

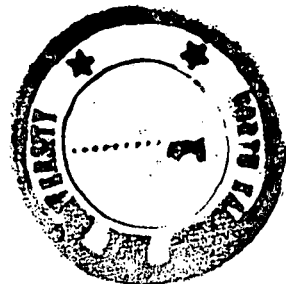
POPULATION STRUCTURE AND SETTLEMENT PATTERNS IN MIZORAM A GEOGRAPHICAL ANALYSIS

ABSTRACT

A THESIS SUBMITTED FOR THE
AWARD OF THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN
GEOGRAPHY

By

LALRINTLUANGA PACHUAU



DEPARTMENT OF GEOGRAPHY
SCHOOL OF ENVIRONMENTAL SCIENCES

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SHILLONG - 793014

DECEMBER, 1991

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A B S T R A C T

The problems of population, poverty and settlements are among the greatest problems which the world experiences today. The present study incorporated the population characters and settlement patterns in Mizoram with the geographical setting of the area. In spite of lack of data, various conceptual approaches, statistical methods as well as cartographic techniques have been applied to find out certain regional identifications.

The analytical study reveals that Mizoram has remained socio-economically backward, in spite of its natural resources. Infrastructural facilities for

economic growth are at their minimal level, mainly due to isolation and hilly terrain and population quality as well. Density of population is very low not only because of limitation of habitable area, but also due to political factor. Micro-regional variation of density is decided by geographical factors.

Unlike the rest of the country, Mizoram is unique in its dominance of a single religion and single language. Christianity is the main religion of the region accounting for more than 80 per cent, while the speaker of Mizo language accounted for 76 per cent. Likewise, the Scheduled tribe population comprised as much as 94 per cent.

The region witnessed a rapid population growth during the last two decades. Male population grew at a faster rate as indicated by a fall in the sex-ratio. However, in respect of literacy, Mizoram is well above the national figure. The aging index analysis proved that the present age structure is conducive to higher population growth in the immediate future.

As much as 75 per cent of the population are confined in the rural areas, in 1981, which has come down from 89 per cent in 1971. This indicated that the region has made a rapid progress in the process of urbanisation.

The workforce also showed a declining trend. Migration is not significant mainly because of the imposition of "Inner Line" regulation.

The factors that affect spatial aspects in selection of sites in Mizoram are slope, climate, water, proximity to arable lands, etc. Prime factor was given to hill top for its conducive temperature in general, and for socio-political security in the past in particular. According to location broad type of settlements identified are settlements on hill top or slope, along the watershed, along the main roads and along the rivers.

Settlements located on a hill-top mostly show a compact pattern, which, in most cases, are later deviated into a linear form, consequent upon the later construction of road networks. Semi-compact settlements are most common, generally found on the watersheds. The introduction of grouping of villages in 1967-71 has also affected the settlement pattern to several extent.

Village size analysis by population size shows that among the four classes of village size in Mizoram, the highest number of village is found in the population size ranging from 200-499 persons. And the average village size by population for the region is 516 persons which decreases towards south at district level.

The spatial analysis of rural settlements reveals a very low value as compared to national figure. The village density (number of rural settlements per 100 square kilometre) is only 3.47; while the inter-village spacing taken at average is only 2.71 kilometres.

Following the Nearest Neighbour Analysis, the dispersion patterns of villages are classified into four categories at block level. They are : a) Clustering (R_n less than 0.89); b) Random (R_n 0.89-1.11); c) Moderate dispersion (R_n 1.12-1.34) and d) High dispersion (R_n more than 1.34). The analysis of randomness or dispersion by R_n value reveals that Mizoram, as a whole portrays a random pattern.

Till 1981 Census, there are only six urban settlements, containing about 25 per cent of the total population of Mizoram with a density of 350 persons in urban areas. However, as compared to the 1971 Census figure with only two urban centres, it is clear that the state has undergone a rapid progress in the process of urbanisation. Their spatial analysis reveals that these six towns are well distributed over the state in terms of spacing. The average spacing is 48 kilometres. The R_n value denoting the degree of randomness or dispersion indicates that the urban settlements in Mizoram is highly dispersed.

It is, thus, seen that not only the physical diversities, inaccessibility and isolation have caused the dispersed spatial pattern of population and settlement in the region, but also economic and socio-cultural factors like existence of meagre cultivable land, prevalence of jhum cultivation practice, and remarkably the chieftainship occupance pattern have greatly influenced the distribution pattern of population as well as settlements within the region.

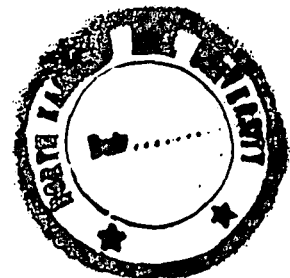
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Prof. R.K. RAI

DEPARTMENT OF GEOGRAPHY

C E R T I F I C A T E

This is to certify that the thesis entitled, **Population Structure and Settlement Patterns in Mizoram : A Geographical Analysis**, submitted by **Mr. Lalrintluanga Pachuau** to the North-Eastern Hill University for the degree of **Doctor of Philosophy in Geography** is a bonafide study to the best of my knowledge. All the quotations, extracts and ideas of other works cited in this thesis have been duly referred to. This work has not been submitted for any degree of any University. The thesis, therefore, may be placed before the examiners for due evaluation.

Dated, Shillong,
the ^{18th} December, 1991.

R.K. Rai
(R.K. RAI)
Supervisor

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A C K N O W L E D G E M E N T S

It is indeed a great pleasure for me for having completed this research assignment entitled, **Population Structure and Settlement Patterns in Mizoram : A Geographical Analysis**, since any kind of research work is never an easy task.

My first and foremost obligation is due to my revered teacher and supervisor, Professor R.K. Rai, former Head, Department of Geography and former Dean, School of Environmental Sciences, NEHU, Shillong. He has been a source of constant inspiration and a critical scholar, who shaped my rough ideas into a much more mature form.

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I acknowledge the untiring help rendered by Mr. T.T. Zothansanga, Mr. K. Zomuana, Mr. K. Laldailova, Mr. B. Lalsangkima, Mr. K. Vanlalamawia, Mr. B. Vanlalhlana, Mr. R. Lalhmachhuana, Mr. Vanlalringa Bawitlung and my fellow Mizo scholars and well-wishers. Their contribution in various ways have greatly helped me to complete the thesis.

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I hope this thesis would suffice the purpose.

December 18, 1991


(LALRINTLUANGA PACHUAU)

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Chapter I

INTRODUCTION

The present work deals with two important aspects of human geography, namely, population and settlement on a geographical purview. A systematic study of population and settlement assumes strategic significance in the general programme of economic development, modernization and social change all over the world, especially in underdeveloped countries like India. Since modern geography is mostly based on theories which attempt to explain spatial patterns and processes, attempts have been made to test various scientific theories and models pertaining to patterns and processes. Besides, the 'man-environment-interaction' has been given prime importance

in whose complex system man and his habitat are the most visible features. Therefore, the study of population and settlement becomes an integral part of the system.

The first idea to consider population and settlement together in geographic researches was raised soon after the World War II, especially in the East-Central Europe, and particular attention was paid to the social issues in reference to territorial patterns of settlements¹. The regional sense has influenced the approach of study particularly in the Marxist approach. In these countries, initially, population and settlement geography was being considered as a branch of economic geography. In course of time, with the advancement of the subject, in North America and United Kingdom, the economic sense has been replaced with the social. Later on, Soviet scholars defined population geography (Geografia Naseleniya) as 'Socio-geographic discipline' in reference to territorial pattern and changes².

By 1955 in Poland, population and settlement geography had received a more theoretical orientation as

-
1. Kosinski, L., "Geography of Population and Settlement in East Central Europe", Review Article, Annals of the Association of American Geographers, Vol.61, 1971, pp.602-03.
 2. Pokshishevsky, V., "Content and Basic Tasks of Population Geography" in Geografia Naseleniya USSR Basic Problems (Moskva Nauka), 1964 (In Russian), as quoted in Population and Settlement in UP, by Alok Kumar Singh, New Delhi, 1985, p.2.

suggested by Dziewonski. The object of population and settlement geography attempts to study the distribution and structure of historically formed territorial grouping of population and settlement, and the material structures connected with them. Such studies should include not only man and tangible objects (material results of his social activity), but also the way how these objects as well as land are being used; in other words, the 'function'³. Although, there has been a debatable questions about such relationship, the aim of the present work is to highlight the regional identification.

Taking these attributes independently, the study can be separated with the help of some concepts and approaches. In population geography, the spatial aspect of the dynamic character of human population is the main consideration, while in settlement geography, the morphological structure is the main issue. In both these cases, 'distribution' and 'change' are the main thrust of analysis through which laws or generalizations are propounded⁴.

3. Dziewonski, K., "The Geography of Settlements and Population Achievements - Theoretical Bases Research Problems", Przegląd Geograficzny, Vol.28, 1956, pp.723-64 (in Polish).

4. Singh, Alok Kumar, Population and Settlement in U.P. : A Geographical Analysis, New Delhi, 1985, p.2.

Nevertheless, the size and distribution aspects of settlements and population are closely interlinked to each other in terms of space and time. Therefore, the historical analysis of peopling and the settlement histogenesis are the counterpart of the population-settlement geography. The concept of socio-economic segregation among settlements is further reflected in the qualities and characteristics of population residing there. The structural and functional, both the approaches are applied together in such integral frame and reference. Like other branches of geography, the concept of spatial differentiation in reference to resource localization is also to be visualised while analysing population-settlement together. Only with such analogy the 'sequent occupance' has to be understood systematically⁵.

REVIEW OF LITERATURE

India with a population density of 216 persons per square kilometre (1981) is the second most populous country in the world. Though the census have been organised since 1881 in India, yet in actual practice nobody seriously took population problem into consideration till 1930. Since the first census operation, India's population has been very rapidly

5. Ibid., p.4.

increasing; and our planners came to know that population growth and economic development could not be parted from each other. There was a need to study the growth rate of population with its consequence closely and the subject became a topic of discussion.

The colossal work of Kingsley Davis on population of India first woke us up to realise the importance of the study, bringing about the valuable progeny of further works of various authors⁶, such as Chandrasekhar (1956)⁷, (1961)⁸ and (1967)⁹, Zachariah (1968)¹⁰, Bose (1970)¹¹, Bhate and Kumudini (1971)¹², Gyan Chand (1972)¹³, Desai

-
6. Bhattacharya, A., Population Geography of India, New Delhi, 1978, p.v.
 7. Chandrasekhar, S., Hungry People and Empty Lands, George Allen and Unwin Ltd., 1956.
 8. Chandrasekhar, S., Population and Planned Parenthood, George Allen and Unwin Ltd., 1961.
 9. Chandrasekhar, S., Asia's Population Problem, George Allen and Unwin Press Ltd., 1967.
 10. Zachariah, K.C., A Historical Study of Internal Migration in Indian Sub-Continent 1901-1931, Asia Publishing House, 1968.
 11. Bose, Ashish, P.B. Desai and S.P. Jain, Studies in Demography, George Allen and Unwin Ltd., 1970.
 12. Bhate, Vajayanti and Dandekar Kumudini, Prospects of Population Control Evaluation of Contraceptive Activity, Gokhale Institute of Politics and Economics, Poona, 1971.
 13. Chand, Gyan, Population in Perspective, Orient Longman, 1972.

(1975)¹⁴, Verma (1977)¹⁵ and others.

Apart from these, we can see numerous works on population with special reference to India which are very helpful to planners. Among the many, mention may be made to the works and contributions in the Indian context such as Agarwala (1972)¹⁶, Ashtaq Ali (1973)¹⁷, Ambannavar (1975)¹⁸, Jain (1975)¹⁹, Bhattacharjee and Shastri (1976)²⁰, Bhattacharya (1978)²¹, Raj (1978)²² and many others. Singh (1985)²³ also analysed the population and settlement in U.P. from a geographical point of view.

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14. Desai, P.B., A Summary of Research in Demography, Popular Prakashan, Bombay, 1975.
 15. Verma, K.K., Culture, Ecology and Population, National Publishing House, New Delhi, 1977.
 16. Agarwala, S.N., India's Population Problem, Tata McGraw Hill Publishing Co. Ltd., Bombay, New Delhi, 1972.
 17. Ali Sayed, Ashtaq, Tribal Demography in Madhya Pradesh, Jai Bharat Publishing House, 1973.
 18. Ambannavar, J.P., Second India Studies - Population, 1975.
 19. Jain, S.P., Demography - A Status Study on Population Research in India, Vol. II, Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1975.
 20. Bhattacharjee, P.J. and G.N. Shastri, Population in India, Vikas Publishing House Pvt. Ltd., 1976.
 21. Bhattacharya, A., op. cit.
 22. Raj, Hans, Fundamentals of Demography (Population Studies with Special Reference to India), Surjeet Publications, Delhi, 1978.
 23. Singh, Alok Kumar, op. cit.

These works have really drawn the attention of the people towards population problems in general, and of the economic geographers in particular.

The north eastern region of India, located away from the mainland of India predominantly characterised by rugged terrain has long been suffering from want of information in most of the fields. Such is the case of population study. Among the few works on population problems, the work of Srivastava (1987)²⁴ is a commentable one. Recently, Goel (1983)²⁵ carried out a research work on demographic structure of north east India covering Assam, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya, presenting a comparative study of the areas.

The recent publication of Tribal Demography and Development in North East India, edited by Bose, Nongbri and Kumar (1990)²⁶ has a remarkable significance, as it contained the scholarly views on the demographic attributes and tribal development of the north east India

-
24. Srivastava, S.C., Demographic Profiles of N.E. India, 1987.
25. Goel, N.P., "Demographic Structure of North East India", Ph.D. Thesis, Geography Department, NEHU, 1983 (unpublished).
26. Bose, Ashish, Tiplut Nongbri and Niklesh Kumar (Eds.), Tribal Demography and Development in North East India, Indian Association for the Study of Population, Delhi, 1990.

in particular. Various scholars like Karna (1990)²⁷, Nunthara (1990)²⁸, Xaxa (1990)²⁹, Imchen (1990)³⁰, Burman (1990)³¹, Gogoi (1990)³², Pathak (1990)³³ and Ganguly (1990)³⁴ have presented their views on the problems and prospects of development of tribal population and its allied attributes.

The geographical study of settlements in modern times began with the work of Ritter in the early nineteenth century. His theme of interdependence among the elements of landscape gave broad base to early settlement geography, which included studies of various phenomena and processes resulting from complex man-land.

-
27. Karna, M.N., "Aspects of Tribal Development in North-Eastern India", in Bose et al. (eds.), Ibid., pp.5-23.
 28. Nunthara, C., "Social Aspects of Tribal Development", in Bose et al. (eds.), Ibid., pp.31-38.
 29. Xaxa, V., "Tribal Development in the North-East : Trends and Perspectives", in Bose et al. (eds.), Ibid., pp.25-30.
 30. Imchen, C.L., "Issues in Tribal Development", in Bose et al. (eds.), Ibid., pp.39-46.
 31. Burman, B.K. Roy, "Tribal Population and Development", in Bose et al. (eds.), Ibid., pp.67-83.
 32. Gogoi, Jayanta Kumar, "Tribal Demography in North-East India : Some Preliminary Observations" in Bose et al. (eds.), Ibid., pp.85-94.
 33. Pathak, Lalit, "Socio-Economic Characteristics of Tribal Rural Settlements", in Bose et al. (eds.), Ibid., pp.95-101.
 34. Ganguly, J.B., "Pattern and Occupational Structure of Tribal Population in Tripura", in Bose et al. (eds.), Ibid., pp.103-190.

relationship³⁵. These syntheses can be seen in modern human geography also³⁶.

In the Indian context, the earliest description of village pattern can be seen in historical works such as Arthasastra and Kautilya³⁷. In modern times, the first systematic approach can be found in the works of Baden-Powell³⁸ and Mukherjee³⁹. Singh (1955)⁴⁰ analysed the evolution of rural settlements in the middle Ganga valley over a long sequence of time based on territorial patterning of different clans in relation to the various physical and cultural factors and agricultural factors and other needs of colonization and settlement. Ahmed (1952)⁴¹ studied the type and patterns of rural

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35. Baker, R.H., "A Study of Rural Settlements" in Coke and Johnson (eds.), Trends in Geography, London, p.123.
36. Brunhes, J., La Geographie Humaine, Paris, 1925; Jones, E., Human Geography, London, 1964; Perpillou, A.V., Human Geography, London, 1966; Money, D.C., Introduction to Human Geography, London, 1968.
37. Kautilya's Arthasastra, Translated by A. Shamasastri, Bangalore, 1915.
38. Baden-Powell, B.H., Indian Village Community, London, 1896. Idem., Origin and Growth of Village Community in India, London, 1899.
39. Mukerjee, R.K., Man and His Habitation, London, Second Edition, 1968.
40. Singh, R.L., "Evolution of Settlements in the Middle Ganga Valley", NGJI, I(2), pp.69-144, 1955.
41. Ahmed, E., "Rural Settlement Types in U.P.", AAAG, 42, pp.223-246, 1952.

settlements in U.P. in relation to physical and cultural factors. He also described the Indian village pattern in another paper⁴², though formerly Spate (1952)⁴³ had given an account of the Indian village which are now followed by recent workers also. Singh (1985)⁴⁴ recently analysed the population and settlement of U.P. taking geographical factors as parameters.

Apart from these, there are numerous literatures on settlements, especially of rural areas of India. But the north-east India still provides a vast scope in this respect. Singh (1971)⁴⁵, Rathore (1971)⁴⁶, Deshmukh (1971)⁴⁷ etc. have undertaken a micro-regional study, taking histogenesis and functional patterns of rural settlements as the main issue. Srivastava (1971)⁴⁸ has

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42. Ahmed, E., "Indian Village Pattern", Geog. Outlook., 3(I), 1962.
43. Spate, O.H.K., "The Indian Village", Geog., 37(3), p.148.
44. Singh, Alok Kumar, op. cit.
45. Singh, R.Y., "Village Hahjuda : A Study in Morphogenesis of Rural Settlements in Eastern U.P., India", in R.L. Singh (ed.), Rural Settlements in Monsoon Asia, NCSI, Varanasi, 1972, pp.233-240.
46. Rathore, G.S., "The Luni Basin : A Note on Prehistoric and Historic Settlements" in R.L. Singh (ed.), Ibid., pp.241-248.
47. Deshmukh, V.M., "A Note on the Functions of Rural Settlements in Buldhana District", in R.L. Singh (ed.), Ibid., p. 273.
48. Srivastava, V.K., "Distribution and Patterns of Rural Settlements in the Upper Son Basin", in R.L. Singh (ed.), Ibid., pp.302-312.

analysed the distribution, type and patterning of rural settlements in Upper Son basin, taking different sets of socio-cultural factors into consideration. Jain (1971)⁴⁹ has studied the distribution of rural settlements in Wardha-Wainganga region under the impact of varying combination of physical factors.

In the north-eastern region of India, only very few works have been done in settlement geography. Singh (1972)⁵⁰ studied the rural settlements and house types in Ri Lum of Khasi Hills, Meghalaya, taking physical as well as social factors as the main determinants of the subject of study. Rai and Goel (1984)⁵¹ made an investigation of rural population and settlement in the Meghalaya Plateau and they were convinced that the rural settlements of the state are directly or indirectly influenced by relief, gradient of slope, soil, climate and availability of drinking water.

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49. Jain, N.G., "Distribution of Rural Settlements in Wardha-Wainganga Region", in R.L. Singh (ed.), Ibid., pp.320-324.
50. Singh, J.P., "Rural Settlements and House Type in Ri Lum of the Khasi Hills, Meghalaya", in R.L. Singh (ed.), Ibid., pp.398-404.
51. Rai, R.K. and N.P. Goel, "Rural Population and Settlements in the Meghalaya Plateau", Hill Geographer, Vol.III, No.2, December, 1984.

Recently, Pathak (1990)⁵² presented the occupational pattern and socio-economic characteristics of the rural population in some of the large rural settlements of Meghalaya, Mizoram and Nagaland.

The influence of topography, soil, climate, water and availability of cultivable land etc. on settlement pattern in Mizoram is vigorous. Owing to the ruggedness of the area, more than 70 per cent of the rural settlements are located on hill tops and hill slopes, while river valleys contained only a few settlements.

OBJECTIVE OF THE STUDY

The main objective of the present study is to analyse the population structure and patterns of settlements in Mizoram, while considering how much influences the geographical factors have in changing, retarding or developing the population characters and settlements of the State. It is apparent that histo-geographical factors, as well as socio-economic factors have always much to do with the quality and character of the population and its habitat. The study, therefore, is an attempt in bringing out the regional identification,

52. Pathak, Lalit, op. cit., pp.95-101.

taking mostly geographical factors as parameters.

The study tries to present the degree of interactions between the inhabitants of the study area and its environs, thereby picturing the influence of natural forces or physical conditions on the overall condition of population characteristics and settlement patterns, whether negative or positive as the case may be.

Attempts will be made to describe various demographical attributes, such as population growth, density, sex-ratio, scheduled caste and scheduled tribe population, religious groups, migration patterns of the population etc. Investigation and historical study of migration into the present Mizoram, and later development of settlement pattern will also form one of the main objectives of the research assignment. However, the study is an attempt in empirical analysis, using various geographical tools and techniques to arrive at suitable conclusions.

SOURCES OF DATA

As pointed out earlier, any geographical information about Mizoram state is very scanty. Whatever informations available are neither complete nor sufficient. However, attempts have been made to collect

as many data as available on the region from primary and secondary sources; covering various governmental departments and agencies.

The necessary materials for the physical aspects of Mizoram have been collected mainly from the publication of memoirs, records and reports of Geological Survey of India; topographical sheets on various scales published by Survey of India. Data pertaining to economy are obtained mainly from the Directorate of Agriculture, Mizoram, Aizawl; the District Agriculture Officer, Chhimtuipui District, Saiha; Department of Economics and Statistics, Mizoram, Aizawl; the Chief Conservator of Forest, Mizoram, Aizawl; the Chief Engineer, Power and Electricity Department, Mizoram, Aizawl; the Directorate of Animal Husbandry and Veterinary, Mizoram, Aizawl; the Chief Engineer, PWD, Mizoram, Aizawl; the Chief Engineer, BRTF, Zemabawk; the Information, Public Relations and Tourism Department, Mizoram, Aizawl, etc.

Data on population attributes are based mostly on Census of India publications on Mizoram and North-East, and Statistical Handbooks of Mizoram published by the Department of Economics and Statistics of Mizoram for different years. Data for analysis of settlements are adapted from the District Census Handbooks for Aizawl,

Lunglei and Chhimtuipui districts, published by Census of India. The study area falls under toposheet No. 84, surveyed by Survey of India, and hence, the toposheets are one of the basic sources of study on settlements as well as topography.

To undertake any geographical research, field data generation is inevitable. The researcher has done an extensive field work, whose necessity being compounded by lack of data; and covered as many as sixteen Community Development Blocks out of the total twenty blocks of the state of Mizoram. Thus, most of the field data analysis made in the thesis is supplemented with observations and photographs, drawn and taken during the field work.

METHOD OF STUDY

In population research, the methodology depends mainly on the availability of data pertaining to various population attributes. It is unfortunate to mention that only very few materials are available on Mizoram, such being the case that a detailed analysis at micro-regional units could not be made, which would otherwise be of great significant and systematic.

Mizoram was part of Assam till 1972, when it became Union Territory, and was divided into three



districts, namely, Aizawl, Lunglei and Chhimituipui districts. The district-level or block-level data is, therefore, available only after 1981 census, which were still very incomplete as compared to those available for other states of the country. However, attempts have been made to describe and analyse population characteristics at smallest possible units to make the best use of whatever data available on the region.

Owing to lack of data, it is found necessary to illustrate and supplement the statements and discussions in the thesis by figures, maps, diagrams and photographs. As such, as many maps and diagrams as possible have been prepared by the researcher and presented in the thesis. To illustrate different aspects and to give bird's-eye-view of the configuration of the land and settlement patterns of the region, a number of photographs, which were taken by the researcher at different areas, have also been attached in the thesis.

A number of quantitative approach and theories have been incorporated in the study of various aspects of population and spatial patterns of rural settlements. Certain scientific theories and universal accepted theories are also tested wherever possible. Various cartographic techniques have also been applied wherever

necessary. The study, thus, is an attempt in an empirical analysis, using various geographical tools and techniques in order to find out positive results.

Some of the methods used in dealing with population aspects are described below :

Population Composition :

Density : Density is defined as a number of persons per square kilometre, i.e.

$$D = \frac{\text{Population}}{\text{Area in sq. km.}}$$

Variation in density can be shown by co-efficient of variation.

Age Composition :

Age composition has been analysed with the help of the following methods :

- 1) Dependency Ratio : It is the dependent children in the age group of 0-14 years and dependent aged persons in the age group of 60 years and above per 100 active population in the age group of 15-59 years, i.e.

$$\text{Dependency Ratio} = \frac{DC + DA}{AP} \times 100$$

where DC is dependent children in the age group of 0-14 years;

DA is dependent aged persons in the age group of 60 years and above,

AP is the active population in the age group of 15-59 years.

- 2) Index of Aging : Defined as the dependent aged persons in the age group of 60 years and above for 100 dependent children in the age group of 0-14 years, i.e.

$$\text{Index of Aging} = \frac{\text{DA}}{\text{DC}} \times 100$$

where DA and DC is same as above.

- 3) Maturity Index : It is defined as the persons aged 30-59 years per 100 youths aged between 15 and 29 years, i.e.

$$\text{MI} = \frac{\text{Persons aged 30-59 years}}{\text{Youths aged 15-29 years}} \times 100$$

- 4) Median Age : It is defined as the age which divides the total population into two equal parts in terms of age that 50 per cent of population are below this age, and another 50 per cent are above that age.

Indices of Population Growth :

- 1) Rate of Population Growth : It is defined as the rate of population growth during a specific period in percentage, i.e.

$$r = \frac{P_1 - P_2}{P_2} \times 100$$

where P_1 is population of the current year (census year),

P_2 is population of the base year or previous year.

- 2) Exponential Growth of Population : It is calculated with the following formula, i.e.

$$P_t = P_o e^{rt}$$

where P_t = Population of the current year,

P_o = Population of the base year,

r = Rate of growth,

t = Time in years between P_o and P_t ,

e = constant exponential part, i.e. 2.7183.

Spatial Characteristics of Villages :

- 1) Density of Village : It is defined as number of villages per 100 sq. kms., i.e.

$$DV = \frac{\text{Number of Villages}}{\text{Area in sq. km.}} \times 100$$

- 2) Mean Observed Spacing of Villages : It is defined as an average distance between settlements in an area, which is computed as :

$$r_o = \frac{\sum r}{N}$$

where r_o is observed mean spacing,

r is nearest neighbour distance of each village,

N is number of points (settlements) in an area.

- 3) Expected Spacing : Given a random situation, an expected spacing between villages are computed⁵³ as :

$$r_E = \frac{1}{\sqrt{2} \sqrt{\frac{N}{A}}}$$

where r_E is the expected spacing,

1 is constant,

N is number of settlements,

A is the area of a place (block).

- 4) Nearest Neighbour Statistics : The nearest neighbour statistics which shows the nature of dispersion or association between observed mean spacing and expected spacing in random situation has been computed with the statistical expressions

53. Mahmood, Aslam, "Spatial Distributions and Interactions", Statistical Methods in Geographical Studies, New Delhi, 1977, pp.72-76.

as advanced by Clark and Evans (1954)⁵⁴ as :

$$R_n = \frac{r_o}{r_E} = 2 r_o \sqrt{d}$$

where R_n is index of randomness,

d is density of villages,

r_o is observed mean spacing of villages, and

2 is constant, and

$$r_E = \frac{1}{\sqrt{2 \frac{N}{A}}}$$

as mentioned above.

SALIENT FEATURE OF MIZORAM

Location

Mizoram lies between 21°56'N-24°31'N latitudes and 92°16'E-93°26'E longitudes⁵⁵. The Tropic of Cancer divides the state into two nearly equal parts. Occupying the north-eastern corner of India, Mizoram has a total geographical area of 21,087 square kilometres. Its share

54. Clark, P.J. and F.C. Evans, "Distance of Nearest Neighbour as a Measure of Relationships in Population", Ecology, Vol.35, 1954, pp.445-453.

55. Pachuau, Lalrintluanga, "Khawiah Nge Mizoram In Dah"?, Meichher, A Monthly Bulletin of Adult Education Wing, Education Department, Government of Mizoram, Aizawl, June 1990, pp.2-6.

LOCATION OF MIZORAM

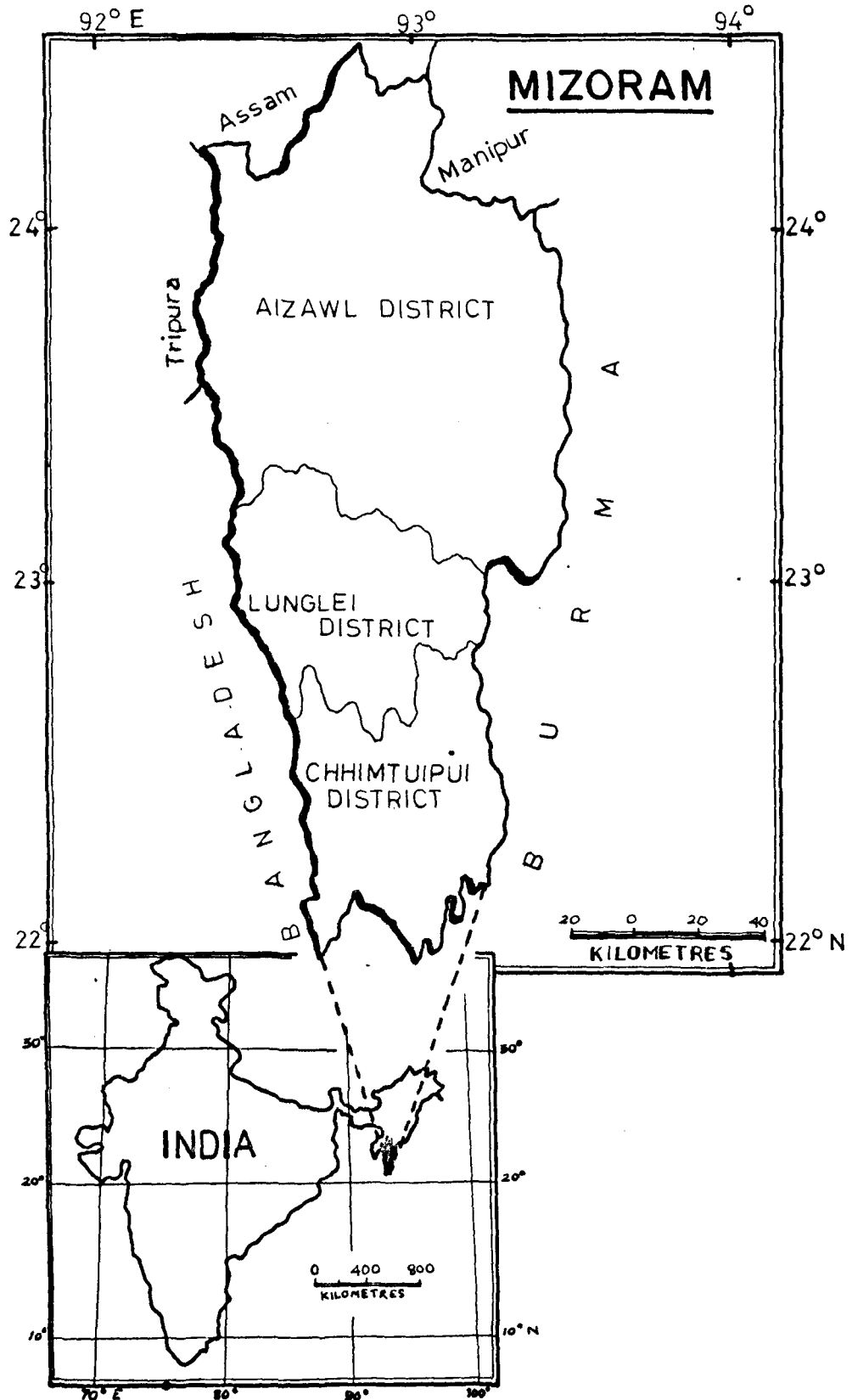
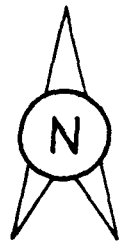


Fig 1.1

is only 0.64 per cent of India's area as a whole.

Mizoram is bounded in the north by Cachar district of Assam and the state of Manipur; in the east and the south by Chin Hills of Burma, and in the west by Chittagong Hill Tracts of Bangladesh and the state of Tripura. Mizoram occupies a great strategic importance in the north east corner of India, as it has a total length of 1,633 kilometres international boundary with Burma and Bangladesh.

Political Background

The history of administration in Mizoram Hills truly begins in the region from 1890, when the territory was divided between Assam and Bengal. The northern part of Mizo Hills with Headquarter at Aijal went to Assam while the southern portion was administered by Bengal. Prior to 1890, there was no regular administrative set-up as it is understood today. A few posts and forts have been established here and there to safeguard the interests of the British regime. In 1898, the British decided to merge the two areas into a district under a Superintendent. The same year also marked the beginning of a settled administration in the district⁵⁶.

56. Baveja, J.D., The Land Where the Bamboo Flowers, Publication Board, Assam, Gauhati, 1970, p. 74.

When India attained independence in 1947, the region continued to remain as one of the districts of Assam, known as Lushai Hills District, which later was changed into Mizo District, till its formation into Union Territory of Mizoram in 1972.

Political disturbance broke out in Mizoram, the then district in 1966 consequent upon the formation of Mizo National Front (MNF), which turned rebellion due to misunderstanding over the political domination of the district by the Indian government. The MNF was declared unlawful, and the region was categorised as "Disturbed Area". The political turmoil badly upset the development of the region in all aspects, and provided only a very few scope for developmental activities. This factor has kept the region to remain undeveloped as compared to the neighbouring state and Union Territories. On the passing of the Constitution (53rd) Amendment Bill and the State of Mizoram Bill by the Parliament on 7th August, 1986, the declaration of "Disturbed Area" was released. Consequent upon these Bills, Mizoram was conferred statehood on 20th February, 1987, and became the 23rd State of the Indian Union.

Administrative Divisions

For administrative purpose, Mizoram is divided into

three districts of Aizawl, Lunglei and Chhimtuipui with district headquarters at Aizawl, Lunglei and Saiha respectively. Among these three districts, Aizawl has the largest area of 12,588 square kilometres, and Lunglei district has an area of 4,536 square kilometres, and Chhimtuipui district has an area of 3,957 square kilometres. Aizawl district is sub-divided into four sub-divisions, namely, Aizawl (Sadar), Kolasib, Champhai and Mamit. Lunglei district is divided into two sub-divisions of Lunglei and Tlabung, while Chhimtuipui district has three sub-divisions of Saiha, Lawngtlai and Chawngte, thereby comprising nine sub-divisions (Fig. 2).

For the smooth functioning of developmental operations, the region is further divided into twenty Community Development Blocks. They are : Lokicherra, West Phaileng, Reiek, Thingdawl, Darlawn, Tlangnuam, Aibawk, Serchhip, Thingsulthliah, Ngopa, Khawzawl, East Lungdar - all within Aizawl districts, and Chawngte, Lawngtlai, Sangau, and Tuipang within Chhimtuipui district; and West Bnghmun, Lungsen, Hnahthial and Lunglei within Lunglei district.

Inner Line Regulations

The British Government, during their regime over the region, was intensely concerned with the protection of the

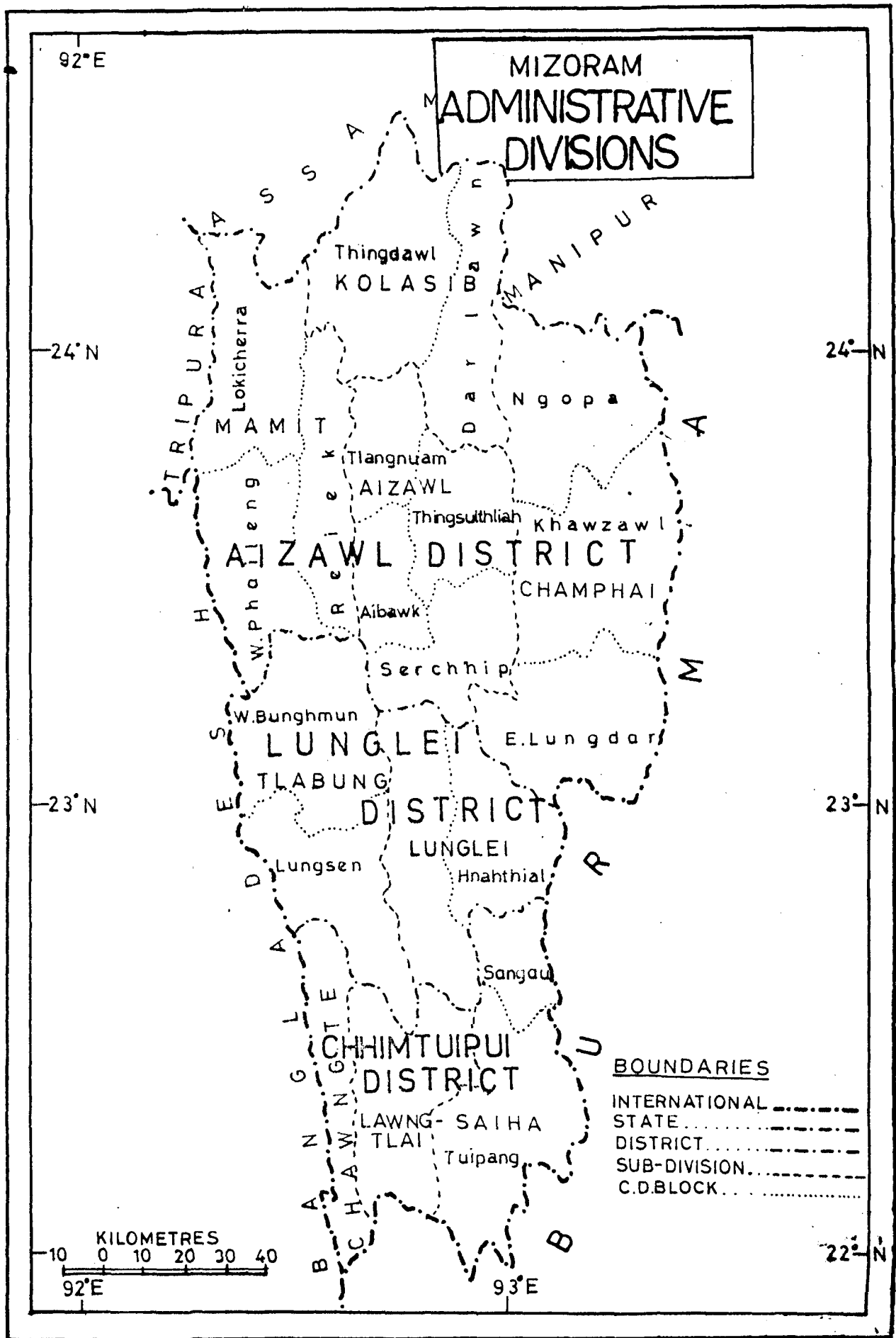


Fig. 1-2

frontiers. They did not want to keep their boundaries, the fringes of which, in the eastern sector, were inhabited by the hill tribes, undefined and indeterminate. Generally, the international boundaries are settled by negotiations between the government concerned. Here there was not such scope of settling any boundary as the tribes were numerous and they were all headed by independent chiefs. Hence, the British Government decided to define the boundary unilaterally. Thus, the boundaries of all the plain districts of Assam with neighbouring hill areas inhabited by independent tribes were determined by an imaginary line called the "Inner Line"⁵⁷.

With the close of the Lushai expedition of 1871-72, the policy adopted by the Government of India was that they would adhere to the systems of exercising political influence only, without direct interference or direct control, coupled with the definition of a precise boundary line beyond which ordinary jurisdiction should on no account extend. This line was to be guarded by a chain of posts, and beyond it only political relations with tribes were to be cultivated"⁵⁸.

57. Ray, A.C., Mizoram Dynamics of Change, Pearl Publishers, Calcutta, 1982, p. 43.

58. Mackenzie, A., History of the Relations of the Government with the Hill Tribes of North-East Frontier of Bengal, Bengal Secretarial Press, Calcutta, 1864, as quoted in A.C. Ray, Ibid.

Under section 2 of Bengal Eastern Frontier Regulation of 1873, a regulation framed for the peace and government of eastern districts on the eastern frontier of Bengal, the Governor General in Council notified the "Inner Line" on the southern frontier of Cachar district⁵⁹. Under the provision of the above section, the government prohibited all the outsiders from beyond the "Inner Line" without a pass from the Deputy Commissioner, Cachar.

Although these restrictions were meant only for keeping the peace in the border to maintain political relationships with the tribes, the "Inner Line" continued to exist even after the annexation of territories. By enforcement of the "Inner Line" and the Chin Hills Regulations, the hill tribes of Assam were kept out of touch with the people in the rest of the country. Not many people of the plains could get admittance into the hills passing through the rigours of scrutiny which preceded the issue of the pass. Intercourse between the different groups of people was thus prevented. This, of course, helped prevention of exploitation of the hill tribes by some unscrupulous people of the plains, mostly traders and money lenders, but it also caused isolation of the tribes and almost an unbridgable gap. The "Inner

59. Foreign Department Notification No.2299P, dated 20th August, 1875, Assam Gazette, September 11, 1875, Part IB, p.497, as quoted by A.C. Ray, Op. cit.

Line" continues even today and the Chin Hills Regulation also in a force in the State of Mizoram. The continuance has been allowed by the government mainly to prevent economic exploitation and the loss of ethnic and cultural identity of the tribes⁶⁰.

Physical and Economic Conditions

The physical setting of Mizoram is dominated mainly by parallel mountain ranges running north to south. Deep river valleys and numerous drainage interspersed the mountain ranges. The valleys are wider in the western part with lower altitude, whereas ranges rise higher in the eastern part. The difficult topographic features have been largely responsible for the overall economic condition of the region.

Economically, the region is poor, industrial and allied activities are least developed or totally absent. Though agricultural economy predominates, the region is far from satisfaction in terms of agricultural products, amply because the traditional jhum practice which prevails in the state yield a very low harvests. Because of her geographical nature, extensive developmental schemes, whatever may be potential, is yet to be realised.

60. Ray, A.C., Op. cit., p.44.

Population and Settlement

The population in Mizoram according to 1981 census was 4,93,757 persons, registering a growth rate of 48.55 per cent during 1971-1981. Mizoram with a population density of 23 persons per square kilometre ranks one of the lowest in India. The sex ratio is 919 which has increased from 946 in 1971. The literacy rate is, however, quite high with 59.88 per cent as against all India average of 36.17 per cent in 1981. The state's population is evenly distributed over the rural areas. Rural population accounted for 75 per cent whereas urban population comprises only of 25 per cent in 1981 census.

The percentage of tribal population in Mizoram is significantly high and tribal concentration is mostly even in all the districts. Scheduled tribes accounted for 93 per cent while Scheduled Castes accounted for only 0.03 per cent. Migration is not significant in this region due to political factors. By 1981 census, only 4.87 per cent are enumerated as migrants.

Christianity is the dominant religion in Mizoram, comprising 84 per cent of the total population. The remaining percentage is shared by Buddhism, Hinduism, Muslim, Islam, etc. Unlike other tribal groups, Mizoram is mono-lingual state in which Mizo is the lingua-franca

of the state. This language belongs to the Assam-Burma branch of Tibeto-Burmese family of language.

There are 721 rural settlements and only 6 urban settlements in Mizoram according to 1981 census. The settlements are mainly governed by the configuration of land surface, climate, fertility of the soils and availability of water. The ethnogenetic factors like tradition, necessity of defence in the past, and access to traditional jhum lands, etc. have also exerted much influence on the pattern and distribution of settlements.

Settlements are found located mostly on the hill tops and higher slopes, while few settlements exist on the lower valleys or riverine banks. One of the important reasons for hill top settlements being the defence purpose - for the early Mizos were involved in conflicts and inter-village feuds. The climatic factors like rainfall, humidity, wind, etc. are also considered in selection of settlement sites.

CHAPTERIZATION

In order to present a systematic analysis, the study has been divided into the following chapters :

An introductory chapter is given at the outset, where the Significance of the Study of population and Settlement

is highlighted. Review of Literature on Population and Settlement Studies, Objectives of the Study, Sources of Data, Method of Study and Working Plan of the thesis are narrated.

Chapter two is the descriptive analysis of physical setting of Mizoram as a whole, dealing in particular with Geology, Regional Structures and Tectonics, Topography, Drainage, Climate, Soil and Vegetation.

Chapter three analyses the economic characteristics of the study area and the economic activities of the population of Mizoram. Analyses have been carried out under the headings of Occupational Structure, Agricultural Activities, Forestry, Development of Power, Transport and Communication Network and Forestry.

Chapter four is a probe into the composition of population of Mizoram, which is sub-divided into eight main sections, such as, Density, Sex Ratio, religious composition, scheduled caste and scheduled tribe population, age distribution, literacy, language and rural and urban composition of population.

The fifth chapter deals with the growth of population. Studies have been made on population growth of the region as a whole, the exponential growth, the

differential growth, such as, sex, caste, tribe, and religion. Attempts have also been made to describe death and birth rate, work force of the population, and patterns of migration.

Chapter six deals with evolution of settlements in Mizoram, tracing the early streams of migration into the state. The influential factors of location and growth of settlements have also been examined.

Chapter seven is the study of types and patterns of settlements in Mizoram. Certain types of settlements are identified. The later part of the chapter deals with quantitative methods analysing the spatial pattern of settlements such as, village size, density, spacing and dispersion pattern of settlements, etc.

Summary of findings and conclusion is presented in the concluding chapter.

Chapter II

PHYSICAL SETTING

Physical environment may be defined as the integrated study of geology, topography, climate, soil and vegetation. Man's relation with his physical environment is a complex one. Man has a role in changing the face of the landscape; as such we have to understand also the degree to which the physical environment has shaped the way of his life. It becomes necessary to view thoroughly the nature of physical framework in reference to 'location, geology, topography, climate, soil and vegetation cover and the related phenomena in spatial context'¹.

1. Jordon, T.G., The European Culture Area : A Systematic Geography, New York, Harper and Row, 1971; Chapter 2, pp.325-326.

GEOLOGY

Geology is the study of rocks which made up the planet earth with different mineral compositions giving rise to various types of litho units. The study of geology becomes an essential part to understand the relationship between landforms and underlying rocks. Geological structure has a bearing not only on relief and landforms of a region, but also on the distribution of minerals, water table, rocks and drainage etc.. Geology is the base on which various geographical factors operate to create varying landscape and pattern of activity. To understand and appreciate the geographical peculiarities of the area, we must take into account its geological past. Thus, geological structure exerts an indirect influence on these processes, and on evolution of landforms which ultimately controls and restricts the human activities.

The Geology of Mizoram has not been studied in detail due to rugged inaccessible terrain, thickly covered by vegetation. Few works on geological exploration of the region have proved that the hills of Mizoram consist of sandstone and shales of tertiary age, thrown into folds. The rocks are the continuation of those rocks forming Patkai range and Cachar hills, and were probably laid down in delta or estuary of a large river issuing from the

Himalaya in the tertiary period. Marine fossils of that age have been found near Lunglei town, which were embedded in nodular dark grey sandstone.

The geology of Mizoram is represented in general by repetitive succession of arenaceous and argillaceous sediments which were later thrown into approximately NNW-SSE trending longitudinal plunging anticlines and synclines².

The generalised stratigraphic succession based upon the work of Geological Survey of India is as follows :

Table 2.1
The Generalised Geological Succession in Mizoram

Geological Age	Group Name	Formation Name	Rock Type
Recent Pleistocene	-	Alluvium	Mainly in river beds
.....		Unconformity
Mio-Pliocene	Surma	Bokabil	Shale, Siltstone, Mudstone and little sandstone
Oligo-Miocene	Surma	Upper Bhuban	Mainly sandstone, siltstone and little shale
		Middle Bhuban	Mainly Shale and Siltstone
		Lower Bhuban	Mainly Hardstone
Oligocene	Barail	Barail	Predominantly shale, siltstone and grey wackes, etc.

2. Satellite Remote Sensing Survey of Natural Resources of Mizoram, National Remote Sensing Agency, 1979, Report, Vol. I, p.20.

The rocks of the Surma groups are exposed in the western part of the state and exhibit ridge and valley features, and trellis drainage pattern. Coupled with the dominance of trend lines, this unit could be separated from the Barail group of rocks which are exposed in the eastern part of the state, showing dendritic drainage pattern and denuded hills oriented in different directions.

In the north eastern corner along the border with Burma, rocks show north-south linear trend and sub-parallel mountain ranges and valley type of topography. This is due to the alteration of hardstone and soft shale beds, grouped under the Barail group³.

Surma Group

The Surma group consists of two main sub-groups of rocks, viz. a) Bhuban and b) Bokabil. Bhuban sub-group is sub-divided into three formations, namely, i) Upper Bhuban formation, ii) Middle Bhuban formation, and iii) Lower Bhuban formation.

3. Sarker, K. and D.R. Nandy, Structure and Tectonics of Tripura - Mizoram Area, India, GSI Misc. Pub. No.34, Part I, pp.141-145.

a) BHUBAN :

i) Upper Bhuban Formation : This formation underlies conformably the Bokabil formation; the contact in most cases is gradational. This rock formation covers the whole hill ranges of central region. The rock formation is predominantly arenaceous, and comprised mostly of massive, brownish, comparatively soft friable, somewhat weathered, medium grained, usually containing fragments of shales.

ii) Middle Bhuban Formation : This formation overlies the Upper Bhuban formation conformably the contact being gradational. It is exposed mainly on the synclinal core of Mat and Tuichang rivers in the southern part of the state. The rock formation is predominantly argillaceous, and comprised mostly of shale, mudstone and siltstone.

iii) Lower Bhuban Formation : Lower Bhuban formation comprises mostly of greyish, fine to very fine grained massive sandstone. This rock formation is found in the eastern part of Lunglei district bordering Burma. This rock type is exposed in the anticlinal core of the Darzo hill ranges where rock exposure is clearly visible. At places, there are well-bedded, hard, compact, fine to very fine grained sandstone bands, inter-bedded with

comparatively thinner bands of siltstone and shale.

b) BOKABIL :

The rocks belonging to this formation occur conformably over the Upper Bhuban, and their contact is transitional. It is represented by soft, friable, loosely packed medium to fine felspathic sandy grey wacke, sandy shale with inter-laminated silt or shale alteration. This type of rock is widely exposed in the western part of the region along Tuichawng, Kau, Tuilianpui and Phairuang rivers synclines.

Barail Group

The Barail group rests conformably on the Surma group. This rock formation is exposed in the small patches in the north eastern corner of Lunglei district, in the anticlinal core of Thingsai hill. The Barail group is mainly composed of arenaceous rocks. This group of rock is lithologically dissimilar from those of the Bhuban formation lying in the west. The Barails comprised monotonous sequence of weathered shale, inter-bedded and inter-laminated with siltstone, exhibiting weathering pink, violet, greenish, grey and white colourations. They enclosed bands of weathered micaceous, felspathic, soft, medium grained sandstone. Unlike Bhuban, the Barails

contain few sedimentary structures like flute casts. The rocks have low rolling dips and have been folded into a broad anticline with the axis trending approximately east-west.

REGIONAL STRUCTURE AND TECTONICS

Structurally, the region is characterised by series of low plunging anticlines and synclines. The study⁴ of trend lines clearly indicates that the folds are asymmetrical, light and compressed in nature. The axial plane of these folds are vertical to sub-vertical with fold axes plunging both towards south and north at low angles. The important feature of this folding is that there are number of lineaments parallel to the regional tectonic trend. This fold is very dominant in western part of the area. In the eastern part of Mizoram trend lines are not seen over long distances due to massive or soft nature of rocks, and hence, delineation of exact nature of folding is rather difficult. From the curved nature of the fold axes, change in plunge direction and general swerving of trend lines, it seems second generation of folds might have taken place. This folding might have developed due to the adjustment in the basement blocks on which tertiary sediments were deposited.

4. The study is based on the notes of Satellites Remote Sensing Survey of Natural Resources of Mizoram : NRSA, 1979, Report Vol.I, pp.23-24.

Based on image elements, geologic and geomorphic features, three broad lithological units have been identified, and the relationships between the units are identified as follows :

Table 2.2
Broad Lithological Units

Group Name	Unit	Lithology	Age
SURMA	Bokabil	Predominantly thin bedded shales, friable sandstones and occasionally alternating with compact fine sandstone and sands.	Mio-Pliocene
	Bhuban	Predominantly alternating sequence of sandstone and shale. At places, massive sandstone bands.	Oligo-Miocene
	Upper Barail	Predominantly shale, siltstone and soft sandstone, occasionally compact, hard stone bands.	Oligocene
BARAIL	Lower Barail	Alternating sandstone and shale	

TOPOGRAPHY

The state of Mizoram is composed predominantly of mountainous terrain of tertiary rocks. The mountain ranges are inclined north to south direction in parallel series. The ranges are separated from one another by

narrow deep river valleys, with only very small patches of plains.

The terrain of Mizoram is young and immature. It shows prominent relief features with steep slopes and is still undergoing denudation in response to various exogenetic (isostatic gravity) processes. Since the terrain is young, the geomorphic features of the state do not show much diversity in the formation of landforms. Most of the landforms observed are erosional in nature. The most dominant process in the evolution of these forms is the action of running water, and is operating from Upper Tertiary period onwards, till today.

Based upon relief, drainage, lithologic and structural set up, the landforms of Mizoram can broadly be classified into the following units :

a) MOUNTAINOUS TERRAIN PROVINCE :

The eastern half of the state can be classified as Mountainous Terrain Province. The overall relief in this province is higher and the slopes are much more steeper than in the western half. The relief here scales from 400-2158 metres. The high points are generally over 1000 metres. Average elevation in this province is in the order of 1500 metres. The slopes are very steep and

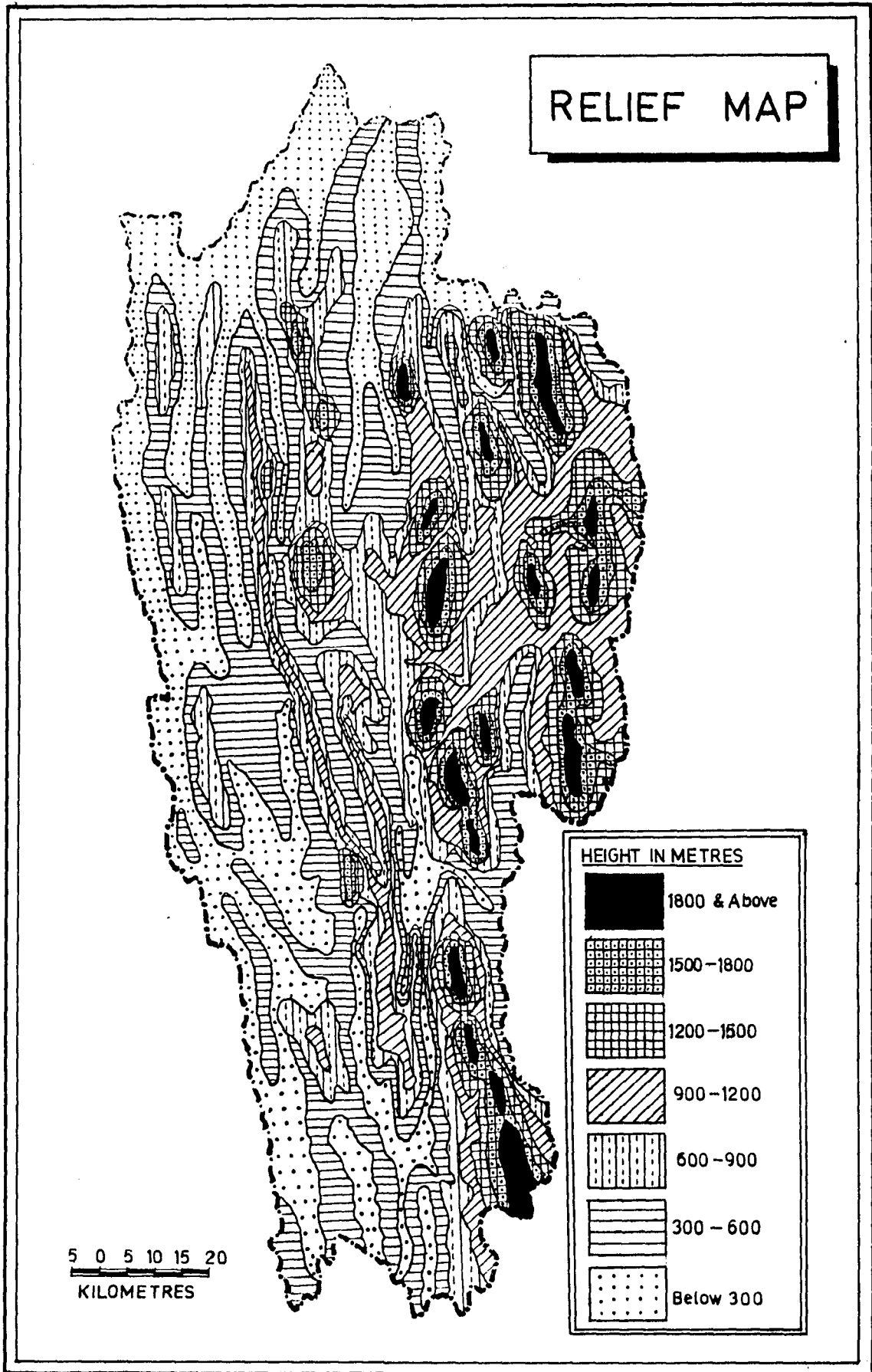


Fig. 2-1

elevation differences between ridge top and valley varies between 200-600 metres. The ranges are mostly aligned in north-south direction. The important mountain ranges in Mizoram can be briefly described as follows :

In the north east corner, bordering Manipur and Burma runs the Sialkal Range. The highest peak of this range is called Lengteng which stood at 2149 metres above sea level. The other high peaks are Naunuarzo and Sur with the height of 2140 metres and 2018 metres. In the south east corner of Aizawl district there are Chalfilh Range and Tawi Range with the elevation of 1905 metres and 1888 metres respectively.

The other conspicuous ranges are Mawmrang, located in between Chalfilh and Sialkal Range in Aizawl district, Hmuifang Range in the central part of the region, and Reiek Range situated at the west of Aizawl mountain. Phawngpui (also known as Blue Mountain), with an altitude of 2158 metres stood out in the eastern part of Chhimituipui district is the highest peak in Mizoram.

The drainage flows either towards north or south, due to over all structural and lithologic control on the drainage. Large scale structural control is evident. Due to relief and moderately heavy precipitation, the dissection is very high. The width of the valley

increases towards both ends on the north and south.

b) RIDGE AND VALLEY PROVINCE :

The western part of the state depicts characteristic ridge and valley type of topography. Nearly half of the area of the state is covered by this province. The relief in this province varies between 40-1550 metres, and the average elevation is 700 metres. The relief is low in the western part and increases towards the east. The hill trend is approximately NNW-SSE to NNE-SSW direction, higher in the central part and tapering towards north and south. The slopes are generally steep and elevation difference between valley floor and hill top is in the order of 100-200 metres. The conspicuous mountain ranges in this province are Mamit and Hachhek in the western part of Aizawl district.

c) THE FLAT LANDS :

There are only few patches of flat lands scattered at places in Mizoram. They are mostly intermont valley plains located in the midst of hills and narrow valleys. These plains are believed to have been formed in the beds of silted up lakes as they are covered by rich alluvial soils.

The largest plain in Mizoram is Champhai, located at

the eastern border at a distance of about 195 kilometres east of Aizawl town. Champhai plain, though being the largest plain in Mizoram, has a length of only 11.27 kilometres, and the widest part is 4.83 kilometres across. The whole area of this plain has been converted into permanent wet rice cultivation.

The second largest plain is situated at North Vanlaiphai in the south eastern corner of Aizawl district. Thenzawl is another important plainⁱⁿ the southern part of Aizawl district which is also under successful wet rice cultivation. Mention also may be made to numerous small flat patches like Tuisenhnar near Khawzawl in the east, Zawlpui by the side of Mat river, Phaisen and Chhimluang, west of Bilkhawthlir village in the north, Hortoki and Bairabi along the river Tlawng.

There is a vast area called Chamdur in the western part of Chhimtuipui district. The area is covered by thick forest, and attempts have been made to exploit this area for permanent wet rice cultivation.

THE LAKES

Being dominated by mountainous topography, only a few lakes are found in Mizoram. The three large lakes are Palak, Tamdil and Rengdil. Other lakes are Rungdil, and

Vachadil. Among these, only Tamdil, 100 kilometres away east of Aizawl has been developed and created as the most important and productive fish-pond managed by the State Government.

DRAINAGE

Surface configuration like relief, slope and dissection are important factors which affect the development of the drainage system of the area.

The state of Mizoram is drained by a number of rivers, streams and nallahs of various sizes and shapes (Fig.2.2). The study area receives a considerable amount of rain water during summer, and most of the streams are ephemeral in nature. Their volume is very limited in dry season whereas they swell rapidly in rainy season. It has been observed that running water is the most effective agent which has sculptured landforms of the region.

Most of the drainage lines originated in the central part of the area, and flow either towards north or south, controlled by the north-south trending ridges. The valleys are narrow and have been carved out in softer formations. The rivers at various places formed deep gorges, and cut across the striking ridges forming watergaps. The upper courses of the rivers are often

intervened by waterfalls. As the drainage course is controlled by parallel ranges, the drainage of ephemeral and consequent types show trellis, dendretic, as well as parallel drainage patterns.

The northern portion of the region is drained by rivers Tlawng (with its tributaries Teirei, and Tut), Tuivawl, Tuirial, Langkaih and Tuival, all flowing northward and eventually fall into Barak river in Cachar plain of Assam. The southern hills are drained by rivers Chhimtuipui on the east with its tributaries Mat, Tuichawng, Tiau and Tuipui; while Khawthlangtuipui with its tributaries Kawrpui, Tuichawng, Phairuang, Kau and De formed the western boundaries with Tripura and Bangladesh; whereas the rivers Tiau and Chhimtuipui (Koladyne) formed the natural boundary with Burma in south east.

The important drainage systems of Mizoram can be described as follows :

1) TLAWNG DRAINAGE SYSTEM :

The river Tlawng is the longest river in Mizoram which measures about 102 kilometres inside the region. It originates from Zopui hill, some 8 kilometres east of Lunglei town, at the height of about 1395 metres. Flowing towards north, it divides the region into almost two equal parts. After the confluence with tributaries Tut and

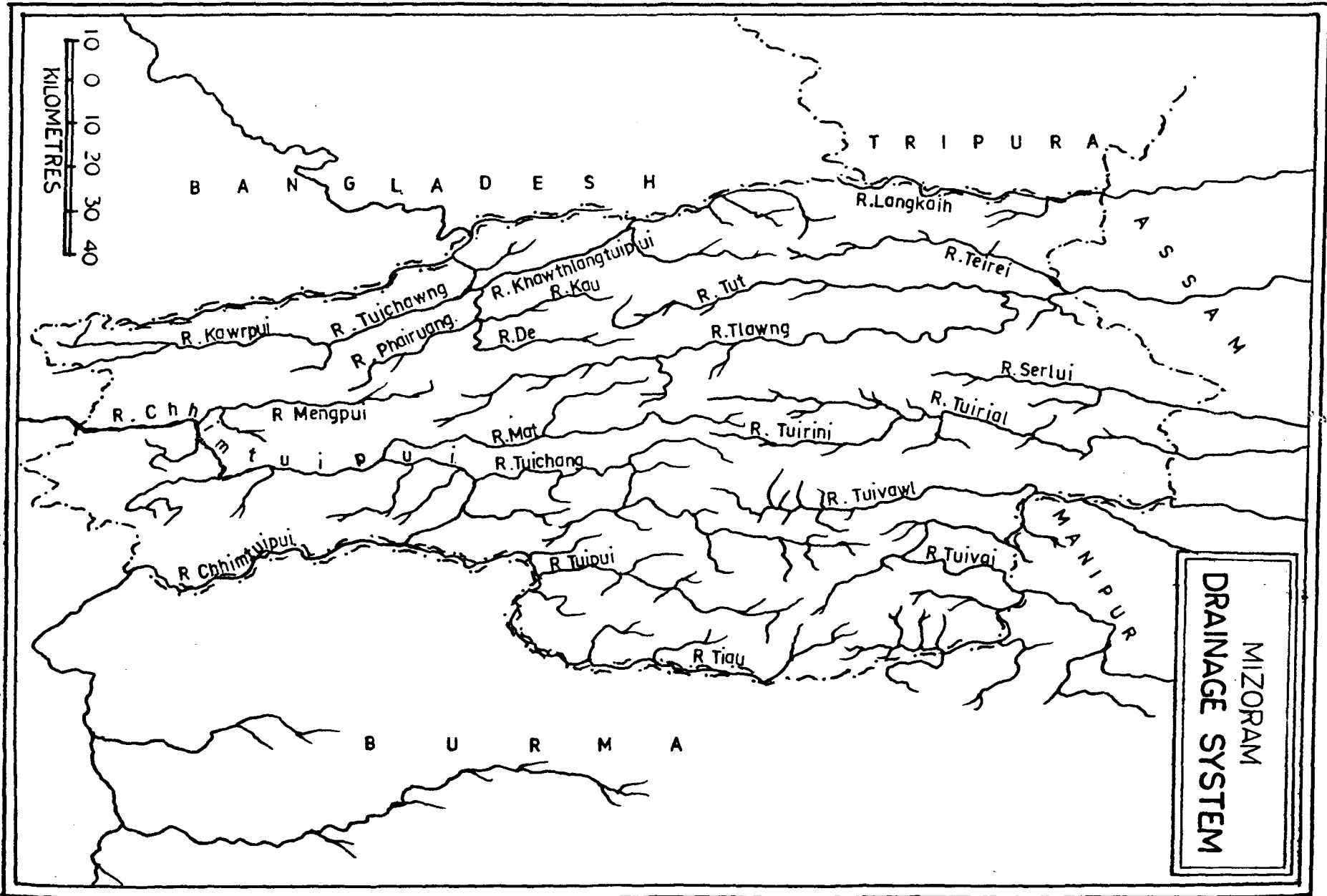


Fig. 2.2

Teirei from the western bank, it enters Cachar district (where it is known as Daleshwari) and eventually falls into Barak near Badarpur. The river is navigable by small boat throughout the year, and it is regarded as the most useful river of Mizoram. River Tut and Teirei flow in parallel with river Tlawng for about 60 kilometres and 40 kilometres respectively before they join the main stream.

2) TUIRIAL DRAINAGE SYSTEM :

Tuirial is also navigable by small boat to a considerable length. Its span inside the state is about 67 kilometres. Originating from North Chawilung hill in Aizawl district, it flows northward to join Barak river in Cachar district of Assam. An important tributary is Tuirini, which joins the main stream from the eastern bank after flowing parallel to it for about 29 kilometres.

3) TUIVAWL DRAINAGE SYSTEM :

This system drains the north east portion of the region. The main river, Tuivawl, which rises near Chhawrtui village flows towards north where the tributary Tuival joins it at Manipur border. It later confluent to Barak river.

4) TIAU DRAINAGE SYSTEM :

The eastern fringe of the region is drained by the

Tiau drainage system. River Tiau which spans for about 83 kilometres is a demarcating line between Mizoram and Burma. Rising from the north east corner near Khuangphah village it takes a southward direction. After the confluence with main tributary, R. Tuipui, it meets R. Chhimtuipui in an opposite direction. The meeting point of these two rivers gives quite an interesting scene as the two currents encountered with an opposite forces.

5) CHHIMTUIPUI DRAINAGE SYSTEM :

This system drains the south-eastern part of Mizoram. The main river, Chhimtuipui is the biggest river in Mizoram by volume. It originates from the western part of Burma near Vanum village at the height of 2325 metres, and flows in southern direction. It enters Mizoram near Sabawngte village from which it takes the northern direction marking the Burma border, and meets Tiau river in the opposite direction. From this point it diverts its flow direction towards north west and meets Tuichang river near Hnahthial village, and eventually flows southwards where tributaries Mat and Mengpui confluent it. The rivers Tuichawng and Mat originate from the central part of Aizawl district. Mengpui, another tributary of Chhimtuipui river rises near Lunglei town and meets the main stream in Chhimtuipui district.

6) KHAWTHLANGTUIPUI DRAINAGE SYSTEM :

The Khawthlangtuipui represents the drainage system of the whole south western part of Mizoram. Originating from Saithah village in Aizawl district, the river flows towards north, forming a boundary line between Mizoram and Bangladesh. After taking about 105 kilometres course, it turns towards south west entering Bangladesh through Tlabung, a sub-divisional headquarter.

Khawthlangtuipui has numerous important tributaries such as Kawrpui, Tuichawng and Phairuang which associate it from the south. Rivers Kau and De flow parallel to it from the south for a considerable length. This drainage system shows rectangular and parallel drainage pattern. The river is navigable by small boat and serves as an useful transport route, as far as trade with Bangladesh is concerned.

The whole drainage system of Mizoram, on a large scale depicts parallel drainage pattern. The reason is obvious; the characteristic parallel mountain ranges. But one should not overlook the presence of trellis drainage pattern produced by numerous consequent and subsequent streams, which flow parallel either to the dip or strike of the ridges. Dendretic drainage system is also observed at Chhimtuipui drainage system where tributaries, such as

Tiau, Tuichang, Mat and a number of streams uniting with the main channel.

CLIMATE

Mizoram, due to its tropical location, enjoys a moderate climate. It is neither very hot nor too cold throughout the year. The region falls under the direct influence of the south-west monsoon, as such the region receives an adequate amount of rainfall. The climate is humid tropical, characterised by short winter, long summer and heavy rainfall.

TEMPERATURE

Since there are no proper observatory stations in Mizoram, it is not possible to give a comprehensive knowledge about the temperature conditions of the region. The analysis is based mainly on observations of the researcher, supplemented with meagre statistical records.

The salient thermo-characteristics of Mizoram is that temperature does not fluctuate much throughout the year, excepting in the low-lying valley sites. The highest temperature is observed in June and July. Thereafter, the onset of monsoon brings down the temperature. The temperature continues to fall with the break of the monsoon rains, and it is minimised in

December and January. In autumn, the temperature is usually between 18°C to 25°C, while winter temperature records normally between 11°C to 23°C. The summer temperature is usually between 21°C to 30°C.

In winter, the lowest temperature is felt at places having high altitudes, such as Champhai, Zote, Ngur, etc. in the east, also Bualpui (Ng) and Phawngpui mountainous area in the south. The maximum temperature in summer is observed at relatively lower places, such as Kanhmun, Lokicherra, Bairabi, Vairengte, etc. in the northern part, and Tlabung, Chawngte, Tuipang, etc. in the south. It is to be seen that places at higher altitudes experience lower range of diurnal temperature, while places at lower altitudes have higher temperature ranges.

RAINFALL

The entire region is under the direct influence of monsoon. It rains heavily from May to September. The average rainfall for the whole Mizoram is 250 cms per annum. The north western portion of the state receives highest rainfall, i.e., more than 350 cms per annum. The rainfall also increases southward with increase in humidity. While Aizawl, located at 23°44'N and 92°43'E receives about 208 cms rainfall, Lunglei records as high as 350 cms. The study of the existing rainfall data

ANNUAL AVERAGE RAINFALL IN MIZORAM

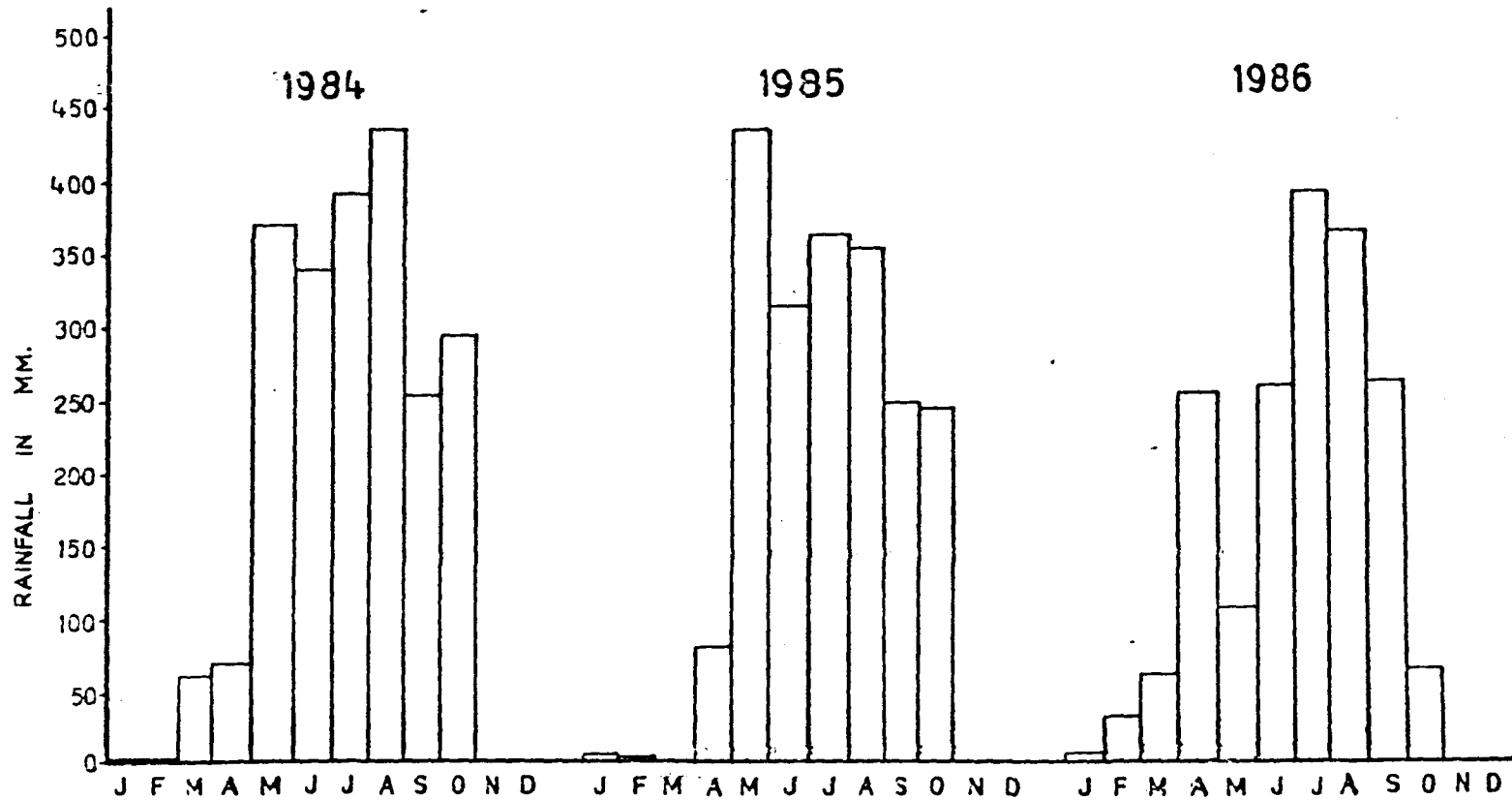


Fig. 2-3

reveals that the highest rainfall data in Mizoram was recorded in July, 1983 with 602.60 cms.

Precipitation is heavy in summer, normally from May to September, and lasts till late October. Normally July and August are the rainiest months, while December and January are the driest months. The monthly rainfall data of Mizoram for certain years are shown in the Table No. 2.3.

THE SEASONS

Seasonal variation of climatic conditions in Mizoram is insignificant. Yet, three different types of seasons, depending on the change in temperature, can be observed, such as :

1) THE COLD SEASON OR WINTER :

This season starts from November and lasts till February. The temperature is comparatively lower (12°C - 20°C), but not too low to make human habitation difficult. The season receives very less rainfall and whatever amount of rainfall received is originated from the north-east, generally known as retreating monsoon. The season is very pleasant with clear blue sky in the absence of cloud covering. Morning mists which are formed upon the valleys give an enchanting view of a wide

Table 2.3
Monthly Rainfall during 1984-86
(in cms.)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1984	4.4	3.6	1.8	69.4	369.6	340.3	392.9	437.0	251.5	295.5	-	0.1
1985	6.5	3.7	3.5	82.6	437.1	315.4	365.6	354.0	248.8	246.0	-	0.2
1986	6.9	31.0	58.2	254.9	105.4	258.5	389.9	364.9	260.9	NA	-	NA

Source : Directorate of Agriculture, Mizoram, Aizawl

stretches, resembling a vast ice-sheets.

2) THE WARM SEASON OR SPRING :

The warm season begins from March to first part of May and merges with rainy season. The temperature has risen upto a range of 19°C-29°C, being aggravated by rainless days. The early part of the season is characterised by bright sunshine and clear sky with little or no cloud till it is disrupted by the coming of pre-monsoon showers.

3) THE RAINY SEASON OR SUMMER :

This is the longest season in Mizoram, lasting for six months from May till late October. The season starts with violent storms which swept the state from south west through Bay of Bengal, marking the beginning of monsoon. It rains heavily from May to September. About 40 per cent of the annual rainfall is received during July and August. The heavy outpours which start normally in the morning are sometimes associated with hailstorms and thunder. The temperature remains high, but is kept down to a considerable extent by the usual rains.

SOILS

The soils in Mizoram are generally sandy. Derived

soil with red loamy texture is also found with high level of lateritic. The soil acidity is high. They are usually low in Potash and Phosphorous. But in an uneroded soil, the content of Nitrogen is quite high mainly due to the accumulation of the organic matters. The soils in the valleys are heavier, as they are brought down by rain water from high altitudes.

Sanker and Nandy (1976)⁵ have classified the soils of Mizoram into three orders of soil taxonomy, viz.,

1) Entisols, 2) Inceptisols and 3) Ultisols.

1) ENTISOLS :

These soils have little or no evidence of profile development. They occur on steep, actively eroding slopes and ridges, or on flood plains that receive new deposits of alluvium at frequent intervals. In the order of entisols, the following soils have been identified at the family level classification :

a) Mixed Hyperthermic, Typic Udipsamments - which occurs in narrow valleys especially on river courses in a very limited area.

5. Sanker, K. and D.R. Nandy, Structure and Tectonics of Tripura-Mizoram Area, India, G.S.I. Misc. Publication No.34, Part I, pp.141-145.

b) Loamy Skeletal, Mixed Hyperthermic, Lythic Udorthents - occur only in ridge tops which have been severely eroded due to indiscriminate felling of forests. The soils have been coherent strata with 50 cms. Exposed rock sequences are seen at few places.

c) Loamy Skeletal, Mixed Hyperthermic, Typic Udorthents - these soils have been encountered in erosional areas on ridge tops and terraces. These are found as dominant units on ridges which are under scrubs. The soils are having 40-60 per cent of coarse gravels. These soils can support good vegetation if properly managed.

2) INCEPTISOLS :

This order of soils occur widely in sub-humid region. The common horizon sequence is an ochric epipedon over a cambic horizon. Freely drained inceptisols are classified as Ochrepts. The following families of subgroup typic Dystrochrepts have been identified in Mizoram.

a) Loamy Skeletal, Mixed Hyperthermic, Typic Dystrochrepts - Found on the concave part of the slopes (in narrow patches) of hill top ridges. Generally, these soils are deep with 40-50 cm thick solum, below which weathered soft rocks are found. They are well suited for

forest species.

b) Fine Loamy, Mixed Hyperthermic Typic Dystrochrepts - commonly occurring on the steep slopes, in narrow valleys and on terraces. They are generally covered with dense scrubs or grasses. The soils are fine loamy in texture. They also have few rock fragments.

3) ULTISOLS :

Ultisols are commonly found on the footslopes. The soils have horizons which are rich in translocated silicate clays. The main sub-order of these soils are Aquults, Humults and Udults.

a) Aquults - only one family of this sub-order, i.e., mixed hyperthermic, fine loamy, typic palequults have been found to exist in Mizoram. It is found in the flat lands.

b) Humults - only one family of this sub-order have been identified. These soils are rich in humus and support generally rain forests.

c) Udults - Udults order of soils are fairly widespread in Mizoram. They are fairly drained, poor in humus, associated with humid climate with high rainfall.

To summarise, in hilly terrain, the slopes are steep

to very steep consisting mostly of Hapludults, Paleudults and Palehumults. These soils are highly leached, poor in bases, rich in iron and low in pH value. They have wider occurrence as compared to other soil types.

The soils on the top of ridges are mostly shallow or underlain by weathered rock and have thin depth. They have poor moisture supply and are capable of supporting only scrubs or low trees.

In narrow valleys, the soils are young and sandy. The extent is very much limited and are of least importance for land use. The soils in flat lands are poorly drained and have high ground water table.

The soils of Mizoram as a whole, are well drained except in flat lands, and are capable of providing substantial oxygen supply for plant growth. The soils of the region also have capability to retain soil moisture and maintain its supply throughout the growing season of the normal crop. They have a low inherent fertility in the form of poor supply of bases and mineral reserve. This implies the necessity of inputs.

VEGETATION

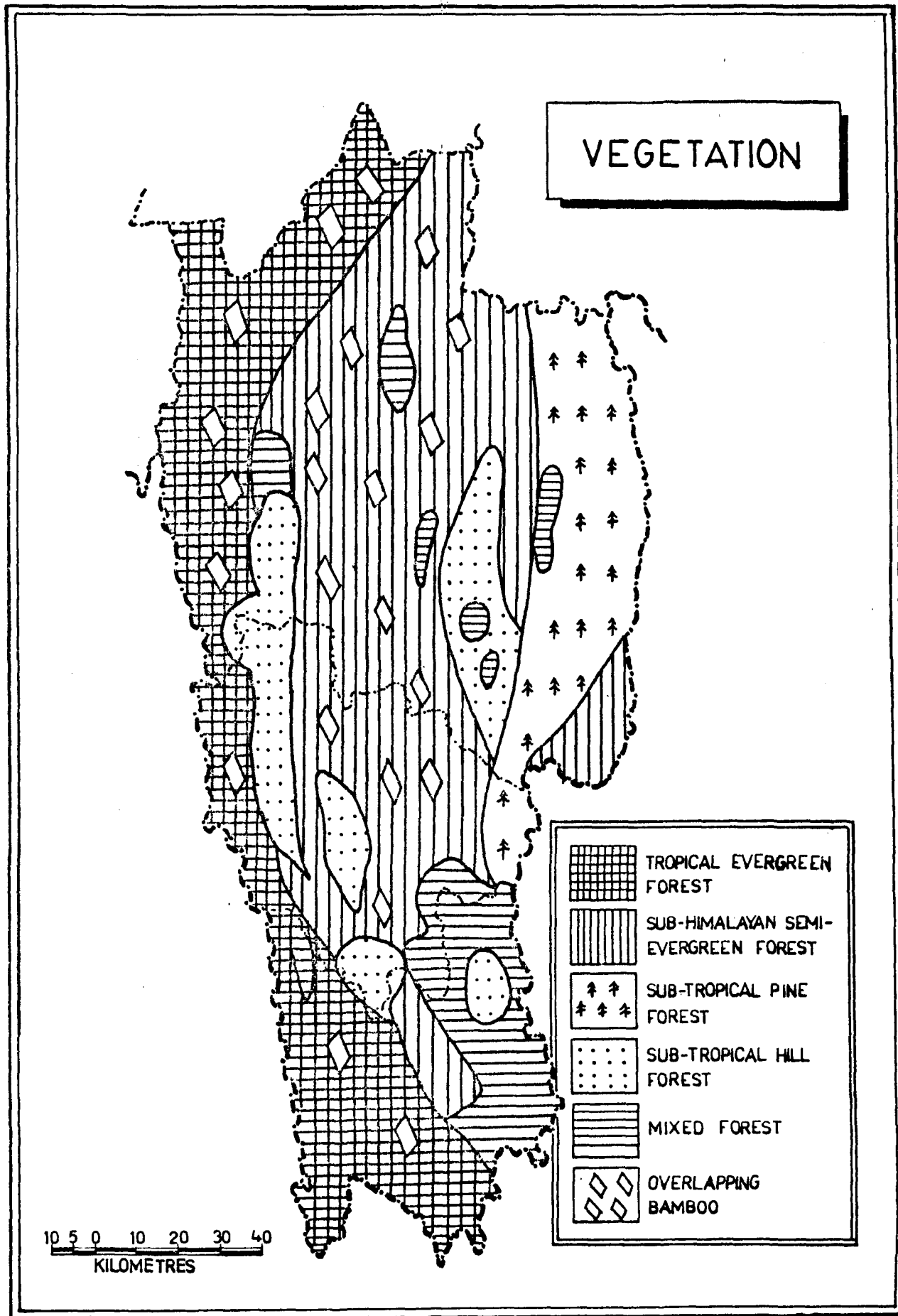
Mizoram has an abundant growth of vegetation. Out of the total geographical area (21,087 sq. km.), as much

as 15,935 sq. km. is covered by vegetation which accounts for about 75 per cent of the geographical area. The tropical location of the region, supported by adequate rainfall and the prevailing climatic conditions favour the luxuriant growth of vegetation. The numerous vegetation ranges from tropical trees to sub-tropical, comprising much valuable timber species, medicinal herbs and domestic resources.







But the vegetation of Mizoram has undergone a serious change due to continuous onslaughts by man, clearance, heavy exploitation and maltreatment by burning and overgrazing. Among these, the traditional jhuming, lumbering and fueling are the major factors responsible for the degeneration of vegetation in Mizoram.

The natural factors which influence the geographical distribution of forest in Mizoram are latitude, elevation, moisture and nature of soil. There is a marked difference in vegetation of the western and the eastern part of the state. The influence of altitude, soil and moisture is obvious.

The forest of Mizoram can be simply described as wooded forests in the higher ridges, and bamboo forests in the lower ridges, normally below 600 metres, including riverine lowlands. The simple classification of the



VEGETATION

-  TROPICAL EVERGREEN FOREST
-  SUB-HIMALAYAN SEMI-EVERGREEN FOREST
-  SUB-TROPICAL PINE FOREST
-  SUB-TROPICAL HILL FOREST
-  MIXED FOREST
-  OVERLAPPING BAMBOO

10 5 0 10 20 30 40
KILOMETRES

Fig. 2.4

vegetation of Mizoram falls under three broad types, viz.,

- 1) Tropical-Wet-Evergreen Forests,
- 2) Tropical Semi-Evergreen Forests,
- 3) Mountain Sub-Tropical Forests.

The timber species found in Mizoram are Lawngthing (Dipterocarpus), Char (Terminalia), Tatkawng (Artocarpus michelia champaca), Ngiau (Michelia champaca), Khiang (Schima wallichii), Thlanvawng (Gmelia arborea), Tei (Cedrela loona), etc.

The main timber species like Lawngthing, Char, Khiang, Tatkawng, Ngiau, etc. are found on sandstone and limestone on the crest and slopes of the ridges as well as on the higher slopes. Bamboo is available everywhere, except in Champhai area in the east, with more intensity towards the west. In fact, bamboo forests cover more than 80 per cent of the total vegetated area in Mizoram. Lower slopes of the ridges and former jhummed areas, and low valley sites are covered with bamboo patches of different growth depending on when the jhum was practised at respective places.

First patch where the composition is a mixture of moist deciduous, semi-evergreen and bamboo are delineated as mixed forest. They are distributed in patches, i.e. Chalfilh Range, north of Champhai and Dampa range.

The following table shows the classification of forests in Mizoram :

Table 2.4
Classification of Forests in Mizoram

Management	Category	Area in sq.km.
State owned	1) Protected	1,300
	2) Reserved	5,255.22
	3) Wildlife Sanctuary	527
Village Council owned/controlled	1) Village Safety and Supply Reserved	1,728
	2) Unclassified	5,240
District Council owned/ controlled	1) Protected	347
	2) Reserved	363
	3) Wildlife Sanctuary	210
	4) Village Safety and Supply reserved	866
Grand Total		15,935.22

Source : Statistical Handbook, Mizoram, 1985, pp.128-129.



PLATE NO. 2.1 :: Nature of Terrain in Mizoram.
Note the burnt lands for jhum cultivation,
thick bamboo jungles and morning mists etc.

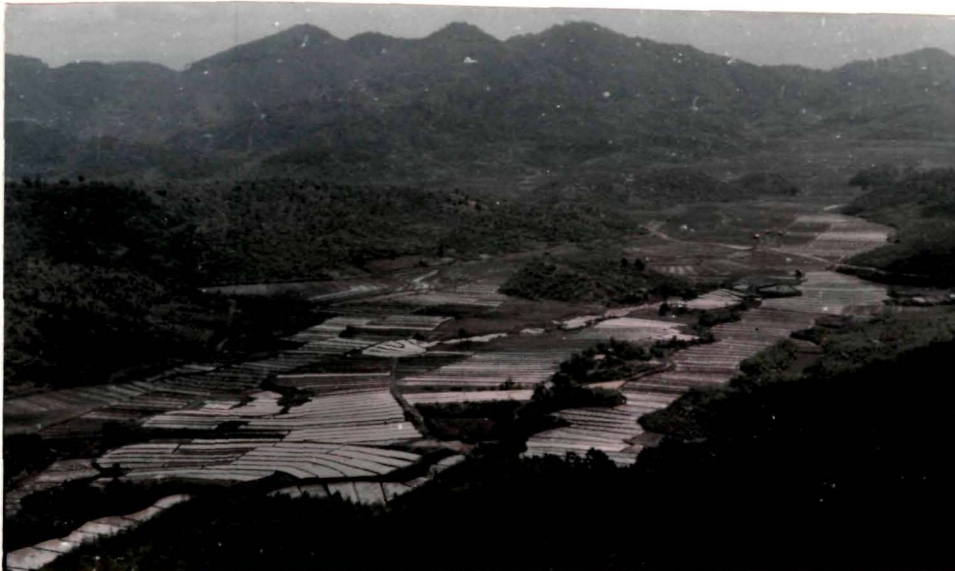


PLATE NO. 2.2 :: Champhai Valley : The widest
plain area in Mizoram. Ranges of Burma are
seen at the background.



PLATE NO.2.3 :: The meandering Tuichang river
Change of river course is a common characteris-
tic of monsoon fed rivers in Mizoram.

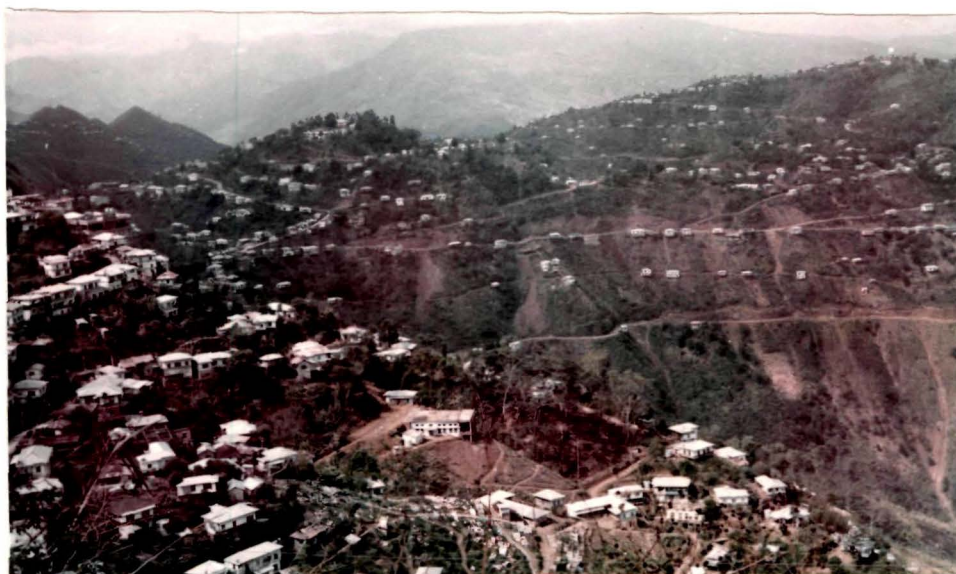


PLATE NO.2.4 :: Due to soft nature of rocks at
places the roads are prone to avalanche and
landslides. The plate shows the western out-
skirt of Aizawl.

Chapter III

ECONOMIC CHARACTERISTICS

The analysis of some of the economic problems and prospects would be of great help to policy makers in devising appropriate schemes for development of the region. Indeed, it is the economic level which portrays the standard of living of the people in the area. The economic study reveals the capacity of growth and manpower of the region, their major activities, strength and sustenance, and ultimately helps in formulation of developmental plans.

Needless to say, India is an underdeveloped country where majority of the people depend on agriculture. The state of Mizoram is one of the least developed region of

India. The reason may be attributed to its extreme isolated location and various geographical constraints like topography, climatic condition and political instability as well.

The present chapter is an attempt to present the economic picture of the state with the help of various economic attributes, such as occupational structure, agricultural activities, forestry, development of power, transport and communication network, and small scale and cottage industries. The related problems like physiography, climate, etc. have been discussed in Chapter II.

Being hilly region and tribal dominated area, majority of the people practise agriculture for their sustenance since the past. Due to lack of information about detailed geological information and investigations of mineral deposits, major mineral based industries are not existing till today. It is not easy at present, to achieve much development in the field of industry not only because of absence of mineral based industries, major trade and commerce, but also due to lack of technical know-how, deficiency in raw materials, power and skilled labour etc. Whatever so-called industry existing in the region is small scale and cottage industries.

OCCUPATIONAL STRUCTURE

The occupational structure analysis represents the economic activities of the people. Occupation is perhaps the most important characteristics influencing man's life¹. It gives the degree of employment and unemployment and exhibits its influence as one of the major determinants of several social, economic and demographic characteristics of the population. As Gosal (1965)² pointed out, "The occupation often reflects a variety of cultural traits of the workers, especially in country like India where cultural moorings have strong bearing on what a person is to do for earning livelihood."

The census of India 1971 divided the population into two broad sections, i.e., workers and non-workers. Workers are classified into nine categories³. Nine

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1. Alba, M. Edward, Preface to Comparative Occupation Statistics for the United States : 1870 to 1940, as cited by D.J. Bogue in Principles of Demography, John Wiley, New York, 1969, p.252.
 2. Gosal, G.S., "Occupational Structure of Punjabi's Rural Population 1961", The Indian Geographical Journal, 40:1, 1965.
 3. Classification of Workers by Census of India 1971 is as follows : 1) Cultivators, 2) Agricultural Labourers, 3) Livestock, Orchards and Allied Activities, 4) Mining and Quarrying, 5) Manufacturing, Processing, Servicing and Repairing - (a) Household industry (b) Other than Household Industry, 6) Constructions, 7) Trade and Commerce, 8) Transport, Storage and Communication, 9) Other Services. The Census of India 1981 has later classified these nine categories into four broad categories. However, the 1971 classification is still followed in the census reports of Mizoram State, as such the analysis corresponds to that of 1971 census classification based on 1981 data.

categories of workers are normally grouped into three economic activities viz., Primary economic activities including categories 1, 2 and 3; Secondary economic activities including categories 4 and 5, and Tertiary economic activities consisting of categories 6, 7, 8 and 9.

Mizoram is an agricultural state and most of the population is engaged in agricultural activities. In 1981, 73.84 per cent of the total workers are attached to primary sector for their occupation. The secondary and tertiary activities comprised of 26.14 per cent (i.e., secondary - 2.21%, tertiary - 23.93%) of the total workers in Mizoram.

As a general rule, there is a marked difference in the economic activities of the workers from urban and rural areas. Of the total workers from urban areas, only 29.31 per cent are engaged in the primary sector, while as much as 84.72 per cent of the total rural workers are primary workers in 1981. The share of workers in secondary and tertiary sectors are very low. The rural participation in the secondary activity is only 0.86 per cent as against 7.77 per cent by urban workers. In tertiary sector, workers accounted for 23.93 per cent for total; 14.52 per cent for rural and 62.91 per cent for urban.

OCCUPATIONAL STRUCTURE

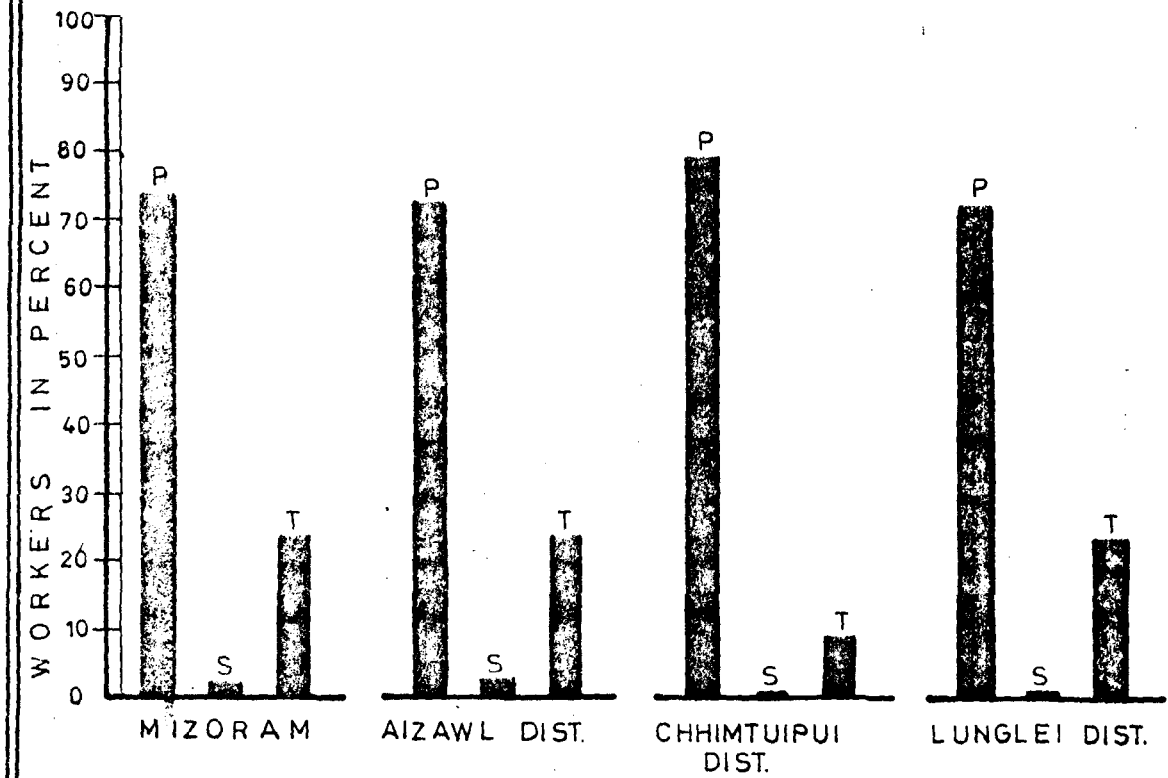


Fig. 3-1

Though block-wise data is not available for distribution of workers in different group, it may be significant to present the same at a district level for the year 1981. It is vivid from table (No.3.1) that Primary sector constituted the highest share in all the districts of Mizoram. The participation rate figured 72.98 per cent in Aizawl district. It is 72.24 per cent in Lunglei district, and Chhimtuipui has the highest value of 79.95 per cent.

The Secondary activity constituted a very small share. It is 2.77 per cent in Aizawl, 1.29 per cent in Lunglei, and only 0.65 per cent in Chhimtuipui district. This indicated that the region is industrially backward; and secondary activities such as manufacturing, processing and other allied activities make no worthwhile contributions to the region's economy.

The tertiary workers constituted a higher component as compared to secondary workers. It is 24.23 per cent in Aizawl; which is slightly higher in Lunglei with 26.46 per cent, and lowest in Chhimtuipui district with only 19.38 per cent.

Another conspicuous character is that the participation ratio of rural workers is comparatively high in primary sector while it is lower in secondary and

Table 3.1

Distribution of Main Workers into Primary, Secondary and Tertiary Sectors, 1981

State/District	Total/ Rural/ Urban	Total Main workers	Primary		Secondary		Tertiary	
			Total	Percen- tage	Total	Percen- tage	Total	Percen- tage
MIZORAM	T	206064	152176	73.84	4563	2.21	49316	23.93
	R	165631	149325	84.27	1428	0.86	24060	14.52
	U	40433	11851	29.31	3144	7.77	25437	62.91
Aizawl District	T	140728	102716	72.98	3912	2.77	34101	24.23
	R	108218	93201	86.12	1085	1.00	13913	12.85
	U	32510	9515	20.26	2806	8.63	20253	62.29
Lunglei District	T	36031	26029	72.24	468	1.29	9535	26.46
	R	30289	24442	80.69	223	0.73	5620	18.55
	U	5746	1587	27.51	245	4.26	3915	68.13
Chhimituipui District	T	29305	23432	79.95	191	0.65	5682	19.38
	R	27128	22682	83.61	99	0.36	4348	16.02
	U	2177	1066	48.96	93	4.27	1345	61.78

Source : Census of India, 1981, Series-31, Mizoram, General Economic Tables and Social and Cultural Tables, Part III-A & B, Part IV-A.

tertiary sectors. In Mizoram as a whole, the rural workers in primary sectors accounted for 84.72 per cent, while it is only 0.86 per cent in secondary; and 14.52 per cent in tertiary sector. This phenomena is all true in all the three districts.

AGRICULTURAL ACTIVITIES

Agriculture, the chief occupation of the south east Asian countries, can also be regarded rightly as the basic industry and mainstay of the people in the state of Mizoram. Mizoram is predominantly an agricultural region where about 75 per cent of the population live in rural areas and depend on agriculture directly or indirectly for their livelihood. It is estimated that about 70 per cent of the population of Mizoram is engaged in agricultural activities.

Landuse

Land resources play an important role in determining man's economic, social and cultural progress. Unfortunately, there has been no proper land classification in Mizoram. Recently, only 6,87,295 hectares representative area which is 32.72 per cent of the total area have been covered under soil survey for land cultivation for different uses. The land capability

classes are presented in the following table :

Table 3.2
Land Capability Class in Mizoram (1987)

Class	Percentage Distribution	Expected area to be covered in the whole state (hectare)
I
II	1.26	26,460
III	9.43	1,98,030
IV	18.23	3,82,830
V
VI	11.08	2,32,680
VII	57.75	12,12,750
VIII	2.25	47,250

Source : Directorate of Agriculture, Mizoram, Aizawl, 1988.

According to the above classification which is based on soil survey, it is estimated that about 3 per cent of the total area, i.e., 63,000 hectares is considered as available potential land for paddy and other seasonal crops cultivation. The moderate slopes falling under Class IV and Class VI which are suitable for horticulture crops covered an area of 4,45,000 hectares

which constituted about 21 per cent of the total geographical area⁴.

However, only 20.86 per cent of the total cultivable land for paddy and other seasonal crops is put under cultivation of the same in 1989. In other words, the area put under cultivation of paddy and other seasonal crops (permanent cultivation) was 13,147 hectares during 1988-89. The area under horticulture was only 6,760 hectares⁵, which is 1.51 per cent of the total land suitable for horticulture.

Jhum or Shifting Cultivation

Jhum or shifting cultivation is the principal method of cultivation in Mizoram and its neighbouring hilly states. About 40,000 hectares of land was put under jhum cultivation during 1984-1985, which is 63 per cent of the total crop area in Mizoram for that year. The yield in jhum system is very low though heavy labour input is required. It is estimated that an average yield in jhum cultivation in Mizoram is about 12 quintals per hectare.

4. Directorate of Agriculture & Fisheries, Agriculture Today in Mizoram, Mizoram, 1988.

5. Ibid.

In most of the agricultural systems, the same piece of land is cropped continuously with occasional fallows. Frequently, the fields are bounded by hedges, fences, ditches; and agriculture landscape is ordered and fermented. In shifting cultivation this is not so. The farmer chooses a patch of forest, secondary or primary, cut down some of the trees with an axe, leaving only the larger and economically useful trees, clears the undergrowth with a chempui or dao, and the debris (locally known as chap) are left to be dried on the sun. The debris is burnt, and the ashes serve as a kind of fertilizers so long as they are not washed away through erosion. Crops are sown on the clearing or swidden with a minimum of preparation, and received only cursory attention during the growth⁶.

Paddy is the main crop in jhum field, combined with maize, oilseeds and variety of vegetables. Weed-out work is done twice or thrice till the harvest, depending on the necessity. The application of fertilizers is normally absent in the jhum system.

After the harvest, the land is left uncropped, and colonization by natural vegetation is allowed while another patch of land is cleared for fresh cultivation.

6. Grigg, D.B., The Agricultural Systems of the World, New York, 1976, pp.57-60.

Ideally, the first clearing will not be used for crops again until it has been under a natural fallow for some years and soil fertility restored. Thus, the essential features of jhum cultivation are - first, the rotation of fields rather than crops, both short period of cropping alternatively with long periods of natural fallows; second, the use of slash-and-burn methods to clear the vegetation, and third, the maintenance of fertility by allowing the vegetation to regenerate. Harvesting methods vary, some shifting cultivators pick cereal heads by hands, other reaps with sickles, while root crops are dug out with sticks and hoes.

Jhumming is a wasteful means of cultivation in terms of the vegetation annihilated in the process and in terms of yield. Not only that, the heavy manual labour input in jhum cultivation could have been much more productive, if utilised in other agricultural activities other than jhum, provided modern equipments are available. By jhum system, the natural vegetation is degenerated with a span of time as a new plot is selected for the next cultivation, following a cyclical order. By 1980, the jhum cycle in Mizoram has come down to 9.74 years.⁷

7. Shifting Cultivation in North-East India, NEC for Social Science Research, Shillong, Second Edition, p.115.

Horticulture

In Mizoram, the area put under horticulture is only 6,760 hectares. This shows that only 1.5 per cent of the total land suitable for horticulture is put under the purpose. Orange plantation occupies the largest area followed by banana, pineapple and different citrus crops. The principal horticulture crops production and areas are shown in the following table.

Table 3.3

Area and Production of Horticulture Crops

Year	Orange		Banana		Pineapple		Different Citrus	
	Area	Prodn.	Area	Prodn.	Area	Prodn.	Area	Prodn.
1985-86	1500	6000	100	5000	360	5000	266	900
1986-87	1700	6500	1500	6000	400	5200	350	1200
1987-88	1664	6999	1711	7784	520	6000	405	1150
1988-89*	3150	7500	2150	7800	900	6500	610	1250
1989-90**	3600	8500	2350	8500	975	7000	735	1700

* anticipated

** targeted

Source : Directorate of Agriculture, Mizoram, Aizawl, 1988.

Cultivation of apple and large cardamom have been introduced which are thriving well and will shortly come into bearing stage.

Wet Rice Cultivation

Out of the total cultivated area, only 1.4 per cent is under permanent wet rice cultivation. Though agriculture is practised elsewhere in the region, permanent cultivation of wet rice is confined only in the valleys like Champhai, South Vanlaiphai, Thenzawl, etc. At present wet rice cultivation has been practised wherever the geographical shape favours, whether large or small. Due to ruggedness, most of the river valleys are narrow, and possibility of permanent cultivation is very less. About 7000 hectares of land area have been put under permanent management till 1985. Average yield per hectare is about 21 quintals.

Minor Irrigation

The ultimate irrigation potential under minor irrigation scheme in Mizoram is estimated about 70,000 hectares of which, 45,000 hectares is for flow irrigation and, 25,000 hectares for River Lift Irrigation. Upto the end of Sixth Plan period, 3,200 hectares were brought under irrigation⁸. This means that another 95.43 per cent of irrigable lands are yet to be irrigated if all potentials are to be put under irrigation. It is to be

8. Directorate of Agriculture and Fisheries, 1989, Agriculture Today in Mizoram.

noted that due to ruggedness of the region, flow or canal irrigation is not applicable in most of the places, that necessitates lift irrigation, whose development calls for regular supply of electricity. However, in spite of the difficulties, there has been a remarkable progress in putting the land under irrigation in Mizoram since the last eight years or so.

Productivity of Crops

As has been mentioned in the foregoing text, major source of livelihood for the population of Mizoram is agriculture. However, if considered from the yield per hectare and total output of various crops, productivity in Mizoram is very low in most of the cases.

Here, five major crops are selected for analysis and presented in the table No. 3.4. It is to be observed that the cultivators have a tendency to abandon the practice of jhuming year after year. As a result, the jhum areas have drastically come down by 6,250 hectares within three years from 45,900 hectares in 1985-86 to 39,650 hectares in 1987-88. Similarly, the gross product of jhum also has come down from 35,900 metric tons in 1985-86 to 32,000 metric tons in 1987-88.

It is interesting to note that though the production has gone down, the yield per hectare has

Table 3.4
Average Yield of Five Major Crops during 1985-1988

Name of Crops	Area in hectare			Production in MT			Productivity/HA in MT		
	1985-1986	1986-1987	1987-1988	1985-1986	1986-1987	1987-1988	1985-1986	1986-1987	1987-1988
Paddy :									
a) Jhum	45,900	38,890	39,650	35,900	31,000	32,000	0.78	0.80	0.80
b) W.R.C.	9,100	10,950	11,206	9,100	17,000	17,000	1.00	1.50	1.50
Total a) & b)	55,000	49,840	50,854	45,000	48,000	49,000	1.78	2.30	2.30
Maize	4,870	4,600	5,300	6,435	6,520	7,500	1.32	1.40	1.40
Pulses	2,804	3,000	3,300	1,040	1,500	2,000	0.37	0.50	0.60
Oilseeds	4,500	4,000	4,500	1,550	1,600	1,700	0.34	0.40	0.38
Horticulture fruits	3,126	4,691	4,771	16,900	18,900	21,650	5.41	4.03	4.54

Source : Directorate of Agriculture, Mizoram, Aizawl, 1990.

increased slightly from 0.78 metric ton in 1985-86 to 0.80 metric ton in 1987-88. Reciprocally, the area of wet rice cultivation (WRC) has steadily gone up from 9,100 hectares in 1985-86 to 11,206 hectares in 1987-88. The yield of WRC per hectare has increased from 1 metric ton in 1985-86 to 1.50 metric ton in 1987-88.

Taking jhuming and wet rice cultivation together, production of paddy has increased from 45,000 metric tons in 1985-86 to 49,000 metric tons in 1987-88, showing an increasing yield from 0.81 metric ton to 0.96 metric ton for the same period. The application of manures, better implements and tools as well as acquisition of larger areas for wet cultivation can be attributed to the increase in production and yield during the same period.

LIVESTOCK AND ANIMAL HUSBANDRY

Livestock plays a very important role in economic development, being used as a medium of exchange in the past. It still occupies a place of social prestige and economic strength in the lives of the Mizo. The development of livestock is, therefore, of vital importance for economic development of the region, especially in the rural areas.

According to the Livestock and Poultry Census,

1982, there are 16,48,584 livestocks in Mizoram. Out of the total livestock population, duck and poultry are dominant, sharing about 41 per cent respectively. Pig is another important domestic animal in the state which constitutes about 7 per cent of the total livestock population. Cattle and mithun comprise of about 3 per cent, goats and dogs have a population of about 1 per cent, and the rest such as sheeps, horses, mules and buffaloes have a negligible share of less than 1 per cent. The detail statistics is presented in table No.3.5.

Prior to the formation of the Union Territory in 1972, there was no significant impact in the field of Animal Husbandry and Veterinary in Mizoram. From 1972 onwards, Animal Husbandry and Veterinary and Dairy Farming was gradually improved. At present, Mizoram has 5 Cattle Farms, 4 Piggery Farms, 1 Fodder Farm, 2 Duck Farms, 8 Poultry Farms and 1 Brooder Chic Farm. Apart from this, the region is also supported by 2 Veterinary Hospitals, 30 Veterinary Dispensaries and 75 Rural Animal Health Centres, Feed Mills and 1 Feed Analytical Laboratory. The Animal Husbandry and Veterinary Department has installed 115 numbers of Bio-gas Plants.

Despite great efforts, done by the state government to improve agriculture, the region could not present a

Table 3.5

Livestock and Poultry in Mizoram, 1987

(Quantity in Numbers)

State/ District	Cattle	Buffa- loes	Mithun	Sheep	Goats	Horse/ Ponies	Mule	Donkey	Pig	Dog	Poultry	Duck
MIZORAM	52,072	4,331	49,768	882	27,539	1,419	43	36	1,19,156	18,441	6,86,867	6,88,000
Aizawl	40,136	3,712	37,983	819	18,808	1,234	10	18	82,071	11,082	4,74,159	4,74,792
Lunglei	6,785	301	5,087	8	5,497	6	-	-	11,334	4,710	1,34,891	1,95,301
Chhimituipui	5,149	317	6,698	55	3,234	179	33	6	15,755	2,649	77,817	77,947

Source : Livestock and Poultry Census, Mizoram, Aizawl, 1982; Directorate of Animal Husbandry and Veterinary, Mizoram, Aizawl.

happy picture yet. Though the bulk of population is engaged in agriculture, the region is far from self-sufficiency in food production. The region produces only 30 per cent of the total annual rice requirement of the area, and 70 per cent of rice consumed annually is imported from other states⁹.

It has been long realised that the age old tradition of jhuming practice should be abandoned in order to get reliable agricultural produce. In this regard, the state government has given financial assistance to Jhumia families for their permanent settlement and economic uplift to abandon present practice of shifting (Jhum) cultivation under Land Use Policy of Government of Mizoram. Under this scheme, large number of families are financed, encouraging them to adopt orchards, piggery, dairy farming, horticulture, teak plantation, pisciculture and other activities in a way to discard jhum practices. The Agriculture Department also launched a Jhum control programme at Aibawk Block, the implementation of which started from 1987-88 covering 1,994 families with financial assistance of around Rs.30,000 per family which will spread over for 5 years. Realising the need to

9. Report of Seminar on "Strategy for Planned Economic Development of Mizoram", 1980, Aizawl, organised by DIPR & T., Government of Mizoram.

increase food production, certain steps have been taken to develop more and more potential flat lands for wet rice permanent cultivation. With all these efforts, it is hoped that the region will become more self-sufficient in foodstuff production in the near future.

FORESTRY

Forestry forms the basic resource of the region's economy. Forests are said to constitute the lungs of the country. But in case of the hills, they represent the very soul of the people living there¹⁰.

On a rough estimate, 76 per cent of the total area of Mizoram state is under forest. The broad classification of forest area is given in the following table.

Table 3.6
Broad Classification of Forest in Mizoram

Sl. No.	Forest Class	Area in sq. km.
1	Reserved forest	7,127
2	Forest under the control of District Council/Village Council (Protected Forest)	3,568
3	Unclassed State Forest	5,240
Total		15,935

10. Gupta, D.P., Forest Development in Hill Areas :
People's Perception and Problems of Participation.

The principal factors which influence the distribution of forests in the region are altitude, climate and nature of soils. The forest of Mizoram could be simply described as wooded forests in the higher altitude and bamboo forests in the lower ridges normally below 600 metres in the riverine belts.

The forest types in Mizoram are broadly classified into three categories such as :

- 1) Tropical Wet Evergreen Forests
- 2) Tropical Semi-Evergreen Forests
- 3) Montane-Sub-Tropical Forests.

1) Tropical Wet Evergreen Forests : This type of forest is found in places where precipitation is high. It is found abundantly in the western part adjoining to Bangladesh, Tripura and Assam. Important timber species of this type of forest are Gmelina arborea (Thlanvawng), Michelia champaca (Ngiau), Amoora wallichii (Sahatah) and Dipterocarpus turbinatus (Lawngthing).

2) Tropical Semi-Evergreen Forests : The forest of this type covers about 50 per cent of the total geographical area of Mizoram. It occupies the central part of the region from Chhimtuipui river in the south to Manipur border in the north. Important timber species are Schima

wallichii (Khiang), Cedrela toona (Tei) and Terminalia mycricarpa (Char).

3) Montane-Sub-Tropical Forests : The montane-sub-tropical forests that thrive on a higher elevation mostly confined in the eastern fringe of the region. They are also found in strips of ranges in the western part around Bunghmun and isolated in Sangau area in the south. Pine (Far), Rhododendron (Chhawkhle) and tall grasses are the dominant species.

Forest Produce

The region in the past, had a luxuriant growth of variety of species ranging from tropical to sub-tropical trees. But recent mismanagement has led to degeneration of much of the valuable forest wealth of Mizoram. The important forest produce of Mizoram mostly in the form of raw-materials are bamboo, timber, firewood, sungrass and broomsticks. . Since data of production quantity is not available, the analysis is carried out here in terms of revenue collected by the state government from certain forest produces.

By and large, bamboo is the most important forest produce of Mizoram in terms of revenue collection. In fact, it is the only forest resource which can support the

future forest-based industry. The main variety among many varieties is Melocanna bambosoides. The sustained yield of this variety of bamboo is roughly estimated at 1 million metric ton annually¹¹. During 1986-87, a sum of Rs. 6.9 lakhs was earned from bamboo only¹². The revenue obtained from bamboo was even higher in 1987-88, amounting to Rs.16.3 lakhs, though later declined to Rs.14.13 lakhs during 1988-89 (Plate No.3.5).

Timber is the second major forest produce of Mizoram in terms of value. Taking together raw and sawn timbers, the revenue collected during 1986-87 was Rs.3.39 lakhs, which rose to Rs.4.77 lakhs in 1987-88. During 1988-89, the timber produce magnificently rose to worth Rs. 9.57 lakhs. The important timber species found in Mizoram are : Michelia champaca (Ngiau), Schima wallichii (Khang), Cedrela toona (Tei), Duabanga sonneratioides (Zuang), Gmelina arborea (Thlangvawng), Amoora wallichii (Sahatah), Terminalia myriocarpa (Char), Shorea assamica (Assam Sal), Dipterocarpus turbinatus (Lawngthing) (Plate 3.7).

11. Lalkhama, "This Land This Zoram", Mizoram News Magazine, Autumn Issue, 1985, p.22(C).

12. All the revenue values of forest produce mentioned in this heading is based on Statistical Handbook, Mizoram, 1989, p.49 & 50.

Firewood is another important produce of the region, which is largely used for cooking purpose. A sum of Rs.1.08 lakhs was collected from firewood in 1986-87. In 1987-88, earning from firewood was higher with Rs.1.11 lakhs which was further increased to Rs.1.48 lakhs in 1988-89.

The production of sungrass, broomsticks and charcoal marked an increase during the last five years. The production of charcoal worth Rs.0.33 lakhs in 1986-87 rose to Rs.1.30 lakhs during 1988-89.

However, the production of cane has shown a sharp fall during the last five years. In 1985-86, cane produce worth Rs.3.13 lakhs which fell to Rs.2060 only in 1988-89.

It is here to be seen that the forest produce of the State has been rising steadily. The total revenue collected from forests in 1985-86 was Rs.16.02 lakhs which increase to Rs.27.28 lakhs in 1986-87. The next two years experienced an even higher increase to Rs.40.95 lakhs in 1987-88 and Rs.44.74 lakhs in 1988-89. This shows an increase of 64 per cent from 1985-86 to 1988-89 in the total revenue obtained from the forest resources of Mizoram.

Development of Forest Economy

Traditional shifting cultivation, widespread lumbering and mismanagement of forestry have been the main drawback in keeping the forest wealth alive. The value of forests destroyed by jhuming is estimated to be over Rs.100 crores annually¹³.

Attempts have been made by the State Forest Department to regenerate the forest either naturally wherever there occurs good seed bearers in particular area or artificially through plantation or both. Apart from the local species, the Forest Department also introduced in their plantation programme exotic species like teak and eucalyptus.

The State Forest Department during 1961 to 1986 has brought an area of 87,703 hectares under different plantation. About 35 per cent is under Economic Plantation, 34 per cent under Fuel Wood and 30 per cent under Social Forestry. The details of plantation is shown in table 3.7.

13. Lalkhama, Op. cit., p. 22(D).

Table 3.7
Statement of Plantation upto 1985-86
(Area in hectare)

District	Economic Planta- tion	Quick Growing species	Fuel Wood	Soil Watch	Social Forestry
Aizawl	16,861	5,883	22,015	10,124	13,427
Lunglei	5,768	3,410	660	400	4,480
Chhimituipui	1,100	900	200	-	2,375
Mizoram	23,729	10,193	22,875	10,524	20,382
Grand Total					87,703

Source : Planning Officer, Forest Department, Mizoram, Aizawl.

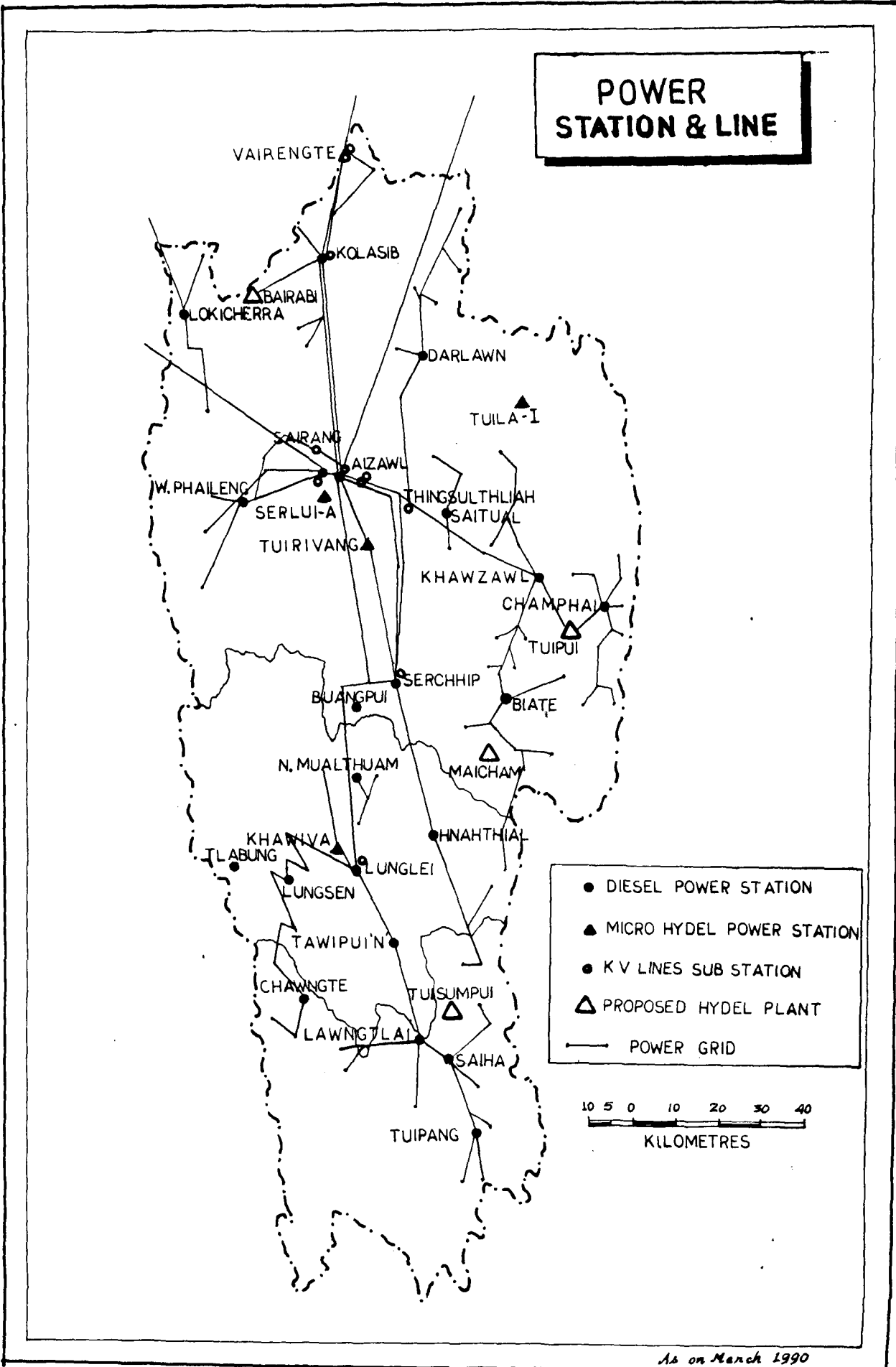
During the period 1986-87, an area of 13,917 hectares was put under plantation of different species like Teak, Thlanvawng (Gomari), Khuangthli and other timber species.

DEVELOPMENT OF POWER

Mizoram being endowed with deep gorges and numerous streams with heavy rainfall, has abundant hydro power potentials. But due to the inaccessible terrain, lack of transport routes and finance its development is still at an infantile stage.

The maiden step in power development was taken in 1962 with the commission of 75 KW Diesel power station at Aizawl. The construction of 66 KV line drawing power from Assam grid was taken up in November 1977. Power available from this system was only 3 MW which could meet the requirement of essential installations only. Keeping in view the future load growth, the need to construct reliable and efficient transmission line was recognised. By 1987 as much as 207 villages were electrified with installed capacity of 16.10 MW by Diesel power alone. This shows that 71 per cent of the villages are still not connected by electricity.

During the present decade, efforts were stepped up to harness the abundant hydro-power potentials in the region and a few projects were identified. Mini-Hydel Projects at Serlui 'A' (1.0 MW), Khawiva (1.05 MW) and Tuirivang (0.30 MW) have been completed. The following mini-hydel projects such as Tuipui (0.50 MW), Tuisumpui (0.45 MW) and Maicham (2 MW) have also been approved. Construction works have been started and expected to be completed by 1991. Detailed investigations for a major hydel project at Tlawng river with proposed 160 MW installation has been taken up and entrusted to National Hydro Electrical Power Corporation. Investigation and construction of 200 MW Tuivai Hydro Project has also been



As on March 1990

Fig. 3-2

taken up by the Central Government. Recently, 132 KV sub-station taking power from N.E. grid was installed at Aizawl with additional 6 MW power import, which makes the total import power to about 10 MW.

The region has so far generated only 25 MW where 22.7 MW is generated from Diesel and only 2.3 MW is generated from Hydel. This shows that the region has a power installation of only 35 MW, which covers only 48 per cent of the total rural population of Mizoram.

TRANSPORT AND COMMUNICATION NETWORK

Development of transport and communication network is very essential for proper and speedy development of a region. Transport and communication lines are the basic necessity, an indispensable infrastructure and essential pre-requisite for any form of development. In fact, transport routes are integral part of a nation's economy and these are the index of prosperity.

The north-east region is till very backward in transport system. Geographical factors, especially physiography greatly affected the development. In hilly state like Mizoram all other means of transport such as Railways, Airways, Waterways are insignificantly developed or totally absent. The only means of transport available

is road transport which is also beset with numerous problems.

Road Characteristics

Road characteristics include the surface conditions of roads, their width, number of lanes, gradients and sharpness of curves. These characteristics are of great significance as they limit or promote the frequency, speed and permissible load of motor vehicle.

Due to ruggedness of the land the development of roads in Mizoram is of great difficulty. As a result of the north-south alignment of ranges, there is a wider scope in constructing the roads in same direction, while construction in the east-west direction is beset with numerous obstacles. As such there are number of blind curves, steep gradients and bridges along the roads running east-west direction.

Road Network

The main mode of transport system available in Mizoram is road transport. The Border Road Development Organisation (with 17 BRTF as its nucleus) and the State Public Works Department are the main agencies in developing the road network in Mizoram.

The roads in Mizoram can broadly be classified into three types, namely, 1) National Highway, 2) State Highway and 3) District Road.

1. National Highway : Mizoram is connected with only one National Highway, i.e., National Highway No. 54. This highway connects Silchar (Assam) with Tuipang in the southern corner of the State through Aizawl and Lunglei. The total length spans 572 kilometres, but Mizoram portion is 521.70 Kms¹⁴. The branches of these road known as NH 54A and NH 54B linked Lunglei and Saiha, the district headquarters. The highway is the most important road at present which facilitates transportation within the state and with the adjoining district of Assam.

2) State Highway : The State Highway is all weathered, truckable metalled road. Important roads under this classification in Mizoram are :

- a) Seling-Champhai Road (150 Kms.)
- b) Seling-Tipaimukh road (139 Kms.)
- c) Sairang-Tuipuibari road (134 Kms.)
- d) Lunglei-Tlabung road (88 Kms.)
- e) Serchhip-Thenzawl road (34 kms.)

14. P.W.D. Road Development Plan of Mizoram, Abstract Statement, Government of Mizoram, p.14.

3) District Road : There are numerous District roads in the State. Some of the important lines are : Kanmun-Kawrtethawveng, Khawzawl-E. Lungdär, Aizawl-Lunglei via Thenzawl, W. Phaileng-Tlabung via Marpara, Kolasib-Zamung, Daplui-Tuidam, Kawnpui-N. Hlimen, Saitual-Ratu, Champhai-N. Vanlaiphai, Tlabung-Chawngte, Keitum-Thingsai.

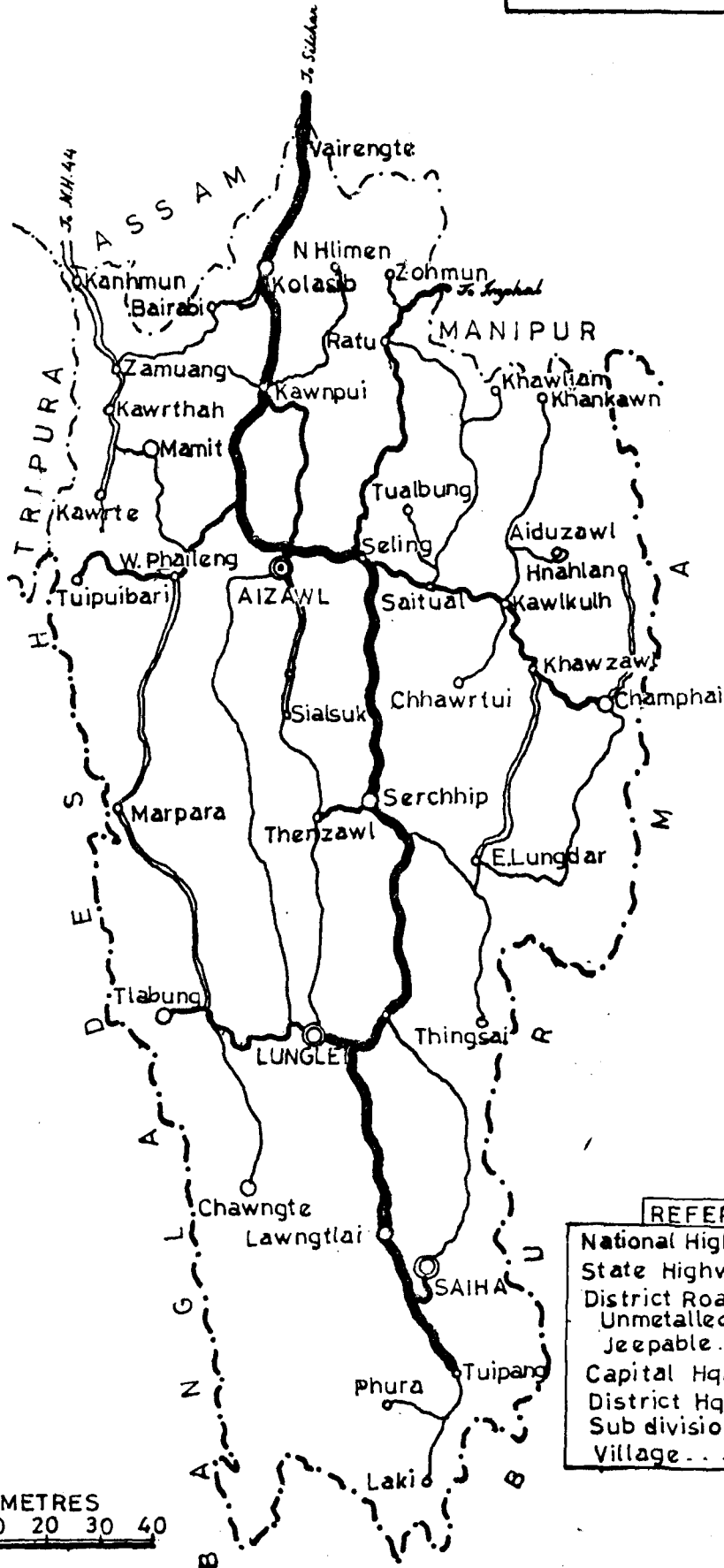
The condition of roads in Mizoram is shown in the following table.

Table 3.8
Condition of Roads in Mizoram : 1985

Sl.No.	Type of Road	Length (in Kms.)
1	National Highway No.54	731.70
2	District Road :	
	a) Surfaced	790.00
	b) Unsurfaced	735.00
3	Rural Road :	
	a) Surfaced	Nil
	b) Unsurfaced	1,336.30
Total		3,393.00

Source : P.W.D., "Road Development Plan of Mizoram",
Abstract Statement, Government of Mizoram, p.14.

ROAD NETWORK



REFERENCES

National Highway No 54	
State Highway	
District Roads:	
Unmetalled Truckable	
Jeepable	
Capital Hqr.	
District Hqr.	
Sub divisional Hqr.	
Village	

KILOMETRES
10 5 0 10 20 30 40

Road Pattern

Physiographic conditions and the level of the economic development directly effect the territorial structure of highway network¹⁵. The pattern of roads in Mizoram has been greatly influenced by topography. The existing road system has been constructed through natural gaps by cutting the north-south trending mountain ranges. So that about 70 per cent of the present road systems are north-south dimensions while the east-west direction shares the remaining 30 per cent. The road pattern in Mizoram as a whole can be attributed to rectangular pattern. Yet, certain road patterns are also observed - such as a) Parallel pattern in the central and western part of Aizawl district joining Aizawl and Lunglei district, b) Rectangular pattern in the eastern part, c) Fork pattern in the northern half of Aizawl district, d) Deranged pattern in the western part of Aizawl district, and e) Linear pattern in the south (Fig. 3.3).

Road Density

While analysing the uneven distribution of road density, it is observed that the areas of high density

15. Kansky, K.J., Structure of Transportation Network : Relationship between Network Geometry - Regional Characteristics, Chicago, p.120.

coincides with areas of low relief and high productivity. On the other hand, the areas of low density are those which have uneven topography and less production soils. True more rugged the relief of a region, the more persistent is the influence exerted upon location of transport routes¹⁶.

During the British rule in Mizoram (then known as Lushai Hills) the only road communications were a bridle path totalling 703 miles. The World War II facilitated Mizoram with construction of roads as a result of its strategic location. After India's Independence, the development of roads have undergone a steady progress. By 1969, the road density in Mizoram was 5.45 km per 100 sq. km. with a total length of 1,149 km. In 1974, the density rose to 7.54 kms. Later in 1982, the road density in Mizoram was 12.62 kms. Though a remarkable progress has been made, the density of road in Mizoram in 1982 was still lowest if compared with its neighbouring states. The density was 15.25 kms. in Arunachal, 23.32 kms. in Meghalaya, 24.44 kms. in Manipur, 38.31 kms. in Nagaland, 41.35 kms. in Assam and 80.10 kms. in Tripura for the

16. James, P.E., "Geographical Factors in Development of Transportation in S. America", Economic Geography, Vol. I, 1925, p. 241.

corresponding year, while it was 47.27 at National level¹⁷.

In 1985, the density figure was enhanced to 16 kms. per sq. km. During the decade plan of road development, i.e., 1981-2001, the state government aimed at constructing various motorable roads of different classifications and the road density is expected to be 41.82 km. by 2001 A.D.¹⁸.

Railway

Mizoram is isolated from the rail network of the country and is served by the railheads at Silchar. The Government of India has sanctioned an extension of Metre Gauge line from Lalabazar (Assam) to Bairabi (Mizoram), a distance of 48.76 Kilometres with a view to integrate this remotely situated state with the rest of India by providing cheap, reliable and efficient system of communication.

The construction works of the project was started way back in 1976 with very slow and steady progress that final location survey was completed only in 1981. The north-

17. Basic Statistics of India 1982-83, Basic Statistics of North-Eastern Region, 1987, N.E.C., p.86.

18. P.W.D., "Road Development Plan of Mizoram", Abstract Statement, Government of Mizoram., p.4.

south alignment of the project follows more or less the course of Tlawng river (Dhaleswari). About 41 kms. of the line from Lalabazar end lies in the relatively plain area and the remaining passes through difficult terrain. Except for 1.26 kms. of the line which falls in Mizoram, the remaining portion lies in Assam. The project was completed and opened in 1991 and Bairabi became the first town in Mizoram to find a place on the Railway Map of India.

Airway

Like other aspects of economic infrastructure, the State of Mizoram has a long way to go in the field of air transport. Till now, it has only one mini airfield, which lies in the valley of Tuirial river, 25 kms. east of Aizawl town (Fig. 3.9). This airfield was constructed by the Defence Ministry for defence purposes, the maintenance and improvement of which, is later entrusted to the State P.W.D. At present, the airfield is engaged by Vayudoot connecting Aizawl with Silchar-Gauhati-Calcutta with airlinks. Apart from this, there is a proposal for construction of medium size airfield at Lengpui, a preliminary survey of which, has been done and entrusted to the Central Government for the take-ups.

Inland Water Transport

The inland water transport has not been developed though it played an important role in Mizoram. During the Fifth Plan period, mass survey for rivers Tlawng, Tuirial, Tuivai, Tuichawng and Tut were taken up. Cleaning of obstructions, blasting of rapids as well as deepening the river channels were done. Before the coming of road transport system, the waterways (rivers) were the basic means of transport for agricultural produce like ginger, chilli, cotton, oranges, etc. During 1984-1985, Rs. 6 lakhs was allocated for the development of inland water transport. So far only the rivers Tlawng, Tuirial and Khawthlangtuipui are navigable throughout the year.

Accessibility Pattern

In the words of Forbles (1964), "Accessibility is the term which implies to the ease of getting to a place"¹⁹. According to Winger (1961), "Accessibility in technical sense is a relative quality occupying to a place of land by virtue of its relationship to a system of transport"²⁰. Garner (1967) described accessibility as "the variable quality of centrality or nearness to the functions or locations"²¹.

19. Choreley, Hagget, Models in Geography, p.305.

20. Idem.

21. Idem.

Accessibility in Mizoram is greatly restricted by geographical factors; the greatest being that of physical. Other factors like economic and social as well as political factors also affected the accessibility pattern to a great extent. On the other hand, the development of transport and communication network is an important factor which helps the progress of development at micro-region and vice-versa.

Taking an average width of 5-10 kilometres from motorable roads as accessible areas, a map is prepared (Fig. 3.4). From the map, it can be seen that the inaccessible areas occupies larger areas than those of accessible areas. The positive areas are made accessible by north-south trending roads in most cases, and east-west dimensional roads in smaller cases. As stated, the accessibility pattern is influenced by physical factor at the most. The mountain ranges running north-south direction favour the construction of roads in the same direction while they act as a limiting factor to the east-west construction of roads. As a result, the accessibility lines link the areas by a longitudinal strikes. The east-west construction of roads is beset with enormous obstacles as it has to cross numerous ranges, but has to be constructed in such a way that steep slopes and blind curves are reduced to minimum. As such,

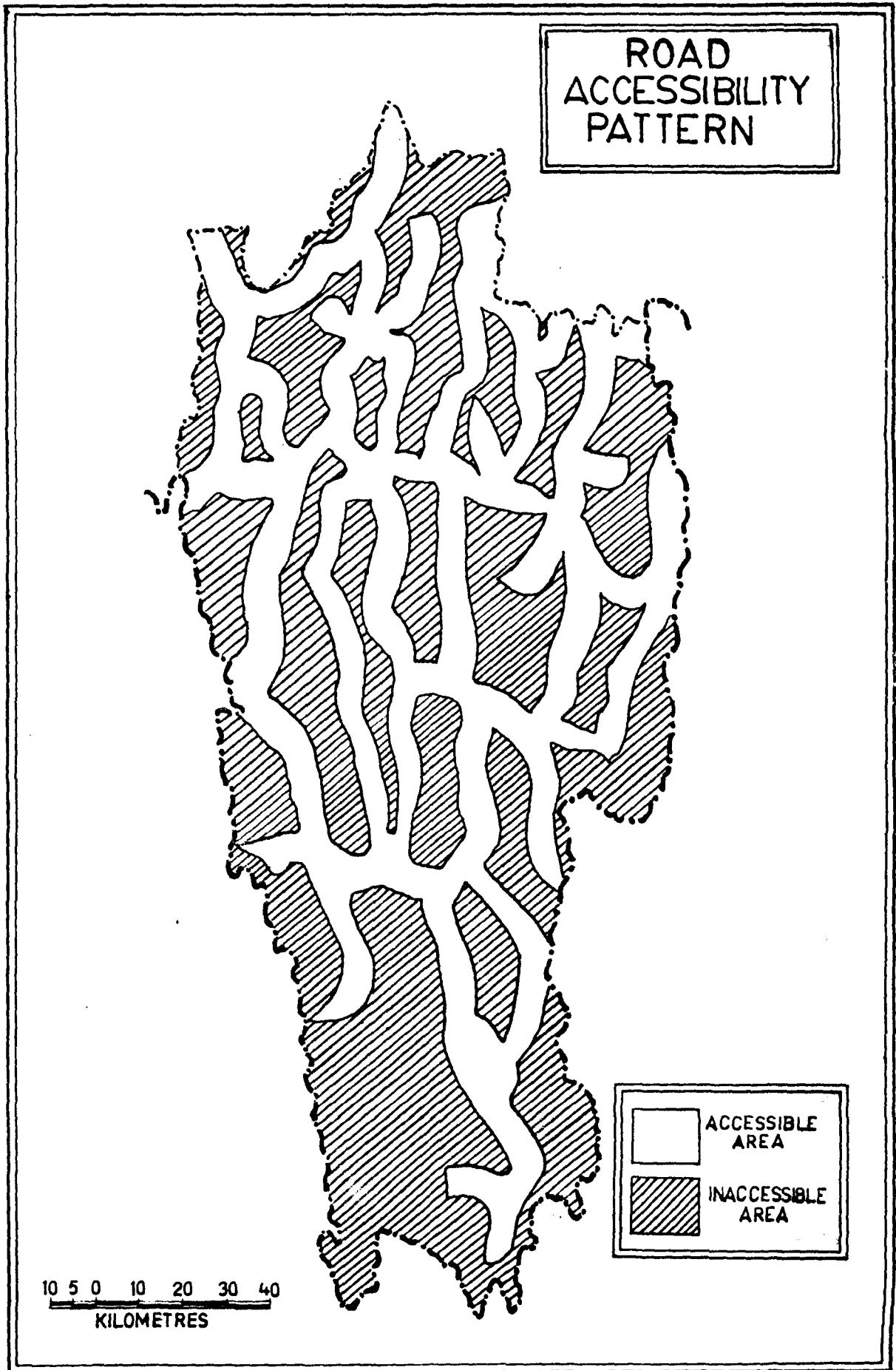


Fig. 3-4

the east-west roads are constructed in folded lines, cutting several escarpments, streams, spurs and rivers. As a result, the distance by road becomes very lengthy as compared to the distance crowfly.

Other factors like economic, political and social especially population and settlement also exerted a sizeable influence upon the accessibility pattern. Town and important settlements are bound to link with roads. There is a tendency to connect with roads, the areas having economic resources such as fertile areas, forested areas or mineral deposits.

The inaccessible areas, on the other hand, are characterised by adverse topography or poor economic condition or dominance of lower section of the community.

In other words, in the region where terrain is difficult and where settlement is sparse with no worthwhile economic infrastructures, connectivity of transport is least developed. As for example, the south-western portion of Mizoram is almost devoid of any road network for it has no pull factor as yet, where the area is occupied mostly by Chakma refugees from Bangladesh.

INDUSTRY

The development in the field of industry is still in an infantile stage in Mizoram. Mizoram is one of the most industrially backward state of the country and is defined as "No-industries District under Category 'A'"²². It is apparent that the process of industrial development cannot go beyond the limit of possibility bordered by infrastructure, institutional, entrepreneurial, technical and many other essentials.

The geographical terrain, the climatic condition, the inherent talent of the people, the socio-cultural aspirations of the people, the trend of economic development in and outside the state and many other related factors are basic determinants of the pace of industrialisation in the region. The factors that hindered the progress of industrial development are lack of funds, lack of organisational structure, and very poor infrastructural facilities like roads, power and markets. It is, therefore, not easy to boost up the pace of industrialisation in Mizoram amidst many of the adverse factors geographical or economical. As such, whatsoever so-called industry existing are Small Scale and Cottage oriented industries.

22. Sen, J.D., "Industrial Development in Mizoram - Progress and Achievement of Industries Department", Mizoram Souvenir, Sl. No.1, Aizawl, Mizoram, 1989, p.54.

Viewed from the region's potentials in regard of raw materials, Agro-based industries, Handloom and Handicraft Industries, Village and Cottage Industries and selected consumer industries should be given priorities in bringing up the region's industrial economy. There is a prospect to establish Plywood or Paper and Pulp-Based Industries on the indigenous produce of bamboos and timbers.

Although there are numerous Small Scale and Cottage Industrial units in Mizoram, only very few of them are registered and approved by the Government. The analysis, here, thus is based on the registered industrial units only.

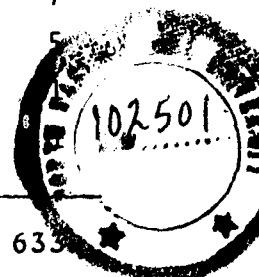
As shown in the table 3.9, there were 633 registered Small Scale and Cottage Industrial units in Mizoram in 1983. Among the varieties, Tailoring, Furniture Workshop, Knitting, Bakery, Automobile Workshop, Handloom, Candle Making and Blacksmithy are the important units which accounted for more than 80 per cent of the total industrial units.

Tailoring is by and large, the most widespread unit and dominated 24 per cent of the total Small Scale and Cottage Industries. It is followed by Furniture (19 per cent), Knitting (10 per cent), Handloom (8 per cent) and Bakery (6 per cent). The Traditional Handloom and

Table 3.9

**Number of Registered Small Scale and Cottage Industries
in Mizoram, 1983**

Name of Trade	Aizawl District	Lunglei District	Chhimituipui District	Total
1. Tailoring	101	37	12	150
2. Furniture Workshop	77	40	2	119
3. Knitting	40	20	1	61
4. Bakery	27	13	-	40
5. Automobile Workshop	23	10	-	33
6. Handloom	24	12	-	36
7. Candle Making	20	29	-	49
8. Blacksmithy	19	9	-	28
9. Atta/Paddy dehusking	14	-	-	14
10. Shoe Repairing	13	-	-	13
11. Cycle/Petromax Repairing	6	-	-	6
12. Hotel Industry	8	-	-	8
13. Book Binding	6	-	-	6
14. Watch Repairing	12	9	-	21
15. Radio Repairing	6	3	-	9
16. Photography	6	-	-	6
17. Chow Industry	5	-	-	5
18. Tuibur Making	5	-	-	5
19. Oil Extraction	5	-	-	5
20. Electronics	5	-	-	5
21. Printing Press	-	5	2	7
22. Battery Charging	-	5	-	5
23. Dental Workshop	-	1	-	1
24. Brick Making	-	1	-	1
Total	422	194	17	633



**Source : Directorate of Industries, Mizoram, Aizawl
and District Industries Officer, Saiha,
Chhimituipui District, Mizoram, 1987.**

Weaving, Blacksmithy, Cane and Bamboo Works are numerous, but actual registered numbers are very few.

Aizawl district by virtue of its size, contains the largest number of Small Scale and Cottage industries as compared to the other districts. It is to be seen from table 3.9 that there are 422 Small Scale and Cottage industrial units in Aizawl district while Lunglei district has 194 units and Chhimtuipui has only 17 units, showing the percentage weight of 66.66, 30.64 and 2.68 per cent respectively for the three districts.

Taking population size as a yardstick, it is interesting to note here that Lunglei district stand out as the highest industrialised district, where 30.64 per cent of the State's industrial units are found where only 17.52 per cent of the total population live. Aizawl district, however, is served by only 66.66 per cent of industrial units where 69.02 per cent of the State's population live. The position of Chhimtuipui district is even worse, for it has only 2.68 per cent of the State's industrial units for 13.45 per cent of Mizoram population. The extreme location, remoteness and lack of socio-economic infrastructures may be attributed to the backwardness of industrial development of Chhimtuipui district as viewed on a smaller scale.



PLATE NO.3.1 :: A slashed vegetal outgrowth left to dry for burn. The prime step of jhum cultivation.



PLATE NO.3.2 :: Jhum lands at three different stages: Present jhum land(foreground), Jungle clearing for coming year and the fallowed land(far side).



PLATE NO.3.3 :: A fallowed land. Note that the soil is severely eroded as a result of jhumming.



PLATE NO.3.4 :: Horticulture - A new prospect of agriculture in Mizoram. The plate shows a double cropping of orange and banana near Kawrtethawveng in western part of Aizawl district.



PLATE NO.3.5 :: Bamboo is the most important forest product of the region in terms of sources of revenue. The plate shows bamboos being floated down by Langkaih river for industrial use in Cachar plains of Assam.



PLATE NO.3.6 :: Champhai valley - the widest plain area in Mizoram has been put under permanent wet rice cultivation for many decades.



PLATE NO.3.7 :: Ngiau (*Michelia champaca*) is one of the best timber species found in Mizoram. The economic exploitation of the timber species in the region at present is beset with transport problems (Foreground : The researcher and his brother on a field tour).



PLATE NO.3.8 :: Nature of terrain in Mizoram is a great hindrance to development of roads. The plate shows a State Highway under construction to connect Lunglei with Aizawl at a shorter distance .



PLATE NO.3.9 :: Tuirial Airfield with minimum runways, located at 25 Km east of Aizawl town is the only existing airfield in Mizoram. Terracing and orchards are seen on the foreground.



PLATE NO.3.10 :: Tawlailir, a village transport carriage could be of great help, depending on the characteristics of road.

Chapter IV

POPULATION COMPOSITION

The study of population and its composition is of great significance in formulation of any plan for economic development of the region. In this chapter, attempt has been made to make a comprehensive study of the population composition of Mizoram with a view to attribute the geographical influences, if any, upon the various features of population of the study area.

The chapter is broadly divided into eight main sections dealing with the following features :

1. Density of Population
2. Sex-Ratio of Population
3. Religious Composition

4. Scheduled Tribe and Scheduled Caste Population
5. Age-distribution of Population
6. Literacy of Population
7. Language, and
8. Rural-Urban Composition of Population.

It may also be noted that along with demographic characteristics, aspects of regional variations (district and block level) have been analysed to the extent possible inspite of very limited comparable data available.

DENSITY OF POPULATION

Population density also known as arithmetic or simple density compares total population to total area. It is a physical standardisation. It involves only the number of people disregards the characteristics of the people and resource potential for supporting human life. Density of population characterises a very important socio-economic conditions. For instance, a high density region may reflect the limitation of carrying capacity of land under a given system of economic exploitation of resources or a low density being able to attract more people from high density regions.

The state of Mizoram is sparsely populated. It ranks one of the lowest populated states of India. The

density of population in this state is only 23 persons per square kilometre as against 216 persons per square kilometre in India as a whole in 1981¹. Due to its remote location in the north-east corner which is characterised by almost inaccessible terrain, backward economy and being politically disturbed area and hostile cultural history in the past, the density is comparably low. The corresponding hilly states, which borne more or less the same characteristics physically and politically also depict a very low density compared to national figure. In 1981 Nagaland has a population density of 80 persons per square kilometre, Manipur 63, Meghalaya 59 and Arunachal Pradesh with only 7 persons per square kilometre.

Though the density remains very low, nevertheless, the region has witnessed a steady increase in density. The density of population in Mizoram was 4 persons per square kilometre in 1901, and remained 4 persons per square kilometre in 1911, with a small increase in fractional digits. It increased to 5 persons per square kilometre in 1921, 6 persons in 1931, 7 persons in 1941, 9 persons in 1951. It has further come up to 13 persons per square kilometre in 1961, 16 persons in 1971 and to 23

1. Excluding the area and population of Jammu & Kashmir where census operation could not be worked out due to disturbance in the state.

POPULATION DENSITY
District-wise 1981

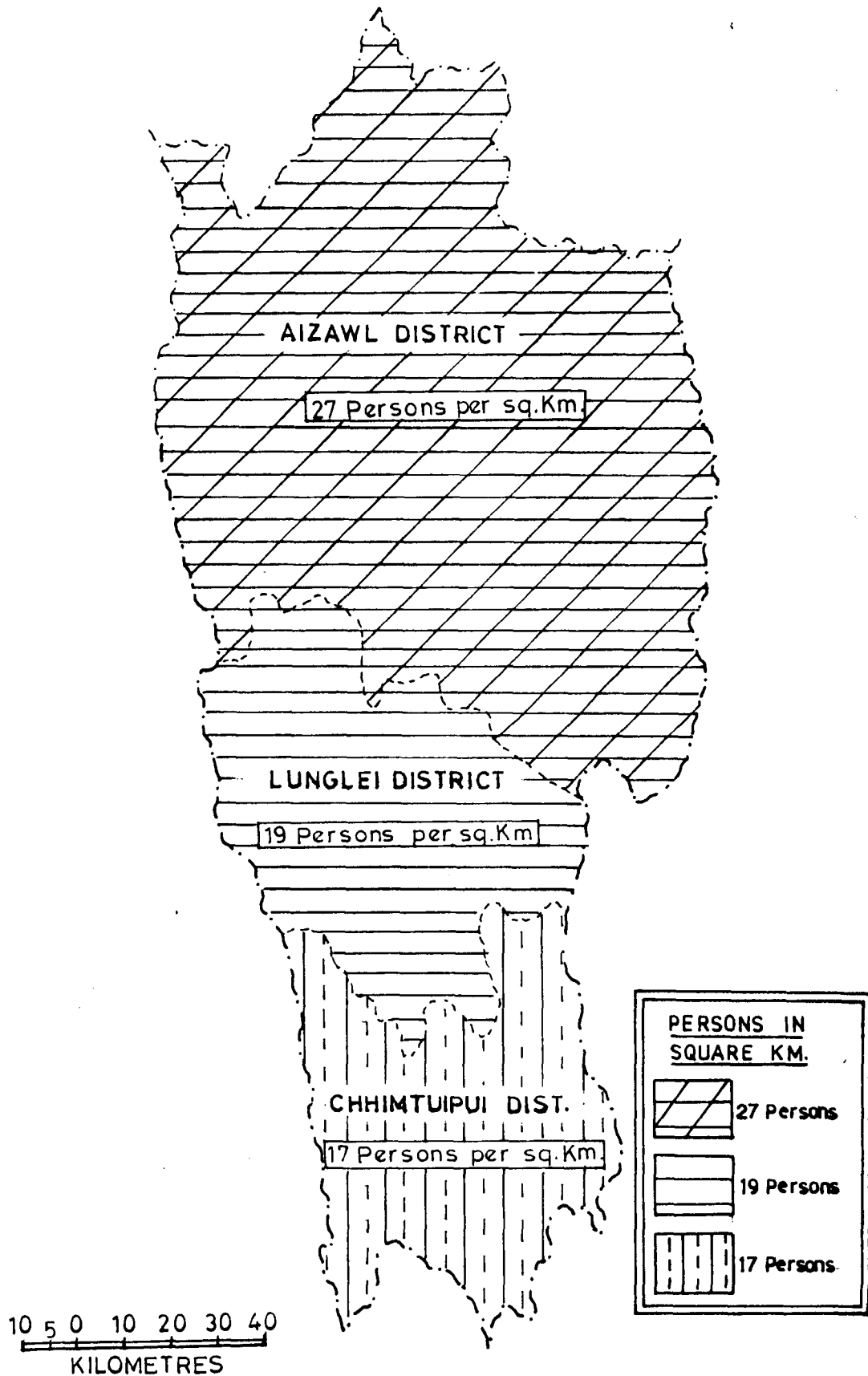


Fig. 4.1

persons per square kilometre in 1981².

An examination of population density at district level reveals that there is a decreasing tendency towards south according to 1981 Census³. The density figures in 1981 for the districts are 27 persons in Aizawl district, 19 persons in Lunglei district and 17 persons in Chhimtuipui district. Southward increase in humidity and temperature has been responsible for this trend at the most, and improper development of transport system and lack of other vital socio-economic facilities to an enormous extent.

Based on 1981 Census figures, the density map is shown at block level (Fig. 4.2) and also presented in the table 4.1. An interesting feature of the map is that there is a certain degree of variation of population density. For instance, it is as low as 9 persons per square kilometre in West Bunglei but as high as 176 persons per square kilometre in Tlangnuam block. The high density in Tlangnuam owes its origin to the township of

2. Density figures are taken in round figure. The exact figures are: 3.90 in 1901, 4.18 in 1911, 4.51 in 1921, 5.90 in 1931, 7.34 in 1941, 9.30 in 1951, 12.62 in 1961, 15.76 in 1971 and 23.41 in 1981.

3. Mizoram was under the State of Assam during 1971 and was then known as Mizo district. Hence, the area figures for 1971 and prior to it are not available separately that certain district-wise data cannot be worked out. The UT was formed in 1972 and attained statehood in 1987.

Table 4.1
Blockwise Population, 1981

Location Code No*	Name of the Block	Total population	Area in sq. km.	Density per sq. km.
1	Thingdawl	35,973	1472.12	24.43
2	Darlawn	18,066	947.42	19.06
3	Ngopa	20,956	1047.52	14.88
4	Lokicherra	24,444	1088.75	22.45
5	Reiek	10,973	937.42	11.70
6	Tlangnuam	93,769	532.67	176.03
7	Thingsulthliah	20,638	874.13	23.60
8	W. Phaileng	16,838	999.57	16.84
9	Aibawk	11,671	616.88	22.91
10	Khawzawl	35,807	1588.08	22.54
11	Serchhip	23,428	798.59	29.33
12	W. Bunghmun	12,239	1389.26	8.80
13	E. Lungdar	28,885	1328.38	21.74
14	Lunglei	34,530	1117.06	30.91
15	Hnahthial	18,615	985.39	18.89
16	Lungsen	21,127	1046.29	20.19
17	Sangau	8,777	565.91	15.50
18	Chawngte	16,983	686.35	24.74
19	Lawngtlai	18,517	1304.84	14.19
20	Tuipang	22,143	1399.90	15.81

Source : Census of India, 1981, Series 31, Mizoram, Part II-A, pp. 18 & 19, and Statistical Handbook, Mizoram, 1987, p. 16(a)

* Location Code Number refers to Figure 4.2.

POPULATION DENSITY
Block-wise : 1981

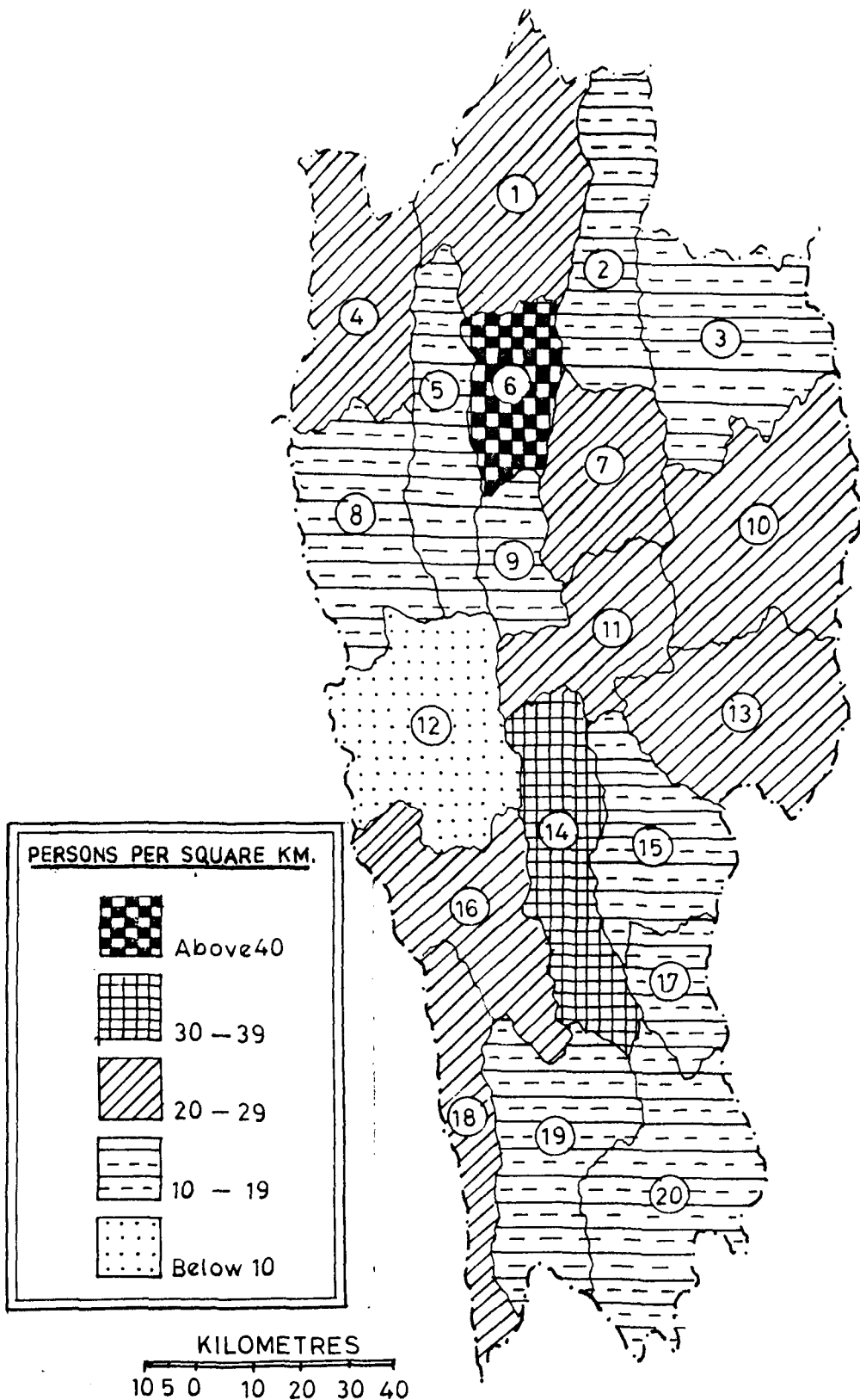


Fig. 4.2

Aizawl, the capital town of Mizoram which falls under this block. Density is high in Lunglei block with 31 persons per square kilometre which is also due to urban population of Lunglei town; the district headquarter. Density is medium (or moderately high in terms of Mizoram's density as a whole) in the blocks of Sercchip (29), Chawngte (25), Thingdawl (24), Thingsulthliah (24), Khawzawl (23), Lokicherra (22), E. Lungdar (22) and Lungsen (20). The density in the blocks of Serchhip, Thingdawl and Khawzawl are due to township of Serchhip, Kolasib and Champhai respectively. The other blocks such as Thingsulthliah Lokicherra, E. Lungdar and Lungsen, on the other hand, are characterised, to a certain degree, by better physical environments as well as better socio-economic conditions as compared to the rest, which resulted in medium density of population. To be more precise, these areas are characterised by favourable climatic and topographic conditions with all the block headquarters connected with all weathered truckable roads.

Those areas marked by one or more of the adverse geographic factors like steep slopes, dissected hills, humid, sultry and unhealthy climate and thick forests, etc. are populated sparsely (Fig. 2.1). Under these fall the blocks of Darlawn (20), Aibawk (19), Hnahthial (19), West Phaileng (17), Tuipang (16), Sangau (15), Ngopa (15),

Lawngtlai (15), Reiek (12) and Bunghmun (9). As the areas of these blocks are comprised of very difficult terrain and negative climatic conditions without proper transport and communication linkages, they do not attract much population. It seems that the natural increase by birth and decrease in death rate is the only factor which has been keeping the density to increase, and in-migration has not made any worthwhile contribution to the population increase in these blocks.

However, it is to be seen from the map (Fig. 4.2) that Chawngte and Lungsen blocks are exceptional cases as far as physical factors on population distribution is concerned. Despite their physical features which is characterised by rugged terrain, hot and humid climate with very small area accessible, the density is rather high which is 25 persons and 20 persons per square kilometre. The most important factor in these cases is rather social, i.e., migration. The Chakma refugees from Bangladesh, inspite of the negative climate regime in these blocks, found themselves adaptable to the areas owing to want of habitation thereby keeping the density quite high.

The lowest density, as mentioned earlier, is found in the block of West Bunghmun with only 9 persons per

square kilometre. This block lying in the western part bordering Bangladesh is drained by four of the major river systems of Mizoram, such as Khawthlangtuipui, Kau, De and Tlawng which resulted in low relief in the form of narrow valleys with hot and humid climatic conditions and densely covered by bamboos. These conditions in one way or another stand as an impediment to population density.

Hence, it is to be seen that the impact of geographical factors is appreciable on the distribution of population in Mizoram. Although the whole region is comprised of mountainous terrain, the slightest distinction in landscape and availability of economic infrastructure and vital resources resulted to a considerable variation in population density. No doubt, the climatic condition, landscape, availability of cultivable land, drinking water and transport routes are the factors most responsible for the distribution of population within the state of Mizoram.

SEX-RATIO

Sex-ratio is another important determinant of population growth. It determines the sexual parity. It is defined as the number of females per one thousand males in the population. It is expected that the sex-ratio at birth should be 1000 females per 1000 males, but

generally observed that it is around 1050 males per 1000 females or 950 females per 1000 males. Park (1963)⁴ thought, for human beings, the ratio of male to female children at conception might be somewhat between 1.25 to 1.50. Actually, it is 1.06, showing that total mortality is much higher for male than for female children.

As the society shows a higher ratio of male children over female children at birth, one can see that with the advancement of age, the predominance of males diminishes, depending upon the mortality schedule operating upon them⁵. The sex-ratio in Mizoram as a whole is 919 in 1981 which is lower than national figure of 933. Among the three districts Aizawl has the highest ratio which is 934, followed by Chhimituipui district with 898 and Lunglei being the lowest with 881 females per one thousand males. But compared to 1971 census figure, only Lunglei is the district which registered a growth in sex-ratio. It has increased from 842 in 1971 to 881 in 1981. The ratios of other two districts namely, Aizawl and Chhimituipui have decreased from 968 to 934 and 989 to 898

4. As quoted in B.C. Mehta's Regional Population Growth : A Case Study of Rajasthan, p. 39.

5. Bhattacharjee, P.J. and G.N. Shastri, Population in India : A Case Study of Inter-State Variations, ISEC Monographs 3, Vikas Publishing House Pvt. Ltd., New Delhi, 1976, p. 58.

respectively, for the corresponding years.

During the last eight decades, Mizoram has been registering a substantial reduction in sex-ratio. It was as high as 1120 in 1911 from where it came down to 1102 in 1931, 1069 in 1941, 1041 in 1951, 1009 in 1961, 946 in 1971 and finally to 919 in 1981. The highest decrease rate (6.24 per cent) was registered during 1961 to 1971. It can be assumed that during 1971 Census, Mizoram being declared politically disturbed area, a large number of the male members were engaged in the underground activities, leaving females behind and they were not enumerated in the Census counts. Such being the case, the number of females is rather low which seems to contradict the assumption. But the effect of other factor like natural birth should not be ignored. But in course of time, several underground members came overground and were enumerated in 1981. This caused, to a great extent, the decrease in sex-ratio. . Possibly, the recent migration of male population from Cachar district in the form of skilled and unskilled labourers in the state who are mainly male members may be accounted for low sex-ratio during the last decade. The sex-ratio has come down to 919 in 1981 from 946 in 1971.

Table 4.2
Changes in Sex-Ratio 1901-1981

Census Year	Mizoram	Aizawl District	Lunglei District	Chhimituipui District
1901	1,113			
1911	1,120			
1921	1,109			
1931	1,102			
1941	1,069			
1951	1,041			
1961	1,009			
1971	946	968	842	989
1981	919	934	881	898

Source : Census of India, 1981. Series-31, Mizoram General Population Tables, Part IIA, p. 26.

The six urban towns in Aizawl, Lunglei, Saiha, Kolasib, Champhai and Serchhip have an average sex-ratio of 901. It is highest in Champhai (986), followed by Serchhip (934) and Kolasib (922). It is low in Aizawl (895) and lowest in Lunglei and Saiha both with the same ratio of only 835.

An analysis of the sex-ratio map (fig. 4.3) shows an interesting picture indicating a higher ratio in the

SEX RATIO
1981

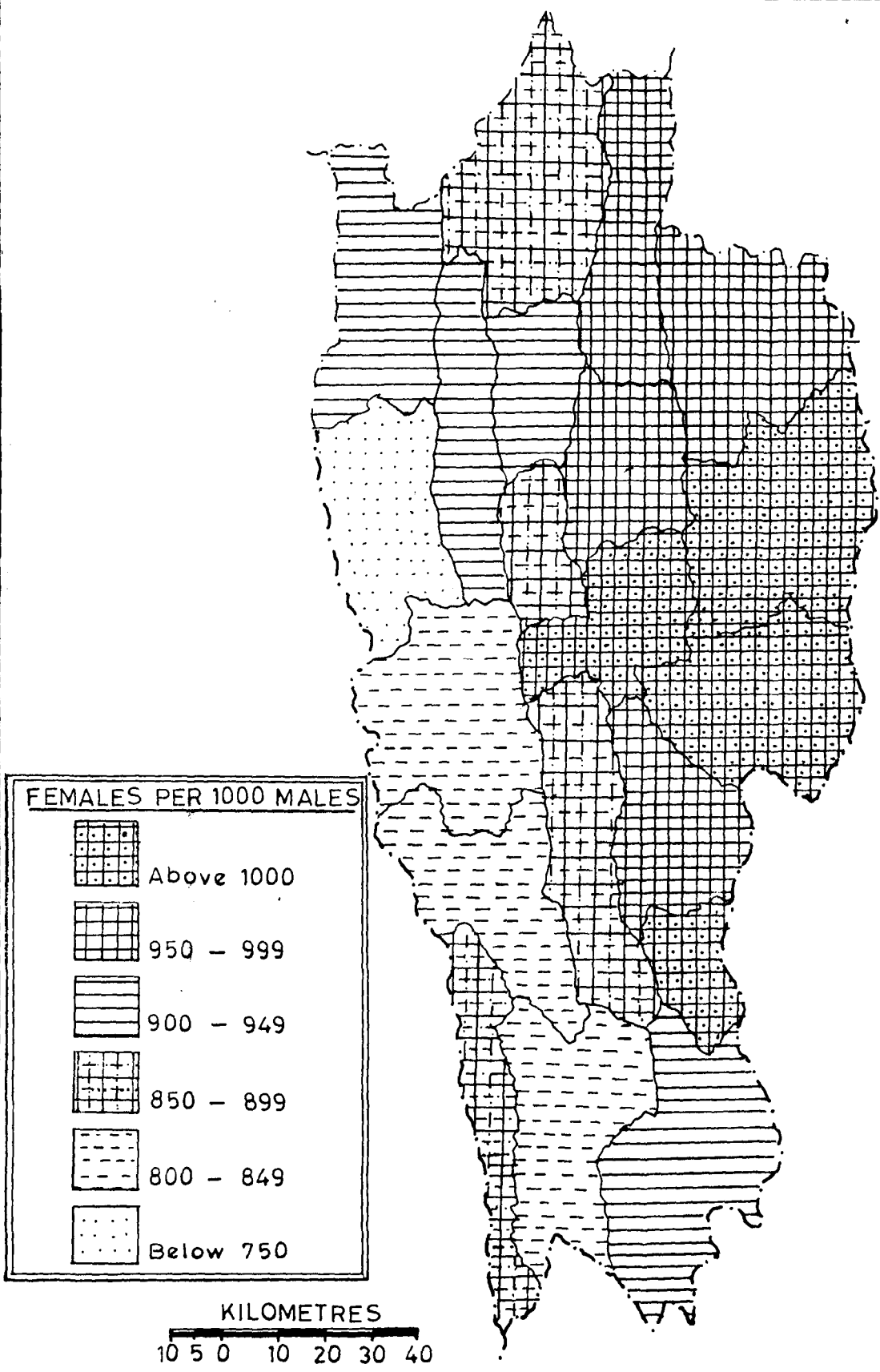


Fig 4.3

eastern half of the region and lower in the western part. It is rather difficult to explain the direct reason behind this fact, as it needs further investigations. No doubt, the eastern part has better climatic and physical environment as well as better road linkages as compared to the western sides.

Sangau block which lies in the south-east corner of Lunglei district has the highest sex-ratio of 1012 females per one thousand males followed by East Lungdar with 1010 which is located in the south-east corner of Aizawl district. The other blocks where males are outnumbered by females are Khawzawl (1003) and Serchhip (1001). Rest of the blocks have ratio less than one thousand. But taking Mizoram's average, i.e. 919 as a parameter, ratio is quite high in the blocks of Ngopa, Hnahthial, Thingsulthliah and Darlawn with a range of 950-986. It is slightly lower in blocks of Lokicherra, Reiek, Tuipang and Tlangnuam with a range of 900 to 944. The remaining blocks, namely, Thingdawl, Aizawk, Chawngte, Lunglei, West Bunglei, Lungsen, Lawngtlai and West Phaileng have a low range, less than 900. West Phaileng located in the western most part of Aizawl district recorded the lowest sex-ratio in Mizoram which is 726 only.

Table 4.3
Sex Ratio, 1981

State/District/ Town/Block	Ratio	Block	Ratio
MIZORAM	919	Ngopa	986
		Hnahthial	968
Aizawl District	934	Thingsulthliah	953
Lunglei District	881	Darlawn	950
Chhimituipui District	898	Lokicherra	944
		Reiek	936
Champhai Town	986	Tuipang	932
Serchhip Town	934	Tlangnuam	900
Kolasib Town	922	Thingdawl	897
Aizawl Town	895	Aibawk	895
Lunglei Town	835	Chawngte	892
Saiha Town	835	Lunglei	881
		W. Bunglei	834
Sangau	1012	Lungsen	834
E. Lungdar	1010		
Khawzawl	1003	Lawngtlai	814
Serchhip	1001	W. Phaileng	726

Source : Census of India, 1981, Series 31, Mizoram, Part-II-A, General Population Tables, pp. 18 & 19.

RELIGIOUS COMPOSITION

History of Indian people has demonstrated a remarkable tolerance for religions of foreign origin and avowed secularity which has no parallel elsewhere in the world. But political and social motivations in the early twentieth century have shown that change in religious composition as well as regional concentration could lead to the extent of bifurcation of the country. That is why it is of extreme importance to understand the religious composition of the people and their concentration in different sub-regions of India. Religion is one of the foremost ideologies which operates, as one of the most forceful cultural determinants of a group of population, e.g., the age of marriage, the practice of remarriage, the occupation, etc.⁶.

The Mizos, who comprised 85 per cent of the total population of the state were animists in the past. But this animism could not be treated as their religion as they believed in the existence of living God or Creator.

Unlike most of the other states of India, Mizoram is marked by a monopoly of a single religion which is Christianity. This religion was brought to the region by the English Missionaries in 1894. So influential and

6. Bhattacharjee, P.J. and G.N. Shastri, op. cit., p.

RELIGIOUS COMMUNITIES
MIZORAM 1981

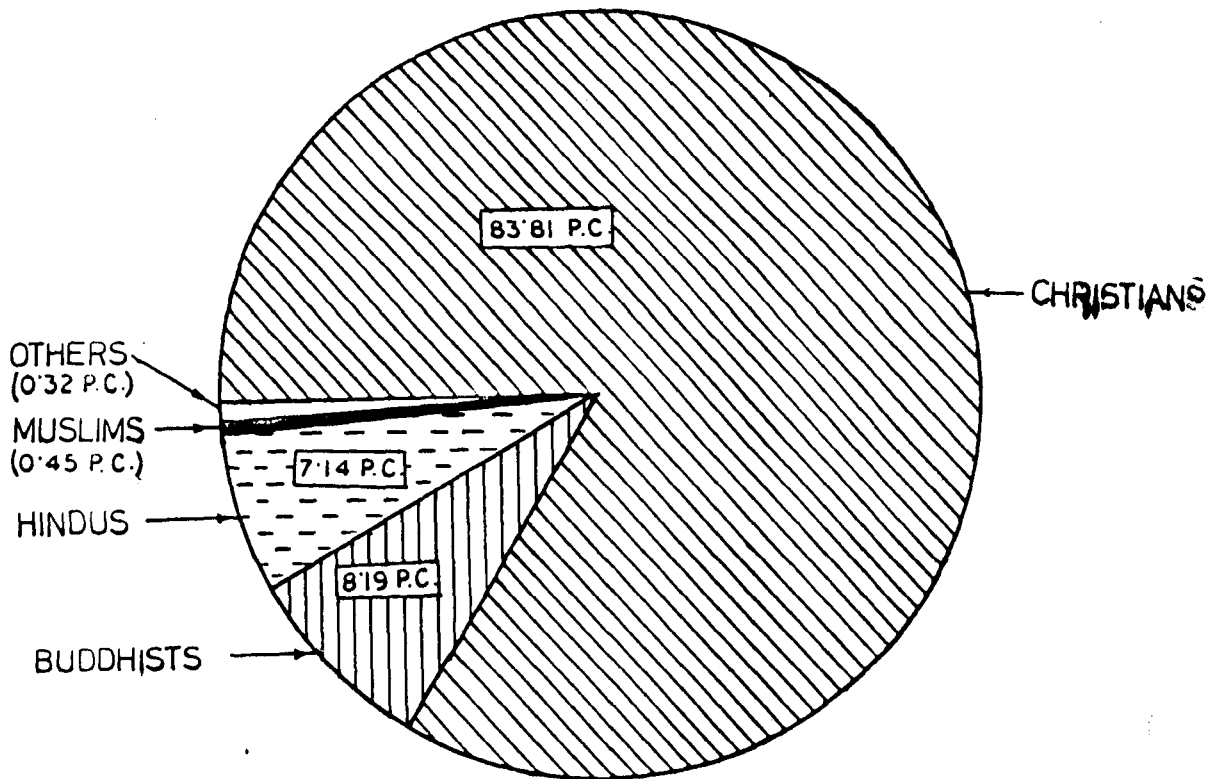


Fig. 4.4

inducive was Christianity to the Mizo that within a span of only half a century it became the major religion of Mizoram. The other religions pursued by a small sections of the population of Mizoram are Buddhism, Hinduism, Islam, Sikhism and Jainism.

The composition of the major religions as shown in the table reveals that by and large Christianity is the dominant religion which accounted for 83.81 per cent of the total population of Mizoram in 1981. The second religion i.e., Buddhism accounted for 8.19 per cent only. Hinduism is pursued by 7.14 per cent of the total inhabitants of Mizoram. The remaining religions, such as Islam, Sikhism and Jainism are negligible, accounting for less than 1 per cent.

As shown in the table 4.4 the growth of these religious communities is not proportional to their share to total population. For example, Christians, who comprise 84 per cent of total population registered a growth rate of 45 per cent, Jains whose composition is negligible in terms of total population but registered a very high growth rate which is 265 per cent. Buddhist communities grew at a higher rate of 79 per cent as a result of large scale migration of Chakma refugees to this land during 1971 to 1981, while Hindus grew at a rate of

Table 4.4
Population Composition by Religion, 1981

Religious Community	Persons	Male	Female	Sex	Percentage to total population	Percentage to decadal growth rate
Christians	4,13,840	2,07,485	2,06,355	995	83.81	44.63
Buddhists	40,429	21,073	19,356	919	8.19	78.52
Hindus	35,245	25,660	9,585	374	7.14	66.02
Muslims	2,205	1,812	393	217	0.45	17.16
Sikhs	421	376	45	120	0.09	1.41
Jains	11	7	4	571	Neg.	266.67
Others	1,606	826	780	944	0.32	N.A.

Source : Calculated from Census of India, 1981, Series 31, Mizoram, Paper I of 1985, p. v, and Statistical Handbook of Mizoram, 1987, p. 17.

66 per cent. Sikh communities registered a slow progress with only 1 per cent growth during the same period.

The spatial pattern of distribution of population of these major religious communities in rural and urban areas is shown in the table 4.5.

Table 4.5
Spatial Distribution of Religious Communities 1981

Religious Communities	Rural Population	Percentage to rural	Urban Population	Percentage to urban Population
Christians	304,409	81.84	109,431	89.83
Buddhists	40,366	10.84	93	0.08
Hindus	24,423	6.57	10,822	8.88
Muslims	1,064	0.29	1,141	0.94
Sikhs	238	0.06	183	0.15
Jains	-	-	11	0.01

Source : Census of India, 1981, Series 31, Mizoram, Paper I of 1985, p. vi.

It is obvious from the table that a higher percentage of the major religions in Mizoram are concentrated in urban areas excepting the case of Buddhists. In this case, the population pursuing Buddhism

is higher in the rural areas. The reason is simple; for Buddhism is the religion of Chakmas who live in rural areas of the south-western part of Mizoram. The Hindus, Muslims, Sikhs and Jains are not the original settlers of the region but entered in the state for business purpose, employment in the office, constructions and other tertiary activities. As the urban centres provide a scope for such activities, their concentration is found to be higher in the urban areas. It may be interesting to note that almost all the tribes categorised under Mizo in Mizoram are Christians, and other religious communities are comprised of non-Mizo who entered the state from other states.

SCHEDULED CASTE AND SCHEDULED TRIBE POPULATION

The proportion of Scheduled Castes and Tribes in the population of any part of India provides an important yardstick of the stage of social, economic and technological development⁷. A higher proportion of these possibly may indicate the backwardness of the society, awaiting more attention of the Government and the planners for their development.

7. Dube, R.S., "Population of Rewa Plateau : A Geographical Analysis", Ph.D. Thesis (Unpublished), Saugar University, 1974.

In contrast to the national picture, the percentage of tribal population is significantly high and tribal population concentration is mostly even in Mizoram. The population categorised as scheduled caste and scheduled tribes together accounted for 93.58 per cent of the total population of Mizoram, which is the highest in the national context. It is followed by Nagaland with 83.99 per cent of its population, Meghalaya with 80.99 per cent. Taking India as a whole, the tribal population comprises only 23.51 per cent of the total population (1981 Census)⁸.

In 1981 Census, there are 461,907 persons under scheduled tribe, and 135 persons belonging to scheduled caste in Mizoram. The percentage of scheduled tribes to the total population is 93.54 and 0.02 per cent for scheduled caste.

The scheduled tribe concentration is very even in the region as the percentage variation is less than 3 in all the districts. In Aizawl district, 94.06 per cent of the population belongs to scheduled tribe. The corresponding values for Lunglei and Chhimtuipui districts

8. Calculated from Statistical Abstract of India, 1982, Central Statistical Organisation, Ministry of Planning, Government of India.

are 92.01 per cent and 93.66 per cent respectively.

Table 4.6
Scheduled Caste and Scheduled Tribe Population, 1981

State/District	S.T.	P.C. to total population	S.C.	P.C. to total population
Mizoram	461,907	93.54	135	0.02
Aizawl	320,088	94.06	81	0.02
Lunglei	79,607	92.01	17	0.01
Chhimtuipui	62,212	93.66	37	0.05

Source : Census of India, Series-31, Mizoram Part II-B, Primary Census Abstract, pp. 38 & 50.

As seen from table 4.6, the distribution of scheduled caste is more uneven in Mizoram as their percentage total population is also insignificant. Of the total population of Mizoram, only 0.02 per cent belongs to scheduled caste. At district level, the contribution of scheduled caste is 0.01 per cent in Lunglei district, slightly higher in Aizawl district with 0.02 and Chhimtuipui being the highest with 0.05 per cent to the total district population.

The block level analysis of tribal population reveals the dominance of scheduled tribes in all the

blocks, where scheduled caste population is confined only in some of the blocks. Scheduled caste population is absent in the blocks of Serchhip, Khawzawl, West Bungle, Sangau and Tuipang.

The difference in male and female population in case of scheduled tribe is very small. The sex-ratio of scheduled tribe is 997 for the whole Mizoram. It is 1003 in Aizawl district, 991 in Lunglei district and 972 in Chhimtuipui district.

The percentage variation in male and female population in case of scheduled caste is quite significant. Male population accounted for 88.89 per cent and females accounted for only 11.11 per cent. In other words, the sex ratio of scheduled caste is only 125 for the whole state. In the three districts, the ratio is 179 in Aizawl, 62 in Lunglei and only 51 in Chhimtuipui district.

It is to be noted that the scheduled caste immigrants who entered the region in search of jobs and settled as cobblers, sweeper, etc. are mainly male members leaving the female members behind and thus keeping the sex ratio very low.

The break up of scheduled caste according to 1971 census showed that Dhupi/Dhobi are the dominant caste

constituting 80.48 per cent of the total scheduled caste population in Mizoram. It was followed by Muchi/Richi comprising 9.75 per cent; Mahara 3.65 per cent; Dholi and Hira both constituting 2.43 per cent respectively and Newsudra with 1.21 per cent.

The scheduled tribe population is dominated largely by the Mizo with 77.23 per cent in 1971. The second largest scheduled tribe is Chakma who comprised 7.14 per cent. Pawi with 6.52 per cent occupied the third place followed by Lakher 6.25 per cent; Hmar 2.50 per cent and Khasi and Jaintia 2.50 per cent.

Age Distribution of Population

In a demographic study of population the analysis of age composition has a great social and economic significance. Every society assigns to its members different functions, confers different economic and social status and, expects different behaviour pattern at different stages of age span. For example, the age at which to enter into school, to marry, to perform gainful work and retire from labour force, follow a definite chronological orders.

The analysis of Table 4.7 shows that in Mizoram by each five years age group, the age of 0-4

MIZORAM
POPULATION BY AGE & SEX
1981

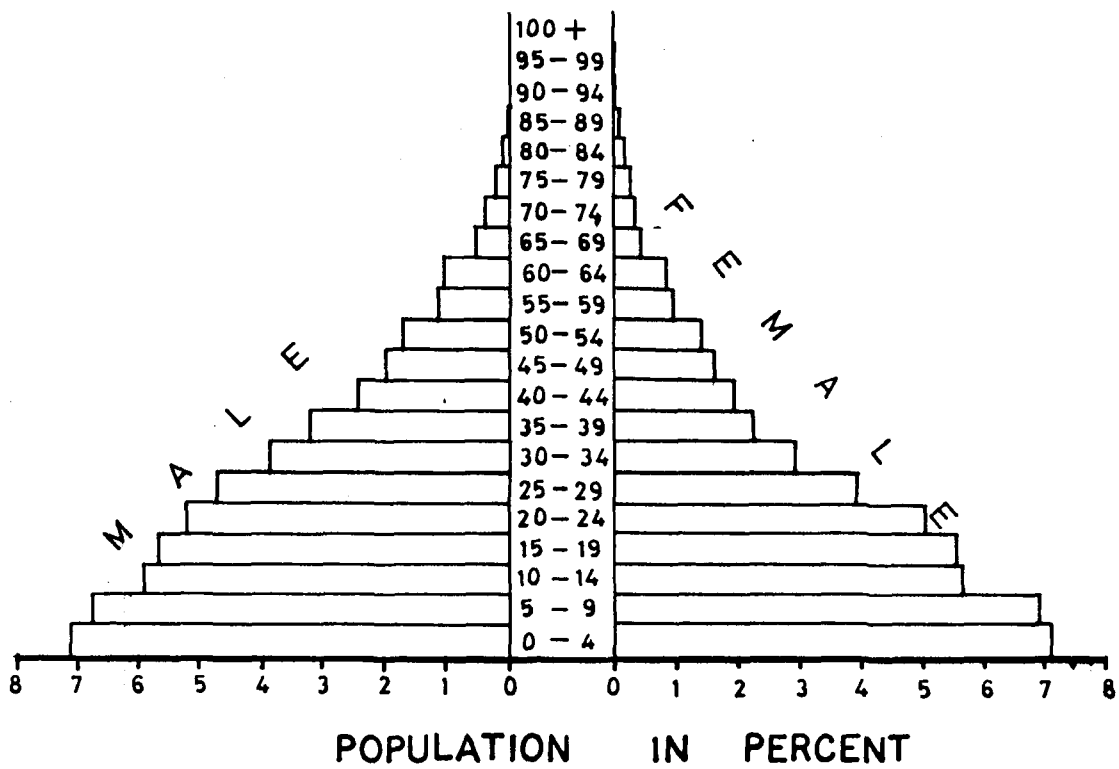


Fig. 4-5

AGE SEX PYRAMID
AIZAWL DISTRICT 1981

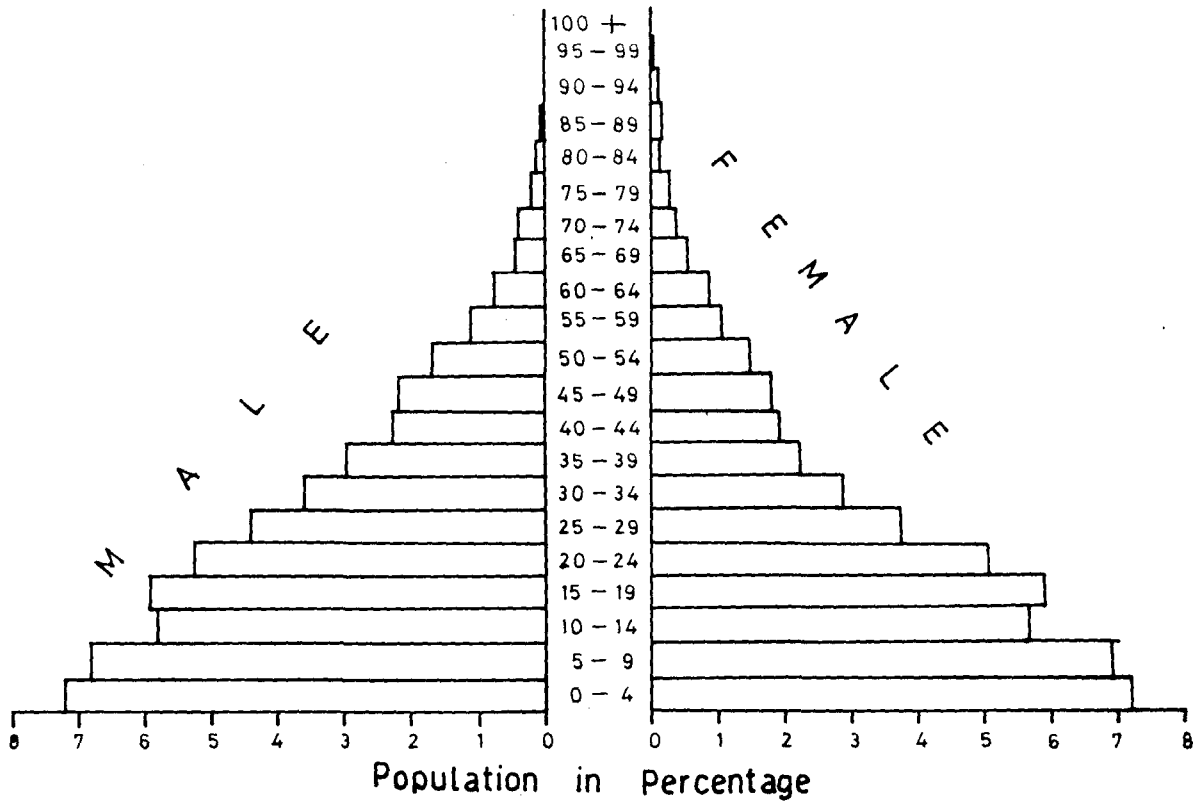


Fig. 4.6

AGE SEX PYRAMID 1981
LUNGLEI DISTRICT

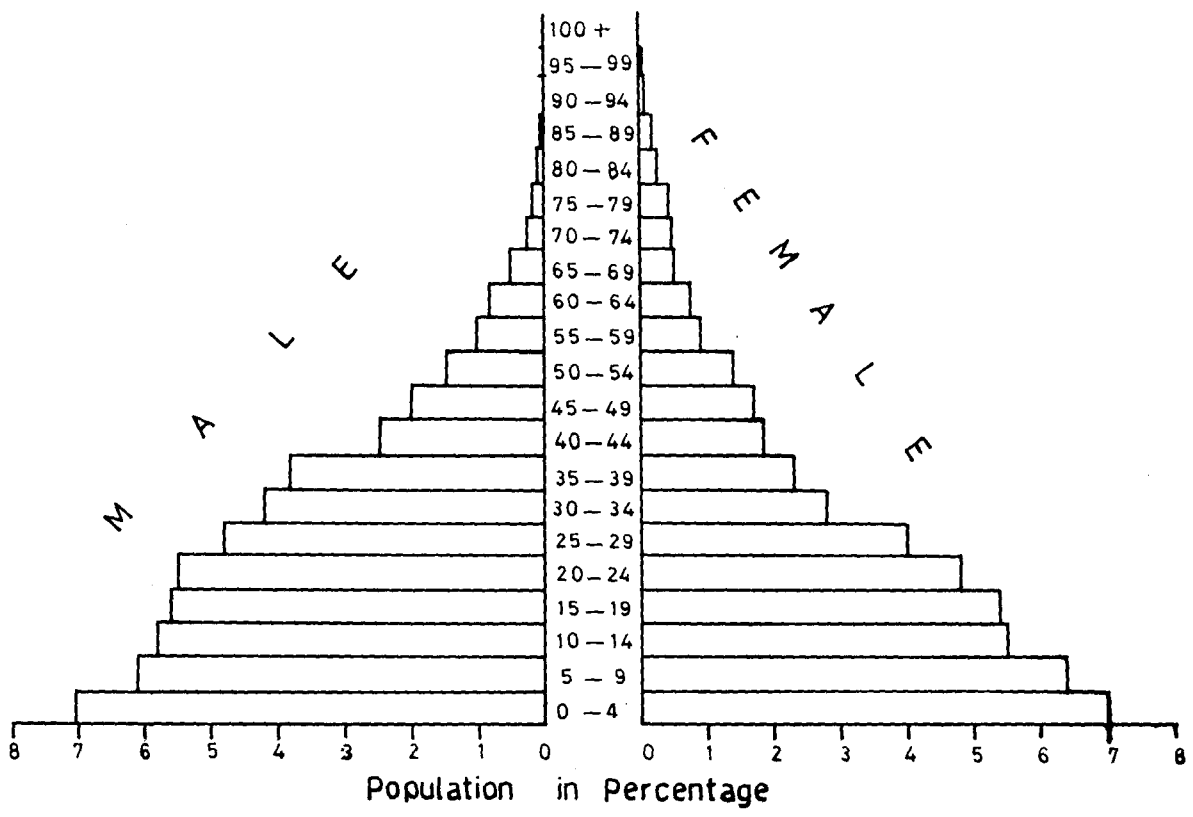


Fig. 4-7

**AGE SEX PYRAMID
CHHIMTUIPUI DISTRICT 1981**

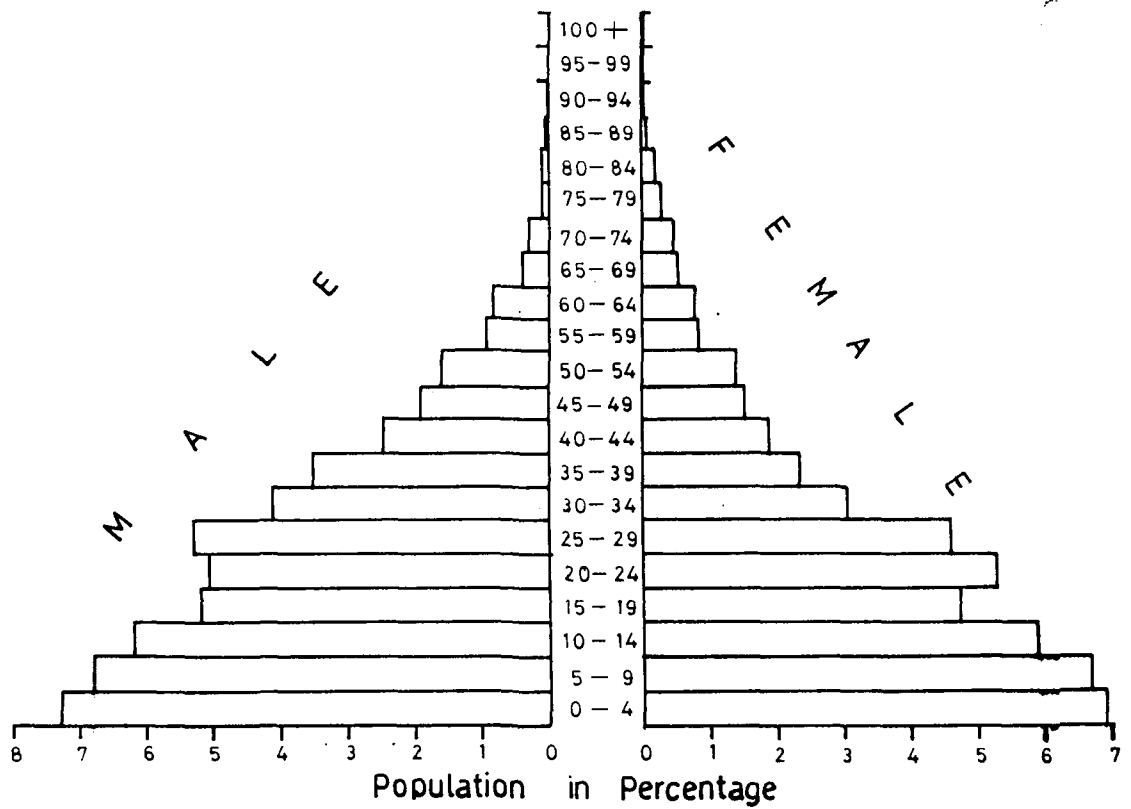


Fig. 4-8

Table 4.7
Age Distribution of Mizoram, 1981

Age Group	Total persons	Percentage to total population			Percentage to Age Group	
		Total	Male	Female	Male	Female
All Ages	4,93,757	100.00	52.09	47.90	52.09	47.91
0-4	70,746	14.32	6.18	7.14	50.15	49.85
5-9	67,407	13.65	6.84	6.80	50.15	49.85
10-14	57,253	11.59	5.88	5.71	50.71	49.29
15-19	56,246	11.39	5.74	5.64	50.45	49.55
20-24	51,187	10.36	5.29	5.67	51.07	48.93
25-29	42,030	8.51	4.60	3.90	54.10	45.90
30-34	32,943	6.67	3.79	2.88	56.82	43.18
35-39	27,078	5.84	3.23	2.24	59.06	40.94
40-44	21,316	2.29	2.37	1.93	55.11	44.89
45-49	17,993	3.64	1.96	1.67	53.98	45.02
50-54	15,413	3.12	1.66	1.45	53.35	46.64
55-59	10,334	2.09	1.10	0.99	52.65	47.35
60-64	8,581	1.73	0.90	0.83	52.19	47.81
65-69	4,932	0.99	0.50	0.49	50.84	49.52
70-74	4,117	0.83	0.39	0.44	46.78	53.22
75-79	2,325	0.47	0.21	0.25	46.53	53.47
80-84	1,728	0.34	0.15	0.19	45.60	54.41
85-89	642	0.13	0.05	0.07	44.39	55.61
90-94	305	0.06	0.02	0.03	42.62	57.38
95-99	136	0.02	0.01	0.01	44.85	55.15
100+	67	0.01	0.00	0.00	43.25	56.72

Source : Calculated by the researcher from Census of India, 1981; Series 31, Mizoram, Part III-A & B, and Part IV-A, pp. 527-530, General Economic Tables.

constituted the largest percentage which is 14.32 of the total population, followed by 5-9 years with 13.65 per cent (Fig. 4.5). It is to be seen that 39.57 per cent of the total population was below 15 years of age, and 4.62 per cent in the age group of 60 and above, and the active population in the age group between 15-59 constituted for 55.60 per cent of the total population. Among the constituent districts, the dependent children (0-14 years) is highest in Aizawl (39.72 per cent), followed by Chhimituipui (38.58 per cent) and lowest in Lunglei (36.94 per cent). Since the proportion of infant population and children is high, it indicates a high population growth prospects in the coming decades because most of this population shall enter the reproductive age group.

The Aging Index reflects the combination of two effects, the mortality and fertility differentials. In countries where fertility differentials are not great and decline in fertility is also not much significant, the mortality differentials are only the main determinants of differences in the proportion of old persons in the total population⁹.

9. Mehta, B.C., Regional Population Growth : A Case Study of Rajasthan, 1978, p. 35.

Table 4.8
Age Distribution Indices of Mizoram, 1981

State/District	Aging Index			Maturity Index			Dependency Ratio			Median
	T	M	F	T	M	F	T	M	F	T
ALL INDIA	14.61	16.22	16.60	108.25	109.45	107.05	85.40	84.84	85.97	20.60
MIZORAM	11.68	11.07	11.48	83.69	92.70	76.55	79.49	73.29	84.58	19.57
Aizawl District	11.99	11.77	12.20	82.49	88.23	76.40	80.82	75.82	85.78	19.37
Lunglei District	11.63	11.23	12.03	87.49	96.67	77.36	76.39	69.97	84.31	20.10
Chhimtuipui District	10.21	10.18	10.22	84.71	93.22	75.91	78.56	74.10	83.66	20.01

T = Total, M = Male, F = Female

Source : Calculated from Census of India 1981, Series 01, India, p. 656, and Series 31, Mizoram, Part III-A and B, and Part IV-A, pp. 527-530.

From table 4.8, it is clear that the index of aging is lower in Mizoram than the country as a whole, being 11.68 for 1981 as against 16.41 for the country for the same period. The regional variation among the three districts is not significant. Aizawl district has the highest with 11.99 of aging index, Lunglei with 11.63 and Chhimtuipui has an age index of 10.21. The lower value of the aging index, as compared to the national figure, indicates that there is larger proportion of elderly persons to children in Mizoram than the country taken as a whole.

The 'maturity index' indicates the proportion of demographically mature persons or the active population reflecting the economic growth potential of the population. The productive capacities and potentialities depend upon the youthfulness of the population. Population in the group of 15-30 years are most active economically, socially, even by demographic criteria (reproduction).

Taking into consideration the maturity index of India as a whole, which is 108.25, the index is relatively low in Mizoram with only 83.69. The maturity index for the three districts shows a slight variation of 82.49, 87.49 and 84.71 in Aizawl, Lunglei and Chhimtuipui districts respectively.

However, it is interesting to note that there is a remarkable difference between the maturity index of males and females. Maturity index for male is 92.70 and for female is 76.55 in Mizoram. At district level the values are 88.23, 96.67 and 93.22 for males in Aizawl, Lunglei and Chhimituipui districts, and 76.40, 77.36 and 75.91 only for females in the corresponding districts in the year 1981.

Dependency ratio is defined as the dependent children in the age group of 0-14 years and dependent aged persons in the age group of 60 years and above per 100 active population in the age group of 15-59 years. In 1981 the dependency ratio for the whole state is 79.49 which is lower than the Indian average of 85.40 in the same period which depicts a variation of 5.91. It is highest in Aizawl district (80.49), followed by Chhimituipui (78.56) and Lunglei (76.39).

An analysis of dependency ratio by sex reveals the dominance of female over male population. The figure is 73.29 for male and 84.58 for female for the whole Mizoram. The dependency ratio for female is as high as 85.78 in Aizawl district, 84.32 in Lunglei district and

83.66 in Chhimtuipui district in 1981. The values for male is 75.82, 69.97 and 74.10 for the corresponding districts for the same period.

In Mizoram, the age median is 19.57 in 1981 which is slightly lower as compared to the national figure of 20.60 for the same period. In the constituent districts, it is highest in Lunglei district with 20.10. It is lowest in Aizawl district with 19.37 and medium in Lunglei district with the age median of 20.01 for the corresponding year.

The age-sex composition of the population in Mizoram is also presented in pyramid diagrams(Figs. 4.5-4.8). It is clear from the diagrams that in all the districts the children and younger age group is extremely large giving a broad base. This indicates either the birth rate is very high or death rate has come down to a certain extent. It may be, therefore, expected in the near future, a high growth rate of population as the present youngsters shall enter the reproductive stage after a decade or so.

LITERACY

Level of literacy in a society is one of the most important yardsticks of demographic dynamism which reflects the manpower and economic potentials of the

GROWTH OF LITERACY IN MIZORAM

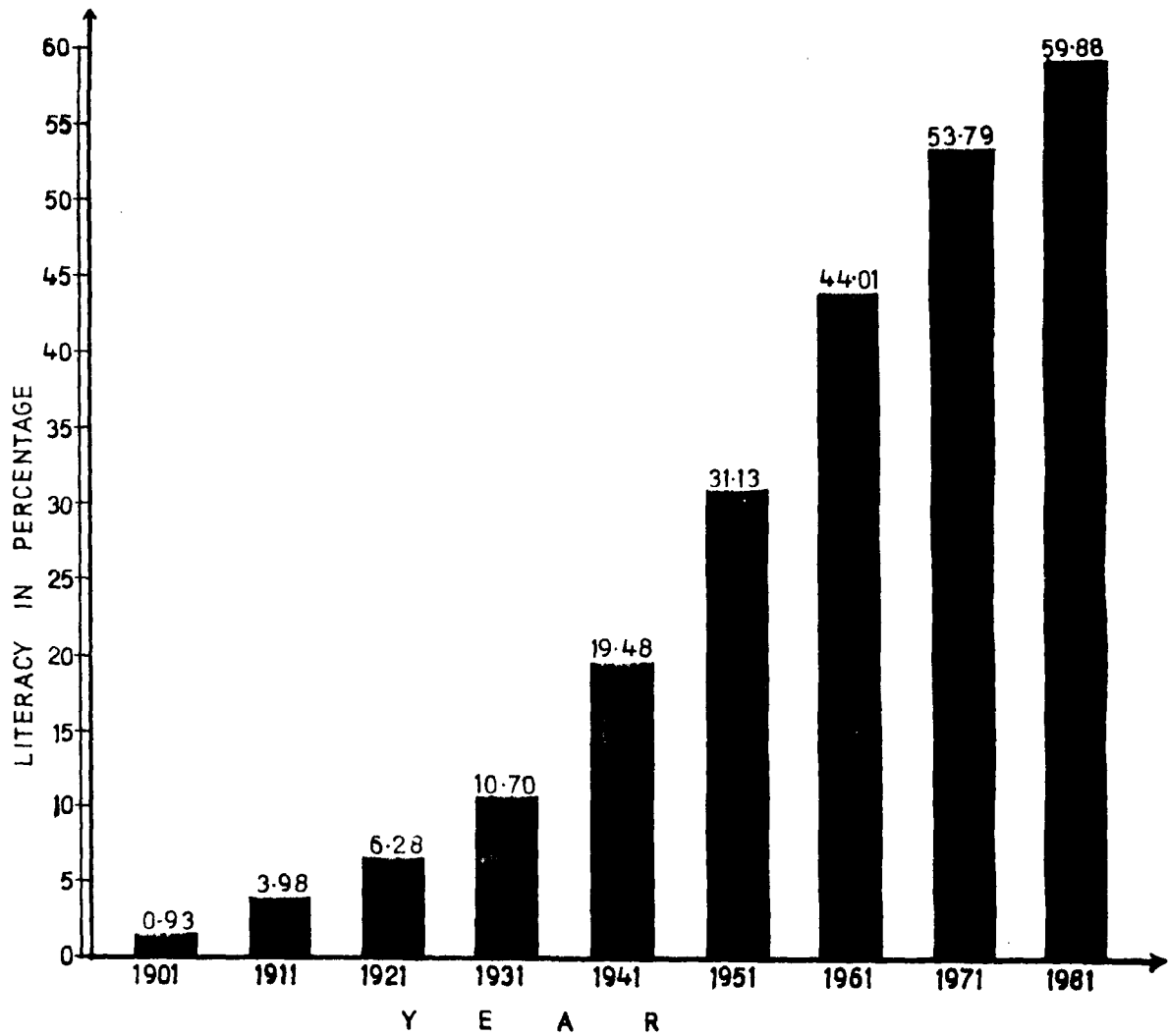


Fig. 4.9(a)

population. But one should not perceive that literacy percentage as a direct indicator of region's economic situation, for Literacy per Census of India envisages rather a loose definition¹⁰.

The percentage of literacy in Mizoram in 1981 was 59.88 as against all India average of 36.17 per cent. This indicates that Mizoram stood one of the highest states in India surpassed only by Kerala (69.17 per cent) and the Union Territories of Chandigarh (64.69 per cent) and Delhi (61.06 per cent).

The progress of literacy in Mizoram is shown in the diagram [Fig.4.9(a)]. As it can be observed from the diagram, the literacy growth rate undertook a rapid progress. The average growth rate during the last eight decades was 46.65 per cent. The literacy rate of Mizoram in 1901 was only 0.93 per cent, which was multiplied to 3.98 in 1911, showing a growth rate of 327.95 per cent. It is clear from the diagram that literacy rate grew at a very rapid rate till 1941, but started to decline since 1951. From 1911-1921, the growth rate was 57.78 per cent which was increased to 70.38 in the later decade. During

10. According to Census of India definition, a person who can both read and write with understanding in any language is to be taken as literate. A person who can merely read but cannot write is not literate. It is not necessary that a person who is literate should have received any formal education standard.

LITERACY BLOCK WISE 1981

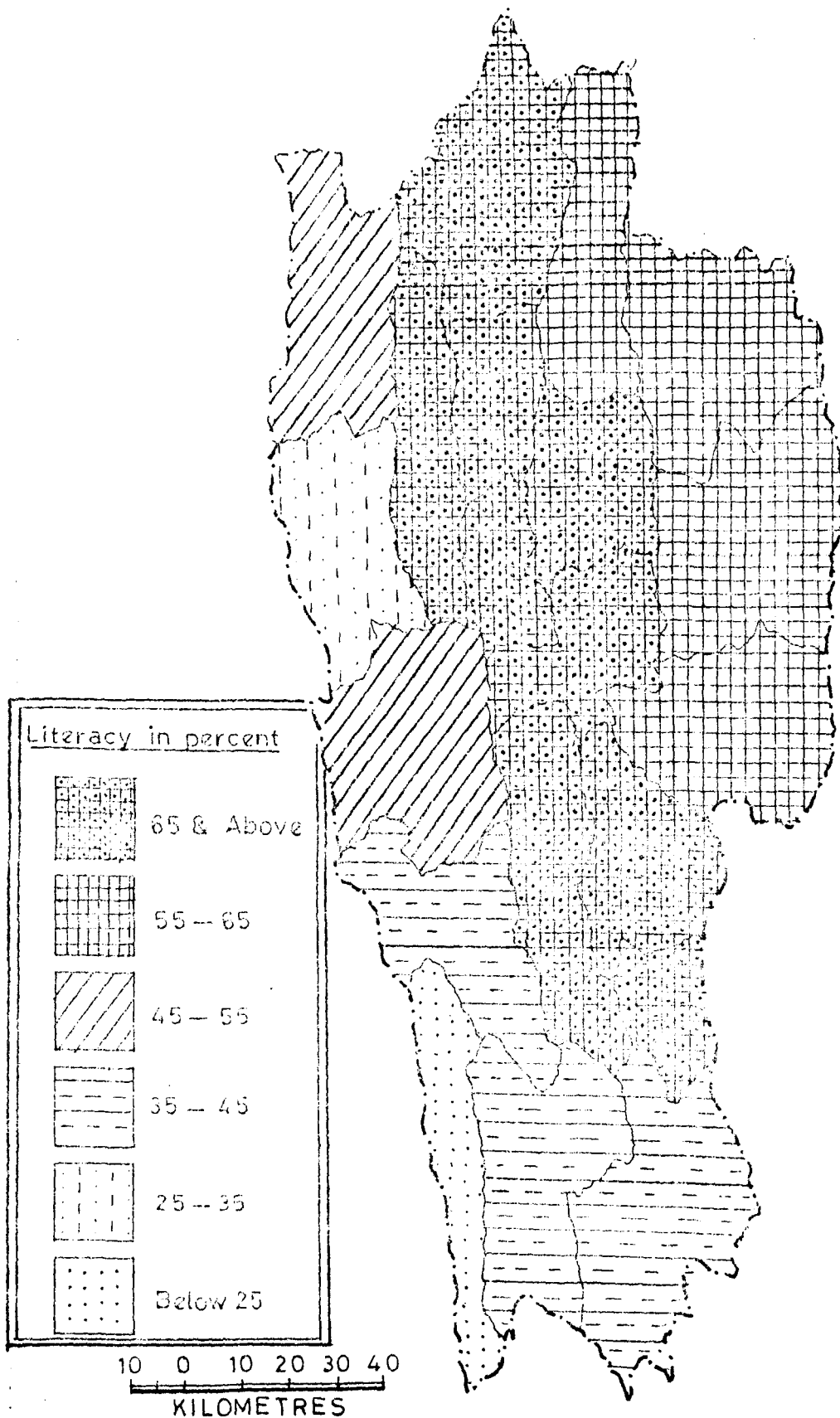


Fig. 4.9

the period 1931-1941, it grew at even higher rate of 82.05 per cent from where the growth rate declined. During the last decade, i.e., 1971-1981, the growth rate was only 11.32 per cent but nevertheless, keeping the literacy rate as high as 59.88 per cent.

From the table 4.9, it can be seen that in 1981 the literacy rate in the constituent districts tend to decrease southward. In Aizawl district, the literacy rate is 62.15 per cent; 56.88 per cent in Lunglei district and only 37.06 in Chhimituipui district. This tendency also applies to literacy rate in respect of female, rural and urban excepting the case of male where the tendency is reversed. In Aizawl district, the difference in rural and urban literacy is 13.74 per cent; 21.45 per cent in Lunglei district and 28.25 per cent in Chhimituipui district.

It is also to be seen that literacy is higher in both sexes in the urban areas. The urban literacy constituted 74 per cent while it was only 55 per cent in rural areas. The availability of better facilities for education and employment in urban areas resulted to high literacy percentage. In Aizawl and Lunglei districts, the urban literacy accounts for more than 70 per cent, while it is lower in Chhimituipui district with 62.36 per cent.

Table 4.9
Literacy and Spatial Pattern - Districtwise, 1981
(Literacy in Percentage)

State/District	Total/ Rural/ Urban	Total	Male	Female	Percentage variation in Male & Female
	Total	59.88	64.46	54.91	9.55
MIZORAM	Rural	55.24	56.49	43.50	12.99
	Urban	74.06	55.12	44.87	10.25
	Total	62.15	54.74	45.25	9.49
Aizawl District	Rural	61.15	54.89	45.10	9.79
	Urban	74.89	54.43	45.56	8.87
	Total	56.88	58.46	41.53	16.93
Lunglei District	Rural	52.61	58.89	41.10	17.79
	Urban	74.10	57.21	42.78	14.43
	Total	37.06	63.33	36.66	26.67
Chhimituipui District	Rural	34.07	63.93	36.07	27.86
	Urban	62.36	60.58	39.41	21.17

Source : Calculated from Census of India, 1981, Primary Census Abstract, Series 31, Part II-B, pp. 31 & 35.

Another distinct character is that literacy for male is higher than female in all the districts. The percentage variation ranges from 9 to 27, aggravated towards the south. The rate of difference in literacy was 9.49 per cent in Aizawl district, 16.93 per cent in Lunglei district and 26.67 per cent in Chhimituipui district being the highest.

An analysis of literacy at block level (Fig. 4.9) reveals that Tlangnuam block and Lunglei block stand out as the most literate blocks. Tlangnuam block, which includes the capital town, Aizawl, has a literacy rate of 75.73 per cent. In Lunglei block the literacy is as high as 68.09 per cent, followed by Thingsulthliah (67.99), Sangau (67.69), Serchhip (66.59), Aibawk (66.42), Thingdawl (65.37), Reiek (65.13), Hnahthial (65.03). Literacy is quite high in the blocks of Darlawn (64.45), East Lungdar (63.59), Khawzawl (63.47) and Ngopa (61.45).

From the map, it is clear that literacy is lower in the western half of the state. Certain blocks such as Lokicherra, Bnghmun, Tuipang, Lawngtlai, Lungsen, West Phaileng and Chawngte have literacy below the region's average. Chawngte has the lowest literacy percentage, i.e. 15.88. The reason, as already cited in the preceding analysis, is that these areas are infiltrated by more backward communities such as Chakmas and Riangs, that kept the literacy rate very low.

LANGUAGE

Mizoram represents, perhaps, the most significant deviation as far as linguistic diversity in India is concerned. It is a mono-lingual state in which Mizo or Lusei is the lingua-franca of the state. The Mizo language belongs to the Assam-Burma branch of Tibeto-Burmese family of language.

By the census of 1971, there were only eight languages with more than one per cent speakers¹¹. These languages are :

Mizo/Lusei	75.55 per cent
Chakma	6.99 per cent
Lakher	3.49 per cent
Pawi	3.10 per cent
Riang	2.95 per cent
Hindi	1.57 per cent
Nepali	1.35 per cent
Hmar .	1.36 per cent.

These languages together accounted for 96 per cent of the total population of the state. Mizo/Lusei alone

11. Census of India - Mizoram Part A & B, "General Population Economic and Social and Cultural Tables", pp. 155-157.

accounted for three-fourth of the total speakers of the state.

The recent Chakma influx has brought a remarkable change in the percentage share of speakers in the state. By 1981 census, the speakers of Chakma language constituted 8.08 per cent of the total state's population, bringing down the percentage share of Mizo language speakers to 71.15 per cent from 75.55 per cent in 1971. The percentage share of Lakher was decreased to 3.38 per cent in 1981 from 3.49 per cent in 1971; while that of Pawi and Hmar rose to 4.65 per cent from 3.10 per cent, and from 1.36 per cent to 1.75 per cent, respectively for the corresponding years.

It is to be found that instead of high tribal concentration in the state, linguistic diversity is insignificant as compared to other tribal areas like Nagaland or Arunachal Pradesh. The reason is unlike other tribal groups who came in pre-historic or ancient period, occupied inaccessible hilly areas thereafter lived in nearly complete socio-cultural isolation, the Mizo came very recently - between 15th and 18th centuries. When the Mizo migrated from Burma, they have had a fairly developed spoken Mizo language. During the last few

centuries, variation in Mizo language has not been significant¹¹.

Chakma language is a deviation from Bengali and Lakher language is unintelligible to the Mizo. Pawi and Hmar language have much similarities with Mizo language. The Riang language is more related to Bengali.

RURAL AND URBAN POPULATION

Rural population relates to the population enumerated in areas other than those treated as urban according to the census definition. According to 1981 census, 75 per cent of the population of Mizoram live in the rural parts and only 25 per cent live in the urban areas. This indicates that Mizoram population is predominantly rural.

Traditionally, the Mizos are jhum cultivators with rural habitat. Absence of economic activities other than jhum cultivation restricted the population of Mizoram to confine in rural areas till the present. The limited cultivable lands do not favour the urban growth as the

11. Ahmad, Ali, Linguistic Pattern of North-Eastern Region, Abstract from First National Symposium on Language and Social and Regional Identities in India, J.N.U., Delhi, 1982, p. 37.

cultivator benefits more if he settles as near to the field as possible, so that he can attend his jhum most of the time.

According to 1971 census, 88.64 per cent of the population of Mizoram live in rural parts and only 11.36 per cent live in the urban areas. The changes in occupational structure from traditional jhuming to other occupations have greatly affected the rural-urban population of Mizoram during the last decade. With the adoptions of new jobs like business, trade and commerce, contracts, employment in the offices, etc., the urban population increased enormously. In 1981 census, the urban population constituted 25 per cent of the total population, though a much better percentage, i.e., 75 per cent of the population are still confined in the rural dwellings. But it is to be seen here that the urban population has increased from 1971 to 1981 at a rate of 120 per cent which indicates that Mizoram has made a considerable progress in the process of urbanization.



PLATE NO. 4.1 :: The Riang children. This pose may, possibly be their first ever.



PLATE NO. 4.2 :: A marriage party proceeding towards the Church. Note a village playground, hill top settlement of Cherhlun village.

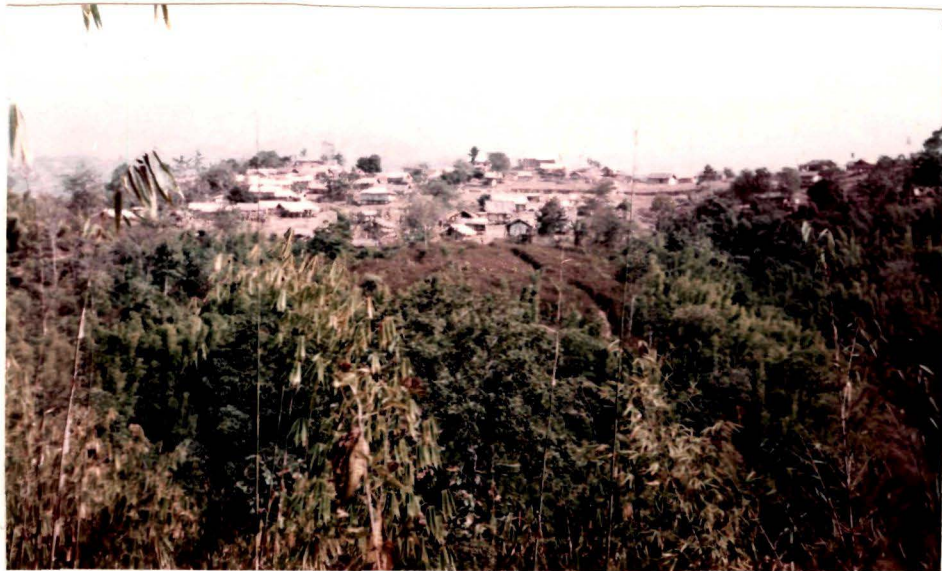


PLATE NO. 4.3 :: K. Sarali, a Riang village on the river Teirei valley is a good example of **semi-compact settlement**.



PLATE NO. 4.4 :: A community feast on the occasion of a villager's success celebration. An example of mutual bonds.



PLATE NO 4.5 : Urban population grew rapidly during the last two decades. The plate shows how settlement expands in Aizawl town in spite of difficult terrain.

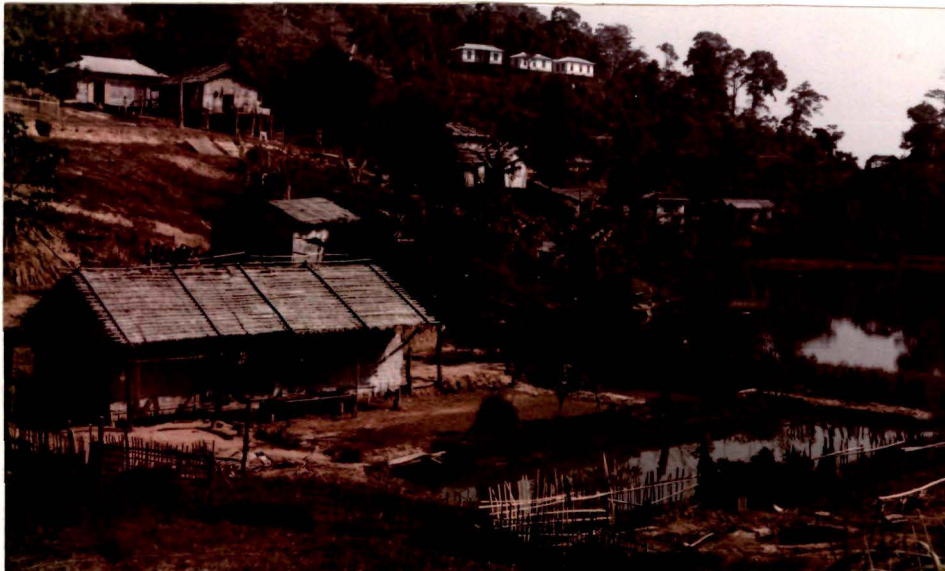


PLATE NO.4.6 : In contrast to Plate No.5.5, it is seen that there is no much pressure on land for housing in an interior village, like that of Tuidam. Note a fish pond and forest bound.



PLATE NO.4.7 : A typical Mizo village. Note the kitchen gardens, house type and their arrangement which shows a sense of regularity.



PLATE NO.4.8 : A typical Riang house is made up, except for the poles, completely of bamboos.

Chapter V

POPULATION GROWTH

Changes in the size of population with numerical addition to the sum is commonly known as population growth. Basically, the growth of population in a region is mainly due to three main factors : birth, deaths and migration during the period under consideration. The pattern of population distribution in a region is mainly dependent on the past changes in the population characteristics in terms of location, distribution, density, growth and mobility. Moreover, the components of population change act as a vital force in determining the demographic character of 'places' and, the area pattern of population growth magnificently reflects the economic

potentials and changing nature of different sub-areas of a region¹. The changes in the dynamics of population whether positive or negative, reflects the history of man's response to the environmental possibilities present in the region.

The population of India has reached 684 million in 1981. This is nearly three times its size in 1901. Every year nearly 22 million babies are born and nearly 8 million persons die, bringing about a net annual increase in population of about 14 million, which is numerically equivalent to the population of the whole Australia².

The state of Mizoram is a region with low population concentration. Nevertheless, it has witnessed an ever-increasing growth of population with increasing pressure on physical and economic resources which is reflected in slow economic progress and unemployment.

The analysis of population growth, therefore, holds significance for a developing state like Mizoram where rapid increase in population may act as the main drawback in achieving the desired degree of economic and social progress.

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1. Dube, R.S., "Population of the Rewa Plateau - A Geographical Analysis", Ph.D. Thesis (unpublished), Department of Geography, Saugar University, Saugar, 1974.
 2. Agarwala, India's Population Problems, Tata McGraw Hill Pub. Co. Ltd., New Delhi, 1974, p. 40.

The overall increase of population in India during the three decades from 1951 to 1981 is around 78 per cent. Therefore, rapid growth of population is one of the major problems which India is facing at present. High growth of population is associated with poverty, malnutrition, illiteracy and socio-economic backwardness. But if the economic development is to accelerate, population growth is a big hazard. The rapid growth of population is not because of a sudden burst in birth rate, but is largely due to a progressive decline in death rate. The death rate started declining at comparatively faster rate, while the birth rate remained almost constant (marginal decline is recorded from 1921 onwards). From the available information it was observed that during 1921-1951, the decline in death rate was 12 per cent as compared to the decline in the death rate of 42 per cent. Again, during the next twenty years (1951-1971), the decline in death rate was another 42 per cent while decline in the birth rate was only 5.5 per cent. This explains the high growth rate of population since 1951³.

3. Bhattacharjee, P.J. and G.N. Shastri, Population in India - A Case Study of Inter-State Variations, ISEC Monograph No. 3, Vikas Publishing House Pvt. Ltd., New Delhi, 1976.

The population of Mizoram according to 1901 census was only 82,434 persons. By 1981, it was increased to 4,93,757 persons which is nearly six times larger than that of 1901 census. The net increase during this period was 4,11,323 persons. This indicates that the growth rate was much higher in Mizoram (498.97 per cent) than the national growth rate of 187.05 per cent during the last eight decades. The growth rate during the same period is even higher in the other states of North-East. It was as high as 1084.51 per cent in Tripura, 504.83 per cent in Assam and little lower in Nagaland (435.36 per cent), Manipur (399.52 per cent) and Meghalaya with 292.62 per cent⁴.

A probe into the table 5.1 reveals that the average growth rate during the last eighty years was 29.32 per cent. Yet, the region has shown ups and downs in the population growth rate. The state's population of 82,434 in 1901 was increased to 91,204 in 1911 showing a plus growth rate of 10.64 per cent. But immediately in the next decade the growth rate declined to 7.90 per cent while the population was increased to 98,406 persons. The main reason behind this trend is that Mizoram undergone a

4. Census of India, Series-I, Registrar General and Census Commissioner for India, and Series-I Part II-B(1), 1981.

POPULATION GROWTH 1901-1981

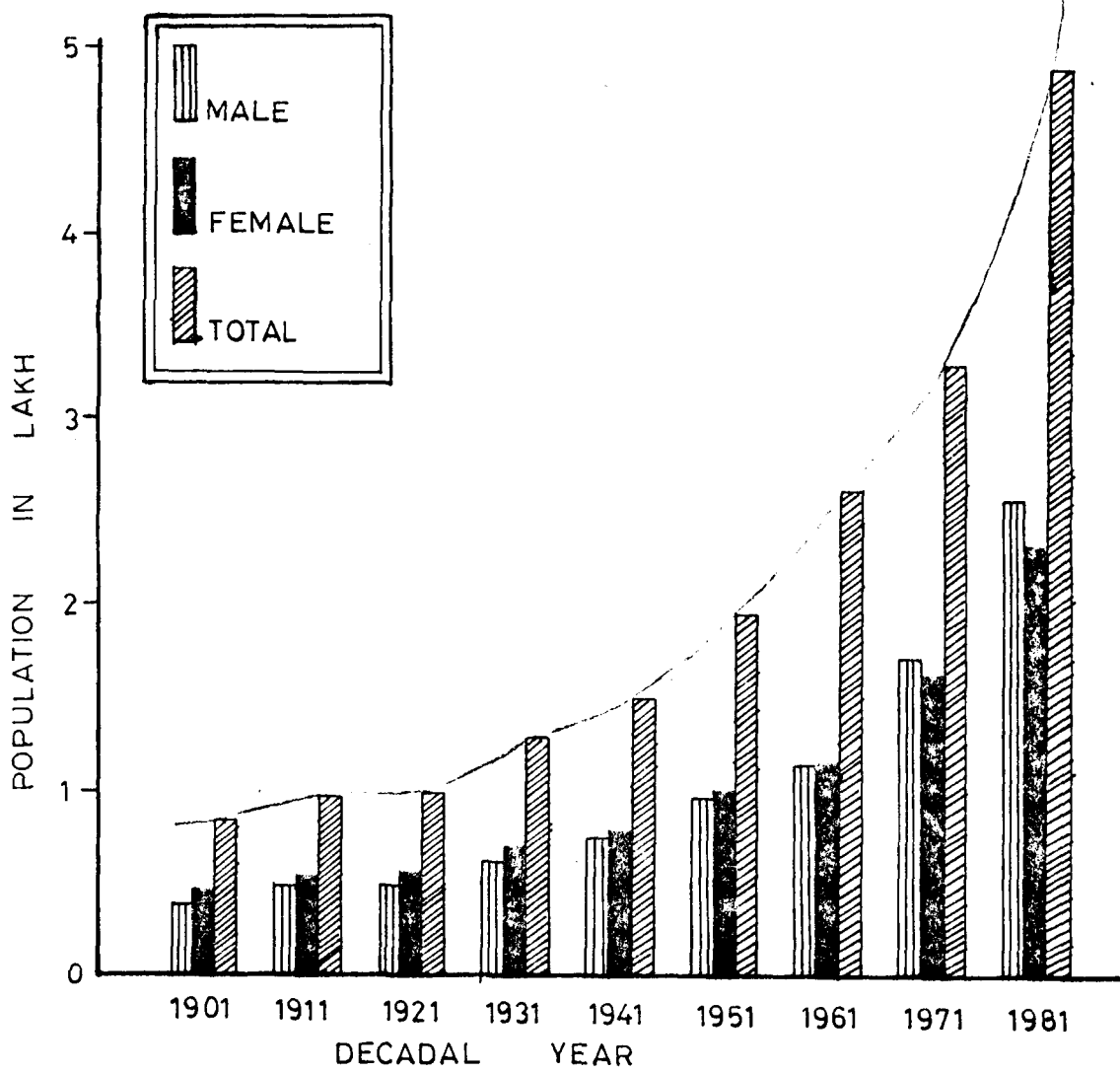


Fig. 5-1

Table 5.1
Decadal Variation in Population since 1901

State/District	Year	Persons	Decadal variation	Percentage decadal variation	Males	Females
MIZORAM	1901	82,434	-	-	39,004	43,430
	1911	91,204	+ 8,770	+ 10.64	43,028	48,176
	1921	98,406	+ 7,202	+ 7.90	46,462	51,754
	1931	1,24,404	+ 25,998	+ 26.42	59,186	65,218
	1941	1,52,786	+ 28,382	+ 22.81	73,855	78,931
	1951	1,96,202	+ 43,416	+ 28.42	96,136	1,00,066
	1961	2,66,063	+ 69,861	+ 35.61	1,32,465	1,33,598
	1971	3,32,390	+ 66,327	+ 24.93	1,70,824	1,61,566
AIZAWL	1981	4,93,757	+161,367	+ 48.55	2,57,239	2,36,518
	1971	2,29,112	-	-	1,16,401	1,12,711
LUNGLEI	1981	3,40,826	+111,714	+ 48.76	1,76,242	1,64,584
	1971	62,136	-	-	33,736	28,400
CHHIMTUIPUI	1981	86,511	+ 24,375	+ 39.23	45,998	40,513
	1971	41,142	-	-	20,687	20,455
	1981	66,420	+ 25,278	+ 61.44	34,499	31,421

Source : Census of India, 1981. Series 31, Mizoram, Part II-A, General Population Tables, p. 26.

natural famine called Mautam⁵ in 1912 which retarded the progress of population growth. It was during this period that the population growth rate was at its lowest as a result of this calamity. The census of 1931 depicts a very high rate of growth, i.e., 26.42 per cent. The recovery from famine with a bloom in agricultural produce may be attributed to this rapid increase. Again, the decadal growth rate of population fell to 22.81 per cent in 1941. It is to be seen in the following decades (1951-1961) that the growth rate was steadily increasing with 28.42 per cent, and 35.61 per cent respectively. Again, the census of 1971 shows that another low rate of decadal increase, i.e., only 24.93 per cent as compared to the previous decades, though the population has come up to 3,32,390 persons with the addition of 66,327 new persons to 1961 census figure. The declining growth rate during 1961-1971 was due to political disturbance which broke out in 1966 in Mizoram. The Mizo National Front (MNF) with an attempt to secure an independent sovereignty started to fight against the Indian Army which tolled many lives.

5. Mautam is a natural famine which appears in Mizoram at an approximate interval of 50 years. The famine caused by the flowering and dying down of bamboo species which led to an abnormal increase in the population of jungle rats, insects and pesticides. The insects and pesticides ate away the crops and famine follows. The starvation resulted not only in reduction of fertility of the people, but directly or indirectly accelerated the mortality rate.

PERCENTAGE VARIATION OF POPULATION GROWTH
MIZORAM

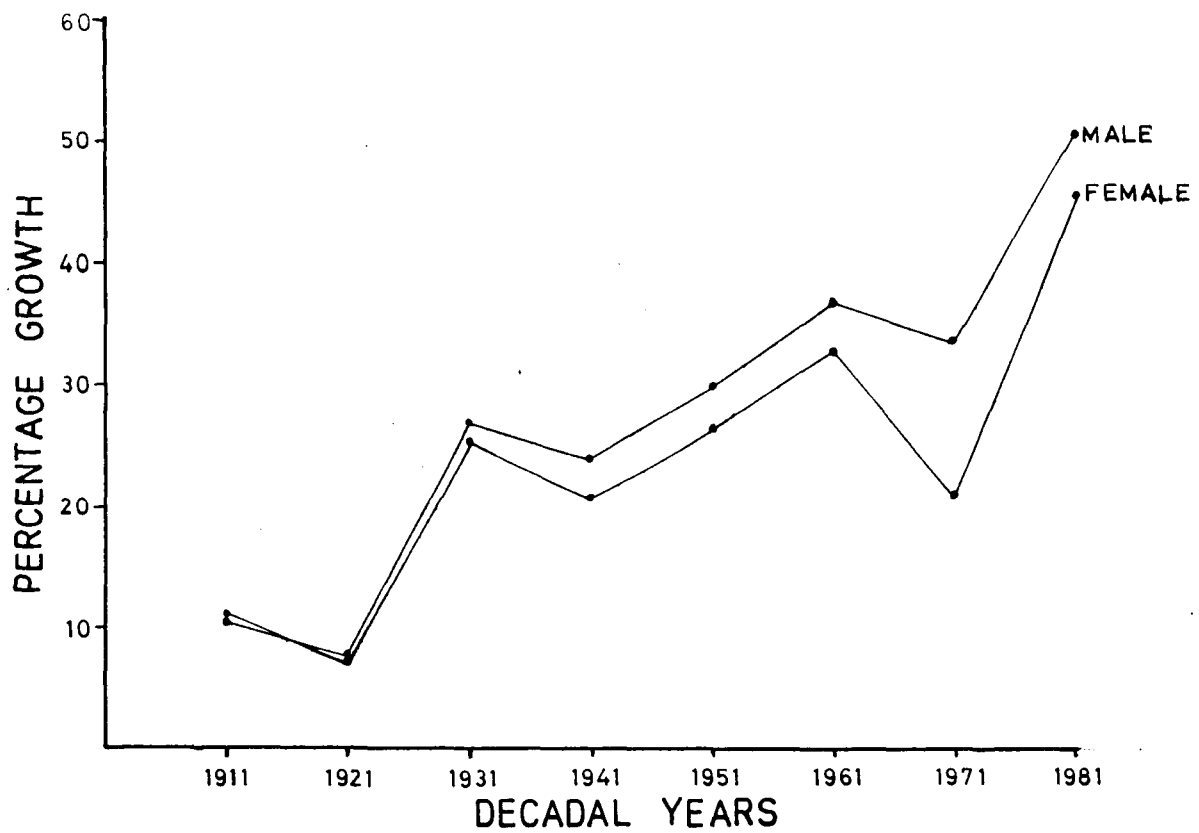


Fig. 5-2

Another reason was that many youths and youngsters who joined MNF and went underground were not enumerated in the census operation at that time. By 1981, the population figure of Mizoram stood at 4,93,757 persons of which, 52 per cent are males and 48 per cent are females. The percentage increase from 1971 to 1981 was 48.55 which is almost double of the growth rate during 1961 to 1971.

As already mentioned, the population growth during the last eighty years was not symmetrical. The growth rate was lowest during 1911 to 1921, the rate being 7.90 per cent as a result of natural calamity called Mautam which Mizoram experienced in 1912. The highest growth rate is observed in the latest census period in 1981 with the growth rate of 48.55 per cent. Steady development in economy, educational facilities, infrastructures, health and medical awareness and conversion of Mizoram into Union Territory providing jobs opportunities, etc. are the important factors that accelerated the population growth during this period. Apart from these, the recent influx of Chakma refugees from Bangladesh and the entry of skilled labour from Cachar and Karimganj districts of Assam have helped in this trend.

The population growth at district level during the eight decades cannot be analysed due to non-availability

of data⁶. However, during 1971 to 1981, Chhimtuipui district has a highest growth rate which is 61.44 per cent, as it is the Chakma influx area. Aizawl district also has a high growth rate of 48.46 per cent, which is the result of immigration from the other districts. Lunglei district, with the lowest rate shows a percentage growth of 39.23 during the same period.

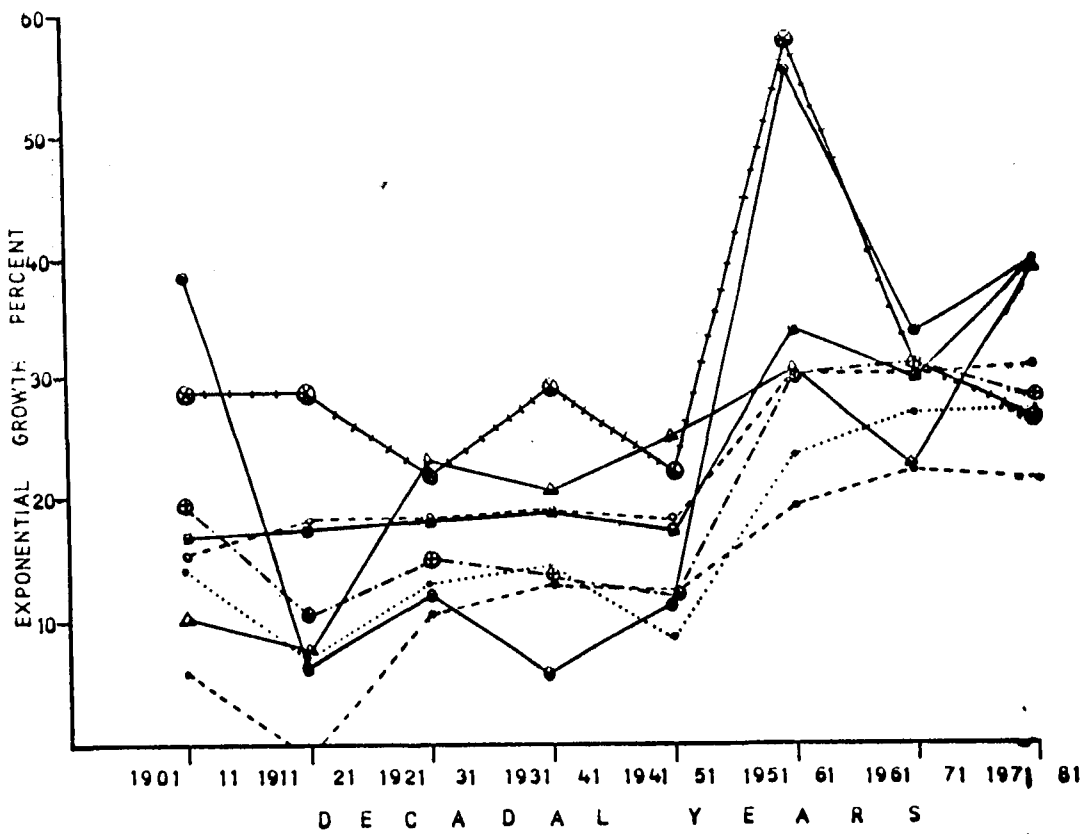
EXPONENTIAL GROWTH OF POPULATION

The exponential growth pattern in Mizoram (see Table 5.2) from the period 1901-1981 reveals that for all the decades from 1901 to 1981, the growth rate is quite high as compared to the national growth rate. The estimation of parameters and necessary calculations have been given under Methodology. During the two decades of 1901-11, and 1911-21*, when the population growth rate of the country was very low, i.e., 5.6 per cent and -0.3 per cent respectively, it was fairly high in Mizoram (10.1 per cent and 7.6 per cent respectively). Of course, it was during the period 1911-1921 that the region itself also

6. Mizoram was under the State of Assam during 1971 and was then known as Mizo district. Hence, the present districts figure for 1971 and prior to it are not available separately. The Mizoram Union Territory was formed after 1971 Census.

* The period 1911-1921 was the natural calamity prone period for the central and northern provinces of India (as well as for Mizoram). That is why the growth rate has declined to negative.

EXPONENTIAL GROWTH OF POPULATION IN N.E. REGION SINCE 1901 [DECADAL]



○ — Nagaland
 ● — Tripura
 ● — Manipur
 □ — N.E. India

- - - Assam
 Meghalaya
 ▲ — Mizoram
 - - - All India

Fig. 5-3

EXPONENTIAL GROWTH OF POPULATION. MIZORAM SINCE 1901

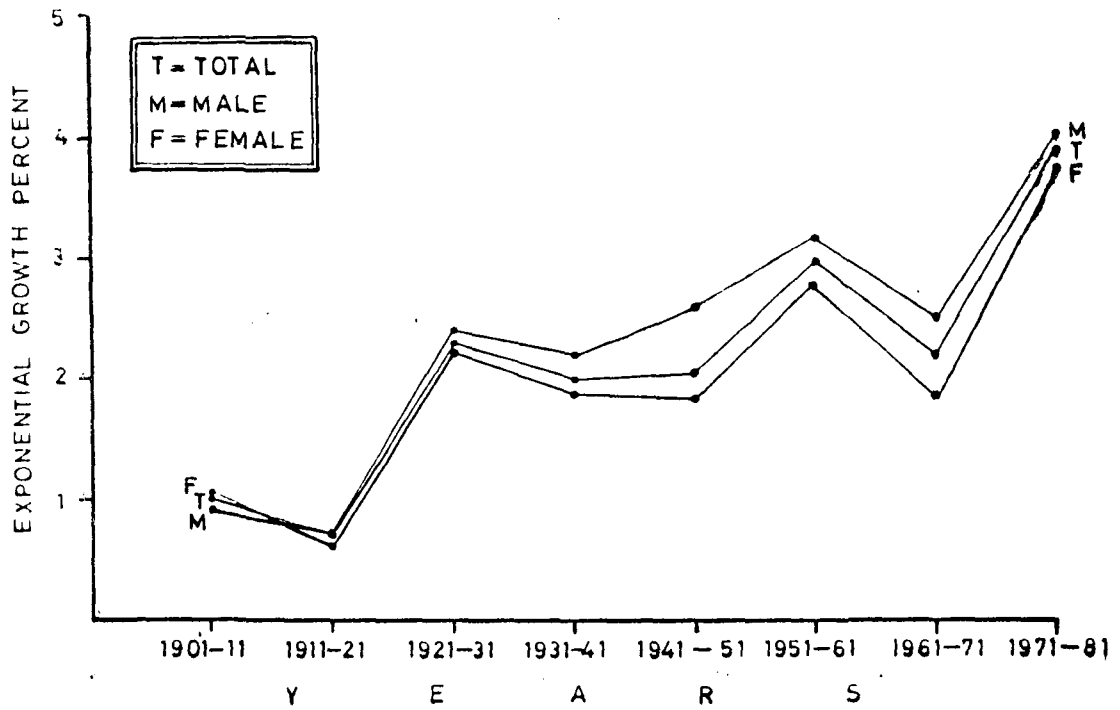


Fig. 5.4

Tbale 5.2
Annual Exponential Growth of Population
Mizoram Since 1901

State/District	Years	Total	Male	Female
MIZORAM	1901-1911	1.01	0.98	1.03
	1911-1921	0.76	0.76	0.71
	1921-1931	2.34	2.42	2.31
	1931-1941	2.05	2.21	1.90
	1941-1951	2.50	2.63	2.37
	1951-1961	3.40	3.20	2.89
	1961-1971	2.22	2.54	1.90
	1971-1981	3.95	4.09	3.81
AIZAWL	1971-1981	3.97	4.14	3.78
LUNGLEI	1971-1981	3.30	3.10	3.55
CHHIMTUIPUI	1971-1981	4.78	5.11	4.29

Source : Calculated by the researcher.

Table 5.3

Exponential Growth Rate of Population in North-Eastern Region during 1901-1981

State/ Union Territory	1901- 1911	1911- 1921	1921- 1931	1931- 1941	1941- 1951	1951- 1961	1961- 1971	1971- 1981
All India	5.6	-0.3	10.4	13.3	12.5	19.6	22.2	-
N.E. India	16.9	17.1	17.8	18.4	17.4	34.6	30.0	40.67
Nagaland	38.4	6.3	11.9	5.9	11.6	55.0	33.6	40.67
Mizoram	10.1	7.6	23.4	20.6	25.0	30.5	22.3	39.57
Assam	15.7	18.6	18.2	18.6	18.2	30.0	30.0	30.78
Manipur	19.6	10.4	14.9	13.9	12.0	30.0	31.9	28.09
Tripura	28.1	28.2	22.8	29.4	22.0	58.1	31.0	27.71
Meghalaya	14.6	7.0	13.0	14.5	8.6	23.9	27.4	27.77

Source : Census of India, 1971, Part II-A(i), India, and Primary Census Abstract, 1981, for all States.

registered a lowest exponential growth rate. The maximum growth rate was observed for Mizoram during the last decade, i.e., 1971-1981 which is 39.57 per cent. The contributing factors to the high growth rate during this period have already been mentioned. The lowest growth rate was observed during the period 1911-1921 (7.6 per cent only) when natural calamity locally called Mautam famine affected the region.

Again from the table it is clear that the exponential growth trend suffers the ups and downs excepting the period from 1931-1941 to 1951-1961. On the contrary, taking India as a whole, the trend is also not symmetrical till 1941-1951, then later follows an increasing trend till the last census period. Here it is interesting to note that since 1901 till 1971, the exponential growth rate for Mizoram is higher than the national average. But in 1981, Mizoram has recorded a lower rate of 39.57 per cent as against 40.67 for all India and North-East Region as a whole.

POPULATION GROWTH BY SEX

The most glaring picture with regards to the population growth in Mizoram by sex-wise is that the male population grew at a faster rate than that of the females. Excepting the growth rate in 1911, where the female growth

was a little higher, the growth rate for male was always on a better side till the last census period. As shown in the table, the female population grew at a higher rate of 10.92 per cent as against 10.31 per cent for male in 1911. Since 1921 onwards, the male population grew at a higher rate ranging from 7.98 per cent in 1921 to 50.58 per cent in 1981, marking an average decadal growth rate of 27.24 per cent during the last eighty years. Nevertheless, the female population also registered an increasing growth rate ranging from 7.42 per cent in 1911 to 46.39 per cent in 1981. The average decadal growth rate from 1911 to 1981 was 24.12 per cent.

The highest percentage growth for both males and females were registered during the last census period, i.e., 50.58 per cent for males and 46.39 for females. The lowest growth rate for males and females were recorded in 1911 respectively with 10.31 per cent for males and 10.92 per cent for females. The percentage variation between male and female growth is seen during 1971.

The population growth of the region which suffers ups and downs during the last eight decades also corresponds to the growth in males and females. The growth rate falls to 7.98 per cent and 7.42 per cent for males and female in 1921 from 10.31 per cent for males and 10.92

Table 5.4
Population Growth by Sex 1901-1981

Year	Total male	Decadal variation	Growth per cent	Total female	Decadal variation	Growth per cent	Percentage variation in male & female growth rate
1901	39,004	-	-	43,430	-	-	-
1911	43,028	+ 4,024	10.31	48,176	+ 4,746	10.92	0.61
1921	46,462	+ 3,434	7.98	51,754	+ 3,578	7.42	0.56
1931	59,186	+ 12,724	27.38	65,218	+ 13,464	26.01	1.37
1941	73,855	+ 14,669	24.83	78,931	+ 13,713	21.02	3.81
1951	96,136	+ 22,281	30.11	100,066	+ 21,135	26.77	3.34
1961	132,465	+ 36,329	37.78	133,598	+ 33,532	33.50	4.28
1971	170,824	+ 38,359	28.95	161,566	+ 27,968	20.93	8.02
1981	257,239	+ 86,415	50.58	236,518	+ 74,952	46.39	4.19
<u>Aizawl District</u>							
1971	116,401	-	-	112,711	-	-	-
1981	176,242	+ 59,841	51.40	164,584	51,873	46.02	15.38
<u>Lunglei District</u>							
1971	33,736	-	-	28,400	-	-	-
1981	45,998	12,262	36.34	40,513	12,113	42.65	6.31
<u>Chhimituipui</u>							
1971	20,687	-	-	20,455	-	-	-
1981	34,499	13,812	66.76	31,421	10,966	53.61	13.15

Source : Census of India, 1981, Series 31, Mizoram General Population Tables, Part II-A, p. 26.

per cent for females in 1911. It rises to 27.38 per cent and 26.01 per cent for males and females respectively in 1931, then comes down again to 24.83 per cent for male and to 21.02 per cent for females in 1941. The following two decades, i.e., 1951 and 1961 shows an upward growth trend of 30.11 per cent and 37.78 per cent for males and 26.77 per cent and 33.50 per cent for females. Again in 1971 the growth rate falls to 28.95 per cent for males and 20.93 per cent for females consequent upon the political instability which swept the region since 1966. As mentioned earlier, the growth rate is highest during the last decade where the record for male is 50.58 per cent and for female is 46.39 per cent.

At this stage, it is important to note that the male population is growing at a higher rate than the female population, which resulted in the changes of sex ratio. The sex ratio was as high as 1,113 in 1901 and 1,120 in 1911. Ultimately with the dominance of male population growth rate, the sex ratio also has come down steadily. From 1,120 in 1911, it came down to 919 in 1981.

POPULATION GROWTH BY CASTES AND TRIBES

In the preceding analysis it has been mentioned that there is a sharp variation in the share of scheduled

tribe and scheduled caste population in the state of Mizoram. While scheduled tribe constituted as much as 93.55 per cent of the state's population in 1981, scheduled caste constituted only 0.03 per cent as against the national figure of 7.76 per cent for scheduled tribe and 15.75 per cent for scheduled caste for the same period.

But in terms of growth, it is to be seen that the growth percentage of scheduled caste is much higher than that of scheduled tribe. During 1961-1971, the growth rate for scheduled caste was as much as 1540 per cent compared to only 20.03 per cent for scheduled tribe. On the other hand, the actual number of scheduled caste population which was only 5 persons in 1961 was increased to 82 persons in 1971, showing a high growth rate but not making worthwhile contribution if we think in terms of percentage value to the total population. The scheduled tribe population which shows a lower growth rate, has rather added 52,285 new persons to 1971 census, which constituted 15.73 per cent to total population. From 1971 to 1981, scheduled caste registered a growth rate of 64.63 per cent while it is 47.43 per cent for scheduled tribe. It is worthwhile to mention that in the tribal dominated states, i.e., scheduled tribes, the growth percentage is all higher for scheduled caste as it may also be seen in

Nagaland, Meghalaya and Tripura. In India as a whole, scheduled tribes recorded a little higher growth rate with 25.48 per cent and 35.81 per cent for the period 1961-1971 and 1971-1981, while the value is 23.94 per cent and 30.95 per cent respectively for scheduled caste for the corresponding periods.

Table 5.5
Growth of Scheduled Caste/Tribe Population 1961-1981
(in percentage)

State/U.T.	Scheduled Caste		Scheduled Tribe	
	1961-1971	1971-1981	1961-1971	1971-1981
Mizoram	1540.00	64.63	20.03	47.43
Assam	24.54	-	-10.93	-
Manipur	22.43	8.40	34.30	15.99
Meghalaya	208.25	41.25	27.39	32.19
Nagaland	-	-	33.14	42.23
Tripura	61.09	60.93	25.13	29.60
N.E. Region	30.00	-	31.56	-
All India	23.94	30.95	25.48	35.81

Sources : Calculation based on Census of India 1961, 1971 and 1981. Social and Cultural Tables, India, and Statistical Abstract of India, 1982, Central Statistical Organisation, Ministry of Planning, Government of India.

Among the scheduled tribes, the Kacharis registered a highest growth rate during 1971-1981, which is 800 per cent. This is followed by Chakma with 77.01 per cent, the Khasis (52.07 per cent) and the Garos (50 per cent). The Mizo who dominated the region grew at the rate of 45.12 per cent while the Nagas show a negative growth of -14.28 per cent.

POPULATION GROWTH BY RELIGION

As stated earlier, the dominant religion in Mizoram is Christianity which comprised 83.81 per cent of the total population in 1981 census. This is followed by Buddhists (8.18 per cent) and Hindus (7.14 per cent). The other religion such as Muslims, Sikhs, Jains, etc. are negligible in terms of percentage to total population as they comprised less than 1 per cent. But the growth rate, regardless of the numericals (actual numbers) has shown an interestingly significant picture. The Sikhs recorded a growth rate as much as 5237.50 per cent during 1961-1971 which is the highest growth for a religious community in Mizoram since the first census operation. During the same period (1961-1971), Muslims show a growth rate of 827.09 per cent which is also very high. The Hindu population registered a growth rate of only 58.08 per cent during the same period, marking a sharp fall from the rate during

1951-1961 which was as high as 112.95 per cent. The Christians with a growth rate of 29.82 per cent during 1951-1961 has come down to 24.13 per cent during 1961-1971. This may indicate that Mizoram was more and more subjected to immigration in the sixties, the migrants being those who followed other religions than Christianity.

It is here interesting to note that the Sikhs who were the leaders in terms of percentage growth during 1961-1971, registered a negative growth rate of -1.40 per cent during 1971-1981. The Muslims having a high rate of growth during 1961-1971 (827.09 per cent) also fell sharply to 17.16 per cent only during 1971-1981. By this time (1981) it is the Jain communities having the highest growth of 266.66 per cent as against 89.66 per cent during 1961-1971. The growth rate of Christian increased to 44.62 per cent in 1981 from 24.13 per cent during 1961-1971. Hindus also registered a slight increase to 66.02 per cent in 1981 from 58.08 per cent in 1971. The Buddhists registering a growth rate of 78.51 per cent in 1981 as against 20.98 per cent in 1971 indicates that there has been a numerous infiltration of the Buddhist Chakmas from Bangladesh during the last decade.

DEATH AND BIRTH RATES

An estimation of death and birth rates is one of the important aspects of demographic study. In fact, it is from the study of death and birth rates that population growth in the future is predicted and projections are made. The birth rates in India, which is one of the highest in the world, has come down from 41.7 per thousand population in 1961 to 33.9 per thousand in 1981⁷.

Unfortunately, there was no record of deaths and births until recently that a systematic analysis in this aspect could not be carried out. Of course, there are some methods applicable in estimating death and birth rates by using some indirect data, such as Burgeois Pichat Method⁸, Reverse Survival Ratio Method⁹ and U.N. Manual IV Method¹⁰. Nevertheless, even an indirect data required for these methods are not available in Mizoram so that an estimation of Death and Birth rate could not be made.

7. India Facts, Printed at Rakesh Press, New Delhi.
8. Role, J.R. and U.P. Sinha, Fertility and Mortality in India 1951-1960, George Allen & Unwin Ltd., London, 1970, p. 214.
9. Coale, A.J. and P. Demeny, Regional Model Life Table and Stable Populations, Princeton University Press, New Jersey, 1966.
10. United Nations : Methods of Estimating Basic Demographic Measures from Incomplete Data, Manual IV, New York, 1967, pp. 12-16.

During the year 1988, the report of births from 637 registration units was 14,528 persons against 2,557 persons death¹¹. This showed an increase of 1971 persons in the units. However, the total population of the registration units is not given and hence, the rate of death and birth cannot be computed.

WORKFORCE

An analysis of work force is imperative in understanding the diverse demographic and socio-economic relationships. In order to define economic activity there are two main yardsticks, what is and what is not economic activity. The first is to ask each person what is his usual occupation or 'gainful work' without enquiring exactly when the work was done. The other type of standard defines the economically active population known as 'the labour force'¹² or 'workforce'. This represents the number of people actually at work during some particular period.

Both the standards are based on 'economically active' population as the group may be counted and

11. Statistical Handbook Mizoram 1989, Dept. of Economics and Statistics, Government of Mizoram, Aizawl, p.140.

12. George, W. Barclay, "Manpower and Working Activities" in Techniques of Population Analysis, John Wiley & Sons, Inc. New York, 1958, p. 264.

classified. It is important to follow a fairly uniform practice in collection of statistics regarding economically active population, so that a comparison can be made between two geographical regions. In Indian measures, a different standards are adopted. In 1951, for example, the population was labelled either as a 'self-supporting person' or an 'earning dependent'. The 1961 and 1971 Censuses first classified the entire population into working and non-working groups and the classification of occupation covered only the working population.

In 1981 the population is classified into workers and non-workers where the workers are further divided into main workers and marginal workers. Main worker means a person who has been engaged in a work for the major part of the year preceding the date of enumeration. Major part of the year may be defined as 183 days or more in a year, or in other words, worked for six months or more in a year. A worker who has been engaged in a work for some time during the year prior to the date of enumeration but not major part of the year is treated as marginal worker. By work force in this context, number of total main workers are considered and calculated in terms of percentage, out of the total population.

The workforce of Mizoram in 1961 was 47.23 per cent which declined to 45.61 per cent in 1971. In 1981, the

WORK FORCE 1981 MALE AND FEMALE

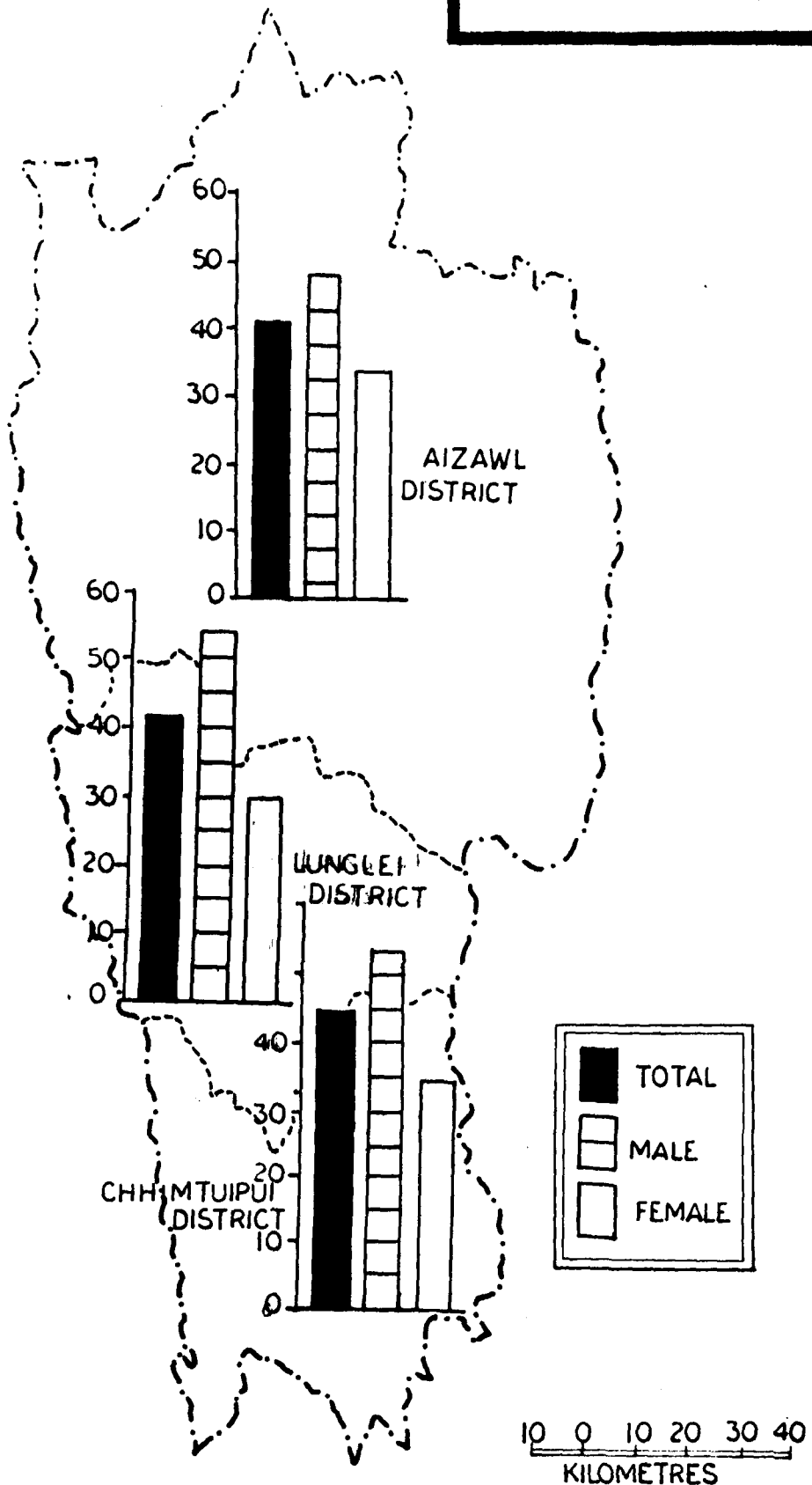


Fig. 5-5

rate was even lower with 41.73 per cent. The corresponding figures for all India during 1961 and 1971 were 43 per cent and 33.34 per cent respectively. It is seen that the rate of workforce follows a decreasing trend, not because of actual decrease in working population, but due to conceptual difference of workers in the Census years. For example, in 1961 census the percentage of working population registered a marked increase, because the workers status was given liberty to include persons whose contribution to productive activity was insignificant. Therefore, the usual fall in the work participation in 1971 as well as in 1982 were not due to depletion of working population, but was on account of a change in the definition of workers in the later censuses.

Being dominated by rural population, as much as 80 per cent of the total working population is comprised of rural population in 1981. Among the three districts in 1981, Chhimtuipui district has the highest workforce with 44.12 per cent, followed by Aizawl district with a rate of 41.25 per cent. The lowest in respect of work force is recorded by Lunglei district with only 31.64 per cent.

As shown in the figure 5.5, it is apparent that in 1981 the working population in Mizoram was dominated by

WORK FORCE 1981
TOTAL, RURAL, URBAN

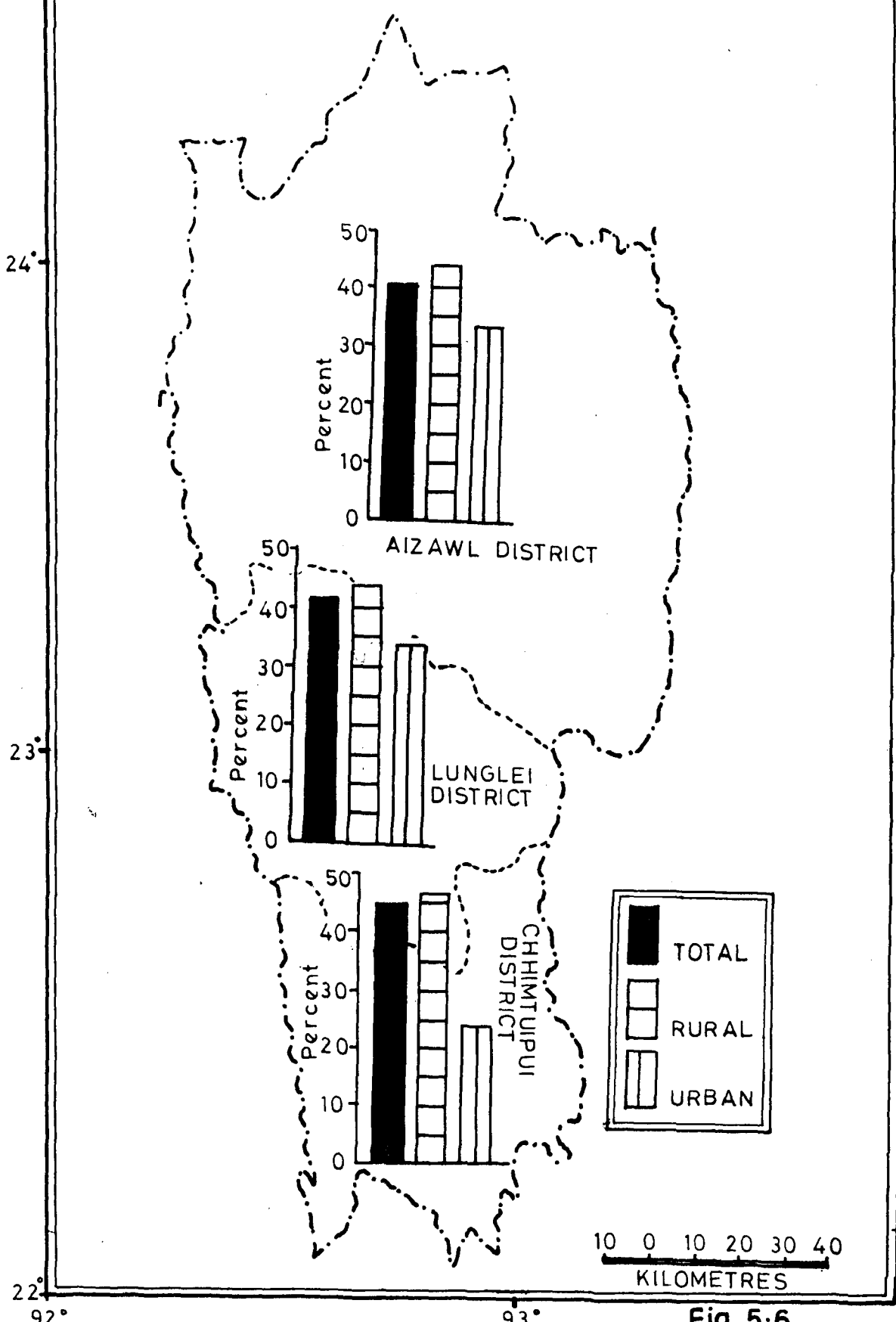


Fig. 5-6

male population. Male workers accounted for 63 per cent of the total workers of Mizoram as a whole. Female workers contributed only 37 per cent of the total workforce.

In Aizawl district in 1981, the male workers constituted 61.78 per cent of total workforce of the district, while female workers made up 38.21 per cent of the district's total workforce. In Lunglei district, male domination is even higher with 66.77 per cent while female shares only 33.33 per cent of the total workforce of Lunglei district. It is also high in Chhimtuipui district with 63.46 per cent for male and 36.53 per cent for female.

Another conspicuous character is the dominance of rural population in the workforce (Fig. 5.6). In Aizawl district in 1981, out of the total workforce which is 41.25 per cent, rural workers constituted 44.45 per cent while urban workers accounted for only 33.31 per cent. In Lunglei district the rural workers comprised of 43.69 per cent and 33.39 per cent by urban workers. The variation between rural and urban workers is highest in Chhimtuipui district with 45.66 per cent for rural and only 20.76 per cent for urban out of the total workforce which is 44.12 per cent in the district.

WORK FORCE 1981
BLOCK-WISE

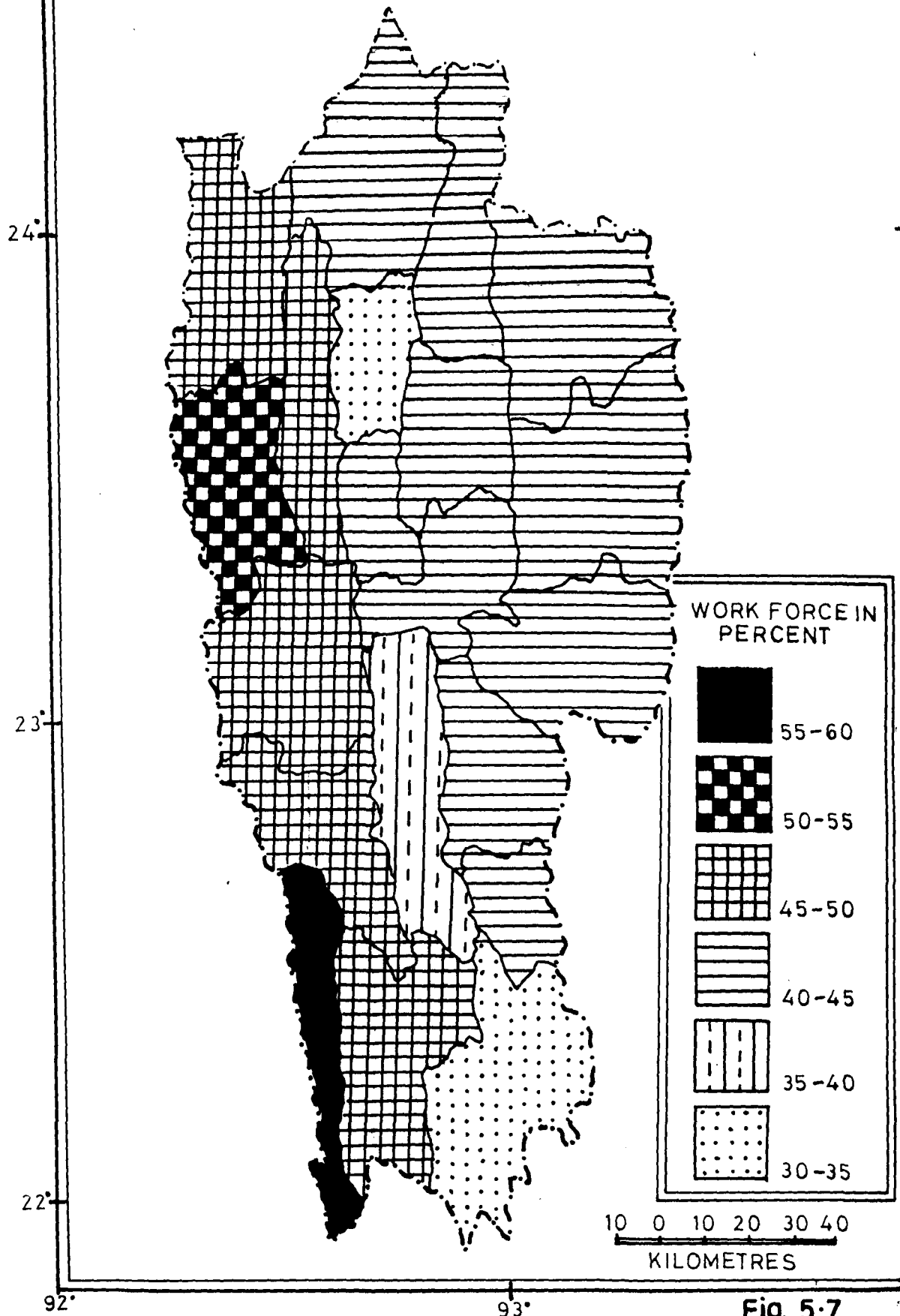


Fig. 5-7

An analysis of workforce at block level (1981) clearly shows that the workforce is lowest in the areas where the share of urban population is vigorous (Fig. 5.7). In other words, the workforce figure is low in the blocks where all the three district headquarters are situated. It is lowest in Tuipang block with only 33.35 per cent of population engaged in economic activities. It is also relatively low in Tlangnuam block with only 36.10 per cent recorded as workers.

At this stage, it may be presumed that the nature of work has much to do with the percentage value of workforce. To be more precise, these three blocks are the areas where the urban towns like Saiha, Lunglei and Aizawl are found. Such towns offer wider range of job opportunities like trade and commerce, employment in the offices and institutions, business and other allied activities unlike the rural setting which offers merely nothing more than cultivation. So that a larger number of a family members can depend on a single worker who is engaged in one of such economic activities.

On the other hand, the activity in rural areas is mainly agriculture which is practised with traditional method resulting in very low yield. As such majority of the people have to engage in such activities to earn their living; thereby keeping in the workforce figure very high.

Thus, the workforce figure is found to be highest in the probably least developed block which is Chawngte with 56.69 per cent (1981). Male workers accounted for 59 per cent while female contributed 54.11 per cent. The block is situated in the south western part bordering Bangladesh where Chakma influx is most operative. The workforce figure is also high in West Phaileng block where Chakma and Riang population is enormous who practised semi-nomadic life pattern.

From the map (Fig. 5.7) it is also very glaring that the western half of the state has higher workforce value, while the eastern half has lower but more or less equal value of workforce. This phenomenon corresponds to the assumption that job opportunities other than agriculture resulted in lower rate of workforce but with fairly higher investments. The eastern sides are facilitated with better transport routes and higher economic status as compared to the western half of the state.

MIGRATION PATTERN

Migration is an important aspect in the field of population study. A community or a country can gain population either by births or by in-migration and it can lose population by deaths among its residents or by out-

migration. In other words, migration is a major factor in changing the size and structure of the population. The migration process affects the areas to which migrants have moved and areas which they have left.

The study of migration is important not only to demographers, but is also of great importance and interest to geographers and scientists because migration may be considered as a symptom of basic social change. In most countries, it has been observed that the industrialisation and economic development have been accompanied by large scale movements of people from farm areas to towns, from towns to other towns, and from one country to another¹³.

Ratzel (1976)¹⁴ gave special attention to migration, their classes and causes. He believed every migrant had an area of origin and a cause, a route of movement and destination. Among these aspects, the cause of migration seems to be most important. There are various causes of the human movement. One of these is population pressure, which often forces people to go out of the area in search of land, employment or any other means of subsistence or

13. Donald J. Bogue, "Internal Migration", Philip M. Hauser and O.D. Duncan (eds.), The Study of Population, New Delhi, Asia Publishing House, 1961, p. 486.

14. Ratzel, F., Determinants and Consequences, U.N. New York.

pleasure. On the other hand, better job opportunities in relatively more industrially or economically developed areas attract people from economically backward areas.

Usually qualified, competent and healthy people migrate in search of jobs and for improving their life career. The age of migration is usually youth when there is over-zealousness to work hard. Male migrants are always more in number than females¹⁵.

Quite understandably, for many migrants, the prospect of a better job is one of the most important. In an analysis of internal migration in the United States, Kuznets and Thomas (1958)¹⁶ have shown that the net flow of migration within the United States has been (as one might expect) away from those states where average income is low, and toward those where it is high. Moreover, studies of international migration have shown that the volume of migration to a nation naturally tends to be highest when it is near the peak of business cycle and from it in times of business depression or famine¹⁷.

15. Raj, Hans, Fundamentals of Demography, Surjeet Publications, Delhi, 1978, p. 185.

16. Simon Kuznets and Dorothy S. Thomas, "Internal Migration and Economic Growth" in Selected Studies of Migration since World War II, New York, 1958, pp. 196-211.

17. Brinley Thomas, "International Migration" in The Study of Population, Philip M. Hauser and O.D. Duncan eds., Chicago, 1959, pp.526-528.

Another positive value which may be achieved by migration is a more favourable climate and development of infrastructure. Increasing literacy and better communication links in the rural areas also gave rise to the rural urban migration. With the help of "Push" and "Pull" theory, it will be easy to understand the process. According to this theory migration may occur as people move in search of better opportunities to improve the standard of living. Some of the push factors which operate at places from where people move are high rate of natural increase, drought, floods, depletion of natural resources, natural calamities and negative social and political conditions. Pull factors are operative at the destination (place of immigration), may be due to the opening of industries, etc. Therefore, Malhotra (1971)¹⁸ rightly points out, "Migration does not arise of its own. It is influenced by a complex set of dissatisfaction and aspirations, situations and opportunities, which are reflected in their histories and characteristics of the migrants". It also operates as a vital force in changing the space content and space relations in any specific area. It is responsible for population distribution, nature and magnitude of demographic mobility and which

18. Malhotra, G.K., "Birth Place Migration in India", Census of India, 1971, Special Monograph, No.I, New Delhi.

influences other demographic phenomena and processes. Further, the magnitude of migration normally reflects the economic potentialities, expansions and diversifications of economic activities of any region¹⁹.

Till 1961, migration data were presented with reference to the place of birth. In 1971, Census migration data were collected for the first time on the basis of place of last residence in addition to the question of birth place, which was further widened in 1981 by adding informations on 'reasons for migration from place of last residence'. However, due to inadequate informations on the region, the present analysis is based mainly on 'place of birth' data and 'place of last residence' which was available for the year 1981.

It is important here to bear in mind that the analysis on migration could not be carried out at length due to limited data. The researcher, however, felt that whatever the analysis is tried in this respect would be of some significance for the future studies.

According to 1981 Census, 4,60,219 persons out of 4,93,757 persons living in Mizoram were born in the state of Mizoram. This means that 33,538 persons comprising of 6.79 per cent of the total population were born outside

19. Gosal, G.S., "Internal Migration in India - A Regional Analysis", The Indian Geographical Journal, No.36, 3, 1961.

the state of Mizoram to be treated as migrants by place of birth. Migration is not significant in this region as the figure constituted only 6.79 per cent of the total population. Of the total migrants, 74.52 per cent are national migrants, i.e., migrants from other states/UT's of Indian International migrants comprised only 25.47 per cent of the total migrants. In other words, only 1.73 per cent of the population of Mizoram are international migrants.

The movement of population within the state or internal migration rate is estimated at 3.40 per cent. Internal migration in rural areas tends to be higher with 3.61 per cent while it is only 2.62 per cent in the urban areas.

The actual figure of population as classified by place of birth and place of enumeration is presented in table 5.6. From this table the percentage value of migrants to total population is worked out and presented in table 5.7. The incoming streams of migration is also computed and put in percentage value to total migrants as to be seen in table 5.8.

As to be seen from table 5.8 and figure 5.8 the inflow of national migrants are more from the adjoining states of Assam and Tripura which are relatively plain

**POPULATION CLASSIFIED BY PLACE OF BIRTH AND
AND PLACE OF ENUMERATION**

**Table 5.6
Place of Enumeration**

Place of Birth	Total/ Rural/ Urban	Total	Rural	Urban	
TOTAL POPULATION		MIZORAM	493757	371943	121814
A. 1. Within the State of enumeration	T	460219	349612	110607	
	R	396671	343152	53519	
	U	63004	5956	57048	
a) Born in place of enumeration	T	275816	224644	51202	
	R	224644	224644	-	
	U	51202	-	51202	
b) Born elsewhere in the district of enumeration	T	167554	114462	53092	
	R	158580	109345	49234	
	U	8606	4776	2932	
c) Born in other districts of the state	T	16819	10506	6313	
	R	13448	9162	4285	
	U	3195	1181	2014	
II. States in India beyond Mizoram	T	24994	15251	9743	
	R	18166	12836	5330	
	U	6352	2146	4206	
a) Assam	T	6210	3159	3052	
	R	3796	2482	1315	
	U	2357	637	1719	
b) Tripura	T	6204	5934	271	
	R	5547	5358	189	
	U	457	377	80	
c) Bihar	T	4044	2489	1545	
	R	3625	2350	1275	
	U	349	120	229	
d) Uttar Pradesh	T	1683	735	747	
	R	1319	608	711	
	U	331	125	206	
e) Others	T	6853	2933	3919	
	R	3877	2038	1843	
	U	2836	884	1972	
B. Born in other countries	T	8545	7079	1463	
a) Bangladesh	T	4373	4255	118	
b) Burma	T	1935	1503	432	
c) Elsewhere	T	93	89	6	

Source : Migration Tables, Census of India, 1981, Series 31, Mizoram, pp. 19-23.

Table 5.7
Migrants Classified by Place of Birth in Percentage to
Total Population

Place of Birth	Total	Rural	Urban
A. Total in-migrants born elsewhere outside the state of Mizoram including international migrants	6.79	-	-
1) Born in the States/UTs in India beyond Mizoram	5.06	4.88	5.20
2) Born in other countries beyond India	1.73	-	-
B. Internal migrants; born in other districts of the state of Mizoram	3.40	3.61	2.62

Source : Calculated from Migration Tables, Census of India, 1981, Series 31, Mizoram, pp.19-23.

areas with dense population concentration in their respective states. Apart from the mainland north-east, a considerable amount of migrants are received from Bihar and Uttar Pradesh, which are also highly populated, pushing their inhabitants to migrate elsewhere.

From table 5.8, one can see that as much as 49.05 per cent to total national migrants are coming from the states of Assam, Tripura and Bihar alone. Consequent upon the push and pull factor, migrants from these states such as Assam (18.51 per cent), Tripura (18.49 per cent) are found to be employed in clerical lines in particular, and in construction works and business in general as skilled and semi-skilled labourers. In the case of Bihar (12.05 per cent) and Uttar Pradesh (5.01 per cent), the push factors seems to be more pronounced as larger sections of the migrants are found engaged in repairing and construction works as semi-skilled and manual labourers. The national migrants from other states and UTs other than those mentioned above comprised 20.43 per cent of total national migrants. It is important to note here that the migrants mostly settled down in rural areas where they can engage themselves in tertiary activities which the original inhabitants normally do not practise for earning their living.

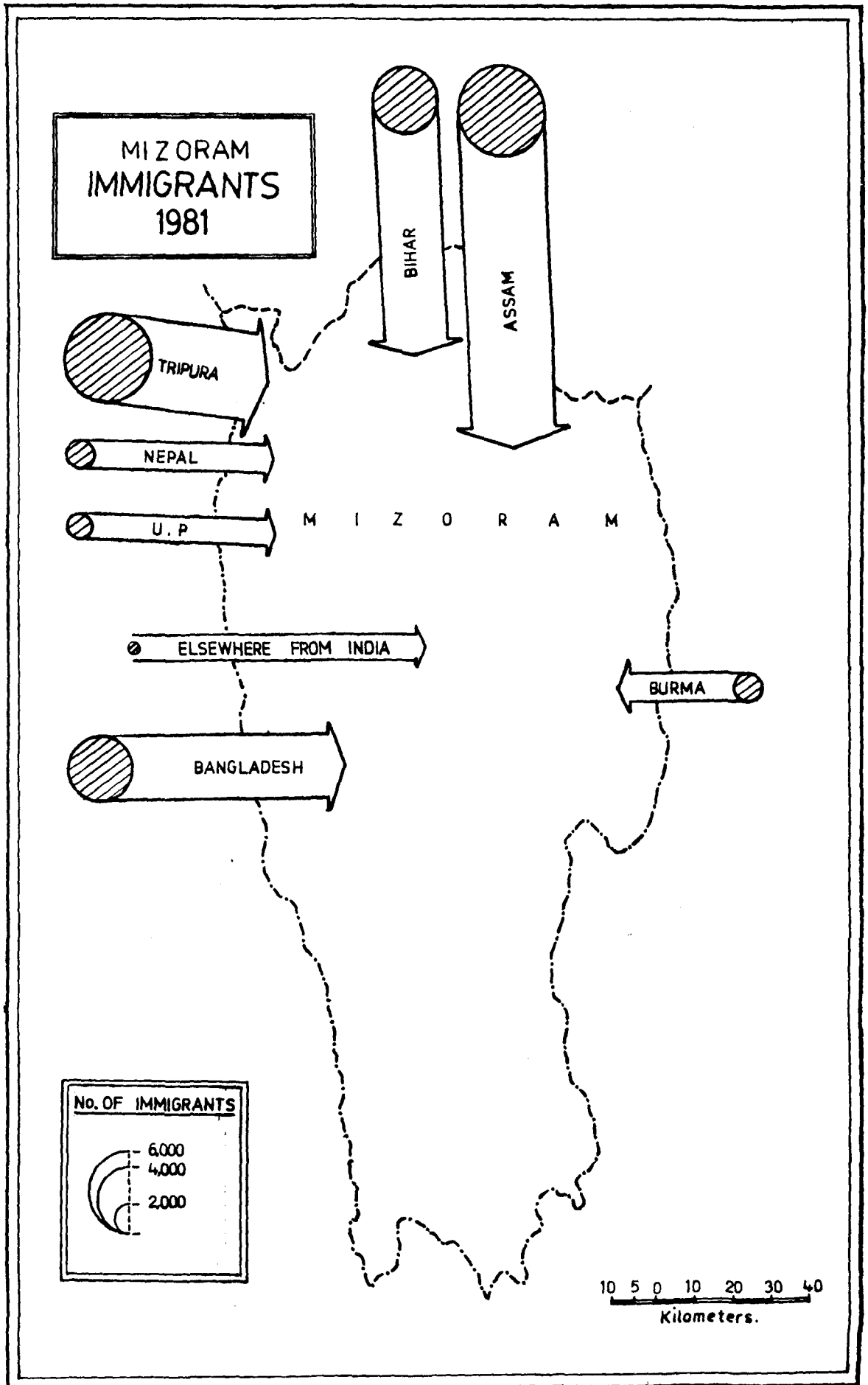


Fig. 5·8

Table 5.8

**Percentage of In-Migrants by Place of Birth to Total
Migrants**
(Percentage to total in-migrants)

Birth Place	Actual (total)	Total	Rural	Urban
A. States/UTs in India beyond Mizoram	24994	74.52	54.16	18.91
1) Assam	6210	18.51	11.31	7.02
2) Tripura	6204	18.49	16.53	1.36
3) Bihar	4044	12.05	10.80	1.04
4) Uttar Pradesh	1683	5.01	3.93	0.98
5) Others	6853	20.43	11.56	8.45
B. Born in other countries beyond India	8545	25.47	-	-
1) Bangladesh	4373	13.03	-	-
2) Burma	1935	5.76	-	-
3) Nepal	1927	5.74	-	-
4) Elsewhere	93	0.27	-	-
C. Total A and B	33538	100.00	-	-

Source : Calculated from Migration Tables, Mizoram, Census of India, 1981, Series 31, Mizoram, pp.19-23.

Among the migrants from abroad, Bangladesh contributed the largest number, i.e., 4373 persons which is 13.03 per cent to total migrants in Mizoram or 51.15 per cent of the foreign migrants. Most of these migrants belong to Chakma community who entered the south-western part of Mizoram practising semi-nomadic life pattern depending mainly on the harvests of jhum. A political turmoil and adverse economic conditions in Burma also caused a considerable section of people to migrate to Mizoram. Migrants from Burma numbering 1935 constituted 5.76 per cent of total migrants. They are mainly traders moving around the state. The researcher witnessed that during the last five years, trading as the cause of migration from Burma has greatly changed into employment as skilled labourers in Looms for the Burmese are skilful in weaving.

Migrants from Nepal constituting 5.47 per cent of total migrants are originally retired army personnel who are adapted to the land. Dairying is the main occupation adopted by Nepalis in Mizoram though a few persons are employed in the government offices. Recent establishment of saw mills and lumbering has offered employment to few sections of Nepalis as well as Biharis.

The pattern of migration also have been tried to describe in the present chapter. In this respect

Table 5.9
Migrants Classified by Place of Last of Residence

Last Residence	Total/ Rural/ Urban	Total	Rural	Urban
	T	229151		
TOTAL	R	157432		
	U	71719		
A. Last residence else- where in India	T	224885	154352	70533
	R	198152	142482	55670
	U	25735	11120	14615
I. Within the state of enumeration but outside the place of enumeration (internal)	T	205085	143980	61104
	R	186253	134166	52089
	U	18202	9232	8970
a) Elsewhere in the district of enume- ration (Intra- district)	T	190422	135928	54494
	R	176400	127512	48888
	U	13511	7942	5569
b) In other districts of state of enume- ration (inter- district)	T	14662	8051	6610
	R	9854	6654	3200
	U	4691	1291	3401
II. States in India beyond the state of enumeration (inter- state)	T	19801	10372	9430
	R	11899	8316	3583
	U	7533	1888	5646
B. Countries beyond India	T	4266	-	-
	R	1701	-	-
	U	838	-	-

Source : Calculated from Migration Tables, Series 31, Mizoram, Census of India, 1981, pp.42-68.

calculation of vital statistics is based on place of last residence, taking all durations in place of last residence into consideration. The total migrants as classified by place of last residence is presented in table 5.9 where the pattern or streams of migration is given in table 5.10.

Table 5.10
Pattern and Distance of Migration

Distance	Pattern	Percentage to total population	Percentage to total migrants
1. Short distance (intra-district)	Rural-Rural	25.82	55.64
	Rural-Urban	9.90	21.33
	Urban-Rural	1.60	3.46
	Urban-Urban	1.12	2.43
2. Medium distance (inter-district)	Rural-Rural	1.34	2.90
	Rural-Urban	0.64	1.39
	Urban-Rural	0.26	0.56
	Urban-Urban	0.68	1.48
3. Long distance (inter-state)	Rural-Rural	1.68	3.62
	Rural-Urban	0.72	1.56
	Urban-Rural	0.36	0.82
	Urban-Urban	1.14	2.46

Source : Computed from Migration Tables, Mizoram, Census of India, 1981, Series No. 31, p. 42-68.

Based on place of last residence, table 5.10 is worked out in which inter-district, intra-district and inter-state migration are shown. It is obvious from the table that the movement of population in Mizoram is

greatly limited to short distance migration. To be more precise, as much as 82.86 per cent of the total moving population are intra-district migrants. Long distance or inter-state migration accounted for 8.46 per cent of total migrants where only 6.33 per cent of the total migrants are medium distance migrants crossing district boundaries.

As to the pattern or direction of movements, the analysis is based on place of last residence which classified the movements of people into four major classes, such as :

- a) Rural to rural - Reverse rural turnover
- b) Rural to urban - Push and pull
- c) Urban to rural - Reverse push back
- d) Urban to urban - Urban turnover.

The table shows that rural to rural migration or reverse rural turnover claimed the highest flow of population, with a record of 62.16 per cent of the total migrants. This is followed by rural to urban (push and pull) with a percentage figure of 24.28. Urban turnover or movements of population from urban to urban constituted a mere 6.37 per cent. Urban to rural migration (reverse push back) accounted the least value of only 4.84 per cent.

The distribution of population movement within the country between the above four classes is closely related with the degree of economic and social development. The rural turnover among females arises largely due to their marriage. Among the males, it may be due to dependence of transferable occupation as in the case of landless agricultural labourers who move from village to village for a short run or seasonal occupations. A large rural turnover could be considered as an indicator of very low economic growth²⁰.

Rural to urban migration is generally believed to be the classic stream which feeds urban growth. According to Mitra (1967)²¹, the enduring assumption is that the over-crowding on agriculture and the consequent lack of subsistence in rural areas pushes population out into urban areas, to which they are inexorably pulled by an ever increasing demand in tertiary activities and to a certain extent in secondary activities.

Reverse migration (urban to rural) is mostly demographic in character by marriage, by birth of child in

20. Bose, A., "Internal Migration in India, Pakistan and Ceylon", Paper presented at U.N. World Population Conference, Belgrade, 1965.

21. Mitra, A., "Internal Migration and Urbanisation in India", Document prepared for UNECAFE, Expert Working Group, Bangkok, Thailand, 1967.

urban areas etc. It is also caused by lack of employment in urban areas and shortage of housing accomodation, etc. Urban turnover is normally due to transfer of services, family problems, change of professions etc.

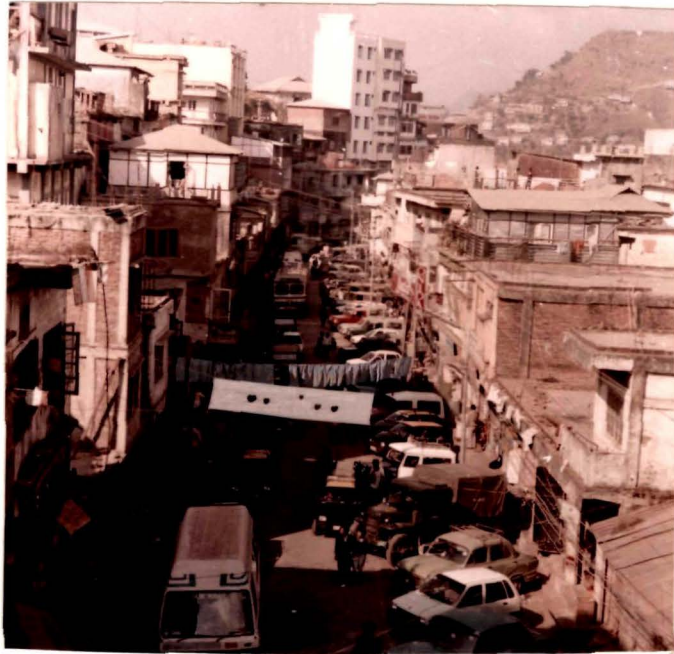


PLATE NO.5.1:: Rapid population growth during the last decade is exemplified in congestion at town areas. The plate shows a busy street of Aizawl.



PLATE NO.5.2 :: Lunglei town is another growth centre in the southern part of Mizoram.

Chapter VI

EVOLUTION OF SETTLEMENT IN MIZORAM

INTRODUCTION

Man by nature is a social animal and lives in a gregarious manner. He lives in communities, in a single collection of houses that form the settlement. Yet one can see various types and patterns of settlements as reflected by its environs. Settlements have gradually evolved over a long period of time and by analysing their sites, types, spatial pattern and functions, one could decipher the history of man's exploitation of the surrounding environment and resources¹.

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1. Bhakta, G.P., "Regional Structure of Meghalaya", M.Phil Dissertation (unpublished), Department of Geography, NEHU, Shillong, 1979, p.95.

The analysis of rural population and rural settlement is of immense importance in this context because of its dominance and the fast transformation which is experienced in the study area during the last three decades especially after 1967. The development and transformation is fairly at a progressive pace due to socio-political enlightenment and urbanisation. A number of rural settlements originally associated with traditional jhuming and forests are undergoing change towards urbanisation. The study of population and settlements in Mizoram has its distinct characteristics.

The study and growth of rural population, its distributional pattern, process and other distinctive characteristics and spatial pattern of settlements depends upon the scale of observation². The present analysis attempts to examine the influence of physical and cultural environments and socio-economic as well as political factors affecting the settlement pattern in Mizoram.

EARLY STREAMS OF MIGRATION AND EVOLUTION OF SETTLEMENTS IN MIZORAM

It is a very difficult task to trace the origin and evolution of settlements in Mizoram. This is mainly due

2. Singh, Alok Kumar, Population and Settlement in U.P. : A Geographical Analysis, Inter-India Publication, New Delhi, 1985, p. 93-94.

to the fact that there is no integrated historical account of the region as it is occupied by ignorant tribals who have lived for a long time in physical isolation and have no scripts of their own. There is no evidence of pre-historic settlement in this region.

Before the advent of the British in this region, the Mizo people were isolated from each other due to difficult terrain, dense forest and lack of transport network. The lack of interaction with the outside world coupled with inaccessibility of the land left them comparatively untouched and, therefore, they remain primitive in character for long period of time.

Traditionally, the Mizo claim themselves the descendants from CHHINLUNG³, a mythical rock, east of Shan State in Burma bordering China. Migration of tribal

3. Some writers believe that CHHINLUNG might have been the name of a cave from which the forefathers of the Mizo tribes came out. Their argument is that the word 'Chhin' means 'cover' and 'Lung' stands for 'stone' and therefore, Chhinlung denotes 'Covering Stone'. This legend is quite common among the other tribes such as Gangte, Paite, Thado, Vaiphei, etc. On the other hand, some writers like R. Vanlawma contends that 'Chhinlung' stands for the name of a Chinese ruler Chien Lung, during whose reign the Mizo moved out to the present habitat. On the other hand, B.K. Roy Burman, in his book, "Socio-Economic Profiles of the Hills Areas of North-East India" (1961, p.84) opines it to be the present Silung in China bordering Shan State in the eastern part.

groups seems to have had taken place as early as the beginning of the 15th century. This migration of different groups was retarded by several haltages at certain locations for longer and lesser periods through Shan State, Chindwin Valley and Chin Hills in Burma.

According to Zawla (1964)⁴, the Mizo migration to the hills began in 1463, whilst Professor Luce estimates the Mizo migration took place during the 26th Century⁵. Thanga (1978)⁶ writes about the settlement of Lusei in the Kabaw valley around Khampat: "That the Mizos belong to the Mongoloid stock is not disputed. That they came from the East is also not disputed. That their original home was in Mekong Valley and that they once lived in the Hukawng Valley was further corroborated by many including an old Burmese priest at Mandalay to Mizo historians who had visited Mandalay to trace the history of their origin and migration. According to him, the ancestors of the Mizos came from Shanghai, possibly in tenth century. By which route they came, and how long they took to reach Hukawng Valley in Burma is now lost in obscurity". According to

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4. Zawla, K., Mizo Pipute leh An Thlahte Chanchin (in Mizo), Aizawl, 1964.
 5. Vumson, Zo History, Aizawl, Mizoram, India, p.58.
 6. Thanga, Lal Biak, The Mizos : A Study in Racial Personality, 1978.

Zawla (1964)" ... they came to the Chindwin belt about 996 A.D."⁷

Liangkhaia (1938)⁸ wrote that the first large-scale migration of the Mizos started from the Chin Hills by crossing over hill ranges bordering south-west Manipur. The Mizo tribes entered the present Mizoram in successive bands and the Hmars, a Mizo sub-tribe, were first to enter. As to the date of their migration from Chin Hills to Mizoram, Soppit (1976)⁹ believes that the first batch of the Mizo tribes after crossing Tiau river settled in Mizoram some time in the middle of the 16th Century. Liangkhaia (1938)¹⁰ also supports this view and agrees that a section of Hmars entered the Manipur plain about the middle of the 16th Century and the beginning of the 17th Century A.D.

According to Songate (1977)¹¹ the Mizos entered Mizoram in four successive batches. The first batch included the sub-clans of Hmar such as Hrangkhawl, Pang,

7. As quoted in Zo History by Vumson, Op. cit., p.58.

8. Liangkhaia, Mizo Chanchin (in Mizo), Aizawl, 1938, pp.7-8.

9. Soppit, C.A., A Short Account of the Kuki-Lushai Tribes, Aizawl (Reprint), 1976, p.vii.

10. Liangkhaia, op. cit., pp.7-8.

11. Songate, Hranglien, Hmar Chanchin (Hmar History), Churachandpur, Manipur (reprint), 1977, pp.145-146.

Mualthuam, and Chhunthang under their chief Chawnhmang who eventually migrated to Tripura. They were followed by Hrangchal, Ngurte, Darngawn, Lungtau, Leiri and Changsen.

Since each clan followed a particular route and built their own villages, the villages are to be known by the clan's name. To this day, many of these villages are in existence under such names like Biate, Chhungte, Darngawn, Khawbung, Khawzawl, Ngur, Thiak, Vankal, Zote and so forth¹².

The Mizo after reaching the present Mizoram, found the land to be very healthy and embracing climate and thought that it was the land which nature has provided for them. They were predominantly agriculturists in the form of shifting cultivation. They settled usually in a single collection of houses, situated on the hill tops than on low level ground with a view to secure easy defence organisation. It is important to note that before the advent of the Britishers in the present Mizoram, the Mizo were head-hunting tribes. The selection of sites for settlements was on the hill tops where they could have a better defence for the villages.

Each village was ruled by the Chief who looked after the welfare of its citizens and was the supreme head

12. Liangkhaia, op. cit., p. 8.

in matter of handling village administration/disputes, distribution of land, etc. With a view to enlarge their territorial possession, the inter-village and inter-clan wars were the order of the day. This eventually resulted to dispersion and micro-regional migration.

In short, as a result of the wars among the clans and villages, certain clans of the Mizo origin have later migrated to different parts of north-east India. The sub-clans of Hmars fled to north and west to Manipur, Cachar, Sylhet and Tripura. A section of Biате entered Cachar district between 1730 and 1780 A.D. and some of them went upto North Cachar Hills and Meghalaya¹³.

Thus, it may be summed up that the Mizo are racially Mongoloid stock in origin, who migrated towards the present habitat somewhere from China during the 15th to 16th Century, following different routes by each clan at different stages with several haltages at different places. It appears that the first batch (of successive batches of migrants) entered the present Mizoram in the period between the middle of 16th Century and the beginning of the 17th Century. They were content to settle there as far as geographical environment was

13. Songate, Hranglien, op. cit., pp.62-63.
Also see Liangkhaia, op. cit., p.43.

concerned. But certain minority clans (sub-tribes) were forced out of the land as a result of inter-clan and inter-village wars. The advent of the British and the eventual attainment of Indian independence changed the way of living to a surmount extent that the Mizo started to adopt modern way of living and have settled down permanently till date, and the inter-village or inter-clan wars are no more experienced but form a part of history.

Although the prime factors in selection of sites and development of settlements might have lost most of its significance at present, but it is imperative to trace the evolution of settlement in this region.

The first settlers in a new and virtually untouched environment have to exist in a self sufficient manner¹⁴. This was true of the early and isolated settlers of the present Mizoram. The first inhabitants, with their necessary limited knowledge, made more or less rational judgement concerning choice of sites for their villages. Important to them was the availability of cultivable land and close supply of water. In addition, building materials and fuel were also important.

14. Panda, P., "Geomorphology and Settlement Pattern in Khasi & Jaintia Hills, Meghalaya", M.Phil Dissertation (unpublished), Department of Geography, NEHU, 1980, p. 208.

The Mizo have always been particular about their place of residence, and a considerable thought was given to the subject of village sites. The highest hill top started as favourite and the site subsequently chosen would be that with proximity to cultivable lands, water supply and other positive hygienic considerations. A compact pattern of settlement was most common in the early development of villages. Houses were constructed close to each other with some sense of regularity arranged usually in two lanes, the front of the houses all facing towards each other and separated by a space treated as a village street. The physical configuration was responsible for the built up of the village structure; it determined the pattern and direction of houses or village street.

Nevertheless, the first settlers in a place must often have made false start and sometimes settled down permanently on a less good site even with a better site closeby. In a similar way, mistakes might have been made which could be seen clearly in the light of later development. Thus, we find some areas in a division of the original settlements into two with the prefix 'old' and 'new' attached to the original name¹⁵. Although we see that shifting of village sites as a consequence of

15. Rinawma, P., "Geomorphology and Agricultural Development in Lunglei District, Mizoram" Ph.D. Thesis (unpublished), Department of Geography, NEHU, 1986, pp.275-276.

development in respect of economic and social amenities in the region.

FACTORS INFLUENCING THE LOCATION AND GROWTH OF SETTLEMENT

The factors that affect spatial aspects of settlement are as complex and varied as are the patterns of distribution. Not only the physical environment is operative in determining location of settlement, but cultural environment and socio-economic and political factors also play a vital role in determining the establishment of settlement. Among the physical environment, topography, geology, terrain, climate, drainage, forest and soil are the significant factors.

In Mizoram settlements are mainly governed by the configuration of land surface, climate, water availability and proximity to arable land. The ethnogenetic factors like tradition, necessity of defence and security, and availability of land for traditional jhum practices have also exerted much influence on the sites of settlement.

Most of the settlements in Mizoram are located on the hill top or crest, that only a very few settlements are found located on the lower valleys or riverine banks. An attributable reason for the selection of hill top settlement is readiness for defence purpose. The early

Mizo were involved in conflict and constant war for territorial possession, as is found in most of the tribal history. The ruggedness of the topography gives no alternative place other than hill top as the existing small patches of level lands (riverine banks) can support only a few settlements.

Climatic condition is another important factor that influence the settlement in Mizoram. The hill crest have pleasant climate with good sunshine, while the low lying valleys are marked by humid, warm and sultry weather. Hence, the hill tops and crests offer the only alternative base for human habitation.

Another factor that helped in selection of settlement sites and growth is the availability of resource potentials and development of infrastructures. Despite the unpleasant climatic condition prevailing on the low valleys or along the river banks, certain settlements exist mainly because of availability of fertile land. The process of economic development, especially infrastructure like road development has led to the establishment of new settlement with a new function suited to its location.

Depending upon the above mentioned factors, the location of settlements in Mizoram can broadly be

described as follows :

- i) Settlement on the hill top and hill slope
- ii) Settlement along the watershed
- iii) Settlement along the main road
- iv) Settlement along the river.

i) Settlement on the Hill Top and Hill Slope

The location of settlement on flat hill top and gentle hill slope terrain was the marked characteristic feature of the hills as defence in the Pre-British period was the most decisive factor in selection of sites for settlement. This choice is also favoured by congenial climatic condition. A numerous settlements, both large and small are situated on the hill tops and hill slopes of the State. The researcher who conducted an extensive field work had no doubt that about 50 per cent of the total settlements in Mizoram are situated on hill top and hill slopes. The remarkable mountain ranges which support settlements of this type are Hachhek Range in the north-western part, Chalfilh-Ratu Range in the north central, Sialkal Range in the north-east, Zopui-Tan-Lurh Ranges in the east, etc. All these ranges are characterised by high degree of slopes and rugged topography that compels the inhabitants to occupy the hill top and hill slopes. The hill top and hill slope settlements are a common

feature in Mizoram and are found numerously throughout the region.

ii) Settlement along the Watershed

A large number of settlements are found located along and between the watersheds, and their distribution varies from place to place. The study of topographical maps reveals that quite a number of settlements are located along the watershed formed by numerous tributaries of different river systems or basins. For instance, North Vanlaiphai, East Lungdar and Khawbung are conspicuous example covered by Toposheet No.84^E/4, issued by Survey of India.¹⁶

iii) Settlement along the Main Road

The development of transport route has also affected the feature of settlement in Mizoram. It has been mentioned that most of the villages in the region are situated on top of the hills. But when motorable road cannot connect them due to various engineering reasons, the villagers are tempted to come down to settle along the main road. By this process, villages like Rengdil, Dampui

16. Pachuau, Lalrintluanga, "The Regional Structure of Mizoram", M. Phil Dissertation (unpublished), Department of Geography, NEHU, 1987, p. 130.

(Plate 7.6), New Vervek, Baktawng, Khawhai, etc. have come down from their original hill top location to the road sides. This phenomena is seen taking place in all along the roads constructed by B.R.T.F. and P.W.D.

iv) Settlement along the River

This type of settlement is found on the low lying valleys of perennial rivers where agriculture or horticulture is practicable. The availability of fertile soil is the main factor for the growth of valley settlements. So that the adjoining areas of certain important rivers such as Tut, Teirei, Tlawng, Langkaih, Chhimtuipui, Khawthlangtuipui and Tuichawng are intervened by a number of settlements.

TRADITIONAL CHIEFTAINSHIP AS AN AFFECTING FACTOR OF POPULATION AND SETTLEMENT IN MIZORAM

The Mizo society as it exists today is indeed very different from what it was about fifty years back. Changes have swept over the region in an extremely rapid manner. Till the early fifties or so, the Mizo chief was the real centre of authority in Mizoram. It is said that the people had adopted the chief system so that they could be guided and governed in all activities of life. In due course of time the chief became hereditary, and the benefit of becoming a chief went to the eldest son. The

chiefs used to be the protectors of village life and property. The entire land and villages belonged to them and it was them who distributed the jhum lands for cultivation to the villagers. Besides disposing of land for cultivation the chief also used to administer justice according to the customary laws of the Mizo. They saved men from revenge and took them under their protection. A chief also have his cabinets called upa to assist him in the day to day administration of the villages under his jurisdiction.

The Chief was usually called Lal which means a lord in Mizo language. He maintained his position more through his personal qualities than hereditary rights, even though under normal circumstances the sons of the chief were provided by him with ample opportunity to build themselves up as Chiefs. Thus as soon as a Chief's son attained maturity, the Chief would set up a separate village with the mature son as its Chief and a few of the households from his village transferred to the new village. He was not supposed to pay any tribute to his father-Chief and was left to himself to establish his position as a Chief through his personal ability.¹⁷

17. Chatterji, N., The Mizo Chief and His Administration, Tribal Research Institute of Mizoram, Aizawl, 1975, p. 1.

The Chief's position in the village was indeed that of a benevolent ruler. All those who lived in the village were looked upon as his own children. He was bound to help them in their adversities, counsel them in their difficulties, reward them in their achievements and punish them when they were found guilty of misdeeds or infringement of established customs. The villagers, in their turn, were to obey his orders implicitly, carry out errands assigned to them individually and collectively and help the Chief in all possible ways. It must, however, be mentioned that the Chief was not an autocrat, and in fact, could not afford to be so if he desired to retain his chieftainship as they would leave him and take shelter under different chief in another village if they found him tyrannical or indifferent to their needs and conveniences¹⁸.

Just as the Chief had the right to banish from his domain any person who incurred his displeasure or whom he considered undesirable, a villager had also the corresponding right to migrate from one Chief's village to another's if the latter agreed. In fact, a strong good chief who administered according to customary law could get away with almost anything, while a weak chief

18. Chatterji, N., Ibid., p. 3.

indulging in petty tyranny was likely soon to find himself a king without any subjects.

From the above text, it can rightly be perceived that existence of large size village was not applicable in the past Mizo society as a village was to remain under the rule of a king. It is important to note here that not only traditional chieftainship is responsible for small population size of the village, but want of cultivable land for jhuming has always been a key factor restricting the village size. Large population in a village would reflect in long distance to jhum lands which would give less time for the villagers to attend their jhuming, leading to a resultant reduction of jhum harvests.

Consequent upon these factors, the settlements in Mizoram has remained scattered here and there, containing only very few population. Of course, the society and the region has gone through the inevitable wind of change. There has certainly been a lot of improvement in various directions. The recent developmental programmes and modernization has shaped the typical village structure and population quality into transitory stage with better living condition of the population. However, it appears that the emotional and sentimental attachment to traditional and societal village life of the past still linger in the mind of elderly Mizo.

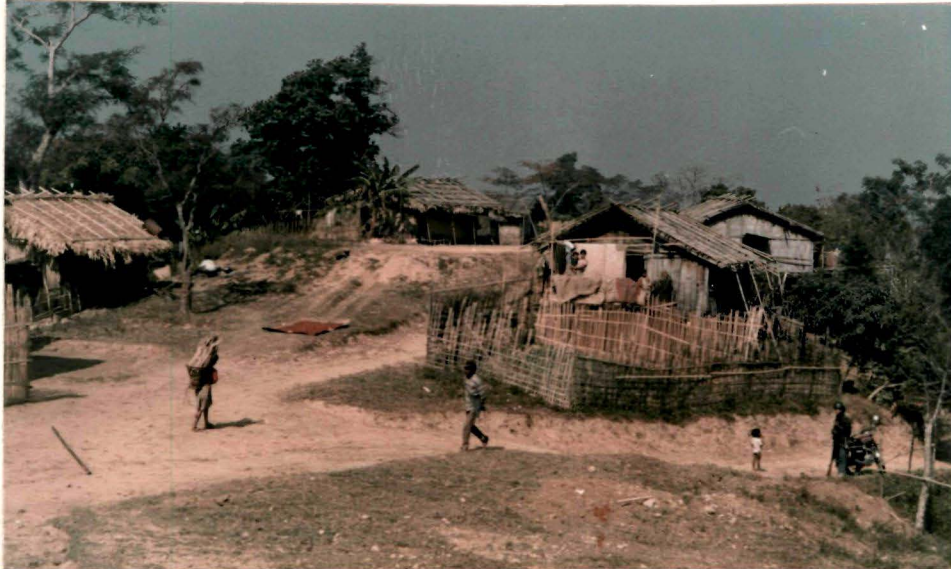


PLATE NO. 6.1 :: A hill-top settlement of Serhmun Village in western part of Aizawl district.
Note : 1) House type, made up mostly of bamboos
2) Kitchen garden with bamboo fencing, 3) Chillies being dried in the sun, 4) A Mizo girl carrying home firewood by a typical basket.



PLATE NO. 6.2 :: Hill-top and Hill-slope settlement of Cherhmun Village, south-eastern part of Lunglei district.



PLATE NO.6.3 :: Kawrthah Village, an example of settlement on the watershed.

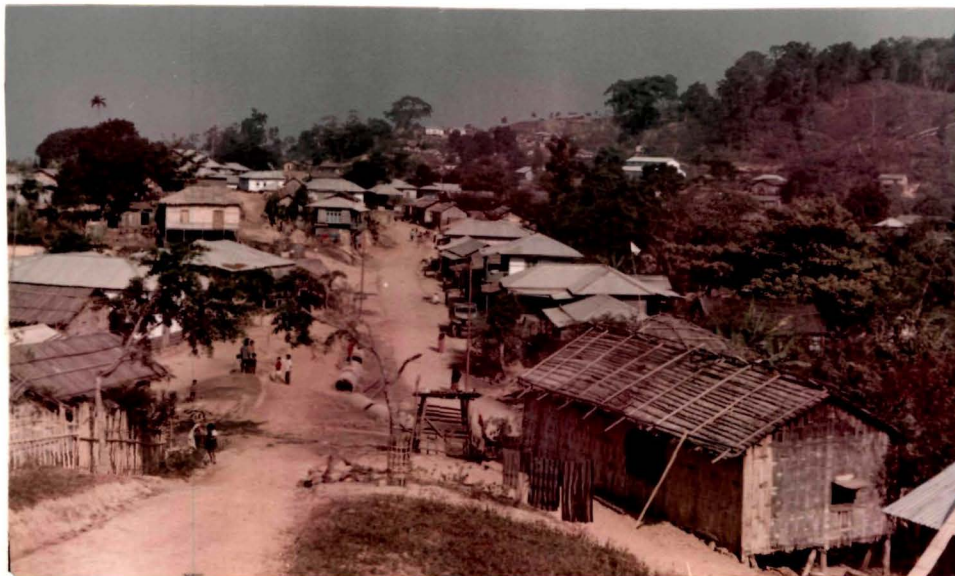


PLATE NO.6.4 :: Settlement along the main road - Tuidam village in western Aizawl district.



PLATE NO.6.5 :: A village water point. One has to go down a mile or so to obtain washing and bathing facilities, especially during dry season.



PLATE NO.6.6 : Collection of rainwater is a common practice, although only few families could afford to obtain storage.



PLATE NO.6.7 :: A new water point at doorstep is greatly welcomed. Kawrthah villagers rushing for water during the hour.



PLATE NO.6.8 :: A hill slope settlement of Khawhri village, Lunglei district depicting a typical Mizo village. Note the Church building and a Community Hall under construction.

Chapter VII

TYPES AND PATTERNS OF SETTLEMENT

The factors which have led to the variation of settlement patterns are many and varied. It is important to realise that the pattern so produced is a result of a number of forces, working either in conjunction or in opposition, over a long period of time¹.

The type of settlement mostly represents a particular form of settlement based on the spatial arrangement of the houses within the limits. Their form and appearances in different sub-regions can be distinguished depending on the physical and cultural

1. Rinawma, P., "Geomorphology and Agricultural Development in Lunglei District Mizoram", Ph.D. Thesis (unpublished), Department of Geography, NEHU, 1986, p.279.

elements. Generally, compact, semi-compact and linear types of settlements are dominated by climate, geologic-topographical conditions and the degree of material culture². The patterns of settlement, i.e., the actual arrangement of streets and roads, may be of several types like radial, star-shaped, 'checker-board', circular, fan-shaped, etc.³. These patterns may exist in either of the types mentioned above.

The settlement patterns in Mizoram are largely affected by factors like topography, climate, fertility of soil, availability of cultivable land and drinking water at one hand, and political and economic factors like development of road links on the other hand. The forces of the latter factors are more operative especially after the mid-sixties till today.

Based on the study of available topographical maps and an extensive field work by the researcher, the followings are the broad types and patterns of settlements identified in Mizoram :

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2. Ahlmann, H.W., "The Geographical Study of Settlements". Geog. Rev., 18(1), 1928, p. 94.
 3. Ali, S.M., "Population and Settlements in the Ghaggar Plain", Indian Geog. J., 17(3), 1942, p. 173.

i) Compact Settlement

The study of 1:50,000 topographical maps and an extensive field study reveals that nearly 30 per cent of the total settlements in Mizoram are compact. One of the important factors responsible for the compact settlement is availability of gentle and undulating terrain where drinking water is easily available with close proximity to cultivable lands. It has been mentioned earlier that the defence factor has led to corporate tribal groups to cluster in villages under the protection of their chief, clan or leaders; and this has greatly influenced the organisational set-up of the village.

The compact settlements are generally located on hill tops and gentle slopes within limited areas, demarcated in most places by geographical barriers such as precipices or escarpments. A good example of this type of settlements are Durtlang, Sihphir, Lungdai (Plate 7.2) and Sialhawk in Aizawl district and Khawhri and Cherhlun (Plate 6.2) in Lunglei district.

The compact settlements are also common in places where settlements are set up either on a fertile flat land or surrounded by an already cultivated plot of lands. The compact settlements have been chiefly characteristics of

the fertile plains since ancient times⁴. Settlements like Lokicherra (Zawlnuam), Hortoki, Champhai (Plate 7.1) etc. depict a compact type as they are surrounded by cultivated flat plains. Another compact settlement like Kawrtethawveng, on the other hand, owes its distinctiveness to the existence of orchards in the area adjacent to village boundary that limits the horizontal growth of the village.

Settlements are also found at the sides of the rivers which can be identified as compact settlement, for example, Bairabi, Sairang, Chawngte and Tlabung (Demagiri). The first two settlements are located along the river Tlawng in Aizawl district while the latter are located along the rivers Tuichawng and Tuilianpui respectively in Chhimtuipui district. These settlements have developed as a 'port village' depending on these rivers that serve as transport routes.

Recently, particularly after 1967, many of the hitherto semi-compact villages are transformed into compact settlement largely due to grouping of villages. This grouping of villages is largely responsible not only

4. Demageon, A., "Agricultural Systems and Schemes of Distribution of Population in Western Europe", Geography, 13, 1925-1926, pp. 251-267.

in changing the settlement pattern in Mizoram, but also in reducing the density of settlement thereby keeping the number of settlements low. The impact of grouping of villages on settlement and population will be discussed later.

ii) Semi-Compact Settlement

About 40 per cent of the total settlements in Mizoram can be classified as semi-compact settlement. The factors responsible for development of semi-compact is more or less the same as those responsible for the compact settlement; but geographical restrictions seems to be a little less significant at several places. Semi-compact settlement developed mainly on areas where sources of drinking water is numerous. Among the many examples of this type of settlement are Kawrthah, Serhmun, Kanhmun, East Lunder, Lengpui, Rawpuichhip, West Phaileng, Ratu, etc. in Aizawl district; Lawngtlai, Tuipang(V) in Chhimituipui district; Hnahthial, West Bughmun and Haulawng in Lunglei district.

In few places, semi-compact settlement are identified as they have nucleated site with few small hamlets linked with the newly constructed project, road and site. Examples are Luangmual, Tanhril, Seling-Thingsulthliah in Aizawl district. It may be noted that

the practice of heterogenous occupation by different sections of the population, ranging from primary to tertiary sectors has led to the development of semi-compact pattern of settlement. Settlements of this type are found throughout the state.

iii) Linear Pattern of Settlement

The development of linear pattern of settlement in Mizoram is of a recent phenomena. The growth of linear pattern of settlement is the consequence of development of infrastructure facilities like construction of new roads. It has been pointed out that most of the settlements in Mizoram are located at the hill tops. But when the highway cannot pass through them due to engineering problem, the settlers are tempted to come down along the roadside establishing a new settlement thereby forming a linear pattern. Transport linkage is most essential for the rural cultivators that they can sell their agricultural produce at reasonable price. As a result, many of the hitherto hill top settlements are subjected to change their house sites thereby forming linear pattern of settlement. A remarkable example can be seen at Dampui (Plate 7.6), Khumtung, Rengdil, New Vervek, Keifang and Khawhai in Aizawl district, Tawipui and Thingfal in Lunglei district.

When the size of settlement enlarges as a result of natural increase in population, a new pattern of settlement is generally marked lineating along the road sides. This type is evident in the case of Pangzawl, Rengtekawn, Tlungvel and Khawzawl (Plate 7.7).

A number of settlements are also identified, located along the river banks mostly in conjunction with the roads. Example of this type can be seen at Tuirial and Tuipui (Plate 7.8) along the Seling-Champhai road, and Tut (Daplui) along the Sairang-West Phaileng road.

In contrast to the numerous patterns noticeable in the plain areas elsewhere in the country, only very few patterns are noticed in the region. A distinctive feature of linear pattern observed in Mizoram is a typical V-shaped and meandering pattern. The V-shaped pattern is evident at Tuirial and Tuipui where the road, after crossing the river turns with an inclination angle of about 30° , taking a V-shaped feature. Meandering pattern is identified at place where the main road inside the settlement area is bending. Rengtekawn, Vairengte and Pangzawl are good example of this type.

TYPES OF SETTLEMENT

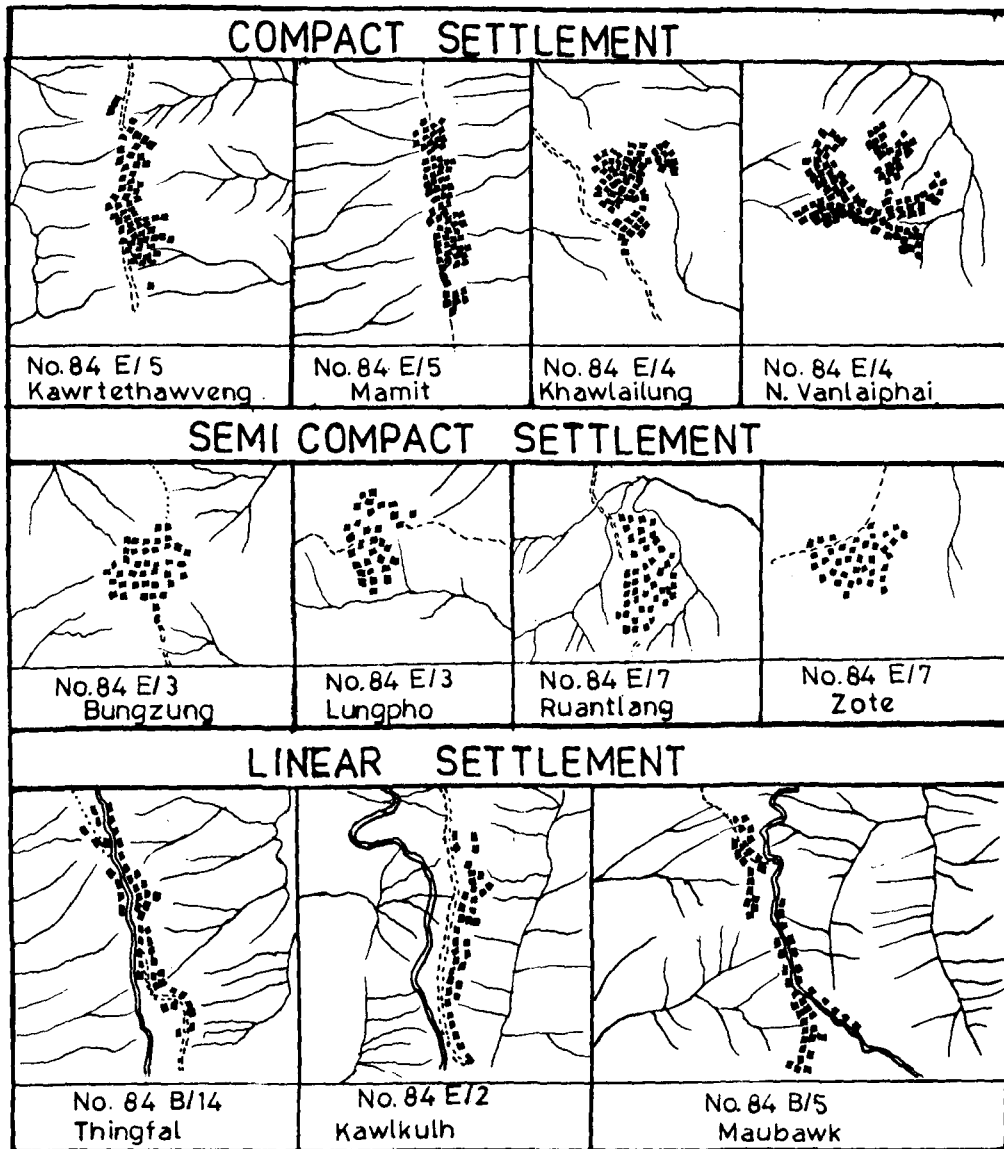


Fig. 7.1

IMPACT OF GROUPING OF VILLAGES ON SETTLEMENT AND POPULATION

Political disturbance broke out in Mizoram in 1966. The establishment of Mizo National Front (MNF) in 1961 with its emphasis on political self-determination, calling for greater Mizoram and secession from India found favour with different sections of the population of Mizoram. Consequent upon the murder of Laimana in December, 1965 (who was supposed to be the inner circle of MNF), misunderstanding prevailed between the Government officials and the MNF; that the latter was compelled, as they claimed, to break into rebellion.

In February 28, 1966, the MNF attacked at several places throughout Mizoram and took control of almost all important centres including Aizawl and Lunglei. However, Aizawl and Lunglei were recaptured from MNF occupation as a result of the operations of Jet Fighters and deployment of more army personnel.

The MNF was declared unlawful by Government of India and was thus forced to go underground, and formed the underground government called 'Mizoram Government'. Some of the MNF dominated areas were recaptured during 1966, but many of the interior villages were still under the control of the MNF, and the MNF activists could always find food and shelter from these interior villages. In

order to put an end to this, the scheme of grouping of villages was recommended by the Central Government.

Under such circumstances, grouping of villages into larger units as counter-insurgency tool was extended throughout Mizoram except the extreme southern portion of Pawi-Lakher region as this region was not affected by MNF activities. The main objective of the scheme was thus, to facilitate the effective operation of security forces against the MNF which had taken control of interior villages spread out in far-flung areas⁵.

Another objective of grouping of villages was to accelerate the process of developmental works and to bring home immediately impact of developmental programmes hitherto almost impossible owing to the scattered nature of villages coupled with extremely inadequate communication facilities. Thus, the scheme was introduced under the provisions of Defence of India Rule, 1962 and the Assam Maintenance of Public Order Act, 1953⁶.

The grouping of villages in Mizoram during 1967-1970 involved a total population of 2,36,162. All the 104 grouping centres were provided with Army posts and civil

5. Nunthara, C., The Impact of Introduction of Grouping of Vilages in Mizoram, Omsons Publication, New Delhi, 1989.

6. Ibid., p. 4.

administration. There were, of course, some villages in different parts of Mizoram which were excluded from the grouping scheme and shifting operation where the MNF movement was normally less active. District-wise population of such ungrouped villages were as follows⁷ :

Aizawl	10,431
Lunglei	2,000
Chhimituipui	24,000

Thus, the total population of ungrouped villages in Mizoram at the completion of grouping scheme was 36,431 and besides, these grouped villages, the district headquarters of Aizawl, Lunglei and Saiha each had a population of 32,000, 12,000 and 1,500 respectively. The total population not directly affected by the grouping scheme was 81,931 while 2,36,162 population was directly involved in the grouping operation.

Thus, out of the total population of 3,18,093 in 1970, as much as 2,36,162 persons or 82 per cent of the total population was directly affected by the introduction of the scheme of grouping of villages in Mizoram⁸.

7. Nunthara, C., Ibid., p. 6.

8. Ibid., p. 7.

A conspicuous impact of grouping of villages on settlement of Mizoram was the total reduction of number of villages. The total number of settlements, i.e., 730 in 1961 census was reduced to 229 as recorded in the 1971 census. Numbers of remote and scattered villages were brought together at several grouping centres.

The impact, as a consequence, resulted in changing the feature of settlement patterns. Many of the hitherto semi-compact settlements were built up into compact settlement or some were enlarged to make up a linear form and vice-versa. The resultant structure of village built up depend mainly upon the configuration of land surface. Linear form along either the road or elongated watershed is most common development of settlement as a result of grouping of villages in Mizoram.

The immediate effect of grouping of villages in Mizoram was the total dislocation of jhuming as villagers had to leave the year's jhum cultivation and were unable to make fresh start in the grouping centres, which they were forced to do, because of the seasonal character of jhum depends purely on monsoon rains. Thus, widespread famine condition naturally followed the introduction of the scheme. In later years, the concentration of agricultural workers in the grouping centres soon

exhausted available land, and the already short cycle of jhuming had to be further shortened. This had been reducing agricultural yields incredibly, and only few families in most of the grouping centres were able to harvest paddy large enough to sustain themselves for the whole year.

As the villages cannot afford to spend many days away from daily agricultural work during the peak season as weed-out work has to be heavy, it was almost impossible to do wage labour outside the village during this particular season. This restricted them to seek employment outside their own villages. In spite of the emotional and sentimental attachment that they have for the village land, the villagers realised the low economic yields of agricultural work under jhum cultivation. As such, they were willing to shift to other occupations whenever they could find them.

One important aspect of the grouping of villages in Mizoram has been the loosening of village solidarity. The people of villages may still be bound together by sentimental attachment to village land, but villagers, especially those who came from other villages, especially those came from other villages, lost loyalty and found it hard to identify themselves as true members of the

hitherto neighbouring village which in some instances turned out to be traditional village rival.

The settlement patterns in the grouping centres which followed the method of concentration of members of any particular village in one block or street also helped deteriorating village solidarity. Thus, the settlement patterns in the grouping centres upset village solidarity while retaining original village loyalty and identity. Thus, people in many instances, still retain the sentimental bond of the old village, which may cut across familial ties. Members of village councils in the grouping centres virtually complain the existence of village sub-group and rivalry within the grouping centres in matters connected with the administration of church, politics, school management and so on. In this way, villagers in the grouping centres gradually lost village solidarity based on tribal setting. As a result, people feel less attached to the village resulting in the consequent migratory flow of population to towns in search of commercial openings. Thus, during the decades 1961-1971, the population of Aizawl town increased from 14,257 in 1961 to 31,740 in 1971.

The structural consequences of villages has, thus, been tremendous. Hitherto remote villages were brought

into larger units. This naturally disturbed the traditional village harmony based on homogeneity and attachment to village land. Both these bases of traditional village structure had been shattered and a new structure based on occupational differentiation and heterogenous character emerged. Thus, the masses of the village communities who were left to fight their survival with the traditional system of jhum cultivation became poorer as their original adaptation to their village jhum practices has been shattered with the introduction of grouping of villages which kept the economy of the villagers into no better condition.

SPATIAL ANALYSIS OF SETTLEMENT

The spatial patterns in the density of rural population in an area is a function of complex interplay of physical, economic, social and technological forces. But natural forces play more prominent role than others in this respect. This is especially true of the developing world where application of modern technologies are limited and economic are predominantly agricultural in nature⁹.

In 1981 Mizoram census, there were 721 inhabited villages and 15 uninhabited villages as against 229 and

9. Singh, Jhujar and R.P.S. Gosal, "Density of Rural Population in Indian Situation - A Comparative Approach", Population Geography, Vol. 8, 1986.

one uninhabited village in 1971 census which indicated the increase in the number of enumerated villages by 31.76 per cent. The rapid increase in the number of enumerated villages during the decade is due to large scale grouping of villages. As political disturbance broke out in Mizoram on the 1st March, 1966, several smaller villages were grouped together for security reasons. In view of this measure, the number of villages found in 1971 were much less in comparison to that of 1981 census on account of the fact that the grouped villages, as time passed, returned to their old villages and thus re-occupied them. The number of inhabited villages in Mizoram in 1981 census and the previous censuses is indicated below :

Table 7.1

Number of Inhabited Villages during 1961, 1971 and 1981

State/District	1961	1971	1981
MIZORAM	730	229	721
Aizawl District	395	106	390
Lunglei District	335*	29	161
Chhimituipui District	-	94	170

* Includes Chhimituipui District.

Source : Census of India, 1981, Series 31, Mizoram General Population Table, p. 16.

NUMBER OF RURAL
SETTLEMENTS 1971

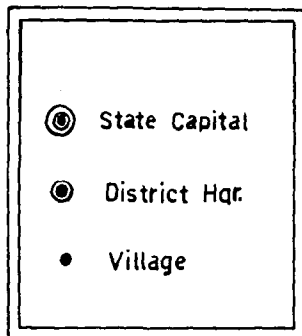


Fig. 7.a

**NUMBER OF RURAL
SETTLEMENT 1981**

- ⊙ State Capital
- ⊙ District Hqr.
- Village
- ⊙ Urban Area

5 0 5 10 15 20
KILOMETRES

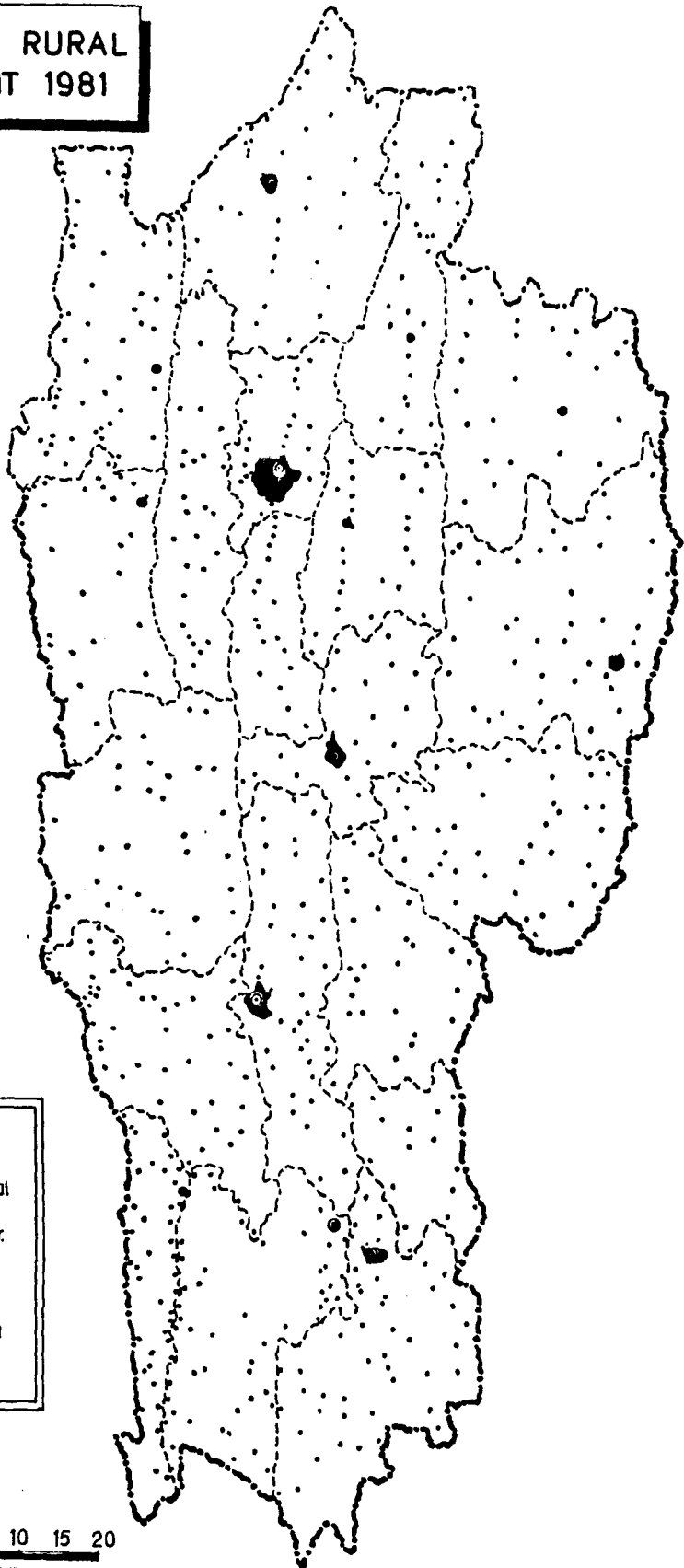


Fig. 7.b

To study the spatial patterns of settlement in Mizoram, a quantitative approach has been applied, considering different indices such as size (population), density and spacing of settlements. The analysis of size and spacing is relevant because 'rural density is also regarded to be a correlate size and spacing of rural settlements',¹⁰.

Village Size Analysis

The relation between density and spacing is reciprocal; as the spacing increases, the density of village will decrease, and with the decrease in spacing, the density will increase. Similar relationship exists between the density of villages and area, and size of villages. Here, village size analysis has been studied taking mainly population size into consideration as the data for village area is not available.

The size of villages are described with the number of population which is classified into seven broad population ranges, viz., (i) less than 200; (ii) 200-499; (iii) 500-999; (iv) 1000-1999; (v) 2000-4999; (vi) 5000-9999; (vi) 10,000 and above indicating therein the rural population.

10. Mukerji, A.B., "Spacing of Rural Settlements in Rajasthan", The Geog. Outlook, Agra, I(1), 1970, p.4..

Table 7.2
Village by Population Size, 1981
(Percentage to Total Rural Population in 1981)

State/ District	Less than 200	200- 499	500- 999	1000- 1999	2000- 4999	5000- 9999	10000- above
Mizoram	6.79	23.61	23.18	23.93	22.49	-	-
Aizawl	4.87	17.75	22.89	25.35	29.15	-	-
Lunglei	8.99	31.96	18.12	28.80	12.12	-	-
Chhimtuipui	12.13	37.85	30.24	12.45	7.33	-	-

Source : Census of India, 1981, Series 31, Mizoram General Population Table, p. 29.

As seen from the above table, there is no village with a population of more than 5,000 in Mizoram. It is observed that 23.93 per cent of the total population are confined in the village size 1000-1999 in different 62 settlements, which is 8.59 per cent of the total rural settlements of the State. There is only slight variation in the confinement of population in the lower range of population size of 500-999 and 200-499 as they comprised 23.18 per cent and 23.61 per cent of the total population of the state. In the range of 500-999 population size, there are 127 settlements (17.61 per cent), whereas there are as many as 267 settlements (37.03 per cent) in the range of 200-499. In the range of village size less than

200 persons, there are as many as 235 villages which is 32.59 per cent of the total settlements in Mizoram, but contained only 6.79 per cent of the total population of the state.

Table 7.3 furnishes the distribution of settlements into various population ranges at district level. As to the total number of settlements, the largest number of settlements are under the population size of 200-499 in all the districts. This is one of the indicators that the geographical conditions do not favour the growth of large sized settlement as resources are limited. Among the three districts, the percentage value of the number of settlements between 200-499 is highest in Lunglei district, which is 42.24 per cent, followed by Chhimtuipui district (41.76 per cent), and it is lowest in Aizawl district with 32.82 per cent. The lowest number of settlements is found in the population size of 2000-4999 in all the districts. The value is 6.67 per cent in Aizawl district, 1.86 per cent in Lunglei district, and only 0.59 per cent in Chhimtuipui district.

The average village size for the whole Mizoram is 516 persons. At district level, the size of settlements decrease towards the south. It is 623 in Aizawl, 430 in Lunglei and 349 in Chhimtuipui district. Geographical

Table 7.3

**Distribution of Villages by Population Size
District-wise 1981**

District/ State	Population range	No. of villages in each range	Percentage of villages in each range
Aizawl	1-199	122	28.72
	200-499	128	32.82
	500-1,999	124	31.79
	2000-4,999	26	6.67
	Total	390	100.00
Lunglei	1-199	59	36.65
	200-499	68	42.24
	500-1,999	31	19.25
	2000-4,999	3	1.86
	Total	161	100.00
Chhimtuipui	1-199	64	37.65
	200-499	71	41.76
	500-1,999	34	20.00
	2000-4,999	1	0.59
	Total	170	100.00
Mizoram	1-199	235	32.59
	200-499	267	37.03
	500-1,999	189	26.21
	2000-4,999	30	4.16
	Total	721	100.00

Source : District Census Handbook, Aizawl, Lunglei and Chhimtuipui, Census of India, Series 31, Mizoram, 1981.

POPULATION SIZE

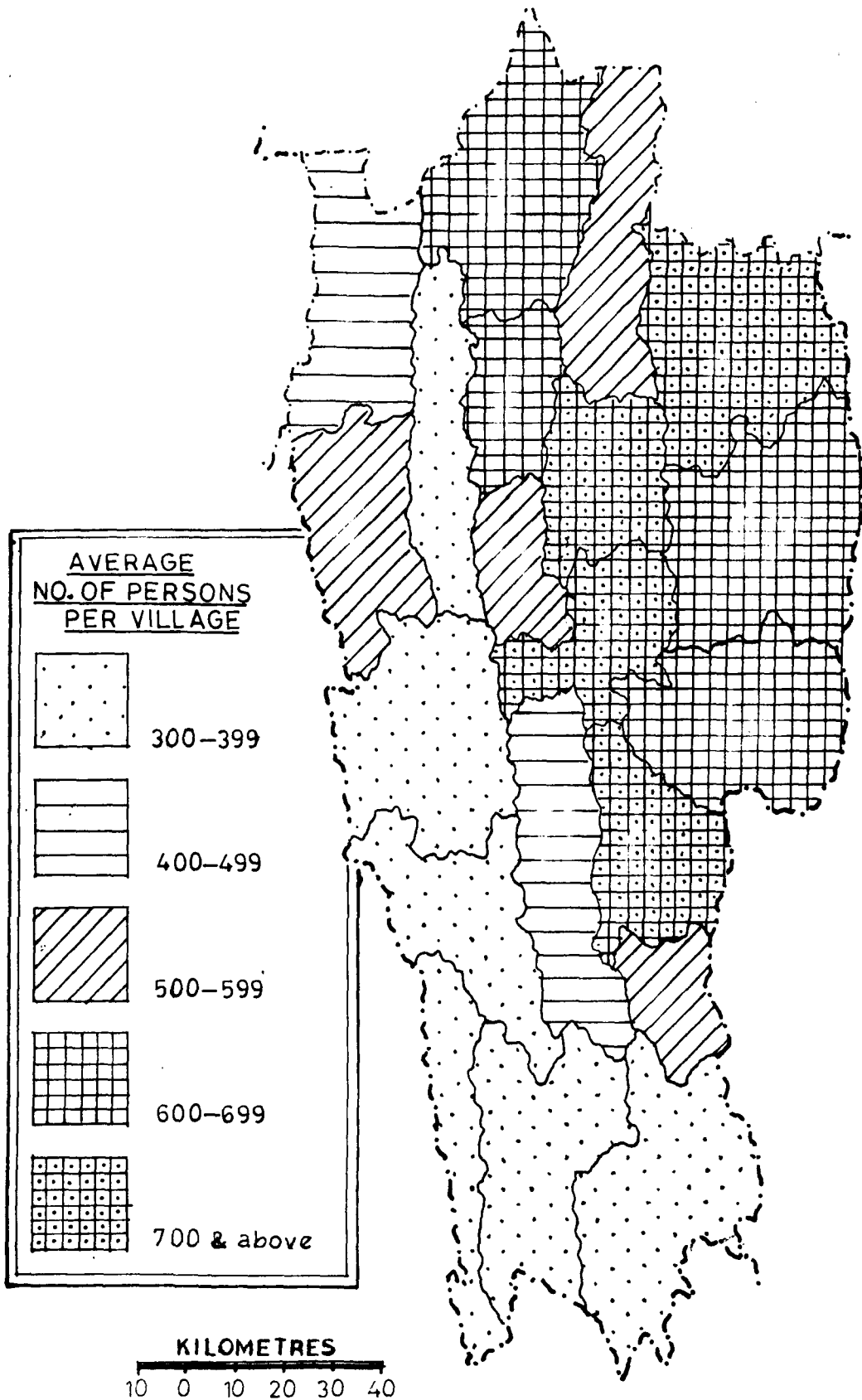


Fig. 7-2

factors like terrain, climate and socio-cultural factors are responsible for this trend. At block level it varies from only 302 in Tuipang block to 847 in Serchhip block. The village size is fairly high in Aizawl district except in the block of Reiek (392) and Lokicherra (453) which registered the sizes below the state's average of 516. Irregular landscape with little communication lines are the main factors that restrict the growth of village size in Reiek, while hot and humid climatic conditions are responsible for low settlement size in Lokicherra block.

In Lunglei district, the difference in village size is marked by topography. The western block of West Bunglei and Lungsen are characterised by low altitude with hot and sultry weather, whereas Lunglei and Hnahthial block are highly elevated embraced with healthy climatic condition. As a result, the size is small in West Bunglei (314) and Lungsen (391) whereas it is fairly high in Lunglei (412) and very high in Hnahthial (716). Except Sangau block, all the blocks in Chhimtuipui district have very small size of settlements due to the fact that they are either characterised by rugged topography with little means of transport or thickly vegetated low elevation with adverse climatic condition, or both. Cultural element has its own influence in the case of Sangau block. Sangau village, the block headquarter has been the centre of one

of the Christian religious factions headed by Vanawia. Migration into this village has led to large size of settlement in this block (548).

Spatial Analysis of Villages

The spatial distribution of rural settlements shows that the average number of villages per 100 km² of rural areas comes to 3.47 which is very low as compared to the density figure of the other states of the country. Out of 20 blocks in Mizoram, only 7 blocks have a density figure higher than the average. Chawngte block has the highest density of settlements, i.e., 7.28 per 100 km² as against only 1.91 settlements per 100 km² in Ngopa block which is the lowest in the state.

The inter-village distance or spacing is calculated at 2.71 km. The highest village spacing is observed at Ngopa block, i.e., 3.87 km. The lowest spacing, i.e., 1.96 km is, observed at Aibawk block. If the average number of 3.47 villages is supposed to be uniformly distributed over 100 km² forming a hexagonal pattern, the average theoretical distance between adjacent villages in the region should be about 2.71 kms.

The gross pattern reveals certain striking facts of the space-size relationship of rural settlements. It may

VILLAGE DENSITY

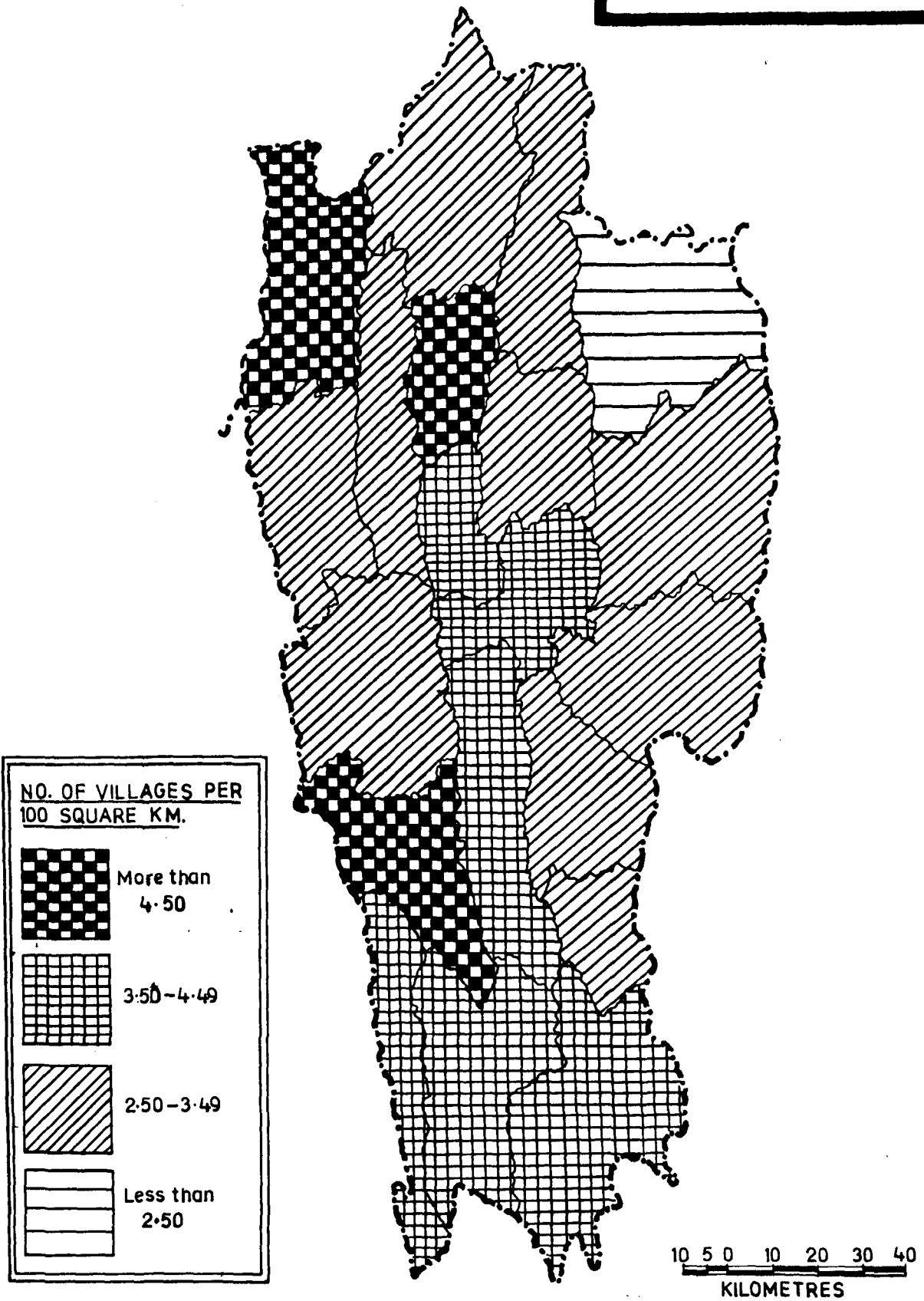


Fig. 7-3

be seen that the universal application of the rural spacing and size relationship (higher spacing between larger settlements and lower spacing between smaller settlements) can be applied only in eight of the twenty blocks, i.e., Ngopa, Serchhip, Khawzawl, Hnahthial, East Lungdar, Darlawn, Reiek and Chawngte - all having related values between size and spacing.

Taking village spacing and size of settlements as yardsticks, the following categories have been identified:

1) Areas with Low Spacing and Size of Settlements (More than 2.50 kms)

Under this category, there are eight blocks namely, Aibawk (1.96 km), Tlangnuam (2.01 kms), Lokicherra (2.07 kms), Chawngte (2.11 kms), Thingsulthliah (2.52 kms), West Phaileng (2.38 kms), Lawngtlai (2.41 kms) and Reiek (2.41 kms). These blocks have population sizes of 583, 688, 453, 354, 794, 543, 331 and 392, respectively. It is observed here that the space-size relationship is applicable to only four blocks namely, Lokicherra (453), Chawngte (354), Lawngtlai (331) and Reiek (392). West Phaileng, in spite of its low spacing, has large population size, i.e., 543 persons due to the fact that it is well served by good transport route. The influence of suburb (Aizawl town) is responsible for large size

settlements in the blocks of Tlangnuam (688) and Thingsulthliah (794). They are well connected by transport links and share the urban economy to a considerable extent, that keep the size of settlements large. Topographical influence is an attributable factor for large size settlement in the case of Aibawk block. An elongated watershed which featured the block in a north-south direction serves as the only alternative for human habitation. The settlements so located on the watersheds are connected by roads with Aizawl town.

2) Areas with Moderate Spacing and Size of Settlements (2.5-2.99 kms.)

Seven blocks are identified under this group of spacing. They are Thingdawl (2.60 kms), Lungsen (2.66 kms), Darlawn (2.67 kms), West Bnghmun (2.69 kms), Lunglei (2.70 kms), Tuipang (2.74 kms), and East Lungdar (2.82 kms). Again in this category the universal application of the rule of spacing and size relationship can be applied only in the two blocks of Darlawn (583) and East Lungdar (687). The function of complex interplay of physical, economic and social forces are reflected in these areas into reverse space-size relationship. In spite of their respective moderately spacing, Lungsen, West Bnghmun, Lunglei and Tuipang have lower population size than they are supposed to. Another inverse

SPACING OF VILLAGE

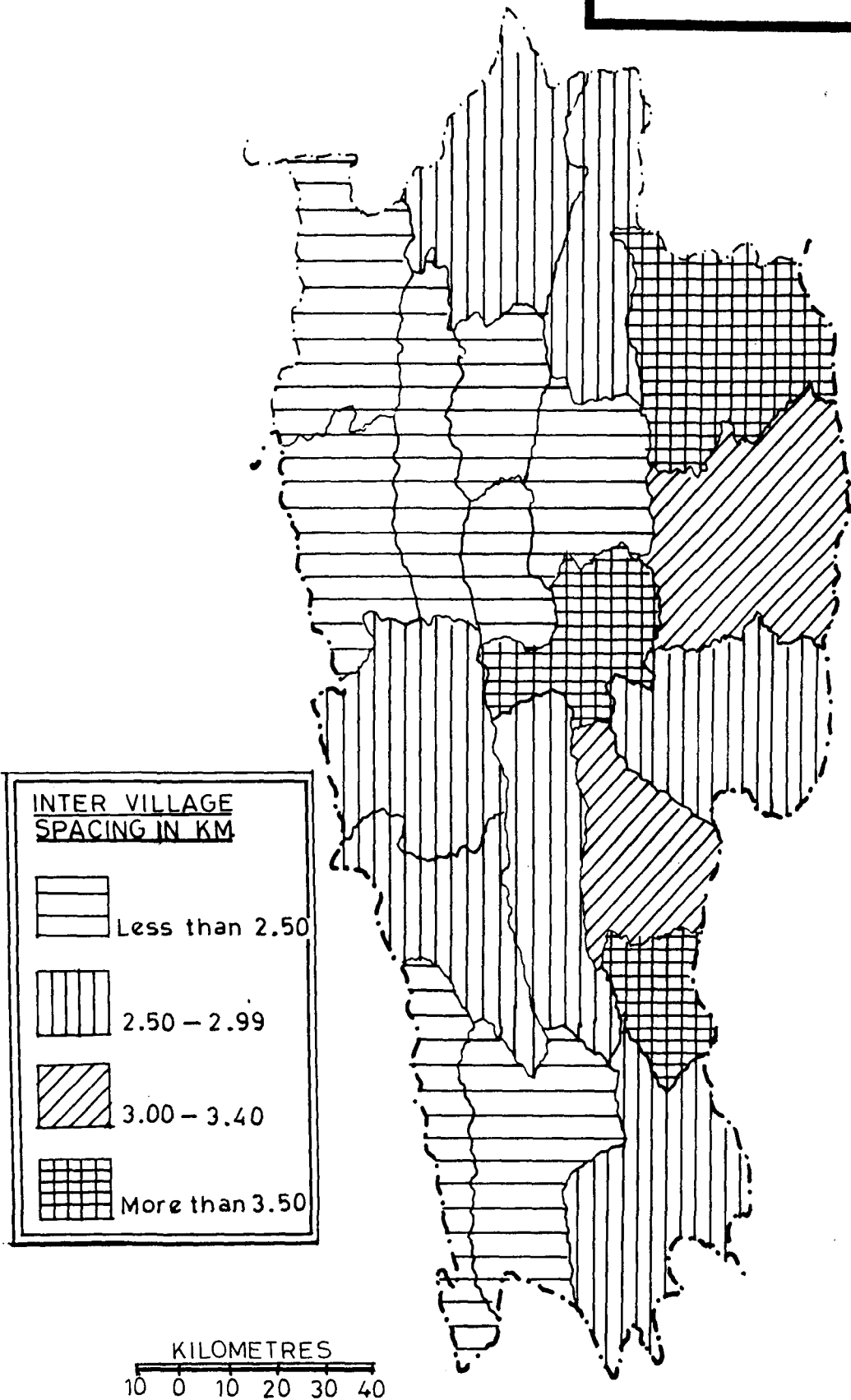


Fig. 7.4

relationship is observed in the block of Thingdawl where the size is much higher (644) if considered in terms of its spacing. Good communication network (NH No. 54 and others) as well as availability of cultivable fertile river plains along river Tlawng has led to large size settlement in Thingdawl block. In the blocks of Lungsen (391), West Bunghmun (314), Lunglei (412) and Tuipang (302), either geographical (natural) or social factors are responsible for lower population size in spite of moderately high spacing. The dominance of Chakma population in the blocks of Lungsen and Tuipang with small but numerous scattered settlements have led to lower size of villages. In West Bunghmun, improper transport route and adverse climatic condition has been responsible for smaller population size; where steep slope and scarcity of cultivable land may be the influencing factors in Lunglei block.

3) Areas with Higher Spacing and Size of Population (3.0-3.4 kms)

Only two blocks, i.e., Khawzawl and Hnahthial are identified under this group. They are both linked with good transport routes and having moderate climatic conditions. Moreover, these two blocks are well drained by river Tlawng and its tributaries, which provide cultivable fertile plots at several places. These factors

RADIAL DISTRIBUTION AND FUNCTION OF RURAL SETTLEMENTS

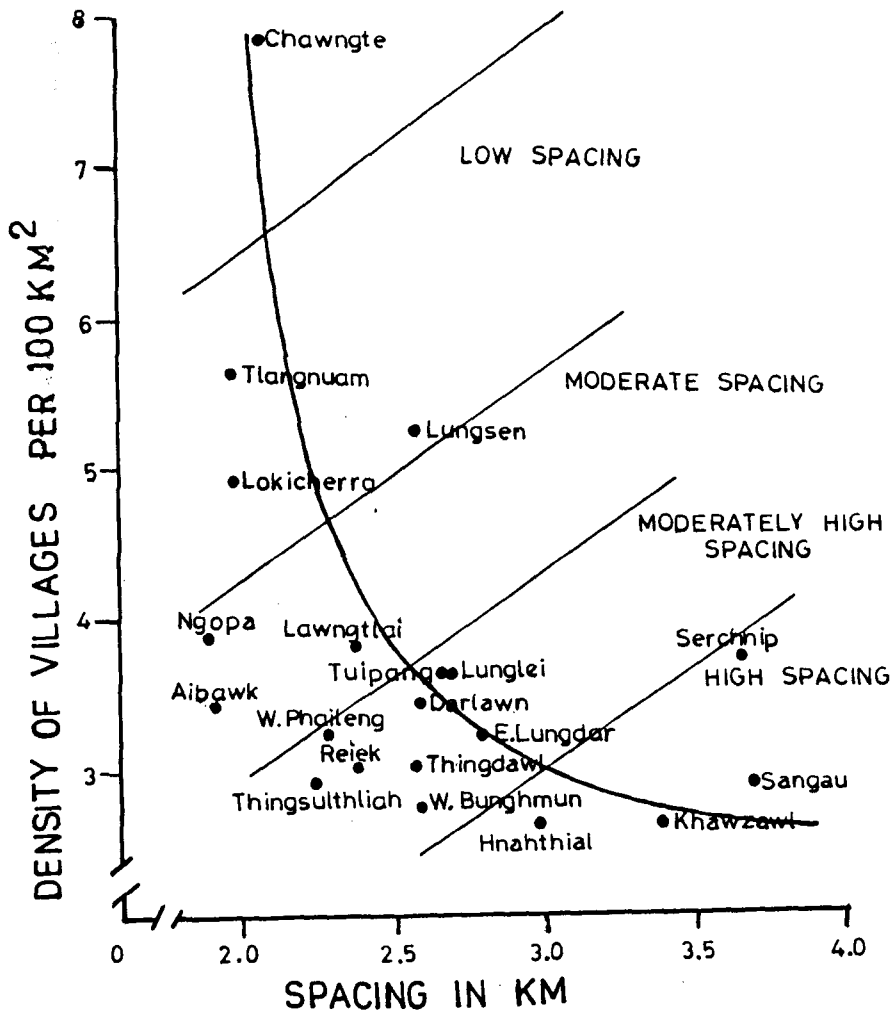


Fig. 7-5

favour the development of large village size. As a result, Khawzawl has an average population size of 674 and Hnahthial has a size of 716 persons per village.

4) Areas with High Spacing and Size of Population (More than 3.5 kms)

Under this category falls three blocks, namely Ngopa (3.87 kms), Serchhip (3.78 kms) and Sangau (3.72 kms). The space-size relationship is best suited to the blocks of Serchhip (794) and Ngopa (776). Ngopa block, located on a huge Sialkal range that form the watershed, is well drained by river Tuivai. Availability of cultivable land for jhum and moderate slope support the growth of settlement size. Serchhip block which is located at the heart of the state has always enjoyed positive character such as good road network, moderate climatic condition and easy availability of cultivable land. Sangau block, in spite of its extreme location and difficult terrain, has a high village size due to socio-cultural factors as pointed out earlier.

DISPERSION ANALYSIS OF VILLAGES

Dispersion analysis of several attributes is influenced by physico-cultural environment and evolution with the changing pattern of socio-economic forces working with the development of science and technology. The

actual distribution of settlements can be predicted through any statistical analysis with every unit having its own trend and identity considering the distribution in general as random. To measure the deviation from such distributional pattern is termed as 'Dispersion Analysis'¹¹. In fact, the settlements are not always evenly spaced, nor on the other hand, they are spaced strictly in random pattern¹².

In the present analysis, the concept of nearest neighbour analysis has been adopted. The nearest neighbour statistics (R_n), applying the index of randomness, shows the level of association between observed mean spacing (r_o) and expected spacing (r_E)* in random situation, which has been computed with the statistical expression advanced by Clerk and Evans (1954)¹³ as :

11. King, L.J., "The Analysis of Spatial Form and Its Relation to Geographic Theory", Annals of the Association of American Geographers, Vol. 59, 1969, pp. 573-595.

12. Dancey, M.F., "A Country Seat Model for the Areal Pattern of an Urban System", Geographical Review, Vol. 50, 1966, pp. 527-542.

* The derivation of formula is also taken from : Mahmood, Aslam, "Spatial Distributions and Interactions", Statistical Methods in Geographical Studies, New Delhi, 1977, pp. 72-76.

13. Clark, P.J. and F.C. Evans, "Distance of Nearest Neighbour as a Measure of Relationships in Population", Ecology, Vol. 35, 1954, pp. 445-453.

$$R_n = \frac{r_o}{r_E} = 2r_o \sqrt{d}$$

where

$$r_E = \frac{1}{\sqrt{2 \frac{N}{A}}}$$

where d denotes density of villages of per square kilometre, N is the number of settlements, and A is the area of the place.

1) Clustering (R_n Value less than 0.89)

This category covers an area of 23.19 per cent of the total rural area of Mizoram and contains 19.45 per cent of the total rural population. It consists of five community development blocks, namely, Aibawk, Thingsulthliah, West Phaileng, Reiek and West Bnghmun. The index of randomness (R_n value) ranges between 0.701 in Aibawk block to 0.867 in West Bnghmun block showing a clustering pattern of settlement. The observed mean inter-village distance of Aibawk, Thingsulthliah, West Phaileng, Reiek and West Bnghmun comes to 1.96 km, 2.25 kms, 2.37 kms, 2.41 kms and 2.69 kms respectively. Among these five blocks the village density is lowest in West Bnghmun ($0.026/\text{km}^2$), and highest in Aibawk ($0.032/\text{km}^2$). Apart from physical factors, socio-economic factors have a remarkable influence on this pattern.

2) Random (R_n Value 0.89-1.11)

This group covers an extensive area covering as much as 62.96 per cent of the total rural area of the state. It contains 63.61 per cent of the total rural population of the state. This group consists of eleven different blocks, namely, Thingdawl, Lokicherra, Lawngtlai, Tlangnuam, Darlawn, Hnahthial, East Lungdar, Tuipang, Lunglei, Ngopa and Khawzawl. Index of randomness ranges from 0.900 to 1.093 showing a more or less random pattern of settlement distribution. Among these blocks, the observed mean inter-village distance is lowest in Tlangnuam, i.e., 2.01 km; it is highest in Ngopa, i.e., 3.87 kms. The density of villages ranges from 0.019 km. per square kilometre in Ngopa to 0.056 per square kilometre in Tlangnuam block.

3) Moderate Dispersion (R_n Value 1.12-1.34)

This category includes three blocks, such as Chawngte and Sangau in Chhimtuipui district and Lungsen in Lunglei district. As the index of dispersion varies from 1.176 in Chawngte to 1.213 in Lungsen, and to 1.244 in Sangau block, it appears that the villages are moderately dispersed. The mean observed spacing of villages is 2.11 km. in Chawngte, 2.66 kms in Lungsen and 3.72 kms in Sangau block. The village density varies from 0.028 per

square kilometre in Sangau block to 0.078 per square kilometre in Chawngte, whereas Lungsen block has a village density of 0.052 per square kilometre. This category which covers only 11.06 per cent of the total rural area of the state contains 12.60 per cent of the total rural population of Mizoram.

4) High Dispersion (R_n Value more than 1.34)

Only one block falls under this category, namely, Serchhip. It has an R_n value of 1.454 which is the highest among all the blocks in Mizoram. As it consists of only one block, the area covered is also very small - only 3.77 per cent of the total rural area of the state, but it has a high mean observed inter village spacing which is 3.78 kms. The high spacing of villages is correlated by high population size; the average population per village being 847 persons. The density of village per square kilometre in this block is 0.037.

The dispersion analysis of villages by R_n value reveals that the distribution of villages in Mizoram as a whole depicts a random pattern except in the case of Serchhip and Sangau which show a high dispersion pattern.

NATURE OF DISPERSION OF RURAL SETTLEMENTS

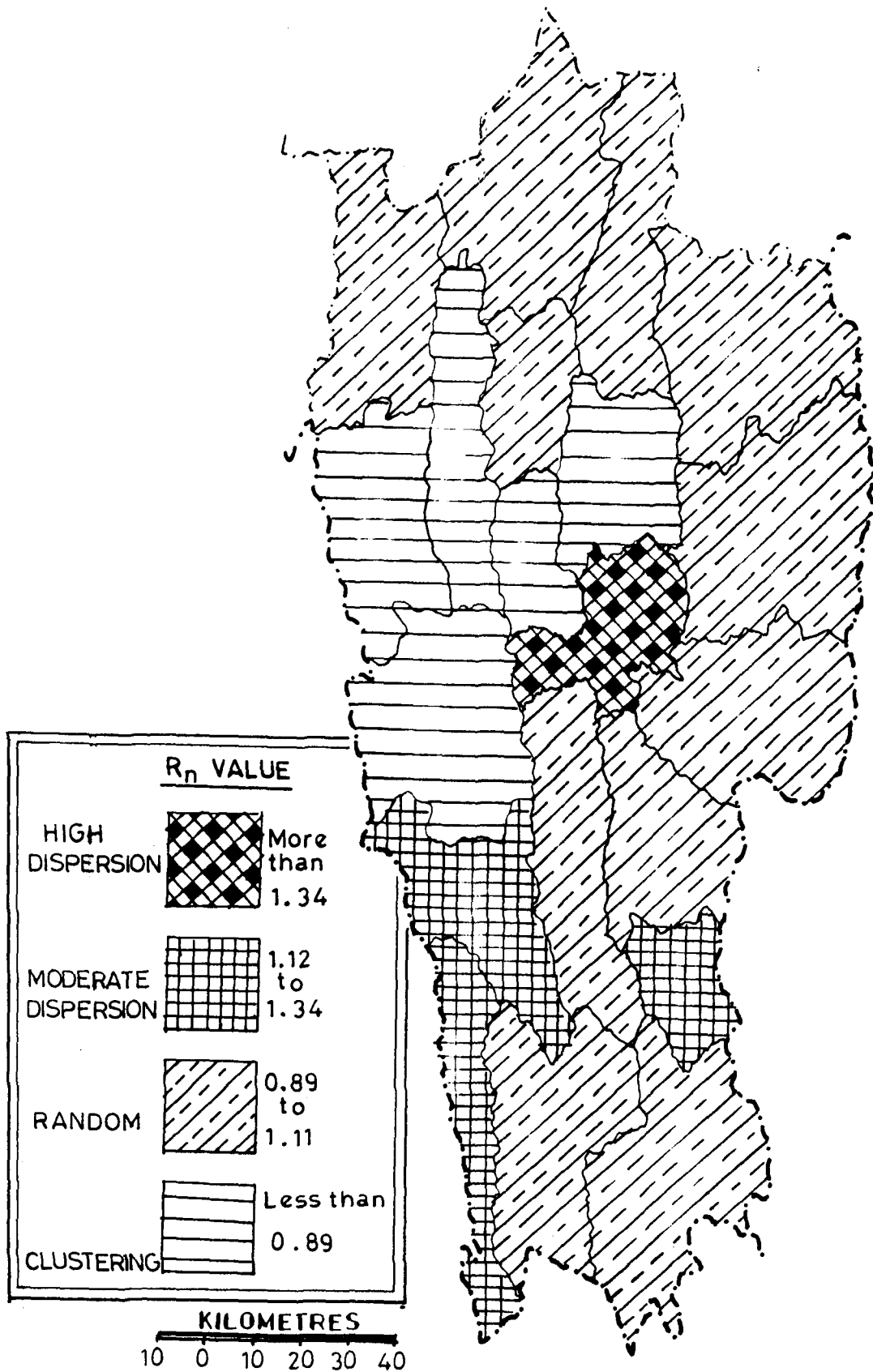


Fig. 7-6

URBAN POPULATION AND URBAN SETTLEMENT

The rural and urban population and settlements are interlinked. The rural and urban systems are the basic components which form the spatial organisation. The urban settlements with their population components work as an agent of transformation in themselves and also effect the surrounding countryside. They not only alter the environmental quality but also improve the socio-economic structure. The urban population and settlements play vital role in space, because they, while catering to their town needs, also serve the rural population of surrounding countryside.

Prior to the 1971 census, there was only one town in the whole Mizoram, namely, Aizawl town which was the Class IV category. In 1971 census, Lunglei was declared as Class IV town. In the 1981 Census, the following places, namely, Champhai, Kolasib and Serchhip within Aizawl district and, Saiha within Chhimtuipui district were declared as census towns. All these new towns were Class V category, i.e., population of 5000 to 9999. Thus in the 1981 census, there were six towns in the whole Mizoram. The towns were classified into six categories :

Table 7.5
Classification of Urban by Population Size

Population	Class
1,00,000 and above	I
50,000-99,999	II
20,000-49,999	III
10,000-19,999	IV
5,000-9,999	V
Below 5,000	VI

According to this classification, there is no town under Class I, III and VI in Mizoram. There is one Class II town namely Aizawl, one Class IV town, i.e., Lunglei and four Class V towns such as Champhai, Kolasib, Serchhip and Saiha.

According to 1981 Census classification of town as stated above, there were only six urban settlements possessing the characteristics of town. They have a total urban population of 1,21,814 persons, comprising 24.67 per cent of the total population of Mizoram. Even though there were only six urban towns, the process of urbanisation has undergone a rapid progress, as may be seen in the following statistics :

Table 7.6
Number of Urban Centres in Various Classification
of Towns (1901-1981)

State/ District	1901	1911	1921	1931	1941	1951	1961	1971	1981
Aizawl	-	-	-	-	-	1	1	1	4
Lunglei	-	-	-	-	-	-	-	1	1
Chhimtuipui	-	-	-	-	-	-	-	-	1
MIZORAM	-	-	-	-	-	1	1	2	6

Source : Census of India 1981, Series 31, Mizoram General Population Tables, Part II-A, p. 15.

From the above table, it is seen that a number of towns increased rapidly from 2 in 1971 to 6 in 1981. Judging from the trend of population growth in the state as a whole, and the coming up of various growth centres in the otherwise predominant rural areas within the state, the addition of new towns in 1991 is expected to be fairly large. The growth of urban population from 1951 to 1981 is given in the following table :

Table 7.7
Progress in Urban Population 1951-1981

State/District	1951	1961	1971	1981
Aizawl	6,950	14,257	31,740	97,591
Lunglei	-	-	6,019	17,205
Chhimtuipui	-	-	-	7,018
MIZORAM	6,950	14,257	37,759	1,21,814

Source : Census of India, 1981, Series 31, Mizoram General Population Tables, Part II-A, p. 15.

As it is obvious from the table 7.7, urban settlement grew at a very fast rate during 1961-1981. The growth rate during 1961-1971 was 100 per cent, which was doubled during 1971-1981 with a growth rate of 200 per cent. Consequent upon the high growth rate of urban settlements, the urban population also grew at an even more higher rate during the same decades. The urban population which was 6,950 for all Mizoram was increased to 14,257 making a growth rate of 105.13 per cent. It is to be seen that the growth of urban population was more pronounced in the latter two censuses of 1971 and 1981. It registered 164.84 per cent growth rate during 1961-1971, and was as much as 222.60 per cent growth rate during 1971-1981. This proved that the region has undergone a rapid progress of urbanisation*. The factors which accelerated the urban growth, apart from natural growth, is the heavy inflow of migration from rural areas of the state which has been described in the preceding chapter.

The list of towns and their population according to to 1981 census, is given in page 228.

* Statistically, urbanisation can be expressed as follows:

$$U = \frac{PU}{PT} \times 100; \quad \text{where, } U=\text{Urbanisation, } PU=\text{Population in urban areas, and } PT=\text{total population.}$$

Table 7.8
List of Towns and Population, 1981

Name of town	District	Population	Classification
Aizawl	Aizawl	74,493	Class II
Lunglei	Lunglei	17,205	Class IV
Kolasib	Aizawl	8,282	Class V
Champhai	Aizawl	7,487	Class V
Serchhip	Aizawl	7,329	Class V
Saiha	Chhimituipui	7,018	Class V

Source : Census of India 1981, Series 31, Mizoram, General Population Tables, Part II-A, p. 14.

SPATIAL CHARACTERISTICS OF URBAN SETTLEMENT

In spite of the fact that only six towns exist in Mizoram, one could see that they are well distributed in the state in terms of space, though the districtwise distribution shows parity. The urban population is represented in Figure 7.8. Some of the important statistics connected with spatial characteristics of urban settlements is given in the table 7.9.

It is clear from the above table that Aizawl, the State Capital is the largest by area as well as population size (677). It is followed by Lunglei and Saiha by area as both are district headquarters, respectively. But by the size of population density, Serchhip (Aizawl district)

has surpassed all the other four urban centres having 488 persons per square kilometre. Champhai and Kolasib (both in Aizawl District) also have larger population density(374 and 230 respectively) than Lunglei (202) and Saiha (132). It is observed here that density decreases towards the south in the case of urban population and settlement also.

Table 7.9
Spatial Characteristics of Urban Settlements

Urban Settlements	Area in km ²	Population	Population Density
Aizawl	110	74,493	677
Lunglei	85	17,205	202
Kolasib	36	8,282	230
Champhai	20	7,487	374
Serchhip	15	7,329	488
Saiha	53	7,018	132

Source : Census of India, 1981, Series 31, Mizoram, General Population Tables, Part II-A, pp.18-19.

The observed mean spacing of the urban settlement, taking Mizoram as a whole, was 48 kilometres, which was much higher than the expected spacing, i.e., 29.63 kilometres. The R_n value is calculated at 1.619 indicating that the urban settlements in the state is highly dispersed.

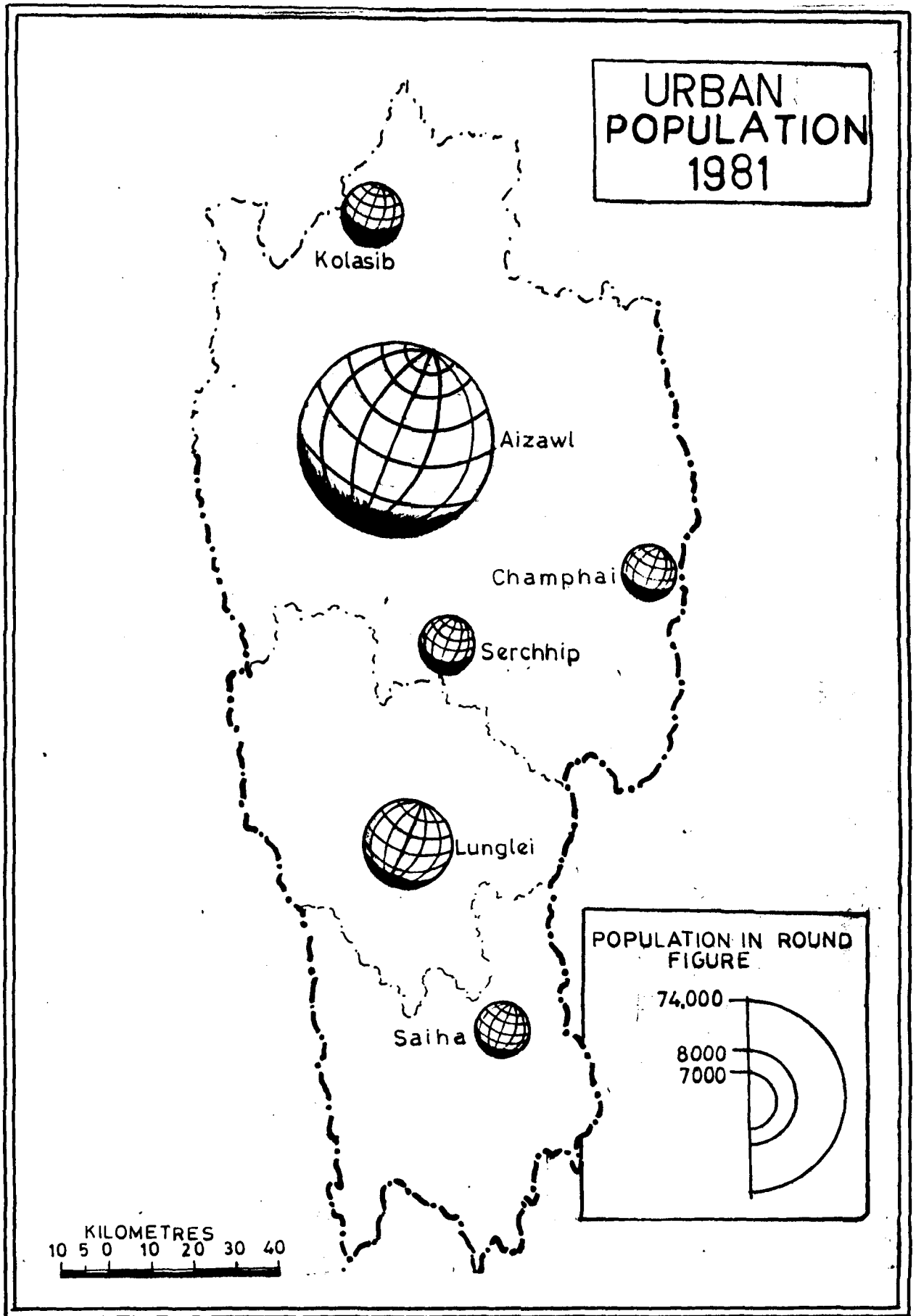


Fig. 7-8



PLATE NO.7.1 : A compact settlement of Champhai, whose horizontal growth being restricted by the surrounding landuse.

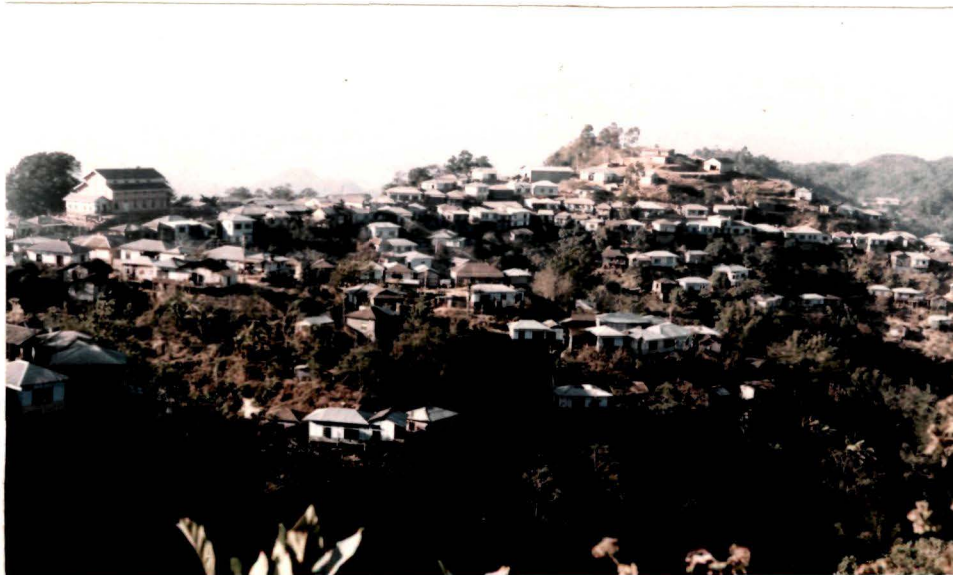


PLATE NO.7.2 : Lungdai village depicts a compact settlement largely due to the geographical barrier, i.e., steep precipice on the west.



PLATE NO.7.3 : Serkhan village, located on a hill slope is a good example of semi-compact settlement.



PLATE NO.7.4 : Kawrthah village has been transformed into semi-compact largely due to village grouping.



PLATE NO.7.5 : Hill top and hill slope settlement of Bunghmun village in Aizawl district. Note the house pattern, and the house sites being shifted down along the road. The trees on the western slope serve as the barriers against cyclone.



PLATE NO.7.6 : Dampui village, the hitherto hill top village has transformed into linear type as a result of later development of road below the original village site.



PLATE NO.7.7 : Khawzawl, formerly semi-compact, has also transformed into linear type as road develops.



PLATE NO.7.8 : Tuipui village is a good example of settlement which is developed along both the river and the road

CONCLUSION

Population and settlement geography occupies a dynamic place in geographical studies. The relationship between population and settlement is both intimate and complex. Population and settlements has always constituted the core of human geography.

The problems of population, poverty and settlements are among the greatest problems which the world confronts today. In developing countries like India, the main concern of national planning agencies is related to the various facets of population and settlements. The study of population and settlement problems through various perspectives so as to ultimately find a balanced settlements on national level is of paramount importance

and has evolved interest among different scientists and academicians.

In the present work, both aspects of population and settlement geography, rural and urban have been studied to incorporate all the varied aspects of population and settlement alongwith the general descriptions of physical settings and economic condition of the study area, i.e., Mizoram. Various conceptual approaches and methodology have been applied and tried out wherever possible. However, the weakness of the study lies in the fact that, Mizoram, being an underdeveloped state among the remote areas of India, many of the important statistics are not available that certain allied aspects of population and settlements are either impossible to analyse or incompletely dealt with, which would otherwise have significance to the study. The study has been divided into seven chapters. The first chapter is an introductory chapter, giving a brief introduction, review of literature, objectives of the study, data base, methodology and chapter scheme.

Chapter II deals with the environmental setting of the study area taking into account certain physical aspects such as geology, regional structure and tectonics, topography, drainage, climate, soil and vegetation. The

understanding of these aspects helped in examining the man-environment relationship which influence the population and settlement of Mizoram.

Mizoram which lies between $21^{\circ}56'N-24^{\circ}31'N$ and $92^{\circ}16'E-93^{\circ}26'E$ has an area of 21,081 square kilometres and a population of 4,93,757 (1,21,814 urban and the rest rural), of which 2,36,518 are females (1981). There are 721 inhabited and 15 uninhabited villages and 6 urban towns. The region is characterised by hilly terrain running in north-south alignment interspersed by wide and deep river valleys.

The geological structure is exemplified by rock formations consisting mainly of sandstone and shales of Tertiary and thrown into long folds. Three main major rock formations can be identified viz. Bokabil, Bhuban (both under Surma group) and Barail and a few unconsolidated alluvial deposits of Pleistocene of recent period. The Bokabil and Bhuban formations are mainly represented by shale, sandstone, and little siltstone and hardstone. The Surma group occupies an extensive area covering the whole hill ranges of central region, whereas Barail formation is exposed in small patches only. The Barails comprised mainly weathered shale, siltstone and few sedimentary structures like flute casts.

The study area is predominantly of mountainous terrain inclining north to south direction in a parallel series. The topographic features can broadly be classified into Mountainous Terrain and Ridge and Valley Province according to altitude. The western part of the state is dominated mostly by wide valleys and ridges. There are numerous rivers which drain the region. All of them have a flow direction towards either north to south. The most important rivers are Tlawng, Tuirial, Chhimtuipui and Langkaih. The region, owing to its tropical location enjoys a pleasant climate and falls within the influence of south-west monsoon. As such, it receives adequate amount of rainfall (250 cm annually). The southern and western parts receive heavier rainfall. The autumn temperature is usually between 18°C to 25°C while winter records temperature between 21°C to 30°C.

The soils found in Mizoram are mainly shale, sandstone and red loamy soil with limestone at few places. Under the soil taxonomy, they are classified as Entisols, Inceptisols and Ultisols. They are well drained except in flat lands and have, in general, high capabilities to retain moisture. They have, however, low inherent fertility in the form of poor supply of bases and mineral reserves.

Mizoram has an abundant growth of vegetation. Vegetation area covers 15,935 square kilometre or about 75 per cent of the total geographical area. Forests can be classified as Tropical Wet Evergreen Forests, Tropical Semi-Evergreen Forests and Montane-Sub-Tropical Forests. There are variety of timber species, medicinal herbs, cane and bamboos. Important timber species found in Mizoram are Thlanvawng (Gmelina arborea), Ngiau (Michelia champaca), Khiang (Schima wallichii), Char (Terminalia), etc.

Chapter III deals with different aspects of economy such as occupational structure of the population, agricultural activities, landuse, types of cultivation, productivity of crops, livestock and animal husbandry, forestry, forest economy, development of power, transport and communication network and industry. The analyses in all these aspects depict that the region is still underdeveloped though one may find a good prospects for development in certain fields.

Mizoram is an agricultural state and most of the workers engaged in agricultural activities. In 1981, 73.84 per cent of the total workers are engaged in primary sector for their occupation. Workers engaged in secondary sector are only 2.21 per cent, while the rest, i.e., 23.93

per cent are of tertiary activities. The participation ratio in each sector is found inversely proportional. For example, the share of urban workers in primary sector is only 29.31 per cent while it is 84.72 per cent for rural in the same sector and so on.

Jhum or shifting cultivation is the main method of cultivation. About 63 per cent of the total cropped area was put under jhum cultivation in 1984-1985. Even though the traditional jhuming is less productive and wasteful if thought in terms of vegetation burnt out and soil erosion, the system could not be abolished completely because the region's economy do not provide other alternative till the present time. The average paddy yield of jhum cultivation in Mizoram is estimated at about 12 quintals per hectare. Only 1.4 per cent of the total cropped area is under permanent wet rice cultivation, confined mainly in the valleys like Champhai, Vanlaiphai and Thenzawl. Horticulture, has been recently introduced, which showed a positive prospects. Irrigation is a problem due to ruggedness of the region. Out of the total estimated irrigation potential, i.e., about 70,000 hectare only 4.57 per cent has been so far put under irrigation, mainly by flow irrigation and lift irrigation. Paddy is the principal crop of agriculture in Mizoram, other important crops are maize, pulses, oilseeds and horticulture fruits.

In spite of heavy concentration of occupation on agriculture, the production is very low. As such, the state has to depend on import of foodgrains from other states. The same is the case with livestock and animal husbandry. Great stress has been given in production of eggs, milk and meat in order to meet the local demand.

However, Mizoram is rich in forest wealth. Attempts have been made to keep up and multiply the value of forest economy. Apart from valuable local species, plantation of exotic species like teak and eucalyptus have been introduced. The total revenue collected from forest during 1986-1987 was Rs. 27.28 lakhs. Though there is a good prospects for development of hydro power, only 2.3 MW has been generated from Hydel, 22.7 MW from Diesel Generators. With the import of 10 MW from Assam, Mizoram has a total power installation of only 35 MW which electrified only 45 per cent of the total rural population of Mizoram..

Transport has always been a problem in hilly regions like Mizoram. The state is connected by National Highway No. 54 with Silchar (Assam) which is the inlet into the state. There are state highways totalling about 545 kilometres inside Mizoram. The district road (jeepable)

has been developed into state highway. The road density in 1982 was only 12.62 kms per 100 square kilometre which is lowest among the north-eastern states of India and far below the national level of 47.27 kms per 100 square kilometre.

As the region is poor in all aspects of economy, there is no big industry in Mizoram. Whatever industry, as it may be called, exists at present is also cottage and small scale oriented industries, depending on indigenous agricultural produce. There is, of course, a prospect for setting up medium size paper and pulp industry in the near future.

Chapter IV presents a detailed account of the population composition. Analyses are made on density of population, sex ratio, religious composition, scheduled tribe and scheduled caste population, age distribution, literacy, language and rural urban composition of population. Mizoram is thinly populated. It ranks one of the lowest in India. It has a population density of 23 persons per square kilometre in 1981, as against 216 persons per square kilometre in India as a whole. The density decreases towards south at district level. Difference of density at block level is influenced by physical setting and availability of economic

infrastructure at the most, and also influenced by cultural factors to an enormous extent.

Sex-ratio of the population shows a decadal decrease. Since 1911, the sex-ratio has come down from 1120 to 919 in 1981. It is interesting to note that, at block level, sex-ratio is higher in the eastern half of the state where climatic as well as economic conditions are better. At district level, Aizawl has the highest ratio, i.e., 934, followed by Chhimituipui with 898 and lowest in Lunglei district with 881 females per 1000 males.

Unlike rest of the country, Mizoram is marked by a dominance of a single religion which is Christianity. The Christians comprised 83.81 per cent of the total population of Mizoram in 1981. Other religions are Buddhism (8.19 per cent), Hinduism (7.14 per cent) and other negligible in terms of percentage like Islam, Sikhism and Jainism.

In contrast to the national figure of 23.51 per cent population of scheduled tribe, Mizoram has a high tribal concentration, i.e., 93.58 per cent, which is the highest among the Indian states. The scheduled caste population comprises only 0.02 per cent of the total population of the state. There is quite a difference in the sex-ratio

between scheduled tribe and scheduled caste. While the sex-ratio for scheduled tribe is almost constant, i.e., 997, it is only 125 in the case of scheduled caste for the whole Mizoram in 1981. This clearly indicates that the scheduled castes are mainly migrants from other states in search of occupation who are comprised mostly of male workers.

The analysis of age-distribution of the population reveals that by five years age group, largest percentage which is 14.32 of the total population is in the group of 0-4 years, followed by 5-9 year group with 13.65 per cent. It is seen that the infant population (below 15 years of age) comprised 39.51 of the total population while active population in the age group between 15-59 constituted 55.60 per cent. There are only 4.62 per cent in the age group above 60. The aging index records 11.68 which is lower than the national figure of 16.41. The 'Maturity index' i.e., 83.69 is also lower than national figure of 108.25. Dependency ratio for the state is calculated at 79.49 as against the Indian average of 85.40. The analysis of dependency ratio reveals the dominance of females over males (i.e., 84.58 for females and 73.29 for males respectively).

The median of age is 19.57 in 1981 census which is a little lower than national figure of 20.60. The age sex composition as portrayed by pyramid diagram with a flat base favours high population growth rate in the near future.

In respect of literacy, and unlike other aspects of population characteristics, Mizoram has a high rate of 59.88 per cent and stood fourth among the Indian states after Kerala (69.77 per cent), Chandigarh (64.69 per cent) and Delhi (61.06 per cent) in 1981. The average growth rate of literacy during 1901-1981 in Mizoram was 46.65 per cent. Difference in literacy at block level is mainly defined by cultural element. Like in the case of religion, Mizoram represents, perhaps, the most significant deviation from language diversity in India. Mizo language accounted for 75.55 per cent of the total population of Mizoram, followed by Chakma (6.99 per cent), Lakher (3.49 per cent), Pawi (3.10 per cent) and Riang (2.95 per cent).

The rural-urban composition according to 1981 census is 75 per cent for rural as against 25 per cent in the urban areas. Compared with 1971 figure of 88.64 per cent living in rural parts, and only 11.36 per cent in urban areas, it is seen that the region has made a rapid progress in the process of urbanization.

Chapter V dealt with population growth taking different components of population. The population growth is studied under various components such as arithmetic or simple growth, exponential growth, population growth by sex, caste and tribe and religion. Attempts have been made to determine death and birth rate, work force of the population and migration pattern in the study area.

The state has witnessed a rapid progress in terms of population growth. The growth rate during 1971-1981 was 48.55 per cent which made up the total population of Mizoram to 4,93,757 persons. The growth rate during 1901-1981 was 498.97 per cent which was higher than all-India average of 187.05 per cent during the corresponding years. The growth rate during the last eight decades was not symmetrical. It registered a low growth rate during 1911-1921 as a result of natural famine called Mautam which occurred in 1912 in Mizoram. Highest growth rate is observed during 1971-1981 as a result of development in economy and health facilities etc. Growth rate at district level in 1981 census was affected largely by cultural character. The Chakma influx area of Chhimtuipui district has a highest growth rate of 61.44 per cent among the three districts, followed by Aizawl (48.46 per cent), and Lunglei (39.23 per cent).

Corresponding to high arithmetic growth rate, the state registered a rate of exponential growth rate higher than the national figure. The highest exponential growth rate was observed in Mizoram during 1971-1981 with a record of 39.57 per cent, and lowest is recorded during 1911-1921 which is 7.6 per cent as compared to North-East India figure of 40.67 per cent and 17.1 per cent for the corresponding periods.

Male population grew at a faster rate than the female population in Mizoram during 1901-1981 excepting the decade of 1901-1911. The growth rate during 1971-1981 was 50.58 per cent for males and 46.39 per cent for females, which were the highest so far observed in Mizoram since 1901. There are is a sharp variation in the share of scheduled tribe and scheduled caste population. But in terms of growth, scheduled caste population has a remarkable growth rate of 1,540 per cent during 1961-1971 as against 20.03 per cent for scheduled tribe. However, the figure has come down to 64.63 per cent for scheduled caste and 47.43 per cent for scheduled tribe during 1971-1981.

Growth rate in case of different religious communities presents rather complex pattern. The Sikhs communities recorded as much as 5237.50 per cent during

1961-1971, but showed a negative growth rate of -1.40 per cent during 1971-1981. The Muslims which registered a high growth rate of 827.09 per cent during 1961-1971 also falls sharply to 17.16 per cent during 1971-1981. The Hindus, on the contrary, registered an increasing growth trend of 58.08 per cent during 1971-1981. The Buddhist communities registered a growth rate of 78.51 per cent in 1981 as against 20.98 per cent in 1971 as a result of numerous entry of the Chakmas from Bangladesh during this decade. The Christians, the dominant communities registered an increasing trend of 44.62 per cent during 1971-1981 as compared to 24.13 per cent during 1961-1971. Birth and death rate, however, could not be analysed due to lack of essential data and information.

The work force of the population of Mizoram also witnessed a declining trend. In 1961, the workforce was 47.23 per cent which fell to 45.61 per cent in 1971, and further fell to 41.71 per cent in 1981. The male population accounted for 63 per cent of the total workers, while as much as 80 per cent of the total workforce is contributed by the rural population. At district level, the workforce in 1981 varies from Chhimtuipui with 44.12 per cent, to Aizawl district with 41.25 per cent and to 31.64 per cent in Lunglei district. The analysis of workforce at block level shows that workforce is lower in

the area where urban population is significantly large, and higher in the areas where rural domination is vigorous with low economic level, and physical setting is negative.

Migration is not significant in the State mostly due to the imposition of "Inner Line" regulation. According to 1981 census, 460,219 persons living in Mizoram were born in the State of Mizoram indicating 33,538 persons or 6.79 per cent of the total population were migrants to the State. Of the total migrants, 74.52 per cent were migrants from other States/Union Territories of India, whereas only 25.47 per cent of the total migrants are international migrants. In other words, internal migrants constituted only 1.73 per cent of the total population of Mizoram. The movement of population within the State or internal migration rate is 3.40 per cent, which is higher within rural areas with 3.61 per cent, and lower in urban areas which 2.62 per cent. Based on place of last residence, the pattern of migration within the State can be classified into four major classes such as : a) Rural to rural, b) Rural to urban, c) Urban to rural, and d) Urban to urban. It is found that the rural to rural migration or reverse rural turnover claimed the highest flow of population, i.e., 62.16 per cent of the total migrants, where urban to rural migration or reverse push back accounted the least value of only 4.84 per cent. It

is observed that the pattern of migration within the State as analysed by the four classes is closely related to the degree of economic development of the micro-region and social status of the population.

Chapter VI presents a detailed account of histogenesis of settlements in Mizoram and shows successive periods of migration into the land. It is agreed that the Mizos, the present inhabitants of the State were Mongoloid stock of origin who migrated to their present habitat some time in the middle of the 16th Century from Shan State, east of Chin bordering China through Burma.

The factors that affect spatial aspects in selection of sites are mainly governed by slope, climate, water availability and proximity to cultivable lands. Prime importance was given, in the selection of sites, to hill top which provides rediness to defence the village as the early Mizo were involved in constant war and conflicts for territorial possessions. It is found that the settlements along the river or valleys have been recent development owing to availability of cultivable fertile lands, since consideration of defence purpose has nothing to do with it at the present situation. The settlements observed in Mizoram can broadly be classified into four groups

according to their spatial selection or location :

- 1) Settlements on the hill top or slopes
- 2) Settlements along the watershed
- 3) Settlements along the main roads
- 4) Settlements along the rivers.

It is important to note that the traditional rule of villages by village chiefs in the past has greatly determined the location, size and number of population in each village. The population in the village was also restricted by traditional jhum cultivation as well.

The last chapter identifies different types of and patterns of settlements in Mizoram. It also examines the spatial characteristics of rural and urban settlements. Based on the study, three broad types and patterns of settlements are identified in Mizoram. They are : 1) Compact settlement, 2) Semi-compact settlement, and 3) Lienar settlement.

It is worthwhile to mention that the introduction of grouping of villages in Mizoram during 1967-1971 has an enormous impact on the pattern of settlements and occupational structure of the people of Mizoram. The introduction of the scheme not only changed the settlement features, and alter the economic life of the people, but

also resulted in total reduction of the number of settlements, and encouraged migratory flow from rural to urban areas. The total number of villages in 1961, i.e., 730 was reduced to 229 as it appeared in 1971 census. It is observed that the settlements again increased to 721 by 1981 as a result of re-occupation of the grouped villages.

Village size analysis by population shows that among the four classes of village size, most number of villages is found in the population size ranging from 200-499 persons. This range accounts for 37.03 per cent of the total rural settlements or 267 villages out of 721. There are 235 villages with a size of less than 200 persons (32.59 per cent). In the range of 500-1999, there are 189 villages (26.21 per cent), where only 30 villages accounting for only 4.16 per cent are found in large size village with a population 2000-4999 persons. The distributional pattern of population in these four classes are also found proportional at district level.

The average number of villages per 100 square kilometre of rural area is 3.47 which is very low as compared to the figures of other states. Out of 20 blocks in Mizoram, only 7 blocks have a rural density figure higher than the average. The maximum density of rural settlements is seen in the block of Chawngte with a record

of 7.28 whereas the minimum value is observed at Ngopa block with only 1.91 settlements per 100 square kilometre of rural areas.

The average inter-village spacing is 2.71 kms. The highest is observed at Ngopa (3.87), and lowest is seen at Aibawk (1.96 km). If the average number of 3.47 villages is supposed to be uniformly distributed over 100 square kilometre forming a hexagonal pattern, the average theoretical distance between adjacent villages in the region should be about 2.71 kms. The gross pattern reveals that the universal application of the rule of spacing and size relationship (higher spacing between larger settlements) can be applied only in eight of the twenty blocks.

Following the Nearest Neighbour Analysis, dispersion pattern of villages have been attempted; by which four categories of dispersion pattern of rural settlements at block level have been identified. They are : 1) Clustering with R_n value less than 0.89, consisting five blocks; 2) Random with R_n value between 0.89-1.11, comprising eleven blocks; 3) Moderate dispersion with R_n value 1.12-1.34 containing only three blocks, and 4) High dispersion with R_n value more than 1.34. Only one block namely, Serchhip falls under category 4. The analysis

of randomness or dispersion by R_n value as a whole reveals that the distribution of villages in Mizoram portrays a random pattern.

The urban population and settlement analysis exposed the rural character of the State that the bulk of the population remained in the rural parts of the State. Prior to 1971 census when Lunglei was declared Class IV town, there was only one town, namely, Aizawl. In 1981 census, another four towns such as Champhai, Kolasib, Serchhip and Saiha were declared as census towns. These make up the total number of urban settlements in Mizoram to six. These six settlements comprised total urban population of 1,21,814 persons which is 24.67 per cent of the total population of Mizoram.

The spatial analysis reveals that these six towns are well distributed over the State in term of spacing. The average spacing is 48 kilometres. But in terms of population size, there are great imbalances. The size ranges from Aizawl, the capital town, having 74,494 inhabitants by 1981 to Saiha with 7,018 residents in the same year.

Population density in these urban settlements is highest in Aizawl (677), followed by Serchhip (488), Champhai (374), Kolasib (230), Lunglei (202) and lowest in

Saiha (132). The R_n value indicating degree of randomness or dispersion is 1.619 which implied that the urban settlements in Mizoram are highly dispersed. Although there are only six urban settlements till 1981, it is observed that the growth rate is very high. During 1961-1981, the urban growth rate was 100 per cent. During 1971-1981, growth rate was as high as 200 per cent. Considering from the trend of population growth in the State as a whole, and the coming up of growth centres in the otherwise predominant rural areas within Mizoram, it can be expected that the addition of new towns in 1991 census would be fairly high.

We have, thus, seen that the isolation of the State has been largely responsible for the backwardness of the State, coupled with numerous adverse geographical characteristics, as well as indigenous cultural elements. Above all, it is interesting to draw some basic evidences on the impact of settlement on population and impact of population on settlement from the above findings.

DENSITY

As Mizoram is sparsely populated, particularly in the past, it cannot afford to have large settlement area. The population has been distributed all over the State in small village settlements. The rugged terrain and thick

vegetation provide only a few sites suitable for human habitation. If we considered the density of population in terms of total geographical area, it is only 23 persons per square kilometres, as against 216 persons in India as a whole. The population density figure, thus, denotes a very low value, unless otherwise considered in terms of density per habitable areas. Although the density of settlement is only 3.47 per 100 square kilometres which is lower than the national average, the value is yet, quite appreciable in terms of total population of the State. There are as much as 721 rural settlements in 1981 with an average of 516 persons in each village.

OCCUPATIONAL STRUCTURE

The occupational structure of the population of Mizoram has also a great impact on the settlement in the region, as the occupation often reflects the cultural traits of the workers. Bulk of the population of Mizoram is engaged in agricultural activities, mostly in the form of shifting (jhum) cultivation at subsistence level. The break up of occupations shows that as much as 73.74 per cent of the total workers are engaged in primary sector. Although the high concentration of workers in the primary sector gave a notion that the State is an agricultural region, the production is yet very unsatisfactory, unable to meet even the local demand of foodstuff.

It is well perceived that jhum system is most primitive method of cultivation which requires heavy labour input, but with very poor returns. In realising the necessity to create alternative occupation, various attempts have been made to totally abandon the method of jhum cultivation. Certain economic schemes have been implemented and the jhumias families are assisted with funds. In spite of the flow of developmental funds from the Central Government the economy is still at subsistence level, largely depending on the traditional jhum cultivation. It may be argued that jhum cultivation, with a type of terrain and vegetation in Mizoram, cannot afford to hold large settlement size.

As presented in Chapter III, the jhum system implies rotation of land rather than crops, following a cyclical order whose minimum period is normally five years. The pressure exerted on land is thus heavy not only because of traditional method, but also because of the heavy concentration of occupation of the villagers on jhuming. It must be perceived that easy proximity to jhum land is always given priority as distance bars the utilization of maximum time for jhum operation. Moreover, the vegetation cover of the State is such that, the tree forests thrive on the higher altitudes, mostly on the tope range of the mountain which are not easy to clear for jhum land;

whereas the bamboo forests provide greater tolerability for jhum clearing, which otherwise thrive on the lower altitude, normally below 600 M. Thus, the difficulty posed on accessibility to jhum land is of great hindrance, as the harvests are transported by headloads. Thus, spatial interaction of jhum land and settlement sites, has added a considerable impact on the settlements. As a result, due to the want of jhum land with easy access, numerous settlements have emerged, distributed here and there, with a generally small population holdings, as permitted by the available land resources of the village bounds.

TRADITIONAL ADMINISTRATION

As presented in the text, the traditional administrative set up in the early Mizo society has a considerable impact on the settlement outcrop. The existence of numerous chiefs (village chiefs) in the traditional settings encouraged small settlement. As pointed out in the analysis, chiefship is hereditary, which goes to the eldest son. Even during the lifetime of a village chief, the eldest son would be allowed to establish a new village and rule as a chief, as long as he does not lose his loyalty to his father-chief. Such tradition greatly encouraged large number of settlements rather than large number of population in the village.

Of course, the hereditary chief administration has been abolished, the system, more or less the same, continues under the village Council. It can be argued that the break up of population seemed more agreeable to keep up the smooth functioning of the Village Council even in the modern settlements. This argument also seemed coherent with the pressure on land as the people still persists the occupation based on jhum cultivation.

It is thus, observed that settlements grew in quantity (on a horizontal scale), instead of size, as a result of traditional administrative set up and traditional occupational practices. Few vertical growth which were observed in the present stage implies merely the shifts in the economic practices of the population, mostly occupational in character.

Among the factors influencing selection of village sites in the traditional period, there may be defence purpose because of inter-village feuds, health purpose including climate and water supply, etc. as highlighted in Chapter VI, because the river valley and lower slopes of the hills are infested with mosquitoes and unhealthy climatic condition resulting in settlement on the hill top and upper hill slopes. Only few villages have been found along the river site and lower slopes.

The choice of village site was also determined by easy access to agricultural land. This had cultural element in operation - sentimental attachment to village site and village land.

We may observe that due to economic pressure, some villagers have been leaving their original village and migrated to roadside villages or towns. But the majority of the villages remain to be found on the hill top or upper slopes. This can only be explained by the cultural attachment to the village land given rise to the traditional settlement pattern coupled with the agricultural system. This also explains the reluctant way in which people are giving up their traditional jhum occupation.

This has been amply demonstrated by the introduction of grouping of villages during 1967-1970. Despite the supposedly better facilities in terms of medical, educational and economic opportunities provided in the grouping centres, many people have gone back to their original village sites after relaxation of compulsory occupation in 1972.

As stated earlier, the economic system follows settlement pattern and drastic changes may not be conducive to social harmony because the settlement pattern

is intricately linked, not only with the economic system, but also with political and religious spheres.

In spite of some major changes in the political behaviour and religious practices emphasizing an all-Mizo pattern, traces of traditional holds are still very strong. Any attempt at introduction of major changes in terms of settlement pattern, economic and political system, etc. has, therefore, to be preceded by development of infrastructural-like network of roads, schools, etc. otherwise, it will always result in societal disharmony with harmful consequences.

Appendix-1
Population by Age and Sex, Mizoram, 1981

Age Group	Total population	Total male	Percentage to total population	Total female	Percentage to total population
All Ages	493,757	257,238	52.09	236,518	47.90
0-4	70,746	45,486	6.18	35,260	7.14
5-9	67,407	33,809	6.84	33,598	6.80
10-14	57,253	29,037	5.88	28,216	5.71
15-19	56,246	28,379	5.74	27,867	5.64
20-24	51,187	26,143	5.29	24,044	5.67
25-29	42,030	22,739	4.60	19,291	3.90
30-34	32,943	18,720	3.79	14,222	2.88
35-39	27,078	15,993	3.23	11,085	2.24
40-44	21,318	11,750	2.37	9,568	1.93
45-49	17,993	9,714	1.96	8,279	1.67
50-54	15,413	8,224	1.66	7,189	1.45
55-59	10,334	5,441	1.10	4,893	0.99
60-64	8,581	4,479	0.90	4,102	0.83
65-69	4,932	2,490	0.50	2,442	0.49
70-74	4,117	1,926	0.39	2,191	0.44
75-79	2,325	1,082	0.21	1,243	0.25
80-84	1,728	788	0.15	940	0.19
85-89	642	285	0.05	357	0.07
90-94	305	130	0.02	175	0.03
99-99	136	61	0.01	75	0.01
100+	67	29	0.00	38	0.00

Source : Calculation based on Census of India, 1981, Series 31, Mizoram, Part III-A & B and Part IV-A.

Appendix-2
Population by Age and Sex-Aizawl District, 1981

Age Group	Total population	Total male	Percentage to total population	Total female	Percentage to total population
All Ages	340,826	176,242	51.70	164,584	48.28
0-4	49,051	24,541	7.20	24,510	7.19
5-9	47,053	23,432	6.87	23,621	6.93
10-14	39,319	19,863	5.82	19,456	5.70
15-19	39,976	20,054	5.88	19,922	5.84
20-24	35,469	18,053	5.29	17,416	5.10
25-29	27,799	15,021	4.40	12,778	3.74
30-34	22,049	12,297	3.60	9,752	2.86
35-39	17,906	10,380	3.04	7,526	2.20
40-44	14,640	7,942	2.33	6,698	1.96
45-49	12,494	6,698	2.20	5,796	1.70
50-54	10,708	5,703	1.67	5,005	1.46
55-59	7,368	3,856	1.13	3,512	1.03
60-64	5,937	3,070	0.71	2,867	0.84
65-69	3,551	1,782	0.52	1,769	0.51
70-74	2,952	1,387	0.42	1,565	0.45
75-79	1,736	807	0.23	929	0.27
80-84	1,222	566	0.16	656	0.19
85-89	489	218	0.06	271	0.07
90-94	212	96	0.02	116	0.03
95-99	101	46	0.01	55	0.01
100 +	32	13	0.00	19	0.00

Source : Calculation based on Census of India, 1981, Series 31, Mizoram, Part III-A & B and Part IV-A, pp. 527-530.

Appendix-3
Population by Age and Sex, Lunglei District, 1981

Age Group	Total population	Total male	Percentage to total population	Total female	Percentage to total population
All Ages	86,511	45,998	53.15	40,513	46.32
0-4	12,224	6,091	7.04	6,133	7.08
5-9	12,414	5,851	6.76	5,563	6.43
10-14	9,868	5,050	5.83	4,818	5.56
15-19	9,559	4,857	5.61	4,702	5.43
20-24	8,934	4,721	5.45	4,213	4.86
25-29	7,620	4,163	4.81	3,457	3.99
30-34	6,131	3,686	4.26	2,445	2.82
35-39	5,234	3,236	3.74	1,998	2.30
40-44	3,811	2,182	2.52	1,629	1.88
45-49	3,209	1,774	2.05	1,435	1.65
50-54	2,695	1,456	1.68	1,239	1.43
55-59	1,768	943	1.09	825	0.95
60-64	1,490	797	0.92	693	0.80
65-69	856	441	0.50	415	0.47
70-74	673	291	0.33	382	0.44
75-79	401	187	0.21	214	0.24
80-84	303	131	0.15	172	0.19
85-89	95	33	0.03	62	0.07
90-94	46	14	0.03	32	0.05
95-99	23	11	0.01	12	0.01
100 +	10	4	0.00	6	0.01

Source : Calculated from Census of India, 1981, Series 31, Mizoram, Part III-A & B and Part IV-A, p. 528.

Appendix-4
Population by Age and Sex, Chhimituipui District, 1981

Age Group	Total population	Total male	Percentage to total population	Total female	Percentage to total population
All Ages	66,420	34,999	52.69	31,421	47.30
1-4	9,472	4,854	7.30	4,618	6.95
5-9	8,939	4,526	6.81	4,413	6.64
10-14	8,066	4,124	6.20	3,942	5.93
15-19	6,713	3,469	5.22	3,244	4.88
20-24	6,785	3,369	5.07	3,416	5.14
25-29	6,610	3,554	5.35	3,056	4.60
30-34	4,763	2,738	4.12	2,025	3.04
35-39	3,938	2,377	3.57	1,561	2.35
40-44	2,866	1,625	2.44	1,241	1.86
45-49	2,290	1,242	1.86	1,048	1.57
50-54	2,010	1,065	1.60	945	1.42
55-59	1,197	641	0.96	556	0.83
60-64	1,154	612	0.92	542	0.81
65-69	524	267	0.40	257	0.38
70-74	492	248	0.37	244	0.36
75-79	188	88	0.13	100	0.15
80-84	203	91	0.13	112	0.16
85-89	58	34	0.05	24	0.03
90-94	47	20	0.03	27	0.01
95-99	12	4	0.00	8	0.01
100 +	25	12	0.01	13	0.01

Source : Calculated from Census of India, 1981, Series 31, Mizoram Part III-A & B, Part IV-A, p. 530.

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