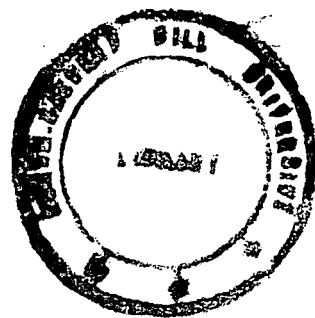


**REGIONAL STRUCTURE
OF
ARUNACHAL PRADESH**
(A BIBLIOGRAPHIC AND DATA BASE STUDY)

By
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Department of Geography
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Dissertation
Submitted in partial fulfilment of
the requirements for the Degree of
MASTER OF PHILOSOPHY

To



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C E R T I F I C A T E

This is to certify that the dissertation entitled
"Regional Structure of Arunachal Pradesh. A bibliographic and
data base study" submitted by Mr. Kaka Gameng ⁱⁿ for the Partial
fulfilment ~~for~~ the degree of Master of Philosophy is a bonafied
study to the best of my knowledge. All the quotations, extracts
and ideas of other studies have been duly referred.

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At the last, my heartiest thanks are due to Mr. Joseph P. Khongbuh for typing the manuscript.

Kaka
5/5/86
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CHAPTER - I

INTRODUCTION

The Issue

The term "region" that a regional geographer is concerned with usually means the two dimensional space on the surface of the earth, where one would find similarity and coherence in the distribution of geographical phenomena. The geographical elements such as relief, drainage, climate etc. as well as natural resources and including man and his activities all together combine to form the regional structure or regional personality of the region.

The main purpose of the study of regional structure is to identify the significant distinctive characteristics and problems of the region and then to regionalise the distributional patterns of the various elements with a view to finding out sub-regions for better understanding. It examines the biotic and non-biotic as well as the human resources that the region possesses. Thus the regionalization ultimately aims at helping the regional planners, for better regional development planning and to minimize the regional disparities.

Study area

The study area selected is Arunachal Pradesh, a Union Territory of the Indian Union located in the north eastern most corner of the country. It touches the historic McMahon Line

to its North, Bhutan on the West, Burma on the East and the States of Assam and Nagaland on the South and South East. It is a land locked territory of approximately 83,578 Sq. Km. in area, lying within the geographical limits of about 26°40' to 29°30' N latitudes and 91°20' to 97°21'E longitudes, with a population of 6,28,050 according to the 1981 Census. The territory is divided into 9 administrative districts, 26 sub-divisions and 97 circles. The regional set up of districts, their size, total population and population density have been catalogued in the following table.

Table 1 - Study Area - District area, Population and Density per Sq. Km (1981).

District/Sub-Division	Area Km ²	Population	Density
1. West Kameng	9,594	62,946	7
2. East Kameng	4,134	42,722	10
3. Lower Subansiri	13,010	1,13,300	9
4. Upper Subansiri	7,032	39,406	6
5. West Siang	12,006	74,151	6
6. East Siang	6,512	70,274	11
7. Dibang Valley	13,029	27,916	2
8. Lohit	11,402	69,400	6
9. Tirap	7,024	1,28,135	18

Source - Provisional Population Figure 1981.

The study area is physically one of the most inaccessible, economically backward and academically little studied region in India. The region, formerly known as North Eastern Frontier Agency (NEFA) is dominated by rugged terrain and formidable mountains. It is the home of about 25 (twenty five) major tribes, who have their own distinct socio-cultural and religious beliefs and speak different languages.

The choice of an administrative unit for the study area may undoubtedly appear not to be always scientific one, but the homogeneity of the geographic personality that the region possesses has encouraged the researcher to take up the entire administrative region as a single study area. It is thus the homogeneity of physical and cultural setting and the incident of its being a single administrative unit which justifies the choice. Moreover, such a choice will help the process of plan preparation at the Union Territory level as well as its execution, and the chances of inter-territorial conflicts are largely set aside.

Work-plan

The main objective of the present study is to make a detailed literature survey of the existing sources and data available, which can be made use of in the study of the regional structure of Arunachal Pradesh, and finally to compile a systematic bibliographic guide for the purpose.

As discussed earlier, the study area is primarily dominated by rugged topography which adversely influences the accessibility of the region. Due to high inaccessibility the region has remained isolated and land locked for a long period and contact with people of other region has come relatively late. On account of the prolonged isolation and lack of transport and communication the area has remained unstudied and its economy is still in the state of under-development. For a sound economic planning it is necessary to have a fuller knowledge about the people, their habitat, economy and natural resources. The multi-linguistic and multi-racial characteristics of the region have attracted a number of anthropological and sociological studies, but very few studies have been undertaken in the fields of economics, geography and geology. Over and above there is no written language of the region except among the Monpas and Sherdukpens of Kameng who use Tibetan script and Khamptis of Lohit who use Thai Burmese script. Majority of the languages are just spoken languages. The present study hopes to furnish a comprehensive and precise bibliographic guide and data base for studying the regional structure of the region, which ultimately would lead to a better understanding of its resources, problems and potentialities and help the regional planner in the task of rapid development of the Union Territory. To make the study meaningful and

purposive, it has been divided into four broad parts.

Before treating the data and source materials in each part a brief description of regional structure under that head is discussed, after which the data and source materials are reviewed with notes on their coverage, content and relative usefulness. The four broad heads under which the materials have been arranged and presented include the following.

- I. Historical perspectives and Administrative growth of the region.
- II. Physical setting - Geology, physiography, drainage, climate, soil and natural vegetation.
- III. Demographic and Socio-cultural Structures - Population growth, distribution, composition, rural-urban population, sex ratio, literacy, religion and linguistic structure, migration, settlement, tribes and their distribution.
- IV. Economic structure - Agriculture, industry, transport and communication, and mineral resources.

The first part covers the reference materials pertaining to the historical perspectives and administrative growth of the study area. Various articles, travelogues and letters written on the important tribes of the region or on the neighbouring tribes by the British during their punitive,

political and missionary expeditions form the main source material of this part. These accounts are found in various old journals such as Asiatic Society of Bengal, Proceedings of Asiatic Society of Bengal, Asiatic Research, Geographical Magazine etc. More recently a number of books on the historical and political situation of the Territory have also appeared. Contributions of Bose 1978,¹ Chakravarty 1979,² Elwin 1972,³ Chowdhury 1983,⁴ Mackenzie 1979,⁵ Luthra 1971⁶ etc. deserve special mention on this count.

Parts two and three cover the references and sources on the physical setting and demographic, socio-cultural structure of the region. These chapters set the pace to unroll "picture of the region" in terms of occurrences and distributions of the physical and human attributes of the region as a whole. For these parts the various publications

-
1. Bose, M.L. British Policy in the North-East Frontier Agency, Concept Publishing Co., New Delhi 1978.
 2. Chakravarty, L.N. Glimpses of the Early History of Arunachal. Research Department, Govt. of Arunachal Pradesh, Shillong 1979.
 3. Elwin, V. (Ed.) India's North-East Frontier in the Nineteenth Century, Oxford University Press, Third Impression 1972.
 4. Chowdhury, J.N. Arunachal Pradesh from Frontier Tracts to Union Territory, Cosmo Publication, New Delhi 1983.
 5. Mackenzie, A. The North-East Frontier of India. Mital Publication, Delhi. Reprinted 1979.
 6. Luthra, P.N. Constitutional and Administrative Growth of the NEFA, DIPR, NEFA, Shillong 1971.

of Geological Survey of India, the Census of India, including the data published by Statistical Department of the Territory and the Gazetteers, from the main data and source base.

The last part covers references and source materials pertaining to the economic structure including agriculture, industry, transport, communication and mineral resources of the region. The primary data and source base for this part are the various publications of Census of India, Directorate of Economics and Statistics, Agriculture and Industry Departments of Government of Arunachal Pradesh and the Geological Survey of India etc. On the whole, the economic data available is mostly compiled to the last few years. Very little material is available on and use on agriculture, mineral resources and the forest wealth of the territory.

In order to understand the spatial distribution and interrelationships of a different natural human and economic phenomena a number of maps have been prepared, based on such fragmentary data as are available. These maps bring out and highlight the various facets of regional structure and also the wide gaps that exist in our knowledge of the territory.

CHAPTER - II

HISTORICAL PERSPECTIVE AND CONSTITUTIONAL AND ADMINISTRATIVE GROWTH

Historical Perspective

Arunachal Pradesh the "Land of the Rising Sun" has been historically an integral part of Assam and India from time immemorial. Hence, in order to get a proper historical perspective of the territory, we have to refer very briefly and pointedly to the Ahom tribal relations. However, it is very difficult to say definitely regarding the original home of the tribes of Arunachal, the route of their migration, the time of their settlement in Arunachal etc. The historians and archaeologist trace the past history of the territory, from the various archaeological evidences and relicts found in the regio. There are many archaeological relicts found in Arunachal as Malinithan in West Siang, Sivalinga cave in Subansiri, Tamreswari temple, Bhismaknagar and Brahma Kunda and Parasuram Kunda in Lohit district, Bhalukpong in Kameng etc., which have their historical bearing with the Assam Buranjis as well as Mahabharata, Ramayana and the Puranas. The Mahabharata and Purana stories indicate that the kings who were known to have reigned over the plains portion of Kamrupa (ancient Assam) also held sway over the neighbouring hilly tracts. As for example, the King Banasura's grandson Baluka shifted his capital from Sunitp or present day Tezpur to Bhalukpong on the foothills of the

Himalaya and even today, the Akas or Hrusso of Arunachal Pradesh claim that they are the direct descendant of King Baluka. In the same way, the Idu Mishmis of Arunachal too claim King Bhismaka to be their ancestor.

In the Hieun Tsang's travel account in eastern India, the North eastern boundary of Kamrupa is mentioned to extend much beyond that of the modern Assam and that it not only included Arunachal Pradesh, Bhutan and Sikkim but also touched Burma and China. According to Ahom historians, the Ahoms entered Assam in 1228 A.D. and till 17th Century they subdued the Chutiyas, Morans, Borahis, Kacharis, Nagas, Miris etc. and established a stable government in entire Assam.

The Ahoms started developing political and other relations with the North-eastern hill tribes only after their conquest of the Chutiya country around Sadiya in 1523 during the reign of King Hso-Hum-Mong (Raja Suhungmung). Sadiya Khowa Cohain was appointed as governor around Sadiya to control the territory and look after the Ahom tribal relation. The Ahom kings however did not always have an easy time, due to continuous raids made by the hill tribes. Unable to control the hill tribes through expeditions, the Ahom brought about settlement with hill tribes through payment of Posa. Pratap Singha granted the right to cultivate certain bordering lands, called Khats, to Nagas or payment in token homage and Momai Tamuli Barbarua permitted the Daflas to levy Posa on the Bohorahs North of

Darrang. Similar rights of Posa were granted to a section of the Akas as well as Adis and the Miris. In order to regulate relations with, and keep the bordering tribes under control, Ahom rulers appointed frontier officials designated as Salal Gohain at Sala, Marangi Khowa Gohain at Marung and Sadiya Khowa Gohain at Sadiya.

In the later part of the eighteenth century, the stability of Ahom empire was disturbed by the revolt of the Moamariyas (those who lived on the Moa fish) especially the Maran and Matak people of Upper Assam, during the reign of Raja Lakshmi Singha (1769-1780). Taking advantage of the instability in the area the Burmese invaded Assam under the great king Badaung Paya (1781-1819) during the reign of Raja Gaurinath Singha (1780-96). The British intervened in the conflict and declared war upon the Burmese on 5 March, 1824 in aid of the Ahoms and drove the Burmese from Assam early in 1826, and signed the Anglo-Burmese treaty at Yandabo on 24 February 1826 in which the British annexed Lower Assam. In Upper Assam, Muttuk and Sadiya was under Purandar Singh, but with the breakdown of Ahom authority in the wake of Burmese invasion, the British finally annexed the whole of Assam in 1838 and constituted it into a Non-regulated Province of the British empire in India.

After annexation of Assam in 1825-26, the British found themselves in contact with a variety of hill tribes occupying contiguous areas along its whole length, with different languages, dress and habits. Moreover the British did not know the precise limits of their newly acquired territory. The Yandabo treaty of 1826 did not define the external boundaries of Assam, it just laid down that the Burmese should not interfere in Assam and its dependencies. On the other hand, the hill tribes almost, all of them advanced claims to lands in the plains below their hills and frequently raided them. The British therefore decided to dislodge the hill tribes from the plains. In 1873, they imposed restrictions on the free intercourse between the people of the hills and those of the plains by an administrative measure, the Eastern Frontier of Bengal Regulation of 1873. By means of an administrative line called the Inner Line, they marked off the North-Eastern Hills from those areas which were under the effective control of the government. But later in 1880, with the Promulgation of Assam Frontier Tract Regulation, the government was enabled to administer certain areas within the Inner Line. In 1906-07, the British Government advocated a Policy of "Loose Control" of the hill tribes and regarded the North Eastern Frontier as geopolitically unimportant from security point of view as it was bounded by states which were neither powerful nor potentially dangerous to the British empire. But the loose policy of 1906-07 was interrupted by the incursion of the Chinese army in 1910 and the Chinese

demand of submission of the Mishmis to their command which posed a threat to India's Frontier security. The government of India felt the danger of an undefined, undelineated frontier, and thus took up an intensive programme of exploration in the borderland between Assam and Tibet in 1912-13.

Thus, the maps prepared show the precise alignment of the 1,312 Km traditional boundary between Assam and Tibet, extending from Isu Razi Pass in Burma in the East to the Tri-junction of Assam, Bhutan and Tibet on the West. In February 1914, Henry McMahon sent two maps to Lonchen Paljor Dorji Shatra, his Tibetan counterpart, who later agreed to the boundary delineated in the maps. This secretly negotiated boundary line between the British and Tibetan delegates is called the McMahon Line. After the delineation of the Assam and Tibet boundary, the government of India exercised direct control over the Assam border stretching up to the McMahon Line.

However, due to the varied topography, multi-racial and multilingual characteristics of the territory, the government encountered peculiar problems in its administration. Prior to 1947, the area of Arunachal was treated as a special area. The Government of India Act 1935, classified the Assam border area as excluded and partially excluded areas and the British pursued a policy of non-interference in the affairs of the frontier

tribes. After independence also the constituent assembly decided to accord special status to the frontier areas in the Eastern Himalaya consisting of the Naga tribal area, the Tirap Frontier tract, the Mishmi Hills, the Abor Hills, and the Subansiri area and the Sela Sub-Agency (vide Article 244 and the Sixth Schedule of the Constitution promulgated on 26 January 1950), but kept them as an integral part of Assam.

Constitutional and Administrative growth

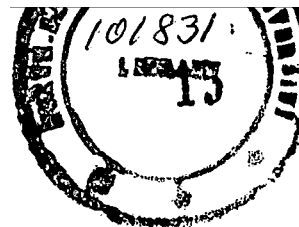
The History of constitutional and Administrative growth of Arunachal Pradesh, may be traced back to the Government of India, Foreign and Political Department Notification of 1914, which extended the Assam Frontier Tracts Regulation of 1880 to the hills inhabited by Abors, Miri, Mishmis, Singphos, Nagas, Khamptis, Bhutias, Akas and Daflas. Consequently, the hills inhabited by the above named tribes were separated from the Darrang and the Lakhimpur Districts of Assam and constituted into the North-Eastern Frontier Tracts. As a result, the North-Eastern Frontier Tracts came into existence composed of the following three administrative units.

- i. The Central and Eastern Section.
- ii. The Lakhimpur Frontier Tracts.
- iii. The Western Section.

The Central and Eastern Section, and the Western Section were each placed under the charge of Political Officers with their headquarters at Sadiya and Charduar respectively. The Lakhimpur Frontier Tract continued under the Deputy Commissioner of the Lakhimpur District of Assam.

Further in 1919, changes in the nomenclature of administrative units followed, the Central and Eastern Section was renamed as the Sadiya Frontier Tract and the Western Section as the Balipara Frontier Tract. The Lakhimpur Frontier Tract however retained its original nomenclature. In 1937, with the promulgation of the government of India (Excluded and partially excluded Areas) Order of 1936, the whole North East Frontier Tract came to be known collectively as the excluded areas of the Province of Assam. These excluded areas came under the direct charge of the Governor of Assam who administered them in his discretion through the Political Officer and the Deputy Commissioner of Lakhimpur.

The year 1943, saw further changes in the administrative set up and Political development in the North East Frontier Tract. An additional post of the Adviser to the Governor of Assam was created with the chief idea of assisting the Governor with the administration of the North East Frontier Tracts. A new administrative charge was created with the certain areas from the Lakhimpur Frontier Tract and the Sadiya



Frontier Tract and called the Tirap Frontier tract and was placed under a Political Officer with headquarters at Margherita.

In the year 1946, the Balipara Frontier Tract was divided into the Sela-Sub Agency and the Subansiri Area, for administrative convenience, in the same way in 1948, the Sadiya Frontier Tract was bifurcated into Abor Hills District and the Mishmi Hills District.

Birth of NEFA in 1954

In the year 1951, the plains portion of the Balipara Frontier Tract, Tirap Frontier Tract, Abor Hills District, Mishmi Hills District were transferred to the Administrative jurisdiction of the Assam. The aforesaid areas minus the transferred plains portion of the Frontier Tract together with the Naga Tribal Area were renamed collectively as North East Frontier Agency (NEFA), with the promulgation of the NEFA (Administration) Regulation of 1954, the Frontier Tracts were redesignated as Frontier Division, with redefined boundaries. As a result of the reorganisation, the Agency was divided into six administrative divisions called Frontier divisions as follows:

Old Title	New Title	Headquarters
1. Balipara Frontier Tract	1. Kameng Frontier Division	Bomdila
	2. Subansiri Frontier Division	Ziro

Old Title	New Title	Headquarters
2. Tirap Frontier Tract	3. Tirap Frontier Division	Khela (later transferred to Khonsa)
3. Abor Hills District	4. Siang Frontier Division	Along
4. Mishmi Hills District	5. Lohit Frontier Division	Tezu
5. Naga Tribal Area	6. Tuensang Frontier Division	Tuensang

Each division was placed under a Political Officer at its respective headquarters. In 1957, the Tuensang Frontier Division was excluded from NEFA and included in the newly formed Naga Hills Tuensang Area of present Nagaland.

The year 1965 saw the further administrative evolution in NEFA. The administration of NEFA was under the direct control of the Ministry of External Affairs since 1935 and it was transferred to Home Ministry on August 1, 1965, with the recommendation of the Daying Ering Commission. In the same year on December, the administrative divisions were renamed as districts from Frontier divisions. Correspondingly, the Political Officers, Assistant Political Officers were redesignated as Deputy Commissioners and Additional Deputy Commissioners.

Birth of Arunachal Pradesh, 20 January 1972.

On 20 January 1972, the North East Frontier Agency was constituted as a Union Territory and designated Arunachal Pradesh under the North-Eastern Area (Reorganisation) Act of 1971. The

territory came to be headed by a Lieutenant Governor, with a Legislative Assembly and a Council of Ministers. On 20 April, 1974, the administration of Arunachal Pradesh was transferred its capital from Shillong to Itanagar in the valley of Pachin River in the southern Subansiri district within the territory itself.

Recently in June 1, 1980, the Arunachal Pradesh Administration reorganised its administrative districts, for administrative convenience and other considerations as territorial distribution of ethnic and linguistic groups etc. It is in fact promoting certain already existing sub-divisions to the status of full-fledged district under new nomenclature. This district reorganisation has been done in accordance with the provision of sub-section (3) of Section 1 of the Arunachal Pradesh (Reorganisation of Districts) Act, 1980, as notified under the government's order of 23 May, 1980.

At present Arunachal has nine districts as follows:

<u>Name of old Districts</u>	<u>Newly carved out districts</u>	<u>Headquarters</u>
1. Kameng District	1. West Kameng District.	Bomdila
	2. East Kameng District.	Seppa
2. Subansiri District	3. Upper Subansiri District.	Daporijo
	4. Lower Subansiri District.	Ziro

Name of old districts	Newly curved out districts	Headquarters
3. Siang District	5. West Siang District	Along
	6. East Siang District	Pasighat
4. Lohit District	7. Dibang Valley District	Anini
5. Tirap District	8. Lohit District	Tezu
	9. Tirap District	Khonsa

Thus we have seen that the Arunachal Pradesh has gone through a continuous administrative and political evolution within a century of its existence. To understand, the historical perspectives and the constitutional and administrative growth of the region, we have an ample number of accounts and reports of various kinds.

Therefore, this chapter shall try to review the existing bewildering mass of accounts, reports, books and travelogues made by various government agencies and administrators with their content, coverage and relative usefulness etc. for understanding the Historical Perspective and constitutional and administrative growth of Arunachal Pradesh.

1. ACHARYA, N.N.

Historical Documents of Assam and Neighbouring States:

Original records in English. Omsons Publication, New Delhi, 1983.

It is an indispensable volume for scholars who are interested in North Eastern Region as it gives the historical documents of the North Eastern Region. Chapter II of the volume deals with the documents related to Arunachal Pradesh.

Content

The main content of the book is (1) documents of agreement entered by Aka Rajas with Frans Jenkins and eight major tribes of Meyong (Minyong) Abors with H.S. Bivar at Lalli Mukh, (2) Walter Hamilton's reports on Dhaflas and Khamptis, and (3) Report of Deputy Commissioner of Lakhimpur on Khamptis and Singphos. The Deputy Commissioner's report of various tribes mentions the name of tribes, their relations, locations and population number etc.

2. Army Headquarters, Chief of the Staff, Intelligence Branch
(compiled)

North and North Eastern Frontier Tribes of India

Cultural Publishing House

18-D, Kamla Nagar, Delhi 7

Reprinted 1983

This volume is compiled by the British Military Intelligence information related to Nepal, Sikkim, Tibet, Bhutan, Assam, Jaintia Hills, Garo Hills, etc. in which some information about hill tribes of Arunachal Pradesh is also given in Chapters X and XI at page 160-193. It gives a brief description of the land and

people with their religious and social customs, historical and political relations with the neighbouring and the British Governments, Military history and important wars fought and British military operations, with route maps, against these war-like tribals and gallantry shown by these people. Thus this volume gives us a valuable account on the various aspects of life of the people of the region.

3. Army Headquarters, Intelligence Branch

Frontier and Overseas Expeditions from India Vol. VII

Mittal Publications, Delhi 35

First Indian reprinted

1983

This volume contains the official accounts of the Abor expedition of 1911-12 compiled by the Intelligence Branch of Army Headquarters of India. This book gives us more details than the accounts given in various other books. It deals in detail with the political causes of the expedition; geography, tribe, climate and season for operations; the phases of operations; results of expeditions etc. Moreover beautiful sketches on the topography and location of various tribes and their settlement areas are also given.

4. BHAT, SUDHAKAR

The Challenge of the North-East.

Popular Prakashan, Bombay

First Published 1975

In this book the author tries to treat in detail the various problems of North Eastern Region of India relating to language, religion, economic development, and administration etc. In Chapter VII, VIII & IX, the author refers to Arunachal Pradesh and a brief description is given of the administrative evolution and boundary dispute between Arunachal and Assam.

5. BARDOAH, N.K.

David Scott in North East India 1802-1831

(A Study in British Paternalism)

Munshiram Manoharlal, New Delhi

1970

David Scott was one of the most fascinating British Officers, who served in North Eastern Region in various capacities from 1802-1831 A.D. In the book, the author describes David Scott's philosophy of administration and establishment of British Paternalism in the region.

The Chapter IV, Section 2 of the book gives a vivid account of the establishment of Sadiya as administrative headquarters in North Eastern Frontier tract by David Scott in the year 1827. The tribes like Daffa, Khamptis and Mishmis are also vividly described in the book. These accounts are of unusual importance, as they relate to the period before the annexation of the region under British empire.

6. BARPUJARI, H. K.

Problem of the Hill tribes North East Frontier 1822-1842.

Vol. I.

Lawyer's Book Stall, Gauhati

First Edition March 1970.

The problem of the Hill tribes in the North East Frontier or Assam was indeed a challenge to the British government. A correct appraisal of the problem in its early phase is attempted in this volume. The problems were varied as these tribes differed widely in language, race, customs and usages and the policy varied from tribe to tribe and from time to time.

For a clear appreciation of these problems and policies of government of India, the introduction provides besides the historical background, geographical distribution of the tribes, their political and social institutions, religious beliefs, commercial pursuits and industrial activities.

This volume discusses the problems of tribes which came into contact with the British from 1822 to 1842 from the introduction of the non-regulated system to the annexation of the Bhutan.

7. BORDOLOI, M.N.

Land of the Hornbill and Wyna.

Research Department

NEFA Administration, Shillong 1964

It deals with the subject of the inter-relationship between the hill people of Arunachal (NEFA) and the plains people of North East Region in the past. The compilation is based on old history books of Assam and various records of the early British rules, chronicles etc. It is very informative on the subject with adequate and relevant illustrations.

8. BARPUJARI, H.K.

Problem of the Hill Tribes North-East Frontier 1843-1872

Vol. II

Basanti Prakash, Gauhati

June 1976

This volume gives various expeditions, treaties and explorations made on the hill tribes of North-Eastern Region by the Britishers to extend their suzerainty over areas occupied by the Frontier tribes, during 1843 to 1872 period. Therefore, it gives a valuable account of all these treaties and punitive expeditions and their results in brief. Also it analyses the British policy with the hill tribes during this period.

9. BOSE, M.L.

British Policy in the North-East Frontier Agency.

Concept Publishing Co.

New Delhi 1978

This book gives a detailed account of the social, economic and cultural life of the frontier region. The main part of

the study relates to the history and evolution of British relations with the tribes of this area in Pre-independent period. The legal validity of the demarcation of the Inner Lines is also considered in this volume and British Policy in this strategic area is analysed. It is a valuable contribution to studies in Indian history and Arunachal Pradesh in particular.

10. CHAKRAVARTY, L.N.

Glimpses of the early history of Arunachal
Research Department, Govt. of Arunachal Pradesh
Shillong 1979
Government of Arunachal Pradesh

This book is the first literature on the general history of Arunachal Pradesh though it begins with the inception of British rule in Assam after the treaty of Yandabo in 1826. It gives various government accounts as grand of Posa to various major tribes of Arunachal Pradesh, their amount, condition etc.

11. CHOWDHURY, J.N.

Arunachal Pradesh from Frontier Tracts to Union Territory
Cosmo Publications
New Delhi 1983

This book is a sequel to the author's earlier book entitled "Arunachal Panoram." While the previous book was a study in the cultural profiles of the major tribal groups of Arunachal

Pradesh, the present publication makes an attempt at tracing the historical situations of the tribes over the ages as far as they could be known from existing records and various reports and accounts. Thus this book gives us vivid historical account from early period to the present day of the Union Territory.

12. CHAKRAVARTY, B.C.

British Relations with the Hill Tribes of Assam since 1858.

Firmal K.L. Mukhapadya, Calcutta 1964.

This book is a collection of materials from published and unpublished sources from Foreign Proceedings of the Government of India preserved in the National Archives, New Delhi, and in the Assam Government records offices, Shillong. It briefly describes the British relations with the hill tribes of the region since 1858. Thus, it gives a valuable account on the major tribes of Arunachal Pradesh. Moreover it gives beautiful sketch-map of the Abor land and NEFA and also sketch-map showing tribes of the N.E. Frontier.

13. DEVI, LAKSHMI (Mrs)

Ahom Tribal Relations (A Political Study)

Assam Book Depot, Gauhati - 1

First Edition 1968

This book describes the relations of the Ahom Kings with the tribal people of Assam, both plains and hills. In Chapter IX, that is, relations of the Ahom Kings with the tribes of the

North-Eastern Frontier, the Ahom and tribal relation is given in detail. It treats the major tribes separately. Thus it is an important and comprehensive reference for reviewing the Ahom Tribal relations of Assam and Arunachal.

14. ELWIN, VERRIER

A Philosophy for NEFA

NEFA Administration, Shillong 1964

This book describes least known part of India, NEFA - now Arunachal Pradesh, a wild and mountainous tract of eighty three thousand five hundred seventy eight square kilometres with its 6,28,050 (1981) lakhs souls. Author has discussed the life and the problems of these people in detail under the heads- Fundamental Problems, Material Aims, Problem of Dress, Psychological Aims, Religious, Social and Cultural aims in NEFA - Arunachal Pradesh. It is a general work which deals with various aspects (including philosophical aspects) of the Union Territory.

15. ELWIN, VERRIER

Democracy in NEFA

Research Department

NEFA Administration 1965

In this book the author has compiled copious information on the indigenous forms of authority at the village level and above in the North East Frontier of India. This information

has great value as it provides the base on which the later development and expansion of local self-government has been built. It is a source book and a summary record of traditional political organisation of NEFA. Thus it gives us a detailed information regarding the village level, inter-village level, local self-government, practices, its functions, organisation, and jurisdictions etc. in the various tribal societies of Arunachal Pradesh.

16. ELWIN, VERRIER (Ed.)

India's North-East Frontier in the Nineteenth Century.

Oxford University Press 1959

Third impression 1972.

This book is a collection of various passages from the older literature, down to 1900 A.D. which has a bearing on the history, people and problems of what is now known as Arunachal Pradesh. The passages are originally found in the form of reports, letters, notes, monologues etc. written by administrators, soldiers, missionaries and explorers etc.

This book is an immensely important collection of the older literature of Arunachal Pradesh. The passages are systematically arranged, tribe wise. Thus this book is one of the most important books which gives us the old accounts written by foreign visitors to this least known part of the country. These passages are of unusual value for they give us a picture of the country as it was before it had suffered any external influence.

17. ELWIN, V., SHASTRI, B. and SIMON, I.M. (ed)

Important Directives on Administration of NEFA

Research Department

NEFA Administration, Shillong 1967

Important directives on administration of NEFA is a compendium of important directives issued from time to time by the NEFA (Arunachal Pradesh) Administration, for guidance of its officers in their duties and services to the people. Now these collections of important directives in a book form has proved as most important reference book. This collection is a comprehensive reference, specially for study of political organisations and administrative reorganisation in the Union Territory.

18. GAIT EDWARD

(Revised & enlarged by B.K. Barua and H.V.S. Murthy)

A History of Assam

Thacker Spink & Co. (1933) P. Ltd

Calcutta - 1, 1st Published 1905

Reprinted 1967

This deals with the history book from pre-historic times to the British rule. It gives some descriptive and historical accounts of major hill tribes of Arunachal Pradesh. In chapter 21, at page 371-377, it mainly deals with the Ahom relations with the major tribes of the then frontier tract.

19. HAMILTON, A.

In Abor Jungles of North-East India

Mittal Publications, Delhi 35

First Indian Edition 1983

This volume deals mainly with the Abor expeditions of 1911-12. But in this volume the former expeditions are also briefly described. Some brief accounts about the tribe and their traditional customs, marriage system, costume etc. are also given. The importance of this volume lies in the fact that it gives many photographs, of village headman, British officers, villages etc. and gives a beautiful topographical survey map of the region.

20. LUTHRA, P.N.

Constitutional and Administrative Growth of the North East Frontier Agency.

Director of Information and Public Relations, NEFA,

Shillong

April 1971

This booklet gives us in detail all the important constitutional and administrative growth accounts of the then NEFA, now Arunachal Pradesh. This is the first book of its kind which gives the important documents in published form, otherwise all this history has remained confined in administrative files and archives.

The appendices and maps furnish useful chronological and geographical background and bring together relevant documents.

21. MACKENZIE, ALEXANDER

The North-East Frontier of India

Mital Publications, Delhi 35

First Published 1884, entitled

"History of the Relations of the Government with the Hill Tribes of the North East Frontier of Bengal."

Reprinted 1979

This volume is an account by Alexander Mackenzie, in charge Political Correspondence of the Bengal Government in 1869. The author gives a detailed account of the political relations of the government of India with the hill tribes of North Eastern Frontier of India upto 1882. It was first published in 1884 entitled "History of the relations of the government with the Hills tribes of the North East Frontier of Bengal."

22. MICHELL, ST. JOHN, F. (Captain)

The North East Frontier of India (A topographical, Political and Military Report). Vivek Publishing House, Delhi - 7.

Reprinted 1973. First published in 1883 by the Superintendent of Govt. Printing Press, Calcutta, under the title

"Report (Topographical, Political and Military) on the North East Frontier of India".

This book contains a very valuable account of North-East Frontier of India, including Assam, Arunachal and Nagaland. It particularly gives Topographical, Political and Military accounts of the major tribes of the region. Major tribes of Arunachal included are Abors, Mishmis, Singpho and Khampti, Miri (Hill Miri) and the Dhaphla tribes. It gives a beautiful account of each tribe, their land, political organisation and military expeditions mainly punitive expeditions made by Britishers on them. Topography of each tribe is beautifully illustrated by sketch maps. Thus it is a valuable book containing old documents which can be undoubtedly made use of as reference in the study of historical perspective and political organisation of Arunachal.

23. MEHRA, P. (Ed.)

The North Eastern Frontier

A documentary study of the Internecine Rivalry between Indian, Tibet and China. Vol. I, 1906-1914.

Oxford University Press, Delhi, 1979.

The documents in this volume deal with a crucial period in the history of India's North East Frontier and the region immediately behind it. It gives official documents and major background discussion of the Simla Convention of 1914, that is the demarcation of McMahon Line between Tibet and India. Thus the volume gives all the important official documents of North East Frontier of India between the year 1906-1914.

24. VOL. II 1914-1954, 1980.

This volume covers the necessary official documents of the region for the period of 4 (four) decades i.e. 1914-1954, in which the rediscovery of McMahon Line in 1936, control in Tawang etc. are described.

Thus both these volumes give us the basic necessary government documents related to the North-East Frontier of India. Also various official communications of India with China and neighbouring countries are given in these volumes.

25. PEMBERTON, B.R. (Captain)

Report on the Eastern Frontiers of British India.

Dept. of Historical and Antiquarian Studies in Assam,
Gauhati.

First Impression 1835

Second Impression 1966

The report on the Eastern Frontier of British India is one of the pioneer works on the subject. The report covers a wide range of subjects, divided into sections, and sub-sections bearing on the physical, anthropological, economic and political conditions of the people inhabiting a large area including Assam, Manipur, Arraland, Kingdom of Pong, Ava and a few other places in Burma. The report incorporates valuable data on military affairs and commercial routes between Assam and Burma and on passes between Assam and Bhutan.

Reports on hill tribes of Arunachal Pradesh are mentioned in the Assam section.

26. RAO, VENKATA, V.

A Century of Tribal Politics in North East India 1874-1974

S. Chand & Co., New Delhi 55

First edition 1976

This book deals in detail with the political situations in North-East India from 1874 to 1974. The volume has been divided into three main parts. The first part deals with the political developments of the region, in which a detailed treatment is given under the sub-heads profile of North-East, Tribal-British relations, constitutional positions and tribal political systems. Second part deals with the District Council in which topics like formation of district councils, constitutional structure, membership, political executive, functions of district council and working of district councils are described in detail. The third part deals with the state politics of the region in which formation of states, elections to legislature, regional political parties and government formation are highlighted beautifully. It is a lucid and comprehensive political account of North East Region which could be used as main reference work in reviewing the political organisation of the region.

27. RAO, VENKATA, V. and HAZARIKA NIRU

Local Self-Government in India (with special reference to Assam and N.E. India)

S. Chand & Co. New Delhi

Reprint 1980

It is a text book for undergraduate student which deals both with theory and practice of local self-government in India. But some special mention has been made on the local self government, its growth and practice of the North Eastern Region which could be used as supplementary reference source with the earlier book e.g. A Century of Tribal Politics in North East India 1874-1974 by the same author.

28. REID, R. (Sir)

History of the Frontier Areas Bordering on Assam 1883-1941

Eastern Publishing House, Delhi

First Published 1941

Reprinted 1983

Sir Robert Reid, the Governor of Assam from 1937-1942 picked up where Alexander Mackenzie in his book ("History of the Relations of the Government with the Hill tribes of the North-East Frontier of Bengal") had left and studied impassionately on the martial and fiercely independent people bordering on China, Bhutan and Burma.

The book contains five parts - first dealing with the Lushai Hills (Mizoram); Second, Manipur State, third the Naga Hills (Nagaland); fourth the Sadiya Frontier Tract; and fifth the Balipara Frontier Tract.

The last two parts are important references for study of Historical perspective and political organisations of Arunachal Pradesh. In the Sadiya Frontier Tracts, the Abor expedition of 1893-94 and 1911-12, Mishmi expedition of 1899-1900 and administrative changes subsequent to these expeditions are described in detail. In the Balipara Frontier tract, Aka expedition of 1883-1884, Apa Tanang expedition 1897, the Miri Mission, the formation of the western sector of the North-East Frontier etc. are described in a lucid manner. This books gives us original accounts of all these expeditions and administrative reorganisations of the then Frontier Tract i.e. present Arunachal Pradesh.

29. SARIN, V.I.K.

India's North-East in Flames

Vikas Publishing House

New Delhi 64

1980

V.I. Sarin's study of India's turbulent North-east is the first attempt of its kind to pin-point, analyse and discuss the complex problems confronting Assam, Nagaland, Manipur, Tripura, Meghalaya, Arunachal Pradesh and Mizoram. It stresses

the geopolitical significance of this sensitive region and describes how various external (foreign) powers are trying to make it a cockpit of international intrigues. He tries to analyse the influx problems of Assam, insurgent movement in Nagaland and Mizoram and also studies the process of social change in Arunachal Pradesh and points out how tensions are developing in this Frontier area.

In Chapter II, under the head of "Arunachal's Silent Revolution", the author briefly describes the administrative evolution and social changes that have taken place in the Union Territory.

30. SELECTION PAPERS

Hill tracts between Assam and Burma

Vivek Publishing Co., Delhi - 7

First published 1909, reprinted 1978, 1981.

(First printed in 1873 at the Bengal Secretariat Press

under the title "Selection of papers regarding the hill

tracts between Assam and Burma and on the Upper Brahmaputra)

This volume is a collection of accounts made by various travellers, soldiers, explorers, administrators etc. on the little known vast North-eastern mountainous region of India, inhabited by a large number of tribes. It was only in the early 19th century that the British military expeditions, surveys and

investigations were carried out, after the first Anglo-Burmese war, to gain geographical knowledge about the area and to acquire some accurate information regarding the customs, traditions, life-style and the languages of these tribal people.

The documents collected here relate to Upper Brahmaputra in Assam, Abor, Mishmi, Singpho, Khampti, Naga, Miri (Hill Miri), Dafia and other tribes living on the hill tracts between Assam and Burma. Each document reveals a fascinating aspect of the region, since it is the product of the survey conducted by the different competent personalities giving authoritative and comprehensive information regarding the land and people, fauna and flora, religion and culture, politics and economics. Many important routes have also been described in detail.

Thus, this volume is undoubtedly a collection of valuable accounts which reveals and gives an original description of the region.

31. SHAKESPEARE, L.W. (Colonel)

History of Assam Rifles

Spectrum Publications

Pan Bazar, Gauhati

First Published in the U.K. 1929

Reprinted 1980

This volume gives a highly illuminating account related to the history of Assam Rifles, their system of defence as well

as the history of the different tribes like the Abors, the Akas, the Daflas, the Khasis, the Mikirs, the Mizos, the Manipuris, the Mishmis and the Nagas. It also describes the various centres and regions within the land which are important both from the strategic and historical point of view. It also describes the forests, means of communication and British dealing of the region. It incorporates an interesting discussion on the survey of the railways and the tea industry.

Mainly this book gives us details about the military expeditions made by Britishers or the major hill tribes of the region. In this volume the expeditions like Abor expedition of 1911-12, the Akas, the Daflas and the Mishmi are given in detail. Thus this book could be used as important reference work for reviewing the military accounts of Arunachal Pradesh as well as the North Eastern Region as a whole.

JOURNALS

1. BARUA, S.N.

Pathai and its administrative history. A. P. News Vol. 7, No. 1, p. 24-35 continued in Vol. 2 No. 2, p. 11-15, 1978.

2. DUTTA, P.C.

(a) Cultural and Historical Background of the Wanchos of Arunachal.

Resarun Vol. VI, No. 2, 1980, p. 1-13.

(b) Origin of the tribes of North-Eastern India.

The Hornbill 1969, p. 19-23.

3. GILIE, A.

An account of an expedition among the Abors in 1853.
J.R.A.S.B. Vol. IX (N.S. 1913) p. 107-122
(Describes Father Krick's visit to Membu (now Mebo in East Siang)).

4. GUHA, B.S.

The Indian Aborigines and their Administration.
J.A.S. Vol. XVII, (1911) p. 19-44.

5. KRICK, M.M. & GILIE, A

An account of an expedition among the Abors in 1853.
J.A.S.B. Vol. IX (1913) pp. 107-122.
(Father Krick's visit to Membu (Now Mebo in East Siang))

6. LINDSAY, A.B.

Expedition against the Abors, 1911-12.
Army Review, Vol. IV (1913) pp. 343-358.

7. MILLIS, J.P.

Tours in the Balipara Frontier Tract, Assam.
Man in India. Vol. XXVI (1947) pp. 9-35.

8. BAIKAR, Y.A.

Sources of the History of Arunachal Pradesh.
Resarun, Vol. V, No. 1, 1979, pp. 16-24.

9. RAVARTY, L.N.

(a) A short note on Posa.

The Horn-bill, 1969, pp. 26-31.

(b) Early History of Lohit District.

Resarun, Vol. IV, No. 1, Jan-March 1978, pp. 1-6.

(c) Historical evolution of Arunachal Pradesh

Resarun, Cum/Vol. 1976, pp. 43-51.

10. RIPLEY, DILLON

Exploring the Mishmi Hills.

Natural History, Vol. LVII (1984) p. 79.

11. SARKAR, N.

(a) Historical account of the introduction of Buddhism
among the Monpas and Sherdrokpers.

A.P. News, Vol. 4, No. 1, 1976, pp. 14-18.

(b) A Historical account of the Tawang Monastery.

Resarun, Vol. IV, No. 2, 1978, pp. 17-24.

These above listed articles found in various Journals deal mainly with the historical accounts of the region as a whole and some with one or the other major tribes of the region. Some accounts made by British Officers as Reports of Expedition on various tribes are very useful as they give us the first hand account of various exploration and punitive expeditions made by Britishers on various major tribes of the region. Thus these

accounts are the basic reference works through which we could know the land and its people, their socio-economic and political organisation of the hill tribes of Arunachal Pradesh, in the early years of the advent of the British to this hidden land.

12. BANERJI, R.D.

Neolithic implements from the Abor country.

Annual report of the Archaeological Survey of India
1924-25, p. 102.

13. BORPADIKAR, B.P.

Stone age and neolithic cultures in the Lohit District
of NEFA.

District Census Handbook, Lohit District
1971 p. 251.

14. COGGIN, BROWN, J.

Groomed stone Hammer from Assam and the distribution of
similar forms in Eastern India.

Journ., A.S.B. Vol. X, No. 4, 1914.

15. DAS, A.K.

Archaeological sites and historical monuments of Arunachal
Pradesh.

A. P. News, Vol. 2, No. 2, 1973.

16. DUARA, D.R.

Neolithic celts from Subansiri District, A. P. News,
August, 1979.

17. DUTTA, D.K.

A Pre-historic artifact at the Nao Dihing Tirap District.
Resarun, Vol. VI, No. 2, 1980, p. 33.

18. JASWAL, I.J.S.

Search of early man in North Eastern India.
Man in India, No. 5, 6 (1976), p. 276.

19. RAIKAR, Y.A.

(a) Bhismaknagar.

A.P. News, Vol. 1, No. 2, 1972, p. 31-36.

(b) The Mud-fort near Tezu could be Sisupalgarh.

A.P. News, Vol. 2, No. 1, 1973, p. 7-9.

(c) Temple and fort architecture in Arunachal Pradesh.

A.P. News, Vol. u, No. 6, 1978, p. 5-15.

(d) Pre-historic archaeology in N.E. India.

A.P. News, Vol. 9, No. 9, 1980, p. 23-30.

(e) Archaeology in Arunachal Pradesh: Problems and Scope.

Research in Arunachal 1979, p. 52-55.

(f) Archaeology in the Nao-Dihing valley.

NEFA Information, Vol. IV, No. 4, 1969, p. 16-19.

(g) British explorers of Bhismaknagar.

Resarun, Vol. III, No. 1, 1977, p. 2-4.

20. SARKAR, N.

(a) Neolithic celt in Arunachal Pradesh and Assam.

Pines, Vol. 1, Part 2, 1973 (Arunachal Number)

(b) Two stone engravings in Tirap District.

A. P. News, Vol. 5, No. 3, 1976, p. 14-17.

21. SIMON, I.M.

Reflection from the Past.

A.P. News, Vol. 5, No. 4, 1976, p. 19-23.

22. STEEL, B.H.

Celt found among the Namsang Nages.

Proceedings of A.S.B. (1870) p. 267.

23. TALUKDAR, G.C.

Bijaynagar

A.P. News Vol. 2, No. 3, 1973, p. 9-13.

These above mentioned articles found in various Journals, mostly in Arunachal Pradesh News and Resarun are mainly dealt with the historical monuments or historical artifacts found in Arunachal Pradesh and archaeological excavations carried out in the Region. Of course most of the articles are published by the officials of Research Department of the Government of Arunachal as they are engaged in research work of this nature. These research findings of Pre-historic artifacts and archaeological remains are very important for tracing of Pre-historic history of the region.

24. BOMJIN, L.

Traditional democratic System of Administration.

A. P. News, Vol. 6, No. 1, 1978, p. 7-11.

25. DUTTA, P.L.

(a) Local institutions of Tirap District.

A. P. News, Vol. 5, p. 27, 1976.

(b) Dormitory institution in Arunachal with special reference to the wanchos of Tirap District. North East Times, Vol. 2, No. 12, August 28, Continued Vol. 2, No. 3, Sept. 4, 1981, Gauhati.

These articles mostly deal with the traditional social and political organisation of various tribes of Arunachal Pradesh. Still today the Traditional or conventional institutional laws of major tribes of Arunachal Pradesh are valid. These articles have reviewed the importance and popularity of these traditional organisations among the people of the region.

CHAPTER - III

PHYSICAL SETTING

Arunachal Pradesh extends from $26^{\circ}40'$ to $29^{\circ}30'N$ Latitude and $91^{\circ}20'$ to $97^{\circ}21'E$ Longitude with a total land area of about 83,578 Sq. Km. It is basically a mountainous region with a wild and formidable terrain. According to some writers, it is one of the world's most difficult mountainous regions, extremely precipitous and highly jagged, rising in mighty convolutions of ridges and spurs from the foothills across the North bank of the Brahmaputra. Running along India's international frontier with Bhutan, China's Tibet and Burma to the West, North and South respectively, it occupies the southern slopes of the eastern most extremity of the mighty Himalayan range. It is a tangle of deep gorge like valleys, densely wooded mountain slopes dissected by numerous torrents and rivers, deep river valleys and a belt of tropical rain forest about 80 Km broad along the lower reaches particularly in its eastern most part.

Geographically, Arunachal falls under two different natural regions of India, from the eastern-most tip of Tirap District to the Tellu river viz. southern part of Lohit district falls under Purbanchal Hills, and the remaining western part from Tellu river in the Lohit district upto the Kameng district falls under Eastern Himalaya or Assam Himalaya region. The main hills of Assam Himalaya region from east to west are,

the Mishmi hills drained by Dibang river, to the west of it lies the Abor hills drained by mighty Siang and its tributaries, to the west of Abor hills, the Miri Hills and the Dafla (Nishi) Hills which are drained by Subansiri river and its tributaries, and the western most Kameng which is situated in the Great Himalaya Range and has very difficult terrain and snow bound ranges towards the north. Kameng district has a few famous and highly elevated passes such as Bum-La and the Tse-La. Tse-La is situated at an elevation of 4740 metres from sea level.

Geology of Arunachal Pradesh is not much known in details. Geological exploration of the territory is presently going on under the Geological Survey of India, but their geological findings are still awaited. Of course, it is not correct to say that the scientific interest in the geological formation of the region started very late, rather it coincides with the advent of the Britishers in the territory. Some of the British officers while on their punitive expeditions to various hills tribes of Arunachal Pradesh, made some Geological observations, which are found in various old Journals, such as Asiatic Society of Bengal, Asiatic Journal and monthly register, Asiatic Researches, Geographical Journal, Record of Geological Survey of India etc. Wilcox made some observations in the Lohit area in 1825, Rowlatte and Godwin Austen in 1875; La Touche in 1883; MacLaren in 1904, Coggin Brown in 1911, and much later in

the Spring of 1963. Augusto Gansser, a Swiss geologist divided the Assam Himalaya or Eastern Himalaya into four structural units (including Sikkim and Bhutan).

Presently the Geological Survey of India is doing its best to explore the geological structure and possible mineral resources of the region. Some of their findings are already published, but larger part of their findings are still lie in the form of unpublished progress reports. Some of the major published works which contain an account of geology of Arunachal Pradesh are miscellaneous publication No. 43, 30; 46; 41; Record of G.S.I., Journal of Indian Minerals, Himalayan Geology etc. The contents of these various publications are discussed in detail in this chapter in the geology section.

Other elements of physical setting such as Topography, Drainage, climate and soil of the region are also in the process of exploration. Some earlier accounts made by Britishers in the form of reports, letters and monologues are found in old journals, viz. Geographical magazine, Asiatic Society of Bengal, Asiatic Researches, Geographical journals etc. Also some valuable accounts are found in old published books which have now been reprinted by Government agencies and various publication companies are available. Some of them are - Topography of Assam by John M'Cosh; Selection papers regarding the hill tracts between Assam and Burma, published by Government of India; A descriptive accounts of Assam, by William Robinson etc. These contain valuable and useful accounts on the physical setting of the region.

Over and above, there are a few published books which cover the geology and physical setting in a very general way. They have therefore been enlisted as general reference work for the chapter on physical setting; they are:

1. CENSUS OF INDIA

General Report, Series 24

Arunachal Pradesh

Manager of Publication

Govt. of India, 1971

This volume covers all aspects of census reports starting from Historical background of the region to socio-economic tables. The introductory part treats in brief about the historical background, physiography, general geology, minerology, seismicity, vegetation and flora, fauna, climatology of the region. So we could use it for writing the physical setting of Arunachal Pradesh, particularly taking the data on physiography, general geology, climatology etc.

2. CHOWDHURY, J.N.

Arunachal Pradesh

From Frontier tracts to Union Territory

Cosmo Publications, New Delhi - 2

1983

This monograph deals mainly with the political and constitutional development of Arunachal Pradesh but also gives a brief account of the geography and geology of the territory.

The first chapter describes the international frontiers, topography, river systems and relative positions of tribes. In the second chapter the author treats in detail about the geology, mineral resources, climate, flora and fauna of the region.

3. RAZA, M. AND AHMED, A.

General Geography of India

N.C.E.R.T.

General geography of India is a geography textbook of Central Board of secondary education for intermediate students. Being a geography textbook it contains chapters on physical and cultural elements of India as a whole. In the physical section it gives a brief account of the drainage and rainfall, temperature, soil & natural vegetation of India. This has been done for Arunachal Pradesh also which is shown to have mountainous and red soils. The natural vegetation is also classified as (i) Alpine, (ii) Moist tropical evergreen, semi-evergreen, and (iii) wet temperate types.

The cultural section, includes description on the tribal population of India, their distribution, language group etc. in which illustrate maps for the same has been furnished.

Although the contents of the text are small in quantity, it has a useful account on the physical and cultural geography of Arunachal Pradesh.

4. SINGH, R.L. (Editor)

India, A Regional Geography

National Geographical Society of India

Varanasi - 5

Silver Jubilee Publication

This volume is the first work which attempts to fill in the long gap in the Indian Regional Geography, containing first hand and authentic information. It deals in detail with the 4 Macro and 28 Micro order regions of India.

Chapters 11 and 12 viz. Eastern Himalaya and Purbanchal, respectively deal in detail with Arunachal Pradesh. Historical background, physical setting, climate, soil, natural vegetation, physical resource base, cultural setting and delimitation of regions are treated in detail. The Assam Himalayas or Arunachal has been divided into four second order regions as - (i) Dafila Region, (ii) Miri Region, (iii) Abor Region, and (iv) Mishmi Region.

The Purbanchal has been divided into two first order regions, five second order regions and 13 third order regions of which one second order region namely Tirap-Lohit Region falls under Arunachal Pradesh. Thus in total Arunachal Pradesh has five second order regions.

This volume forms an important source for the study of physical setting of Arunachal Pradesh.

5. SINGH GOPAL

A Geography of India

Atma Ram and Sons, Delhi - 6

Fourth Edition 1983

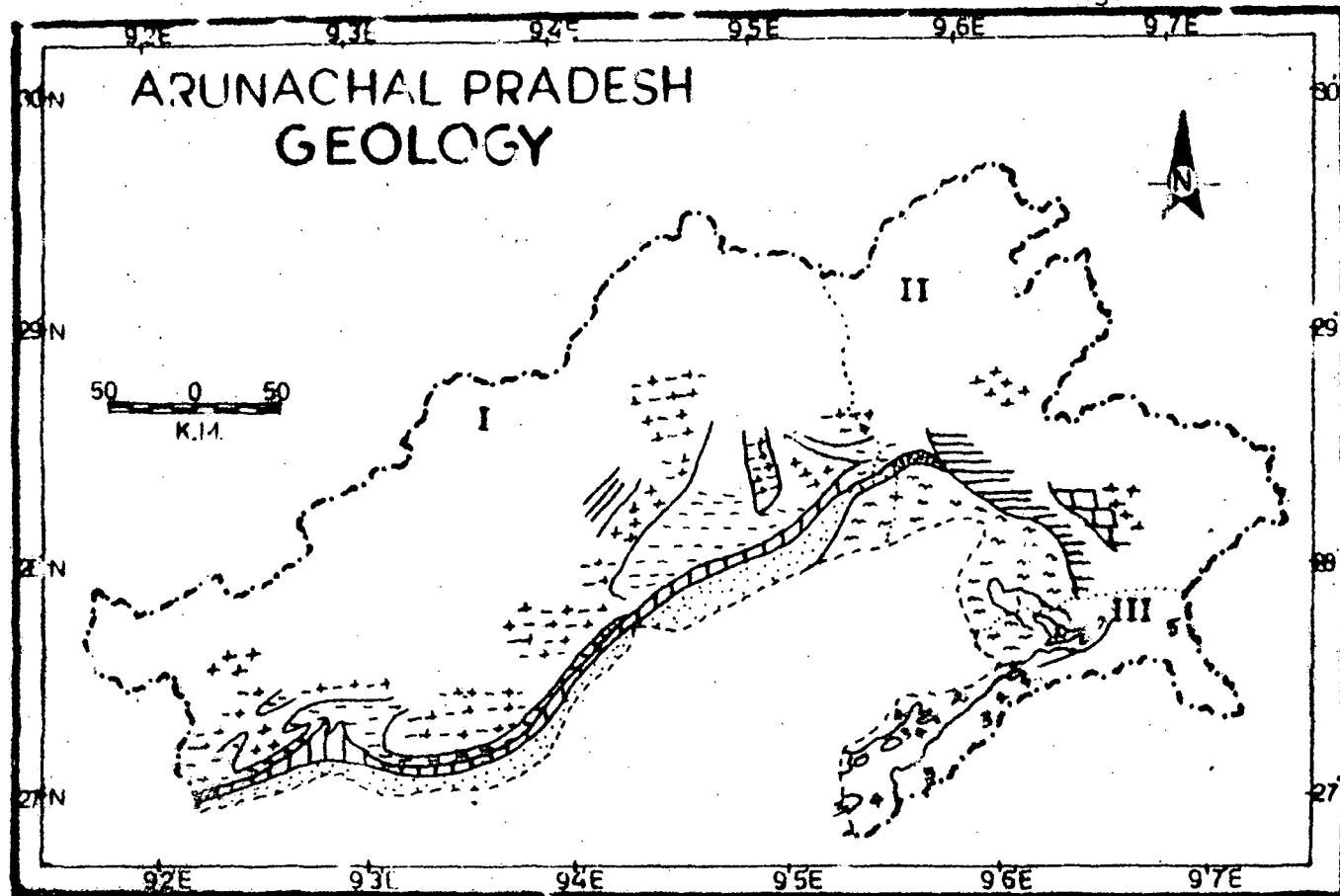
This book is primarily a textbook for undergraduate and graduate level students of Indian universities. It has two parts, the first part deals with the physical environment, economic geography and population. The second part is devoted to a description of the geographical regions of India.

Chapter 32 in the second part gives a brief account of the Assam Himalayas, and describes the second order region, important passes and rivers of Arunachal Pradesh. It gives us some basic idea on the topography, drainage and natural region of the territory, but the material in Arunachal Pradesh is rather meagre.

GEOLOGY

The Arunachal Himalayas is least studied and least discovered part of the Himalayas, geographically and geologically. Thus the facts regarding the geology of the region is not much revealed and known. Presently the Geological Survey of India is doing intensive and extensive investigations on the geology and mineral occurrences of the territory. From their findings a general geological framework of the territory can be outlined as below:

Fig. 2



I. Kameng Subansiri & Siang.

- | | | |
|------------------------------------|-------|---|
| Mid Miocene | | SIWALUK BELT |
| Pleistocene | | (sandstone & clays) |
| Permian | | GONDAWANA |
| | | (hard sandstone & slaty shales) |
| Pre-Permian | --- | BICHOM GROUP (micro quartzites carbonates & bor volcanic) |
| Early Palaeozoic | +++ | BOMDILA GROUP (gneisses & schists) |
| Pre cambrian | | |
| Pre cambrian with younger granites | +++ | Sheela Group (micro quartzites, granites & schists) |

II LOHIT.

- | | | |
|---------------------------------|-------|---|
| Tertiaries | | |
| Lower Paleozoic | | Crystalline limestones & low grade schists. |
| | --- | Schistose Meta sediments |
| Pre Cambrian | | Parametamorphites |
| Lower Paleozoic to Pre-Cambrian | +++ | Granodiorite-diorite complex. |

III TIRAP.

- | | | |
|---------------------------------|-------|-------------------|
| | | Alluvium |
| TERTIARY (Eocene - Pleistocene) | 1 | DIHING SERIES |
| | 2 | TIPAM SERIES |
| | 3 | BARAIL SERIES |
| | 4 | DISANG SERIES |
| | 5 | Parametamorphites |

Arunachal Pradesh geology is characterised by the presence of sedimentary and metamorphic rocks of various epochs of the earth's evolution starting from the most ancient times upto the recent. Some high grade and metamorphic rocks of the pre-cambrian age are found in Northern parts of Bomdila generally known as Bomdila and Shela group which constitutes Gneisses, schists granites etc. The rocks found in Lamdak and Daporijo areas of Subansiri, the Mechuka area of West Siang and the Granodiorite-diorite complex of Dibang and Lohit district belongs to the pre-cambrian.

A Gondwana belt consisting of Hard sandstone and slaty shales of peruvian age extends from Kameng to the West of Siang river in the Siang district. To the North of this elongated Gondwana belt, specially in west and East Siang pre-cambrian rocks are found near Yingkiang and Along, which is broadly known as Dichom group (constitutes the Miri quartzites, Carbonates and Abor volcanics). South of the elongated Gondwana belt lies the Siwalik belt mostly constitutes the sandstone and clays which belongs to the mid-miocene to pleistocene period. In the Dibang, Lohit and Tirap district immediately below the foothills of Greater Himalaya lies the North eastern extend of Assam plains which constitutes alluvium of recent origin. Tirap district as a whole is mainly constituted of sedimentary rocks of the tertiary period.

Detail geological investigation of Arunachal Pradesh Himalayas are carried out by the Geological Survey of India. Thus some of the important and valuable papers on geology are discussed in this section. They are:

1. ACHARYYA, S.K. AND SASTRY, M.V.A.

Stratigraphy of the Eastern Himalaya.

G.S.I. Misc. Pub. No. 41. Part - 1, 1979.

In this paper the authors provide an account of the stratigraphy and lithology of the Eastern Himalaya, which includes Darjeeling, Sikkim, Bhutan and Arunachal Pradesh. Thus it gives us a detailed stratigraphic account of Arunachal Pradesh which has an independent stratigraphic development from the foreland Ganga-Brahmaputra basin and the main Himalayan Section.

2. BAKLIWAL, P.C. AND DAS, A.K.

Geology of Parts of Kameng District, Arunachal Pradesh.

Progress Report G.S.I., Shillong 1970-71.

3. BANERJEE, S.

A note on geology of Arunachal Pradesh.

Tr. Mines Mrt. Fuels, Vol. 21, No. 8.

4. BANERJEE, T.

Geological observations in a portion of the outer Himalayas in the Sela-Sub Agency, NEFA.

Unpublished Progress Report G.S.I., Shillong 1954.

5. CHALAPATHI RAO, R. V.

Some major geotechnical aspects of Environmental development of North-Eastern Himalayas of Arunachal Pradesh - An Appraisal.

Misc. Publication No. 43

D.G., G.S.I. 1983.

This paper particularly deals with the geotechnical aspects as Geomorphology, geology and seismicity of Arunachal Pradesh and its impact on socio-economic development in the Region. Arunachal Pradesh has estimated hydro-potential of about 8.8m Kw as against 12m Kw for entire N.E. Region and about one-fifth ($1/5$) of the total hydropotential (41m Kw) of the country as a whole. But this could not be fully utilized due to its rugged topography and terrain as about 90% of the total land area is mountainous which has steep gorges, soft incompetent rock masses which is not conducive for construction of big dams.

6. DHOUNDIAL, D.P., KAKOTI, B. SANGMA, L. DANGE, M.N. DAS, A.K. MANNA, S.S. and SANTRA, D.K.

An outline of tectonic patterns in parts of Arunachal Pradesh.

Unpublished Progress Report, G.S.I., Shillong 1971-72.

7. DIRECTOR GENERAL, GEOLOGICAL SURVEY OF INDIA

MISCELLANEOUS PUBLICATION NO. 43

Proceedings of the Symposium on Geology and Mineral resources of North Eastern Himalayas.

(A collection of papers presented at the Symposium held during 28th to 30th May, 1976, at Shillong)

This miscellaneous publication of G.S.I. has papers mainly dealing with the North Eastern Region in general and Arunachal Pradesh in particular. It has been divided into four sections which almost deals with all aspects of geology, stratigraphy, tectonic, mineral geology etc. of the region. The first section deals in detail with the Subansiri expedition. This is the second multi-disciplinary scientific expedition carried out during 1974-75 on the unknown mountainous terrain of Subansiri and Kamala valley in Subansiri district, Arunachal Pradesh, the first being Daphabum expedition during 1969-1970 in the Lohit district. Like Daphabum scientific expedition, in this survey expedition, scientist from the Anthropological Survey of India, Botanical Survey, Geological Survey, Zoological Survey and Survey of India took part. In first section of the volume, the objective, nature and procedure of the survey and the findings or reports of various members of the expedition are described in detail. The main reports are on Geology of Subansiri and Kamla valleys, Ecological adjustment and identity of formation among the people of Arunachal Pradesh Border, reports of

the fauna collected during Subansiri expedition 1974-75, Arunachal Pradesh and observations of the Botanist member of the Subansiri expeditions 1974-75. The Section II of the publication deals with the Engineering Geology of the region. In which the geotechnical aspects and its impacts on the development, as environmental, water resources etc. are treated in details. The main papers in this section are as follows:

- i) Some major geotechnical aspects of environmental development of N.E. Himalayas of Arunachal Pradesh - An appraisal.
- ii) On some geotechnical aspects of Subansiri river dam project, Arunachal Pradesh.
- iii) Engineering geology of parts of Brahmaputra basin.
- iv) Water potential of N.E. India - constraints of development and remedies.
- v) Landslides in Arunachal Pradesh.
- vi) Geo-technical aspects of Dihang dam project, Siang District, Arunachal Pradesh, and
- vii) Programme for geo-seismological studies in North Eastern Region with special reference to the proposed dam sites near Pasighat and Dolongmukh, Arunachal Pradesh.

Thus this section mainly deals with the geological formation, lithostratigraphy and tectonic of the N. E. Region as a whole with special reference to some proposed dam sites in Arunachal Pradesh.

The Section III has two papers on Geophysics. One i.e. application of Geophysics in Geological problems in the N. E. of India, is mainly concerned with the techniques used in geological investigations in N.E. Region of India.

The Second Paper viz. Geological significance of Seismic refraction survey at a bridge site across the Lohit River, Arunachal Pradesh, gives details about the seismic refraction survey carried out at the Bridge site of Lohit River. It gives details of the underlaying layers, which contain Schistose type of rocks.

The Section IV Quarternary Geology and stratigraphic palaeontology.

This section has two papers viz. (i) Geomorphology and quarternary geology of Dikrang basin, Subansiri District, Arunachal Pradesh with special reference to the Hydrogeological characteristics of Alluvial sediments, and (ii) on the stratigraphic correlation upper tertiary of Arunachal Pradesh, with the Tipam formation of Assam has been reviewed. Formerly, due to their lithological resemblance and on the occurrences of

certain heavy minerals, the upper tertiary of Arunachal was correlated with the Tipam of Assam, but recent finding of a molar of *Bos* Sp. in this rock of Ramghat area of Subansiri district this problem of stratigraphic correlation of the Upper tertiary of Assam and Arunachal Pradesh has been reviewed by the author.

The last paper of this section viz. prospects of palaeontological studies in Siwaliks - Arunachal Pradesh, gives us a general idea of future prospects of the discipline in Arunachal Pradesh. Recent palaeontological studies in the region have found a rich fossil evidence which could be made use in establishing stratigraphic correlation of Arunachal Himalayas with the Western Himalayas.

Section V - Economic geology and Biochemistry. This section has five papers in total, all of them dealt with the economic geology and mineral resources of Arunachal Pradesh, they are as:

- (1) A new method for determination of concentration of nickel ores and rocks and its application in N.E. Himalayas.
- (ii) Geochemical prospecting for base metals in the Ranga valley, Subansiri district, Arunachal Pradesh.

- (iii) A note on the base metal investigation in Ranga Valley, Subansiri District, Arunachal Pradesh.
- (iv) Coal measures and resources in Arunachal Pradesh a review, and
- (v) A note on the nickel and cobalt bearing magnetite and chromite around Pukhpur, Tuensang District.

This miscellaneous publication contains the paper dealing mainly with the various geological explorations and observations of the various scientific surveys on Arunachal Pradesh. Therefore, we can use this publication intensively in understanding or writing of physical setting of Arunachal Pradesh, particularly the geological section.

8. DIRECTOR NEFA CIRCLE G.S.I.

Mineral Resources of North East Frontier Agency

Journal, Indian Minerals, Vol. 25, No.2, p. 101-119

April-June 1971.

This paper gives us details about the mineral resources of Arunachal Pradesh, with a brief account on the Geological set up of the region as a whole. It describes the various rocks and its mineral associations in the territory.

9. DUARA, B.K.

Geological mapping of parts of the Darrang District,
Assam and Kameng District, NEFA.

Progress Report, G.S. I. Shillong, 1965-66.

10. DUTTA, A.; GILL, G.K.S. & SRINIVAS, J.

Geology of Subansiri and Kamla Valley.

Miscellaneous Publication No. 43

Proceedings of the Symposium of Geology and Mineral
Resources of North Eastern Himalayas.

D.G., G.S.I. 1983.

This paper gives us the geological results of the joint scientific survey's expedition to Subansiri Valley during 1974-75, conducted by Geological Survey of India jointly with Botanical Survey of India, Zoological Survey of India, Anthropological Survey of India and Survey of India. The region was unknown and unmapped previous to this survey expedition. The survey expedition throws light on geology, zoology, anthropology, botany and mapping of the area.

This survey expedition tries to find out the lithostratigraphy and tectonics of both the valleys e.g. Subansiri and Kamla. It classifies the various geological formations with their rock contents and distribution in the region. Moreover, they discovered as many as 30 hot springs, and mineral occurrences of graphite, sulphide, marble etc. in the region. Therefore,

this paper could be used as an important reference for the study of geology of Subansiri and Kamla valley.

11. DUTTA, A.

Geological mapping in Kameng district and investigation of Rupa dolomite.

Progress Report of G.S.I. Shillong 1972-73.

12. GODWIN AUSTIN, H. H.

A note on geology of parts of Daffla Hills, Assam.

Journal Asiatic Society of Bengal Vol. 1 (1875).

13. GEOLOGICAL SURVEY OF INDIA

Miscellaneous Publication No. 30

Geology and Mineral Resources of the states of India

Part IV, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura.

December 1974.

This booklet is compiled and published by the Geological Survey of India, which comprehensively deals with the geology and mineral resources of Arunachal Pradesh. It has four chapters. The first chapter deals with the Introduction, the second physiography, the third geology and the last i.e. fourth chapter deals with the mineral resources of Arunachal Pradesh. In the geological section, stratigraphy and structure & geological history of

Arunachal Pradesh are treated. For this purpose the entire region has been divided into two different parts viz. (i) Kameng, Subansiri and Siang Himalaya, and (ii) Lohit Himalaya, and their lithostratigraphic succession and tectonic units are described in detail. Also the distribution of various rocks in the region is given in detail.

14. JAIN, A.K.; THAKUR, V.C. AND TANDON, A.K.

Stratigraphy and Structure of the Siang District,
Arunachal Pradesh Himalaya

Journal Himalayan Geology No. 4, 1974.

15. KAKOTI, B. AND SANTRA, D.K.

Geological Traverse from Tamen to Tali in Arunachal
Pradesh.

Progress Report, G.S.I., Shillong 1972-73.

16. KARUNAKARAN, C. AND RANGA RAO, A.

Status of Exploration for Hydro Carbons in the Himalayan
Region - Contributions to stratigraphy and structure.

G.S.I. Misc. Pub. No. 41, Part V, 1979.

A stratigraphical and structural survey is being conducted by ONGC specially in the tertiary Himalayan Foothills, in order to evaluate the hydrocarbon potential of these sedimentary formations. Therefore, this paper gives a beautiful and dependable

stratigraphic and structural account of the foothills of Arunachal Pradesh, which could supplement as a source material in understanding the geology of Arunachal Pradesh.

17. LA TOUCHE, T.H.D.

Note on the Geology of Aka hills.

Record G.S.I. Vol. 28, Part - 2, 1885.

18. LIMAYE, M.D. & MULLICK, B.B.

Systematic cum traverse mapping of the area in the neighbourhood of Miao, Tirap District and the continuous area of the Lohit District of NEFA.

Progress Report, G.S.I. 1965-66.

19. MACLAREN, U.C.

Geology of Upper Assam.

Record G.S.I. Vol. 31, Part - 4, 1904.

20. MANNA, S.S.

Geological mapping in the Tellu valley in parts of Lohit District, Arunachal Pradesh.

Progress Report G.S.I. Shillong 1972-73.

21. MULLICK, B.B. & BASUHOWDHURY, S.

Geology of Parts of Siang District, NEFA.

Progress Report G.S.I., Shillong 1966-67.

22. NANDY, D.R. AND DEBADHIKARI, B.

Geological mapping in the Tellu valley of Lohit District.

Progress Report, G.S.I. Shillong 1965-66.

23. NANDY, D.R.

The Daphabum scientific Survey expedition, NEFA Journal, Indian Minerals, Vol. 24, No. 2, April-June 1970, p. 144-147.

This is an expedition account conducted during November 1969 - January 1970 to little known mountainous terrain of Daphabum range in Lohit district of Arunachal Pradesh called the Daphabum scientific survey expedition.

In this survey expedition thirteen scientists from five different disciplines took part viz. geological, botanical, zoological, anthropological and archaeological. This expedition was organised by geological survey of India. The author was the leader of the party.

24. NAUTTIYAL, S.P.

A preliminary notes on the Geology of Bhutan, Himalaya. Report of the 22nd Session of India Geological Council, 1964.

25. PRASAD, K.C.; KAKOTI, R. AND BARMAN, S.K.

Geology and Geomorphology of a part of the Subansiri River valley.

G.S.I. Misc. Publication No. 46, 1981, p. 1-10.

The authors have studied the Subansiri River from its origin to its confluence with Brahmaputra. They have tried to analyse the geomorphological implication of the shifting of river course about 4 Km westward between 1918-19 and 1971. It gives a beautiful and upto date account of the physiography and geology of the region in general and the Subansiri river course in particular.

26. SANTRA, D.K.

Geology of parts of the Siang and Siyom valleys, Siang District, Arunachal Pradesh.

G.S.I. Misc. Pub. No. 41, Part 1, 1979, p. 179-190.

This paper mainly deals with the geology of the Siang and Siyom valleys with particular reference to the stratigraphy, structure and tectonics of the region. Earlier, Coggin Brown (1912) took a rapid reconnaissance traverse in Siang valley and described the geology of the area in brief, Laskar (1958-59) surveyed a portion of the Siang valley near Rengging in search of coal and limestone deposits, and Mullick and Basu Chowdhury (1966-67, 1968) carried out traverse mapping in parts of Siang district in degree sheets and brought out the geology of the

area in greater detail, but lithostratigraphic and structural patterns remained to be worked out, with which this paper is mainly concerned. It gives a detailed account of the geological formations from Pasighat to Along with their successive lithology, rock and mineral formations. The author also furnishes two plates which shows clear occurrences of rocks of the region. It is a valuable reference work for understanding of the geology of Siang and Siyom valleys.

27. TRIPATHI, C. & SINGH, S.

On the Strain estimates of Eocenes of Eastern Himalaya, Arunachal Pradesh.

Record G.S.I. Vol. 112, Part 2, p. 47-50
1983.

In this paper the strain value of Yingkliong Formation (East Siang) deduced from the deformed nummulites have been discussed. The study revealed that the Yingkliong formation has been subjected to Polyphase deformation and has suffered as much as 75% of the elongation during post-Eocene tectonic movements. Thus, it discusses in brief about the geology and tectonics, formation and thrusts of the Yingkliong formation. It also discusses in brief the other two formations of the Region as Aber volcanic and Miri formation with the structure just to compare each other.

28. TRIPATHI, C. & KAURA, S.C.

Note on the report of diamictite and Plant remains from Salari area, Kameng District, Arunachal Pradesh. Journal, Indian Minerals, Vol. 34, No.3, July-Sept., 1980, p.41.

In this paper the author gives the Salari formation beneath the Bomdila group. In Salari formation some diamictite and plant remains are found in the form of fossils. Thus, from their remains the geologist tried to draw the tectonics and the stratigraphy of the Kameng district. Also the general tectonic sequence of the area is also given in this paper.

These are the various valuable findings and publications of Geological Survey of India. It has not been possible to go through some of the publications listed above. It is partially due to non-availability of old journals and partially due to restrictions imposed on their use. Many of the progress reports of G.S.I. are still unpublished.

PHYSIOGRAPHY, DRAINAGE, CLIMATE AND SOIL

Physiography

Physiography of Arunachal Pradesh can be divided into three broad divisions from South to North according to altitudinal

1. The Siwalik or Sub-Himalayan tract,
2. The Lesser Himalayan ranges, and
3. The Great Himalayan ranges.

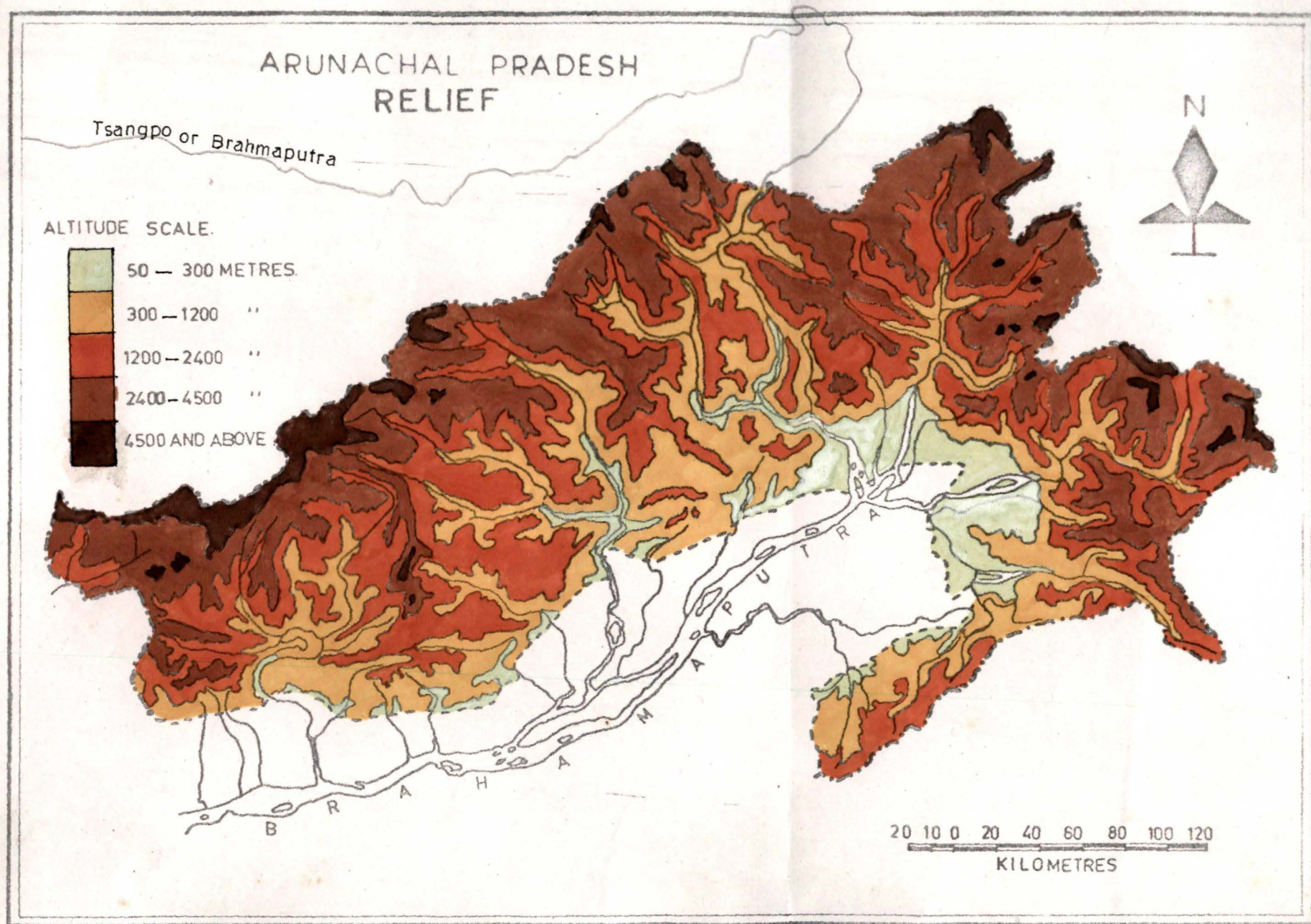


Fig. 3

1. The Siwalik or Sub-Himalayan tract - This tract lies between the Assam plains and the lesser Himalayan ranges extending from Kameng to the western part of Siang district from where it gradually loses its identity in the plains east of the Siang river. The sub-himalayan tract or Siwalik ranges are very prominent in Kameng and Subansiri district extending for a width of about 20 Km and the ranges trending in E - W to ENE - WSW direction and ranges rising to altitude to about 1500 - 2000 metres.

In the Lohit district (present Dibang valley and Lohit district) we do not find the Siwalik or Sub-Himalayan ranges. Because, the eastern continuity of the Assam plains extends upto the foothills of lesser Himalayan ranges, the areas South of Dibang valley, western part of Lohit and North-western part of Tirap district is an alluvial plains where altitude varies from 50 to 300 metres, which is the North-eastern continuity of Assam plain.

2. The Lesser Himalayan ranges - This ranges occurred centrally in the territory between the Siwalik or Sub-Himalayan on the South and the great Himalayan ranges towards North. The elevation or altitude of these ranges varies from 2000 to 4000 metres. It contains some fertile river valleys and plateaus as Kamala valley, Aptatani plateau etc. Towards the east, the ridges more often turn to North-South and ultimately around the Sino-Indian-Burma plateau the general change of direction in the axis of the mountain occurred. The lesser Himalayan ranges almost occupies the central and major parts of the territory.

3. The Great Himalayan ranges - the Great Himalayan ranges in the North of the territory consists of snow-capped ranges (above 7,000 metres) and high valleys, running down from the great Northern glaciers. These ranges separate the complicated structure of the Himalaya from the flat and undulating table land of Tibet. The great Himalayan possesses some high peaks like the Garichen (6538m) and Kanto (7089 m) and some famous passes along the Sino-Tibetan border, namely Thang-La, Tulung-La, Dom-La, Andra-La and Kaya-La etc.

Drainage

Arunachal Pradesh is dissected by numerous rivers and their tributaries. Each district region is drained by a principal river, from which the district name has been named. As the Kameng river drained the east and west Kameng district with its main tributaries like Tenga, Bichom etc. The Tawang river drained the Tawang valley across the Sela pass and flow into Bhutan. The lower and upper Subansiri districts are mainly drained by the Subansiri river and its tributaries as Kamla, Dikrang, Ranga etc. The west and East Siang is drained by the mighty Siang river and its principal tributaries as Siyom, Yame, Simang, Sirik etc. The Lohit and Dibang valley districts respectively. The North-Eastern Part of the Tirap is drained by Tirap river, Namchik and Namphuk (Buri dihing) and the South western part by the Dirak, Namsang and Tisa rivers.

Climate

Arunachal Pradesh experiences a variety of climatic condition. It is accentuated by the variable nature of topography terrain and relief. Climatic condition thus, tends to change within short distance. In general there is a contrast in temperature and rainfall between the valleys, foothills and mountain tops. On an average the territory receives about 500 cm annual rainfall. The amount of rainfall decreases from east to west. Pre-monsoon showers begin towards the end of March, monsoon proper lasting from May to the end of September and post monsoon showers lasted upto the month of November.

Temperature too varies from season to season and place to place, summer is hot in low laying areas and warm in high altitude areas. Snowfall is experienced during winter in most of the regions at the height of 1,500 metres and above. Prasad thus, taking the temperature as primary criteria divided the region into three major climatic zones: (i) the hot and humid sub-tropical area of the foothills, (ii) the cooler or micro-thermal region of the lesser Himalaya, and (iii) the Himadri type (Alpine) in the Great Himalaya.¹

Soil

In absence of regular survey and lack of data on soil information about soil is not much known. In the lower reaches

1. Prasad, J. 1971. Eastern Himalaya, India: A Regional Geography, (Ed) R. L. Singh, NCSI Varanasi, p. 484.

of the valley the soils are sandy and progressively clay. But soils in the foothills are diluvial in nature being either loams or sandy loams mixed with pebbles brought down by rain waters from higher altitudes. Soils in the valleys are clayey alluvium and rich in organic content with higher moisture retaining capacity.

The foregoing discussions, very briefly outline the physiography, drainage, climate and soil of Arunachal Pradesh. There are a few books and articles which discuss these topics in more details. They are thus discussed below with their contents and coverage.

1. BAILEY, F.M. (Capt)

Journey through a portion of South-Eastern Tibet and the Mishmi Hills.

Geographical Journal, Vol. XXXIX (1912), p. 334-347.

This is a travelogue of Captain F.M. Bailey, who made a journey of about 1715 miles from Wan-Hsien (Tibet) to Sadiya (Lohit District, Arunachal Pradesh) in the year 1911. This travelogue gives us a comprehensive geographical account of the path he followed and the area and rivers he came across. It gives us altitude of various places the author visited. Moreover it describes the nature and course of rivers as Irrawadi, Tarawan, Lohit and their various major and minor tributaries.

Thus this travelogue gives a beautiful geographical description of the mountainous region lying between Tibet and India, specially the Mishmi Region of present Arunachal Pradesh.

2. BENTINCK, A.

The Abor expeditions: Geographical Results.

The Geographical Journal Vol. XLI, Feb. 1913, p.97-114.

This paper was written during the punitive expedition popularly known as Abor expedition 1911-12 for murder of Dr. Williamson at Komsing by Abors (now Adi). It gives us the geographical results of the expedition, in which they took a survey party who surveyed the area. It gives us a beautiful geographical account of the path they follow, physiography of the region and the course of Dihong (Siang) river and its major tributaries as Yamna, Siyom, Yigrung etc. with their general direction, width, volume of water, velocity etc.

It gives a map of the area surveyed (at page 200) in which the paths followed are given with location of the villages they visited. This geographical account could be used for writing the physiography of Arunachal Pradesh in general and Siang district in particular.

3. BURMAN SAVISTRI, G.

NEFA - The Land and its People.

Shillong 1963.

4. CROWE, H.M.

Mr. Crowe's account of a journey to Apa Tani country.
Shillong 1890.

5. DEY, A.K.

Minutang Landslide, Mishmi Hills, NEFA, Assam.
Records G.S.I. Vol. 87, Pt. 3. p. 485-494, 1962.

In this article, the author describes about the devastating landslide which occurred in the Mishmi Hills in September 1948, which wiped out the entire prosperous village of Minutang (91D; 28°11':196°33') in the Mishmi Hills of Arunachal Pradesh. It vividly describes the country and the people, the village, route, the superstition of local people and the causes of the landslide. It gives an account of the physiography, drainage, climate and soil of the region. The paper is illustrated by pictures which show the extent of devastation of the landslide.

6. DATTA CHOUDHURY, S. (Editor)

Gazetteer of India - Arunachal Pradesh: Lohit, Tirap and
Subansiri Districts.
Government of Arunachal
1978

These volumes are the first district Gazetteers published in Arunachal Pradesh. A Gazetteer is a carefully collected and systematically compiled information on a particular area. Obviously these Gazetteers covered all aspects of activities of each district.

We can use intensibly the first chapter of these gazetteers for the writing of physical setting of Arunachal Pradesh, as it covers the general, physical features and natural resources of each district respectively.

7. ELWIN, VERRIER

The North-East Frontier of India.

Geographical Magazine Vol. XXIX (1956)

8. GRAY, J. ERROL

Diary of a journey to the Bor Khampti country and sources of the Irrawady made by Mr. J. Errol Gray, Season 1892-93 from Assam.

Simla 1893

9. GRIFFITH, W.

Journal of a trip to the Mishmee Mountains from the debouching of the Lohit to about ten miles east of the Chalums ($27^{\circ}50'$ to $28^{\circ}10'N$; $95^{\circ}20'$ to $96^{\circ}40'E$).

Hill Tracts between Assam and Burma

Reprinted 1981

Vivek Publishing Co., Delhi.

Griffith beautifully describes the topography and relief of the route he followed from Sadiya to the Lain-Planj-Thaya, also recorded temperature of various places and water bodies simultaneously. This account could be use as a supplementary reference work in the writing of physical setting of Arunachal Pradesh.

10. HARMAN, H.J.

Narrative report of Lt. H.J. Harman in charge Dhapla
Military expedition Survey: General report on the
topographical Survey of India for the season 1874-75.
Calcutta 1876.

11. Hazarika, K.C.

From the Upper peaks of Dibang Valley.
A. P. News Vol. 10, No. 7, 1981.

This article describes the land and mountains of Dibang valley. On the whole the information contained is too meagre.

12. HORE, W.B.

Report on the Abor country, Simla 1913.

13. KINGDON, WARD, F.

The Seinghku and Delei valleys.
North East Frontier of India
Geographical Journal, Vol. LXXV
(1930) p. 413-435.

This account gives the travelogue or exploration account of the Seinghku valley (in Tibet) and Delei valley (in Arunachal) by F. Kingdon Ward during 1926 and 1928 respectively. The main objective of the expeditions were to do a detailed Botanical Survey of the two valleys.

In 1928, Delei valley expedition is important for our study purpose, as this valley is situated in the Mishmi hills of Arunachal Pradesh. The paper described natural vegetation of the valley together with its topography, climate and the agriculture practices of the local people.

14. LEPPER, C.H.

Notes on the Singpho and Khampti Country, North-Eastern Frontier.

Proceeding, A.S.B. (1882)

15. LUMSDEN, D.M. AND WILLIAMSON, N.

A Journey into the Abor Country, 1909

Geographical Journal Vol. XXXVII (1911) p. 621-629.

This is a travelling account made by Colonel D.M. Lumsden, C.B. and Neol Williamson to Abor country from Pasighat to Kebang in the year 1909. Later in the year 1911-12 when Mr. Neol Williamson with Dr. Gregosson revisited the country, he was murdered at Komsing.

This account though very brief, gives us first hand information of the region, in which the authors have given a sketch of their route upto Kebang village and describe the general topography of the region and the route they followed.

16. MACGREGOR, C.R.

Notes on Akas and Aualand

Proceeding A.S.B. (1884)

17. MACGREGOR, C.R.

**Journal of the expedition under Colonel Woodthorpe, R.E.,
from Upper Assam to the Irrawadi and return to Patkai
range.**

**Proceedings R.C.S. Vol. IX
(1887)**

18. MACGREGOR, C.R.

**Military report on the Khamti Singpho countries.
Calcutta, 1887.**

19. M'COSH JOHN

**Topography of Assam
(Delhi 1837 Reprinted 1975)
Sanskaran Prakashak, Delhi.**

**This monograph offers a fascinating account of the
anthropological, economic and geographical aspects of the North
Eastern Part of India. It gives descriptive account on the
ruggedness of the area, the climatic diversities of the hills
and the plains, the vastness of rivers and their effect on the
economy, the richness of colourful tribal life and the mineral
wealth etc. which could be made use of in the writing the
physical setting of Arunachal Pradesh.**

20. NEEDHAM, J.F.

**Excursion in the Abor Hills from Sadiya on the Upper Assam
and Rima in South-Eastern Tibet.
R.C.S. Supplement Paper Vol. 11 (1887-89).**

21. NEUVILLE, J.B.

On the geography and population of Assam, 1823
Asiatic Researches Vol. XVI (1828)

22. OGLE, M.J.

Extract from the narrative report on the survey operations
of India during 1887-88.
Calcutta, 1888.

23. ROBINSON WILLIAM

A Descriptive account of Assam
Reprinted 1975
Sanskaran Prakashak
Delhi

This book describes the geography of Assam with special reference to human and ecological interaction. The hill tribes section of the book gives a brief account about the topography of various territories of hill tribes of Arunachal Pradesh.

24. TASI RINCHIN

Geomorphology and Rural Settlements of Saghichu Basin,
West Kameng

(A quantitative approach)

Unpublished M.A. dissertation submitted in the Geography
Department, NEHU, 1984.

25. WADE, S.P.

Geographical Sketch of Assam 1800.

Asiatic annual register (1805)

These are the main sources and reference materials for the geological, physiography, structure, drainage of Arunachal Pradesh.

26. WILCOX, R.

Memoir of a Survey of Assam and the Neighbouring Countries, executed in (1825-26-27 & 28).

Selection of Papers regarding the hills tracts between Assam and Burmah.

Reprinted 1981

Vivek Publishing Col., Delhi - 7.

This memoir by lieutenant R. Wilcox gives a detailed account of the progress of geographical discoveries on the North East Frontier made during 1825 to 1828. He himself made various survey expeditions to various parts of the region such as to the Bor Khampti country, Abor country, Mishmi country etc. During these survey operations he tried to discover the various tributaries of Brahmaputra from their confluence to the source, at the same time determined locations of important village of the surveyed area.

27. YOUNG, E.C.

A Journey from Yun-nan to Assam.

Geographical Journal Vol. XXX

(1907) p. 152-180.

This is an interesting travelling account made by E.C. Young, who had travelled the vast mountainous country which lies between India and China and South of the Tibetan Frontiers. The main objectives of the expedition was to see whether there is any possibility of opening up a trade route between the two countries.

It gives a good descriptive account of the country lying between the two empires. It describes the people, living in this region with their settlement, house type, agriculture etc. It also mentions the Singphos and Mishmis of Arunachal Pradesh.

These above mentioned books and articles are the existing valuable materials for understanding the physical setting of Arunachal Pradesh.

CHAPTER - IV

DEMOGRAPHIC AND SOCIO-CULTURAL STRUCTURE

Population study has acquired prominence in geographical studies. It is rightly so, because among the various elements of regional structure that cause areas to differ from one another, population obviously is the most significant. Other elements are oriented around it and derive significance and meaning from it. As man is not only the utiliser of physical earth, but also the creator of cultural earth, the study of population or demographic structures (like how many, where it is concentrated, how it is composed and how it is structured) has important relevance in the study of regional structure of an area.

Number and distribution

The population census is, obviously, the most important source material for the population study. It provides a static picture of the population of an area at a particular point of time. Moreover it gives a wide range of data about the demographic and socio-economic aspects of population. Unfortunately, the census operation in Arunachal Pradesh started as late as 1961 and figures are therefore available only for the three censuses.

According to 1981 Census, Arunachal Pradesh has a total population of 6,28,050 with density of 7 persons per sq. km. The district-wise distribution of population is as follows:

Table - I: Arunachal - Primary abstract at a glance
(1981 Census).

Union territory/ Districts	Area in Km ²	Total Population	Density
Arunachal Pradesh	83,743	6,28,050	7
1. West Kameng	9,594	62,946	7
2. East Kameng	4,134	42,722	10
3. Lower Subansiri	13,010	1,13,300	9
4. Upper Subansiri	7,032	39,406	6
5. West Siang	12,006	74,151	6
6. East Siang	6,512	20,274	11
7. Dibang valley	13,029	27,716	2
8. Lohit	13,402	69,400	6
9. Tirap	7,024	1,28,135	18

Distribution

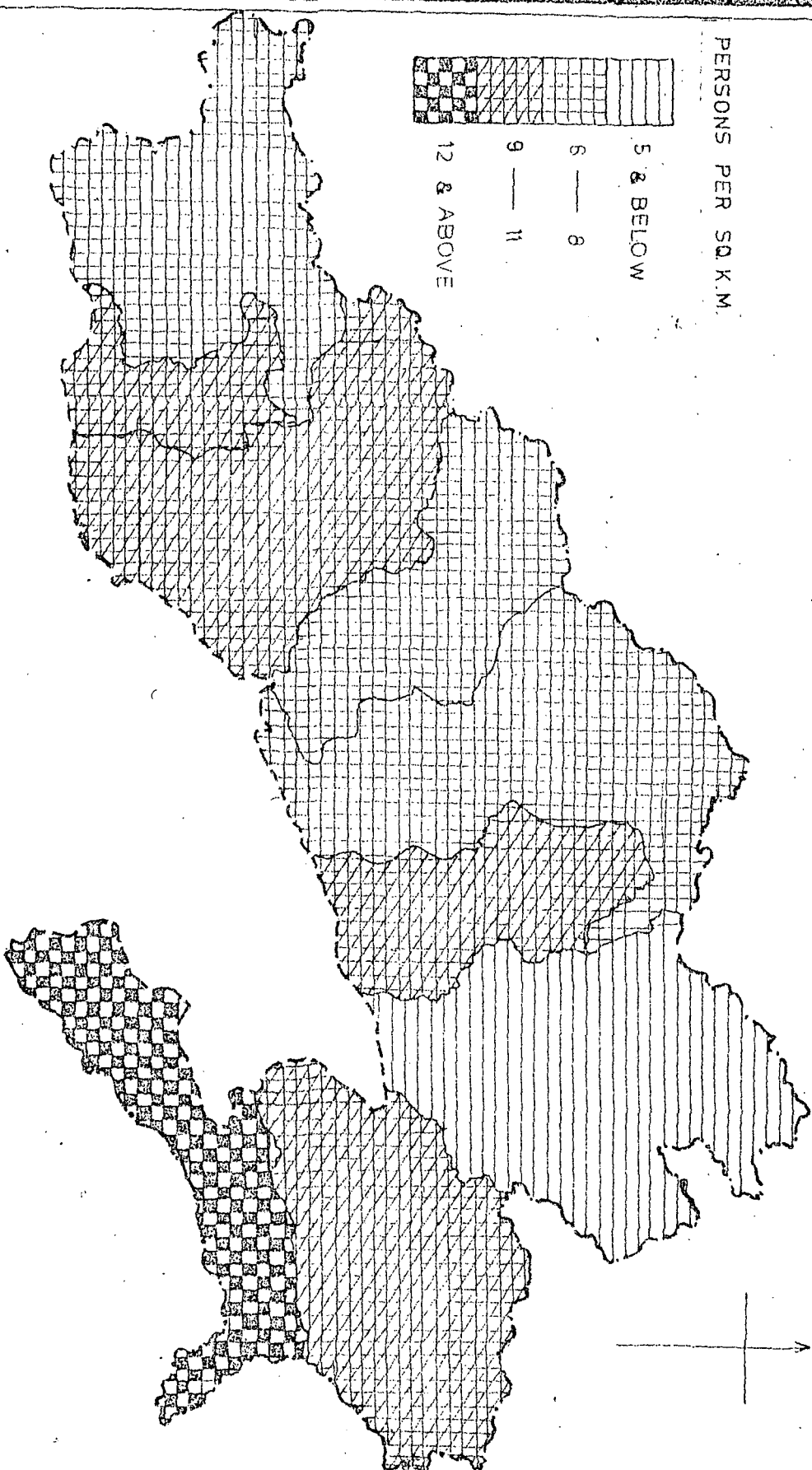
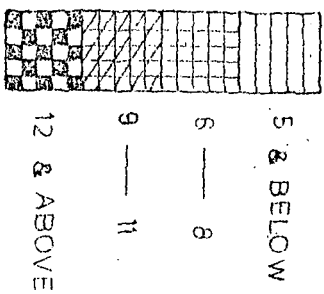
Population distribution of an area is well expressed by commonly used technique of "Density" which refers to the ratio between population and land area. It measures degree of population concentration and is generally expressed in terms of number of persons per unit area.

According to 1981 Census, Tirap district is the most populous as well as the most densely populated with density of 18 persons per Sq. Km. followed by East Siang District with 11 persons per Km². Dibang valley district is the least populated district both in terms of absolute number and density which is

ARUNACHAL PRADESH POPULATION DENSITY

1981

PERSONS PER SQ.K.M.



20 0 20 40 60 80 100 120 K.M.

Fig. 4

2 persons per Km². The remaining districts have density between 6 to 10 persons per Km². The Table II illustrates the population density (Distribution) of Arunachal Pradesh.

Table - II: Population density $\frac{P}{A}$

where P = population 1981, A = area.

Density range/Persons per Km ²	Districts
5 and below	Dibang Valley
6 - 8	West Siang, West Kameng, Upper Subansiri and Lohit.
9 - 11	Lower Subansiri, East Siang and East Kameng.
12 and above	Tirap

According to 1971 Census, Siang district (present West and East Siang) was topped both in population and area. But after district reorganisation it was bifurcated into two districts. In 1981, Tirap district ranked first in population number and density with absolute number of 1,28,135 persons which is equal to 20.31% of the State population. It would be more precise and informative if we could have got the population data at circle level. Presently it is not available, as final population tables are yet not published. The present data is based on the provisional figures for 1981.

ARUNACHAL PRADESH DECININIAL POPULATION GROWTH RATE 1971-81

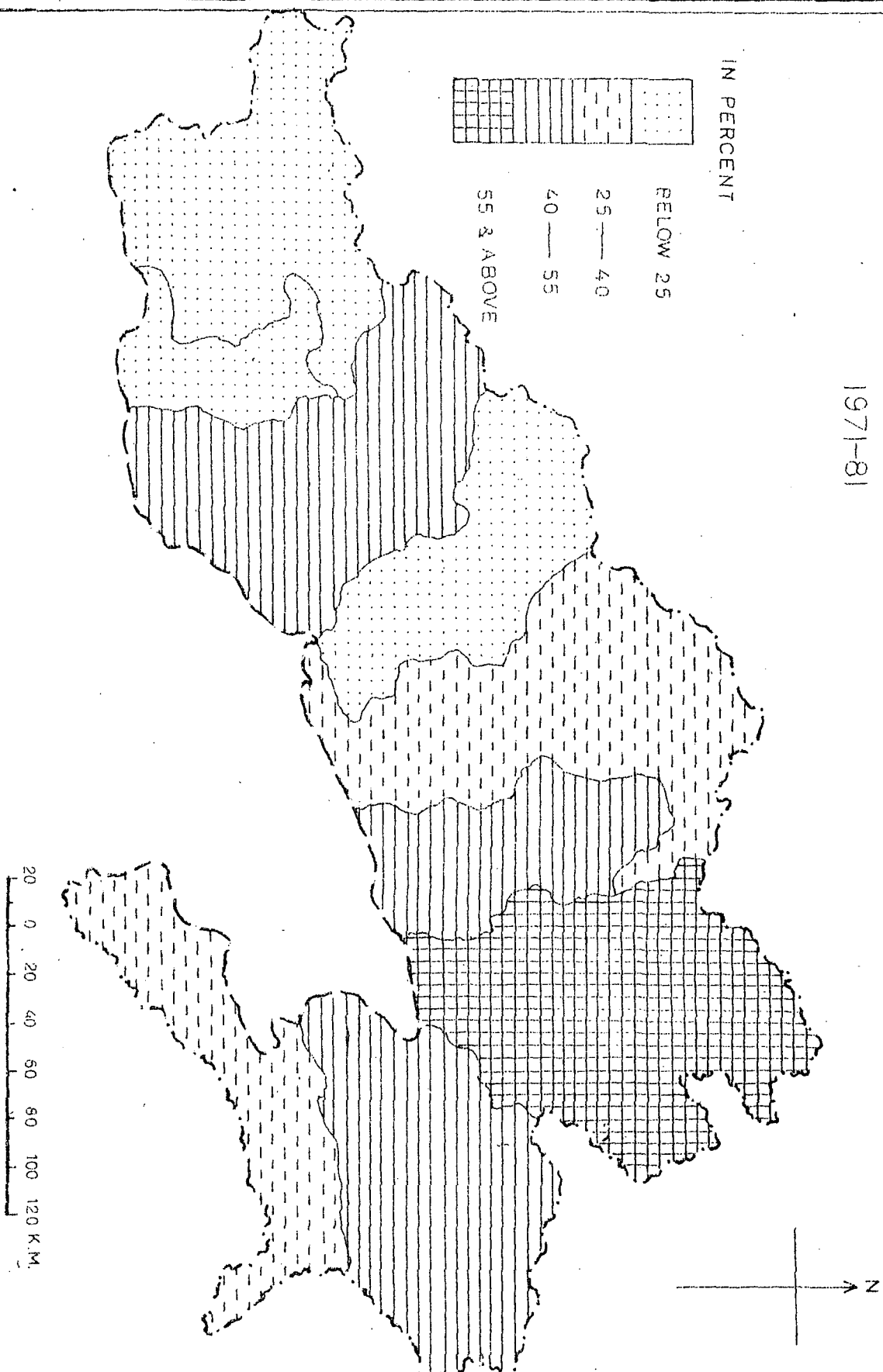


Fig. 5

Growth of Population

Growth of population is the broadest meaning of change in population numbers inhabiting a territory during a specific period of time which may either be positive or negative. This change/growth can be measured both in terms of absolute numbers and percentage. The absolute growth is obtained by subtracting the population of an earlier date from that of the later period of time, while the percentage change is obtained by dividing the absolute change by the population at the earlier date and multiplying it with 100.

The absolute growth of Arunachal population in 1981 over 1971 is 1,60,539 persons, which gives a decennial growth rate of 34.34%. The following table shows the comparative picture of population growth in the different districts of Arunachal Pradesh between 1961-71 and 1971-81.

Table - III: Statement showing a comparative picture of Arunachal Pradesh (1981 Census, provisional figures).

Union Territory/ Districts	Total Population		Decennial growth rate (in percent)		Density
	1971	1981	1961-71	1971-81	
Arunachal Pradesh	4,67,511	6,28,050	(+)38.91	(+)34.34	7
1. West Kameng	50,867	62,946	(+)22.09	(+)23.75	7
2. East Kameng	35,134	42,722	(+)24.44	(+)21.60	10
3. Lower Subansiri	80,914	1,13,300	(+)30.32	(+)40.02	7
4. Upper Subansiri	32,014	39,406	(+)30.77	(+)23.09	6

Union Territory/ Districts	Total Population		Decennial growth rate (in percent)			Density
	1971	1981	1961-71	1971-81	1981	
5. West Siang	59,242	74,151	(+)23.43	(+)25.17	6	
6. East Siang	49,005	70,274	(+)34.49	(+)43.40	11	
7. Dibang valley	15,232	27,716	(+)48.59	(+)81.96	2	
8. Lohit	47,633	69,400	(+)84.63	(+)45.70	6	
9. Tirap	97,470	1,28,135	(+)63.56	(+)31.46	18	

The table shows, the overall decennial population growth as positive. 1971-81 decadal growth rate is less than 4.5% the 1961-71 growth rate, but it is 10% higher than the national average of 24.75%.

District-wise figures show that Dibang valley district topped with 81.76% followed by Lohit district with 45.70% in decennial growth rate. East Kameng with 21.60% has the lowest growth rate which is 12.34% less than the regional average of 34.34%.

This high decennial growth rate is mainly accounted by the immigration of people from the adjoining areas, in search of government services and as agricultural labourers. Moreover population growth in an area is also an index of its economic development.

ARUNACHAL PRADESH SEX RATIO 1981

FEMALES PER 1000 MALES.

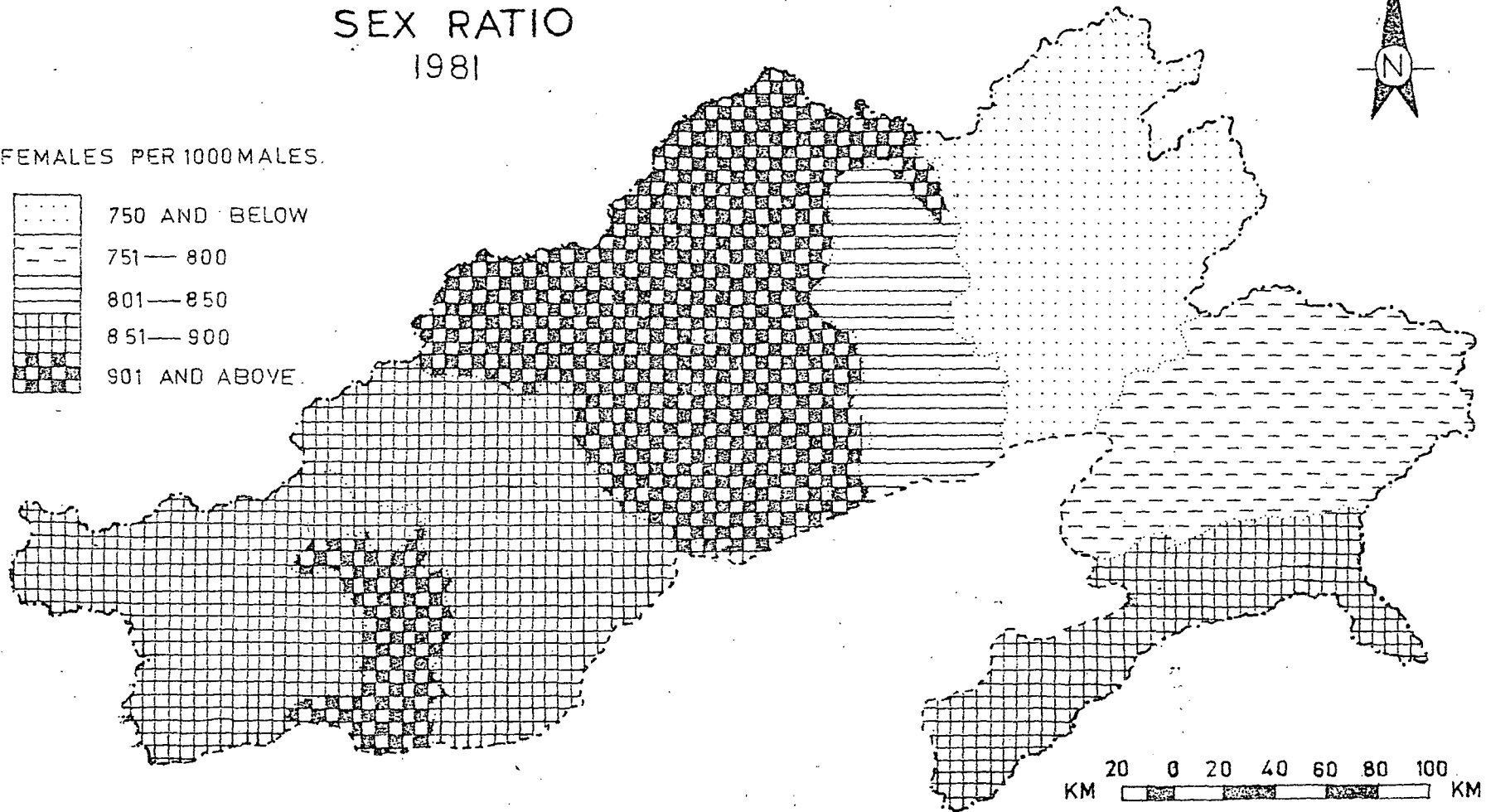
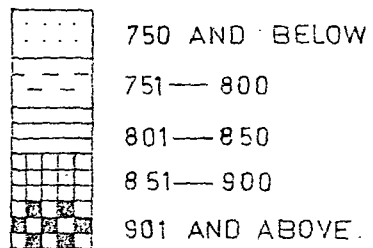


Fig. 6

The decennial population growth rate of 1971-81 is cartographically represented in the figure No. 5.

Table - IV: Decennial population growth rate of 1971-81.

Decennial growth rate range	District-wise rank
Below 25	East Kameng; West Kameng and Upper Subansiri.
25.01 - 40	West Siang and Tirap.
40.01 - 55	Lower Subansiri, East Siang and Lohit.
55.01 and above	Dibang valley.

Sex Ratio of Population

The sex ratio is expressed in terms of number of females per thousand males. Average sex ratio of Arunachal is 870 per 1000 males (1981 Census) as against 861 in 1971. Still it is far below the national average of 935 (1981). The following table shows the sex ratio of 1971 and 1981 of Arunachal, Districtwise, with rural, urban and percentage increase in 1981 over 1971 Census. (Fig. No. 6).

Table - V: Statement of sex ratio - Districtwise,
Rural-Urban and percentage increase in
1981 over 1971.

Union territory/ Districts	1971			1981			Percentage increase in 1981 over 1971	
	Total	Rural	Urban	Total	Rural	Urban		
							Rural	Urban
Arunachal Pradesh	861	881	457	870	887	646	(+)68	(+)41.36
1. West Kameng	727	755	396	870	881	728	(+)16.69	(+)83.84
2. East Kameng	930	930	-	943	943	-	(+) 1.40	-
3. Lower Subansiri	940	940	-	883	928	618	(+) 1.28	-
4. Upper Subansiri	953	953	-	971	971	-	(+) 1.89	-
5. West Siang	850	909	372	912	946	617	(+) 4.07	(+)65.86
6. East Siang	869	915	547	850	979	674	(-) 3.93	(+)23.21
7. Dibang Valley	806	806	-	733	733	-	(-) 9.06	-
8. Lohit	762	791	508	781	795	656	(+) 0.51	(+)29.11
9. Tirap	883	883	-	872	872	-	(-) 1.25	-

Rural versus Urban

Ruralities dominate in Arunachal Pradesh, as 93.6 per cent of the total population of the region dwells in rural areas. According to 1981 Census out of nine districts, four districts namely East Kameng, Upper Subansiri, Dibang Valley and Tirap do not have a single urban place, which shows the degree of rural dominance in the region as a whole.

1981 Census recorded six, Class - V and VI urban places in the region which together contained 6.4% of total population. The Class- V urban places increased from one in 1971 to five in 1981 and the number of Class - VI towns has gone down from 3 in 1971 to one in 1981. According to Indian Census urban place classification, the Class - V urban places should have population of 5,000 to 9,999 and the Class - VI should have a population of less than 5,000.

Pasighat, with 9,125 persons ranked first among the urban places. It has 22.98 per cent of total urban population of the territory, followed by Naharlagun with 19.28%, the following table shows the rural-urban population of Arunachal Pradesh 1981.

Table - VI: Rural-urban population, 1981.

Districts	Rural	Urban
1. West Kameng	59,140	3,806
2. East Kameng	42,722	N11
3. Lower Subansiri	99,245	14,055
4. Upper Subansiri	39,406	N11
5. West Siang	67,653	6,498
6. East Siang	61,149	9,125
7. Dibang valley	27,716	N11
8. Lohit	63,169	6,251
9. Tirap	1,28,135	N11

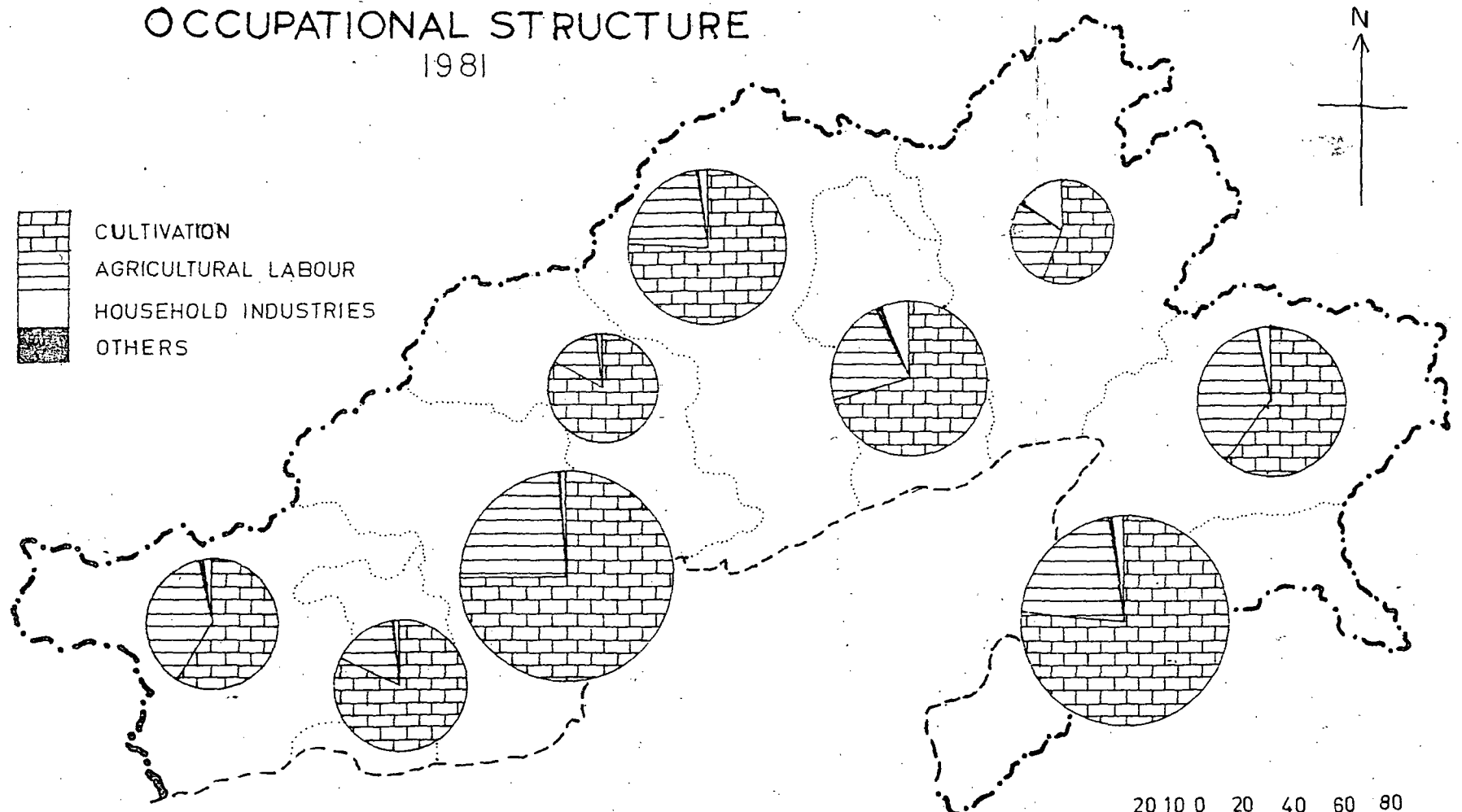
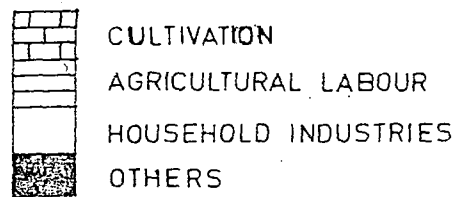
III. Workers vis-a-vis Non-workers

Among the aspects of population composition, the discussion of the proportion of workers and non-workers to the total population is of great economic and agricultural relevance. Proportion of workers to total population of Arunachal Pradesh (1981) was found to be the lowest in Lohit district with (44.88%) and highest in Kameng district with 55.45%. It shows that roughly half of the total population are engaged in productive economic activities, while the remaining half are non-workers. The following table shows the workers and non-workers (1981) district-wise.

Table - VII: Districtwise workers and non-workers 1981.

Union Territory/ District	Total popula- tion	Workers	Non- workers	Percentage of workers to total popula- tion
Arunachal	6,28,050	3,08,946	3,19,104	49.19
West Kameng	62,946	31,128	31,818	49.45
East Kameng	42,722	23,688	19,034	55.45
Lower Subansiri	1,13,300	59,447	53,853	52.47
Upper Subansiri	39,406	19,439	19,967	49.33
West Siang	74,151	35,661	38,490	48.09
East Siang	70,274	32,471	37,803	46.21
Dibang valley	27,716	14,480	13,236	52.24
Lohit	69,400	31,147	38,253	44.88
Tirap	1,28,135	61,485	66,650	47.98

ARUNACHAL PRADESH OCCUPATIONAL STRUCTURE 1981



CIRCLES ARE PROPORTIONATE TO THE WORKING POPULATION OF EACH DISTRICT.

20 10 0 20 40 60 80
KILOMETRES

Fig. 7

Classification of workers by main activities (occupational structure)

The study of working force gains more significance if its occupational structure is also examined in detail. Occupation refers to a person's profession or type of work one is engaged in. It holds immense significance as it reveals whether a region's economy is agricultural, industrial or semi-industrial, its level of economic development and the direction which economic planning of the region could follow.

Census of India 1981, recorded the distribution of worker by cultivators, agricultural labourers, household industry and others. Districtwise break-up of workers by main activities has been furnished in the table No. VIII (See also Figure No. 7).

In 1981, 72.29% of the total working population was cultivation as against 78.34% in 1971. Compared with the 1971 Census the percentage of Household workers also decreases from 24.83% to 19.39%, and agricultural labour from 2.45 to 1.96. The Percentage of cultivators in 1981 is highest in Upper Subansiri (83.37) followed by East Kameng (81.89). Agricultural labour percentage is highest in the Dibang valley (14.65) and lowest in Upper Subansiri district (.48).

Table - VIII: Districtwise distribution of workers by main activities 1981.

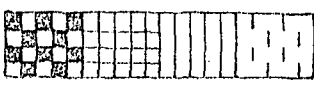
Union Territory/ Districts	Total workers	Cultiva- tors	Agri. labour	House- hold	Others	% of culti- vators to total work- ers.	% of agri. lab. to total work- ers.	% of house- hold Ind. to total work- ers.	% of other workers to total workers
Arunachal Pradesh	3,08,946	2,23,329	7,575	1,267	76,775	72.29	2.45	.41	24.85
West Kameng	31,128	18,442	626	243	11,817	59.25	2.01	.78	57.96
East Kameng	23,688	19,397	199	13	4,079	81.89	.84	.05	17.22
Lower Subansiri	59,447	44,378	646	247	14,176	74.65	1.09	.41	23.85
Upper Subansiri	19,439	16,206	94	84	3,058	83.37	.48	.42	15.73
West Siang	35,661	27,895	450	201	7,115	78.22	1.26	.57	19.95
East Siang	32,471	23,029	1,790	224	7,428	70.92	5.51	.69	22.88
Dibang valley	14,480	7,894	2,121	35	4,430	54.52	14.65	.24	30.59
Lohit	31,147	18,672	834	100	11,541	59.95	2.68	.32	37.05
Tirap	61,485	47,416	815	123	13,131	77.12	1.32	.20	21.36

ARUNACHAL PRADESH

LITERACY RATE

1981

PERCENT OF TOTAL
POPULATION



BELOW 15

15 — 20

20 — 25

25 & ABOVE

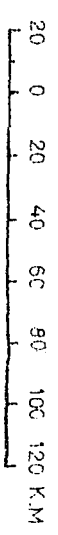
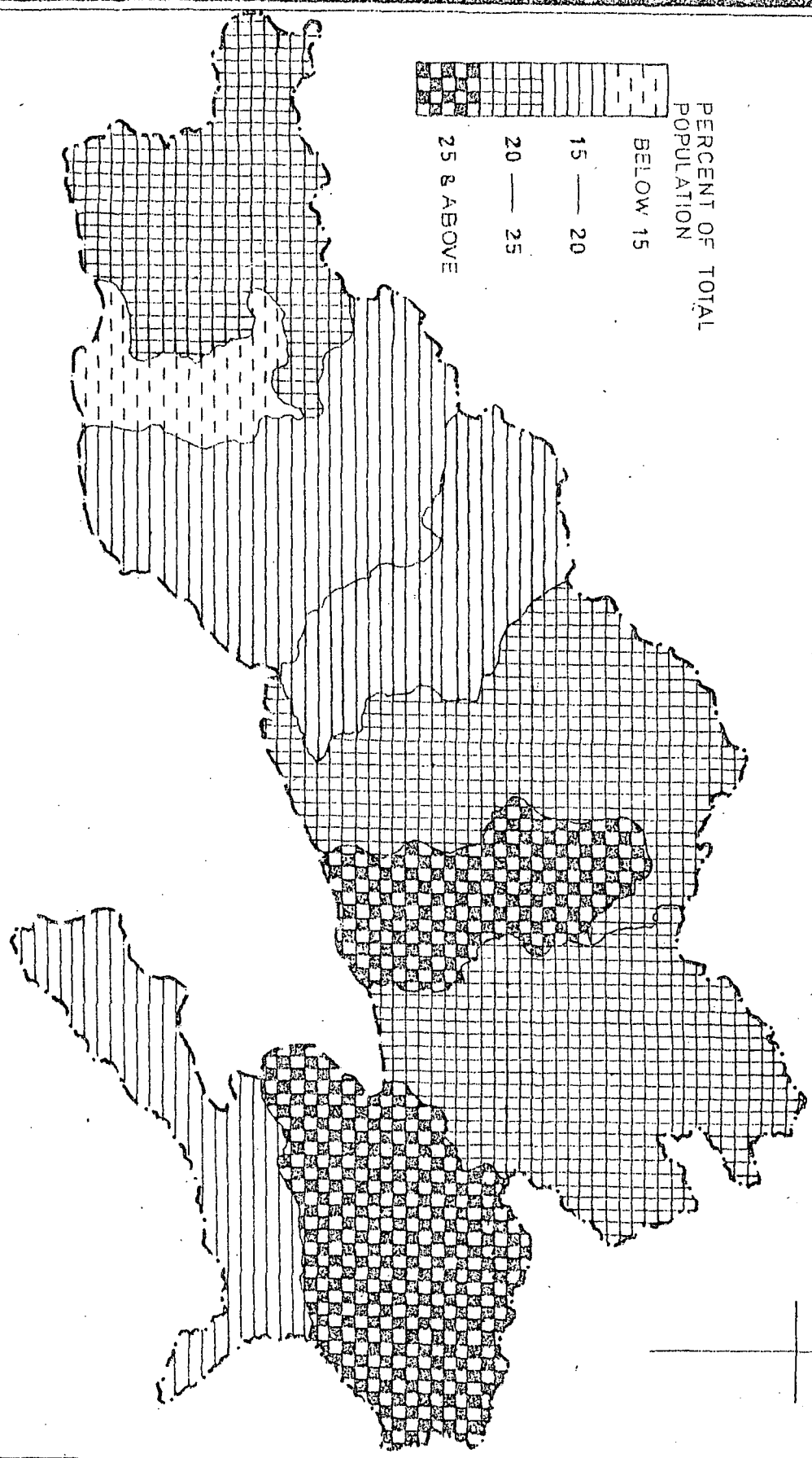


Fig. 8

The high percentage of cultivators to total workers and the relative low percentage of agricultural labours reveal the peasant nature of farming, with the family contributing most of the labour on land in Arunachal Pradesh. It is only in the Dibang Valley that the percentage of agricultural labours is significant.

LITERACY

It is simply expressed in terms of percentage of literate population to the total population. Arunachal is quite far behind on this score, and the overall percentage is only 20.09 for the territory. But the percentage of literacy growth rate between 1971 to 1981 recorded is the highest for the country with 77.95%. Some districts namely, Lower Subansiri and East Kameng recorded an increase of 203.85% and 120.32% respectively. The figure No. 8 shows the distribution of the literate as percentage of total population of the region at a glance.

Table - IX: Literate as percent of total population 1981.

Literacy percentage range	Districts with literacy percentage range
Below 10.00	East Kameng (6.94)
15.01 - 20.00	Tirap (18.17) and Lower Subansiri (18.93), Upper Subansiri (12.43).
20.01 - 25.00	West Kameng (21.45), West Siang (22.25), and Dibang valley (25.00).
25.01 and above	East Siang (25.15) and Lohit (27.35).

SOCIO-CULTURAL STRUCTURE

Arunachal Pradesh was almost completely isolated until very recently. It is inhabited by a large number of tribes speaking different languages and dialects of the Tibeto-Burman family and exhibiting a great diversity of culture, custom and dress. These diversities in culture, customs, dress and religious faiths of the tribes are largely influenced by the region's prolonged isolation, its geography, economy and ethnology.

Culturally the region may be broadly divided into three main cultural areas. (1) The first cultural area includes the tribes of Monpas, Sherdukpins of Kameng, Membas and Kambas living all along the northern frontier of Subansiri, Siang and Dibang valley districts and the Buddhists Khamptis and Singphos in the foothills near Tezu and Margherita. They are largely inspired by Buddhist ideas and have a developed civilization which has been considerably influenced by Tibet and Burma. In proximity to the Monpas Sherdukpins, live the Buguns (Khowas), Hrussos (Akas) and Dhammais (Mijis) who although not Buddhists, share some aspects of their neighbours' culture. (2) The second cultural area is the great central block of territory extending from eastern Kameng to Lohit district. It is inhabited by a large number of tribal groups, who have been divided from one another by the difficulty of communications and by the state of inter-tribal war in which they lived for centuries before they

were brought under regular administration. This cultural area is mainly inhabited by the tribes like Daflas (Nishis), Apatanis, Tagins, Hill Miris etc; in the Subansiri districts and Abors (Adis) including Ashings, Pailibos, Ramos, Bokars, Boris, Gallongs, Minyongs, Padams, Pasis, Panggees etc. in West and East Siang, the Mishmis (Idus, Taraons and Kamans) in Dibang and Lohit districts. (3) The third cultural area is mainly inhabited by the Wanchos, Nootes, Tangsas and Singphos, who are by and large organised under influential and wealthy chiefs, particularly among the Wanchos. The Nootes have adopted a very elementary form of Vaishnavism and have been more in contact with the outside world than any other with a resultant loss of much of their traditional culture.

Religion

The religion among the tribes of Arunachal Pradesh is essentially based on a functional hierarchy of gods who exercise their supreme supernatural control over humanity in different effective orders. People in this region are living in a very difficult terrain, and behind their ordinary, tough, hard life, they feel the interplay of natural forces playing their different and yet distinctive roles. There are devastations caused in no time by nature, storm, earthquake, epidemic etc. The phenomena around them fill them with a feeling of awe, remorse and piety. They strain their mind to understand it and

when they fail to understand its logic, they discover a supernatural explanation for their destiny. Thus to appease the supernatural power, they perform various ritual ceremonies and observe festivals, which form an integral part of the socio-religious faiths among the tribal people of the territory.

In this wide tract of country, religion belongs to two basic orders - the Buddhists and the non-Buddhists. The Monpas, Sherdukpins of Kameng district are the two important Buddhist tribes, which follow the Mahayana sect of Buddhism. They follow the Buddhism in an institutional form, and the Tawang Monastery is the centre of their religious life. The Membas and Khambas of Upper Subansiri and West Siang districts and the Khamptis of Lohit districts also follow Buddhism, but rest of the tribes may be said to be non-buddhists. The non-buddhist tribes have their own cultural tradition and though they are different in their faith, their religion seems to be a blend of animism with naturalism. Some anthropologists like Taylor call the tribals as animists.

Major tribes and their distribution

Arunachal Pradesh is the home of about twenty five major and about eighty minor tribes. About 70% population of the region is constituted by tribal population (1981 Census). The under-administration of this North East Frontier territory before independence had left these tribesmen to their own lot, thus

preserving their rich cultural heritage in its pristine purity. The major tribes of the region and their relative distribution are as follows:

- 1) **Abor or Adis** - The Adis formerly known as Abors are one of the most numerous and principal tribes of Arunachal Pradesh. There are many sub-tribes or clans in this great tribe namely, Boris, Bokan, Gakong, Minyongs, Pasi, Padams, Pailibos, Milangs, Panggees etc. They occupy principally the southern slopes of the great Himalaya range between the Dihing and Subansiri rivers in the west, and east Siang district and south eastern part of Dibang valley district.
- 2) **Akas (Hrussos)** - The Akas are very amicable and friendly tribe of Arunachal Pradesh, they are very adapt in painting. They mostly inhabit the southern part of Kameng district. Kotsum and Kovatsum are the two main sub-groups of Akas.
- 3) **Apatamis** - The Apatamis are the most civilised tribe of Arunachal Pradesh, and are particularly distinguished by their wet rice cultivation practices. They primarily occupy the famous Apatami plateau in present lower Subansiri district.
- 4) **Dafilas (Nishis)** - The Nishis or Nishings are one of the most numerous and principal hill tribes of Arunachal Pradesh, inhabiting the Subansiri District (upper and lower) and some parts of East Kameng.

5) **Hill Miris** - The Hill Miris are inhabiting the mountain tracts on either side of the lower Kamla and Simmi river in the Lower Subansiri district of Arunachal Pradesh.

6) **Khamptis** - The Khamptis primarily occupy the Tengapani basin in Lohit district. They follow the Theravada sect of Buddhism and originally migrated from Bor-Khampti area.

7) **Mishmis** - There are three main sub-groups of Mishmis viz. Idus, Taraon and Kaman. They inhabit the Dibang and Lohit Districts.

Idus are distinguished from the Taraon and Kaman Mishmis by their distinct hair style. Both the sexes of the Idus cut their hair at the sides of the head and wear it long tied into a knot at the back. The hair in the front is cut short and hangs over the forehead. Therefore, they are popularly known as Chulikata (cropped haired) by plains people.

The Taraon and Kaman Mishmis are popularly known as Digaro and Miju Mishmis. The Mishmis occupy the rugged and formidable terrain of Lohit and Dibang valley districts.

8) **Mijis** - The Mijis inhabit the central part of West Kameng district mainly towards the North-western part of Bomdila.

9) **The Monpas** - The Monpas are the inhabitants of the Kameng district (West Kameng) of Arunachal Pradesh. They follow

the Mahayana sect of Buddhism. The great Buddhist Monastery of Tawang is the heart of the Monpa life.

10) Nocte - The Noctes belong to the Mongoloid stock of human family, and mainly inhabit the narrow strip of turbulent mountains that divide Margherita and the Brahmaputra valley from the Burma border in the high slopes of Patkoi range of the Tirap district.

11) The Sherdukpins - The Sherdukpins, a hitherto unknown and minor tribe of Arunachal Pradesh are virtually confined to three villages - Rupa, Shergaon and Jigaon, surrounded by Bompa-La to the South, Naring-La to the West and Bomdila to the North in the West Kameng District. The Lamaism has gained considerable influence over them.

12) The Singphos are inhabiting the Indo-Burma border area, bounded on the North by the Lohit, on the East by the Langtang range, on the South by the Patkoi range and on the South by State of Assam mainly in Bordumsa Circle of Tirap district and its adjoining parts of Lohit district.

13) The Sulungs are one of the most backward tribes of Arunachal Pradesh. They are found dispersed widely over the inaccessible, unexplored and rugged hills in the North Eastern region of East Kameng and Lower Subansiri districts, bounded by the McMahon Line in the North, Bagmis and Nishis territory on the South, Lower Subansiri District on the East and Mijis of Kameng on the West.

14) The Tangsa - The Tangsas mainly live in the Changlang and Miao Subdivision of Tirap district and have many sub-groups as Mokhim, Longlang, Joghi, Khemsing, Rongran, Longri, Longphi, Hawi, Mosang, Moran, Tikhak, Panthi, Sankes, Taipis and Mokhing etc.

15) The Tagin - The Tagins inhabit the Upper Subansiri and adjoining parts of West Siang District.

16) The Wanchos - The Wanchos inhabit mainly the western part of Tirap district, bounded by the Tisa river in the East Tuensang area of Nagaland in the West, Patkai hills in the South and the Sibsagar district of Assam in the North.

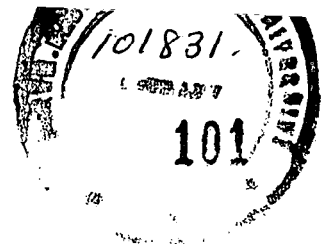
The aforesaid description gives Demographic and Socio-cultural structure of Arunachal Pradesh in very general way. As the main task of the present study is to present a detailed literature survey, which could be used for understanding the regional structure of Arunachal Pradesh, the present chapter has mainly been oriented to furnish a detailed bibliographic and data base study for understanding the demographic and socio-cultural aspects. The text of the chapter has been divided into sections and sub-sections for the purpose.

The demographic section is divided into the following sub-sections viz. Population number; growth; sex-ratio; rural-urban, distribution; literacy etc. In the same way, the socio-

cultural section is divided into various sub-sections such as major tribes, their distribution, settlement, religion, language etc.

The main sources of data and reference for demographic sections and sub-sections are furnished by the various publications and data published by the Census of India, District Statistical Handbook published by Director of Economics and Statistics, Government of Arunachal Pradesh, and the Gazetteers, and supplemented to some extent by the articles in Arunachal News, the then NEFA information. References on the socio-cultural sections are made available by the valuable research work and publications of the Directorate of Research Government of Arunachal Pradesh. This Department is doing intensive and extensive research on the socio-cultural aspects of the tribes of the territory. The philological section of the Directorate has been able to bring out a language guide book for each major tribe of the region. These publications form the main source materials for understanding the socio-cultural structure of Arunachal Pradesh.

The present chapter will try to critically review the content, coverage and usefulness of the references pertaining to these sections and sub-sections on the demographic and socio-cultural structures of Arunachal Pradesh.



I. Demographic Structure

In this section of the chapter, the source materials and data which deal with the demographic aspects of Arunachal Pradesh will be treated. This section has been divided into the following sub-sections — Population growth, distribution, composition, rural-urban population, sex ratio and literacy. For this section various census publications particularly the general population tables from the main source material, but in addition a few published books and articles are also referred which furnish supplementary materials.

1. CENSUS OF INDIA 1981

Provisional Population Tables

Series 24 Arunachal Pradesh

(Paper 1 of 1981 Supplement)

This Provisional Population Tables is supplement to the Paper 1 of 1981 Census. This provisional publication is brought out to furnish the population tables to the public earlier as the final census publication takes sometime. This paper contains the rural and urban composition of population, number of towns, main workers and main workers with broad categories. In addition to these, the provisional primary census abstract down to the circle unit is also presented in this volume. Value of this volume is that, it gives us the provisional population totals before the final census publication is ready.

2. CENSUS OF INDIA 1961

General Population tables and NEFA special tables.

Vol. 24, NEFA, Part - IIA.

The 1961 Census is the first ever census conducted separately in Arunachal Pradesh, the then NEFA. The census enumeration was done by using different sets of schedules viz. (A) Simplified Census of NEFA 1961 Schedule & (B) All India census schedules and individual slips.

Some innovations were introduced in NEFA due to the extremely difficult transport and communication and the age old superstitions of the people. Under simplified schedule, the 1961 census covers about 88.5% of the NEFA Population, rest 11.5% of total population was covered under the All India Census Schedules and individual slips.

This volume furnish us the following tables and data -- general population tables, area, houses and population; village classified by population; distribution of rural population between villages of different sizes and various special tables of NEFA Population covered on simplified census of NEFA, 1961.

Though, the census operations of 1961 census in NEFA was not smooth and did not synchronise with census classifications and tabulations with the rest of the country, the total population tables is very important and useful for understanding the population structure of the then NEFA, as it provides the first reliable and detailed population data for the area.

3. CENSUS OF INDIA 1971

General Population Tables

Series 24 Arunachal Pradesh, Part II A

This volume contains the basic tables with regards to the area and population of Arunachal Pradesh of 1971 Census. This census was so conducted as to synchronise with the All India Census schedules and individual slips.

It mainly contains the data and tables on the following sub-sections.

- 1) Area, houses and population.
- ii) Decadal variation in population since 1901.
- iii) Village classified by population.
- iv) Town and urban agglomerations classified by population in 1971 with variation since 1961.

Primary Census abstract and alphabetical list of villages of Arunachal Pradesh.

This volume is useful in understanding the population number, rural-urban composition, sex ratio etc. of the region.

4. CENSUS OF INDIA 1971

General Report

Series 24 Arunachal Pradesh

1971 Census is the first intensively operated census in Arunachal Pradesh with smooth and uniform classifications

which synchronised with the rest of the country. The 1961 census was mainly done with the simplified census of NEFA 1961 schedule, and also could not cover some of the interior and inaccessible parts of the region.

This volume begins with the Introductory notes which includes sections on historical background, physiography, general geology, minerology etc. It is useful for an understanding of the historical perspectives and physical setting of Arunachal Pradesh.

The chapter II to VI mainly deal with the demography of the region such as — size and distribution and density of population, growth rate of population; rural and urban population; sex ratio and age structure; literacy and education data.

The remaining chapters contain an analysis of the data pertaining to religions, distribution of population by main activity and scheduled caste and scheduled tribes populations.

5. BURMAN, ROY, B.K.

Demographic and Socio-economic Profiles of the hill areas of North East India.

Census of India 1961

Ministry of Home Affairs, Government of India.

The monograph is useful for the study of demographic and socio-cultural structure of Arunachal Pradesh in particular and North Eastern Region in general.

6. SINGH, J.P.

Human Resources of North Eastern India

Inter India Publications

New Delhi 110 015, 1982

The Chapter 11 (eleven) of the book deals with human resources of Arunachal Pradesh, in which it described briefly the aspects of human resources, levels of amenities and intensity of association between human resources and amenities. These aspects have been illustrated cartographically by giving two sets of maps. The first set of map shows the characteristic of population and level of human resources as percentage of non-tribal population; literacy percentage; percentage of people living in villages of 500 persons and more; percentage of non-agricultural workers and level of human resources.

The second set of maps illustrates the level of amenities as percentage of village having schools; percentage of village having power supply, percentage of village having pucca roads, percentage of village having post offices; percentage of village having medical facilities; percentage of village having drinking water supply and level of amenities.

Since this book mainly deals with the human resources of North Eastern Region of India in which Arunachal Pradesh is an element, it forms a basic reference material for writing the demographic structure of the territory in general and human resources in particular.

7. RAI, R. K.

Patterns of Population Changes in North Eastern India
1961-81.

Project report of Indian Council of Social Science
Research, N.E. Regional Centre, Shillong, 1985.
(Cyclostyled)

This project report has been compiled by Dr. R.K. Rai, Head of the Department of Geography, NEHU, Shillong. Its contents include population growth in N.E. India during 1901-1981; density and distribution of population, sex ratio 1961-81; literacy 1961-81; occupational structure of N.E. India and urbanisation.

8. KUMAR, B.

A resume of the Provisional Population Totals 1981.
A.P. News Vol. 10, No. 4, June 1981.

In the article, the author mainly studies population growth since 1961 to 1981, decennial growth rate of population, sex ratio and literacy in Arunachal Pradesh, based on the provisional population totals of 1981 Census.

9. JHA, S. D.

Demographic account of the seven sisters in North-Eastern Region.

A.P. News Vol. 11, No. 4, April-May, 1982.

In this article, the author gives a statistical account of demographic structure of the different political units of North Eastern Region mainly based on the 1981 Population Census.

Total population, growth of population since 1901, sex ratio, migration, literacy, scheduled tribes and scheduled castes population, distribution of population by religion, percentage of distribution of workers according to main economic activities etc. of the region (including Arunachal Pradesh) are treated in detail with upto date data and tables.

Education

11. BORTHAKUR, I.K. (Mrs)

A Study of literacy in Arunachal Pradesh.

Arunachal News Vol. 4, No. 6, Aug-Sep. 1975 continued
Vol. 4, No. 7, October 1975.

The author in this article gives a critical account of the various aspects of literacy in Arunachal Pradesh based on the 1971 Census data. Arunachal Pradesh is the least literate territory in India which has only 11.29 percentage of total population as literate (1971 census). Male literacy is 17.82% while female literacy is as low as 3.71%. Apart from overall analysis of literacy structure of Arunachal Pradesh, the author has highlighted the hinderances in the way of female education in the territory together with the steps taken by the state and central government in the various plan periods for upliftment of education.

12. CHANDA, A.M.

Education in Arunachal Pradesh

Consideration of Expansion

A.P. News, Vol. 9, No. 1, Feb-March 1980.

In this article the author highlights the education and literacy situation in Arunachal Pradesh, comparing it with the other states and union territory of North Eastern Region.

13. ANONYMOUS

History of education in Arunachal Pradesh

A.P. News, Vol. 9, No. 4, Aug 1980.

The history of education in Arunachal Pradesh since 1947 to present day is traced in this article. It discusses the growth of educational development by taking the number of schools district-wise, and the number of trained and untrained teachers.

14. JHA, S.D.

School education in Arunachal Pradesh.

A. P. News, Vol. 12, No. 1, Dec-Jan 1983.

The author discusses the growth of schools and enrolment from 1961-80. Position of trained teachers as percentage to total teachers during 1976-77 to 1980-81, and class-wise enrolment of students for the same years are also given.

The data shows that the growth of schools and enrolment rises positively through the years. The percentage of trained teachers decreases from 55.22% (in 1976-77) to 47.18% (in 1980-81). The enrolment of students decreases with the higher classes with highest percentage of enrolment in lower classes, specially Class II (33.47% in 1980-81) which shows the high percentage of dropouts.

15. MORRISON, T.

Twenty five years of progress: Education

A.P. News, Vol. 1, No. 6, Aug 1972.

The author describes the educational development of Arunachal Pradesh from 1947 to 1972. During 1947 the region had only three primary schools with a total enrolment of 30 students. By the year 1972, within a short period of twenty five years the region had one degree college, 7 higher secondary schools, 11 high schools, 45 middle schools, 503 junior basic schools and 3 nursery schools with an overall enrolment of about 27,000 students.

The causes of this rapid development of education in the region such as free education, uniforms, hostel facilities etc. are also briefly discussed.

16. MANNOU, C.I.

Adult education programme and its feature in Lohit District.

A.P. News, Vol. 12, No. 2, Feb-March 1982.

After giving the overall educational position of Arunachal Pradesh (district-wise), the author discusses the adult education programme and its progress in the territory with special reference to Lohit district.

17. GOVT. OF ARUNACHAL PRADESH

An eventful decade of Progress in Arunachal.

Directorate of Information and Public Relation,
Govt. of Arunachal Pradesh, 1976.

This booklet published by the Director of Information and Public Relation, Government of Arunachal Pradesh, furnishes the basic statistics of all round development in Arunachal Pradesh upto the year 1975-76. The progress of education occupies a small section in the booklet with basic data on its development.

18. BANDARI, K.

Tribal education needs nursing.

A.P. News, Vol. 4, No. 6, Aug.-Sept. 1975.

19. ISLAM, M.

Education tends a new outlook to Arunachal Pradesh,
Social Welfare Vol. 19, No. 8, Nov. 1972.

20. MIRI INDIRA

Problems of education in Mankind.

Vol. 14, No. 5, July, 1969.

21. PEGU, R.C.

Condition of female education in Arunachal Pradesh.

A.P. News Vol. 7, No. 8, Dec. 1978.

22. KAMAT, P.

Programme of adult education in Arunachal Pradesh.

A.P. News, Vol. 7, No. 4, 1978.

23. GOVERNMENT PUBLICATION

Third All India Education Survey.

Arunachal Pradesh, State Tables, Vol. I.

D.P.I. Arunachal

24. GOVERNMENT PUBLICATION

Arunachal Pradesh: A Review of the Implementation of
Selected Educational Programme in State 1981-82.

D.P.I. Arunachal.

II. Socio-cultural structure

Under socio-cultural structure, the various population attributes such as religion, social customs and linguistic structure, migration and settlement, and tribes and their distributions shall be treated together with the relevant available materials.

A. Religion

Arunachal Pradesh is the abode of about eighty hill tribes but does not exhibit much diversity in terms of religions

practices. The Monpas and Sherdukpens of East and West Kameng, the Khamptis of Lohit, and Membas and Kambas Upper East and West Siang do practice Buddhism, a very few have been converted to Christianity or Hinduism (mostly Bhaisnav) but most of the tribes believe in and practice their traditional social customs and have been called animists.

In this section the articles, booklets and books related to the religions and traditional social customs including the various festivals, ritual practices and dances of the various tribes have been referred to as source materials.

1. BAGCHI, R.N.

Socio-cultural profile of the Monpas of Kalaktang area.

Resarun Vol. IX, No. 1, 1983.

This monograph discusses in detail the socio-cultural structure of Kalaktang Monpas or Rongnama Monpas who primarily inhabit the West Kameng district and are Buddhists of Mahayana sect by religion. The subjects included are social organisation, religious beliefs and practices, priesthood, festivals, dance and music, political organisations etc.

2. BARUA, T.K.

The Singphos and their religion.

Directorate of Research, Govt. of Arunachal Pradesh,

Shillong 1977.

This book highlights the socio-cultural and religious beliefs of the Singphos, a small tribe living partly in Tirap and Lohit districts of Arunachal Pradesh. The first part of the book deals with the land and the people of the Singpho area, with their domestic and social life. The second part is mainly devoted to the religious beliefs and practices of the Singphos.

3. BORGOHAIN, H.

Socio-religious prohibition among the Adis.

Resarun, Vol. VII, No. 1 & 2, 1981.

Adis are the main inhabitants of Siang district and constitute one of the major tribes of Arunachal Pradesh. The Adis, like other tribes, have certain socio-religious prohibitions and restrictions which are followed or observed strictly. The author describes various socio-religious restrictions or Taboos that are observed in the Adi society.

4. CENSUS OF INDIA 1971

Social and cultural tables

Series No. 24, Arunachal Pradesh

Part II C(1)

This volume presents the social and cultural tables of 1971 Census with regard to religion, scheduled castes and scheduled tribes of Arunachal Pradesh. The main contents include

the basic data and tables pertaining to religion, population classification by literacy, industrial category of workers and non-workers among scheduled castes and scheduled tribes. According to the religion data, the number of people under the percentage of various major religions to total population are as follows: Buddhism 61,400 (13.13%), Christianity 3,684 (0.79%), Hinduism 1,02,832 (21.9%), Islam 842 (0.18%), Jainism 39 (.008%), Sikhism 1,255 (0.27%). Other religions and persuasions 2,96,674 (63.46%), religion not stated 785 (0.16%).

This volume is very useful for understanding the religious composition of the population as well as the percentage of total workers (classified according to S/C and S/T) and non-workers of Arunachal Pradesh. It provides a valuable data base for the study of the socio-cultural structure of Arunachal Pradesh.

5. CHOUDHURY, J.N.

A Comparative study of Adi Religion.

Directorate of Research, Govt. of Arunachal Pradesh

Shillong 1977.

The Adis are one of the major tribes of Arunachal Pradesh who predominantly occupy the Siang district. In this book the author gives an account of the conceptual and ritual beliefs and practices of Adis, and compares them with the other religions of India. Besides, the book also depicts the historical background, migration, present locations, cultural profile and economy, arts and craft etc. of the Adis.

6. DEURI, R.K.

Ritual belief and practices of the Miju Mishmis of
Lohit Valley.

Resarun, Vol. IX, No. 2, 1983.

Almost all tribal people believe in a supreme creator. This is based on the spiritual qualities of natural phenomena which create havoc in the form of earthquake, landslide, fire, storm, epidemic and crop failure etc. To protect themselves and the society from these natural calamities they perform rituals and sacrifice animals to appease the supreme creator. In this paper the author describes the nature of ritual practices and offerings made by the Miju Mishmis.

7. DEURI, R. K.

Festivals of Kameng

Directorate of Research, Government of Arunachal Pradesh
Shillong 1983

This book presents the popular and important festivals of East and West Kameng which is mainly inhabited by Monpas, Sherdukpens, Khowas, Mimus, Akas, Bagnis etc. It describes all the popular festivals of these tribes and subtribes.

8. DHAR, B.

Monpas of West Kameng: A Study of the Tsangla Sub-culture
Resarun, Vol. VIII, No. 2, 1982.

The Monpas of Kameng district are practically found in three groups viz. Kalaktang Monpas, the Dirang Monpas and the Tawang Monpas. The Kalaktang and Dirang Monpas are christened as Tsangla and the Tawang Monpas as Brahmin. The socio-cultural traits of the Tsangla are described in detail in this article.

9. DUTTA, P.C.

Trends of socio-cultural development in NEFA.

NEFA Information, Vol. III, No. 12, 1969.

Trends of socio-cultural development of a society are influenced by the trade contact with its relatively developed neighbour. In the earlier days the trade contact was mainly with Tibet, but later during British regime it partially shifted towards Assam. At present the contact is fully towards Assam and the rest of India. The author vividly describes the trends of socio-cultural development of Arunachal Pradesh in the above sequence.

10. ELWIN, V.

Myths of the North East Frontier of India.

NEFA, Shillong, 1958, reprinted 1968.

This book contains about four hundred folk stories which are based on mythological belief of various tribes of Arunachal Pradesh. The author classifies these stories into four major parts, and twenty sections on the basis of the story to which it relates.

The first part contains the mythological stories related to the heaven and the earth and its creation. The second relates to the man and his history, the third to the daily life of man and the fourth part with the world of animals.

These folk tales are interesting because they are related to the myths and socio-religious beliefs of the tribes of the region.

11. ERING, O.

Traditional culture of Arunachal.

A.P. News, Vol. 2, No. 1, 1973.

The traditional culture means various religious faiths, spirituality belief, mythological or philosophical concept of life and death. Thus the author describes the practical uses of these traditional beliefs among the tribes of Arunachal.

12. ROY, S.

Aspects of Padam Minyong culture.

Directorate of Research, Shillong 1966.

This book is an outcome of intensive research by the author who has been cultural research officer in the NEFA administration. The Minyong and Padams are closely allied tribal groups living in the Siang district of NEFA. It gives an account of the various cultural aspects of both the groups of the Adi tribes of the region.

13. SARKAR, N.

An account of Gorcham Chorten, the largest Stupa in
Arunachal Pradesh.

Resarun, Vol. III, No. 4, Oct. 1977.

The author in this paper gives an account of the origin and history of the Gorcham Chorten which is the largest chorten or Budhnath Stupa in the Buddhist area of Arunachal Pradesh. It is located at Gorcham near Zemithang in the northern part of Kameng district. The motto of building chorten among the Buddhist and specially the historical background of the Gorcham Chorten are also discussed.

14. SARKAR, N.

Minor Religions structures of the Monpas and
Sherdukpens.

Resarun Vol. 3, No. 3, July 1977.

This paper describes the various religions structures found in the Monpas and Sherdukpens of Kameng district who are Buddhist by religion. The common religion structures described are as Phans, Wing-Piung or Laptse, Sachubompa, Kuthang etc.

15. SARKAR, N.

Buddhism among the Monpas and Sherdukpens.

Research Department, Shillong 1980.

The Monpas and Sherdukpens are the two main tribes of Kameng district who follow the Mahayana sect of Buddhism in Arunachal Pradesh. In this book the author describes in detail about the Buddhism as practised by them including the historical background, religion structures and institutions etc. Thus this book provides a useful reference for understanding the religion practices of Arunachal Pradesh, particularly the Buddhism among the Monpas and Sherdukpens of Kameng district.

16. SARKAR, N.

Tawang Monastery

Research Department, Shillong 1981

Government of Arunachal Pradesh.

The Tawang Monastery stands on the spur of a hill about 10,000 feet above the mean sea level, near the Tawangchu, in the Kameng district. It is the fountain head of the spiritual life of the Monpas and Sherdukpens of Arunachal Pradesh. The author describes the Monastery with historical background, descriptive account of the monastic system with maps and illustrations.

17. SARKAR, N.

Dances of Arunachal Pradesh

Directorate of Research, Government of Arunachal Pradesh

Shillong 1974.

This book presents a detailed description of the dances of twenty one major tribes spread over all the districts

of Arunachal Pradesh. The author not only presented the various dance movements but also relate each dance to the social context of the community performing it. Only the popular and major dances are included. The dances are very much part and parcel of various festivals which are related to the ritual and religious practices of respective tribes.

18. SINGH, R.

Religion and culture of North Eastern India.

Abhirav Publications

New Delhi 1977

This book describes in detail the religion and culture of each tribe in Arunachal Pradesh in a lucid manner, and forms an important source for understanding the religion and socio-cultural life of the region.

19. MIRI, S. (ed)

Religion and Society of North East India

Vikas Publishing, New Delhi 1980

This volume contains papers presented by various distinguished scholars at the Seminar organised by the Philosophy Department of NEHU in 1979 on "Religion and Society of N.E. India."

Though there is not a single paper pertaining to the religion and society of Arunachal tribal in particular, some

papers deal the basic philosophical aspect of religion of the region as a whole. The paper "The Spread of Christianity in the N.E. India or exchange theory of Conversion" by B.P. Misra contains the basic philosophy or logic behind the conversion of tribal people to christianity, to which Arunachal is no exception.

Thus this volume could be used as a supplementary source in the study of the religion situation in Arunachal and N.E. Region as a whole.

B. Language (Linguistic Structure)

The main references for this section are provided by the work done by the philological section of the Directorate of Research, Government of Arunachal Pradesh. The philological section has been entrusted with the practical task to prepare simple grammar, language guide and dictionaries for the use of government personnel serving in the interior places of the region, who often find themselves among people who know no language other than their own. For this purpose the philological section brought out at least one language guide book or grammar, or dictionary of each major tribes of the region. Therefore, these language guide books form the primary source and reference material for understanding the linguistic situation of Arunachal Pradesh. Apart from these publications, there are very few published books and articles on this topic.

1. AHMED, A.

The pattern of distribution of languages in the North-Eastern Region.

Journal - Himayala-Man and Nature Vol. VI, No. 2, 1983
continued Vol. VII, No. 1, 1983.

The article discusses the geographical distribution of the various languages of North-Eastern Region of India with suitable data and maps, and forms a useful source for understanding the linguistic pattern and distribution in the region.

2. DASGUPTA, K.

Language and Culture

Resarun 75

A language is the mirror of a culture and as such it should be studied with the framework of culture. Some scholars have the notion that the tribal dialects have a limited vocabulary, but it is not correct, when one looks into it he finds that it has a sufficient number of words necessary for that society. The author discusses some major languages spoken in Arunachal in relation to the culture and language areas concerned. It mainly deals with the following languages - Miju Mishmis of Lohit, Daflas (Nishis) of Subansiri, Gallo of West Siang, Monpas of Kameng and Tangsa and Singphos of Tirap District.

3. GRIERSON, G.A. (ed)

Linguistic Survey of India

Tibeto-Burman family Vol. III, Pt. 1.

This volume "Linguistic Survey of India" contains the Tibeto-Burman family of language, to which the languages of North Assam group fall. It treats in detail the languages of all the tribes of Arunachal. It gives the pronunciations, use of articles, prefixes, suffixes, noun, gender etc. of each local dialect with its equivalent English words. This volume of linguistic survey of India forms the primary reference to understand the linguistic family of various dialects of Arunachal Pradesh.

4. MIRI, M. (ed)

Linguistic Situation in North East India

NEICSSR, Shillong 1982.

This volume contains the papers by scholars presented at the Seminar on the Linguistic Situation in N.E. India conducted by the North East India Council of Social Science Research in association with the Department of Sociology and Anthropology on 25-26 September 1979. The effort was to study the multidimensional issues involved in the development process of N.E. India, with special focus on the problems of inter-ethnic communication, linguistic identity and growth of ethnic consciousness on the basis of linguistic affiliation in post independent period.

The editor apart from giving a relevant introductory notes on the linguistic situation of the N.E. India, classifies the various papers under three main heads. The first part contains papers related to the language and politics, trend of the language and culture, language problem etc. The second part contains papers on language, culture and society, in which Sino-Tibetan languages of N.E. India; social aspects by P.C. Bhattacharjee is very much relevant to the study of linguistic situation in Arunachal, and the last part contains the papers on linguistics, in which the paper by K. Dasgupta "A few aspects of some of the languages of Arunachal Pradesh" studies the main dialects of the territory.

This volume constitutes an important and valuable reference work for understanding the linguistic structure of North Eastern Region as a whole.

C. Migration and Settlement

There is very little written material dealing with the migration and settlement of Arunachal Pradesh. Most of them are to be found in the ethnographic monographs on the various tribes of the region, written either by Britishers or prepared here recently by the Research Department of Government of Arunachal Pradesh. Moreover, major tribes of the region do not have written language, except the Monpas and Sherdukpens who

have Tibetan script and Khamptis who use Thai script. Thus most of the migration accounts are based on the myth and legendary beliefs and of various tribes.

1. BHATTACHARJI, T.K.

The Adis: Their origin and migration.

A.P. News Vol. 6, No. 9, 1978.

The Adis, Mongoloid in physical affinity presently live in the east and west Siang district, and are one of the principal tribes of Arunachal. This article gives an account of the possible causes of migration of Adis. According to the author, the original home of Adis was Salwin Mekong basin, but this conclusion is based only on folklore as incorporated in the Abangs or chanted poetic songs of the Adis.

2. DUTTA, P.C.

The Story of origin and migration of the Noctes.

Resarun 76.

The author describes the origin and migration of the Noctes, based mainly on the narrated story by village elders. The Noctes of Tirap district, migrated mainly from the Burma. The author has narrated the migration courses of various villages, as described by village elders of respective villages of the tribe.

3. DUTTA, P.C.

The Wanchos - their legendary beliefs regarding origin and migration.

Resarun, Vol. 3, No. 4, Oct. 1977.

The Wanchos of the Tirap district, live mainly in the western part of the district in the area bounded by the Tisa river in the east, Tuensang area of Nagaland in the west, Patkai hills in the South and the Sibsagar district of Assam in the North.

The article describes the origin and migration of Nocte as narrated by elders of the tribe. They might have migrated to their present habitat from the land beyond the Patkai hills or in the Tuensang area of Nagaland.

4. DUTTA, C. (ed)

District Gazetteer of Arunachal
Government of Arunachal, 1978.

The district gazetteer of each district describes the tribes, their origin and migration in the respective district. Thus it provides some idea about the migration of each tribe.

5. KUMAR, B.

Urbanisation in Arunachal Pradesh
A.P. News, Vol. 10, No. 2, 1982.

The concept and process of urbanisation is of very recent origin in Arunachal. Only in 1971 census, data on four urban centres were enlisted and during 1981 census two more urban centres have come up. Only 6.32% of the total population of Arunachal is urban. It is thus the least urbanized among the states and union territories in the country.

This article describes the processes of urbanisation in the territory, and to test the degree of stabilization of urban centres, considers some criteria. The criteria are sex ratio, number of families which moved to urban places as regular or permanent inhabitants, ratio of workers and non-workers, dependency ration, ratio of female to male workers, growth rate of population, and literacy and its growth rate. Also attempt has been made to project the 1991 urban population of the territory.

6. PANDA, P.C. and YADAV, K.

A Study of Rural Settlement of Tirap District of Arunachal Pradesh.

Hill Geographer Vol. II, No. 2, 1983, pp. 26-31.

This article gives a geographical account of the rural settlement of Tirap district and includes such aspects as distribution of rural population and settlement, settlement site, selection of settlement site by various tribal groups of Tirap as Wancho, Singpho, Tangsa and their house types.

D. Tribes and their distribution

There is ample material available on the various hill tribes of Arunachal Pradesh. The British during pre-independence period made several political, military and missionary expeditions to the hill tribes of the then NEFA. The accounts of these expeditions are found in various old journals and government papers. In the post independence period under the guidance of Dr. Verrier Elwin, Tribal Adviser to the Governor of Assam, a number of monographs on the various tribes of Arunachal Pradesh were brought out. Presently the Directorate of Research, Government of Arunachal Pradesh is doing intensive research work on the tribes of the territory and has brought out books and Monographs at least one for each principal tribe of the territory.

The following are the books, monographs and articles which dealt with the geographical and socio-cultural aspects of the tribes of the region.

1. BARUAH, T.K.M.

The Idu Mishmis

Directorate of Research, Govt. of Arunachal Pradesh

Shillong 1960

The Idu Mishmis constitute one of the principal sub-groups of the Mishmi tribes of Arunachal Pradesh. The Idus

are primarily inhabiting the rugged hills of the Lohit district. This book is a pioneering attempt to introduce them to the outside world. It described the land and the people, their domestic life, social life, political life, religion and ceremonies and provides first hand information regarding the socio-cultural life of the Idus of Arunachal.

2. BAGCHI, R.N.

The Life Cycle of Tagin

A.P. News, Vol. 6, No. 1, 1978

This article describes the life cycle and the socio-cultural activities of Tagins who pre-dominantly occupy the Upper Subansiri District of Arunachal Pradesh.

3. BHATTACHERJEE, T.

The Idus of Mathun and Dri Valley

Directorate of Research,

Government of Arunachal Pradesh

Shillong 1983

The Mathun and Dri valleys lie in the Northern region of Lohit district. The two valleys form part of the famous Dibang valley which is mainly inhabited by the Idus or Chulikata Mishmis, a major tribe of Arunachal. This volume gives a detailed account about the land and people of the Dibang valley, their origin, migration, material life, agriculture, social life, political life etc.

4. BHATTACHERJEE, T.K.

The Tangams

Directorate of Research

Government of Arunachal Pradesh

Shillong 1975

This monograph is about the Tangams of Tuting area of Siang district, which is one of the most inaccessible parts of the region with difficult mountainous terrain. The Tangams are a section of the Adis or Abors of Siang District. The first chapter of the book describes the land and people, mountain, river, flora, fauna, forest, climate etc. The second chapter deals with the people and their history, the third with the occupations, the fourth with the social life and the last one with the world of unknown on the various myths and mythological beliefs of the Tangams.

5. BOWER, U.G.

The Hidden Land

Allied Publisher

Indian reprint 1978

This book provides a vivid account of the Subansiri by the wife of the first political officer of the area during the British regime. The author lived among the Nishis and Apatanis of the area and describes the land and the people, their society, social customs etc. It constitutes a valuable contribution based on first hand information.

6. CHOWDHURY, J.N.

The Hill Miris of Subansiri

Directorate of Research

Government of Arunachal Pradesh

Shillong 1970

The Hill Miris of Subansiri District mainly occupy the eastern and North eastern part of the district. This book contains a brief sketch of their traditional culture and social life. The introductory part contains a descriptive account of the district its various hill tribes and the historical and political background. Second part contains a descriptive account of the people e.g. the Hill Miris. The author distinguishes between the Hill Miris and the plain Miris, and then gives an interesting account of the Hill Miri country, their migration, ethnic and cultural group, language, appearance, dress, village, house types, economy, trade, social institutions, political institutions and religions etc.

7. COOPER, R.E.

Bhutan: Tailed people "Daktas"

People with a tail in the east Bhutanese Himalaya Man,

Vol. XXXII, No. 131, 1933.

The paper describes the Monpas around Tawang of present Tawang district of Arunachal, who carry a felt sitting pad attached to their backs.

8. CHATTERJEE, S.K.

Nishis of Popum Pama Valley

A.P. News Vol. 5, No. 1, 1976.

This article gives a short account of the Nishis of Subansiri area, which is one of the major tribes of the territory.

9. DEURI, R.K.

The Sulungs

Directorate of Research,

Government of Arunachal Pradesh

Shillong 1982

This monograph deals with the Sulungs who are one of the most backward tribes of Arunachal Pradesh. They are found widely dispersed over the inaccessible, unexplored and rugged hills in the North Eastern Region of East Kameng and Subansiri districts. Their main habitation is bounded by the McMohan Line towards Tibet, on the south by the Bagnis territory, on the east by the lower Subansiri district and on the west by the Mijis of Kameng.

The book gives an introductory idea about the Sulungs, their country, material culture, political, social and economic organisation, rituals, religious beliefs and domestic life in five chapters.

10. DUTTA, P.C.

The Noctes

Directorate of Research

Government of Arunachal Pradesh

Shillong 1978

This monograph presents a detailed description of the socio-cultural life of the Noctes, one of the major tribes of Tirap district. They primarily inhabit the Central part of the district which is bounded on the east by the Tirap river, on the west by the Tisa river, on the south by the Patkai hills and in the north by the State of Assam.

The introductory chapter contains accounts of location, flora, fauna, geology, climate, origin, migration, history, language etc. The second chapter deals with the domestic life, the third with the social life, the fourth with the political life and the fifth with the religion. It is a valuable reference book on the Noctes and also provides a useful ethnographic reference on hill tribes of the territory.

11. DUTTA, P.C.

Tangsas of the Namsik and Tirap Valley.

Directorate of Research

Government of Arunachal Pradesh

Shillong 1964

The Tangsas predominantly occupy the Namsik and Tirap valley and form one of the major tribes of the district. The book provides an introductory account of the socio-cultural, socio-economic, and religious life of the Tangsas.

12. DALTON, E. T.

Descriptive Ethnology of Bengal
Calcutta 1872

This ethnographic account is the first descriptive account on the various hill tribes of the region. The major tribes described are the Khamptis, Singphos, Mishmis, Abors, Daflas, Akas and Nagas.

13. DUFF-SUTHERLAND-DUNBAR, G. COGGIN BROWN, J AND KEMP, S. W.

Abors and Galongs
Memoirs of A. S. B. Vol. V, 1913-1917.

This paper gives us an important and valuable account of the Abors and Galongs of the present east and west Siang District.

14. DUN, G. W.

Preliminary notes on Daphlas
Simla 1896

This preliminary note is about the Daphlas now known as Nishis or Nishing and inhabiting mostly of Subansiri District.

15. HAIMENDORF, FURER, C.V.

Himalayan Barbary

London first published 1955

Reprinted 1956

It is a descriptive account of an expedition as well as a travelogue made by the author "Professor C.F. Haimendorf" during 1944. He was entrusted by government of British India to explore the border land between India and eastern Tibet which remains to this day unmapped and unexplored. The expedition was intended to prepare the ground for the extension of administrative control over a group of little known tribes of the region. One of the main tasks was to study the people's economy and social organisation of the area west of the Subansiri river and of establishing friendly relations with such independent tribes as Apatanis and Daflas (Nishis).

The survey is mainly concerned with the Apatanis of Subansiri. It vividly describes the land and the people, their economy, socio-cultural organisations apart from the friendly relations established by the author during the expedition. It forms an important reference for understanding the Tribes and their distribution in Arunachal.

16. HAIMENDORF FURER, C.V.

Highlanders of Arunachal Pradesh: Anthropological

Research in N.E. India

Vikas Publishing House, New Delhi 1982

This book contains an ethnographic account of the traditional social and cultural life of the tribes of Arunachal Pradesh, with special reference to the Nishis and Hill Miris. In general it deals with all the tribes of the territory with their traditional social and cultural life.

This volume dealing exclusively with the hill tribes of Arunachal, forms an important and useful reference for understanding the tribes of the territory in general and the Nishis and Hill Miris in particular.

17. HAIMENDORF FURER, C.V.

A Himalayan tribe - From Cattle to Cash.

Vikas Publishing House, New Delhi.

The Himalayan tribe described in this volume is the Apatanis of the famous Apatani plateau of lower Subansiri District. They constitute one of the principal tribal groups of Arunachal. The book particularly discusses the socio-economic development among the Apatanis between 1944 to 1978 and highlights the economic transformation since last thirty years in the territory in general and amongst the Apatanis in particular.

18. HALLIDAY, H.I.

The Abors of Assam

United Empire, Vol. XIX, 1928

This paper gives us introductory notes on the Abors of Siang and its subgroups such as Galongs, Minyongs, Padam, Pasi, Bori, Bokar, Pangis Simongs etc. Abors are one of the principal tribes of Arunachal.

19. HESSEL MEYER, C.H.

The Hill tribes of the Northern Frontier of Assam.

J.A.S.B. Vol. XXXVII, 1868

The paper describes the main hill tribes of the Northern region including the Akas of Kameng district from Arunachal.

20. KUMAR, K.

The Boris

Directorate of Research

Government of Arunachal Pradesh

Shillong 1979

The Boris are a small group inhabiting the Upper central region of Siang district, especially the central portion of the Siyom valley and a major portion of the Sike valley between Muga in the south and Gasheng in the north. They are sub-group of the Adis of Siang.

This monograph gives a fairly full account of socio-cultural life and the habitat and economy of the Boris in

seven chapters. The contents are as land and the people; domestic life, economic life; social life; political life, religious life and myths and traditions.

21. KUMAR, K.

The Pailibos

Directorate of Research

Government of Arunachal Pradesh

Shillong 1979

The Pailibos or Libo is a small group of the Adis of Siang district, confined mainly to the Tato and Payum circle of present West Siang District.

This monograph discusses in detail the social, economic, political and religious life of the Pailibos. The introductory part deals with the land and the people with the topography, climate, flora-fauna, communication, language and population.

22. KENNEDY, R.S.

Ethnological report on the Akas, Khoas, Mijis and Membas of Tawang.

Shillong 1914

These are the principal tribes of the Tawang area of Kameng district. They are Buddhist by religion and use Tibetan script. Mask making, mask dance and animal dances are very popular among them.

23. KONDINYA, B.

Wancho Janajati of Arunachal Pradesh

Himalayan Man and Nature Vol. 4, No. 3, 1980.

24. KONDINYA, B.

Aka Janajati of Arunachal Pradesh

Himalayan Man & Nature, Vol. 3, No. 10, 1980.

25. KONDINYA, B.

Monpa Janajati of Arunachal Pradesh

Himalayan Man & Nature, Vol. 3, No. 8, 9, 1980

These articles by same author describe the Wanchos of Tirap, Akas and Monpas of Kameng districts. The aspects touched are their present location, socio-cultural, religious and economic life.

26. MILLS, J. P.

The Mishmis of the Lohit Valley, Assam.

J.R.A.I. Vol. LXXXII, 1952.

There are three subgroups of Mishmis namely, Taraon, Idu and Miju Mishmis with distinct differences in dress and hair style. This paper describes them in detail.

27. NAIR, P. T.

Tribes of Arunachal Pradesh

Spectrum Publications

Gauhati 1985

This recent book constitutes an important and valuable work of reference on the tribes of Arunachal Pradesh. It contains descriptive account of the major tribes of the territory with their socio-cultural and economic life treated in detail. The sections on administrative set up, British relations with hill tribes of Arunachal are informative. But the sections on the tribes are more detailed and illuminating. The major tribes discussed include the Adis, the Akas, the Apatanis, the Nishis, the Gallongs, the Khamptis, the Mishmis, the Monpas, the Wan-chos etc. with their present location, origin, history of migration, food habits, house types, material culture and social organisation.

28. NANDA, N.

Tawang - the land of Mon

This book describes the remote border subdivision Tawang of Arunachal, which is the main habitat of the Monpas. It gives a vivid description of the life, laws, customs and religious beliefs of the Monpas.

29. PANDEY, B.B.

The Hill Miris

Directorate of Research

Government of Arunachal Pradesh

Shillong 1974.

This monograph describes the Hill Miris of lower Subansiri district, which forms a comparatively small group among the tribal communities inhabiting the district. Like other ethnographic monographs published by the Directorate this volume too gives a detailed account of the various aspects of the Hill Miris such as the land and people, social, economic and political life.

30. PANDEY, B.B.

The tribes of Arunachal Pradesh

Journal of Social Research, Vol. XXIII

No. 1, 1981.

Arunachal is the abode of about twenty five principal tribes and about eighty subtribes. The author describes the principal tribes of the territory in brief.

31. BAGCHI, R.N.

Bagnis of East Kameng

Social Research (JISR) Vol. 4, No. 3-4,

July - Oct. 1984.

The Bagnis, a section of the Mishis are local inhabitants of East Kameng district, which is bounded on the north by the Tibet, on the south by the Darrang district of Assam, on the east by the lower Subansiri and on the west by the West Kameng. The paper describes the socio-cultural life of the

Bagnis, the land, the people, their origin, migration, the village, house type, food habits and social organisations. The account though brief is useful.

32. SHUKLA, B.K.

The Daflas

Directorate of Research

Government of Arunachal Pradesh

Shillong 1959.

This treatise is a brief introduction to the study of Dafla (Nishis) tribe, who constitute a major tribe of the territory and primarily inhabit the Subansiri district. It describes the land and the people, their socio-cultural, socio-economic and socio-religious life.

33. SHRIVASTAVA, L.R.N.

Among the Wanchos

Directorate of Research

Government of Arunachal Pradesh

Shillong 1973

This book gives an account of the geographical and ecological setting of the Wancho area, the economic condition, social systems, political institutions, and the religious beliefs and practices of the people. The Wanchos primarily occupy the south and south-west of the Tirap district, bounded on the north and east by the Noctes, on the south by the Burma and on the west by the Konyaks of Tuensang district of Nagaland.

34. SINHA, R.

The Akas

Directorate of Research

Government of Arunachal Pradesh

Shillong 1962

The Akas are a small tribe living in the Kameng district of Arunachal. It is the first book written on the Akas. It gives an account on these charming people, their beautiful surroundings, their domestic, social, political life and the land.

35. SHARMA, R.R.P.

The Sherdukpens

Directorate of Research

Government of Arunachal Pradesh

Shillong 1961

This volume introduces the Sherdukpens, who form a relatively small tribe living in the Kameng division. Like the other monographs on various tribes of the region, it contains the chapters on the land and the people, their domestic life, social life, political organisation and religions with detailed description.

36. SRIVASTAVA, L.R.N.

The Gallongs

Directorate of Research

Government of Arunachal Pradesh

Shillong 1962

The Gallongs or Gallos is a major subgroup of the Adis of Siang. They primarily occupy the west Siang district. This monograph introduces the Gallongs and discuss the various aspects of their life such as the land and people, their social, economic, political and religious life.

These above mentioned books, monographs and articles are the main important source materials and useful references for the study of the various tribes of Arunachal Pradesh.

CHAPTER - V

ECONOMIC STRUCTURE

The territory of Arunachal is mountainous. It has rugged topography and formidable terrain, with deep gorges and steep mountains. It has a wide range of agro-climatic conditions ranging from subtropical to arctic in the higher altitudes. The land topography is characterised by steep hills and narrow valleys as a result, the main agricultural practice is jhumming or shifting cultivation. In the valleys however, the soils are deep and fertile where wet rice of sedentary agriculture is being practised now a days. The main occupation of the people is agriculture. About 90 per cent or more of the local people are engaged in agricultural activities mainly jhumming, except some sedentary agriculture practised along the foothills of Assam-Arunachal State boundary and the river valleys. Thus the economy of Arunachal is essentially agricultural and centres largely round jhumming. Practically, all productive activities are on consumption level and each family produces all that it needs. A little weaving, bamboo and cane works are also practised for local purpose only. Trade and commerce during the British period was limited to fairs held along the borders of Assam and were on very limited scale, carried on by some tribes. No, industry, worth the name existed in 1947, and arts and crafts come at the verge of extinction.

After independence the free India inherited a very precarious legacy of development specially the transport and communication in Arunachal Pradesh. A plan of systematic

development of the area was envisaged in the year 1952 and a team of workers were trained to help the tribal people's progress, but very little had been done until 1962. Much of the development work was geared to defence requirements which again were highlighted by the Chinese movement across the border. At present the territory has about 11,553 Km road surfaced and unsurfaced. There are about 48 community development blocks in which about 1103 educational institutions, 200 post offices, 171 hospitals, 1720 places have been provided with electricity, and the percentage of literacy has risen to 20.5 per cent. This shows indeed a tremendous development against a completely dark background of economic activity that prevailed in 1947.

As stated earlier, the main economy and the main stay of the people of Arunachal is agriculture, primarily shifting or jhum agriculture. People of the territory are not conservative, they have begun to adopt modern methods of agriculture, and in the suitable areas permanent cultivation has been taken up, even double cropping, multiple cropping, pisciculture, and use of manure have come into vogue. The principal constraints to agricultural development are the formidable topography and also lack of technology, lack of proper utilization of known technology; lack of markets and economic, political and social institutions.

Jhumming as a system of cultivation is the indigenous form of agriculture being the most commonly and customarily accepted among the cultivators of the state. The indiscriminate practice of jhum in the hilly areas brings many negative consequences, as ecological disequilibrium by depletion of forest cover aggravates chances of soil erosion and depletes the top soil. To control these negative consequences of the jhumming, economists, and agricultural scientists have suggested to encourage the local people to take up allied activities such as piggery, poultry, dairy farming, fisheries, fruit and vegetable cultivation and agro-based small scale industries. Presently, the central as well as state governments have taken up multi-disciplinary programmes through various government agencies and departments like agriculture, animal husbandary, rural works department etc. who encourage the local people in improved farming, use of fertilizers, high yielding variety, and help in the construction of irrigation channels.

Industrial development in the region is infancy and has been just initiated under various plan periods. Small and cottage industries comprise of weaving, handloom, craft. There are a few medium scale industries such as Mini Cement Plant at Tezu, forest based industries, like saw mills and plywood mills etc. But the level of industrial development is far below the national average as the region has only 3 medium and large

industries and 11 small industries. The region is rich in water resources, which could be harnessed in producing hydro-electricity to the tune of about 20,000 megawatts. Thus development of micro-hydel power is rapidly taking place. Till 1980 out of 2973 villages, 295 has been electrified and more are expected to be electrified in near future. The present electricity consumption is 9 units per capita against the national average of 131 units. Transport development is very much lacking behind, in the territory, which acts as the main constraint to economic development. The overall transport development could be understood by the statement that "Till 1957 the only means for reaching even the district and subdivisional headquarters was to be airborne." During British regime the road development may be said to be nil; only some small tracts were developed for administrative purposes. In the post independence period, the free India inherited a very precarious legacy of developmental programmes in Arunachal particularly the development of Transport and Communication infrastructure. The pace of transport and communication development was speeded up since 1962 mainly for defence requirement, when Chinese moved across the boundary. In 1960, Road Development Board was entrusted with the responsibility of looking after and coordinating efforts in connection with development of border roads in frontier areas. Presently, the territory has about 11,553 Km of roads of which

2,396 Km are surfaced. Road density per 100 Sq. Km is only 7.2 Km which is far below the national average of 48.9 Km of Road per 100 Sq. Km of area. The main constraints to road development are its formidable terrain, the heavy rainfall, loose soil, mass wasting, frequent landslides, and large number of rivers.

Arunachal Pradesh is endowed with high potential of natural resources, specially hydro-power, forest resources and mineral resources, but they are yet to be explored and harnessed. The Geological Survey of India and Oil and Natural Gas Commission are presently doing intensive and extensive exploration survey, which has given very encouraging results. Now some oil drilling activity has been taken up at Karsang in Tirap district by ONGC. The Mini Cement Plant at Tezu in Lohit district is based on local limestone. As a result of the endeavour of Geological Survey during last three decades a number of occurrences of coal, iron ore, sulphite, clay, limestone, dolomite and building stones have been found. Thus, Arunachal is expected to have mineral-based industries in the near future.

The present economic structure of Arunachal is characterized by a concerted effort at overall economic development with the national mainstream. This chapter on economic structure will review all the existing source materials on the topic. The account of the overall economic development of the region is

furnished by various statistical accounts published by the Directorate of Economics and Statistics, Government of Arunachal Pradesh, the 1967 Techno-economic Survey of NEFA conducted by the National Council of Applied Economic Research and various articles found in NEFA information, and Arunachal news. Data on mineral resources are found in the various publications of the Geological Survey of India, particularly the Journal of Indian Minerals, Miscellaneous Publications, and the Bulletin of Indian Geological Association etc.

The important source materials, with their contents, coverage and usefulness for the study of economic structure of Arunachal Pradesh are discussed below.

(1) General Economic Growth or Development

1. AGRAWAL, A.K.

Development in Arunachal Pradesh during 30 years Planning.

A.P. News, Vol. 10, No. 1, 1982.

The economic development of Arunachal during the last 30 years of Planning is discussed in this article. The developmental activities under various five year plan periods, their total financial allocations or various economic overheads are briefly discussed. It is important reference for understanding the economic history of Arunachal since independence to the present.

2. ANONYMOUS

Blue Print for economic development of Arunachal Pradesh.

A.P. News, Vol. 10, No. 2, 1981.

This paper outlines the directives and strategies of development in North-Eastern Region with special reference to Arunachal Pradesh. It discusses the various developmental schemes and projects undertaken for Arunachal by the committee of Ministers, Government of India. It particularly describes development and construction of road and bridges, railways, paper mills, cement plant, jhum control programme, fruit processing, power, telecommunication, science and technology institutions, water supply, commercial crop, dairy farming etc. as proposed by the committee and the envisaged outlay of money for these schemes and projects.

This article gives a valuable account of the strategy of economic development of the territory, which is much sought source for understanding the economic structure of the N.E. region as a whole and Arunachal in particular.

3. DR. BORTHAKUR, I.K. (Mrs)

Major constraints on Arunachal's economy.

A.P. News, Vol. IV, No. 9, 1976.

The author in this article gives an account of the various economic developmental programmes in the province, the

various financial allocations of plan periods etc. followed by the various constraints on economic development in the region. The main constraints pointed out are the region's rugged topography, low population density, mass illiteracy, extremely low road density, over and above the unexplored natural resources including minerals.

4. CHATTERJEE, S.K.

Economic development of Arunachal Pradesh: A transformation from subsistence to money economy.

A.P. News, Vol. 10, No. 1, 1982.

The author discusses the development of Arunachal's economy from mere subsistence (barter) to money economy in this article. During the pre-plan (five year plans) period, the economy was essentially subsistence in nature and transactions were mainly barter. After the Plan Period there was an accelerated growth in the Plan investment on economic development from Rs. 201 lakhs in first five year plan to Rs. 6067.97 lakhs in the fifth five year plan. In the process the barter economy was rapidly overtaken by the monetized economy. To test the rapid transformation of mere barter to monetized economy, the author discusses various indicators in brief such as the growth of marketed surplus in agricultural output, flow of labour from agriculture to non-agricultural activities, increase in wage, payment in cash, conversion of intra-national and inter-

state trade from barter to monetized transactions from unbanked area to bank area; proportionate consumption expenditure and income of subsistence farmers in cash etc.

5. KAR, K.C.

A Page from the History of Development in Arunachal.

A.P. News, Vol. 5, No. 2, 1976.

This article mainly refers the road development in Lohit district, particularly Changland-Khela Road which was constructed under the patronage of the then Political Officer, later Lt. Governor of Arunachal, Shri K.A.A. Raja. It vividly describes how he (Shri Raja) tapped the hidden manpower potential of the local people and utilized them for constructing the Changlang - Khela Road on partial self-help basis. It reveals the zeal for development of the local people as well as the tactics of an able and capable administrator in harnessing the same.

6. CENSUS OF INDIA, 1971

Economic Tables

Series 24, Arunachal Pradesh, Part II (B)

This volume contains the economic data and tables of 1971 Census of Arunachal Pradesh. The main contents are classification of workers and non-workers on the basis of main activity by sex and age, rural and urban educational level,

agriculture and industrial activities, occupational classification by sex, rural and urban areas etc. Thus it contains data pertaining to every aspect of economic activities of the territory and is undoubtedly a very useful reference work for understanding and writing the economic structure of Arunachal Pradesh.

7. MATTHEW, T. (Ed)

North-Eastern Hill Regions of India - Problems and Prospects of Development.

Agricole Publishing Academy

New Delhi - 7, First Published 1981.

Papers included in this volume were presented at the National Seminar on Rural Development at the North-Eastern Hill University in April 1978. Though there is not a single paper which presents the problems and prospects of development of Arunachal Pradesh, the papers in general highlight the economic development of the hill areas of the North Eastern Region as a whole. In a general way, it highlights the peculiarities and diversities of custom and tradition, of climate and terrain, of the long period of neglect and isolation that the region has been subjected to. All these pose problems of a kind such as not encountered in other parts of the country. Apart from the impediments to development, feasible measures of policy are also suggested in the papers, which are useful for the N.E. Region as a whole as well as for Arunachal.

8. MATTHEW, T. (Ed.)

Tribal Economy of North Eastern Region

Spectrum Publications

Gauhati 1980.

It is an edited volume which contains the papers presented at the Seminar on Tribal Economy held in March, 1976, organized by the Department of Economics and of Continuing Education of the North-Eastern Hill University. The papers have been written mostly by people who have worked in the region and experienced the conditions and problems of economic life of the region and have tried to contribute to its development.

The common theme of the papers in this volume is the structure of the tribal economy which is vastly different from the other economic systems such as capitalism or socialism. Many papers discuss the problems of economic development, others the potentialities and still others suggest alternative sources of income and employment for the tribal people.

9. National Council of Applied Economic Research

Techno-economic Survey of NEFA

NCAER 1967.

This volume is the result of report of the National Council of Applied Economic Research, who conducted a techno-economic survey of NEFA early in 1964. In this survey, the Council could not use the usual methods and techniques of

analysis employed in other techno-economic surveys as they were found to be of little use in preparing a strategy for its development. The region apart from being dissimilar from the rest of the country is characterized by utter poverty juxtaposed with rich resource endowments and development potentialities. The area is mountainous with small patches of plains in between ridges, and the climate is rigorous. It is sparsely populated and the entire local population is tribal. Further as very little statistical information was available in respect of population, landuse, yield, livestock, forest, transport etc. and vast portion of the area remained inaccessible even during fair weather, it effectively curtailed the field visit, and under the circumstances the council has carried out the analysis in broad terms only.

The volume discusses almost all aspects of economic development with their potentials and suggests strategies for development. The aspects studied include Agriculture, Livestock and fisheries, forest, industries, minerals and commerce, power transport, manpower, education and health, and their present position and potentials are discussed in detail and various recommendations and suggestions have been made in regard to the possible strategies for development.

10. DATTA RAY, B. (Ed.)

Social and Economic Profile of North-East India.

B.R. Publishing Corporation

Delhi 1978.

It is an edited volume of seminar papers which were presented at a seminar conducted on 14-16th March 1975 at Shillong by the North East India Council for Social Science Research in association with the Indian Council of Social Science Research, North Eastern Council and the Government of Meghalaya. The seminar was an attempt at studying the basic problems of growth of North east. More than thirty papers were presented at the seminar covering various socio-economic and political situations, development etc. of the region as a whole. There is a useful introductory chapter by the editor. The papers are classified under the following heads. (1) Profile of North East India Economy, (2) Levels of economy and the market, (3) Cultural perspectives, and (4) Prospects of integrated development.

These papers are valuable as a source material for understanding the basic socio-economic and political of the region in general and each state and union territory of the region in particular.

11. THUNCON, P.K.

Economy of Arunachal and Twenty Point Economic Programme

A.P. News, Vol. 4, No. 9, 1976.

In this article the then Chief Minister of Arunachal Pradesh has highlighted the developmental programmes in the State under the twenty point economic programme.

These are the few available papers and articles which deal with various economic activities of Arunachal Pradesh. Other than these, the economic data are compiled and published by various government departments and organizations such as Directorate of Economics and Statistics, District Statistical Officer, Central Statistical Organisations, Census of India etc. The following are the Statistical Publications which contain data pertaining to different aspects of economic development of the State.

12. Directorate of Economics and Statistics.

Statistical Handbook of Arunachal Pradesh.

It is annually published since 1970-71, which contains data on each and every departmental activity.

13. District Statistical Officer

District Statistical Handbook.

It is published annually for each district by its respective District Statistical Officer. It too contains data on departmental activities of the respective districts.

14. Directorate of Economics and Statistics.

Economic Review, 1977, 1979-80, 1980.

15. Directorate of Economics and Statistics.
Report on Economic Census 1977.
16. Directorate of Economics and Statistics
Statistical Outline of NEFA, 1960, 1962, 1966, 1967.
17. Directorate of Economics and Statistics
Twenty years development activities of Arunachal Pradesh since 1960-61 to 1979-80.
18. Directorate of Economics and Statistics.
Economic Census 1977.
District-wise data.

These are the major statistical volumes published by various government departments of Arunachal, which contain upto date data on the various economic activities of Arunachal Pradesh.

(ii) Agriculture

The mainstay of the people of Arunachal Pradesh is agriculture, especially jhumming or shifting cultivation. Agriculture is still in the subsistence stage, and agricultural practices are essentially traditional. This is largely due to the rugged topography of the region which is more suitable for jhum rather than sedentary practices. The indiscriminate and wide practice of jhum creates many negative consequences such

as soil erosion, silting etc, which may cause environmental disequilibrium in the region. Thus the central and state government have started various land development schemes and jhum control programmes.

This section on agriculture will review the various books and articles dealing specifically with the agriculture practices and with agricultural development of the region.

1. ANONYMOUS

Fisheries Programme in Arunachal

A. P. News, Vol. 10, No. 2, 1981.

Arunachal is the first among the North Eastern Region and Union Territories of India in respect of two particular schemes, namely - paddy-cum-fish culture (Pisciculture) in Apatani plateau and Trout culture in snow fed areas in Kameng. This article describes the various fisheries extension programme in the State and puts the annual produce during 1979-80 as 350 tonnes and expects the same to go up by another 600 tonnes in addition to the present produce in near future.

2. BORTHEAKUR, I.K. (Mrs)

The Problems of Agricultural Development in Arunachal Pradesh with special reference to Subandiri District.
Unpublished Ph.D. Thesis (G.U.).

3. GOHAIN, C.B.

Approach to Agricultural Development.

A.P. News, Vol. 1, No. 3, 1971.

Arunachal agriculture is primarily dominated by the most traditional system of farming called jhum or shifting cultivation. The author briefly describes the various approaches and schemes taken up by the government during the different plan periods.

4. GOHAIN, C.B.

Haji or Jhum - A Traditional Means of Living.

A.P. News, Vol. 1, No. 7, 1971.

This article describes the traditional farming system prevailing among the tribal people of the territory. He emphasizes that jhumming is not only a means and way of farming among the people but is closely linked with the socio-political and cultural organisations of the region.

5. GOHAIN, B.C.

Shifting Cultivation among the Abors.

Bulletin of Department of Anthropology,

Vol. III, No. 2, Calcutta 1954.

The Abors now popularly known as Adi, are an important and principal tribe of Arunachal and include many subgroups such as Gallo, Minyong, Padams, Bori, Bokai, Pasi, Pailibo, Milangs

etc. The main occupation is the agriculture predominantly shifting or jhum cultivation. The author gives a brief account of the shifting cultivation practised by the Abors.

6. GOHAIN, B.C.

Agricultural Organisation among the Abors.

March of India, Vol. VI, No. 2, 1953.

In this article the author describes the various agricultural organisations and the shifting cultivation practices, the modus operandi of traditional farming system among the Abors (Adis).

7. HAIMENDORF FURER, C. VON.

Agriculture and Land Tenure among the Apatamis.

Man in India, Vol. XXVI, 1946.

The author was commissioned by Indian Government to explore the border land between India and Eastern Tibet e.g. Present Subansiri district to study the economy and social organisation of the native people in order to prepare ground for extension of administration over the area. This area is primarily inhabited by Apatamis. The author gives a full concise account of the economy and social organisation of the Apatamis. The Apatamis practise wet rice cultivation and are in advanced stage in comparison with the other tribal people of the region. The author vividly describes the farming practices and land tenure system among the Apatamis of Subansiri particularly the Apatami plateau.

8. MUKHERJEE, R.

Towards a Dynamic Agriculture.

NEFA Information, Vol. 5, No. 9, April 1971.

In this article the writer writes about the recent agricultural innovations taking place among the local people of NEFA. The local people are recently taking up sedentary farming such as terrace, wet rice cultivation in suitable areas in addition to shifting cultivation. Moreover they have taken up the use of irrigation, vegetable cultivation as potato, use of high yielding varieties etc. This new trend of innovation in agriculture has mainly come through the demonstration farming displayed by the respective district agricultural department of the territory in different places. Innovation has not only helped the local people in taking up the new method of farming, but also in producing surplus food.

9. MUKHERJEE, R.

Multiple cropping around Pasighat: An Assessment.

NEFA Information, Vol. 6, No. 2, September 1971.

This article describes the activities of the Gram Sevak training Centre of Pasighat. This training centre is doing intensive research work in double and multiple cropping in Arunachal, through giving training to the village level workers and local farmers under Farmers Training Centre. It influences the local people through its various demonstration

farms around Pasighat to take up the double and multiple cropping through introduction of high yielding varieties such as IR 8, Joya etc. The author assesses the present position and future potentials of double and multiple cropping around Pasighat.

10. MUKHERJEE, R.

Pisciculture in Apatami plateau.

A.P. News, Vol. 5, No. 2, March 1976.

Development of fisheries among the tribals of Arunachal is very recent one, but it is developing in some parts of the region such as Apatami plateau. This rapid improvement in fisheries is due to the incentives given to the local people by the government in the form of free seeds, and subsidised digging of fishpond etc. The paper describes the development history of fisheries in Arunachal, particularly the Apatami plateau, where the fisheries development switched to paddy-cum-fish culture. It is profitable to the farmer as well as very popular among the people.

11. SUKLA, S.P.

Agricultural potential and planning in hill regions in India, with special reference to Arunachal Pradesh.

Urugh Publications

Allahabad, 1983.

Present volume is the first such volume which is fully devoted to the agricultural geography of Arunachal Pradesh,

particularly the Siang region. At the outset it critically treats the physical and human environment which determines the agricultural pattern and characteristics of the region, then it deals in detail with the nature of agriculture of the region, particularly jhumming as a *modus operandi* as well as the spatio-temporal dimension of the same.

The volume contains three broad parts, of which the first part contains chapters pertaining to the region's geographical and human personality, which basically dictates the mode of agricultural pursuits in the region.

The spatio-temporal dimension and potential of agriculture of the Siang region is fully discussed in the Part II of the book. It gives a comprehensive account of the present use of agricultural land, land available for agriculture, and the agricultural organisation of the region with special reference to jhumming. Jhumming as the traditional mode of farming and the sedentary farming as a new innovation to the local people are treated in detail.

The last part of the volume critically reviews the agricultural planning in hill regions, with special reference to the study region. It assesses the agro-potential of the region and attempts to delimit the agro-planning regionalisation of the region. It also points out the agricultural problems and problems involved in planning. This work is an

important source material for understanding the present agricultural pattern and problems of Arunachal in general and Siang region (the study area) in particular.

12. THANGAM, E.S.

Cash crops cultivation in Forest Department

A.P. News, Vol. 9, No. 4, 1980.

This paper describes the possibility of having large scale cash crop cultivation in Arunachal, particularly in the jhum areas as a shifting cultivation control programme. The suggested crops and possible areas of cultivation are as follows: Tea about 1000 hectares at Kanubari, about 1000 and 400 hectares at Yachuli and Basar respectively, Coffee plantation over 800 hectares in Changlang, and Big Cardamon about 300 hectares in Tirap district, Cocoa about 60 hectares will be raised on experimental basis at Deomali and Namsai, and Small Cardamon about 60 hectares in Deomali area.

13. THANGAM, E.S.

Shifting cultivation control programme in Wancho area, Arunachal Pradesh.

A.P. News, Vol. 10, No. 7, 1981.

This article describes the shifting cultivation control programme taken up by the Government of Arunachal in the Wancho area in Tirap district - its techniques, problems

and achievements. The control programme is done by encouraging the local people in plantation cultivation, gardening, vegetable cultivation, fisheries etc. in suitable areas.

(iii) Industry, Transport and Communications

Arunachal Pradesh has a land area of about 83,578 Sq.Km of which about 80 per cent is mountainous with difficult terrain steep slopes, gorges and lofty mountains. Because of the extremely rough topography, varying weather and climate and lack of transport and communication, the area remained economically backward and virtually isolated for a long period. This prolonged isolation hinders the inter and intra-regional intercourse among the local people as well as the people outside the State. Long stagnation and prolonged isolation of the region were partially broken by the British through their various expeditions to the region. But the British did not pay heed to economic development of the region during pre-independence period. After independence the government of free India felt the urgent need for road development as a vital infrastructure for economic development as well as defence and administrative purposes. With the inception of five year plans, road development was started together with various developmental schemes. Presently, the territory is marching towards economic development with her rich natural resources like forest, minerals, hydro-power, flora and fauna and rich heritage of the local people in handloom, weaving, carpet making, wood carving, cane and bamboo works etc.

Apart from difficult topography of the region the absence of entrepreneurial skill, of skilled and semi-skilled labour and of dependable communication and marketing facilities are standing in the way of rapid industrial development of the territory. Due to lack of communication there is no scope for heavy industry and very little for medium scale industry. So small scale and cottage industry is only possible for which the territory has command substantial potential. The important cottage industries are weaving, handloom, basketry (cane & bamboo works) wood carving, sericulture etc. which are steadily developing under the patronage of Industry Department of Government of Arunachal Pradesh. The medium and small scale industry of the region are mainly forest and agro-based. At present the State has 7 medium and 795 small scale industries such as plywood, saw mills, veneer mills, rice haulers, oil crushers, furniture making, candle work, carpet making, textile manufacturing, automobile workshop etc. Under the large industrial scheme, paper mill at Bhalukpung in West Kameng, mini cement plant at Tezu in Lohit district, and light roofing industry at Pasighat have been established. Two more paper mills, one each at Kimin in Lower Subansiri and Miao in Tirap District will be set up very soon.

Transport and communication is the main obstacle to economic development. As discussed earlier Arunachal has about 11,553 Km road of which about 2,376 Km, are surfaced. It gives a total road density only 7.2 Km of road in a 100 Sq.

TRANSPORT

REFERENCES

- Track
- Unmetalled Road
- Metalled "
- National Highways
- ✈ Air Route (Vayudut)
- ++++ Railway metre gauge

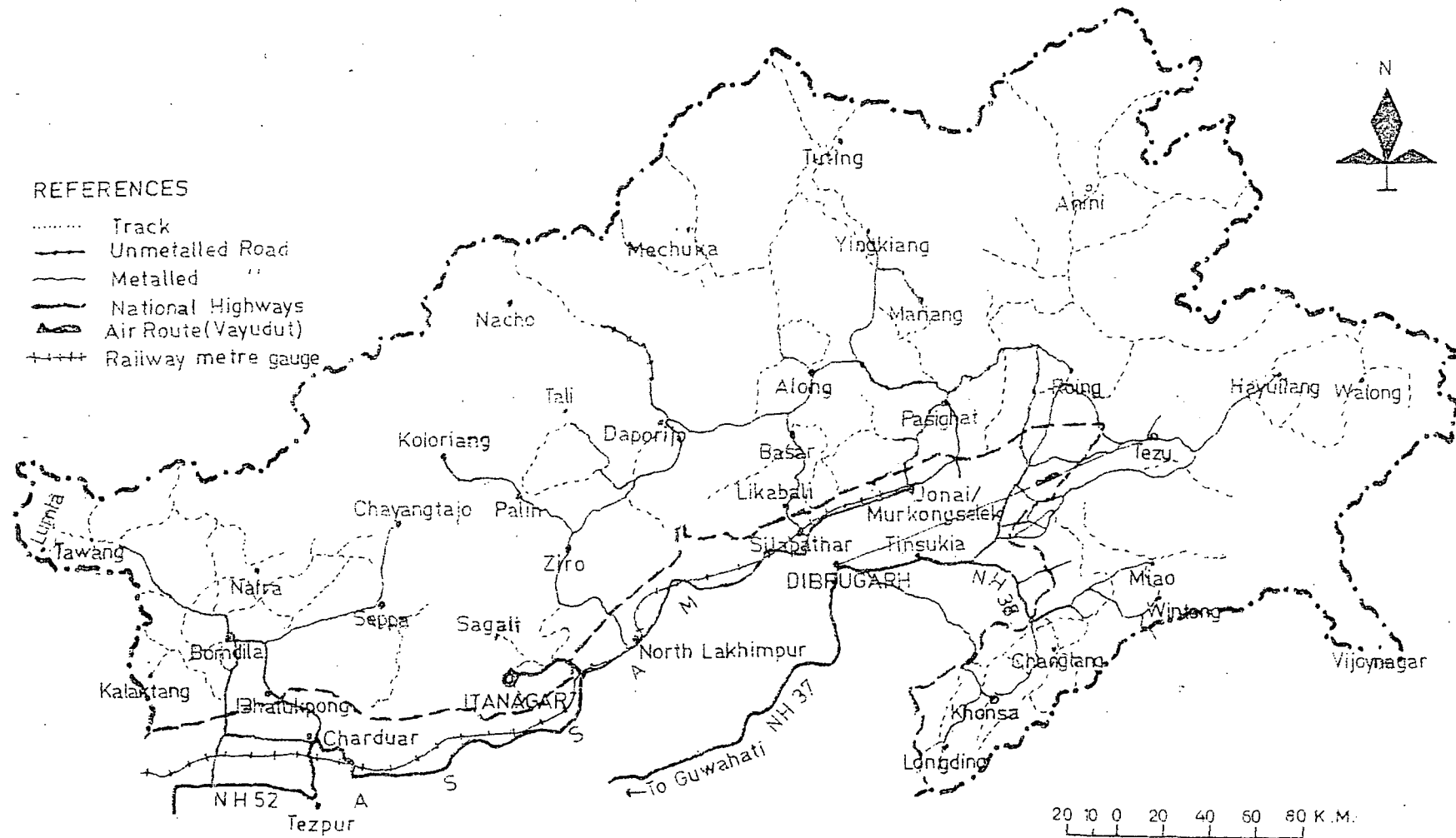


Fig. 9

Km of the area. Like the transport facilities the communication infrastructure too is lacking in the State. According to Statistical Handbook of 1980-81, the territory has only 200 Post and Telegraph Offices, three low transmission Radio Stations, and one low transmission television relay centre at State Capital. This communication infrastructure is too inadequate for such a vast area. More Radio Stations and Television Relay Centres are likely to come up very soon in the near future.

Below we give a review of available literature on industry, transport and communications, with their content, coverage and usefulness.

1. ANONYMOUS

Power Development in Arunachal.

A.P. News Vol. 5, No. 1, 1976.

This article discusses the power development in Arunachal, specially hydro-power. According to 1950's Survey conducted by Central Water and Power Commission, Arunachal has a total hydro potential of about 10,000 MW, of which about 9420 Kw are harnessed. The author describes briefly the various micro-hydel projects developed in Arunachal and discusses the potentials, and prospects of future hydro-power development in the region.

2. BAM, T.

A Profile in Industrial Growth: Arunachal Pradesh

A. P. News, Vol. 11, No. 7, 1982.

The author in this article describes in brief about the pace of Industrial development and discusses potentials of Arunachal including the rich natural resources in minerals and forests, rich heritage of handloom and handicrafts which promise a bright future for development. The coverage includes the handloom, handicraft and cottage industries; mineral based industries; agro-based industries; forest based industries, industrial estates; industrial training institute, industrial development and financial corporation; incentives to the entrepreneurs; marketing programme etc. of the territory.

3. BORAH, C.N.

A brief note on sericulture industry in Arunachal Pradesh

A.P. News, Vol. 11, No. 4, 1982.

Sericulture is an important village industry and it can play a vital role to improve the economic condition of the rural people. The author gives a brief account of development of sericulture in Arunachal Pradesh from 1970 to 1982.

4. BORGOHAIN, H.

Development of Industries and Handicraft in Arunachal Pradesh, with special reference to the Adis of Siang District.

Resarun, Vol. IX, No. 2, 1983.

This article gives a fairly detailed account of the industrial development of Arunachal Pradesh with special reference to the handicraft, cottage industry and small scale industry of the Adis of West Siang district, where the local people have taken active interest in the development of cottage industries specially, weaving, handloom, fruit processing etc.

5. HAZARIKA, K.C.

Traditional Textile Industry of Taraon.

Resarun, Vol. V, No. 1, 1979.

The traditional textile industry referred in this article is the handloom and cloth weaving amongst the Taraon or Digaru Mishmis of the Lohit valley of Lohit district. Weaving is the occupation of the Taraon women. The author vividly describes the weaving technique, designing, weaving equipments etc. in this article.

6. JHA, S.D.

Study of Growth oriented problems for Industrial development in Arunachal Pradesh.

A.P. News, Vol. 12, No. 5, 1983.

Arunachal economy enjoys vast natural resources as forest, mineral, water resources, livestock, growing agriculture, and horticulture resources. But the conspicuous absence of specified itemwise and location wise exact information of quality and magnitude operates as a major constraint to industrialisation. This article, separately deals with all these problems of industrialisation. Lastly the author suggest small and medium scale industries as priority for industrial development in the territory.

7. PLANNING COMMISSION

Report of the Study team on Tribal Development Programme:
North East Frontier Agency
Committee on Plan Project
Planning Commission.

This report is based on the spot study of the various tribal development programmes undertaken in NEFA, by the Planning Commission, with the object of giving practical effect to the recommendations made in the original Fourth Five Year Plan Draft outline for the welfare of scheduled tribes and for assisting state government in evolving concrete schemes

of development specially adopted to the needs and conditions of the tribal communities and areas. The study team thoroughly conducted the survey on each and every aspect of economic developmental activities such as tribal communities, development plan, administration, agriculture, forest, community development, cooperative and panchayats; industries, mineral, power, transport communication, education, and medical and public health, with summary of necessary recommendations for the development of all these aspects.

8. PULLU, J.

The Bamboo and Cane culture of the Indus.

Resarun, Vol. 3, No. 2, 1977.

This article gives us an idea of the extent to which the Idus, as indeed most of the tribes of Arunachal Pradesh and North-Eastern India in general, make use of natural vegetation in their life. Not only are their dwelling houses entirely made of wood, bamboo, cane and straw but their implements, their utensils, certain articles of wear etc. are derived from natural product. Some of the most impressive bridges that bridge otherwise formidable rivers in the Idu area and elsewhere are entirely made of cane.

9. SHARMA, S.V.S.

SIET in the North Eastern Region. Small Industry Extension Training Institute.

Hyderabad 45, 1979.

This booklet describes the small industry extension training centre Institute's activities in Arunachal, which started in the year 1976, when the Industries Department, Government of Arunachal Pradesh, requested the Institute to collaborate in organising the first publicity campaign to create awareness among the local entrepreneurs about small industry possibilities in the territory. Consequently, the Institute in collaboration with the Industry Department conducted the industrial publicity campaign at Itanagar with a big success and attracted over fifty five prospective entrepreneurs from five districts of the territory.

On transport and communication, we have not come across any article or books which may deal with this topic. A few articles do discuss the traditional transport system, such as traditional suspension bridge of various tribes of the region. So, for this section we have to fully depend on various statistical publication by various government departments and agencies. They are census of India's District Census Handbook, Directorate of Economics and Statistics, District Statistical Handboo, and District Gazetteers which have been discussed in the preceding chapters.

(iv) Mineral Resources

Nature has endowed Arunachal Pradesh with varied mineral resources. Due to relative lack of development in transport, technology etc. these minerals are yet to be

MINERAL OCCURRENCES

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Kilometres

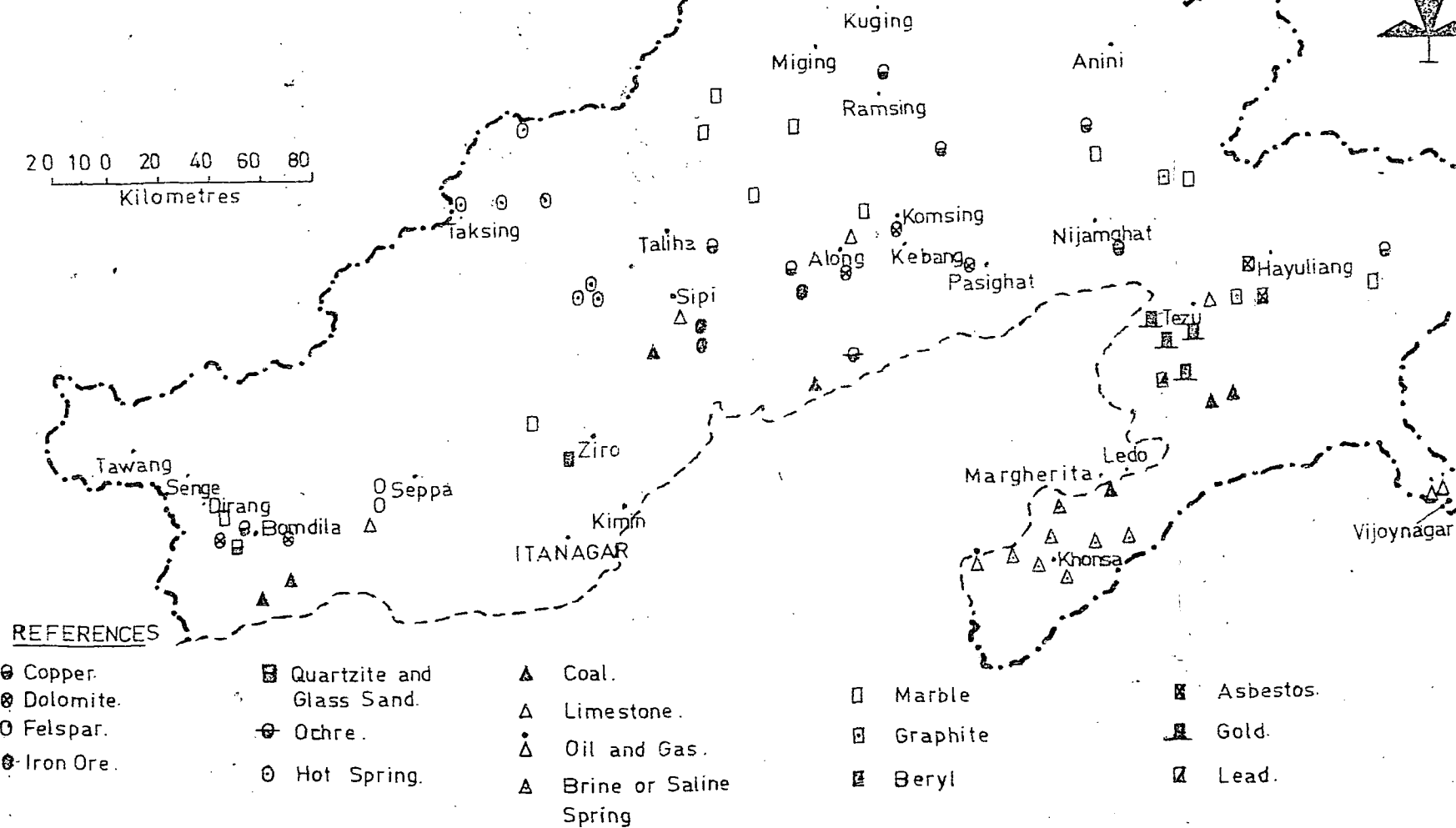
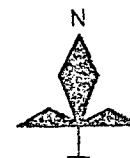


Fig 10

explored and harnessed. The detailed geological and geographical study of the area has only just begun. The geological survey of India's active involvement has resulted in tracing out some of the potentialities of mineral occurrences in the region.

The various valuable publications of Geological Survey of India form the main source and reference for understanding the mineral resources of Arunachal. Results of many of the mineral and geological investigations carried out by Geological Survey of India are to be found in the form of unpublished progress reports. Thus they are beyond our reach as their use is restricted. The references cited in this section occur mainly in the journal of Indian Minerals, Record of Geological Survey of India and various miscellaneous publications of Geological Survey of India.

1. COGGIN BROWN, J.

Dihong Valley Reconnaissance.

Record G.S.I., Vol. 42, Part 4, 1912.

This is the first such account about the geological formation along the Dihong river (Siang river). Apart from describing the various rock and geological formations of the region it discusses also its economic geology. It describes the occurrence of gold obtained from the gravel beach in the bed of Brahmaputra at Kobo, coal occurrence in outer Abor Hills.

Possibility of Iron ore occurrence at Geku, copper occurrence in the bed of the Sisi river, marble associated with mica schists in the neighbourhood of Singing, etc. are briefly described in this reconnaissance account on the Dihong river of Siang district, Arunachal Pradesh.

2. DIRECTOR, G.S.I. NEFA CIRCLE

Mineral Resources of NEFA

Indian Minerals Vol. 25, No. 2, 1971.

This paper contains an account of the possible mineral resources of Arunachal on the basis of rock formation and the Geological Survey of India's investigations. It tries to fully describe the percentage content of mineralization of various minerals and their area of occurrences. The minerals discussed are sulphide, limestone, marble, coal, graphite, iron ore, rock-phosphate, saline springs, mica, clay, ochre etc. with their economic value, specific areas bearing these minerals and the percentage of mineral contents etc.

3. MUKHERJEE, R.

Knowing the Unknown

A.P. News, Vol. 8, No. 9, 1980.

This article describes the mineral resources of Arunachal Pradesh. The author also traces the history of mineral exploration in the region by Geological Survey of India. Since 1825, till present, the author comprehensively describes

the various minerals found in respective areas in the territory, their percentage of mineral contents, possible reserves and possibility of using these minerals in the economic development specially industry in the territory.

4. PASCOE, H.

Coal in the Namchik Valley, Upper Assam.

Record G.S.I. Vol. 41, Part 3, 1912.

It describes the coal seams exposed in the Namchik river mouth, which the author encountered during his field investigation in the year 1911. The total thickness of the coal seam was 60 feet of which 5 to 6 feet was of poor quality. All these occur within a thickness of about 360 feet of strata.

5. SANGMA, L. DANGE, M.N. AND KUMAR, M.N.

Study of the brine wells in parts of Tirap district, Arunachal Pradesh.

Indian Minerals, Vol. 28, No. 2, 1974.

This paper contains the report on the brine well in Tirap district, bounded by latitude 27° to $27^{\circ}07'N$ and longitude $95^{\circ}28'$ to $95^{\circ}34'E$ which falls under Survey of India toposheet No. 83 M/8. There are about 30 brine wells in the area. In the distant past these brine wells were the only indigenous source of manufacturing common salt. Authors duly investigated these wells and discuss in detail regarding

their chemical contents, which revealed very high concentration of chlorite, sodium, potassium, by carbonate and sulphate.

6. SANTRA, D.K. AND DAS, S.K.

Studies of Graphite deposits on the Daporijo-Ziro Road west of Simmi river Subansiri District, Arunachal Pradesh. Indian minerals Vol. 32, No. 1, 1978.

This paper deals in detail with the economic potentialities of flaky and amorphous graphite occurrences found on the Daporijo-Ziro Road in Subansiri district. It describes the mode of occurrence, the mineral content and quality of the graphites, possible reserves and utilization of the minerals.

The reserve of flaky graphite is estimated to be about 21,866 tonnes and amorphous graphite to be about 33,02,520 tonnes. The flaky graphite can be used for the manufacture of paints, pigments, foundry, and the amorphous variety could be utilized in pencil making and polishing etc.

7. TALAPATRA, A.K. AND ROY SINHA, R.N.

Indications of Sulphide mineralisation around Buragaon, Kameng District, Arunachal Pradesh. Indian Minerals, Vol. 31, No. 1, 1977.

Authors during their geological mapping survey, along the tunnel alignment in course of the geotechnical investiga-

tion of Tenga Hydel Project encountered some indications of sulphide mineralisation in the area. In this paper they simply describe the possible occurrence of the minerals for further investigation.

8. TRIPATHI, C. AND KAURA, S.C.

Polymetallic sulphide mineralisation in Ranga Valley,
Subansiri District, Arunachal Pradesh.
Indian Minerals, Vol. 35, No. 2, 1981.

The author investigated the sulphide mineralisation in Ranga valley near Potin village. It is scattered over a 700 metre wide zone extending about 3 Km. in NNE-SSW trending schistose rocks.

The mineral elements associated with sulphide mineralizations are cobalt, nickel, copper, zinc, tin, tungsten. The author discusses the mode of occurrence, their percentage of mineral content, associated rock structures etc.

9. TRIPATHI, C. GAUR, R.K. AND SINGH, S.

A note on the occurrence of Nummurites in East Siang District, Arunachal Pradesh.
Indian Minerals, Vol. 35, No. 1, 1981.

This note gives us a brief note on the occurrence of a belt of nummulitic limestone in the Yingkiang-Mariang area of present east Siang district. It also briefly describes the geological succession of the Yamne valley.

10. TRIPATHI, C. DUNGRAKOTI, B.D. AND GHOSH, R.N.

Notes on Discovery nummulitics from Dihong Valley,
Siang District, Arunachal Pradesh.

Indian Minerals, Vol. 33, No. 1, 1979.

This article gives us a note on the possibility of occurrence of Nummulitics limestone between Pasighat and Rengging village. A sandy limestone horizon belonging to Eocene sequence is exposed on the right bank of the Dihong river near the point determined by coordinates $28^{\circ}07'30''\text{N}$ and $95^{\circ}17'30''\text{E}$ in the Survey of India Toposheet No. 82 P/8 in East Siang District, Arunachal Pradesh.

11. TRIPATHI, C.JAIN, L.S. AND ROY BASU, S.

A note on the finding of Sulphide mineralisation in Lumla area, Kameng District, Arunachal Pradesh.

Indian Minerals, Vol. 33, No. 2, 1977.

It briefly describes on the occurrence of sulphide mineralisation in the Lumla area of Kameng district.

CHAPTER - VI

CONCLUSION

This bibliography and data base study on the Regional Structure of Arunachal Pradesh has been prepared on the basis of the materials available in libraries and offices located at Shillong. The following libraries have been particularly consulted: (1) Central Library, N.E.H.U. (2) Central Library, Geological Survey of India. (3) Research Library, Government of Arunachal Pradesh.

Due to constraints of time and money it has not been possible to visit libraries outside Shillong and it is possible that some more materials, specially in the libraries at Gauhati, Calcutta and Delhi. Even with this limitation it is hoped that it has been possible to cover the ground fairly, adequately.

On account of its isolation, inaccessibility and formidable topography, Arunachal Pradesh has remained unexplored and its geography and economy have for the most part unstudied.

The present study reveals that in general there is paucity of material and literature on almost every aspects of the Regional Structure of the region. This is particularly true of the physical setting and economic resources development where the gap is particularly wide. Relatively speaking,

there is better coverage so far as the Historical perspective and Administrative growth and Demographic and Socio-Cultural structures are concerned.

The historical background of Arunachal Pradesh can be traced after the British advent only and the account on the earlier history on the territory are extremely vague and insufficient. Of course, there are some references on Ahom tribal relations in Ahom Buranji (History of Ahoms in Assamese), but the coverage is meagre and insufficient. There are however many historical relics like Staford, Malinithan, Bhismaknagar, etc. which may be used by historians to trace the early history. A fairly good account of the historical development and administrative growth after the British advent is however available in the contributions of Reid, Mackenzie, Baroah, Chowdhury, Elwin, Chakravarty, Michell, Luthra etc.

So far as the Demographic and Socio-cultural Structure is concerned, the Census of India furnishes us valuable and upto date population data since 1951. Besides the table volumes there are also reports for each census and some special socio-economic studies particularly during 1971 Census. Besides the Census of India various statistical demographic data have also been published from time to time by the

Directorate of Economics and Statistics, Government of Arunachal Pradesh. The chief source materials on the society and culture of the different tribes are provided by the valuable publications on different tribes by the Directorate of Research, Government of Arunachal Pradesh, which is doing commendable work. One can also make use of the early accounts of British travellers and administrators about these tribes. Though these early accounts are skatchy, they are based on first hand knowledge and give us a historical perspective about the society and culture of these tribes. It needs to be emphasised, however, that the region is inhabited by 25 major tribes and many more minor tribes living in mountainous and inaccessible terrains, and the literature available cannot be considered to be adequate for all the tribes nor whole the tribes.

So far the physical setting, economic structures are concerned the literature available is extremely inadequate. There is no work giving detail account of the geological structure, physiography, drainage, climate, soils and natural vegetation of the region and information on these has to be called from works which deal either with the North-Eastern Region as a whole or with the Eastern Himalayas or what little information is available from the district gazetteers.

The position would seem to be even worst so far as the Economic Structure is concerned. Since no land records are available one is completely in dark about the extent of agricultural land or the area under various crops under geographical distribution. Only some state level generalised data are available which have limited use and probably are of limited accuracy. The only dependable reference on economic structure is the "Techno-Economic Survey of NEFA" published by the National Council of Applied Economic Research and published in 1967. The limitations of this survey are however acknowledged in this book and further the survey is now nearly twenty years old. A few articles have appeared recently in Arunachal News showing the recent developments of the region. Besides, there are annual reports of the Agriculture, Industry, Supply and Transport departments of the Government of Arunachal Pradesh.

On mineral resources the material available is very meagre, as no detailed surveys for minerals have been done by the Geological Survey of India.

Even with these constraints on the availability of data and literary sources, it has been attempted to present a broad picture of the Regional Structures of Arunachal Pradesh under various subheads. A number of maps have also been prepared to bring out the various facets of the regional structures.

Even though the present references and data base are insufficient for a proper understanding of the regional structure of the territory. It is possible to make a systematic study of the broad patterns and problems, supplemented to some extent by field study.

The bibliography and data base study presented here, it is hoped at least bring together the relevant materials at one place under the appropriate heads, this may be used as the bases for further study of the region which is absolutely necessary for its development. The development of Arunachal Pradesh is at present hampered no less by lack of accurate knowledge and facts about its physical setting, economic resources and the people inhabiting its various parts, as by its mountainous terrain and the general lack of transport and communication. And to this end the bibliography presented here may be considered to be a humble contribution.

SERIALS
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