CHAPTER III
DESCRIPTION OF SITES

Location and physiography:

The area under the present investigation is a continuation of the 'Shillong plateau', in the District Jaintia Hills, Meghalaya. It includes five villages, viz., Longnoh, Mustem, Muplang, Pynthorlangtein and Demthing surrounding Jowai Town — the headquarter of the District. It is defined by the latitudes E-25° 15' 3" ; 25° 30' and longitudes N 92° 0' 2". It lies in the South Western part of Jowai. The village Longnoh, about 7 kms. from Jowai marked its southern boundary followed towards the western side by the other four villages. All these villages are at a distance of 5 to 8 kms. from Jowai.

The area exhibits the peculiar topographical features giving rise to a rugged topography with innumerable hillocks of variable altitudes, some steep gorges and deep, narrow and elongated valleys, through which are flowing the streams of bigger and smaller magnitudes. The whole area is however a hilly place and these hills take the form of tumbled ranges which run for the most part north and south of the area. Seen from the air, the plateaus seem to consist of small hillocks closely knitted together. This belt consists mostly of rolling grassy downs, intersected with rivers and streams and dotted all over with soft rounded hills covered with fresh soft turf which from a distance look as soft as velvet. There are no big peaks, rocks or ridges and view from above it exhibits an open
RAINFALL
MEAN MAX. TEMPERATURE
MEAN MIN. TEMPERATURE.

% RELATIVE HUMIDITY

RAINFALL (mm)

MEAN NUMBER OF RAINY DAYS

TEMPERATURE (°C)

OMBROTHERMIC DIAGRAM

FIG. 4
country. On every small valley—springs of crystal clear water emanate and lower down these springs turns into brooks and rivulets which hum sweetly during fair weather. Every level or semi-level patch of land in this plateau has been converted into beautiful terraces for cultivation of paddy in which the small streams, which spring up from the valley serve as sources for irrigation. Nowadays, even the higher slopes are being terraced to grow more food. Some of these valleys are very big and have become the granaries of these hills. Such big valleys range from 100 to 3000 acres. In the area under study there is only one big valley of about 200 acres only at Pynthorlangtein from which the name of the place was derived (Pynthor means plain). But in most cases only small patches of paddy field in between the hillocks presented in terrace form were observed.

Climate:

The climate of the surveyed area is mild, neither too hot in summer because of heavy rain nor too cold in winter, eventhough there is ground frost in the months of December to February. A very heavy rainfall was always experienced on this area, with an annual average rainfall of 4108.24 mm. The ombrothermic diagram shown in Fig. 4 explains the five rainy months (May to September/October). There is a complete absence of rainfall in the months of November to January(Table II Appendix). On the month of February/March the rainfall starts and with the advent of rain, the people starts potato cultivation. Beginning from April, there is a sharp increase in rainfall till it reached the highest peak in July and it comes down as it approaches the
winter months. Maximum number of rainy days are also observed on the mid-five months of the year (Table IV Appendix).

The climate is dry in the month of March due to low rainfall and strong southerly wind lashes the locality. From the month of March the temperature shows an ascending trend and it is interesting to note that it reaches the zenith in the month of May (25°C). Thereafter it declines due to the increase in the magnitude of rainfall. The temperature drops down to 18.20°C in the month of January due to the cold spell of the winter season. During the four wettest months of the year - June to September - the temperature records a slight variation of 23.7°C to 23.8°C respectively (Table I Appendix).

Rainfall seems to have a noticeable offset on the humidity of the place. The five months - May to September - which shows heavy rainfall in the year remains unabated and maintains maximum humidity of 85.66% to 95%. While the winter months show a sharp decrease in the humidity, going down to 65.66% in the month of March (Table III Appendix).

The Soils:

Brenchley (1915) and Thursten (1951a, 1953) observed a close correlation between the crop-weed growth and soil types. Das and Bhattacharjee (1970) observed that the distribution pattern of weeds was highly influenced by the adaphoic factors, vis., soil pH and mineral matters. Due to heavy rainfall the old alluvium and laterite soils are constantly being washed away by rains causing acidic conditions of the soil of this
area. Also the properties of the soil may vary from place to place and in turn likely to change the growth and distribution of weed flora. Depending on the topography the soils of this District may be classified as follows: The soils of the central and northern-region, which includes the surveyed area, are loamy. This is because erosion is comparatively less in these regions (Pakynstein 1965). The physico-chemical properties of the soil of the cultivated crops have been studied in order to determine the effect of these soil factors on weed population.

Biotic influence:

The weeds in cultivated fields is subjected to tyranny inflicted by man. One of the main biotic factors in this region is 'Jhuming' (shifting cultivation) on the steep deforested slopes where the forests are usually cleared and burnt, followed by raising crops for two or three years. Thereafter the land is again reverted to forest for five to ten years and the cycle is repeated. The crop cultivated in this case is mainly potato. Various cultural practices, vis., ploughing, manuring, irrigation etc. attribute to the growth and increase of weed population and at the same time check the growth of weeds. Due to a special power of adaptability, however, the weeds can rapidly grow and establish themselves on any far-away place with varied soil and environmental conditions. But it is in the regular disturbance of man for his cultivation which influence the growth of these obnoxious plants in the cultivated fields.
Another biotic factor is grazing by animals, thereby exposing the soil to conditions which facilitates erosion.

Cultivated lands especially paddy fields, maize fields, potato fields and sweet potato fields are infested by weeds under the influence of various factors. Various authors (Brenchley, 1940; Brenchley and Warington, 1933, 1936, 1945; Warington, 1958; Hitchings, 1960) attributes this weed infestation in agricultural land as due to adoption of different methods of cultivation, periodic fallowing, manuring and crop rotation.