CHAPTER - I

INTRODUCTION
1.1 Background Information

Evolution can be viewed as changes in the morphology of organisms through time (Buettner-Janusch, J 1969). Evolutionarily, the important change is in the frequency of alleles and genotypes, not phenotypes. These changes may take place in different degrees depending upon many evolutionary forces over time. If the changes occur in small-scale over the span of few generations, then the change is labelled as microevolution. And if the change is effected on a large perspective in which emergence of new species and higher taxonomic categories are the result, then the term macroevolution is labelled for such an evolutionary phenomenon. Thus what is different from each other is in the magnitude of change and involvement of time factor. Dobzhansky (1972) has clearly said, "the words 'microevolution and macroevolution' are relative terms, and have only descriptive meaning; they imply no difference in the underlying causal agencies". He further says, "cumulative effect of microevolution through ages lead to macroevolution. An effective breeding population during a certain period of time at a specific level should be taken into consideration to study microevolution". Thus, microevolution encompasses a series of specific and minute genetic changes, some clearly adaptive, others apparently random, and still others that are even mal-adaptive in effect.
According to Lasker and Tyzzer (1981), microevolution refers to those genetic changes occurring in human populations which are generally non-permanent fluctuating variations.

Gene frequencies in any human population experience change from generation to generation and are caused by many factors. Therefore, human evolution is an ongoing process. The factors which cause such an ongoing process are mutation, natural selection, gene flow, genetic drift, recombination etc. These factors act in different degree and ways to disturb the Hardy-Weinberg Equilibrium thereby causing microevolution. In order to understand the matrix of these evolutionary forces, investigation like the ethnographic account of the people, their mating patterns, environmental factors, genetic markers, anthropometric and anthroposcopic parameters etc. should be carried out. In other word, anthropogenetical study will throw light on the microevolutionary trend of the population in question.

From an evolutionary perspective, mutation is the only way by which totally new variation can be produced. However, because of the fact that mutation occurs so infrequently at any particular locus (estimated at about one per ten thousand gametes per generation), it would rarely have any significant effect on allele frequencies. (Jurmain, R. et al, 1998).

Gene flow refers to the exchange of genes which can occur only if the migrants interbreed. How gene flow influences micro-evolutionary change in modern human populations is seen in the population history of African-Americans over the last three centuries (Jurmain, R. et al, 1998).
By measuring allele frequencies for specific genetic loci, the amount of gene flow of non-African American gene pool can be estimated (Jurmain, R. et al, 1998). Genetic drift is purely a statistical phenomenon and is a property of the size of a population, which is effective only when the size is very small. The fluctuation of gene frequency of certain traits is not due to any adaptive value of the genes (Barua, 2002). However, the size of the population as well as selection determined the frequency of the gene (Hulse, 1971). No doubt, the phenomenon is produced only when a population itself is so small that chance becomes a significant factor in determining the frequency of the contrasting alleles at one locus or another. A study of Martin (1970) of the Hutterites, a religious group which has been endogamous for many generations illustrates the way in which the founder effect (an aspect of genetic drift) undoubtedly worked again and again during the course of human evolution. Ninety-one founders have left almost ten thousand living descendants, who now live in more than one hundred separate communities.

In course of micro evolutionary study, one should not ignore the study of culture. The profound effect of culture on human genetics is indicated by the African populations in which the death from sickle-cell anaemia of all or almost all person having the genotype HbS HbS has been balanced by the death from malaria of a great many persons having the genotype HbA HbA (Hulse, 1971). The practice of farming by clearing jungles which are the breeding grounds of mosquitoes, has affected the gene frequency of Hemoglobin (Livingstone, 1961). The interaction of human cultural environments and changes in lactose tolerance (ability to digest fresh milk; caused by the production of lactase) among human populations is another example of bio-cultural evolution. (Jurmain, R. et al, 1998).
Kinship as a trait of social structure also tends to interfere with the random mating thereby disturbing Hardy-Weinberg Equilibrium. A certain amount of skewing in the distribution of alleles may be expected because of this. It is thus seen that culture acts as a protective screen of exchanging genes between different groups of people.

1.2. Review of Literatures

Research works on anthropogenetic and microevolutionary theme were carried out on different population groups in different parts of the globe. Boas (1911) initiated the study of microevolutionary studies and examined the effect of migration and demonstrated the plastic nature of metric traits causing change in the statistical averages between the ancestral and descendants in Japanese populations. Shapiro (1939) also did extensive study on the Japanese sedants, Japanese immigrant residents in Hawaii and Hawaiian born Japanese and showed variation in a number of morphological traits. Ito (1936) similarly studied the anthropometric traits of the newborn infants of Japanese parents in America. Goldstein(1943) studied on body changes among descendants of Mexican immigrants; Laskar (1946) studied on physical differentiation between immigrants with American born Chinese; Kraus et al (1956) worked on microevolution among the social endogamy and blood type distribution among the Western Apache; Greulich (1957) on Physical growth and development of American born and native Japanese children; Alexeeva, T.I. (1980) on indigeneous population of central and eastern Siberia; Tammora(1980) on the morphological variation of Ryukyu Islanders. Other studies on the similar theme include those of Frisancho et al (1970), Cleg, et al (1972),Crogner (1981), Gupta and Basu (1981), McGregor (1982), Takhirashi (1984), Kimura (1984) etc.
In Indian context Mahalanabis (1936), Rao (1948) and Shangvis (1953) initiated the microevolutionary study among the populations. Das (1960) worked on the physical variation between the plain Garos and hill Garos. In 1978 he studied the morphogenetic trait of the Khasis. Das, et al. (1980) also researched on the biological variation of the Kalita caste group of Assam. Das et al (1980) studied among the Kaibartas of Assam, and in the same year he also studied among Kayasthas of Kamrup to examine the biological variation. Chai (1972) studied on the biological variation of indigenous population of Assam. Similar work on biological variation were carried out by Bhanu (1974) on Ezhavas, Pulsysas and Parayas of Kerala. Raghbir (1974) worked on the anthropometric measurements of the Himachalis and Punjabis. Khongsdier et al. (2001) studied the bio-anthropological study of the Pnar of Jatinga in North Cachar Hills of Assam. Malhotra (1966, 1978, 1981); Gulati (1971); Barua and Phookan (1980) worked on different populations and demonstrated microevolutionary trend.

As regards the population of Manipur is concerned, Singh (1978) attempted to find out the genetical distance among the three valley populations, Singh (1988) also observed microevolution between the hill and plain Kabui tribes. Shah (1990) found a low degree of variations among the three Muslim populations of Manipur valley. Singh (1992) studied among the Meiteis of Manipur and Assam. Debi (2002) worked on the morphogenetical study of the Kwalha Meiteis. Singh, L.R. (2002) worked on the demography, culture and bio-anthropology of Kom tribe. Thus, such scanty microevolutionary and anthropogenetic study among different populations of Manipur calls for undertaking an immediate and urgent research investigation on Purum (Chothe) tribe of Manipur.
Purum (Chothe) is an internationally known tribe on whom a number of anthropologists of international fame like Leach, E.R. (1951) etc. have worked upon. Among Indian scholars, Das, T.C. (1945) conducted his field research work among the Purum tribes which is presently known as Chothe Tribe, before beginning of second World war. He presented his findings in a monograph entitled ‘The Purum – An Old Kuki Tribe of Manipur’ in 1945. What Das had done was the ethnographic account of the people. However, he also attempted some physical anthropological parameters. Thus in 1936 he took anthropometric measurements and anthropometric observations on sixty adult male individuals from four villages. He collected information on ten somatoscopic and eleven somatometric measurements. From those eleven somatometric measurements, he calculated seven anthropometric indices.

1.3 Statement of Objectives

The Present study primarily aims at delineating the demographic and anthropogenetic profile of the tribe by studying twenty two somatometric measurements, nineteen somatoscopic observations and four behavioral traits and ten genetic markers of the tribe under study. This will act as a ready reference for anthropogenetic profile of the tribe. And thus this will be another addition to the existing work on demography and anthropogenetic data of different populations.

Secondly, in the present study an attempt will also be made to compare, using univariate statistical techniques, the findings of two Chothe populations (set apart by a time gap of nearly seven decades) i.e. the present Chothes and the past Chothes reported by Das in the year 1945 on the basis of his work. This will throw light on the direction,
magnitude and trend of variation in respect of their anthropogenetic traits, if there be any, and the associated cause(s) thereof.

A very brief geographical account of Manipur and the villages covered under the present study, and the ethnohistorical background of the people follows in the next chapter.