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Towards a Settlement Structure for Kerala, Part I

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TOWARDS A SETTLEMENT STRUCTURE FOR KERALA

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For many reasons, besides those that are self evident, we are grateful to all persons and institutions who have guided us and helped us in completing this work.

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TOWARDS A SETTLEMENT STRUCTURE FOR KERALA

" The Ekistics of today -
The Ekistics of tomorrow"

PREAMBLE:

"Ekistics" is the science of human settlements. Ekistics demonstrates the existence of an overall science of human settlements conditioned by man and influenced by economics, social, political, administrative and technical sciences and the disciplines related to art.

Contrasted to architecture which is confined to the design of buildings, or to town planning which, by its own definition, is confined to towns (that is, one category of human settlements) or to geography, which describes only phenomena of terrestrial space or to several other disciplines whose scale is limitedto parts, categories or types of settlements, Ekistics is a science whose task is to examine all human settlements from every possible point of view, in order to develop skills for the solution of problems involved in the development of the human habitat.

As such, Ekistics studies the field of human settlements with three different ideas in mind the geographic dimensions, where we move from the single room (the smallest ekistic unit) to the house, the plot, the block, the neighbourhood, the communitty, the small town, large city, metropolis, etc., the nature of related disciplines, that is the economic and social aspects of the settlements, etc., the sequence of procedure from analysis to the formulation of policies, to subsequent synthesis, programs, and plans.

In order to study human settlements, the science of Ekistics has had to use a wide range of space and time. It has to start by studying human settlements from their most primitive stage to understand the evolution which has led to forming towns, and is now leading to the metropolis and megalopolis; and to understand the type of settlements to come. Further more, Ekistics also has to study settlements of several sizes. It has to cover the whole earth and to study types of settlements in all types of surroundings, in all types of cultures and civilizations, and in all periods.

To achieve this end, namely the studying of human settlements in their entire evolution, and to develop this science to the point of being prescriptive and not just descriptive, Ekistics has a long and difficult road to follow. To achieve this end, we must work hard for many generations to come.

The principles of Ekistics may be stated as follows:

0.61 Human happiness: The main purpose of human settlement is to satisfy man. Human happiness is the ultimate goal of the creation of human settlements.

0.62 Unity of purpose: We cannot achieve this goal unless we understand that we have to achieve a unity in the economic sense, in the political, administrative, technical and aesthetic senses. Unless we understand the need to achieve such a unity, we are doomed to fail as it is impossible to have a settlement which is satisfactory from the aesthetic point of view but uneconomic; or vice versa. This would not serve man and thus would defeat the very purpose of the existence of the settlements and the first of our principles.

0.63 Hierarchy of functions: To arrive at proper solutions within our settlements, we have to understand that there is a hierarchy in all functions which gives guidance for finding the necessary solutions. A settlement for few people has different functions and requires a different conception from a settlement serving a much greater number of people. We have to understand where each particular settlement belongs in the whole hierarchy of functions.

0.64 **Four dimensions:** It is wrong to consider settlements as static. Often, the mistake is made of regarding settlements as two dimensional phenomena. Not only do they have three physical dimensions, but to limit ourselves even to those means that we forget that all settlements and the communities they serve are constantly changing. They are only the cells of a living organism. As such they have a fourth dimension of time, which together with the other three dimensions, conditions the functions, the conceptions and the solutions at every specific moment.

Many scales for many masters: Inthe past humen settlements were inhabited only by man and thus they were built only on the human scale. Now human settlements must also accommodate the cars, trains and all the types of machines which are serving or will serve man. Without letting the machines become the masters of settlements, the latter should accommodate them as factors which are indispensable for human life. To achieve a balance between the human forces (man who has to be served) and machines(which have to serve man), human settlements must be based on the principle that its several different elements require several scales.

TOWARDS A SETTLEMENT STRUCTURE FOR KERALA

I N T R O D U C T I O N

The settlement structure of Kerala which is unique in all respects is undergoing a slow ttransformation since 1951 as a result of policies designed to accelerate the country's economic progress. New industrial complexes have been created and traditional urban settlements have emerged as centres of administration and economic advancement. The overall purpose of this study is to place into a sharper spatial focus thesettlement structure of Kerala - to compare various areas in relation to their functions and interdependence - and in essence, to appraise Kerala's attempt to advance as rapidly as possible and propse a co-ordinated approach to the evolution of a functional settlement structure for Kerala. The post independence Governments response to the sharp regional variations within the structure of a multi-national state establishes the basic frame work. Since political power was sensitive local pressure, special attention is given to this aspect of planning.

A real understanding of what has happened in Kerala demands more than a study of either state averages or state policy and planning goals alone. This work illustrates the need for intensive study of the settlement structure of Kerala and regional growth as well as the state's political structure and economic planning.

In this study an attempt is made to identify and understand the settlement structure of Kerala. The study also aims at differentiating the present group of settlements in Kerala by their character, composition, functions andinter and intrarelationships. The major intention of this study is to analyse the interactions between various forces - social, political, administrative, economic, geographic, etc., and their manifestations in the physical form of settlements.

An understanding of the settlement structure of Kerala in its varied aspects, leads to the evolution of a futuristic pattern of settlements with a basic structure. A harmonious linkage of the various settlements will result in an advanced social, economic, and physical growth. This is the crux of all planning - the evolution of a settlement structure - for interwoven activities and functions within the matrix of an area. Taking Kerala as the body, each settlement is a cell in it and the structure of these cells determine the efficiency of inter and intra urban and rural relationships. The gaps are to be bridged and the opportunities exploited.

WHAT IS SETTLEMENT STRUCTURE?

By structure is meant the mutual relations of the constituent parts or elements of a whole as determining the peculiar nature or character. It is an organised body or combination of mutually connected and dependent parts or elements. The various mutually related and dependent components are the social, economic, geographic, administrative and political factors which have played their own vital role in moulding and shaping of the physical form of the settlemnts for satisfying particular functions of life. The degree of variance in all fields of life and the standards of assessment determine the peculiar nature of the settlement structure from place to place, and area to area. A global variation of the inter-related functions reveal the stratum or stage of development and the structure evolving out of a study in the norm or standard of assessing the achievements of a society.

KERALA - THE STUDY AREA

Stretching in a southerly direction from south India, Kerala is a narrow strip of land, along the west coast up to about 35 miles north of Cape Comorin, the land's end of India. She ~~is~~ lies between $8^{\circ}17'30"$ to $12^{\circ}47'40"$ N.latitude and $74^{\circ}51'57"$ to $77^{\circ}24'47"$ E longitude.

While the state of Mysore bounds her on the north and north-east, the stat of Madras defines her eastern and southern limits andthe Arabian sea washes her shores on the west.

The area of Kerala state according to the Survey of India is 15002 square miles and the population as per 1961 census is 16,903,715 persons. The width of land towards the east varies from a minimum of 7 miles her midwidth being 46 miles.

The variations in the topographic features determines the three longitudinal stretches of land from the coast to the ghats. From the coastal plains rich in mineral sands and abundant in coconut palms to the alluvial midlands with strips of green carpets of paddy fields and garden crops to the high ranges of luxuriant forests and estates, the change is abrupt and striking. The rivers emerging from the high ranges flows eastward through the rugged midland and the plain coast land into the sea, form
and back waters in the low lands. The
8 months of an year is the condi
vegetation in Kerala.

The people in
different caste
Even then -

The favourable climate, easy access and good soil conditions along with historical accidents and social political and economic reasons have resulted in a variation of density pattern from the coastal plains to the high ranges, as a decreasing function. A fairly well educated mass with high population growth is characteristics of Kerala. Also 43% of the population is below the age of 15 , thereby having a high dependency rates.

The occupational structure of the people is related to this intensity of concentrations and availability of lands. Since there are very little mineral sub-strata in the area. The industrial development is still lagging and the primary occupation is still agriculture and forestry. Moving from west to east, the frequency of urban centres in the coastal plains - at 3 to 22 miles intervals- and the economic activity other than agricultural leads us to midland area of widely spaced urban centres. Where people are engaged primarily in agriculture and cash crop production and then to the sparsely populated high lands under forests and estates.

The settlement pattern of Kerala is of a scattered nature comprising of isolated homesteads and is quite unique from the situations and patterns in other parts of India. Here the unit of settlement is a homestead. The whole landscape is spotted with homesteads, the towns

merging into the rural areas and the rural areas moving into the towns. The settlements are access oriented rather than area oriented. An area wise classification of the settlements depicts the settlements in character as either rural or urban. The phenomena within this area are the linear development which is a result of access oriented and social prestige and the rural urban knots which are the collection and service centres for an area in the hinterland. The scattered nature of settlements with the variations of densities of population has resulted in the scattering of services and facilities in urban, urban and rural areas. The intensity of such functions has been a direct exponent of the intensity of population concentration and the resultant of political and administrative manoeurings rather than economic necessities.

The caste groupings are still predominant in the rural areas while in urban areas this is slowly changing to class groupings. The change in the social structure is very slow and the traditions and values of life are not sacrificed for urbanisation in Kerala.

The urban influence have penetrated into the rural areas through the rural urban knots*. The man in the rural area has been so urbanised that the differences can never be clearly stated.

Kerala state is divided into nine districts. There are 55 talukes withinthese nine districts and withinthe taluks we have 1636 revenue villages. These are only administrative entities in Kerala and not natural or physical entities. A major administrative division within thestate will reveal the fact that there are three distinct cultural divisions - the Malabar area in the north, the Cochin area inthe centre and the Travancore area in the south - with differentials in economic development and social set up. But basically the people and of Kerala can be brought under one unifying element-the language (Malayalam).

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* Rural urban knots are a non-residential phenomena found in rural areas, where urban facilities and services are located in a miniature scale. They are usually found at the intersection of major and minor roads, and in one to two plots deep and one to two furlongs in length.

WHY THIS TEHSIS?

The pattern of human settlement is a result of multiple factors like geography, history, economics, society, politics, administration and culture. The variations in these factors from hilly regions to coastal regions reflect the structure of settlements in the respective regions. In Kerala along the coastal strip we mostly find the scattered type of settlement, and as we move towards the hilly regions, semi-nucleations are visible.

The present study is to understand how the settlement pattern in Kerala has evolved over a period of time, and has manifested itself in a distinctive nature to satisfy man's requirements in life. The growth, the changes, the sizes, the functions and the inter-relations all helps us to understand how the whole body functions with the functioning of each cell.

The high rate of growth of population, the diminishing land man ratio, the built in social strictures, the non-availability of minerlas for economic growth, the pressure on land for cultivation, the scattered nature of settlements, the erosion of the land by sea, all demand an immediate attention for the survival of mankind in this small strip of land. This is an unique situation where man by ingenuity has to solve the problems through

an integrated approach and create a settlement structure interwoven to all the above materices.

The fabric evolved should reflect existing trends and limitations and it is here that a through study of the area will help us in at least understanding our settlement structure. The final product will be a guide line and an eye opener to mankind of today to plan and reorient our settlements. This is not an end in itself, but only a means to further probing and research works. The utility of this study is particularly important inthat so far in the state (as in the case with all other states) there is no physical plan for the whole area, nor an outline settlement structure for the whole state.

SCOPE AND LIMITATIONS OF THIS THESIS

The scope of this study in the existing context of our limited understanding of the settlement structure is to make a critical estimate of others findings, with a view to determining.

(a) to what extent these findings lend themselves useful to formulate planning proposals for a settlement structure for the whole of Kerala, and

(b) to what extent those findings reveal the physical impact of the economic growth so far.

All documented sources available will be reviewed to see how far planning proposals can be given. Here it may be noted that the planning proposals will be in the light of the documented sources available and this limitation makes it quite evident that studies of physical impact of economic growth in detail are likely to expose the provisional nature of the proposals made by us. Yet this will remain a contribution, since so far no effort has been made to assemble, analyse and propose on the basis of all available findings.

Thus the study will cover aspects like -

a. Description of the state.

b. The continuous formation and expansion of urban areas.

c. The decrease in cultivable land man ratio and problems arising out of it.

d. The lack of suitable resources for a faster and favourable economic growth.

e. The pattern of distribution of settlements - rural, urban and tribal.

f. The structure of such settlements in terms of their size, functions, interlinks, etc.

g. A proble into the reasons for such a settlement structure in temms of location, social and cultural aspects and economic viability.

h. The political forces which developed such a structure.

j. Trends of growth and changes - the positive trends, the negative trends and stabilised negative trends.

k. An attempt to relate these trends to economic growth.

l. A critical examination of previous findings, and conclusions and assessments and their validity in the present context.

m. Conclusions based on the above studies.

n. Economic planning and accepted scope of economic growth, based on the five year plans.

o. The negative and positive aspects of such planning resulting in stresses and strains in the structure of the settlements, which may be physical, economic or social.

p. Broad conclusions drawn from all the above studies, which may help in drawing up a policy for proposing a broad settlement pattern for Kerala.

q. Evolving certain concepts and methodology for application in a given situation for proposing a settlement structure for Kerala.

r. The application resulting in the settlement structure in Kerala in terms of its functions, size, composition, character, interlinkages, economics of resource utilisation, balanced development, conducive growth, etc.

THE GOAL TO BE ACHIEVED.

The fast rate of growth of population, and the meagre availability of habitable land andresources, are posing problems of effective physical and economic growth in Kerala. While on the one hand the land man ratio has decreased from 1.51 acres/person in 1901 to 0.57 acres/persons in 1961, the economic growth has been taking very slow strides. The physical pattern has to be closely aligned with the economic growth potentials if this area is to survive with the fast rate of growth ofpopulation. Hence a clear planning of the settlement structure in way ofthe potentialities, the trends of growth, the interlinkages, the least disturbance of rural areas, and forests, all call for detailed studies in economic growth.

In spite of proposing a provisional settlement structure for Kerala through these limited studies, the major aim or goal in this endeavour is to open the eyes of our planners to the hard task ahead of us and to point out where we are making mistakes positive or negative. Thus the final goal is to achieve a synchronised aproach to global planning than area planning, for creating a habitable, economic, and socially viable environment for man to live, recreate and work.

THE PHILOSOPHY OF BALANCED DEVELOPMENT.

Each state has abody of traditions and objectives which rally the populations support. The viability of any state is measured by the degree of support people give to the "state idea" or the "raison detre" of the state. A modern state is one that has through political and educational measures successfully engaged the greater mass of the population in support of the state's raison detre". The individual has shifted his values from those of purely regional or local institutions to the national level, he has become national in out look. There must exist, therefore, within this broader frame work, a mechanism for the integration of the individual to supra regional goals and values, restrictions and taboos on social mobility are to be eliminated. The state territory becomes the effectively utilised area. Some would maintain that political boundaries should correspond to economic and social areas so that "homogeneity" becomes a reality.

"The rural population of Kerala is still more urban in character. The people in this state have an outlook and set of values which are in many respects different from those of their counterparts. As regards education, cleanliness, etc. the rural areas maintain

a high standard .....Here for example is a net work of excellent roads, and power is the cheapest in India, most of the villages have electricity and medical services are good"*. It is on such a developed society that our operations are made in the course of this work.

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*"Blossoms in the dust" by Kusum Nair, published by Gerald Duckworth, London, 1961.

P A R T - I

THE SETTING OF KERALA

CHAPTER - I

THE LAND - CANVAS FOR PLANNING

1.1 LOCATION

Kerala is located between 8°17'30"N and 12° 47' 40" N latitudes and between 74° 51' 57" E and 77°24' 47" E longitudes. It stretches in a southerly direction from South Canara along the west coast upto about 35 miles north of Cape Comorin along the south western portion of the Indian Peninsula. Kerala is bounded by the State of Mysore on the north and north east, the state of Madras on the eastern and southern limits, and the Arabian sea on the western side.

1.2 The majestic western ghats with its magnificent array of towering peaks rising in echelon, constituting 'a no less striking physical than moral limit' on the east and the Arabian sea on the west have given Kerala a comparative isolation which, in the past, has been recognised to have played a vital role not only in the preservation of a distinctive culture, but also in shaping her political destinies. In modern times, however, when quick and

improved means of communication by land, water and air overstep natural barriers, and the fear of interstate aggressions has melted away, the role of isolation has ceased to command the importance it had in the past. Indeed, the western ghats protect the state from the dry winds of the eastern plateau and helps her to maintain a steady rainfall during the monsoon. The Arabian sea, likewise contribute in no small measure to the development of her maritime trade at several ports, her flourishing fishing industry and the exploitation of her mineral sands.

1.3 AREA AND DIMENSIONS.

The area of the state according to the Survey of India is 15002 square miles and 15002.6 square miles according to the Survey Department of Kerala Government. The country extents to the east in irregular widths varying from a minimum of 7 miles to a maximum of 75 miles, her mid-width being 46 miles. From the farthest point on the east, the land tapers to the north and the south in unequal lengths, forming a scalene triangle with its base on the long coast line extending over 360 miles, with its apex on the western ghats. The perpendicular length of the state comes to 339 miles.

1.4 PHYSICAL FEATURES.

Kerala is singularly diversified in her physical features as in configuration. In the light of this diversity of physical features the state can be divided into three natural divisions consisting of the low land or sea board, plains and hills corresponding to the low land, midland and high land. The coast for a short distance along the bordersof the lakes is generally flat, retreating from it, the surface immediately becomes unequal roughening into slopes which gradually combine and swell into a mountainous amphi theatre that bounds it on the east. The long and narrow stretch of sandy sea board is low and is generally swampy and is in several parts liable to be flooded during the monsoon indundations. The area is typical of the luxuriant growth of waving cocoonut palms. Beneath the shades of the trees nestle the houses, generally not huddled together as in an east coast village, but each in its own compound often surrounded by a stout fence of thorns, cocoonut palm leaves or walls of mud or stones.

1.5 The plains succeed the low land is gentle ascents andvalleys but broken here and there by isolated low hills. The endless succession of houses and gardens scattered in picturesque disorder and the florid and exuberant vegetation that for a great part of the year clothe the land of Kerala

present a striking contrast to 'the nudity of the eastern plains'. The mid land is 'enlivened and fertilised by innumerable rivers and pastoral streams whose border are crowned with groves and cultivation that everywhere following their winding course presents a unique charming scenery infinitely more diversified than other parts of the peninsular India and one that would indicate abundance'.

1.6 The high land or the eastern portion is broken by 'long spurs' extensive ravines, dense forests and tangled jungles. Towering above all, 'their slopes mostly clad in dense forests the western ghats which constitute the glory' of the state keep watch over this favoured land at its feet. Thus the predominant feature of the highlands is the intensive coverage by forests and plantations, which are by far sustaining the economic base of the state.

1.7 NATURAL DIVISIONS.

From the configuration of the land, it can be easily understood that the state can be divided into three natural divisions namely the Highland, Midland and Low land. For this purpose the procedure adopted is to fix the highlands as the areas having an altitude of 250 feet above, mean sea level; the midland as those areas having an altitude between 25 feet and 250 feet above mean sea level, and the

low lands as those having an altitude less than 25 feet above mean sea level. Since the contour map of the survey of India for Kerala shows the contours only upto 50 feet above mean sea level, it was inevitable that the determination of the area falling in the classification of the low landhad to be done with reference to the reports of the Municipal Commissioners and Thsildars who had necessarily to depend upon certain amount of approximation for the purpose. There are, indeed, some revenue villages lying partly in one classification and partly in another.

1.8 In the course of this study continuous reference will be made to these three natural divisions. Each of these three natural regions has its own distinctive type of settlement structure, and it is felt that the settlement structure is best studied in this context. This is justified because in the Kerala situation Geography has played quite an important role in the evolution of the scattered settlement pattern, and certain trends of population concentration and distribution have taken place, guided to a great extent by the geography of the area. This division also helps in understanding the relationships of the natural divisions, with the crop pattern and the population concentrations.

1.9 ADMINISTRATIVE DIVISIONS.

Kerala is comprised of 9 districts these being - Cannanore, Kozhikode, Palghat, Trichur, Ernakulam, Alleppey, Kottayam, Quilon and Trivandrum. Excepting Trivandrum and Trichur all districts are further divided into revenue divisions. Within these districts there are 55 taluks in the state and each taluk is divided into a number of revenue villages, the total number of such villages being 1636. In the former Malabar area, a few revenue villages are grouped under Firkas. Except in respect of the villages of Tirur Taluk and the majority of villages of Alathur and Palghat taluks the revenue village of the Malabar area are subdivided into 'desoms'. In the former Travancore and Cochin areas of the state the revenue villages are subdivided into "karas" and "muris". The revenue villages of Kasaragod and Hosdurg taluks which were in the south Kanara district have no subdivisions at all. The names of districts and taluks and number of villages in each taluk are given in Table No.1.

1.10 Since 1875 the nomenclature of district was 'Division'. The district was comprised of 'Taluks', and each taluk was made up of 'villages', then known as 'proverthi', further subdivided into 'karas' or 'mullas' or 'shermanans'. This nomenclature was in use upto 1951,

with only the alteration of mullas or shermanams which ceased to exist, and only the terms 'karas' or 'muris' existed. Also the division began to be knwon as 'district'. Cochin was too small to have further divisions. The primary divisions consisted of taluks, which themselves comprised a number of villages, further subdivided into muris.

1.11 Kerala state was constituted of regions from the princely states of Travancore and Cochin, and the Madras State. Kerala state was formed with effect from Ist November,1956, as per the state Reorganisation Act 1956. From the erstwhile princely state of Travancore, the territories comprised in the Agastheeswaram, Khovala, Kallulam and Vilavancode taluks of Trivandrum district and the Shencottah taluk of Quilon district were ceded to Madras State. Kerala state comrpised of the territories of the existing state of Travancore-Cochin, excluding the area mentioned supra; the Malabar district excluding islands of Laccadive and Minicoy; and the Kasaragod taluk of south Kanara district.

1.12 THE SOILS

The soils of the state are broadly classified as sandy, alluvial, laterite, black, peaty and forest and hill soils. The sandy soils occur as a narrow belt all along the coast. They are highly forous, with low water

retentive capacity. They are extremely deficient in all major plant foods and lime and require organic matter.

1.13 The alluvial soils cover the entire tract of Kuttanad and the 'kole' lands of Trichur and Mukundapuram taluks. They are heavy in texture and are generally well supplied with organic matter. But being located in the low land, close to the coast, they are subject to inundation from the sea, and have strong acidic reaction. Laterite soils cover the largest area. They are characterised by a vesicular structure, and the accumulation of hydrated oxides of iron and aluminium. The soil, close to the water table make excellent blocks for building purposes. Laterite soils are of low fertility, and those found in the hills are gritty and shallow, poor in organic matter and deficient in all essential plant foods. Laterite soils respond well to good cultivationand judicious application of fertilisers. Red soils are found in a part of Neyyatinkara taluk. They are deficient in organic matter and low in all major plant foods, and lime. But they respond well to good agronomic practices. Peaty or kari soils occur in the taluks of Ponnani, Kanayanur, Vaikom, Shertalai, Ambalapuzha and Kuttanad covering an area of 50,000 acres. They are characterised by a deep black colour, with extremly high

content of organic matter. Failure of crops in kari lands is largely due to various acidic reactions. Fertility problems are also created by the annual inundation by saline waters. These soils are noted for their poor fertility and low yields.

1.14 Forest and hill soils cover about 26% of the areaof the state. Plantation crops as tea, cardoman, and rubber are extensively grown as forest soils, and they thrive due to the high content of organic matter. Black cotton soils are found in small areas of Chittur and Palghar taluks. Cotton is the main crops grown on such soils.

1.15 GEOLOGY

Three main geological formation can recognised in Kerala. They are -

a. The Archaeans (oldest rock)

b. Warkallis of tertiary age(upper miocene to pliocene)

c. The recent deposits (Quarternary)

1.16 For the purpose of stratigraphical classification, the state of Kerala can be divided into 4 district zones each zone having a more or less north south alynement. They are the following -

a. Crystaline rocks consisting of representatives of the Archaean group.

b. Residual laterite, fromed by the decomposition in site of the Archaean crystalines.

c. The Warkalli formation - lignite bearing sedimentary beds with a laterite capping.

d. Recent formation - consisting of alluvial marine and lacustine deposits

1.17 CLIMATE AND RAINFALL

On the whole, the state has a fairly salubrious climate without extrmes. A bracing cold climate exists in the highland region throughout the year. The diversity of the physical planting of the state has resulted in the diversity of climate. In the rest of the country enjoys temperate climate. Humidity is rather high in the plains, and rises during the S.W.monsoon. The entire state is assured of a fairly good rainfall as it gets the benefit of both southwest and north east monsoons. The rainy season starts towards the end of May, and is fairly widespread till the end of November. The High Ranges of Kottayam district experiences the highest rainfall, and so also the mountainous regions of Malabar and the coastal region. The southern regions of the state

receive the minimum rainfall during the year. Except for slight variations in the quantum of rainfall which occurs in certain years the state is particularly free from a failure of rains and consequent destruction of crops on a vast scale due to drought. The southern regions receive an average rainfall of 60" and the northern regions get an average rainfall of 120" or around it. The temperature in the plains generally ranges from 70^{o} to 80^{o}F. In the high ranges, the temperature ranges from 30^{o} to 60^{o}F. There is no well defined season in Kerala. The summer and winter are practically controlled by the S.W. and N.E. monsoon. Autumn and spring are practically The only two seasons are the dry season and the wet season.

1.18 THE RIVERS, LAKES AND BACKWATERS.

Kerala is blessed with the divine gift of water in an abundant measure. It is her topograhy and hydrology that make Kerala rich in water potential. The western ghats on the east, with the exception of the Palghat pass form a continuous barrier. With a total

precipitation of rainfall of 42,00,000 million cft, an annual run of 2500000 million cft. is yielded by the rivers.

1.19 There are 41 west flowing rivers in Kerala 3 east flowing rivers are the major tributaries of the Cauvery. Only a few of these 44 rivers are large, while the others are smaller, comparatively. The Beypore, Bharatapuzha, Periyar and the Pamba are the only 4 rivers with more than 100 miles length and yielding more than 100,000 million cft. of water. On an average, the river of Kerala are about 40 miles long, have a catchment of 200 sq.miles and accessent for about 38,000 million cft. of water. Then there are the backwaters and lagoons and the numerous streams falling into them.

1.20 The rivers flow rapidly and fall through great heights in the upper reaches of the hills, and provide excellent potential for hydro-electric generation. The rivers often good irrigation possibilities and potentials in the indulating and lands. As they reach the delatic position near the coastal line, the rivers become sluggish, and enter the sea through estuaries and backwaters. The rivers are generally tidal and navigable at the lower reaches.

1.21 One of the striking features of the State is the continuous chain of lagoons or backwaters, running parallel to the sea coast and receiving the water from the rivers and streams that take their source from the western ghats. Geological evidence goes to show that these lagoons are of recent origin, and are created as a result of a series of upheavals and subsidences.

1.22 The backwaters are mainly used for fishing culture and coconut husk retting and their shores for coir manufacture. The important backwaters from north are Kumbla, Kalanad, Bekal, Chittari, Kavvayi, Kotta river backwater, the Korapuzha backwater, the Veliyangad, the Kodungallur, the Cochin kayal or Varapuzha, the Vembanad, the Kayamkulam, the Ashtamudi, the Paravur, the Edava and Nadayara Kayals, the Anjingo, the Kadinamkulam and the veli Kalyal.

1.23 THE MOUNTAINS, PASSES, PLAINS AND COASTLINE.

Then western ghats which form the eastern boundary of the state constitute her chief mountain system. To the south of the Nilgiri hills is the

remarkable pass or gap of the western ghats known as the Palghat gap. It has an elevation of only 1000' but has a maximum width of 15 miles. The western ghats rise from very low attitudes of a few hundred feet above sea level upto about 5000' on an average with the Anamudi peak reaching the highest elevation of 8841 ft. above sea level. The western ghats are pierced by a few passes. The Perambachi ghat gives access to Coorg, Periya ghat to Mysore, and Karkkur ghat to the Nilgiri. The Bodinaickanur pass connects Bodinaickannur in Madura district with the High Range and leads to Devicolam and Munnar. The Thevaram pass connects Thevaram with the Cardoman hills, the Kambam pass opens upto Madura and the Gudalur or Kumili pass connects Peerumade and Kanjirapally with Kambam and Ottamapalayam. The trunk road from Trivandrum to Tirunelveli passes through the Aramballi pass. The Mottachimala pass, the Thirukkurangudy Bridle pass and the Yedamala pass are the less important passes.

1.24 The plains succeed the low lands in gentle ascents and valleys, but broken here another by isolated low hills. It is enlivened and fertilised by numerable rivers and pastoral streams whose borders are crowded with groves and cultivation.

1.25 The coastline extends for about 350 miles in length and lies in an almost north to south direction. This has enabled the state in establishing a number of major and minor ports, in addition to maintaining a flourishing fishing industry, and providing employment for a large number of the population in the coastal area. Out crops of rocks are never found in the coastline except to the south of Trivandrum and north of Calicut. A longitudual strip of water logged area consisting of large tracts of coconut gardens, and the vast acres of paddy fields like Kuttanad and the backwaters along the coastline separate the mainland from the narrow strip of coastal tract. This coastal strip is thickly populated. Coconut is grown ona very large scale very near the sea coast, and the main occupation of the people is fishing cultivation of paddy and coconut.

1.26 The long coastline is subject to heavy sea erosion in several places, accentuated during the monsoon months, when a rough sea makes deep inroads into the land. During the non-monsoon months, there is generally accretion, but this is of smaller magnitude

than that of erosion. Particularly severe sea erosion action is felt most in Cannanore, Tellicherry, Vypur Island, Chellanam, Ambalapuzha, Neendakara, Chavara, Pachallur etc. The sea continuously scrouns away valuable lands, damages vast areas of coconut plantation and buildings and render thousands of coastal dwellers homeless.

1.27 Another serious problem observed over recent years is the tidal overflow. This action pollutes the inland water sources, making the water unfit for irrigation or culinary use.

1.28 LAND UTILISATION AND CROP PATTERN.

The fact that Kerala has drawn upon the margin of cultivable land much more than in the rest of India is clear from the phenomenal increase in population. The net area shown in the state in 1966 was 2064337 hectares - 53.5% of the total area, while for India it is only 39.1%. The proportion of fallow landin Kerala is very low - 0.8% of total area. A higher proportion of the total area devoted to cultivation becomes all the more significant in view of the fact that forests cover 27.35% of the total area compared with the all India average of 17.5%.

1.29 The total cropped area is 2551344 hectares - 66.2% of the total geographical area. This works to a crop intensity of 123% (all India 113.2%, Punjab 130%, Maharashtra 120%). For field crops alone the crop intensity works out to about 166%. In Kerala nearly 40% of the area is under commercial perennial crops. The area under cultivable waste is only 2.85% of the land area and barren and uncultivable land, and land out to non-agricultural uses are 2.8% and 5.9% of the total geographical area respectively (vide Table No.5)

1.30 The techniques of cultivation as well as the economics of field crops differ widely from that of commercial plantation crops. The former are generally a function of subsistance economy while the latter are largely market oriented. Table No.4 gives a comparitive analysis of the area under different crops and the average yield. Tapioca and rice together account for 70% of the area under food crops, the remaining being under pulses, sugarcane, pepper, ginger, tumeric, cardamom, betel nuts, bananas and other plantains, cashewnut, tapioca and other food crops.

1.31 Land productivity in general is high in Kerala and compares very favourably with other states. The per acre yield of rice is 1105 lbs. in 1966 which is 25% higher than the all India average. Only the states Madras and Andhra, have higher yields. A wide gap in food requirements to the extent of 50% which exists at present can be partially covered only through intensive cultivation and subsequently raising the yield per acre. Whereas efforts at raising the yield are justified by all means, it would be unwise to divert land from commercial crops to cultivation of paddy. Apart from the direct importance of cash crops to industrial growth of Kerala in the form of raw material supply, commercial crops of Kerala make a substantial indirect contribution to the industrial effort of India through the large amount of foreign exchange earnings they bring in annually - to an extent of 13% of the total foreign exchange earned by India. Exports of commodities like tea, pepper, cardamom, cashewnut, lemongrass oil and coconut products earn the foreign exchange for India.

It would therefore be in the interest of the state economy to maximise returns from land by growing higher value crops in place of low value crops like tapioca, smaller millets, etc. in as much area as possible.

1.32 In general the land utilisation of Kerala is very extensive and intensive at the same time - extensive in the sense that whatever land is available is being rapidly put under cultivation and intensive in the sense that the yield is increasing at a fast pace. Moreover there is a definite pattern of land utilisation. The east of the high ranges is under forests and tea and coffee estates. Still lower down we find the plantation and some of the minor forests. The midland is utilised for paddy cultivation and cash crop cultivation, while the low lands are under coconut trees and paddy cultivation. The urban and rural uses are interwoven into this matrix of landscape and it is always seen that the normal Malayalee never wastes his land for non-economical uses. This has reflected the scattered nature of settlements primarily to have an eye on the crops grown in one's land and

secondly to derive the maximum yield out of land. Lastly, but not the least, the Malayalee would like to have his privacy in family life and in a way we can say that he is of an introvert nature as regards his private life.

1.33 Agricultural crops and the plantations which are the main component of primary sector, are largely produced for the market and are the basic factors responsible for imparting a high level of productivity to this sector (52% of the output). Agriculture in the state is characterised by a high yielding cropping pattern, good physical yeilds, a high intensity of cropping and superior cultivation techniques. The intensity of cropping - which gives the degree to which a given piece of landis utilised was 119.3% as against 113.2% for India in 1965-66. For field crops alone the cropping intensity was 162 percent. All these factors combine to make the agricultural sector of Kerala highly productive, the average level of agricultural output per net cultivated acre in Kerala being Rs.361 as against Rs.123 for whole of India. Maximisation of factor utilisation is

particularly important in Kerala where the factor supply is perfectly inelastic in the case of land. As less fertile land came under the plough, and intensive utilisation started recently, the capital output ratio in agriculture is shifting steadily in an unfavourable direction. The experience of the past suggests that our output mix requires as much change as in the input compositions if we have to put the land to optimum use.

1.34 Kerala owes the superiority of its cropping pattern to the large number of high value yielding plantation crops grown in the state. Cocoonut, the most important of these occupy about 65% of the non-food crop area and yield Rs.480/- per acre on an average. Other cash crops in the order of their importance in area covered are pepper, rubber, arecanut, tea, cashewnut, cardamom and coffee. They cover roughly 40%of the gross cropped area. Since these plantation crops are mainly raised for sale in the market, the agricultural sector of Kerala is highly commercialised. Kerala's agricultural economy is highly monetised. The large number of cash crops grown in the state are all brought to the market for sale.

Secondly, since a high percentage of food requirements are obtained from other parts of India, they are again channelled through the market. A high degree of commercialisation of Kerala's economy is one of the factors responsible for absorbing a large section of the population in the tertiary sector.

1.35 75% of the forest area in the states lies in the districts of Kottayam, Trichur, Quilon and Kozhikode. Area under non-agricultural uses is found to be largest in Palghat and Cannanore districts. About 50% of the area under miscellaneous tree crops in Cannanore district. About 2/3rd of the cultivable waste land lies in the Malabar district of Palghat, Kozhikode and Cannanore. Cultivable waste is least in Trivandrum district. About 80% of the "other fallow land" is accounted for the three Malabar districts of Cannanore, Kozhikode and Palghat. About 70% of the current fallow is concentrated in Palghat, Kozhikode and Cannanore districts. Land kept as current fallow is least in Alleppey district. 41% of the cropped area in the state is in Palghat, Kozhikode and Cannanore districts. The percentage of cropped area to net area is found to be very high in Palghat and Alleppey districts, which goes to show the high intensity

of cropping by multiple cropping methods, in these two districts compared to other districts.

1.36 Diversity of crops and heterogenity of cultivation are the important factors of agriculture in the state.

1.37 Food crops occupy 65% of the cropped area in the state. The districts of Palghat, Kozhikode and Cannanore account for about 45% of the food crop area in the state. The percentage is highest in Palghat district. 50% of the paddy production of the state is in Palghat, Trichur and Kozhikode districts. The important districts where sugarcane is cultivated are Alleppey and Kottayam. Cannanore, Kozhikode and Kottayam are the important pepper growing districts, with Cannanore district accounting for 45% pepper production. Kottayam district is the most important Cardamom producing centre in the state. Cashew growing is most predominant in Quilon, Kozhikode and Cannanore. Cocoonut trees occupy about 65% of the nonfood crop area in the state. Kozhikode district accounts for 1/5th of the coconut producing area in the state. Cotton is only produced in parts of Palghat district where black cotton soil is found. Cannanore district is the most important tobacco producing area.

1.38 Of the plantation crops, tea, coffee and rubber are the most paying crops. 75% of the tea production comes from Kottayam. Other tea growing centres are located in Quilon, Kozhikode and Cannanore (Wynad). Coffee is grown mostly in Palghat, Kozhikode and Cannanore. Rubber occupies about 70% of the area under plantation crops in the state. The most important rubber growing districts are Kottayam, Quilon, Kozhikode, Ernakulam and Cannaore.

CHAPTER - II

THE PEOPLE

2.1 The population has grown by 541.26% between 1836 and 1961. From 1836 to 1901, the growth was by 142.65% and from 1901 to 1961, it was by 164.27%.

2.2 It is curious to note that inspite of the steady increase of population during each decade, the decennial increase of population is fluctuating, every alternate decade with the exception of 1951-1961. The growth of population by 164.27% is alarming, as it is almost double that of the all India average of 84.25 over the same period 1901-1961. The pressure on land was reduced to some extent by the general trend of declining decennial percentage increase in alternate decades, but then the departure from this trend in 1961 has aggrevated the already precausious situation.

2.3 Taking the decade 1951-1961, the annual percentage increase of opulation is as high as 2.24 for Kerala as against 1.98 for all India. This is quite high. Table No.7 gives a picture of the annual rate of increase of population of various states between 1951-1961.

2.4 The rate of annual percentage increase registered by Kerala during the decade 1951-1961 is higher than that

registered by certain foreign countries like the U.S.A., Argentina, Nigeria, Cuba, Burma, Japan, Pakistan, France, Federal Republic of Germany, Greece, Holland, Hongkong, Poland, Rumania, United Kingdom, Yugoslavia and New Delhi.

2.5 Kerala occupies only 1.22 percent of the area of India, but is responsible for 3.85 percent of his population (in 1961). In other words, Kerala while covering only about 1/80th of India's surface, accounts for 1/26th of her population. The population of Kerala is almost equal to that of Canada and 1.6 times that of Australia.

2.6 POPULATION DENSITY

According to the 1961 Census, the population density of Kerala is 1127 persons/sq.mile (435 persons/ Sq. Km.). Between 1836 and 1961, the population density has hot up from a ruse 176 to 1127 persons/Sq.miles with a progressive increase over each decade.

2.7 Of all the states in India, Kerala hasthe highest density of population (Vide Table No.9) with West Bengal coming Second with 1021 persons/Sq.mile. The population density of 435 persons/Sq.km is not only higher than the All India average of 138 persons/Sq.Km. but also far higher than the average World density of

23 persons/Sq. KM, and very much higher than those in Canada, New Zealand, Mexoo, U.S.A., Greece, France, Hungary, U.K., Japan, China (Tarivan) and Ceylon, of which China is highest with 295 persons/Sq.KM, followed by Japan with 252, and U.K. with 215.

2.8 The density of population is reflected in the proximity between persons enumerated at a Census. This is calculated on the basis of the formula

$d^2 = \frac{200}{n\sqrt{3}}$ where d = proximity

n = number of persons/100 Sq.KM.

for the application of this formula, the state is assumed to be divided into a number of equilateral Prbangles and the individuals are assumed to be occuppying the corners of the triangle.

Table No.10 shows that the population has been increasing to such an extent that between the above period, the proximity has reduced to almost a third.

2.9 This brings various problems. The average land per capita of population has reduced from 3.64 acres in 1836 to 0.57 acres in 1961. If the actual cultivated areas is considered, it is only 0.28 acres per capita, and the per capita cultivable area is only 0.35 acres.

2.10 In Chapter I, the entire area of the State has been divided into 3 natural divisions, the highlands, the midlands and the Lowlands, The Highlands being those having an altitude of over 250', the Midlands having an altitude of between 25' and 250', and the Lowlands, having an altitude less than 25'.

2.11 In spite of the fact, that the midland has the longest population the lowlands has the highest population density (explained supra). The highland which has longer area than either the lowland and the midland, has the lowest population density. This is because the highlands are covered over with forests, plantations and mountainious area, which naturally account for the sparse population. Dense population is attracted to the lowlands due to the natural attributes like a long sea coast, dense coconut growing areas, inland waters rich in fisheries, and vast paddy fields.

2.12. Another index on the population density is the proximity and land per capita (vide Table No.11). This again goes to show the acute shortage of land, and the heavy pressure on land in the lowlands. With the population continuing to increase at an alarming rate, and the land not increasing, this creates a terrific imbalance in the land man ratio, and this puts forward a major hurdle for physical planners to tackel effectively.

2.13 SEX RATIO

From 1901 to 1951, there has been a progressive increase of the sex ratio but then in 1951 to 1961, there has been a drop (vide Table No.12). Kerala has the highest sex ratio among the States. The sex ratios in the neighbouring States of Madras and Mysore are 992 and 959 females/1000 males respectively. The sex ratio for india as a whole is only 941 females/1000 males.

2.14 The sex ratio is undoubtedly one of the most important of all demographic characteristics. "Sex composition affects directly the incidence of birth, death and marriage: it appears as a differential in marital status, occupational distribution and in virtually all other distribution of characteristics; and it is used as a basis of distribution in almost every aspect of social structue." (Amos H.Hawley).

2.15 A study of the sex ratio of the population according to the natural division shows that the lowlands have the highest sex ratio coming to 1033 females per 1000 males. The highlands have the lowest sex ratio. As has been observed, the earliest settlement in Kerala would have been in the coastal regions as it was comparatively easier to settle there. With growing pressure of population in the Coastal areas, the

population partially migrated to the midlands and lastly to the highlands. Since these migrants take time to take their families with them, the highest sex ratio in the lowlands is obvious, with it being reduced towards the midlands being further reduced in the highlands. This is quite consistent with the trend of migration. Between the lowlands and midlands, there is a nominal difference in sex ratio. This is because the migration from lowlands to the midlands does not much difficulty. In the case of mirgration to highlands the difficulties are more. So the female folks are reluctant to join the male folks, and when they do, it takes a longer time. Trichur district has the highest sex ratio while Kottayam district has the lowest (vide table No.13).

2.16 In demographic and social status, the age structure of the population is of supreme importance in rendering comparison valid and sowing apparent difficulties. Information on the age structure of the population is essential for many pruposes including the analysis of the factors of population change and the preparation of current population estimates and forecastes; the calculation of morbidity and imortality rates as a guide for public health activities and as a measure of their success, acturial analysis for

Commercial and other purposes and of the probability of the survival and related measures; analysis of the factors of labour supply and of manpower, and study of problems of dependancy represented by persons in very yound and very old age brackets.

2.17 A study of the age structures in Kerala goes to show that a large percentage of the population - 41.62% (Male) 40.37% (Female) is between the age group 0-14. Only 53.21% (Male) and 54.23% (female) of the population (male and female respectively) are in the productive age group of 15-59. This is a great imbalance , and has a telling effect on the structure and development of its economy. Since over 45% are dependants, the employed person is laxed excessively to support the dependants. This goes to show the base heavy age pyramid which exists in Kerala. This is true in both rural and urban areas, which follow almost the identical pattern of the state.

2.18 This therefore goes to stress the need for an urgent and drastic need of population control. The only 2 outlests for this are by family planning and by out migration.

2.19 Considering the sex ratio of the age groups, it is seemed that the number of males is more than the

number of females upto the age 10-14, and progressively increasing through the age brackets within that age group. ***

2.20 Taking the rural urban sex ratio by age group in the ages 0,2 3, and 4 the sex ratio is more in rural areas than in urban areas while in age 1 it is less in rural areas than in urban areas. From the age group 5-9 to 50-59 it is more in rural areas than in urban areas. In the remaining age groups it is less in the rural areas than in urban areas.

2.21 LITERACY

Taking the proportion of literate and educated persons to the total population, Kerala leads the States In India with 46.85%. This is against 40.63% in 1951. In point of male and female literacy Kerala leads the States in India with 54.97 in the case of males and 38.90 in the case of females in 1961.

***

Ages 0,1,2,3, & 4	- females less than male - fluctuating
" 5-9 and 10-14	- less than males but progressively increasing.
" 15-19 to 30-34	- higher than males progressively increasing upto 25-29
" 35-39 to 45-49	- less than males - steadily decreasing
" 50-59 to 60-64	- higher than males - progressively increasing.
" 65-69	- higher than males.
" 70 +	- higher than males.

2.22 The lowland has the highest rate of literacy, the percentage of literates coming to 50-87. The midland comes next with 46.77% of literates and the highland last with only 39.47%. A similar pattern is noticed in the case of male and female literacy.

2.23 The lowland continues to show the highest rate of literacy followed by the midland and highland. In urban literacy however the midland has shown, the highest rate of literacy followed by lowland and highland.

2.24 In making a districtwise study it is seen that so far as rural literacy is considered, Alleppy disotrict comes first with Palghat last. This is also true of rural male literacy. But Kottayam ranks first and Palghat last, in respect of rural female literacy.

2.25 Kottayam also ranks first and Palghat ranks last in toral urban literacy, urban male literacy and urban female literacy.

2.26 Out of 10,000 literates in the State 8228 live in rural areas while only 1772 live in urban areas. In urban areas the proportion of female literates is higher than that of males. Trivandrum ranks highest when considering the proportion of literates living

in urban areas, and Quilon ranks last.

2.27 53,15% of the total population of Kerala are illiterates, 31.9% literates without educational level, 11.98% with primary or junior basic qualifications and 2.97% matriculates or those with qualifications above matriculation.

2.28 Among the males 45.03% are illiterates, 36.88% literates without educational level, 13.96% with primary or junior basic qualifications and 4.13% matriculates or those with qualifications above matriculation. Among females 61.00% are illiterates, 27.03% literates without educational level, 10.04% with primary or junior basic qualifications and the remaining 1.83% entire matriculates or holders of qualifications above matriculation.

2.29 Since Kerala can boast of having the highest literacy, rural and urban, male and female in India, Kerala is well equipped with a knowledgeable fraction of manpower who can be utilised to better and uplift the economy. This also clearly goes to show that this manpower can, by giving necessary technical training, cater to the needs of a progressive industrial structures, by which Kerala can stabilise her economy.

2.30 Table No.17 gives an idea of the languages of a sample of 10000 persons of the population. Malayalam being the State language is the mother tongue of the

largest percentage of the people.

2.31 Considering the distribution per 10000 speakers of the major mother tongue (Malayalam) in the State who also speak one or more subsidiary languages, it is found that 398 persons speak English.

2.32 English is the most wisely known subsidiary language among the population of the State, whose mother tongue is Malayalam. The teaching of English in educational institutions is responsible for this feature. It is curious to note that the knowledge of English is higher towards the South.

2.33 RELIGION

The whole population of the State is mostly claimed by 3 religions viz. Hin-divism, Christianity and Islam. Members of these 3 religions constitute 99.96% of the population of the State in 1961. Hindus contitute the majority claiming 60.83% of the population of the state. Christians and Muslims follow with 21.22% of and 17.91% respectively. In the sex of Hindus, there is no any significant difference between the proporations in rural and urban areas of the State as a whole, though the rural areas have a slightly higher proportion than the urbans areas. But in the case of Christians and Muslims, it is noticed that the proportion of Christians

is more than in the rural areas than in urban areas, while the proportion of Muslims is more in urban areas than in rural areas. Kerala comes first in respect of proportion of Christians, if compared with the states of India.

2.34 In 1961, the Hindus enjoy a higher proportion than Christians and Muslims in all the districts. Next to Hindus, Muslims are predominant in the districts of the Northern part of the State while Christians are predominant in the region entering Ernakulam and, Kottayama, districts. Where the proportion of Christians are high the proportion of Muslims are small, And vice versa. Christians have an absolute majority over the Hindus in two districts, but Muslims do not have, an absolute majority over Hindus in any district.

2.35 It can be seen from Table No.19 that while growth rate of the Hindu population is less than that of the state population the rate of growth of Muslims is higher and that of the Christians is abnormally higher.

2.36 GROWTH OF POPULATION

Fertility, mortality and migration are the 3 accepted componenets of the population increase of a country. In 1961, the figure for Kerala regarding

Birth rate and growth rate are given in Table No.20.

2.37 Kerala stands last but one among the States in India, in respect of birth rate during the last decade. One of the reasons for the comparatively loco birth rate in Kerala in spite of a high ruptial fertility is the higher proportion of unmarried women in the age group 15-44 which comes to the order of 22.0% of the women in that age group as against 7.4% for India, and 13.2% and 8.2% for the neighbouring States of Madras and Mysore respectively. Another factor is the high percentage of late marriages. Fertility is the highest where husbands are either illiterate or uneducated. A higher literacy has its impact on controlling to birth rate.

2.38 Another important component of population growth is mortality. The expectation of life at birth for Kerala for the decade 1951-61 has been estimated to be 48.3 years for both sexes, which is the highest in India, as against the all India average itself being only 41.2. From 1911-20, when the life at birth was 25-49 years for males and 27.41 years for females, it has risen to 46.17 for males and 50.00% for females in 1950-60. The cause forthe increasing and high expectation of life at birth in Kerala is found in her decreasing mortality. War, famine, natural calamities and pestilence are the 4 principal reasons

which contribute to a high mortality. In Kerala, in the absence of first 3, it is only pestilence that has ever dominated the causes of death in the State. With the advancement of medical sciences, disease has been eliminated to a great extent which has reduced the mortality rate. During the last decade itself number of hospitals, dispnesaires, secondary health centres and primary health centres has increased by 381.95%, the number of outdoor patients by 266.67%, number of indoor patients by 209.29%, and no. of nurses by 83.66% no. of doctors by 206.5%, and no, of beds by 186.55%. Implementation of rural sanitation and water supplies and the education of the public on health matters has also succeeded in creating healthy habits and are incentive among the Kualities who are already reputed for their sense of cleanliness for more and more cleanliness. The proportion of deaths per 10000 population in Kerala has decreased in 1961 under all causes from what is was in 1957.

2.39 Lastly, the territorial changes consequent on the reorganizations of states are another fact in the growth of population. Out of the 16,903,715 persons constitutely the population of Kerala which represents an increase of 24.76% during the decade 1951-61, 259,705 are migrants to Kerala, and constitutes 1.54% of the

total population.

2.40 In general it can be stated about the components of population increase in general, that the increase of population in Kerala is not so much on account of the increase in the birth rate due to the decline in the death rate. If immigration and emigration are considered, more people have gone out of Kerala than have come in. Even if the number of those who have fone out of Kerala is not taken into accoount the contribution of immigrants to the growth of Keralas population is only negligible.

2.41 Table No.21 shows that there is no significahh variation in the percentages of dwellings out of the total census houses is higher in the rural areas than in the urhan areas in the State as a whole, as well as in the districts. This is quite a natural phenomenon as the rural areas have less of industries, trade and commerce and similar items which requires non dwelling houses compared to the urban areas.

3.42 Another Table gives the number of census households per 1000 census houses in the State and districts. Table No.22 almost reveals the same features as the previous one.

2.43 Table No.23 gives the no. of persons per household in 1961.

2.44 The number of persons per household has increased from 5.69 in 1951 to 5.79 in 1961. While the average number of person per occupied residential house is less in 1961, than wheat it was in 1951, the average number of persons per household has increased in 1961 from what it was in 1951. Cannanore district, has the highest number of persons per household. While Palghat district has the lowest. The number of persons/household is higher in urban areas than in rural areas, in the State and in all districts. In the urban areas the no. of persons/household is highest in the Cannonore district and lowest in the Palghat district. The latter has the lowest figure in the rural areas also. The Ernakulam has the highest no. of persons per occupied residential house in the rural areas.

2.45 RURAL AND URBAN POPULATION

The proportion of urban population in Kerala has shown a rising trend from 7.11% of the total population in 1901 to 15.11% in 1961 (vide Table No.24). The decennial growth of urban population has also shown an accelara ed increase from 15.40% in 1901-11 to 60.52% in 1951-61. The highest rate of decennial increase has

been during the decade 1951-61. This can be attributed to the growth of population of thee towns, the increase in the area of towns. The density of urban population in 1951 has been 6309 persons/sq.Mile. This has decreased to 5919 persons/sq.miles in 1961. The main factors which have contributed to this decrease in the density of urban population are that the density of some of the new towns (1961 census) is lower than that of the areas which were already towns before and the jurisdiction of some of the towns has been extended to lower loco density areas. The preximity of population in urban areas is 22.48 metres in 1961, and per capital area of land is only 0.11 acres.

2.46 The rural population has increased over the decade 1951-61, though the decennial variation has been fluctuating showing a fall in the %age increase at ev ry alternate decade. This trend is similar to that in respect of the total population. From 1901 to 1961 the rural population has increased by 141.50%. The density of population in rural areas has risen from 811 persons per sq. mile in 1951 to 985 persons in 1961. The preximity of population in the rural areas comes to 55.11% metres and the per capita area of land is 0.65 acre.

2.47 DISTRIBUTION OF POPULATION IN URBAN AND RURAL AREAS

84.89% of the population of Kerala live in rural areas comprising 75.54% residing in villages with a population of 5000 and above, 9.26% in villages with a population of 1000 - 4999 and 0.09% in villages, With a population of 200 - 999. In Kerala Villages of a population of 5000 and above command the longest %age of her population intake the rest of India, when the longest percentage of population is distributed among villages and of comparatively smaller population sizes.

2.48 The urban population of Kerala constitutes 15.11% of the total, 7.44% are concentrated in towns of Classes III to VI, 1.74% in Class II and 5.93% in cities and town groups of Class I.

2.49 A Talukwise classification is made to study the density of population . The classification is based on function. The 3 categories are:

(1) Entirely Rural Taluks

(2) Non Industrial Taluks

(3) Industrial Taluks.

corresponding to

(1) a taluk having no town either industrial or non industrial.

(2) a taluk having no industrial town.

(3) a taluk having at least one industrial town.

2.50 An industrial town is one dealing with manufacturing processes. A non Industrial town is one dealing with the processing of agricultural produce.

2.51 No Taluk in Kerala is non industrial . 39 Taluks are industrial taluks and the rest entirely rural. Of the industrial taluks, 28 have a density of population above that of the state and the rest below, while of the entirely rural taluks, 5 have a density of population above that of the state and the rest below. The 5 entirely rural taluks in the State are Cranganore (Trichur), Kuttanad (Alleppey), and Kunnathur, Karunagapally and Kottarakara (Quilon).

2.52 All talukes whether entirely rural or industrial having a density of population above that of the state are either Coastal taluks or those contigous to the Coastal area. The sea board taluks are densely inhabitted while the interior taluks are sparsely peopled. The reasons are becuase the land at the Coast is more valuable, Communication is easier, colonisation in the interior taluks must have been later, - legends say that Parasurama law must have began from the Coast - Cultivation of the jungle, valleys and hill slopes are more difficult Purchase and Sale of land at the Coast is easier. Life in the juble is plagued with leeaches, snakes and wild animals. The interior is liable to extreme of temperature while the Coast has comparatively gengial climate.

2.52 Of the 24 taluks which have registered a population increase above that of the State during 1951-61, 8 taluks form a Conglomeration extending from Hosdru taluk in the north to Ernad Taluk in the south, interrupted only by Cannanore and Badagara taluks. Of the remaining 16, 9 cover the whole of the southern portion of the State extending from Karunagapalli and Kunnathur to Neyyatiritara. This conglomeration is followed by a chain of taluks in the eastern border of the area, lying to the north of the conflmeration right up to the southern border of the Trichur district. In other words, taluks which recorded a higher rate of increase in population than that of the State form two conglomerations one in the north and another in the south. distinctly excluding Trichur, Palghat and Alleppey districts and portions of Cannanore, Kozhikode, Ernakulam and Kottayam districts of the above taluks, the taluks of Udmubanchola, south Wynad, Peermade, North Wynad, Devicolam, Pathanapuram, Nedumangad, Kottarakara, Pathanamthilta, Kunnathur, and Karunagapally, are entirely rural taluks. While the taluks of Alleppey, Kanjirapally and Chirayinkil show comparable rural and urban increase, the taluks of Tellicherry, Quilandy, and Ernad reveal high rural increase. The taluks of Hosdrug, Kozhikode, Kunnathunad, Quilon, Trivandrum and Neyattinkara show high urban increase.

2.53 Taluks having an increase in population below that of the State form another conglomeration in the Centre of the State, extending partly to the South besides 3 isolated taluks, in the north. The taluks in this group can be divided into 3 growth ranges, the lowest being upto 9.9% comprise of the Taluks of Palghat and Changanacherry, the next one being 10-19.9% comprising the taluks of town, Ponnani, Ottapalam, Alathur, Chittur, Talappilly, Chowghat, Parur, Muvattupuzha, Thodupugha, Meenachel, Vaikom, Kottayam, Thiruvalla, and Chenganur; and the last 20% and above but below that of the State increase comprising the taluks of Kasaragle, Cannanore, Badagara Perintalmanna, Trichur, Crnganore, Mukundapuram, Kanayannur, Cochin, Shertalai, Aubalapuzha, Kuttanad, Karthigapally, and Mavelikra.

2.54 MIGRATION

Migration is the movement of people from one place to another. Usually people move to a place when certain additional facilities or opportunities are available, from a place where they are absent. These facilities may be economic or social, political or cultural.

2.55 In 1961, the no. of inmigrants to Kerala from other states and union territories in India comes to 233,416 persons and the no. of emigrants from Kerala to other States and union territories in India comes to 6,24,444. So Kerala has inourred a net loss of 391028 persons.

2.56 Movement of population from urban areas to rural areas or between rural areas is not generally motivated by economic causes, except when the rural areas of destination are centres of intensive economic activity. The primary factors for such movement are therefore non economic, the more significant among them being birth and marriage migration. Out of every 1000 rural population 754 persons are non immigrants. Kottayam has the lowest figure of 628, and Trivandrum leads with 838.

2.57 Among migrants in rural areas persons whose place of birth is in the rural areas of the same district form the longest category of 172 per 1000 of rural population.

2.58 The highest proportion of rural to rural migration is in Kottayam which may be accounted to the movement of large no. of plantation labourers. The development of plantations during the recent past will validate the above statement.

2.59 A slightly more important group is formed by persons who have moved from the rural areas of one district to those of another, within the state. Between regions of the same district large disparities in economic opportunity may not exist, but not so between districts.

2.60 In the State as a whole, on an average 41 out of every 1000 rural inhabitants are interdistrict migrants from rural areas of other districts within the State. Cannanore and Kottayam have the highest proportion of such migrants. The new settlements in North and South Wynad taluks and the increased attention paid to the development of plantations in Kottayam district are perhaps significant contributory factors.

2.61 About 10 to every 1000 persons of rural population of India are those born in rural areas of other States or Union territories of India, and who have migrated to rural areas in Kerala. Kerala has a total of 145,326 persons of such migrants, of which 131,390 constituting the largest number have migrated from Madras State and 11845 from Mysore State. It is also noticed that about 2/3rd of the migrants from Madras are concentrated in Kottayam district. There are mostly plantation workers. Other noteworthy concentrations are in Palghat and Trivandrum districts. The migrants from Mysore are mostly settled in Cannanore and Kozhikode districts, more than 2/3rd being in the former itself.

2.62 Immigration to the rural areas of Kerala from the rural areas of other States and union territories in India has been proportionately more, during the past decade.

2.63 The distribution of immigrants from urban to rural areas is given in Table No.28.

2.64 Movement of people from urban areas to rural areas cannot be motivated by any important economic reason. It is possible that small numbers of persons so reported may as well be residents in the of towns and cities. Kottayam district has the largest proportion of such migrants and it is possible that some workers from urban areas have migrated for plantation labour from urban areas. Marriage migration is indicated by the larger percentage of female migrants. Of inter state immigration, Madras accounts for the largest number with 18,626, followed by Mysore and Maharashtra with 3017 and 1705 respectively.

2.65 When examining the immgration into rural areas, on a taluk-wise basis it is found that the percentage of immigrants into the rural areas of the State to the total rural population comes to 24.63.

2.66 Of the low immigration taluks all except Kunnathunad, Mavelikhana and Kottarakara are coastal taluks with high density population. The Coastal taluks being desnsely populated do not lend much scope for

immigration . All the high immigration taluks with the exception of Trichur are either highland taluks or taluks having a sizeable proportion of highlands in them. The high percentage of migrants is therefore obviously into the low density areas namely thee highlands.

2.67 Migration to urban areas is the more important phenomenon as urban areas are more important centres of industry and services to which people from the all areas move. In Kerala, however the difference between proportion of immigrants to rural and urban areas is not so significant. 738 out of 1000 urban population are non migrants, as against 754 for the rural areas.

2.68 The proportion of non migrants per 1000 urban population is lowest in Kottayam district closely followed by Ernakulam. These are areas to which immigration is highest. The differences between the proportions among males and females are not as large as was observed in the case of rural areas.

2.69 Out of 1000 inhabitants in the urban areas of the State, 121 are immigrants from the rural areas of the same district. Marriage migration is indicated due to this higher number of female immigrants. Trichur district has the highest proportion of immigrants from rural areas with 170 persons per 1000 urban population,

while Trivandrum district comes last with 90 per 1000.

2.70 48 out of every 1000 urban population are immigrants from the rural areas of other districts in the State.

2.71 29,228 persons born in rural areas of other States and union terriotires of India were enumerated in the urban areas of State, working out to 11 per 1000 of urban population, 13 among males and 10 among females. The largest number 22730 comes from Madras State and 2297 from Mysore State. More than half the immigrants from the rural areas of Madras to the urban areas of this State are concentrated in Trivandrum district. The urban areas of Cannanore account for nearly 50% of the immigrants from the rural area.

2.72 Out of 1000 inhabitants of urban areas, non-immigrants together with immigrants from rural areas within and between districts in the State and from other States and union territories constitute 918. 79 are immigrants from the other urban areas both within the State and from other states and union territories within the state, and the balance are persons born outside India, or other places.

2.73 Urban areas of Ernakulam district have the largest proportion of immigrants from other urban areas

which comes to 109 per 1000 urban population.

2.74 Among immigrants from the urban areas of the same district there are more females than males. But as the distance increases male immigrants preponderate over females. This trend is reflected in almost all districts.

2.75 Immigration from the urban areas of other States and Union territories within India to the urban areas of the State has also been proportionately more during the last decade.

2.76 It is observed that slightly less than 40% of the total population in the cities are Children in the age group 0-14. Among immigrants to cities only 15 to 18% are in that age group.

2.77 It is noticed that in the higher educational levels, proportionately there are more migrants. This may be due to the fact that as Children grow up, more and more of them join the elders in the City due to better educational facilities available there.

2.78 Big cities naturally attract considerable nos. of people from other areas because of the concentration of economic activity there. Ernakulam municipal town with the expanding industrial activities has attracted the highest proportion of migrants.

2.79 Trivandrum provides employment to the major portion of the educated and technically qualified immigrants. This is so because the head offices of all government departments are located there. Due to the limited achievements in the field of industrial development in Kerala, even now Government sources remains the largest sources of employment for educated people.

2.80 In Ernakulam 927 out of every 1000 engineers are immigrants, due to the existence of a large no. of manufacturing and other industrial establishments in and around Ernakulam.

2.81 1022 females/1000 males is the sex ratio prevailing in Kerala. In the rural areas it is 1027, and in urban areas it is 991. Theimmigrants female population from the adjacent states of Madras and Mysore comes to 930 (total), 937 (rural) and 910 (urban) per 1000 male migrants. The female emigrants from Kerala to the above adjascent states comes to 635 (total) 602 (rural) and 687 (urban) per 1000 male emigrants. The female immigrants to Kerala from the States and union territories to other than the adjascent States comes to 619 (total), 1040 (rural) and 441 (urban) per 1000 male immigrants. As against this the females emigrants from Kerala to States and union territories other than Madras and Mysore comes

to 386 (total),333 (rural) and 455 (urban) per 1000 males emigrants. The sex ratio worked out after adjusting the emigrant and immigrant population so far as Kerala and the States and Union territories are concerned, come to 1001 (total), 1011 (rural) and 950 (urban) per 1000 males, in Kerala. The higher sex ratio of immigrants from the adjascent States of Kerala, than that from the rest of the States and Union territories is largely due to the nearness of Madras to certain employment pockets in Kerala. This is an exception to the usual reason of marriage migration accounting for the preponderance of female immigrants from proximate areas.

CHAPTER - III.

RESOURCES - PROBLEMS & PROSPECTS

3.1 WATER

Kerala is richly endowed with potential for generation of hydro-electric power. The Coal does not possess any coal or oil for generation of power but there are 44 rivers in Kerala. which constitute the storehouse of hydel power. This favourable factor compensates for the absence of any fossil fuels. Investigations so far have estimated this potential to be roughly of the order of 2.50 million kilowatts at 60% load factor. This 5% of India's total hydro-electric power potential. The potential can be exploited and utilised at a very reasonable cost of 1.7 paise per KWH of production, due to the favourable topography of Kerala, which lend the required hydraulic head for the installation of power projects. Early implementation of hydro-electric projects in the national interest at an accelerated pace with the view of most economic and optimum utilisation of country's natural resources is advocated.

3.2 In spite of heavy rains, and the assured monsoon season, Kerala has still to resort to irrigation because of her undulating configuration, and other natural

features. Extensive irrigation is required to make her self-sufficient in food crop production. Irrigation in Kerala is mainly required to Btabilise the cultivation of lands to protect them against the vagaries of the monssons, to enable them to have additional crops and to facilitate the adoption of intensive farming. The rivers therefore offer themselves as a source of water for irrigation and their even distribution, all along the width of the State, facilitates the even distribution of water for irrigation of good agricultural land.

3.3 A characteristic feature of the rivers in the State is the intrusion of salinity in their tail reaches, with the termination of the monsson rains. The Coastal land in almost all the river basins are subject to tidal submergence with consequent damages to cultivation.

3.4 The rivers of the State provide an excellent system of water routes and their interconnection through back waters and natural canalas enable the maintenance of a cheap mode of transport. Navigation has therefore played an important role in the communication facilities for a long time. Free movement of water traffic is however handicapped during the summer months due to dwindling run off. The rivers are an asset to the state, for the

advancement of the country both economically and industrially.

3.5 The backwaters serve as a continuous water link along the coast, with intermittent gaps here and there. However these intemittent gaps have been breacked by canals to establish a continuous link from north to south.

3.6 One of the problems of there backwaters is their salinity caused by the intrusion of salt water from the sea, during the monsoon. This affects the waters of rivers and the contaminated waters are detrimental to the cultivation of paddy in the neighbouring low lands on the banks of these water ways.

3.7 FORESTS

Forests rank among the key resources of Kerala. Estimates of the area under forests show that 27.35% of the total geographical area of Kerala is under forests. Nearly 87% of the total forest area is with the State Government, making it an organised resource potential. In the northern part of the State an extensive area is owned by the Private agencies. Apart from the importance of forests as a source of raw materials for industry and timber for other uses, forests have a moderating effect

on the climate and act as a vegetal cover protecting the soil from erosion. A large number of perennial tree crops like Coconut, Arecanut, Cashew nut, and rubber are grown in the State. Their effectiveness in protection of the soil and influence on climate is as great as in the case of forests. These perinnial Crops, therefore, act as a useful subsidiary to the actual forest gowth.

3.8 Next to Assam which has the largest area under forests, comes Kerala in India. Apart from the abundance of wild life to which these contribute not a little, they also form an important source of income to the State. High grade tea and cardamom are also grown in the higher altitudes on a plantation basis, and in the lower altitudes cash crops like Pepper, ginger, rubber, lemon grass and turmeric are cultivated. On an average the revenue per acre comes to Rs.10/- in these forest areas as against on all India average of Rs.3/- per acre. Employment potentials of forests however is quite meagre in relation to the area they occupy.

3.9 The high degree of rainfall, old geological formation and maritime climate have largely been responsible for the luxuriant forest growth in Kerala. Trees get the full benefit of moisture, depth of soil and protection from forest and drought; and for these reasons, forests

in Kerla also possess the advantage of a long growing season. The large variations in climatic and topographical conditions in the State have resulted in a large variety of forests. With the exception of desert and tmuely temperate and alpine types, all classes of forests are found in Kerala. The State has been a pioneer in raising artificial plantations of valuable spices of trees. They are renmwned for their rich resources of timber such as teak, elbony, rosewood, blackwood, besides large varieties of soft woods. There are not less than 700 varieties of trees in the State. Diversity, beauty and economic value are the special characteristics of the flora of Kerala.

3.10 Among the natural forests, 80% of the growth comprises the decidous forests. The rest is of the evergreen type. The evergreens are found mostly in the higher ranges at a height of 2,500 feet, since they require a cooler climate to grow. Among the evergreen types, most of the species are utilised in manufacture of plywood and packing cases, which is a flourishing industry in the State. Anjali used for boat building

and mahagony utilised for furniture, are two other important economic species found among the evergreens. Many newer species have also sprung into prominance and planned extraction on a commercial scale is advocated.

3.11 Teak and Rosewood are the most important species found among the deciduous forests. Vanteak, Poola and Charopira are some of the other important species.

3.12 Kerala ranks high among the Indian States, in respect of artificially raised plantations of valuable species. In fact Teak plantations were first raised in Nilambur as far back as 1842, The planting work has been regularly carried out. Although Kerala can claim to have been a pioneer in matter of teak plantations, a beginning with the other plantations has been made only very recently with onset of the era of planning in the State. The new plantations are of Cashewnut, Soft wood, wattle, Eucalyplus grandis, etc.

3.13 Whereas for the whole of India about 75% of major forest is extracted by the purchasers, in

Kerala only 15% or so of the forest produce is extracted by purchasers directly, the rest being entrusted to departmental extraction. Unlike the major forest produce where removal is done mainly through the government agencies, the extraction of minor forest produce is mostly done through the purchasers. Kerala is unique in having working plans for all the government owned forest areas in the State. Since all the government forests are managed under the latest scientific systems, there is hardly any danger of over felling being done in the public sector forests.

3.14 Withe a wide variety of forests, both natural and artificial, the system of silviculture practised are suited to the types. The section system is one that is being applied in all the evergreen forests and trees of economic importance only are extracted under the simple felling rules. The complex nture of the vegetation and difficulty of regeneration of evergreen speices, together with the danger of heavy wild growth have caused these forests to be worked under a selection system.

3.15 In other timber forests clear felling with

natural regeneration, supplemented by artificial planting, is being done. The climate and soil conditions. are so favourable that there is generally no difficulty in obtaining natural regeneration. The only exception, and it is quite an important one, exists in case of evergreen forests which are being worked more and more heavily as demand for new species arise in the market. Their regernation is not keeping pace with the removals.

3.16 The private forests are to be taken over by the Government. Steps have already been taken in this respect. Apart from the problem of acquisition of private forests in Kerala, the pressure of population in the State is resulting in deep in roads into the forest areas especially where forests occur in the mid-land region. The gravity of the enchroachment situatimn arises from the fact that in case a lenient view is taken these will in the long run prove a serious menace to proper maintenance of forest potential. The problem of generation of the worked forests is intimately connected with light for plant species to grow. A problem is that of Eupatorium (a weed) which got intro-

duced by some ex-servicemen who had returned from Assam. By research it has been found out that this shrub can be used for manufacture of a fertilizer.

3.17 A few tribes reside within the forest areas they are allowed privileges of cultivation free of assessment and free grazing rights. Recently tribal blocks are being formed for bringing these tribes together and for initiating them to a better way of life.

3.18 In Kerala, the existing potential of forests resources is being exploited comparitively much better than in many other States. Due to long accessibility provided by many rivers and high density of roads, many of which serve the forests, extraction of forests has been very much facilitated. The role of river transport in exploitation of forest wealth is shown by the fact that the two centres of forest produce viz., Kallai and Chalkudy are both located by the side of rivers. Although the general picture as regards exploitation of existing resources is quite bright, some pockets still remain untapped.

3.19 In spite of large potentials of bamboo

in the state this source remains completely unutilised for industrial purposes. Out of the total available supply about two third is utilised for local requirements of construction. A large number of medicinal plants exist in the State. But the potential is harly being used.

3.20 There is not much scope in Kerala for extension of area under forests through afforestation programmes. There are already a number of completing claiments to land use. What is required today is to minimise the inroads into forest areas. A complete resource survey of the forest should be made to assess its potentials and declare a future mobilisation programme fisheries.

3.21 Another benefit consequent on the development of water resources in the State will be in pisciculture. Kerala State with her long coast line and an almost continuous stretch of lakes and backwaters bordering the coastal region, is ideally suited for the development of sea and backwater fishing. Its present production of fish from all sources amounts to about 310,000 tons fish is a staple food of the people,

the per capita consumption being 15 Kgms as against 6 Kg. per annum in India.

3.22 The fishery resources of Kerala consist of England and marine fish. The inland fishery is comprised of backwaters, lakes, rivers, reservoirs, paddy fields, ponds, and tanks. However fresh water fishery provides comparitively little scope for development in the State.

3.23 The marine resources, on the other hand, consist of 366 miles of coastline and a fishable area of 30 to 35 miles extending on the continental shelf with numrous sheltered bays and river mouths. Except during monsoons, there is good fishing all along the enshore belt of 6-7 miles from the coast line. The fishing area lying north of Quilon is important foroil sardine, mackerel and prawns. The bottom condition is characterised by a shifting mud bank, highly rich in nutrients, contributing to a high productivity of Plankton. The region south of Quilon provides a good fishery of white baits and also large fishes like tuna, seer, etc. The bottom conditions here is characterised by large stretches of sandy and rocky beds.

3.24 Cochin harbour is the only major harbour

that provides landing facilities for fishing vessels at present. Fishing harbours are being contructed at Vizhinjam and Beypore. Baliapatam and Azhikode are also being equipped with landing facilties. The fihsing harbour at Moplak Bay is fast progressing completion. The boat building yards are located at Vizhinjam, Beypore, Shakthikulangara, Cannanore and Ernakulam. The mechanised fishing centres are Neendakara, Cochin, Azhikode, vizhinjam, Ponnani, Beypore and Cannanore, tellicherry and Thottapally.

3.25 With about 3000 miles of coast line and 0.79 million sea going fishermen Japan stands foremost on world fisheries. Here production in 1962 was 6.86 million tonnes as against the world production of 44.72 million tons of fish. With 87000 fishermen and 2000 miles of Coastline Norway had a fish catch of 1.34 million tonnes of fish in 1962. The natural resources of 3000 miles of Coast line, India's fish production is only 7.25 lakh tonnes, while Kerala with 366 miles of Coastline had average marine catches of nearly 3 lakh tonnes.

3.26 The marine resources of the State are not yet very accurately and scientifically assessed. Our

knowledge about the fishing grounds, fishery resources and fishing methods are still in the infant stage. It will, hence, appear to be too ambitious for the state to plan to achieve in a decade or two what Norway and Japan have accomplished over half a century. But unlike in those countries where fisheries had a natural development spread over centuries there is a pressing need here to harness all our resources and utilize them to the maximum welfare of the country.

3.27 Lying between the 35 and 70 fathoms lines on the continental shelf are rich fishing grounds characterised by the abundance of bottom dwelling fishes and the grounds extend from Wadge Bank in the South near about Cochin in the north. In this area there are extensive patches of good trawling regions yielding good catches comparable with some well known European trawlihg grounds. There are rich rocky beds also where modern methods of line fishing have yielded excellent results. It may be said that our present yield is only 1/7 to 1/10 of a possible exploitable stock compared to the North Sea on the assumption that the same percentage of carbon is being converted into explitable fish stock. Fishing takes place at present

only in an area of 1500 to 2000 sq. miles which is only 1/12 of the potential area. A landing of 5 lakh tonnes by 1970-71 would help to exploit only about 30% of the minimum potential.

3.28 The main export items consists of prawn products. Tunce has also a ready market abroad just as shrimps. The existence of rich tune grounds on the off-shore waters of Kerala and a programme for tapping them in a planned manner. will ensure greater prospects for imppoving our export trade in marine products. Reservoir fisheries too have slope in the State because of the high rate of population who demand more food.

3.29 The entire coast line is well served by the railways. From Trivandrum to Kayamkulam and from Tirur to Majeswar, a total distance of 220 miles, the tracks are only 2 to 3 miles from the sea coast. In addition there is a motorable road running almost all along the entire coast line. Head loads, bicycles, motor lorries, all these modes of employed for the transportation of fish to the market depending on the distance of the landing sites from the consuming centres. The

catch is auctioned at the landing centres. The bidders include the fish curers, the retailers and lorry owners who generally supply fish to the retailers. The important whole sale fish market in the State are located at Trivandrum, Kottayam, Tanur, Trichur, Kozhikode, Alwaye, Changanacherry and Athirampuzha. Changanacherry, Athirampuzha and Vaniyamkulam are the most important markets for cured fish and salted fish. In the coastal areas the consumption of dried fish is confined mostly off season when fishing totalling stops. In the interior of the State, owing to the lack of transport facilities, cured fish is soldfor the major part of tye year. The State has a number of retail fish markets in every town or a group of villages.

3.30 MINERALS:

From the point of view of its industrial development Kerala's mineral resources are a weak link in the State's economy; with only 1.7% share in all India production of minerals. The important minerals of the State are the radio active beach sand comprising of Illmenite, Monazite, Rutile, Sillimanite and Zircon. The other minerals available are China Clay and Tile Clay, Graphite, iron ore and mica are also found, though

only in very small quantities. Quartz reefs containing minute quamrties of goldoccur particularly in the Wayanad Taluk of Malabar. The deposits of lime sheel occur in lakes and along the coast. It is the defeciency of minerals that partly presents an obstacke to the growth of large scale industries in the State.

3.31 Of foremost among the mineral resources of the State are the beach sands in Quilon District which contain large concentrations of ilmenite, monazite, rutile, sillimanite, and Zircon. Some of the ilmenite is of inferior quality due to bucoxenisation, particularly along the Neendakara - Azhiyikkat bar. The extraction is done at Chavara. India, which at one time used to hold almost a monopolistic position in the export of ilmenite has now to face a number of competitions.

3.32 China Clay is found in Kundara is claimed to be one of the finest in India. There are China Clay deposits in Trivandrum and Quilon districts. Murukkumpazha and Chathannoor are two localities where China Clay is found in abandance.

3.33 Surface occurences of graphite in Neyattinkara Taluk has been declared in isolated localities. Lime stone is found to occur in various backwaters and also the estauries of Kadalundi and Rarapuzha rivers, and in Kozhikode district and Cranganore lake. Presently the Vembanad lake deposits are exploited.

3.34 Sile Clay is the raw material of one of the major industries of Kerala. Local earths, silts and clays are found along alluvial flats of most of the rivers of the state. The clay is transported by country craft.

C H A P T E R - IV

A C T I V I T I E S

4.1 OCCUPATIONAL STRUCTURE

The working force participation in Kerala as indicated by the 1961 Census shows that out of a population of 16,903,715 only 5,630,333 are workers, amounting to a percentage of the total population of 33.31%. This is much lower than the all India figure of 42.98% workers. If the working age group of 15-59 is considered, the %age of workers to the total population in Kerala is only 58.49% as against 69.21% for all India. Between 1901 and 1961, whereas the population of Kerala has increased by 164.27%, that of India has increased by 83.40%. During this period the working force in Kerala has increased by 97.80% as against 69.14% being the increase recorded for All India. Although the working force in Kerala has increased during the last 60 years at a higher rate than the All India rate, the population in Kerala has also increased at a much faster rate than the All India population. This has resulted in a fall in the percentage of working force to the total population

from 44.59 in 1901 to 33.31 in 1961. It is also significant that the working force participation both in relation to the total population as well as the population in the working age of 15-59 in Kerala is less than that of all India. Table No. gives the total population, the total workers and their total population along with the decennial variations from 1901-1961.

4.2 Kerala has the 3rd largest proportion of non-workers to the total population. This is an indicator of the comparatively low rate of working force participation in Kerala, among the States and Union territores of India. In the distribution of workers among the 9 industrial categories in the various states and union territories, also Kerala has same unique features. In all states except Kerala, the highest percentage of workers to total population comes under "cultivators", but in Kerala "other services" takes the highest percentage, "cultivation" takes second rank, while "agricultural labourers" comes second in all but 5 states including Kerala. Agricultural labourers occupies third place in Kerala. 'Manufacturing other than household industry' ranks fourth, 'Household Industry' ranks fifth, and 'Mining, quarrying, livestock, forestry,

fishing, hunting and plantations, orchards and allied activities' comes sixth. Trade and Commerce ranks seventh and 'Transport storage and communications' ranks 8th, with 'construction' ranking last.

4.3 In 1961, Male participation comes to the tune of 47.20% of the total male population, while only 19.71 % of the female population are working. It is noticed here that the corresponding figures in 1901 were 56.32 for males and 32.73 for females which indicates a gradual declining trend. The proportion of male workers to male population in 1961, in the working age group 15-59 is 83.85%, as against that of the female workers to the feamel population coming to 34.42%. The increase in the male working force between 1901 and 1961 by 119.59% has not kept pace with the increase in the total male population by 162.01%, over the same period. In the same way, the increase in the female working force between 1901 and 1961 by 69.47 % is very much lower than the increase in the female population by 166.53 %.

4.4 It is noticed that Kerala has the highest proportion of male non-workers to total population, in the whole of India, and has the 4th highest proportion of female non-workers to total population.

4.5 To throw more light on the problem of working force participation, the analysis is given in Table No. The percentage of population which is not in the working force but should be included in it, to total population come over to 1.53 in the case of males and 0.40 in the case of females. 0.95% of male population is in the working force which should not be included in it as against 0.91 in the case of females. In effect the real working force comes to 47.83% in the case of males and 19.30% in the case of females.

4.6 The districts having the highest proportion of male workers in primary sector are Cannanore, Palghat, Kottayam, Alleppey, Quilon and Trivandrum of which the last 4 form on contiguous region.

So far as the female workers are concerned all the districts except Alleppey, Quilon and Trivandrum have the highest proportion in the primary sector which lie contiguous. In no district in the state, the male workers in the secondary sector form the highest proportion, whereas Alleppey, Quilon and Trivandrum districts have the highest proportion of workers in the secondary sector. Kozhikode, Trichur and Ernakulam have the highest proportion of male workers in the tertiary sector, while in none of the districts the proportion of female workers in this sector claims the first rank.

4.7 The primary sector of industry consists of cultivation, agricultural labour and livestock, forestry, fishery, hunting and plantation, orchards and allied activities.

TABLE NO.

Item	1961	1951	1931	1921	1911	1901
Cultivator/ 1000 population.	70	75	89	108	115	163
Agricultural labourers/1000 population.	58	82	71	87	102	78

4.8 The Table No. reveals that the no.of persons working as cultivators has come down from 163/1000 population in 1901 to 70 per 1000 population in 1961. In the case of agricultural labourers also the no. has declined from 78/1000 in 1901 to 58 per 1000 in 1961.

4.9 In a predominantly agrarian society a large portion of workers is engaged in agricultural or primary sector of the economy.

4.10 A significant feature of Kerala's economy during the last 60 years has been a noticeable shift in the pattern of employment from agricultural to non-agricultural sectors of the economy. The proportion employed in the primary sector has continuously decreased from 62% in 1901 to 47% in 1961. The least production secondary sector has demand more or less at 20% throughout the period. The tertiary sector has been continuously increasing, the percentage increasing from 19 in 1901 to 34 in 1961. This is due to the tremendous increase of employment in other services which is a low productive group. Trade and Commerce sector reduced from 10% in 1901 to 6% in 1961 Employment in transport has remained more or less constant around 2% throughout the period.

Industrial division.	1901	1911	1921	1931	1951	1961
Primary	62.2	61.8	60.7	57.5	56.1	47.0
Secondary	18.4	19.1	18.4	20.0	20.3	19.3
Tertiary	19.4	19.1	20.9	22.5	23.6	33.7

4.11 When comparing this with the figures for India, it is noticed that while in the case of the latter, a stagnant economy emerges, Kerala has undergone a considerable change.

4.12 The proportion of employment in plantation is only next highest to that of Assam. Plantationslike Coconut, tea, arecanut, coffee and rubber with some perennial crops occupy about 45% of the gross cropped area. The proportion of employment in household industry is only next highest to that of Andhra. Coir, handloom textiles, jaggery making, coconut oil crushing, and reed works are some of the important household industries. Kerala follows West Bengal in having the highest proportion of employment in manufacturing. Labour intensive industries like Cashew, bricks and tiles, coir and textiles employ large no.of workers. The proportion employed in trade and commerce is only next to that of W.Bengal. Unlike the rest of India, where barter trade is still prevented on a significant scale in the rural areas, Kerala's economy is highly monetised. A high degree of commercialisation is

one of the factors responsible for absoprtion of a large section of the population in the tertiary sector. The proportion of employment in road transport is next only to that of West Bengal. A wide network of roadways compensates for the limited coverage of railways, and is superior to that in most other parts of India. The proportion of employment in other services is highest in Kerala. Employment in this category is largely low productive and the increasing population preasure brings about considerable increase in the proportion employed in this category. Thus on the whole, employment in non-agricultural sector gives an impression that Kerala is highly industralised. This is quite insteading in view of the fact that Kerala has a per capita income of only Rs.234/- in 1956 as against Rs.261/- for all India.

4.13 The most important reason for such backwardness is that the employment in organised sections of manufacturing and services do not give the same rank to Kerala among the states. The percentage of organised employment in mining and manufacturing was hardly 3.62 in 1961, as against 3.84 for all India.

The percentage of organised employment in service industries was 8.96 and was exceeded by W.Bengal, Bombay and Punjab.

4.14 Moreover, the productivity per worker even in the organised sector is very low as compared to that of all India. The Industrial backwardness in Kerala is highlighted by the fact that whereas the productivity per worker in Kerala is only about Rs.692/- (1960-61), the all India figure is Rs.1178/- The low productivity per worker was namely due to the low capital labour ratio. Capital per factory worker in 1956 was about 2737/- as against the all India figure of Rs.5830/-. Cashew industries employing about 40% of the total factory workers has a capital per worker of only Rs.200/-.

4.15 The reasons for the highly labour intensive less capital intensive and low productive industries in Kerala are -

1. Out of an estimated 9.7 lakh workers engaged in secondary sector in 1956, 18000 were in mining, 171,000 were in factory enterprises, and 782000 were in non-factory industries.

2. About 30% of the total industrial units in this state do not use power and they employed over 50% of the factory workers. Moreover most of the industries are agrobased.

4.16 The primary sector in Kerala is comparatively better developed. The cash and plantation crops, occupy 45% of the gross cropped area and which contribute 55% of the net value originally from agriculture, are largely produced for the market, and impart a high level of productivity to this sector. Agriculture is thus characterised by a high value yielding crop pattern, good physical yield and superior cultivation techniques (in contrast to low level of technology in the secondary sector).

	Kerala	All India
Primary sector.	625	411
Secondary sector.	539	1294

4.17 The increase in the tertiary sector is rather sluggish. It is interesting to note that the no.of female workers in all 3 categories in this sector(trade and commerce, transport and communication, storage and construction) has actually decreased which is rather intriguing.

The increase in the population by 106 lakh has outpaced the increase in the no.of woekrs by only 27.72 lalkhs ie. the proportion of workers to total population has decreased from 45 to 33% causing a corrr-esponding rise in the dependancy ratio. The primary sector has absorbed a smaller proportion of the increase in labour force than the secondary sector, and the tertiary sector has accommodated the largest no. from among the new enhants, with 'other services' absorbing the largest number of workers.

4.18 The proportion of the labour force engaged in the tertiary sector in India as a whole declined during the first 2 decades of the present century from 15.6% in 1901 to 13.6% in 1921. In the following 3 decades the proportion registered a moderate increase to 15.0% in 1931 and 17.2% in 1951. The proportion fell to 16.0% in 1961. While the proportion of the labour force in the primary sector in India increased from 67.5% in 1901 to 69.5% in 1961 the corresponding proportion in Kerala steply from 52.2% to 47%.

4.19 There has been a sudden and imprecedented rise in the proportion of workers in the tertiary sector. Between 1951 and 1961 the net addition to the working population has been about 12.5 lakhs of which the primary and secondary sectors absorbed less than 4 lakhs

and the rest poured into the tertiary sector. This sudden spurt in this sector is noticed because while in the previous decades the increase in labour force was distributed among the 3 sectors, the bulk of the new enhants during 1951-61 were forced into the tertiary sector.

4.20 The teeming nos. in tertiary activity reflect with a shift in demand by final consumers in favour of services in response to a rise in real income per capita nor a rise in the demand for service activities a necessary concomitant of the movement towards higher productivity levels in the primary and secondary sectors. Increase in demand for service activities of either type is a product of growth. On the contrary the rising proportion of tertiary workers in Kerala flows from want of dynamism in the other sectors of the economy. The situation is the product of stagnation. It reflects a chronic imbalance brought about by population growth.

Sector	Proportion of Income		Proportion of labour force.		Relative income	
	Kerala	India	Kerala	India	Kerala	India.
Primary	49.1	45.4	54.9	71.8	0.89	0.63
Secondary	14.6	18.5	19.3	9.4	0.75	1.96
Tertiary	36.3	36.8	25.8	18.8	1.40	1.92

4.21 It is seen that relative income in the secondary and tertiary sectors is lower in Kerala than in India as a whole. In spite of the fact that the tertiary sector has a large proportion of working force the product per worker in this sector in Kerala is considerably greater than that in the primary and secondary sectors.

4.22 The mounting pressure of population against a stagnant economy has been brought out by a rise up dependency ratio. An overcrowded primary sector and a rudimentary secondary sector have continued to accommodate substantialnos. of new enhants but they have shown signs of saturation. The residue spills over into the tertiary sector which somehow accommodates increasing numbers without showing symptom of saturation because entry into some of the activities in this sector is comparatively easy, which can be organised on a small scale which with modest investment. Retail distributive trade is a typical example. Initial investment needed for a panshop or tea shop is small. In Kerala, the no. of such workers is quite large. Apart from such retail traders the development of certain other service activities like banking and education in the state has also been great. Personal and domestic services is another division which has been inflated out of all proportions.

4.23 Thus the high proportion of labour force borne by the services sector in Kerala is not be construed as a mark of high level of growth and per capita income, it only reflects the rapid growth of population and arrested growth of the economy. The tertiary sector which today supports an inordinate burden is craching up under the strain. It cannot absorb many more without aggravating the level of disguised unemployment which is already phenomenal. The state of the tertiary sector exemplified dramatically the urgency of rapid industrialisation of Kerala.

4.24 In the State as a whole out of every 1000 males there are 528 non-workers as against 526 in the rural areas and 540 in the urban areas. The corresponding proportions for India are 429 for total, 418 for rural and 476 for urban areas. In the case of males the proportion of non-workers to 1000 population is highest in Kerala among the states and Union Territories of India.

4.25 There are an average of 803 female nonworkers per every 1000 females in thestate as a whole as against 791 in the rural areas and 870 in the urban areas. The corresponding all India proportion are 720(total), 686(rural) and 889(urban).

4.26 The proportion of male non-workers to 1000 males is highest in the Trichur district with 545 followed by Alleppey district with 544 and lowest in Palghat with 485. In thecase of females the proportion is highest in the Kozhikode district with 856 female non-workers per 1000 females and Palghat district comes last but 729.

4.27 In the state as a whole the proportion of male workers among male immigrants is more than the corresponding proportion among general population. So also in the case of females.