

S.D. JHA

ARUNACHAL PRADESH

(RICH LAND POOR PEOPLE)



About the book

The book: ARUNACHAL PRADESH-RICH LAND POOR PEOPLE, is an attempt to study the working of Socio-economic variable in relation to socio-economic transformation taking place in the union territory during the recent past. While doing so, the historical back-ground has been viewed; The pictursque topography has been outlined; The varied demographic features have been brought out; The socio-economic living conditions of the tribesmen and their social institutions and practices have been detailed out.

Besides, the natural resources like land, water, forest and minerals have been accounted for. The agriculture and its allied activities, the industries and the trade and commerce, the co-operation and the infrastructure as well have been dealt with in a cohesive manner with the sole purpose of focusing on the process of socio-economic transformation taking place and also revealing the development potential in Arunachal Pradesh.

Rs. 140/-

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1986

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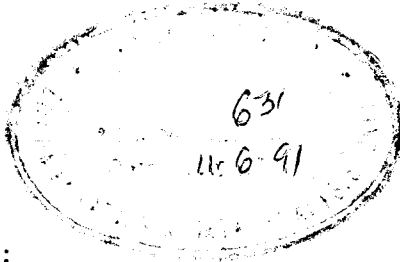
NEW DELHI

GUWAHATI

First Published 1986

330.954163
JHD

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Published by :

OMSONS PUBLICATIONS

Jasomanta Road

Pan Bazar, Guwahati

Assam



000631

Distributed by :

WESTERN BOOK DEPOT

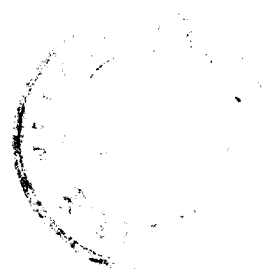
Pan Bazar Guwahati

ASSAM

Printed in India at :

SANGITA PRINTERS

DELHI-53



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1

Introduction.

Historical Background

The history of the mountainous and multiracial north-east frontier region which is now known as Arunachal Pradesh ascends for hundreds of years into the mists of tradition and mythology. A number of ruins in the foothills such as the archaeological relics at Bhishmaknagar, the ruins of the copper temple Tamreshwari and Brahmakund, all in Lohit, the ruins of a fort at Bhalukpung in Kameng and the ruins on the Ita hill in Subansiri, suggest some contact between the ancient rulers of Assam and the tribesmen of the Pradesh, living near plains.

According to Puranic legend, Rukmini, the daughter of King Bhishmak, was carried away on the eve of her marriage by Lord Krishna himself. The ruins of the fort at Bhalukpung are claimed by the Akas as the original home of their ancestor Bhaluka, the grand-son of Bana Raja, who was defeated by Lord Krishna at Tezpur (Assam). A Kalita King, Ramchandra, driven from his kingdom in the plains of Assam, fled to the Dafia (now Nishang) foothills and established there his capital.

2 *Arunachal Pradesh Rich Land and Poor People*

of Mayapore, which is identified with the ruins on the Ita hill¹. A place of great sanctity in the beautiful lower reaches of the Lohit River, the Brahmakund, where Parasuram opened a passage through the hills with a single blow of his mighty axe, still attracts the Hindu pilgrims from all over the country.

In the year 1838² when the British took over the administrative control of Assam from the last Ahom king, Shri Purander Singh, it was thought necessary to extend elementary regular administration to the adjoining north-east frontier region. The first important step in this direction was as such initiated with adoption of Regulation V of 1873 empowering the then Lieutenant Governor of Assam to prescribe a Line, called 'Inner Line' with a view (1) "to bring the commercial relations of the hills with the plains under more stringent control, (2) to prevent the operation of speculators in "*Caoutchouc*" (raw rubber), (3) to prevent the spread of tea gardens, and (4) to laydown rules for the possession of land and property beyond the 'Inner Line' without special permit."³

The British soon realised that it was necessary to form the tribal regions into Non-Regulation Tracts to be administered directly by the Deputy Commissioners. In order to bring about some uniformity in the administration of the tribal areas, the Scheduled District Act was passed in 1874.

The Assam Frontier Tracts Regulation of 1880⁴ promulgated extension of the administrative coverage to the hilly areas

1. The capital of Arunachal Pradesh has been shifted from Shillong to the Ita hill known as Itanagar, during the year of 1974. This Ita-hill widely known as Itafort is the permanent site for the state capital of Arunachal Pradesh.
2. Verrier Elwin: A Philosophy for NEFA, (1964) p.2.
3. The Notification No. 1486 dated June 21, 1876, issued by the Government of India, Foreign Department, states that the Governor General in Council is pleased to prohibit all British Subjects from going beyond the 'Inner Line' without a pass under the hand and seal of the Deputy Commissioner.
4. P.N. Luthra: Constitutional and Administrative Growth of NEFA, (1971) p.19.

(Contd.)

inhabited by a number of tribes, namely, Bhutias, Daflas (now Nishang), Akas, Abors (Adis), Miris, Mishmis, Khamptis, Naga Hills men and Singphos. Consequently, North-East Frontier Tract, extracted from the then Darrang and Lakhimpur districts of Assam, came into being as an administrative Agency. Simultaneously, it was divided into three administrative units : (1) the Western Section, (2) the Central and Eastern Section, and (3) the Lakhimpur Frontier Tract. From the point of view of administrative convenience, while first two units were placed under the charge of political officers, having their headquarters at Charduar and Sadiya, respectively, the third one was under the control of Deputy Commissioner of Lakhimpur District, in addition to his own usual charge.

With the appointment of an Assistant Political Officer at Sadiya in 1882, the administration started making efforts for bettering relation between the tribesmen in the region and the people of the rest of India. These efforts, however, caused inclusion and exclusion of the different tracts into and from the administrative unit of north-east frontier region, prior to 1914, when it was one of the eight Assam valley districts.⁵ In fact, for about a century since 1838 the Britishers remained content with protecting the plain areas from occasional raids by the tribal people from the hills and taking out few punitive expeditions into the hills. These measures were either intended to put down tribal uprisings or to induce them to peaceful life by show of force.

Having been covered administratively, the whole of tribal region was divided into two Frontier Tracts in 1915⁶. This

A regulation to empower the extension of Assam Frontier Tract & Regulation, 1880, to certain tracts in Assam and to declare Act 10 to 1872 (the code of criminal procedure shall be deemed never to have come into force in the Garo Hills District, and the Khasi and Jaintia Hills District).

5. Arnold Wright, (edited): Bengal and Assam and Behar and Orissa, Their History, People, Commerce and Industrial Resources, (1917), p.405.

6. P.N. Luthra: *op, cit*, p.11.

division led to rename the Western Section as Balipara Frontier Tract and the Central and Eastern Section as Sadiya Frontier Tract. Nevertheless, the Lakhimpur Tract continued to be as such. By 1937, this administrative status of the North-East Frontier Tract could be effected to under the Government of India's (Excluded and Partially Excluded Area) Order of 1936.

Under the effective provision of the Section 91⁷ (1) of the Government of India Act, 1935, the above Frontier Tract came to be known as Excluded Area of Assam. Again, the 1942⁸ administrative change took place as a consequence of which Tirap Frontier Tract was carved out of the Sadiya Frontier Tract. In 1943, an adviser was appointed as the administrative head with a purpose to develop the region through gradual penetration of the administrative machinery.

Subansiri Area and Se-La Sub-Agency, the two administrative units were created in 1946, dividing the former Balipara Frontier Tract. The year of 1948 also could not escape change when two Divisions, the Abor Hills and the Mishmi Hills out of the remaining portion of the Sadiya Frontier Tract, were formed⁹.

Another change was effected in the administrative set-up on the 26th of January, 1950 when the Government of Assam was relieved of its responsibility for looking after the administration of the Excluded Area. However, the discretionary power was vested in the Governor of Assam, under the provision of the paragraph 18 of the Sixth Schedule to the Constitution and Part B of the Table 20 of the Schedule,¹⁰ who

7. P.N. Luthra: *op. cit.*, p.3.

8. Verrier Elwin: *op. cit.*, p.3.

9. *Ibid*; p.3.

10. P.N. Luthra: *op. cit.*, pp.16-17. "The Governor may (a) subject to the previous approval of the President, by public notification apply all or any of the foregoing provisions of this schedule to any tribal area specified in Part B of the table appended to paragraph 20 of the Schedule or any Part of such area or part shall be administered in accordance with such provisions and (b) with like approval, by public notification, exclude from the said table, any tribal area specified in Part B of that table or any part of such area".

served as the agent of the President of the Union of the Republic of India.

In 1951, Tuensang was created as a separate Division in the North-East Frontier Tract.¹¹ During the same year, plain areas of Mishmi Hills District, Abor Hills District, Tirap Frontier Tract and of the Balipara Frontier Tract were excluded from and included into the administrative jurisdiction of Assam. With the partition, what remained to the Frontier Tract, North-East Frontier Agency (NEFA) was finally constituted, on January 5, 1954 under the North-East Frontier (Administration) Regulation 1954. As a result, new administrative picture as against the then existing one emerged as below :

<i>Sl. No.</i>	<i>Old Title</i>	<i>New Title</i>
1	2	3
1.	Balipara Frontier Tract	1. Kameng Frontier Division 2. Subansiri Frontier Division
2.	Tirap Frontier Tract	Tirap Frontier Division
3.	Abor Hills District	Siang Frontier Division
4.	Mishmi Hills District	Lohit Frontier Division
5.	Naga Tribal Area	Tuensang Frontier Division

Having been excluded from the NEFA, Tuensang was merged with the Naga Hills under the Naga Hills Tuensang Area Act 1957.

The process of change continued and on August 1, 1965, the responsibility of the central administration for NEFA was transferred from the Ministry of External Affairs to the Ministry of Home Affairs. During the same year, the Frontier Divisions were renamed as (a) Kameng District, with headquarters at

11. Verrier Elwin: *op. cit.*, p.3.

Bomdila (b) Subansiri District, with headquarters at Ziro, (c) Siang District, with headquarters at Along, (d) Lohit District, with headquarters at Tezu and (e) Tirap District, with headquarters at Khonsa. Simultaneously, the Political Officers, Additional Political Officers and Assistant Political Officers in the charge of districts, sub-divisions and circles, were redesignated as Deputy Commissioner, Additional Deputy Commissioner and Extra Assistant Commissioner respectively, and the NEFA administration was conducted on the lines of the Union Territory as provided in paragraph 18 of the Sixth Schedule to the Indian Constitution.¹² According to the provision of the North-Eastern Areas (Reorganisation) Act, 1971, (81 of 1971), the name of the Union Territory of NEFA was changed to Arunachal Pradesh¹³ on the twenty-first day of January 1972; and was placed under the charge of a Chief Commissioner in accordance with the Union Territory Act of the Ministry of Home Affairs, the Government of India.

The Pradesh Council formerly known as Agency Council of the erstwhile NEFA Administration, as brought into operation on the 3rd of December, 1969, ushered the era of self-Government in the region, empowering its people to manage

12. The Union Ministry of Home Affairs, in its turn, delegated powers to the Governor of Assam: 'The Governor delegates the financial and cognate powers to the Adviser as and when necessary. The Deputy Commissioners and the Heads of the Departments within their jurisdictions they exercise executive procedure for the initiation, processing and sanctioning of Schemes follows the normal pattern except that in the case of NEFA, a good deal of discretion is exercised in recognising the special need of the people'.
13. The region is called as Arunachal Pradesh—the land of the rising sun. It is indeed the most appropriate name for this newly created Union Territory, because within India, the first rays of the rising sun kiss the mountain peaks of this colourful region every morning and to the people of Arunachal. They are the people of the sun—the sun shines always assuring and heartening. The Arunachalees worship the sun and the moon and call 'Donyi' and 'Polo' respectively.

their internal affairs themselves.¹⁴

With a view to secure the balanced development of the north-eastern area, the North-Eastern Council, (comprising Assam, Meghalaya, Manipur, Tripura and Mizoram and now Nagaland also) setup under the North-Eastern Council Act (84 of 1971) came into existence on 7th November 1972, as an advisory body to advise the Central Government on behalf of its constituents to take necessary action with regard to (1) any matter of common interest in the field of economic and social planning, (2) any matter concerning inter-state transport and communication, and (3) any matter relating to power or flood control projects of common interest.

Arunachal Pradesh Administration has joined the council as one of its Seventh Constituent members. It is hoped that the Constituent members of the Council¹⁵ will accelerate process

14. In the exercise of the powers conferred by Article 240 of the Constitution, read with sub-paragraph (2) of para 18 of the VI Schedule to the Constitution, the President of India was pleased to promulgate the North-East Frontier Agency Panchayat Raj Regulation, 1967 (No. 3 of 1967) creating three-tier local administration, namely, Anchal Samiti at block level, with power to acquire, hold and dispose of property and to enter into contracts (Selection-4), Zilla Parishad at district level as constituted under the provision of Section 51, with powers to advise the Administrator on all matters concerning the activities of the Gram Panchayats and Anchal Samities situated within the district, drawout the district plan, raising of revenues for the Anchal Samities and review the working of the Samities (Sec. 55); and the Agency Council (Sec.57) subsequently amended as the Pradesh Council under the North-East Frontier Agency (Administration) Supplementary Regulation, 1971 (Sec. 3) with power to make recommendations to the Administrator on matters of administration and schemes of development, five year plan and proposals for undertaking Legislation for the region in respect of any of the matters enumerated in the State List or in the concurrent List in the VII Schedule to the Constitution (Sec. 11).
15. Clause (3) The Council shall—(a) review, from time to time, the

(Contd.)

of growth in the region through the means of co-ordination between different administrative units in the region.

Present Status

The present Arunachal Pradesh is an ancient land, and bears references to the frontier parts of India in the great Indian epics of the Ramayana, the Mahabharata, the Sankhyana, the Grihya Sangrah and so on. As it is known, the princess of Rukmini was born in Bhisma Nagar. The great warrior of ancient time, named Bana lived in Arunachal Pradesh. It is also known that King Balinarayan had drawn his soldiers from the Arunachalees in struggle against the enemies from outside.

In course of administrative and political events. Arunachal Pradesh has travelled from the 'Tract' to the 'Union Territory' as is evinced on the foregoing pages. The Panchayat

implementation of the projects and schemes included in the regional plan and recommend measures for effecting co-ordination among the Governments of the States concerned in the matter of implementation of such projects and schemes; (b) where a project or scheme is intended to benefit two or more States, recommend the manner which,—(i) such project scheme may be executed or implemented and managed or maintained; or (ii) the benefits therefrom may be shared, or (iii) the expenditure thereon may be incurred; (c) on a review of progress of the expenditure, recommend to the Central Government the Quantum of financial assistance to be given, from time to time, to the State or States entrusted with the execution or implementation of any project or scheme included in the regional plan; (d) recommend to the Government of the State concerned or to the Central Government the undertaking or necessary surveys and investigation or projects in any State represented in the Council to facilitate consideration of the feasibility of including new projects in the regional plan.

Clause (4) The Council shall review from time to time the measures taken by the States represented in the Council for the maintenance of security and public order therein and recommend to the Governments of the States concerned further measures necessary in this regard.

'Raj was promulgated during 1967 with Agency Council as Apex Body. As per record, the first meeting of the Agency Council was held in December, 1969. Under the provision of the North Eastern Areas (Reorganisation) Act 1971, (81 of 1971), the present status of Union Territory was granted to the erstwhile North-East Frontier Agency and renamed as Arunachal Pradesh on 21 January, 1972. The Union Territory of Arunachal Pradesh was placed under the charge of Chief Commissioner during 1972 only. During this year, the Agency Council was redesignated as Pradesh Council.

The year of 1975 also proved eventful for Arunachal Pradesh. On 15 August, 1975, then existing Pradesh Council was constituted into the Union Territory Legislature. The panel of then existing five counsellors was constituted into Provisional Council of Ministers. Consequent upon the above change, the post of Chief Commissioner was further elevated to the position of Lieutenant Governor on 15 August, 1975. The first general election to Arunachal legislature was held in the month of February, 1978. The Arunachal Pradesh Legislative Assembly has 33 members in total, out of which 3 members are nominated.

Earlier, Arunachal Pradesh had nominated representative in the parliament. By an Act of the Government of India in 1971, the Union Territory was provided with one seat each in Lok Sabha and Rajay Sabha, but these representatives were nominated by the President of India. But at present, Arunachal Pradesh enjoys two elective seats in the Lok Sabha based on the Universal franchise.

In the sequence of the administrative events in Arunachal Pradesh, the year of 1980 may also be known significant. During this year, the Union Territory was reorganised into 9 districts by delimiting the existing ones. The erstwhile Kameng district was made into West Kameng comprising Bomdila and Tawang sub-divisions and East Kameng comprising Seppa sub-division. The former Subansiri district was organised into Lower Subansiri and Upper Subansiri districts with headquarters at Ziro and Daporijo respectively. Similarly, the erstwhile

Siang district was split into West Siang with headquarters at Along and East Siang with headquarters at Pasighat. The erstwhile district of Lohit was delimited into Dibang Valley with headquarters at Anini and Lohit with headquarters at Tezu. However, the district of Tirap was allowed to remain intact. But in October, 1984, the newly constituted district of West Kameng was further split into two districts : namely West Kameng with headquarters at Bomdila and Tawang with headquarters at Tawang. Thus, the total number of administrative district has come to ten in Arunachal Pradesh. Presently there are 27 sub-divisions and 100 Circles. Besides, there are 48 Community Development Blocks and 50 Anchals in Arunachal Pradesh.

Physical Features

Fascinating but lesser known Arunachal Pradesh is located between $26^{\circ} 28'$ to $29^{\circ} 30'$ N latitudes and $91^{\circ} 30'$ to $97^{\circ} 30'$ E longitudes, on the north-east extremity of the country, comprising 83,5782 Sq.Km of area.¹⁶

Its location can best and easily be intelligible, looking at its border of 300 kilometre, running with Bhutan in the West and onwards to the tri-junction of China, Burma and India in the north-east, along high peaks of the Himalaya of 1000 kilometre in length. In the immediate east of the Pradesh, falls the hill-range of Patkoi and the plains of Assam, in the immediate and straight south of it.

Arunachal Pradesh may take anyone to the snowcovered peaks as water sheds on the Mac-Mohan Line¹⁷ from where low ridges of the lesser Himalaya, gradually, rise into snowcovered belt. The great Himalayan ranges run from the East of the

16. Census of India 1971, Series 24 Arunachal Pradesh, Part III-A Establishments Report Part III-B Establishments Tables p.vii.

17. Sir Henry Mac-Mohan was the British representative at the conference at Simla in 1914, between the representatives of the then Government of India, China and Tibet. The 'Line' was agreed to and marked on map on 24th March, 1914.

Bhutan Himalayas to the Tsangpo upto Mishmi hills, about 400 kilometre in length. In the extreme east, the Pradesh meets another series of mountain range where the Himalayan range turns from East-West direction to South-West direction and hastens on, prominently, south wards into the hills of Nagaland.

Latitudinal and longitudinal coverage of the topography of the region indicates that the ranges in north-south embrace some 3° latitudes and 92° to 98° longitudes in east. Its great range of elevation from the outer Siwalik-type hills rises to a height of 300 metres and further in a series of knife like ridges from the plains of Assam to the inner or Greater Himalaya which encompasses heights from 4,900 metres to 7,000 metres along the border of Tibet. "The characteristic Siwalik formation of the Himalayan mountains is found along the greater part of its length upto the point where the mountains carve around the valley head."¹⁸ This typical character is replaced by a series of low hills with easier slopes which gradually merge into the higher mountains of the Himalayan range where they meet the Patkoi-ranges, separating India from Burma. The distance from valley head to the point merging into the high Himalayan mountains is not much. But a remarkable deviation in elevation as well as in the appearance of the mountains is visible.

Coming to the lay of districts of Arunachal Pradesh, Kameng, lying between 26° 54' to 28° 1' N latitudes and 91° 30' to 93° 22' E longitudes, is situated on the western border of Arunachal Pradesh. Being stretched over 13,724 square kilometre of area, it adjoins Bhutan where three distinctive ranges of the Himalayan formation, namely, the outer, the middle and the inner, appear. The first 3,400 metres of the ridges are at a shorter distance from the plains. Onwards to the east, in general east-west Himalayan alignment is found to be disrupted and the ridges are found running from the north to the south. At this axis line, the general change in the direction is frequent around the Sino-India-Burma plexus.

18. NCAER, Techno. Economic Survey of NEFA (1967) p.7.

Lying between 26° 53' and 28° 33' N latitudes, and 92° 41' and 94° 22' E longitudes, and covering 14,797 square kilometre, Subansiri also consists of hills and valleys that extend from the plains of Assam upto the border of Tibet. A few lofty hills rise to the height of 20,000 feet and remain covered with snow throughout the year. Around Ziro, the district headquarters, the level valley encompassed by hills has beautified the feature of the district.

Being situated between 27° 33' to 29° 20' N latitudes and 93° 11' to 95° 35' E longitudes with the area of 23,723 square kilometre, Siang too has the hills, on the northern belt, rising as high as 15,000 feet. But outer hills are unimpressive and small in height. Due to this dominating gentle slopes of the ridges, a larger area of plain-land could have been available. The great earthquake of 1950 had, in fact, changed the topography of the area and because of splitting up of the hill that fell on the river Siang, the beds of the river were forced up almost to the level of the land in some cases.¹⁹ In this district, there is a place named Mechuka which is regarded as second Switzerland. Thus, Siang too possesses a fascinating physical feature.

Lying between 27° 33' to 29° 30' N latitudes and 95° 15' to 97° 30' E longitudes, with the area of 24,427 square kilometre, the Lohit plain forms the eastern continuity of the plains of upper Assam. And from the plains of Lohit district (also known as Luhit district), the lesser Himalayan region that is the middle part of the district rises just abruptly and is covered with dense forests. Along with the elevation its altitude is around above 3,000 metres. The snow clad higher Himalayan region rises to a height of about 5,500 metres. The hills of the Lohit valley also rise from 2,000 to 17,000 feet as a result of which higher region of the district is extremely cold. In Lohit comparatively larger portion of plains is there.

With the area of 6,907 square kilometre, the district of Tirap is situated between 26° 28' to 27° 33' N latitudes and

19. Census 1951, Assam, NEFA District Census Handbook .p.VIII.

95° 10' to 97° 11' E longitudes. The Changlang and Khonsa area in this district is of a typical formation and quite similar to that of the neighbouring Naga hills. The shattered nature of the mountain formation in this area, including some portion of Siang also is attributed to the dreadful earthquake of 1950 which rocked the whole terrain and split the rocks and as such consequently land slides and deeply silted rivers have become the common features of this area in particular. The general altitudinal variation in this district is from 500 feet in the plains to about 15,020 ft.

It is, thus, peculiar to note that direction of the ridges in Arunachal Pradesh has been changing frequently and thereby consequently causing rapid change in topography. No ridge anywhere in Arunachal Pradesh runs continuously. As soon as one ends, the next extends either in opposite direction or parallel or in other different direction. It is because of this that no geographical discipline is visible amongst the hills. Due to factors, mentioned earlier, (pp. 13-14) only small patches of plain—land are available in Arunachal Pradesh. A few lofty peaks such as Gorichen (21,450 feet) and Kangto (23,260 ft.) and Se-La Pass (14,000 ft.) in the north-west corner of the district Kameng are very much in existence. Thus, to regard Arunachal Pradesh as a land of ridges, mountains and peaks is nothing but coming very much closer to the reality of natural endowment.

Soil: Being a hilly terrain, soil in major part of Arunachal Pradesh is rocky. Generally, the rocks are of the Himalayan type, such as shales, schists and conglomerates.²⁰ Due to the land erosion and deposition by the rivers, soil is sandy too. Some where mica is mixed with soil, particularly in the river belts. Soil contains solid acidity and rich nitrogen. In general, soil absorbs organic matter by means of the rotting of the jungle leaves.

But, unfortunately this organic layer is washed away due to heavy rain fall. The burning of the cut and dry jungles on the jhuming fields contributes this organic matter heavily. But

20. NCAER: *op. cit*, p.9.

due to land being stiff slope, it goes away and the soil loses its fertility which compels the jhumias to shift the cultivation to next plot of land. The basic factor in this connection is that layer of the soil which contains fertility is very thin. Somewhere soil is found of sedimentary character. Soil of plain-land available in the valley, is of clayey-alluvium and rich organic content. Soil in the foothills is diluvial²¹ in character, being either loam or sandy or both mixed. The general characteristic of the soil is their acidity, which increases with rain fall and heaviness of soil.

Rocks: As the Rock Survey conducted by the Eastern Zone Geological Survey of India, reveals rocks of Kameng district comprise grade-schist, quartzites, Calc-silicates under Se-La group. And the rocks under Bomdila group comprise gneisses, mica, schists, thin Calc-silicates, marble, graphitic schists, metabasics and Quartzites. The Tenga Unit consists of gneisses, low grade schist, amphibolites and phyllites and fine-grained sericitic Quartzites. There are other units of rocks also such as Bichom group Gondwanas and Tertiaries in this district of Kameng.

Rocks in Subansiri district are mostly precambrian schists migmatites and at times, younger granitic intrusive of the Se-La group of Kameng are also found.

The Siang rocks are mostly either carbonised or semi-carbonised. Lignitic to peaty materials occur with in various sections across Tertiary formation of the district.

In Lohit, the physical succession of rocks is seen from the Lohit plains to the parts of higher Himalayan in the north-east direction which has been characterised as Schistose meta-sediments Chlorite Quartz & mica schist, carbonate rocks and lime rocks etc.

The geological setup of Tirap district has been divided into two parts, namely, (1) Metam or Phites of Vijayanagar

21. NCAER: *op. cit.*, p.9.

and (2) the Tertiary formation in the rest of the district. Geologically, a little could have been known about their rocks.

Drainage: As Arunachal Pradesh is an abode of peaks and ridges, each and every ridge contains a geographical habit to make flow streams. The number of the stream from one ridge as well as its vastness depends on the height, size and the aliveness of the same. All these streams flowing from ridges bear a tendency to merge into another. And, thus, either a new river is formed or already flowing river is fed. Now this river also is bound to merge into the next river due to typical topography and, finally, the principal river is fed.

There are five such principal rivers one in each of the districts. An interesting thing is that all the five districts have been named on the principal river flowing along the district such as Kameng, Subansiri, Siang, Lohit and Tirap district on the name of Kameng, Subansiri, Siang, Lohit and Tirap rivers. All these principal rivers emerge from the higher Himalaya except Siang.²² Among the other rivers, Bichung, Dibang, Kamlang, Noadihing, Matum, Dri, Am Emra the Ahul, Ithun or Luthit, Iri and the Sesseri are also important in Arunachal Pradesh. Though all the five rivers are mighty, Siang is, however, the mightiest of all, dividing the whole Arunachal Pradesh into two halves, East and West. So far the direction of the river-flow is concerned, the same is determined by the hills and ridges. Still it is observed that most of the rivers flow southerly, but somewhere easterly and westerly too. Whatever the direction of the other rivers and streams may be, they are drained by the five principal rivers flowing southerly and at last these rivers of Arunachal Pradesh are drained by the powerful westerly flowing Brahmaputra. The rivers flowing along Arunachal Pradesh possess the vast potentiality for hydro-electricity generation due to the typical topography.

Here it should be pointed out that the Brahmaputra river, being the drainage of speedy rivers of Arunachal Pradesh,

22. Siang river originates from Mansarobar—Kailash and while flowing along Tibet, is called by the name of 'TSANGPO'.

contains high current irrespective of its flowing along the plains of Assam.

Thus, we find that there is cobweb of streams and rivers in Arunachal Pradesh which have broken the topography into many parts in isolation.

Climate: The climate condition in Arunachal Pradesh tends to change very frequently and considerably. It is rapid changing topography as well as elevation of the place from sea level that influence its climate vitally. As noted from table No. 1.1, maximum and minimum temperature stood at 15.2 and 0.6 degree centigrade at Ziro as against 19.7 and 10.7 degree centigrade at Along.²³ While the elevation from sea level of Ziro is about 5,000 feet, it is very much low in case of Along. Another example that we may take is that of Pasighat and Bomdila where during the aforesaid period maximum and minimum temperature was recorded to be 22.2 and 11.9 and 8.9 and 4.9 degree centigrade respectively. Here again the elevation of Bomdila is about 9,000 feet, where as Pasighat is situated in the foot hills, that is adjoining the plains of Assam.

Another notable phenomenon, as borne out from the Table, is that both maximum and minimum temperature start rising from March onwards, right upto July at Bomdila and Tezu and August/September at other places, that is, 39.9 degree centigrade at Along in September and 35.9 degree centigrade at Walong. Similarly, in July minimum temperature of 7.2 degree at Along, 8.5 degree centigrade at Bomdila and 21.8 degree centigrade at Tezu were recorded. Again, the temperature starts, falling by October and comes to the minimum by the month of December/January.

All this demonstrates the fact that climate in Arunachal Pradesh changes from hot to humid and, again, from humid to hot. Besides, some places like Bomdila and Ziro remain extremely cold during winter and, on the other hand, some places like Walong, Seppa remain extremely cold during winter and

23. Statistics Department: Statistical Handbook of NEFA, 1970-71, pp.29-30.

relatively hot during the summer. Looking at the maximum and minimum temperature at different places, it may also be observed that spell of warm season being a very mild one is brief on the whole, and, temperature²⁴ during summer is not constant. It goes to maximum and minimum in another week and at times during the day too.

From the stand point of climatic groups, where some of the places in Arunachal falling under snow belt belong to 'POLAR ICE CAP' group, the places between snow belt and foot-hills may be brought to the category of 'TUNDRAS' group. Again, climate of the places in the foot-hills is almost at par with that of the plains in Assam. In a word, overall cold climate pervades predominantly over the centre of Arunachal Pradesh.

Coming to other aspect of climate, we may note that rainfall is gauged throughout the year in Arunachal Pradesh, though very unevenly in different parts over the year, as evident from the Table given below.

Table No. 1.1
Showing Average Rainfall, District-wise ²⁵
In centimetre

Month	Districts				
	Kameng	Subansiri	Siang	Lohit	Tirap
January	3.26	5.69	7.86	5.48	5.64
February	3.01	8.32	14.38	19.19	18.00
March	2.15	9.74	18.41	31.29	20.96
April	6.73	11.73	21.97	43.79	23.35
May	14.28	30.81	39.93	44.43	36.39
June	31.90	29.63	59.50	36.15	48.76
July	26.08	43.44	73.56	39.87	56.87
August	20.10	27.04	40.86	17.95	46.13
September	17.29	28.29	77.05	24.44	31.85
October	12.39	12.50	18.79	17.40	11.80
November	1.42	1.89	2.59	0.65	1.71
December	Nil	0.08	0.10	Nil	Nil
Total :—	138.61	209.16	374.97	280.55	301.46

24. The observation is based on the available rainfall and temperature statistics: Department of Economics and Statistics, Govt of Arunachal Pradesh.

25. Statistics Department: *op. cit.*, p.26.

The heaviest monthly average rainfall of 31.2 centimetre was recorded by Siang, followed by Tirap, averaging 25.1 centimetre, Kameng had the poorest rains with the overall monthly average of about 11.5 centimetre. June/July is the period recording maximum rainfall throughout the territory whereas December goes almost without rain. January also uniformly records poor rainfall, being one-third to one-fourth of the average rains of different districts. Barring little variation from time to time, the phenomena still continue.

Vegetation : In the absence of categorical data, the coverage of forest in Arunachal Pradesh can well be mentioned by stating that excepting homestead, tracks, roads, streams and rivers, playing grounds, a few patches of sand deposits, a few barren hills and administrative centres and the present jhum cultivation fields, everywhere there is forest. This forest consists of hedges, small and big trees. Thus, the whole surface of the land of Arunachal Pradesh is clothed with forests and without any ado it can be said here that Arunachal is a green land because of green forest.

As a matter of fact, the vegetation in the entire region of Arunachal is very much influenced by altitude, latitude and longitude. In Kameng district, better known botanically, vegetation can easily be sampled going along the roads from Bana²⁶ via Rupa to Kalaktang and along the road from Bhalukpung to Tawang, northern sub-division under Kameng. These sampled forests consist of mainly big trees which are evergreen.

The district of Subansiri consists of dense forest on the high as well as small hills and in the valley too. The vegetation in this district depends mainly on altitudes and rainfall. Anyway, the same may be categorised, such as tropical, sub-tropical and temperate and alpine. While tropical forest is found upto 1,200 metres, sub-tropical forest is there between 1,200 to 2,000 metres and temperate and alpine forests between 2,000 to 4,000 metres.

26. It is a place in eastern Kameng near Seppa Sub-divisional headquarters of eastern Kameng.

Siang is having the most fascinating and dense forest areas. The entire district is covered with almost big trees which are of much commercial value. The classes of forest in this district are of tropical evergreen between the altitudinal range of 300 to 900 metres, sub-tropical evergreen mostly along the river valley between the range of 900 to 1,500 metres and sub-temperate and temperate mixed vegetation above 1,500 metres. In other words, the evergreen forest is found in the foot-hills, the temperate evergreen in the middle ranges, the coniferous forest at the higher elevation and the alpine forest in the extreme north of the district.

The high region of Lohit is extremely, cold and, consequently, snow bound all over the year. This cold climatic condition is proved to be a blessing for an enviable stock of flora with innumerable varieties of trees. The topical vegetation is found upto 1,000 metres. But the altitudinal range of 1,000 and 2,000 metres, sub-tropical evergreen is found with patches of evergreen class. Between 2,000 and 3,500 metres of elevation the temperate type of vegetation is found.

The lesser Himalayan region rises from the plains of Lohit in Tirap comprising forested terrain. In the valley as well as along the rivers, evergreen forest occurs.

In nut shell, evergreen forest is found in the foot-hills areas, the temperate evergreen in the middle ranges, coniferous at higher elevation and alpine on the extreme northern parts of Arunachal Pradesh. Similarly, the tropical rain forest is specially confined to the foot-hills as well as to the plain areas of the Pradesh. The typical three storied forests contain either species or one or two pre-dominating species in the upper canopy. The examples of the type of forest, mentioned above, are Hallong & Makai and Mallock etc.

Although the coniferous is found in the drier western Himalaya at a lower elevation comparatively, the same is found mixed with the other broad-leaved species in the eastern Himalaya at higher elevation comparatively and this appears to

be mysterious. Kameng falls within the drier Himalayan where vegetation from 2,700 to 4,300 metres is a worth of shrub by junipers with pine, silver fir, dwarf rhododendrons and wild straw berries. While above 4,600 metres alpine meadows catch the human sight²⁷ until the perpetual snow line in relation to the coverage of forest as well as the vastness of vegetation, the population of wild animals is sparse in Arunachal Pradesh. The abode of wild animals can be divided into broad regions, namely, the foot-hills areas where tiger, elephants, leopards, deer and pigs are available. The next is the higher region comprising the hills where cold climate animals such as musk deer, barking deer, clouded leopards and pandanges are found. In this region, bears, jackles, monkeys, wild dogs, capped Langoor of Assam Macaque, rats, squirrels, wild cats and golden cats are there in poor number. Likewise, the stock of birds is also poor due to the climatic condition as well as the keen hunting nature of people.

27. NCAER: *op. cit.*, pp.48-49.