. 77° 48' 20" E seperates the western from the central division and Long. 77°51'40" can be considered as the boundary between the central uplands and the eastern plains(Fig. 8). In order to facilitate description each division is sub divided into northern, central and southern zones. Lat. 11° 43' N can be regarded as the line seperating the northern from the central zone and Lat. 11° 41' 30" N as the boundary between the central and southern zones.

THE WESTERN DIVISION:

The Western division exhibits a rough terrain and in the northern zone of the western division, Settamalai (42479) exhibits the tallest peak. (Plate I, Fig.1). The ridges mostly trend in NNE-SSW direction. The upland is comprised of ridges characterized by several peaks. The most important among
Fig. 6.

PHYSIOGRAPHIC DIVISIONS OF THE STUDY AREA

NORTHERN ZONE

CENTRAL ZONE

SOUTHERN ZONE

Mulakkadu

Tanavadiyur

Sanarpatti

Vanniyal

Pakkanadu R.F.

Kupparatty

Kupparatty

Avadattur

Tamparappattu

Kukkadu

Savuniyur

Ramakavandanur

Karanapatti

Central DIVISION

EASTERN DIVISION

NORTHERN DIVISION

CENTRAL DIVISION

SOUTHERN DIVISION

VANAPATTU

Pakkanadu

Kupparatty

Avadattur

Tamparappattu

Kukkadu

Savuniyur

Ramakavandanur

Karanapatti

Central DIVISION

EASTERN DIVISION

NORTHERN DIVISION

CENTRAL DIVISION

SOUTHERN DIVISION

VANAPATTU

Pakkanadu

Kupparatty

Avadattur

Tamparappattu

Kukkadu

Savuniyur

Ramakavandanur

Karanapatti

Central DIVISION

EASTERN DIVISION

NORTHERN DIVISION

CENTRAL DIVISION

SOUTHERN DIVISION

VANAPATTU

Pakkanadu

Kupparatty

Avadattur

Tamparappattu

Kukkadu

Savuniyur

Ramakavandanur

Karanapatti

Central DIVISION

EASTERN DIVISION

NORTHERN DIVISION
The slopes of the ridges are dissected by wet weather rills and are covered with vegetation. The Cauvery river has carved out a longitude valley and the shear zone represented by two faults. (Refer Fig.6).

Compared to the northern zone, central and southern zones exhibit lower peaks and the Cauvery river flows from north to south along the fault zone.

CENTRAL DIVISION:

The central division is mostly comprised of Pakkanadu reserve forest, Vedakali Muniappan pallam in the foothills of Settamalai (42479). The slopes of the ridges are cut deeply by wet weather rills and are covered by thick vegetation. (Plate.1, Fig.2).

The northern zone of central division exhibit higher peaks (41697 and 41599) when compared to central and southern zones. Grady's N 45° E main fault (Tirupattur-Koratti-Pakkanadu fault) dissects the central zone of the central division.

EASTERN DIVISION:

The most prominent peak of eastern division is Kondamalai (42012). The ridges mostly trend in NNE-SSW direction. The upland is comprised of ridges characterized by several peaks. The most important among them are (41821), Kondamalai (42022) and (41044). The northern zone is mostly a rugged terrain and mostly
comprised of pyroxenites. The southern zone of the eastern division is mostly a plain (Plate I, Fig. 3).

**WEATHERING:**

Owing to prolonged subtropical weathering the hills are weathered up to 3 feet. The uplands are mostly comprised of syenites owing to their greater resistance to weathering. The other rock types that have survived weathering are the migmatites and dunites. The pyroxenites display in places chemical weathering. The ultimate product of weathering of rock types of the area under investigation is red soil.

**CLIMATE:**

The climate of the study area has the traits of As' of Koppen's system. As it is dry the climate is healthy.

**RAINFALL:**

The annual rainfall is about 85 cm and the highest average number of rainy days occur in the months of October and November.

**HUMIDITY:**

Usually, humidity is high in the months of October and November and low in the months of March and April.

**TEMPERATURE:**

The highest temperature recorded is 106°F and the lowest is 90°F. On the top of uplands the temperature is very comforting. During summer the plain portion is hot but not unbearable. In winter it is cold. During the rest of the year the temperature is moderate.
P L A T E. I.

F i g u r e s:

1. Western division showing Settamalai.

2. Central division showing thick vegetation and Kondomalai, East of Pakkanadu.

3. Eastern division showing the plain region.
DRAINAGE:

The important river draining the area around Pakkanadu is Cauvery river, Perumpallam stream and many rills. The Cauvery river course occupies NNE-SSW fault zone.

The drainage pattern around Pakkanadu comprises two minor basins.

1. The Sarabanga Minor Basin.
2. The Cauvery minor basin.

The Sarabanga minor basin consists of Jalagandapuram sub basin (Fig. 8). The Jalagandapuram sub basin has a total area of 1,815 acres. Out of which 1,400 acres comes under non ayacut category and 415 acres under ayacut category. About 100 wells are located in the above sub-basin.

The Cauvery minor basin consists of Mettur sub basin (Fig.7). The Mettur sub basin has a total area of 5,902 acres. 1,718 acres come under Non-ayacut area and 4,184 acres come under ayacut area.

There are five large tanks and several small tanks in the area under investigation.

VEGETATION:

In general, Mesophytes and Xerophytes represent the flora of the area under investigation. This can be ascribed to low average rainfall, intense heat during the greater part of the
Fig. 7.
SKETCH MAP SHOWING THE DRAINAGE PATTERN OF PAKKANADU VILLAGE

- Mulakkadu
- Tanavadiyur
- Pakkanadu
- Settamalai
- Vanavasi R.F.
- Pakkanadu R.F.
- Tanagattur
- Kudumianott
- Adaiyur

Scale
1"=1 Mile
year, its geographical position between latitude 11° 40' and 11° 45' N and the nature of the soil. The jungle on the plains is comprised of perennial cactus shrubs that grows to a height of 7 feet.

Near Pakkanadu village, a gentle slope prevails which is used for growing paddy, groundnut, coconut and rarely sugarcane.

**HUMAN GEOGRAPHY:**

The entire area is thinly populated. The main inhabitants are the indigenous Hindu Dravidians whose main occupation is agriculture.

The important villages of the area under investigation are

<table>
<thead>
<tr>
<th>Village</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pakkanadu</td>
<td>11° 41' 55&quot;</td>
<td>77° 49' 50&quot;</td>
</tr>
<tr>
<td>Panangattur</td>
<td>11° 42'</td>
<td>77° 49'</td>
</tr>
<tr>
<td>Aduvapatti</td>
<td>11° 43'</td>
<td>77° 49' 30&quot;</td>
</tr>
<tr>
<td>Mullakkadu</td>
<td>11° 44' 30&quot;</td>
<td>77° 50'</td>
</tr>
<tr>
<td>Sanarpatty</td>
<td>11° 44'</td>
<td>77° 52'</td>
</tr>
<tr>
<td>Jalakandapuram</td>
<td>11° 42' 15&quot;</td>
<td>77° 52' 30&quot;</td>
</tr>
<tr>
<td>Ramakavandanur</td>
<td>11° 41'</td>
<td>77° 51'</td>
</tr>
<tr>
<td>Kanniyanpattu</td>
<td>11° 41' 30&quot;</td>
<td>77° 49'</td>
</tr>
<tr>
<td>Adaiyur</td>
<td>11° 41' 20&quot;</td>
<td>77° 50'</td>
</tr>
</tbody>
</table>

**ACCESSIBILITY:**

The eastern plains around Pakkanadu (refer Fig. 6) are served by fairly well developed roads connecting north and
south of the area under investigation. Jalakandapuram can be reached by bus. Pakkanadu village can be reached by bus. The area under investigation for carbonatite can be reached by cart or by jeep.

COMMUNICATION:

Jalakandapuram and Pakkanadu have postal facility.

WATER SUPPLY:

Streams and dug wells are the main source of water supply for irrigation and domestic consumption. The water table around Pakkanadu occurs at depths ranging from 20 to 30 metres.