



261

GOVERNMENT OF KERALA

# MAN POWER STUDIES

VOL. I

BUREAU OF ECONOMICS & STATISTICS  
TRIVANDRUM  
OCTOBER 1977

## FOREWORD

The Man Power Unit started functioning in the Bureau of Economics and Statistics from April 1974. The Unit has taken up a series of Man Power studies relating to various disciplines and areas of operation and completed twelve studies while the others are in different stages of Progress. Man Power, being an integral part of economic development, has its significance in the overall planning process in the country. In this context, it is hoped that the Man Power studies conducted by this Bureau may be useful to the planners and Administrators.

I am presenting the reports of these twelve studies as a comprehensive volume.

Trivandrum,  
29 October, 1977.

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## CONTENTS

	<i>Page</i>
1. Technical Man Power for Agriculture in Kerala	1
2. Attrition Rate of Agricultural Personnel in Kerala	37
3. Utilisation of Veterinary Personnel in Kerala ..	51
4. Employment Potential of Fisheries Development Programmes in Kerala ..	79
5. Man Power Involvement in the School Education of Kerala	107
6. Unemployment among B.Ed. degree holders in Kerala ..	135
7. Employment Trends among Engineering Graduates on the Live Register of the Employment Exchanges—1974 ..	151
8. Employment of Engineering Personnel in Kerala ..	177
9. Medical Man Power (Allopathic) in Kerala ..	205
10. Unemployment among Allopathic Doctors in Kerala ..	237
11. Nursing Profession in Kerala ..	261
12. Directory of Technical & Professional Institutions in Kerala—1974 ..	277

# 1

**TECHNICAL MAN POWER FOR AGRICULTURE IN  
KERALA**

# TECHNICAL MANPOWER FOR AGRICULTURE IN KERALA

## 1. Introduction

Agriculture occupies a vital role in the economy of Kerala. The agricultural economy of Kerala witnessed appreciable progress with the implementation of various schemes on agricultural production under Five Year Plans. Trained manpower in the fields of agricultural research, agricultural development and administration and agricultural education constitutes one of the most important resources necessary for achieving and sustaining higher rates of growth in agriculture. Agricultural technical personnel have a key role in increasing agricultural production but at present they are in short supply. At present the State is facing acute shortage for getting adequate agricultural graduates to man the development programmes while the situation during the past years has been that of unemployment.

It is necessary to link up the supply of agricultural manpower with the requirements for Five Year Plans. Comprehensive statistics on the economic characteristics of agricultural manpower are thus essential for the formulation and appraisal of the agricultural development programme in its employment aspects. The lack of information on trained manpower often leads to crucial bottlenecks in the development process. Therefore periodical studies are needed on stock of agricultural manpower, its distribution by age, occupation, educational level and other significant characteristics. For the formulation of programmes on agricultural development it is necessary to make estimates of the future supply and demand for agricultural manpower. This study is intended to estimate the existing stock of agricultural personnel and their demand and supply during the Fifth plan in Kerala.

## 2. Stock of Agricultural graduates and post graduates

The stock of agricultural graduates and post graduates in Kerala at the end of the Fourth Five Year Plan (1973-74) was estimated on the basis of the information collected from different offices of the Department of Agriculture and other State Government Departments like Soil Conservation, Dairy Development and Animal Husbandry. Details have also been collected from Central Government Departments functioning in Kerala such as Directorate of Arecanut and Spices Promotion Council, Tuber Research etc. and from organisations like Rubber Board, Coffee Board, Cardamom Board and also from Agricultural University, Banks, F. A. C. T. and similar fertilizer

concerns where agricultural graduates and post graduates are employed.

In the private sector the employment opportunity for agricultural graduates and post graduates is negligible. However the data relating to agricultural personnel employed in certain organisations in the private sector have been collected and included in the stock.

There were 1065 agricultural graduates and 313 post graduates working in various Departments and Organisations in Kerala at the end of the Fourth plan. Thus the total stock of agricultural personnel at the beginning of the Fifth plan in Kerala was 1378 (1065 graduates and 313 post graduates).

The details of the stock are furnished below:—

Organisation	Stock at the beginning of Fifth plan	
	Agricultural Graduates	Post Graduates
1. Central Government Departments		
2. Public Sector undertakings		
3. Agriculture Department	1	12
4. Soil Conservation Department	185	42
5. Dairy Development Department	728	76
6. Other Departments	58	3
7. Kerala Agricultural University	11	..
8. Nationalised Banks	2	..
9. Other Banks including Co-operative Banks	26	150
10. Private establishment	25	27
	12	1
	17	2
Total	1065	313

From the outturn figures collected from the College of Agriculture, Vellayani it is seen that the total outturn of agricultural graduates from the College from 1955 to 1973 was 1021. Out of these graduates, 288 have been admitted to the post graduate course for agriculture upto 1973. Therefore the number of graduates who were available for employment is the difference between these two figures which comes to 733. The total outturn of agricultural post graduates from the College upto 1973 is 283. Thus the total supply of agricultural graduates and post graduates at the beginning of the fifth plan worked out on the basis of the outturn data comes to 733 and 233 respectively. Considering the net out migration as negligible, all the above graduates and post graduates might have not employment in various Departments and Organisations within the State. But even

before the establishment of the College of Agriculture, Vellayani in 1955 there were agricultural graduates and post graduates employed in the Department of Agriculture and other Organisations. These graduates and post graduates have undergone their education in agriculture from Agricultural Colleges of other States in India. From the above our estimate of the stock of agricultural graduates as 1065 and post graduates as 313 seems to be realistic. The details of intake and outturn of agricultural graduates and post graduates are given in tables I and II.

On the basis of the stock position of agricultural graduates and post graduates at the beginning of the Fifth plan we have estimated the stock for the next 10 years. For estimation of stock the actual outturn date upto 1976 have been used. While working out the stock of agricultural graduates and post graduates an attrition rate of 1% and certain wastage rates have been assumed. These assumptions are explained in the subsequent paragraphs.

#### *Attrition Rate*

The Institute of Applied Manpower Research (IAMR) has worked out the attrition rate of agricultural personnel as 0.5% per annum of the stock. But the Department of Agriculture, Government of India have assumed the attrition rate as 1% of the stock. For Kerala the attrition rate has been worked out by the Manpower Unit of the Directorate of Agriculture. Separate rates have been worked out for agricultural graduates and post graduates and also for the agricultural personnel as a whole. The details are given in table III.

The rates are as follows:—

Attrition rate of agricultural personnel in Kerala ...	0.8%
Attrition rate of agricultural graduates in Kerala ...	0.7%
Attrition rate of agricultural post graduates in Kerala ...	1.6%

The above attrition rate of agricultural personnel in Kerala worked out as 0.8% of the stock is very close to the All India attrition rate of 1% worked out by Government of India. Therefore the All India attrition rate of 1% has been adopted for estimation of stock in this report.

#### *Wastage Rate*

The All India wastage rate in agricultural education worked out by I.A.M.R. for B. Sc. (Ag) is 33.8% and for M. Sc. (Ag) 4.3%. In the report "Demand and Supply of Agricultural Technical Manpower—A paper on Fifth plan Estimates 1975" issued by the Department of Agriculture, Government of India it is pointed out as follows:—

"the student wastage of 33.8% for B.Sc.(Ag) seems still very high in the present economic context and suitable remedial measures to



bring down the wastage rate to a tolerable level of 10% are required to be taken. The State Government should play an active role in this regard”.

The Agricultural Personnel Committee of the Planning Commission has also suggested that a wastage rate higher than 10% in professional institutions should be investigated and remedial measures introduced.

As regards M.Sc. (Ag) the I.A.M.R. has worked out the wastage rate as 4.3%. Government of India have stated that this rate seems to be too low. Therefore the wastage rate for M.Sc. (Ag) has been worked out by Government of India, according to which the rate comes to 11.2%. Thus Government of India have accepted wastage rate for B.Sc. (Ag) as 33.8% and the rate for M.Sc. (Ag) as 11.2% for estimation of stock. In Kerala the wastage rate for agricultural education has not been worked out so far. An attempt has therefore been made by the Manpower Unit of the Directorate of Agriculture, Kerala to estimate the wastage rates for B.Sc. (Ag) and M.Sc. (Ag).

In Kerala there is only one Institution which is the College of Agriculture, Vellayani conducting B.Sc. and M.Sc. courses in agriculture. The data relating to intake and outturn of agricultural graduates and post graduates have been collected from the College of Agriculture, Vellayani. Instead of conducting detailed studies and investigations on student wastage the ratios of outturn to intake with a suitable time lag for the duration of the courses were worked out. These ratio calculated for intake and outturn data for the latest decade will give reliable estimate of student wastage in agricultural education required for manpower planning.

The wastage rates for B.Sc. (Ag) and M.Sc. (Ag) in Kerala estimated by the Manpower Unit of the Directorate of Agriculture are furnished below:—

Wastage rate for B.Sc. (Ag.) in Kerala 4.1%

Wastage rate for M.Sc. (Ag) in Kerala 2.9%.

The details in respect of wastage rates estimated for B.Sc. (Ag) are given in table IV and for M.Sc. (Ag) in table V. Since the wastage rates in Agricultural Education in Kerala are lower than the admissible rate of 10% suggested by Government of India neither any investigation nor detailed study is required at present. For estimation of stock the wastage rates adopted in this report are 4.1% for B.Sc. (Ag) and 2.9% for M.Sc. (Ag). The details of wastage rates estimated by I. A. M. R. and Government of India are given in tables VI, VII and VIII.

### Age Distribution

It is a fact that majority of the agricultural graduates and post graduates is employed in the public services i.e., State Government, Central Government, Government Undertakings, other Organisations and Agricultural University. The average age of passing B. Sc. (Ag) is assumed as 21. The post graduate course being of 2 years duration after B. Sc. (Ag) the average age of passing M. Sc. (Ag) is assumed as 23. The age group composition of agricultural personnel in Kerala during the 1st year of the Fifth plan is given in the following table.

**Age group composition of Agricultural personnel in Kerala**  
(1974-75)

Age group	B.Sc. (Ag.)		M.Sc. (Ag.)		Total Agricultural personnel	
	Number	Percentage	Number	Percentage	Number	Percentage
23 or below	31	2.9	..	..	31	2.2
24--28	183	17.2	51	16.3	234	17.0
29--33	287	26.9	129	41.2	416	30.2
34--38	293	27.5	79	25.2	372	27.0
39--43	152	14.3	29	9.3	181	13.1
44--48	97	9.1	18	5.8	115	8.4
49--53	17	1.6	5	1.6	22	1.6
54 & above	5	0.5	2	0.6	7	0.5
Total	1065	100.0	313	100.0	1378	100.0

The above table shows that 74.5% of agricultural graduates and 82.7% of agricultural post graduates are below 38 years of age. Only 2.1% of graduates and 2.2% of post graduates would superannuate during the Fifth plan period. In the subsequent plan period also 9.1% of graduates and 5.8% of post graduates would be superannuating. This indicates that the replacement needs during the coming 10 years would be extremely marginal and the bulk of the fresh stock would have to be accommodated mainly in new jobs that may be created.

The stock of agricultural graduates at the end of the Fifth plan period would be 1280 considering outturn during the period and 1% attrition. The details of estimates of stock are furnished in table IX. The stock of agricultural graduates at the end of the year 1983-84 is estimated as 1673. Similarly the stock of agricultural post graduates at the end of the Fifth plan period is estimated as 362 and at the end of the year 1983-84 as 456. The details of these estimates are given in table X.

### 3. Stock of Agricultural Engineers

In Kerala there is no institution conducting Agricultural Engineering Degree courses. Even in India there were only 3 Agricultural Engineering Colleges till 1963. But at present there are 11 Agricultural Engineering Colleges in India. These Colleges are situated in the States of Maharashtra, Madhya Pradesh, Orissa, Punjab, Rajasthan, Tamil Nadu, U. P. and West Bengal.—Since there is no facility for Agricultural Engineering Education in Kerala many posts for which Agricultural Engineering degree is required are filled up by graduates in Engineering on other disciplines such as Mechanical, Electrical or Civil. It is estimated that there were 29 Agricultural Engineering graduates and 3 Agricultural Engineering post graduates working in agriculture and allied sectors in Kerala at the commencement of the Fifth plan. The details of the stock of Agricultural Engineering personnel are furnished below:

<i>Department/Organisation</i>	<i>No. of Agricultural Engineering graduates</i>	<i>No. of Agrl. Engineering Post graduates</i>	<i>Total</i>
Department of Agriculture	17	3	20
Kerala Agro-Industries Corporation	11	3	14
Co-operative Bank	1	..	1
Total	29	6	35

From the above it is seen that 57% of the Agricultural Engineering personnel is in the Department of Agriculture and 40% in the Agro-Industries Corporation. Only 3% of the stock is in the co-operative sector.

The age group composition of the Agricultural Engineering personnel is as follows:—

<i>Age group</i>	<i>No. of graduates</i>	<i>No. of post graduates</i>	<i>Total</i>
23 or below	..	..	..
24—28	5	..	5
29—33	14	2	16
34—38	6	1	7
39—43	3	2	5
44—48	1	..	1
49—53	..	1	1
54 and above	..	..	..
Total	29	6	35

The age composition shows that youth predominates in the category of Agricultural Engineering personnel. Persons below 34 years constitute 60% and persons upto 48 years account for 97% of the total stock.

As mentioned earlier there is no institution in Kerala conducting agricultural engineering courses. Therefore persons who wish to acquire Agricultural Engineering Degree and post graduate degree have to seek admissions in the Agricultural Engineering Colleges in other States. In this context the stock of Agricultural Engineering graduates for future periods could not be estimated at present. Vacancies arising in the Agricultural Engineering sector are being filled up by Agricultural Engineering graduates if available or by Engineering graduates of other disciplines viz, Mechanical Civil and Electrical.

#### 4. Utilisation of Agricultural Manpower

The major source for employment of agricultural graduates and post graduates is employment under public service. In Kerala they are employed under Central Government Departments like Directorate of Arecanut and Spices Promotion Tuber Research etc., and under State Government Departments such as Department of Agriculture, Soil Conservation, Dairy Development and Animal Husbandry. Agricultural graduates and post graduates are also employed in Corporations/Boards such as Kerala Land Development

Corporation, Rubber Board, Coffee Board etc. Kerala Agricultural University and Fertilizer concerns like FACT also employ Agricultural graduates and post graduates. Those who find employment in the private sector in the case of Agricultural graduates and post graduates are only very few. Self employed agricultural graduates and post graduates in the State appear to be negligible. The following table shows the percentage distribution of agricultural personnel in various Departments and Organisations in Kerala.

**Percentage distribution of Agricultural personnel in Kerala  
1976-77**

Department/Organisation	Agricultural Graduates		Agricultural Post Graduates		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
Central Government Departments	1	0.08	17	5.26	18	1.22
Boards/Corporations and other Organisations	121	10.58	19	5.89	140	9.54
Agriculture Department	91	69.08	82	25.38	873	59.47
Other Departments	80	6.99	4	1.23	84	5.72
Agricultural University	14	1.22	162	50.16	176	11.99
F.A.C.T.	79	6.90	7	2.17	86	5.86
Hindustan Insecticides Limited	1	0.09	1	0.31	2	0.14
Banks including Co-op. Banks	39	3.40	28	8.67	67	4.56
Organisations and Fertilizer concerns in the Private Sector	19	1.66	3	0.93	22	1.50
Total	1145	100.00	323	100.00	1468	100.00

The above table shows that 69% of the agricultural graduates and 25% of the post graduates are employed under the Department of Agriculture. Among the post graduates 50% is employed under the Kerala Agricultural University. As regards agricultural graduates only 1% is employed in the University. The post graduates employed under the University are engaged in teaching in the College of Agriculture and also in Research work in the Agricultural Research

Institutions under the University. About 3% of the graduates and 9% of the post-graduates are employed under Banking Sector—Nationalised Banks, Co-operative Banks, Land Mortgage Banks and other Scheduled Banks. About 7% of the graduates and 2% of the post-graduate are employed under FACT which is one of the major fertilizer concerns of India. In the private sector only less than 2% of the graduates and less than 1% of the post-graduates are employed. The main private sector concerns are Shaw Wallace & Company, Madras Fertilizers Ltd., Rallis India, E. I. D Parry etc., and the Mannam Sugar Mill. The details regarding distribution of agricultural graduates and post-graduates in different sectors are given in table XI.

As explained above majority of the agricultural technical personnel are employed in the Department of Agriculture. The Director is the Head of the Department. He is assisted by technical officers such as Additional Directors, Joint Directors, Deputy Directors and Assistant Directors etc., at the Directorate. In the field there are Joint Directors at Regional level and Deputy Directors at District level. The District level officers are assisted by Assistant Directors and Junior Agricultural Officers. The programmes and policies of the Department which are mainly aimed at increasing agricultural production are implemented by the above-mentioned technical officers. The Intensive Agricultural District Programme (I. A. D. P.) is operated in the Districts of Alleppey and Palghat each under the control of a Joint Director. There are 5 soil testing laboratories and one mobile soil testing laboratory in the State. Each laboratory is under the control of an Assistant Soil Chemist. There is also one pesticides testing laboratory at Trivandrum under the control of a Research Officer. There are 4 S. F. D. A. projects in Kerala which give assistance to the farmers. There are District Agricultural Farms, Seed Farms and Nurseries under the Department of Agriculture. Various special programmes such as Multiple Cropping, Development of Banana, Cashew, Sugarcane, Cocoa etc., are also implemented by the Department. All the above schemes are effectively manned by technically qualified agricultural personnel. There is also one Agricultural Marketing Officer at Trivandrum who is in charge of Agricultural Marketing Division. The Scheme of Intensive Paddy Development (IPD Unit) units is the main strategy for paddy development in Kerala during the V plan. The object of the scheme is to enhance the output of rice per unit area by using high yielding varieties of seeds and by ensuring supply of adequate inputs and credit combined with technical know-how. These I. P. D. Units popularly known as "Ela" programme are expected to serve as models of multiple cropping also for the future development of the entire paddy area of the State. At present there are 389 I. P. D. units in the State. Each Unit is given to the exclusive charge of a Junior Agricultural Officer

who will be responsible for the efficient functioning of the unit for increasing paddy production. A Farm Information Bureau was formed by integrating the information service of the Departments of Agriculture and Animal Husbandry and started functioning in January 1969 directly under Government of Kerala. The Bureau provides effective and timely information support to the various development schemes of Agriculture and allied sectors. The Bureau serves the farmers through various channels of mass communication. A fortnightly journal "Kerala Karshakan" is also issued by the Bureau. Every issue contains articles, notes and success stories in the sphere of Agriculture, Animal Husbandry, Dairy Development etc. Technical bulletins, leaflets, booklets and Farm guides are also published by the Bureau. Farm Information Bureau is very closely associated with the All India Radio with regard to agricultural development programmes. A new programme entitled "Farm News" was started. According to this, news on development activities in the sphere of agriculture and allied sectors would be collected and issued to Malayalam and English Newspapers and to news division of All India Radio regularly. The Farm Information Bureau is under the control of the Principal Information Officer who is assisted by a team of technical staff.

Among the post-graduates in Agriculture 50% is employed under the Kerala Agricultural University. There are 14 Agricultural Graduates and 162 post-graduates employed under the University. Out of these 162 post-graduates in agriculture, 48 persons are Ph. D. holders. Of these 48 Ph.D. holders 21 are working in the College of Agriculture, Vellayani, 2 in the College of Horticulture and the remaining 25 in the Agricultural Research Stations under the control of the University.

### **Unemployment Among Agricultural Personnel**

There is no problem of unemployment among Agricultural personnel in Kerala at present. But on All India level there is unemployment among agricultural graduates and post-graduates. In Kerala the position is entirely different. We require more technical hands for implementation of various development activities in the agricultural sector. Thus it is seen that there is actually dearth of agricultural graduates and post-graduates in Kerala at present.

### **5. Supply of Agricultural Personnel during the V plan**

The stock of Agricultural graduates including post-graduates at the beginning of the V plan is estimated as 1252 (958 graduates and 294 post-graduates). The annual out turn of Agricultural graduates and post-graduates from the College of Agriculture, Vellayani has been estimated applying wastage rates. The wastage rates worked out for Agricultural graduates in Kerala is 4.1% and

that for Agricultural post-graduates is 2.9%. Applying the above rates to the intake figures the annual out turn is estimated for the V plan period.

The duration of the course for B. Sc. (Ag.) was enhanced from 3 years to 4 years from 1972 onwards. Therefore the students admitted in 1972 would be able to pass B. Sc. (Ag.) in 1976. Therefore there was no output of Agricultural graduates during the year 1975. The year-wise intake and outturn of Agricultural graduates and post-graduates for the V plan periods are furnished below.

#### Intake and out turn of Agricultural graduates

<i>Intake</i>		<i>Out turn</i>	
<i>Year</i>	<i>Number</i>	<i>Year</i>	<i>Number</i>
1971	54	1974	70 (Actual)
1972	50	1976	44 do.
1973	83	1977	80 (Estimate)
1974	83	1978	80 do.
			274
Total			

#### Intake and out turn of Agricultural post-graduate

<i>Intake</i>		<i>Out turn</i>	
<i>Year</i>	<i>Number</i>	<i>Year</i>	<i>Number</i>
1972	Nil.	1974	Nil
1973	24	1975	17 (Actual)
1974	10	1976	2 do.
1975	24	1977	23 (Estimate)
1976	24	1978	23 do.
			65
Total			

From the above estimates it is seen that the total out turn of agricultural graduates during the V plan will be 274 and the outturn of Agricultural post-graduates during the period will be 65. Thus the total supply of agricultural personnel including graduates and post-graduates during the Fifth plan in Kerala comes to 339 (274 graduates plus 65 post-graduates).



The All India supply of agricultural personnel during the V plan estimated by the Department of Agriculture, Government of India is 27,500. The supply estimate of Kerala during the plan period is only 1.2% of the All India supply.

#### 6. Demand for agricultural personnel during the V plan:

It is very difficult to estimate the demand of agricultural personnel due to lack of information relating to various development schemes under agriculture and allied sectors. Demand of agricultural personnel can be estimated only if proper statistics in respect of the schemes under agriculture, staffing norms of the schemes etc., are made available. In the private sector and self employment activities the demand is not fully known.

In the Department of Agriculture the requirement of agricultural graduates and post-graduates for the V plan have been estimated on the basis of the schemes already sanctioned and those which are being proposed to Government during the course of the V plan period.

The estimated demand of agricultural graduates and post-graduates for the V plan period in the Department of agriculture are given below:—

Name of Scheme	Manpower requirements	
	B. Sc. (Agr.)	M. Sc. (Ag)
1. I.P.D. Units	505	..
2. Coconut package	26	..
3. T x D (Central scheme)	1	..
4. T x D (State Scheme)	4	..
5. Rejuvenation programme	1	..
6. Pepper Package	6	..
7. Pulses Development	1	..
8. State seed form	1	..
9. District Agricultural Farms	3	..
10. Collective Farm	4	..
11. Quality control of Fertilizer	4	..
12. Soil Testing & Quality control	4	2
13. Plant protection	10	8
14. Tapioca package programme	8	..
15. Cocoa plantation	1	..
16. Cashew in private sector	2	..
17. Agricultural Marketing	14	..
18. Metereological Service	19	..
19. Development of problem areas	1	..
20. S. F. D. A.	2	..
	9	..

<i>Name of Scheme</i>	<i>Manpower requirements</i>	
	<i>B. Sc. (Ag.)</i>	<i>M. Sc. (Ag.)</i>
21. Establishment of seed gardens for cocoa	1	..
22. Establishment of progeny garden for cashew	4	..
23. Operational research projects	3	4
24. Development of oil seed	2	..
25. Seed certification	2	..
26. Pilot project for amendment of acid soils in Kerala	3	..
27. Development of pineapple	9	..
28. Command area development	8	6
29. Sugarcane development	4	..
30. Eradication of root wilt diseases in coconut plantation	7	..
31. Operational Research Project on integrated control of rice	7	..
32. Tree crops projects	91	..
Total	833	20

From the above it is seen that 853 graduates/post-graduates in agriculture (833 graduates and 20 post-graduates) are additionally required during the V plan period. In addition to this, agricultural personnel are required for replacement also. Applying attrition rates to the total stock, the requirement towards replacement for the plan period is worked out as follows:—

<i>Year</i>	<i>Total stock</i>	<i>No. required for replacement</i>
1974-75	1135	11
1975-76	1124	11
1976-77	1157	12
1977-78	1225	12
1978-79	1293	13
Total		59

It is observed that 59 graduates/post-graduates are required for replacement during the V plan period. Out of this 16 persons belong to the Department of Agriculture. Thus the total demand for agricultural personnel for the Department of Agriculture, Kerala during the V plan period is estimated as 869 as shown below:

Additional requirements during the V plan for implementing plan schemes of the Department	853
Requirement for replacement during the V plan period	16
Total demand for the V plan period	869

The demand for agricultural post-graduates for the plan period is 20 and the supply for the period is estimated as 65. But in the case of agricultural graduates the total outturn is only 274. The out turn of agricultural graduates and post-graduates during the plan period is 339 (274 graduates plan 65 post-graduates) only as against the demand of 869 personnel. The demand is found to be about 3 times of the estimated supply. Thus there is actually dearth of agricultural graduates in the State for implementing the plan schemes in the agricultural sector. Considering this aspect Government have enhanced the intake capacity for B.Sc. (Ag) in the college of agriculture to 100 from 1976-77. Since the duration of the course is 4 years the out turn of the students admitted in 1976-77 will be effected only in 1980-81 i.e. after the V plan is over. Hence the plan schemes under agriculture are implemented by deploying agricultural personnel working in other regular schemes of the Department without detrimental to the normal work.

In the case of other State Government Departments, Central Government Departments and other allied sectors such as Banking, Fertilizers, Agricultural University, Boards/Corporations etc., the demand of agricultural personnel for the V plan could not be estimated due to lack of information regarding their development programmes and the agricultural personnel proposed to be utilised in the respective sectors. However the replacement needs have been estimated for the V plan period as mentioned earlier. From this, it is seen that 43 agricultural graduates/post-graduates are required for the V plan period towards replacement alone in the Departments and organisations connected with agriculture excluding the Department of Agriculture. From the data received from Agriculture University other Departments and organisations relating to Agriculture sector it is estimated that 65 agriculture graduates and 386 post-graduates are additionally required for the V plan period. Thus the total demand of Agricultural personnel during the V plan period comes to 1363 as follows:—

#### Demand of agricultural personnel

<i>Department</i>	<i>Additional requirement during the V plan</i>	<i>Replacement during the V plan period</i>	<i>Total demand for the V plan period</i>
Department of Agriculture	853	16	869
Other Departments & Organisations	401	43	444
Banking Sector	50	..	50
<b>Total</b>	<b>1304</b>	<b>59</b>	<b>1363</b>

This estimate of demand of Agricultural graduates/post-graduates in the V plan is arrived on the basis of the available information and the assumption indicated above. The total number of Agricultural graduates and post-graduates available for employment during the V plan is only 339. From these estimates of supply and demand it appears that the supply could not be in a position to meet the requirement. Supply comes only about 24% of the demand.

## 7. Demand for Agricultural Engineers

Agricultural Engineers are mainly employed under the Kerala Agro-Industries Corporation and also in the Department of Agriculture. The demand of Agricultural Engineers for the V plan depends upon the nature of development schemes of the Agro-Industries Corporation and the schemes under Agricultural Engineering sector of the Department of Agriculture.

The Agro-Industries Corporation has selected 25 entrepreneurs to start Agro-service Centres. Out of this, 23 have completed training and 2 were exempted from training. 8 entrepreneurs have already started their centres. The Corporation has proposed to employ 34 Agricultural Engineering graduates during the V plan period.

Under the Department of Agriculture there are 5 Agricultural Engineering Units at Trivandrum, Alleppey, Ernakulam Malampuzha and Calicut. Each unit is under the charge of an Assistant Agricultural Engineer. These units are under the control of the State Agricultural Engineer at the Directorate of Agriculture. There is also one Research Testing and Training Centre (R. T. T. Centre) at Vellayani under the Department. This centre is headed by a Research Engineer.

Since there is no institution in Kerala conducting Agricultural Engineering courses there is no supply of Agricultural Engineering personnel to be estimated.

As regards demand of Agricultural Engineering personnel the requirement could not be estimated since the qualification prescribed for the posts is degree in Agricultural Engineering or Mechanical Engineering. Since sufficient number of Agricultural Engineers may not be available for employment in this State, Engineers of other disciplines may likely to be employed. It is estimated that 13 Agricultural Engineers are required in the Department of Agriculture during the V plan. Thus the total demand of Agricultural Engineers in the Agro-Industries Corporation and the Department of Agriculture is expected to be 47 in the V plan.

## 8. Agricultural Education, Training and Research

The College of Agriculture, Vellayani was started in 1955 under the control of the Department of Agriculture. Consequent upon the establishment of the Kerala Agricultural University in 1972 the College of Agriculture was transferred to the University. The duration of the course for B. Sc. (Ag.) was 3 years upto 1971. The duration of the course was enhanced to 4 years in 1972 and trimester system of education with internal valuation was adopted. The course was extended to a 4 year degree course to include programme of work experience and electives to fall in line with the pattern suggested by I. C. A. R. The student advisory system is also followed. The duration of M. Sc. (Ag.) is 2 years. Ph. D. course in trimester system was also introduced in 1974. The intake and out turn of B. Sc. (Ag.) and M. Sc. (Ag.) are give in tables I and II. The enrolment capacity in the College of Agriculture, Vellayani for B. Sc. (Ag.) has been enhanced from 80 to 100 from 1976 in order to meet the increasing demand of technical manpower to the various Development programmes in Agriculture of the State. With the establishment of the Kerala Agricultural University the following Research Institutes have also been transferred to the University with effect from 1st February 1972.

1. Central Rice Research Station, Pattambi
2. Regional Rice Research Station, Mannuthy, Trichur
3. Regional Rice Research Station, Moncompu
4. Regional Rice Research Station, Kayamkulam
5. Model Agronomic Research Station, Karamana
6. Coconut Research Station, Nileswar I
7. Coconut Research Station, Nileswar II
8. Regional Research Station, Kumarakom
9. Regional Coconut Research Station Balaramapuram
10. Central Horticultural Research Station, Ambalavayal
11. Cardamom Research Station, Pampalumpara.
12. Pepper Research Station, Panniyur
13. Lemongrass Research Station, Odakkali
14. Banana and Pineapple Research Station, Karamana
15. Cashew Research Station, Anakkayam
16. Agricultural College and Research Institute, Vellayani
17. Agricultural College Farm, Vellayani.

The Research efforts of the University yielded several significant results which are valuable to the farm economy of Kerala.

In order to enhance the professional competency of the technical hands refresher training course are organised by the Department of Agriculture. There is a scheme for Farmers Training and Education which provides essential support to agricultural production efforts and aims at increasing the yield. Scientific demonstrations on farmers' fields supported by audio visual aids, farm broadcast and

farmers discussion groups are the main features of the programme. There are at present 4 Farmers Training Centres at Trivandrum, Trichur, Pattambi and Taliparamba. Each training centre is under the control of a Deputy Director of Agriculture.

The Agricultural Graduates recruited as Junior Agricultural Officers are being given inservice training at the College of Agriculture for a period of one month.

Further, Officers of the rank of District Agricultural Officers and above are given training in Agricultural planning for a period of 3 weeks by the Kerala State Planning Board.

There are various training courses in Agriculture conducted in other States and also in foreign countries. Officers of the Department are being deputed to undergo such training courses. Details of different training courses on Agriculture are furnished in Appendix I. A list of Agricultural Colleges and Agricultural Engineering Institutions in India is also given as Appendix II.

## List of Tables

Table	I	.. Intake of Agricultural Graduates in Kerala
"	II	.. Intake of Agricultural post-graduates in Kerala
"	III	.. Attrition Rate of Agricultural personnel in Kerala
"	IV	.. Wastage rate for B.Sc. (Ag.) in Kerala
"	V	.. Wastage rate for M.Sc. (Ag.) in Kerala.
"	VI	.. All India wastage rate for B.Sc. (Ag.) estimated by I.A.M.R.
"	VII	.. All India wastage rate for M.Sc. (Ag.) worked out by I.A.M.R.
"	VIII	.. All India wastage rate for M.Sc. (Ag.) worked out by Government of India
"	IX	.. Stock of Agricultural Graduates in Kerala
"	X	.. Stock of Agricultural post-graduates in Kerala
"	XI	.. Utilisation of Agricultural personnel in Kerala
Appendix	I	.. Details of training programmes for Agricultural personnel
Appendix	II	.. List of Agricultural Colleges and Agricultural Engineering Colleges in India.

TABLE I

## Intake and out-turn of Agricultural graduates

<i>Intake</i>		<i>Out-turn</i>		<i>Ratio of out-turn to intake %</i>
<i>Year</i>	<i>Number</i>	<i>Year</i>	<i>Number</i>	
1955	51	1958	48	94.1
1956	80	1959	73	91.3
1957	78	1960	82	105.1
1958	80	1961	69	86.3
1959	78	1962	80	102.6
1960	66	1963	59	89.4
1961	58	1964	60	103.4
1962	57	1965	54	94.7
1963	59	1966	46	77.9
1964	63	1967	55	87.3
1965	63	1968	72	114.3
1966	95	1969	79	83.2
1967	83	1970	80	96.4
1968	52	1971	52	100.0
1969	54	1972	52	96.3
1970	53	1973	60	113.2
1971	54	1974	70	129.6
1972	50	1976	44	88.0

*Note:—*The duration of the course has been enhanced from 3 years to 4 years from 1972 onwards.



TABLE II

## Intake and out-turn of Agricultural post-graduates

<i>Intake</i>		<i>Out-turn</i>		<i>Ratio of out-turn to intake %</i>
<i>Year</i>	<i>Number</i>	<i>Year</i>	<i>Number</i>	
1961	22	1963	21	95.5
1962	26	1964	21	80.8
1963	23	1965	23	100.0
1964	30	1966	30	100.0
1965	28	1967	30	107.1
1966	30	1968	29	96.7
1967	50	1969	49	98.0
1968	20	1970	22	110.0
1969	20	1971	19	95.0
1970	20	1972	22	110.0
1971	19	1973	17	89.5
1972	—	1974	—	—
1973	24	1975	17	70.8
1974	10	1976	2	20.0

TABLE III

## Attrition rate of Agricultural personnel in Kerala—1977

Category of personnel	Rate of attrition due to		Attrition rate
	Retirement	Pre-retirement	
Agricultural Graduates	0.400	0.228	0.628 (0.6%)
Agricultural Post-graduates	1.360	0.284	1.644 (1.6%)
Total Agricultural personnel	0.620	0.240	0.860 (0.9%)

TABLE IV

Wastage rate of B.Sc. (Agriculture) in Kerala

<i>Total intake over a period of 5 years ending</i>		<i>Total out-turn over a period of 5 years ending</i>		<i>Out-turn as percentage of intake</i>	<i>Percentage of wastage</i>
<i>Year</i>	<i>Number</i>	<i>Year</i>	<i>Number</i>		
(1)	(2)	(3)	(4)	(5)	(6)
1965	300	1968	287	95.7	4.3
1966	337	1969	306	90.8	9.2
1967	363	1970	332	91.5	8.5
1968	356	1971	338	94.9	5.1
1969	347	1972	335	96.5	3.5
1970	337	1973	323	95.8	4.2
1971	296	1974	314	106.1	6.1
Average				95.9	4.1

TABLE V

## Wastage rate of M.Sc. (Agriculture) in Kerala

<i>Total intake over a period of 5 years ending</i>		<i>Total out-turn over a period of 5 years ending</i>		<i>Out-turn as percentage of intake</i>	<i>Percentage of wastage</i>
<i>Year</i>	<i>Number</i>	<i>Year</i>	<i>Number</i>		
(1)	(2)	(3)	(4)	(5)	(6)
1965	129	1967	125	96.9	3.1
1966	137	1968	133	97.1	2.9
1967	161	1969	161	100.0	0.0
1968	158	1970	160	101.3	-1.3
1969	148	1971	149	100.7	-0.7
1970	140	1972	141	100.7	-0.7
1971	129	1973	129	100.0	0.0
1973	103	1975	97	94.2	5.8
1974	93	1976	77	82.8	17.2
<b>Average</b>				97.1	2.9

TABLE VI

All India Wastage Rate for B.Sc. (Agriculture) worked out by  
I.A.M.R.

<i>Total intake over a period of 5 years ending</i>		<i>Total out-turn over a period of 5 years ending</i>		<i>Out-turn as percentage of intake</i>	<i>Estimated wastage</i>
<i>Year</i>	<i>Number</i>	<i>Year</i>	<i>Number</i>		
(1)	(2)	(3)	(4)	(5)	(6)
1963	32,443	1966	21,735	67.0	33.0
1964	36,775	1967	25,062	68.1	31.9
1965	41,190	1968	26,773	65.0	35.0
1966	43,681	1969	28,260	64.7	35.3
1967	44,353	1970	28,709	64.7	35.3
1968	44,594	1971	29,954	67.2	32.8
Average				66.2	33.8

TABLE VII

All India Wastage rate of M.Sc. (Agriculture) worked out by L.A.M.R.

Total intake over a period of 5 years ending		Total out-turn on a period of 5 years ending		Out-turn as percentage of intake	Estimated wastage
Year	Number	Year	Number		
(1)	(2)	(3)	(4)	(5)	(6)
1962	3101	1964	3082	99.4	0.6
1963	3880	1965	3851	99.3	0.7
1964	4855	1966	4618	95.1	4.9
1965	5871	1967	5414	92.2	7.8
1966	6797	1968	6290	92.5	7.5
Average				95.7	4.3

TABLE VIII

All India Wastage rate of M.Sc. (Agriculture) worked out by the  
Department of Agriculture, Government of India

<i>Total intake over a period of 3 years ending</i>		<i>Total out-turn over a period of 3 years ending</i>		<i>Out-turn as percentage of intake</i>	<i>Estimated wastage</i>
<i>Year</i>	<i>Number</i>	<i>Year</i>	<i>Number</i>		
(1)	(2)	(3)	(4)	(5)	(6)
1964	3598	1966	3330	92.3	7.7
1965	4274	1967	3810	89.1	10.9
1966	4610	1968	3938	85.4	14.6
1967	4910	1969	4307	87.7	12.3
1968	4991	1970	4474	89.6	10.4
Average					11.2

TABLE IX

## Stock of Agricultural Graduates in Kerala

<i>Year</i>	<i>Stock in the beginning of the year</i>	<i>Additions during the year</i>	<i>Total</i>	<i>Attrition loss (1% of Col. 4)</i>	<i>Stock at the end of the year (Col. 4—5)</i>
(1)	(2)	(3)	(4)	(5)	(6)
1974-75	1065	70	1135	11	1124
1975-76	1124	•	1124	11	1113
1976-77	1113	44	1157	12	1145
1977-78	1145	80	1225	12	1213
1978-79	1213	80	1293	13	1280
1979-80	1280	85	1365	14	1351
1980-81	1331	96	1447	14	1433
1981-82	1433	96	1529	15	1516
1982-83	1514	96	1610	16	1594
1983-84	1594	96	1690	17	1673

\* Duration of the course is changed to 4 years instead of 3 years and hence no out-turn.



TABLE X

## Stock of Agricultural Post-graduates

<i>Year</i>	<i>Stock in the beginning of the year</i>	<i>Additions during the year</i>	<i>Total</i>	<i>Attrition loss (1% of Col.4)</i>	<i>Stock at the end of the year (Col. 4-5)</i>
(1)	(2)	(3)	(4)	(5)	(6)
1974-75	313	..	313	3	310
1975-76	310	17	327	3	327
1976-77	324	2	326	3	323
1977-78	323	23	346	3	343
1978-79	343	23	366	4	362
1979-80	362	23	385	4	381
1980-81	381	23	404	4	400
1981-82	400	23	423	4	419
1982-83	419	23	442	4	438
1983-84	438	23	461	5	456

TABLE XI

## Utilisation of Agricultural personnel in Kerala during 1976-77

Department/Organisation	Agri. Graduates	Agri. Post-graduates	Total
Central Government Department	1	17	18
<i>State Government Department</i>			
Agriculture Department	791	82	873
Soil Conservation Department	58	3	61
Dairy Development Department	11	..	11
Animal Husbandry Department	10	..	10
Harijan Welfare Department	1	..	1
<i>Boards/Corporation</i>			
Rubber Board	91	12	103
Coffee Board	1	3	4
Cardamom Board	12	..	12
Kerala Land Development Corporation	5	1	6
State Planning Board	..	1	1
<i>Other Organisation</i>			
Indo-Swiss Project	12	3	15
F.A.C.T.	79	7	86
Kerala Agricultural University	14	162	176
Hindustan Pesticides	1	1	2
<i>Banks</i>			
Nationalised Banks	25	27	52
Other Banks	7	1	8
Co-operative Banks (including Land Mortgage Bank)	7	-	7
<i>Private Sector</i>			
Mannam Sugar Mill	1	-	1
E.I.D. Parry	5	1	6
Shaw Wallace & Company	6	1	7
Madras Fertilizers	2	..	2
Chamundi Fertilizers	1	..	1
Mysore Fertilizers	1	..	1
Rallis India	8	1	4
<b>Total</b>	<b>1145</b>	<b>323</b>	<b>1468</b>

## Details of Training programmes for Agricultural personnel

Sl. No.	Description of training programme	Centre	Duration	Type & No. of personnel to be trained	(6)
(1)	(2)	(3)	(4)	(5)	(6)
1.	Inservice training for Junior Agricultural Officers of the Department of Agriculture	College of Agriculture, Vclayani	1 month	..	30
2.	Training in Agricultural Planning	State Planning Board, Trivandrum	3 weeks	8	..
3.	Training course on various Agricultural aspects of Coconut, Arcaanut, Cocoa, Cashew and spices	C.P.C.R.I., Kasargode	2 weeks	2	4
4.	Inter disciplinary short term training course in water management	Water Technology Centre, I.A.R.I., New Delhi	4 weeks	2	..
5.	Training courses on improved methods of rice cultivation of laying out Mimikit demonstrations	All India Co-ordinated Rice Improvement Project, Rajendranagar, Hyderabad	6 days	..	12
6.	Farmers Training Education Programme in High Yielding Varieties	Extension Education Institute, Rajendranagar, Hyderabad (A.P.)	2 weeks	4	..
7.	Training in plant protection	Central Plant Protection Training Institute, Hyderabad (AP.)	3 months	4	2
8.	Training in Irrigation and drainage structures	C.R.R.I., Cuttack (Orissa)	15 days	1	..
9.	Short training course in soil testing	I.A.R.I., New Delhi	1 month	2	2
10.	Seed Improvement training course	N.S.C., New Delhi,	6 weeks	2	..

11.	Diploma in Agricultural Marketing	Directorate of Marketing and Inspection, Nagpur	11 months	..	1
12.	Training course for sugarcane development	Indian Institute of Sugarcane Research, Lucknow	4 months	1	1
13.	Refresher course of Agricultural Engineers	Extension Education Institute, Nilokter, Haryana	4 weeks	2	..
14.	Training in Extension, teaching methods and subject matter for instructional staff for G. T. C. E. T. C. Agricultural School	Extension Education Institute, Rajendranagar	6 weeks	2	..
15.	Training course in Extension method and subject matter for the Institutional staff of Extension Training Centres (Men & Women)	do.	2 weeks	2	..
16.	Specialised course in Agricultural credit management for District Level Officers of S.F.D.A./M.F.A.L. areas	do.	2 weeks	1	..
17.	Specialised programme in subject matter for District Level Officers in new Dryland Agricultural Technology and communication techniques	do.	1 week	1	..
18.	Training course in Extension methods and subject matter for Agricultural Extension Officers (Agriculture)	do.	6 weeks	..	4
19.	Specialised programme in Subject Matter for District Level Officers in New Rice Technology and Communication techniques	do.	1 week	..	..
20.	Specialised workshop in production of Audio Visual aids and Agricultural information materials for the staff of F.T. Cs./E.T. Cs. and Agricultural Information Officers	do.	10 days	..	2
21.	Training course in Agricultural Administration and management for District Level Officers/Assistant Directors of Agriculture/District Agricultural Officers	do.	2 weeks	..	..
22.	Farm Machine utilisation course	Tractor Training & Testing Station, Tractor Nagar, Bundi (M.P.)	3 months	..	..
23.	International Rice Research Training	International Rice Research Institute, Manila, Philippines	6 months	2	2

## APPENDIX II

## List of Agricultural Colleges/Institutes in India

- \*1. The Dean,  
Faculty of Agriculture,  
Assam Agricultural University,  
Jorhat (Assam).
- \*2. The Principal,  
Agricultural College,  
Bapatla (Andhra Pradesh).
- \*3. The Principal,  
College of Agriculture,  
Andhra Pradesh Agricultural  
University, Rajendranagar,  
Hyderabad (Deccan).
- \*4. The Principal,  
S. V. Agricultural College,  
Tirupati (A.P.).
- \*5. The Principal & Regional Director  
& Dean of Faculty of Agriculture,  
Bihar Agricultural College & Agr.  
Research Institute, Sabour,  
P. O. Bhagalpur (Bihar).
- \*6. The Principal,  
Agricultural College,  
Kanke, Ranchi (Bihar).
- \*7. The Principal,  
Tirhut College of Agriculture,  
P. O. Dholi, District Muzaffarpur  
(Bihar).
- \*8. The Principal & Dean,  
B.A. College of Agriculture,  
Anand (Gujarat).
- \*9. The Principal,  
N. M. College of Agriculture,  
Navasari (Gujarat).
- \*10. The Principal,  
College of Agriculture,  
Junagadh (Gujarat).
- \*11. The Principal,  
Agricultural College, Vellayani,  
Trivandrum (Kerala).
- \*12. The Associate Dean,  
College of Agriculture,  
Jabalpur (M. P.).
- \*13. The Associate Dean,  
College of Agriculture,  
Gwalior (M. P.)
- \*14. The Associate Dean,  
R.A.K. Agricultural College,  
Schore (M. P.)
- \*15. The Principal,  
Government of Agricultural College,  
Rewa (M. P.)
- \*16. The Associate Dean,  
College of Agriculture,  
Indore (M.P.)
- \*17. The Associate Dean,  
College of Agriculture,  
Raipur (M. P.)
- \*18. The Dean,  
Agricultural College and Research  
Institute, Lawley Road,  
P. O., Coimbatore-3 (T.N.)
- \*19. The Head, Department of  
Agriculture, Annamalai University,  
Annamalainagar (T.N.)
- \*20. The Principal,  
Agricultural College,  
P. O. Vouvalthottam,  
Distt. Madurai (T.N.)
- \*21. The Associate Dean,  
College of Agriculture,  
Poona (Maharashtra).
- \*22. The Principal,  
College of Agriculture,  
Nagpur (Maharashtra).
- \*23. The Principal,  
College of Agriculture,  
Akola (Maharashtra).
24. The Principal,  
Sri Shivaji Agricultural College,  
Amaravati (M.S.).
25. The Associate Dean,  
College of Agriculture,  
Dhule (M.S.)

- \*26. The Associate Dean,  
College of Agriculture,  
Parbhani (M.S.)
27. The Principal,  
Anand Niketan College of Agrl.,  
Anandwan, Warora, Distt. Chanda.  
(Maharashtra)
- \*28. The Principal,  
College of Agriculture,  
Dapoli, Dist. Ratnagiri  
(Maharashtra)
29. The Associate Dean,  
College of Agriculture,  
Kolhapur-4, (Maharashtra).
- \*30. The Principal,  
Agricultural College, Hebbal,  
Bangalore (Karnataka).
- \*31. The Principal,  
College of Agriculture & Research  
Institute, Krishnagar  
Dharwar (Karnataka)
- \*32. The Dean, College of Agriculture,  
O.U.A.T., Bhubaneswar-3 (Orissa).
- \*33. The Dean, College of Agriculture,  
Punjab Agricultural University,  
Ludhiana (Punjab).
- \*34. The Principal,  
Khalsa College, Amritsar,  
(Punjab)
- \*35. The Dean, College of Agriculture,  
Haryana Agricultural University  
Hissar (Haryana).
36. The Principal,  
College of Agriculture, Kaul,  
Karnal (Haryana)
- \*37. The Dean, College of Agriculture,  
Udaipur (Rajasthan).
- \*38. The Associate Dean,  
S.K.N. College of Agriculture,  
Udaipur University, Jobner (Raj.)
39. The Principal, Dayanand College,  
Ajmer, (Rajasthan).
40. The Principal,  
G. V. College of Agriculture.  
Samgaria (Rajasthan).
41. The Principal,  
Allahabad Agricultural Institute,  
Allahabad (U.P.).
- \*42. The Principal,  
Institute of Agricultural Sciences,  
Kanpur (U. P.)
- \*43. The Principal & Dean,  
College of Agriculture,  
Banaras Hindu University,  
Varanasi (U. P.).
- \*44. The Principal, R.B.S. College,  
Agra (U. P.).
- \*45. The Principal, J.V. College,  
Baraut, Meerut (U.P.).
- \*46. The Principal,  
Amar Singh Jat College,  
Lakhaoti, Bulandshahar (U.P.).
47. The Principal,  
Janta Agricultural Degree College,  
Ajitmal (Etawah) U.P.
- \*48. The Principal,  
R.M.P.P.V. Degree College,  
Curukul Narsan (Saharanpur),  
(Uttar Pradesh).
- \*49. The Principal,  
Sri. Durgajee Degree College,  
Chandesar, Azamgarh (U.P.).
50. The Principal,  
Ch. Chhotu Ram Degree College,  
Muzaffarnagar (U.P.).
51. The Principal,  
Kissan Degree College,  
Simbhaoli (Meerut).
52. The Principal,  
Cochar Agricultural College,  
Rampur, Manhyaran,  
District, Saharanpur (U.P.).
- \*53. The Dean, College of Agriculture  
G.B., Pant University of  
Agricultural Sciences and  
Technology, Pantnagar (U.P.).
54. The Principal,  
Janta College Bakewor, (Etawah)  
U.P.

55. The Principal,  
R.S.M. Degree College,  
Dhampur Bijnor (U.P.).
56. The Principal,  
B.N.V. College, Rath,  
Hamirpur (U.P.).
- \*57. The Principal,  
Baba Raghava Das Degree College,  
Deoria (U.P.).
- \*58. The Principal,  
Kulbhaskar Ashram Degree College,  
Allahabad (U.P.).
59. The Principal,  
Tilak Dhari College,  
Jaunpur (U.P.).
60. The Principal,  
Narian Degree College,  
Shikohabad (U.P.).
61. The Principal,  
K.V. Degree College,  
Machhra (Meerut) U.P.
62. The Principal,  
National Degree College,  
Barhal Ganj, Gorakhpur, U.P.
- \*63. The Principal,  
Udai Pratap College, Varanasi,  
Uttar Pradesh.
64. The Principal,  
Degree College, Gazhipur,  
Gorakhpur, U.P.
- \*65. The Principal,  
Town Degree College,  
Ballia (U.P.).
66. The Principal,  
R. K. Degree College, Shamli,  
Dist., Muzaffar Nagar (U.P.)
67. The Principal,  
Government Agriculture College,  
Sepore (J & K).
- \*68. The Principal-cum-Jt. Director of  
Agriculture,  
Himachal Pradesh,  
College of Agriculture and  
Research Institute, Solan (H.P.)
- \*69. The Associate Dean,  
College of Agriculture,  
Palampur (H.P.).
- \*70. The Dean,  
Faculty of Agriculture Science &  
Animal Husbandry,  
University of Kalyani,  
P.O. & T.O., Kalyani,  
Dist. Nadia (W.B.).
71. The Principal,  
Palli Sikasha Sadan,  
Vishwa Bharati Sriniketan,  
Distt. Birbhum (West Bengal).
- Post-Graduate Institutes only:**
72. The Head,  
College of Agriculture,  
University of Calcutta,  
Calcutta-19.
73. The Director,  
Indian Agricultural Research  
Institute, New Delhi.

\* This indicates the Colleges offering both under-graduate and post-graduate courses.

## APPENDIX II

**List of Agricultural Engineering Colleges in India**

List as on 11-10-1976

**AGRICULTURAL ENGINEERING COLLEGES**

1. College of Engineering,  
J.N.K. Viswa Vidyalyaya,  
Jabalpur (M.P.)
  2. College of Agricultural Engineering,  
Punjabrao Krishi Vidyapeeth,  
P.O., Krishinagar, Akola  
Maharashtra
  3. College of Agricultural Engineering,  
Mahatma Phule Krishi Vidyapeeth,  
Poona (Maharashtra).
  4. College of Agricultural Engineering,  
Rahuri (Maharashtra).
  5. College of Agricultural Engineering  
and Technology,  
Orissa University of Agriculture  
and Technology,  
Bhubaneswar (Orissa).
  6. College of Agricultural Engineering,  
Punjab Agricultural University,  
Ludhiana (Punjab).
  7. College of Agricultural Engineering  
and Technology,  
Udaipur (Rajasthan).
  8. College of Agricultural Engineering,  
Tamil Nadu Agricultural University,  
Coimbatore (T.N.).
  9. Allahabad Agricultural Institute,  
Agricultural Engineering  
Department Allahabad (U.P.).
  10. Indian Institute of Technology,  
Kharagpur (W.B.).
  11. Pant College of Technology,  
G.B. Pant University of Agriculture  
& Technology, Pantnagar (U.P.).
-



MEMORANDUM FOR THE RECORD

DATE: 10/10/50

TO: SAC, NEW YORK

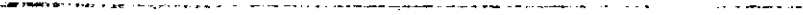
FROM: SAC, NEW YORK

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2

**ATTRITION RATE OF AGRICULTURAL PERSONNEL  
IN KERALA**



## ATTRITION RATE OF AGRICULTURAL PERSONNEL IN KERALA

### Introduction

The major source of employment for Agricultural graduates and post-graduates in Kerala is the Department of Agriculture. They also find employment opportunities in the Departments like Soil Conservation, Dairy Development, Animal Husbandry etc. and in Organisations such as Kerala Agricultural University, Rubber Board, Coffee Board, Cardamom Board, Banks, FACT and similar Fertilizer Concerns, and Central Government Departments like Directorate of Spices Promotion, Tuber Research Institute etc. About 75% of the Agricultural manpower stock belongs to the age-group of less than 38 years.

In the report of the working group on Agricultural Manpower set up by the Planning Commission, Government of India in connection with the formulation of the Fifth Five Year Plan, the following recommendation was made:

“Agricultural Manpower stock is considered to be young. It is estimated that persons below 35 years would in 1974 constitute 88% of the total stock. While the Department of Agriculture has assumed an attrition rate of 1%, the Institute of Applied Manpower Research (I A M R) considers that replacement could be only around 0.5% of the stock. This issue required detailed study by the Manpower Cells at the State level”.

In Kerala the rate of replacement of agricultural personnel has not been worked out so far. Therefore an attempt has been made by the Manpower Unit of the Directorate of Agriculture to estimate the attrition rate. Data required have been collected from the records of the Directorate and also from the Regional and District Level Offices of the Department. Details of Agricultural Manpower in other Departments and Organisations have also been collected.

The Department of Agriculture, Government of India and the Institute of Applied Manpower Research, New Delhi have worked out the attrition rate assuming the age of retirement of Agricultural personnel as 58. But in Kerala the age of retirement of personnel in the Department of Agriculture and in other State Government Departments is 55 while the age of superannuation in Central Government Departments and other Organisations is 58. About 60% of the total Agricultural personnel are employed in the Department of Agriculture. Therefore the attrition rates of Agricultural personnel in the Department of Agriculture and for Agricultural personnel of the entire State have been estimated separately.

From the data collected, the attrition rates are worked out separately for graduates and post-graduates in Agriculture apart from the attrition rate for Agricultural personnel as a whole.

## 2. Attrition rate of Agricultural personnel in the Department of Agriculture, Kerala

The factors responsible for attrition of stock of any category of technical manpower are:—

1. net out-migration
2. retirement
3. death before reaching the age of retirement.

In the case of agricultural personnel the incidence of net out-migration outside the State is rather negligible. Therefore the attrition on account of the remaining two factors has to be taken into consideration.

The following table gives the age composition of the active agricultural technical personnel in the Department of Agriculture as on 1-1-1977.

Age group	Graduates in Agriculture		Post graduates in Agriculture		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
23 or below	59	7.46	8	9.76	67	7.67
24—28	143	18.08	18	21.95	161	18.44
29—33	165	20.86	24	29.27	189	21.65
34—38	223	28.19	15	18.29	238	27.26
39—43	110	13.91	8	9.76	118	13.52
44—48	74	9.35	5	6.09	79	9.05
49—53	11	1.39	4	4.88	15	1.72
54 and above	6	0.76	..	..	6	0.69
Total	791	100.00	82	100.00	873	100.00

### The replacement due to retirement in the next Five Years

Out of the total number of 873 agricultural personnel (791 graduates and 82 post-graduates) the number of persons in the age group of 50-54 is 16. Therefore 16 persons will be retiring within a period of 5 years. The percentage of persons retiring in the age group of 50-54 is 16. Therefore 16 persons will be retiring within a period of 5 years. The percentage of persons retiring in the next five years to the stock at the beginning of the year when worked out comes to 1.833. The five year average of this percentage will indicate the rate of attrition due to retirement per annum. This rate comes to 0.367%.

<i>Stock of Agricultural personnel as on 1-1-1977</i>	<i>Persons in the age group 50—54</i>	<i>Percentage of persons retiring in the next 5 years to the stock</i>	<i>Rate of attrition due to retirement</i>
873	16	1.833	0.367%

### *Replacement due to pre-retirement death*

To estimate the replacement needs due to death before reaching the age of 55, the age specific mortality rates are applied to the stock of active agricultural personnel in the Department. For the age specific mortality rates, the "Tables of L. I. C. (1970-73)—Ultimate Mortality Functions" have been used. The rate of attrition due to pre-retirement death of Agricultural personnel thus estimated comes to 0.230%.

<i>Age group</i>	<i>No. of persons lx.</i>	<i>dx.</i>	<i>lx. dx.</i>
23 or below	67	.00129	.08643
24—28	161	.00128	.20608
29—33	189	.00141	.26649
34—38	238	.00196	.46648
39—43	118	.00313	.36934
44—48	79	.00520	.41080
49—53	15	.00860	.12900
54 and above	6	.01143	.06858
<b>Total</b>	<b>873</b>	<b>..</b>	<b>2.00320</b>

Rate of attrition due to pre-retirement death is 2.00320

873

=0.00230

=0.230%

### *Attrition rate of Agricultural personnel*

The two rates derived as explained above when added together gives the overall attrition rate of Agricultural personnel in the Department.

<i>Stock of Agricultural personnel</i>	<i>Persons retiring within 5 years</i>	<i>Rate of replacement due to retirement %</i>	<i>Rate of replacement due to pre-retirement death %</i>	<i>Attrition rate %</i>
873	16	0.367	0.230	0.597

Thus the attrition rate of Agricultural personnel in the Department of Agriculture is estimated as 0.597% say 0.6%.

### 3. Attrition Rate of Agricultural Graduates

There are 791 graduates in Agriculture in the Department out of the total stock of 873 Agricultural personnel. The remaining 82 are post-graduates. Among the graduates in Agriculture 12 persons are in the age group of 50-54. The percentage of graduates retiring in the next 5 years to the stock at the beginning of the year is 1.517. The rate of attrition due to retirement is the 5 year average of this percentage.

<i>Stock of Agricultural graduates in the Department as on 1-1-1977</i>	<i>Persons in the age group of 50—54</i>	<i>Percentage of persons retiring within a period of 5 years to the stocks</i>	<i>Rate of attrition due to retirement</i> %
791	12	1.517	0.303

The rate of attrition due to retirement in the case of Agricultural graduates in the Department is 0.303%.

The rate of attrition of Agricultural Graduates in the Department due to pre-retirement death is estimated as follows:—

<i>Age group</i>	<i>No. of persons</i> <i>lx.</i>	<i>dx.</i>	<i>lx. dx.</i>
23 or below	59	.00129	.07611
24—28	143	.00123	.18304
29—33	165	.00141	.23265
34—38	223	.00196	.43708
39—43	110	.00313	.34430
44—48	74	.00520	.38480
49—53	11	.00860	.09460
54 and above	6	.01143	.06858
Total	791	..	1.82116

Rate of attrition due to pre-retirement death is  $\frac{1.82116}{791} = .00230 = 0.230\%$

The above two rates when added together gives the attrition rate of Agricultural Graduates in the Department.

<i>Stock of Agricultural Graduates</i>	<i>Persons retiring within a period of 5 years</i>	<i>Rate of attrition due to retirement %</i>	<i>Rate of attrition due to pre-retirement death %</i>	<i>Attrition rate of Agricultural Graduates %</i>
791	12	0.303	0.230	0.533

The attrition rate of agricultural graduates comes to 0.50%.

#### 4. Attrition rate of Agricultural post-graduates

There are only 82 post-graduates in Agriculture in the Department of Agriculture. Out of this 4 persons will be retiring within a period of 5 years. The percentage of persons retiring in the next 5 years to the stock is worked out as 4.878. The five year average of this which comes to 0.976% indicates the rate of attrition due to retirement.

<i>Stock of Agricultural post-graduates</i>	<i>Persons in the age group 50-54</i>	<i>Percentage of persons retiring within a period of 5 years</i>	<i>Rate of attrition due to retirement</i>
82	4	4.878	0.976%

The rate of attrition due to pre-retirement death in the case of Agricultural post-graduates is estimated as follows:—

<i>Age group</i>	<i>No. of persons</i>	<i>dx.</i>	<i>lx. dx.</i>
23 or below	8	.00129	.01032
24—28	18	.00128	.02304
29—33	24	.00141	.03384
34—38	15	.00196	.02940
39—43	8	.00313	.02504
44—48	5	.00520	.02600
49—53	4	.00860	.03440
53 and above	..	.01143	..
Total	82	..	.18204

Rate of attrition due to pre-retirement death of Agricultural post-graduates is  $\frac{.18204}{82} = 0.00222 = 0.222\%$

The above two rates when added together gives the attrition rate of Agricultural post-graduates in the Department.



<i>Stock of Agricultural post-graduates</i>	<i>Persons retiring within a period of 5 years</i>	<i>Rate of attrition due to retirement</i> %	<i>Rate of attrition due to pre-retirement death</i> %	<i>Attrition rate of Agricultural post-graduates</i> %
82	4	0.976	0.222	1.198

The attrition rate of post-graduates in Agriculture comes to 1.198% say 1.2%.

The rates of attrition of Agricultural graduates and post-graduates and also the attrition rate of agricultural personnel as a whole in the Department of Agriculture estimated as explained earlier are furnished below:—

<i>Category of Agricultural personnel</i>	<i>Stock as on 1-1-1977</i>	<i>Persons retiring within a period of 5 years</i>	<i>Rate of attrition due to retirement</i>	<i>Rate of attrition due to pre-retirement death</i>	<i>Attrition rate</i>
Agricultural graduates	791	12	0.303%	0.250%	0.5%
Agricultural post-graduates	82	4	0.976%	0.222%	1.2%
Agricultural personnel	873	16	0.367%	0.230%	0.6%

From the above it is seen that the overall attrition rate of Agricultural personnel of the Department of Agriculture estimated as 0.6% is very close to the rate worked out by the Institute of Applied Manpower Research, New Delhi. In the case of Agricultural Graduates our rate is 0.5%, where as the rate for post-graduates comes to 1.2%.

### 5. Attrition rate of Agricultural Personnel in Kerala

As mentioned earlier 60% of the stock of Agricultural personnel in Kerala is in the Department of Agriculture. The remaining 40% is distributed among various Departments and organisations. The percentage distribution of stock of Agricultural personnel in Kerala is as follows:—

<i>Department/Organisation</i>	<i>Percentage distribution of Agricultural personnel</i>		
	<i>Graduates</i>	<i>Post-graduates</i>	<i>Total</i>
Department of Agriculture	69	25	60
Other State Government Departments	7	1	6
Kerala Agricultural University	1	50	12
Central Government Departments	..	5	1
Banks	3	9	5
Other Organisations	20	10	16
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>

The details of stock of Agricultural personnel are given in Table 1 appended. The attrition rate of Agricultural personnel in Kerala (including the Department of Agriculture and other departments and organisations where Agricultural graduates and post-graduates are employed) is estimated as follows:

<i>Category of Agricultural personnel</i>	<i>Rate of attrition due to retirement</i>	<i>Rate of attrition due to pre-retirement death</i>	<i>Attrition rate</i>
Agricultural graduates	0.400	0.228	0.628
Agricultural post-graduates	1.360	0.284	1.644
Agricultural personnel (graduates and post-graduates)	0.620	0.240	0.860

Details of the above estimates are furnished in the tables 2 to 7 appended.

From the above it is seen that the attrition rate of agricultural graduates is 0.6% and the rate for Agricultural post-graduates is 1.6%. The overall rate for Agricultural personnel in Kerala is 0.9%. This rate is very close to the estimate of 1% worked out by the Department of Agriculture, Government of India. Our rate when corrected also comes to 1% which is the same rate estimated by Government of India. The All India attrition rate of 1% estimated by Government of India can therefore be adopted for Agricultural personnel in Kerala also for estimation of stock and future requirements.

#### APPENDIX

TABLE 1

#### Stock of Agricultural Personnel in Kerala as on 1-1-1977

<i>Department/Organisation</i>	<i>Agricultural graduates</i>		<i>Agricultural post-graduates</i>		<i>Total Agricultural Personnel</i>	
	<i>No.</i>	<i>Percentage</i>	<i>No.</i>	<i>Percentage</i>	<i>No.</i>	<i>Percentage</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Department of Agriculture	791	69.08	82	25.38	873	59.47
Other State Government Departments	80	6.99	4	1.23	84	5.72
Central Government Departments	1	0.08	17	5.26	18	1.22
Kerala Agricultural University	14	1.22	162	50.16	176	11.99

(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Corporations/Boards</i>						
Rubber Board	91	7.95	12	3.72	103	7.02
Coffee Board	1	0.09	3	0.93	4	0.27
Cardamom Board	12	1.05	..	..	12	0.82
Land Development Corporation	5	0.44	1	0.31	6	0.41
<i>Other Organisations</i>						
Indo-Swiss Project	12	1.05	3	0.93	15	1.02
FACT	79	6.90	7	2.17	86	5.86
Hindustan Insecticides Ltd.	1	0.09	1	0.31	2	0.14
Banks (including Co-operative Banks and Land Mortgage Banks)	39	3.40	28	8.67	67	4.56
Others	19	1.66	3	0.93	22	1.50
Total	1145	100.00	323	100.00	1468	100.00

TABLE-2

## Age-wise distribution of agricultural personnel in Kerala as on 1-1-1977

Age Group	Agricultural Graduates		Agricultural Post graduates		Total	
	No.	%	No.	%	No.	%
23 or below	66	5.8	8	2.5	74	5.0
24-28	190	16.6	46	14.2	236	16.1
29-33	286	25.0	62	19.2	348	23.7
34-38	317	27.7	93	28.8	410	27.9
39-43	165	14.4	54	16.7	219	14.9
44-48	98	8.5	38	11.8	136	9.3
49-53	16	1.4	17	5.3	33	2.3
54 and above	7	0.6	5	1.5	12	0.8
Total	1145	100.0	323	100.0	1468	100.0

TABLE-3

## Attrition due to retirement of Agricultural Personnel in Kerala

<i>Category of personnel</i>	<i>No. of Persons</i>	<i>Percentage of persons retiring within a period of 5 years to total stock</i>	<i>Rate of attrition due to retirement</i>
Agricultural Graduates	1145	2.0	0.40
Agricultural Post-Graduates	323	6.8	1.36
Total Agricultural Personnel	1468	3.1	0.62

TABLE-4

## Rate of Attrition due to pre-retirement death of Agricultural personnel in Kerala

<i>Age Group</i>	<i>No. of Persons lx.</i>	<i>dx.</i>	<i>lx. dx.</i>
23 and below	74	.00129	.09546
24—28	236	.00128	.30208
29—33	348	.00141	.49068
34—38	410	.00196	.80360
39—43	219	.00313	.68547
44—48	136	.00520	.70720
49—53	33	.00860	.28380
54 and above	12	.01327	.15924
Total	1468	..	3.52753

Average =  $\frac{3.52753}{1468} = 0.00240$

Rate of attrition due to pre-retirement death is = 0.240%

TABLE-5

**Rate of Attrition due to pre-retirement death of Agricultural Graduates  
in Kerala**

<i>Age Group</i>	<i>No of persons lx.</i>	<i>dx.</i>	<i>lx. dx.</i>
23 and below	66	.00129	.08514
24-28	190	.00128	.24320
29-33	286	.00141	.40326
34-38	317	.00196	.62132
39-43	165	.00313	.51645
44-48	98	.00520	.50960
49-53	16	.00860	.13760
54 and above	7	.01327	.09289
<b>Total</b>	<b>1145</b>	<b>..</b>	<b>2.60946</b>

$$\text{Average} = \frac{2.60946}{1145} = 0.00228$$

1145

$$= 0.228\%$$

TABLE-6

**Rate of attrition due to pre-retirement death of agricultural post-graduates  
in Kerala**

<i>Age Group</i>	<i>No. of persons lx.</i>	<i>dx.</i>	<i>lx. dx.</i>
23 and below	8	.00129	.01032
24-28	46	.00128	.05888
29-33	62	.00141	.08742
34-38	93	.00196	.18228
39-43	54	.00313	.16902
44-48	38	.00520	.19760
49-53	17	.00860	.14620
54 and above	5	.01327	.06635
<b>Total</b>	<b>323</b>	<b>..</b>	<b>.91807</b>

$$\text{Average} = \frac{.91807}{323} = 0.00284$$

323

$$\text{Rate of attrition due to pre-retirement death is } -0.284\%$$

TABLE—7

## Attrition rate of Agricultural Personnel in Kerala

Category of Personnel	Rate of attrition due to		Attrition rate
	Retirement	Pre-retirement death	
Agricultural Graduates	0.400	0.228	0.628 (0.6%)
Agricultural Post-Graduates	1.360	0.284	1.644 (1.6%)
Total Agricultural Personnel	0.620	0.240	0.860 (0.9%)

THE UNIVERSITY OF CHICAGO

Department of Chemistry  
5708 South Woodlawn Avenue  
Chicago, Illinois 60637

Dear Sirs:

I am pleased to inform you that your application for admission to the Ph.D. program in Chemistry for the fall semester has been accepted. You will be joining the department in September.

Your advisor, Professor [Name], is pleased to have you as a student in his laboratory. He will be meeting with you in the next few weeks to discuss your research interests and the details of your program.

Please contact the department office at [Phone Number] if you have any questions.

Sincerely,  
[Name]

Yours truly,  
[Name]

Enclosed are your admission letter and a copy of the department's policies and procedures. Please read them carefully.

We look forward to your arrival and to working with you on your research.

Very truly yours,  
[Name]

cc: [Name]  
cc: [Name]

**3**

**UTILISATION OF VETERINARY PERSONNEL  
IN KERALA**



REPRODUCTION OF ANIMALS IN THE  
IN THE STATE

## UTILISATION OF VETERINARY PERSONNEL IN KERALA

### Introduction

The Animal Husbandry Programmes are given due recognition in the formulation of the Five Year Plans. In earlier periods the programmes were confined to the activities like disease control and extension. In subsequent plans, emphasis was given to improve the quality of the stock so as to give higher productivity of milk. The significance of the animal husbandry programmes and dairy and poultry development for the improvement of the rural economy and welfare of the small and marginal farmers and other weaker sections of the community is well recognised. By the development of this sector regional imbalances can also be reduced by increasing the per capita income of the community.

The Veterinarians have a leading role in the implementation of the animal husbandry programmes systematically and to usher in the white revolution. Activities like prevention and cure of animal diseases and upgrading of the local species will increase the level of income of the rural folk. The importance of the scientific management of the livestock was brought to light even five decades ago by the Royal Commission (1928). The Commission recommended long-term objectives in providing hospitals for live-stock. Man power Planning of the veterinary personnel is therefore an important ingredient to the animal husbandry programmes.

The object of the study is to assess the stock of Veterinarians in the State and the demand for and supply of veterinary graduates and post graduates in the State by the end of the Fifth and the Sixth Plan periods. In the estimation of the demand, programmatic-cum-normative approach is adopted. The supply of the Veterinary Graduates and Post-graduates is assessed on the basis of actual out-turn and anticipated out-turn from Veterinary College, Mannuthy. The anticipated annual out-turn is determined allowing seventeen per cent wastage. The pattern of utilisation of the Veterinary Personnel in the State is also furnished for which details collected from the concerned departments and institutions are used. An attempt is also made to assess the stock of Para Veterinary Personnel (Live-stock Assistants, Poultry Assistants etc.) and the demand for them for the Fifth and Sixth Plan periods.

### 2. Veterinary Education

The veterinary education is not very old as the agricultural education in the country. There were only five Veterinary Colleges in the early thirties located in Bombay, Lahore (Pakistan), Calcutta, Madras and Patna with limited intake capacity. Even in 1951 there were only eight Veterinary Colleges in the country with a total intake capacity of 434 for the Veterinary Graduate Course. In regard to facilities for Post-graduates studies, there was only one Post-graduate Veterinary College in 1957. In Kerala, the Veterinary College at Mannuthy was started in 1955 with an intake capacity of 70 students for B.V.Sc. Course. Later the college was affiliated to the Kerala Agricultural University which was established in 1971 with the following objectives.

1. Imparting education in different branches of study, particularly Agriculture, Horticulture, Animal Husbandry including Veterinary and Animal Sciences, Co-operation, Fisheries, Agriculture Engineering, Home Science and other allied branches of learning.

2. Furthering the advancement of learning and prosecution of research particularly in agriculture and other allied sciences.

3. Undertaking an extension education programme and

4. Such other purposes as the University may determine from time to time.

The University has at present three constituent Colleges.

1. College of Veterinary and Animal Science, Mannuthy.

2. College of Agriculture, Vellayani and

3. College of Horticulture, Mannuthy which was started in 1972.

In the College of Veterinary and Animal Science facilities for conducting Post-graduate courses are expanded and Research Programmes in various fields are started.

The staff pattern of the Animal Husbandry and Veterinary Personnel in the Agricultural University (1976) is as shown below:—

<i>Name of Post</i>	<i>No. of sanctioned posts</i>	<i>No. of posts filled up</i>
Dean	1	1
University Professors	11	11
Junior Professors/Readers/Officers-in-charge of Training Courses	16	10
Lecturers	42	36
Extension Assistants/Veterinary Surgeons etc.	10	10

The University has notified for the recruitment of the personnel in the following category of posts to meet the additional requirements due to expansion of the University in the V Plan period.

<i>Name of post</i>	<i>No. notified</i>
Professor	1
Associate Professors	6
Assistant Professors	11
Instructors	6
Junior Instructors	10

### 3. Wastage in Veterinary Education in Graduate level.

In 1958 the perspective planning division of the Planning Commission conducted a study on wastage rate in six Veterinary Colleges. In the four year Veterinary Graduate Course, the wastage rate was estimated to be 23%.

Another estimate made by the Ministry of Agriculture is 16% based on the average out-turn of Veterinary Graduates for the period 1964 to 1966. The average out-turn for these years worked out to 84.4% of the total intake indicating a crude wastage rate of 16%.

The I.A.M.R. has recently estimated wastage rates for B.V.Sc and M.V.Sc. Courses for the last decade. The wastage rate for B.V.Sc. works out to 20.6% and that for M.V.Sc. to be 10.3% (See Appendix I, II).

The Man Power cell of the Ministry of Agriculture, Government of India has also calculated the wastage rates for B.V.Sc. and M.V.Sc. Courses. These are based on the admissions and corresponding out-turn of the B.V.Sc. and M.V.Sc. for the last decade. The wastage rates are worked to be 21.5% in B.V.Sc. and 10.5% in M.V.Sc. Courses.

The wastage rate of Veterinary Graduates in the State is calculated based on the admission and corresponding out-turn. The estimate is made in the following table.

**Wastage rate of B.V.Sc. in the State**

Total intake over a period of 5 years ending		Total out-turn over a period of 5 years ending		Out-turn as percentage of corresponding intake Col. 4 —x 100 Col. 2	Estimated wastage 100—Col.5
Year	Number	Year	Number	(5)	(6)
(1)	(2)	(3)	(4)	(5)	(6)
1967	234	1971	186	79	21
1968	237	1972	193	81	19
1969	229	1973	183	80	20
1970	214	1974	182	85	15
1971	218	1975	187	86	14
1972	208	1976	182	88	12
Average				83	17

From the above table it is seen that the average wastage of students admitted during the period 1963 to 1972 is 17% which is nearly 4% below the estimate made by the I.A.M.R. and the Ministry of Agriculture. It is also striking to note that the wastage in different periods is less than the all India estimate.

#### 4. Animal Husbandry activities in the Five Year Plans

Animal Husbandry was one of the least developed sectors in the economy. According to 1956 Live-stock census Kerala had 25.1 lakh cattle and about 4.9 lakh buffaloes making a total bovine population of 30 lakhs. Of these 5.6 lakh cattle population and 2.6 lakh buffaloes were used for drought purposes. The census revealed that Kerala had only 74 milch cows and buffaloes per 1000 population while the all India average was 177. The quality of the indigenous stock was also very poor. The average lactation yield of cows and buffaloes in the State was 400 lbs. which was very low when compared to other States. The per capita availability of milk was 50 ml. as against all India average of 140 ml.

A summary of important achievements under animal husbandry programmes during the first three plans were as given under.

1. It was possible to cover only 25% of the breeding cattle population through key village Blocks and artificial insemination centres upto the end of the Third Five Year Plan period.

2. The progress made in the upgrading of native cows with exotic varieties was not sufficient to meet the increasing demand for milk.

3. The programme of selective breeding with Malabar goats and upgrading of the indigenous stock for meat and milk by a process of mixed breeding with selective strains had yielded promising results.

4. A bacon factory in the public sector was started.

5. Poultry development works had succeeded in improving the quality of the State's poultry.

The Fourth Plan aimed at raising the per capita availability of live-stock products considerably over the Plan period. The plan for cattle development covered the breeding needs over 50% of the cattle population, there by achieving the target of per capita availability of 140 ml. of milk per day. In piggery and poultry development the aim was to double the production during the Plan period. The estimated milk production in the State stood at 4% lakh tonnes in 1973-74 yielding a per capita consumption of 60 gms. per day. This per capita availability of milk is far below the level of 230 gms. for a balanced diet recommended by the I.C.A.R.

The programmes in the Fifth Five Year Plan aim at the production of milk to the level of 5.50 lakh tonnes in 1978-79. In order to achieve this target co-ordinated and concerted programmes for the development of the infra structural facilities like improvement of the quality of the stock, provision of veterinary aid, etc., are visualised. The following are some of the important schemes/institution under the Animal Husbandry programmes in the State.

1. District live stock farms and Dry stock farms.
2. Jersey cattle breeding-cum-cross breed farms.

3. Key Village Blocks
4. Intensive Cattle Development Projects.
5. Cross breeding schemes
6. Fodder development schemes
7. Feed factories
8. Prevention of contagious and infectious diseases among livestock.

The number of institutions for veterinary aid in Kerala was almost doubled during a period of 15 years from 1960-61. There were 59 hospitals, 143 dispensaries and 4 mobile dispensaries in 1960-61 and in 1975-76 the number of these institutions increased to 397 altogether. The institutional progress in veterinary aid in Kerala since 1960-61 is shown in the following table.

**Progress in the number of Veterinary Hospitals and Dispensaries in Kerala**

(In Numbers)

Year	Hospitals	Dispensaries	Mobile Dispensaries	Total	Index of growth
(1)	(2)	(3)	(4)	(5)	(6)
1960-61	59	143	4	206	100
1965-66	59	182	4	245	119
1970-71	61	259	11	331	161
1971-72	62	263	10	335	163
1972-73	60	282	10	352	171
1973-74	60	285	10	355	172
1974-75	69	295	11	375	182
1975-76	72	313	12	397	193

The other important physical achievements under animal husbandry programmes are given in appendix III. A list of institutions dealing with animal husbandry activities under the Animal Husbandry Department is also given as Appendix IV.

**5. Stock and Utilisation pattern of Veterinary Graduates and Post-graduates**

For the estimation of the stock of Veterinary Personnel, the 1971 census records are one source of data. In the 1971 census it is estimated that there were 620 Veterinarian in the state of whom 25 persons were employed in agriculture and allied industries and the remaining 595 persons in other services. The Man Power Division of the state Bureau had collected the stock of Veterinary Personnel actually employed in the state in 1975 from the concerned departments and institutions. In the estimation, the stock of the

Veterinary Graduates employed was found to be 514 and the Post-graduates numbered 82. If we add out-turn of Veterinary Graduates every year from the Veterinary College, Mannuthy to the number of Veterinarians in other services as given in 1971 census and allow 1% attrition for retirement etc., the stock since 1971 would be as shown below.

Year	Stock in the beginning of the year	Out-turn	Net stock at the end of the year allowing 1% attrition loss
1971-72	595	36	626
1972-73	626	42	661
1973-74	661	32	686
1974-75	686	41	720

Thus the stock of Veterinarians in Kerala in 1974-75 would be 720. But the stock of both the Veterinary Graduates and Post-graduates estimated by the Bureau for the period was 596. This figure relates to the active stock of Veterinarians in the state during the period. There were 117 Veterinary Graduates seeking employment in 1975 as per the live register of the employment exchanges. If we add the unemployed persons to the active stock we get the total stock to be 713 in 1975. This is very near to the estimate made on the basis of census figures. There will be a few pensioners who are practicing in treatment of livestock and animal husbandry as a part-time job. The number of such persons may come to 25.

### Utilisation Patterns:

The pattern of utilisation of the Veterinary Personnel employed in the state in 1974-75 was as shown below.

Organisation	Veterinarians employed					
	Graduate		Post-graduate		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
Central Government Establishment	20	3.9	..	..	20	3.3
Animal Husbandry Department	428	83.3	22	26.8	450	75.3
Other Departments	58	11.2	2	2.5	60	10.1
Educational Institutions	5	1.0	58	70.7	63	10.6
Banks	3	0.6	..	..	3	0.5
<b>Total</b>	<b>514</b>	<b>100.0</b>	<b>82</b>	<b>100.0</b>	<b>596</b>	<b>100.0</b>

The above table reveals that the A.H. Department is the major employer of the Veterinarians in the State. More than three-fourth of them are absorbed in various categories of posts in the Department. A ten per cent of the Veterinarians mostly Post-graduates are employed in educational and research institutions under Kerala Agricultural University. The Indo-Swiss Project is the important Central Government establishment employing Animal Husbandry Personnel. The Commercial operations of the Dairy Development Department has been taken over by the Live-stock Development and Milk Marketing Board. Utilisation of the Veterinary Personnel in these institutions is briefly described in the following sections.

### **Department of Animal Husbandry**

The department of animal husbandry in the State is responsible for implementing schemes relating to animal welfare activities including the livestock and the poultry production. During the year 1975-76 there were more than 950 institutions functioning under its control. The Director of Animal Husbandry was assisted for technical matters by one Additional Director responsible for S.F.D.A. Programmes, two Joint Directors one for animal husbandry and the other for poultry development and four Deputy Directors besides two Assistant Directors and other supporting staff. Of the Assistant Directors, one is concerned with Key Village Blocks to work in co-operation with the Deputy Director and other Assistant Director is responsible for swine Husbandry Programmes. The following are the activities of the Deputy Directors at the Headquarters.

1. Extension
2. Key Village Blocks
3. Veterinary Programmes
4. Livestock Development

The district administration is rested with the eleven District Veterinary Officers. He has both the technical and the administration control over the various institutions like Veterinary Hospitals, Dispensaries A.I. Centres, K.V. Centres etc., in the district. The details regarding the number of institutions under the control of the District Veterinary Officers in each District is given in Appendix V. The Senior Veterinary Officers who are also in the same cadre of the District Veterinary Officers, are not under the control of District level administration. A few district hospitals are functioning under the direct control of the Senior Veterinary Officers. Similarly the Veterinary Hospitals and Dispensaries under I.C.D.P.etc., will not come under the control of the District Veterinary Officers. In technical matters the District Veterinary Officer is assisted by a Veterinary Surgeon at the district headquarters.

### **Livestock Development**

The animal husbandry activities in the N.E.S. Blocks are carried out by the Extension Officer, Animal Husbandry.(redesignated as Veterinary Surgeon)



of each Block, the District Veterinary Officer holds the technical control over the activities of the Extension Officers. The Deputy Director (Extension) in the Directorate exercises overall control of the animal husbandry programmes of the N.E.S. Blocks in the State.

The scheme of Key Village Blocks which aims at the improvement of productivity of cows continues in 14 Blocks. At present there are 158 sub-centres under these Blocks. The administrative control of the Key Village Blocks of a district is vested with the District Veterinary Officer while each key Village Block is placed under the control of a Key Village Officer, in the cadre of a Veterinary Surgeon. The Key Village sub-centres are put in charge of Livestock Assistants.

Besides the Key Village Blocks there are 30 Artificial insemination centres and sub-centres functioning under the control of the Department.

With a specific objective of stepping up milk production in a particular area by the improvement of cattle, two Intensive Cattle Development Projects are functioning in the State one at Alwaye and another at Palghat. Each I.C.D. Project is managed by a Project Officer assisted by an Assistant Project Officer in each Regional Artificial Insemination centre under the Project. There are altogether 6 Regional Artificial Insemination centres and 162 sub-centres working under these two projects of which 4 Regional Artificial Insemination centres with 100 sub-centres are under the Project at Alwaye.

Another project for the improvement of the cattle started in the State is the cross breeding scheme sponsored by the I.C.A.R. Since April 1974 the scheme continues as the State scheme as no provision is made available from I.C.A.R. The scheme operates in two centres one at Neyyattinkara and another at Chalakudy. Each centre is managed by a Senior Veterinary Officer.

The Department runs a livestock farm at Kudappanakkunnu in Trivandrum which is only one of its kind in the State. The farm is under the administrative control of a Superintendent in the cadre of an Assistant Director. Two dry stock farms and a Veterinary Dispensary are functioning under his control. Each dry stock farm is under the immediate supervision of a Veterinary Surgeon. These farms are also engaged in the implementation of fodder development schemes in the farm area and maize and hybrid napier are cultivated.

For the development of fodder cultivation in the State, a fodder development office is functioning at Alwaye under the fodder development officer. There is a scheme for running a composite farm, i.e. a farm for breeding pureline jersys and for cross breeding of jersys utilising the jersy as the donor breed. The farm is located at Vithura in Trivandrum District. The farm is under the direct control of an Assistant Project Officer.

In the programmes for cattle development the Intensive Cattle Development Projects functioning in the State with headquarters at Alwaye and Palghat deserve special mention. The project is functioning with a specific objective

of stepping up milk production in a particular area to a targeted level within a specific period. The Project at Alwaye was started in 1969 with four Regional Artificial Insemination Centres, each located at Alwaye, Vaikom, Kanjirappally and Mavelikkara. The Project at Palghat was started in 1973 with two Regional Artificial Insemination Centres one at Palghat and the other at Trichur. Twenty-five sub-centres are functioning under each R.A.I.C. Each Intensive Cattle Development Project is managed by a Project Officer assisted by each Assistant Project Officer in each Regional Artificial Insemination Centre.

The piggery development programme of the Department is implemented by the Pig Development Officer at Alwaye. The object of the intensive pig development scheme is to support the rural economy through pig rearing. A bacon factory which was started under the scheme was transferred to the Agro—Industries Corporation.

### **Poultry Development**

The administration of the poultry development programmes of the Department is vested with the Joint Director at the headquarters. The Department has under its control four Regional Poultry Farms, three District Poultry Farms, one Broiler Farm, a Central Hatchery, a Duck Farm and two Intensive Poultry Development Blocks. The Regional Poultry Farms function under the control of the Assistant Directors. Under the Regional Poultry Farms there are panchayat poultry units to popularise the hybrid varieties of the poultry in the rural areas. The District poultry farms are functioning under the charge of Veterinary Surgeons. The administrative control of the farm is vested with the concerned District Veterinary Officer, while the technical control on the Farm is exercised by the Assistant Director, Regional Poultry Farm.

In the programmes for poultry development, the establishment of the Central Hatchery at Chengannur in Alleppey District during 1961-62 was a significant step. The unit is under the immediate control of Production Manager in the cadre of the Assistant Director. The Central Hatchery continues its activities of Commercial hatching and distribution of improved strains of white leghorn chicks and operation of white leghorn breeding programme. In addition to these activities, a mobile veterinary unit, a feed compounding factory, a duck farm at Niranam and a chick sexing school are functioning under its control.

The egg collection and marketing scheme at Chengannur was started functioning in 1964. The implementation of the scheme is vested with the superintendent of the scheme. The scheme is operated through different sales depots functioning in different districts of the State. The Duck Farm at Niranam was started in 1966 under the administrative and technical control of the Production Manager, Central Hatchery. The Farm functions under the immediate supervision of a Manager.

The Broiler Farm, Pettah in Trivandrum was started in 1962 under the control of the Regional Poultry Farm, Kodappanakunnu. Subsequently the farm was raised to the status of a District Farm and a Veterinary Surgeon is in charge of the Farm.

The two Intensive Poultry Development Blocks, one at Pettah and another at Muvattupuzha are under the control of each Project Officer assisted by each Assistant Project Officer.

For the development of Poultry in the Cannanore district, the Cannanore District Poultry Farming and Marketing Co-operative Society was organised at Pariyaram in 1967. Financial assistance for the implementation of the poultry programmes is given by the Agricultural Refinance Corporation. The technical control of the scheme is vested with the Assistant Director (Poultry) whose headquarters is at Cannanore.

Details of flock strength and production and distribution of eggs in different poultry farms are given in Appendix VI.

### **Disease Investigation and Control Programme**

The programme is carried out by the Chief Disease Investigation Officer. Under him three investigation units, one each for poultry, cattle and T.B. are functioning under the immediate control of each Disease Investigation Officer. The disease investigation for cattle is being carried out on various aspects of cattle diseases. The Disease Investigation Officer also examines various material received from the field and communicate the results for taking necessary action. In the disease investigation unit for poultry, in addition to the regular study of poultry diseases, causes for the mortality among birds in the poultry farms and causes of chick mortality in the private farms etc., are investigated. The disease investigation unit for T.B. aims at a systematic control of T.B. in organised herds with the ultimate object of eradicating the disease from the State for the development of a healthy livestock.

In addition to the three institutions for disease investigation programme, a Veterinary and Biological Institute is also functioning in charge of a Superintendent for the manufacture of vaccines to control different diseases among the cattle and poultry.

The scheme for the eradication of Rinderpest among cattle was started in 1965 with headquarters at Palghat. One Deputy Director is in charge of the scheme. The scheme envisages the establishment of checkposts and vigilance units at the interstate borders and mobile units for intensive vaccination work within the State.

Employment pattern of technical personnel in the Department of Animal Husbandry is given in Appendix VII.

## Kerala Livestock Development and Milk Marketing Board

The agrarian economy of the State is characterised by severe under-employment. Therefore in the formulation of programmes, greater emphasise should be given to such schemes which are capable of providing large scale employment in rural areas. In other words, the essentials of development strategy should be an integrated approach to encourage agro-based activities such as animal husbandry and dairying so as to expand opportunities for rural employment. The Kerala Livestock Development and Milk Marketing Board was constituted as a fully Government owned company on 14-11-1975 with the objective of co-ordinating and integrating various dairy development programmes hitherto undertaken by different agencies like the Department of Animal Husbandry, Indo-Swiss Project and Dairy Development Department. The activities also include the management of all the milk schemes and commercial functions of the above agencies such as the administration of dairy plants, chilling plants, Bull stations cattle feed compounding factory etc. The following institutions were brought under the direct control of the Board with effect from 1-5-1976.

1. L. & P. Feed Factory from Animal Husbandry Department.
2. Units transferred from Dairy Development Department.
  - (i) Central Dairy, Trivandrum
  - (ii) Alleppey Milk Scheme.
  - (iii) Ernakulam Milk Project.
  - (iv) Chilling plants at Muvattupuzha, Vellathuval, Kattappana, Vandiperiyar, Vagamon, Thodupuzha, Munnar, Ankamaly, Patticadu, Mavelikara, Quilon, Cannanore and Yeroor.
  - (v) Dhoni Bull Station.
3. Indo-Swiss Project, Mattupetti and its units.

The L. & P. Feed Factory situated at Malampuzha in Palghat District is the only feed factory situated in Kerala. The unit has an installed capacity of 35 tonnes per shift of 8 hours duration. The production has achieved an all time record of 10600 tonnes in 1976-77. There is a proposal to run the factory in three shifts and for this purpose an expansion programme is being worked out.

The milk projects of the Board consists of the milk supply schemes in Trivandrum, Alleppey and Ernakulam and the nine chilling plants mentioned above. The installed capacity of the Trivandrum milk scheme was 6000 litres a day. By increasing refrigeration and storage facilities the capacity has now been raised to 10000 litres a day. The milk chilling plant at Yeroor, milk co-operative societies and the Government farm at Kudappanakunnu are the agencies supplying milk to the Dairy. The plant under the Alleppey milk supply scheme has an installed capacity of 2000 litres a day. The chilling plants at Quilon and Mavelikkara each having a capacity of 2000 litres a

day are under the scheme. The Ernakulam Dairy scheme has a capacity of 10000 litres a day and distributes 12500 litres every day. The entire quantity of milk is collected from the eight chilling plants under the scheme. In addition to these schemes three chilling plants are under construction. The schemes for the installation of a chilling plant at Neyyattinkara with a capacity of 10000 litres and for the enhancement of the capacity of the plant at Trichur to 10000 litres are also under active consideration of the Board.

The Dhoni Farm, now under the control of the Board, is intended to produce and supply CME Semen required for the districts of Kottayam, Ernakulam, Trichur, Palghat, Malappuram, Kozhikode and Cannanore. Steps have been taken to produce frozen semen from this farm. It is expected that the frozen semen will be made available from Dhoni by July 1977. The entire area of the above districts will be brought under the insemination programme with the frozen semen by the end of 1979.

The Indo-Swiss Project which was set up with the assistance of Swiss technical co-operation service started functioning in 1963 at Mattupetty. The project has two aims (1) Creation of new breed of cattle which is adapted to Indian conditions and (2) Systematic promotion of fodder development. The project is now having three farms Mattupetty, Peermade and Kulathupuzha. Frozen semen is being produced at the Mattupetty and Kulathupuzha units. The Board is entrusted with the supply of semen and liquid nitrogen to more than 500 cattle breeding units run by the Departments of Animal Husbandry and Dairy Development. Peermade is an extension centre of the Mattupetty unit. There is also a training centre at Mattupetty to impart training in artificial insemination, fodder development, etc., to farmers and extension workers.

The Kerala Livestock Development and Milk Marketing Board is responsible for implementing different schemes for Dairy development in Idukki District under the Western Ghat Development Programme.

**Utilisation pattern of Veterinary Personnel in the Board is as shown below**

<i>Designation of the post</i>	<i>Minimum qualification for the post</i>	<i>No. of posts sanctioned 1976</i>	<i>No. of posts filled up</i>
(1)	(2)	(3)	(4)
Executive (Animal Husbandry)	B.V.Sc.	2	2
Superintendent	do.	1	1
Livestock Development Officer	do.	1	1
Plant Manager	do.	1	1
Feed Analyst	M.V.Sc.	1	1
Assistant Analyst	do.	1	1
Animal Husbandry Officer	B.V.Sc.	4	4
Cattle Breeding Research Officer	do.	1	1
Superintendent (Semen Bank)	do.	2	2
Veterinary Surgeons	do.	30	25
Cattle Breeding Officer	do.	4	..
Livestock Assistants	L. A. Training	19	11

Of the 48 posts sanctioned with qualifications B.V.Sc/M.V.Sc. 38 are filled up. Among the personnel whose minimum qualification prescribed in B.V.Sc. there are five post-graduates and four officers having advance training in Animal Husbandry.

In addition to the above veterinary personnel the Board has given employment to thirty-four dairying personnel for dairy development programme. Two of them are degree holders and the remaining are diploma holders in dairying.

In the expansion programme of the Milk Marketing Board 15 veterinary personnel are additionally required by 1978-79 in the following category of posts.

Executive (Animal Husbandry)	1
Animal Husbandry Officer	1
Cattle Breeding Research Officer	1
Veterinary Surgeons	10
Cattle Breeding Officer	2

#### 6. Demand for Veterinary Graduates and Post-graduates during V and VI Plan periods

Demand for veterinarians may arise due to attrition losses by retirement, death, etc., and due to the expansion programme of the departments and implementation of new schemes. The demand for veterinary graduates and post-graduates due to retirement, etc., is very few which is indicated by their age-group composition given below.

#### Age profile of the Veterinary Graduates and Post-Graduates employed as on 31-3-1975

Age group	Veterinary graduates		V. P. G.		Total	
	No.	% to total	No.	% to total	No.	% to total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
23 or below	2	0.4	..	..	2	0.3
24-28	41	7.9	2	2.4	43	7.2
29-33	146	28.4	39	47.6	185	31.6
34-38	227	44.5	12	14.6	239	40.1
39-43	69	13.3	13	15.9	82	13.8
44-48	14	2.6	14	17.1	28	4.7
49-53	12	2.3	2	2.4	14	2.4
54 & above	3	0.6	..	..	5	0.5
All groups	514	100.00	82	100.00	596	100.00

It is evident from the above table that the total loss due to retirement even by 1982 is only 15 graduates and 2 post-graduates if the retirement age is 55 years. In the University Department the retirement age is still higher (58 years). Therefore, new avenues of employment are to be explored to give employment to the new additions of the stock every year.

For the estimation of demand for a specific period the programmatic-cum-normative approach is generally adopted. The coverage of the Plan scheme and the recommended staffing pattern will give the number of personnel required for different categories of posts. The demand in the organised sector like Government Departments, Research Institutions, Banks, etc., are collected through the agencies concerned. The demand of the veterinary personnel in the private sector in the State is very few. The demands for the veterinary graduates and post-graduates during the Fifth Plan period according to programmes of the various institutions are estimated at 270 and 36 respectively.

In this connection it is imperative to assess the demand for the veterinarians according to certain norms. According to the recommendations of the State Manpower Committee, the Madras Government in 1972 had constituted a sub-committee to study the possibilities of creating additional employment opportunities for the veterinary personnel. The committee fixed the following norms in determining the veterinary graduates and para-veterinary personnel.

**(i) Veterinary Assistant Surgeons (B. V. Sc.)**

<i>Nature of work</i>	<i>Norm</i>
1. Veterinary aid	One Veterinary Assistant Surgeon for every 12,500 heads of livestock.
2. Dairy cattle development	One Veterinary Assistant Surgeon for every 5000 heads of females (cow and buffaloes) over 3 years of age.
3. Sheep development	One Veterinary Assistant Surgeon for every 20,000 sheep.
4. Piggery development	One Veterinary Assistant Surgeon for every 20,000 pigs.
5. Poultry development	One Veterinary Assistant Surgeon for every 50,000 fowls.

**(ii) Requirement of Post-graduates**

For all Animal Husbandry work one M.V.Sc. for every 10 B.V.Sc.

**(iii) Para-veterinary personnel—Livestock Assistants**

1. Veterinary aid		One Livestock Assistant for every
		Veterinary Surgeon
2. Dairy Cattle Development	5	do. for every B.V.Sc.
3. Sheep Development	5	do. for every B.V.Sc.
4. Poultry Development	5	do. for every B.V.Sc.
5. Piggery Development	5	do. for every B.V.Sc.

The livestock and poultry in Kerala in different periods are as shown below:—('000)

<i>Item</i>	1966 <i>Census</i>	1972 <i>Census</i>	1978*	1984*
Total live stock	4641	4936	5252	5588
Female (Cows & Buffaloes) over 3 years	1354	1456	1565	1682
Goat	1201	1478	1817	2235
Other Livestock	112	130	152	178
Poultry	9909	12207	15015	18468

*Source*:—Livestock Census.

\*Estimated according to previous growth rate.

As there is every scope for the development of poultry in the State and there are programmes for increasing the number of poultry units and quality of fowls the number of poultry will definitely increase during the Sixth Plan period. In regard to the programme for livestock development, it is true that the stress is more on the improvement of the quality than the increase in the number. But it is expected that the number of the live stock will also increase due to programmes like S.F.D.A. and M.F.A.L.

The requirements of B. V.Sc. according to the norm for different programmes by 1978 and 1984 are indicated below.

<i>Programme</i>	<i>Requirement of B.V. Sc.</i>		
	1972	1978	1984
(1)	(2)	(3)	(4)
Veterinary aid	395	420	447
Dairy Development	291	313	336
Goat Development	74	91	112
Piggery Development	6	8	9
Poultry Development	244	300	370
Total B. V. Sc.	1010	1132	1274

Requirements of M.V.Sc. according to the norm, one M.V.Sc. for every 10 B.V.Sc. by 1978 and 1984 will be 113 and 127 respectively.

It is a recognised fact that the economic conditions of the rural community, the bulk of which are marginal farmers and landless agricultural labourers, can be raised by introducing subsidiary occupations like animal husbandry, poultry keeping, etc. The scheme of the Special Animal Husbandry Programmes under S.F.D.A. is visualised to achieve this objective. The programme, has a special significance in the Kerala economy. Here, it is estimated that



nearly 12% of the households possess no land and 61% of the households are in the group possessing less than one acre. Therefore it is quite reasonable to cover all the eleven districts of Kerala by the programmes of S.F.D.A. and M.F.A.I. In order to implement the special animal husbandry programmes, veterinary aid, etc., there should be one B.V.Sc. in every Panchayat for veterinary aid, disease control, etc., and one for every two Panchayats for extension and other programmes like dairy development, poultry development, etc. This target may be achieved towards the end of the Sixth Plan period. Therefore in order to cover about 970 Panchayats in the State the total requirement of B. V. Sc. will be 1455. The requirements of the B. V. Sc. based on the jurisdiction can be adjusted according to actual need of the area and the total requirements can be adjusted according to the norm fixed on the basis of livestock and poultry population. Therefore the total demand of B. V. Sc. towards the end of the Sixth Plan may be taken as 1274.

The total requirement of Post-graduates towards the end of Sixth Plan on the basis of the post-graduate—graduate ratio 1:10, will be 127 as mentioned above. As there are programmes of expansion of the University and establishment of research centres for disease investigation, biological research, etc., this demand will not be on the high side.

#### **7. Supply of Veterinary graduates and Post-graduates**

The only institution imparting veterinary education in the State is the Veterinary College at Mannuthi in Trichur District. While the institution was started in 1955, the intake was 70 students for B. V. Sc. and the actual intake was increased to 80 till 1959. Now, the intake is limited to 40. The actual intake and out-turn for students of B.V.Sc. since the inception of the College are given in Appendix. The post-graduate course was started in 1965. Though the number of seats for M.V.Sc. is 20 the actual intake was found to be always less than the sanctioned strength. The actual intake and out-turn of the M.V.Sc. is also given in the Appendix VIII.

In the estimation of out-turn of B.V.Sc. a 17% wastage is attributed. Though loss due to retirement is negligibly small, one per cent attrition of the total stock of every year is applied as there may be loss due to outmigration, etc., which is not studied separately. Even this estimated loss will be less than ten every year. Based on these assumptions and the estimated effective stock of 720 B.V.Sc. in 1975, the total effective stock in 1978 will be 795 and the estimated requirement according to programmes comes to 900. Thus there will be a shortage of 105 B.V.Sc. towards the end of the Fifth Plan period. The effective stock of B.V.Sc. by 1984 will be 940 against the total requirements of 1274 according to the norms. The shortage of B.V.Sc. by 1984 will be above 300.

#### **8. Demand and supply of para-veterinary personnel (Livestock Assistants, Poultry Assistants etc.)**

According to 1971 census there were 680 persons in the cadre of Livestock Assistants in the State. In 1976, there were 1060 persons in the cadre in the

Department of Animal Husbandry alone and the total stock of the Livestock Assistants including those employed in other Departments and the Agricultural University is estimated at 1135 in 1976. The supply of the Livestock Assistants is according to requirements and they are given training in the Veterinary College after recruitment. Therefore, there will not be the problem of deficit/excess supply of personnel in the category of Livestock Assistants. The requirements of para veterinary personnel according to the norm mentioned earlier will be as follows:

<i>Programme</i>	<i>Norm</i>	<i>Requirement</i>	
		1978	1984
Veterinary aid	One for every B.V.Sc.	420	447
Dairy Development	5 "	1565	1680
Goat	5 "	455	560
Piggery	5 "	40	45
Poultry	5 "	1500	1650
Total		3980	4382

Perhaps the demand of the para veterinary personnel according to the above norm cannot be fulfilled due to financial constraints. But it is quite reasonable to have the para veterinary personnel at the rate of three for every Panchayat towards the end of the Sixth Plan, one for veterinary aid and the other two for other programmes. Therefore, considering their requirement in municipal and corporation areas as well, the total demand of the para veterinary personnel towards the end of the Sixth Plan will be nearly 3,000.

## 9. Conclusion

The scientific management of the livestock is an important factor in the animal husbandry programmes. The Veterinarians have a leading role in this regard. In Kerala there were 514 graduates and 82 post-graduates in veterinary science employed in different departments and institutions during 1975. Of them 83% of the B.V.Sc. were absorbed in the Animal Husbandry Department alone. In regard to the post-graduates the Kerala Agricultural University is the major employer. Nearly two-third of the post-graduates were employed in the University departments and research stations.

The Veterinary College, Mannuthy affiliated to the Kerala Agricultural University is the only institution in the State imparting veterinary education. There are also facilities for post-graduate studies and research in the University. The intake of students for B.V.Sc. when the College started in 1955 was 70 and the capacity is reduced to 40 at present.

According to the estimate made by the I.A.M.R. the wastage rate of B.V.Sc. course is 20.9%. The Manpower cell of the Ministry of Agriculture, Government of India worked out the wastage rate for B.V.Sc. to be 21.5%. The

wastage rate of veterinary graduate in the Veterinary College of the State is calculated to be 17% based on the admissions and corresponding out-turn.

The stock of veterinarians in the State is estimated to 720 in 1975 considering the number of persons actually employed and the number of persons seeking employment. The effective stock of the veterinarians by 1978 and 1984 is worked out to be 795 and 940 respectively. Though the loss due to retirement is negligibly small one per cent attrition adopted by the Ministry of Agriculture is followed in the estimation of the stock.

The demands for the veterinary graduates and post-graduates are estimated on the basis of the programmes for the Fifth Plan period. It is found that there will be a deficit of 105 B.V.Sc. by the end of the Fifth Plan period for the implementation of the programme. In regard to the post-graduates, their supply and demand are almost balancing.

The demand for the veterinarians by 1978 and by 1984 is also estimated adopting certain norms fixed in relation to the livestock population. According to the norm the requirement of the B.V.Sc. by 1978 will be 420 for veterinary aid, 313 for dairy development, 19 for goat development, 8 for piggery development and 300 for poultry development. Thus total requirement by 1978 will be 1132 B.V.Sc. and 113 post-graduates (one post-graduate for every 10 B.V.Sc.). Similarly the total requirement of the B.V.Sc. and M. V. Sc. by 1984 will be 1274 and 127 respectively. The demand is also estimated according to requirements for specific area. It is quite reasonable to have one veterinary surgeon for veterinary aid in every Panchayat and another one for every two Panchayats for Dairy development, Poultry development, extension, etc. In order to cover nearly 970 panchayats the requirements of B.V.Sc. will be 1455. This total demand may be limited to 1274 by adjusting the requirement according to actual need. This target may be achieved by the end of the Sixth Plan period. As there are programmes of expansion of the University and establishment of research centres for disease investigation, biological research, etc., the demand of 127 M.V.Sc. by 1984 will not be on the high side.

The requirement of the para veterinary personnel (Livestock Assistants, Poultry Assistants, etc.) towards the end of the Sixth Plan will be about 3000.

The animal husbandry programmes are considered to be the pivot of rural development. The activities like veterinary aid, dairy development, poultry keeping, piggery development, etc., have a leading role to improve the economic conditions of the small and marginal farmers and other weaker sections of the community. The special animal husbandry programmes under S.F.D.A. have greater significance in this context. These programmes are now implemented by the Department of Animal Husbandry, Dairy Development and the Kerala Livestock Development and Milk Marketing Board. The activities of these agencies may be co-ordinated so as to obtain the maximum benefit to the community in the implementation of different schemes. For example, programmes for increasing milk production in an area should be implemented along with the expansion of marketing facilities. Therefore it may be more appropriate to assess the demand for the veterinarians for different activities jointly by these agencies.

## APPENDIX I

## Wastage rate for B.V.Sc. worked out by I.A.M.R.

<i>Total intake over a period of 5 years ending</i>		<i>Total out-turn over a period of 5 years ending</i>		<i>Out-turn as percentage of intake</i> Col. 4 $\frac{\text{---}}{\text{---}} \times 100$ Col. 2	<i>Estimated wastage</i> 100—Col. 5
<i>Year</i>	<i>Number</i>	<i>Year</i>	<i>Number</i>		
(1)	(2)	(3)	(4)	(5)	(6)
1960	6330	1964	4790	75.7	24.3
1961	6507	1965	4949	76.1	23.9
1962	6556	1966	5152	78.6	21.4
1963	6414	1967	5145	80.2	19.8
1964	6371	1968	5257	82.5	17.5
1965	6483	1969	5297	81.7	18.3
Average				79.1	20.9

## APPENDIX II

## Wastage rate for M.V.Sc. worked out by I.A.M.R.

<i>Total intake over a period of 5 years ending</i>		<i>Total out-turn over a period of 5 years ending</i>		<i>Out-turn as percentage of</i> Col. 4 $\frac{\text{---}}{\text{---}} \times 100$ Col. 2	<i>Estimated wastage</i> 100—Col.5
<i>Year</i>	<i>Number</i>	<i>Year</i>	<i>Number</i>		
(1)	(2)	(3)	(4)	(5)	(6)
1961	353	1963	298	85.4	15.6
1962	458	1964	386	84.3	15.7
1963	517	1965	467	90.3	9.7
1964	644	1966	613	95.2	4.8
1965	792	1967	754	95.8	4.2
1966	971	1968	854	88.0	12.0
Average				89.7	10.3

## APPENDIX III

## Physical Achievement under Animal Husbandry Programmes

<i>Item</i>	<i>Unit</i>	<i>1973-74 position</i>	<i>V Plan target</i>	<i>Achieve- ment 1976-77</i>
Milk production	('000 tonnes)	410	550	500
Egg production	(million)	800	1200	1040
Meat	('000 tonnes)	260	..	500
Intensive cattle development projects	(No.)	2	continue	
Key Village Blocks	(No.)	14	continue	
Establishment of cattle breeding farm	(No.)	1	2	1
Establishment of poultry farms	(No.)	9	2	2
Intensive Egg and Poultry production- cum-marketing centre		1	Expansion programme	
Piggery Development Blocks		5	Expansion programme	
Pig breeding farm		..	1	1
Rinder pest eradication check posts		14	3	2
No. of vigilance units		2	3	3

## APPENDIX IV

## List of institutions under A.H. Department

Sl. No.	Name of institution and location
1	District Veterinary office
2	"
3	"
4	"
5	"
6	"
7	"
8	"
9	"
10	"
11	"
12	Senior veterinary office
13	"
14	"
15	"
16	Intensive cattle development project
17	"
18	Regional Artificial Insemination centre
19	"
20	"
21	"
22	"
23	"
24	Cross breeding centre
25	"
26	District livestock farm
27	Dry stock farm
28	"
29	Fodder development office
30	Pig development office
31	Regional Poultry farm
32	"
33	"
34	"
35	Central Hatchery
36	Egg collection and marketing scheme
37	Intensive Poultry development block
38	"
39	Broiler farm
40	Poultry development scheme
41	Jersey farm
42	Rinder pest eradication scheme
43	Veterinary and Biological institute
44	Disease Investigation office (T.B.)
45	" (Cattle)
46	" (Poultry)

Trivandrum  
 Quilon  
 Alleppey  
 Kottayam  
 Idukki  
 Ernakulam  
 Trichur  
 Palghat  
 Malappuram  
 Calicut  
 Cannanore  
 Trivandrum  
 Alleppey  
 Kottayam  
 Cannanore  
 Alwaye  
 Palghat  
 Alwaye  
 Vaikom  
 Kanjirappally  
 Mavelikkara  
 Palghat  
 Trichur  
 Neyyattinkara  
 Chalakudy  
 Kudappanakkunnu  
 Kuriottumala  
 Palode  
 Alwaye  
 Alwaye  
 Kodappanakkunnu  
 Koovappady  
 Malampuzha  
 Mundayad  
 Chengannur  
 Chengannur  
 Pettah  
 Muvattupuzha  
 Pettah  
 Cannanore  
 Vithura  
 Palghat  
 Trichur  
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**Number of Institutions under the control of the District Veterinary Officers]  
1975-76**

Institutions	Trivan- drum	Quilon	Alleppey	Kottayam	Idukki	Erna- kulam	Trichur	Palghat	Mala- ppuram	Kozhi- kode	Canna- more
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Veterinary hospitals	6	9	5	4	6	8	7	9	2	4	3
Veterinary dispensaries	31	39	29	18	13	27	39	21	22	22	30
Mobile veterinary dispensaries	1	1	1	1	1	1	1	1	..	1	1
Veterinary sub centres/ First aid centres	3	10	8	3	5	9	19	21	17	17	11
A-I centres	..	2	5	..	1	3	5	2	1	1	4
A-I sub centres	..	..	5	..	..	..	1	..	..	..	..
Key village blocks	3	3	..	..	..	..	..	..	2	2	4
Key village sub centres	36	36	..	..	..	..	..	..	20	26	40
Piggery unit	1	..	..	1	..	1	1	..	..	..	..
District Poultry farm	..	1	..	1	..	..	..	..	..	1	..
Goat farm	..	..	..	..	..	..	..	..	..	..	..
Central Veterinary store	1	..	..	..	..	..	1	..	..	1	..
Clinical Laboratory	..	1	..	..	..	..	..	1	..	..	..

## APPENDIX VI

**Flock strength and production of eggs in the poultry farms during  
1975-76**

<i>Name of Institution</i>	<i>Flock strength</i>		<i>Egg production</i>	
	<i>Total stock</i>	<i>Disposal</i>	<i>Total stock</i>	<i>Disposal</i>
(1)	(2)	(3)	(4)	(5)
1 Regional Poultry farm, Kudappanakkunnu	56314	49493	167590	163776
2 Regional Poultry farm, Koovappady	18922	15160	115639	115052
3 Regional Poultry farm, Malampuzha	17955	13753	129908	127885
4 Regional Poultry farm, Mundayad	26429	22554	167590	163776
5 District Poultry farm, Manacaud	8363	5659	152642	150450
6 District Poultry farm, Chathamangalam	15789	12367	143365	142392
7 District Poultry farm, Quilon	6196	3624	106272	102734
8 Broiler farm, Pettah	5883	4276	18360	18208
9 Central Hatchery, Chengannur	56826	47447	648063	633677



## APPENDIX VII

**Employment pattern of Animal Husbandry Personnel in the  
Department of Animal Husbandry 1975-76**

<i>Name of post</i>	<i>No.</i>
Director of Animal Husbandry (1150-1650)	1
Additional Director of Animal Husbandry (950-1450) (S.F.D.A.)	1
Joint Director (Poultry) (850-1450)	1
Joint Director (A.H.)	1
Chief Disease Investigation officer	1
<i>In the cadre of Deputy Director (750-1200)</i>	
Deputy Director (Extension)	1
Deputy Director (Key village blocks)	1
Deputy Director (Veterinary)	1
Deputy Director (Livestock Development)	1
Deputy Director (Rinder pest Eradication)	1
Production Manager	1
Project Officers (I.C.D.P)	2
Assistant Project officer (Jersey farm)	1
Project officer, Poultry development	2
<i>In the cadre of Assistant Directors (560-1100)</i>	
Assistant Directors (Poultry)	4
Assistant Director (Key Villages)	1
Assistant Director (Swine Husbandry)	1
Superintendent (District Livestock farm)	1
Superintendent (Veterinary Biological Institute)	1
Superintendent (Egg Marketing)	1
Assistant Project officers (I.P.D. blocks)	2
Disease Investigation officers	3
Pig Development officer	1
Quality control officer	1
Fodder Development officer	1
Senior Veterinary officers	11
Assistant Project officers (R.A.I. centre and L.S.P Feed factory)	7
District Veterinary officers	11
Veterinary Surgeons (grade I) 510-995	29
Veterinary surgeons (grade II) 445-835	424
Senior Instructor 445-835	1

## APPENDIX VIII

## Intake and out turn of B.V.Sc. and M.V.Sc.

(Veterinary College, Mannuthy)

Year	Graduate course		P.G. Course	
	Intake	Out-turn	Intake	Out-turn
1955	70	..	..	..
1956	80	..	..	..
1957	80	..	..	..
1958	80	..	..	..
1959	80	28	..	..
1960	79	58	..	..
1961	49	64	..	..
1962	50	64	..	..
1963	47	70	..	..
1964	54	72	..	..
1965	48	64	4	..
1966	35	57	8	2
1967	50	35	8	4
1968	50	42	9	9
1969	46	42	7	5
1970	33	31	13	5
1971	39	36	6	7
1972	40	42	7	8
1973	40	42	13	9
1974	62	41	18	6
1975	56	36	13	7
1976	43	31	10	7

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**4**

**EMPLOYMENT POTENTIAL OF THE FISHERIES  
DEVELOPMENT PROGRAMMES  
IN KERALA**

OFFICE OF THE ATTORNEY GENERAL  
STATE OF NEW YORK  
ALBANY, N. Y.

## EMPLOYMENT POTENTIAL OF THE FISHERIES DEVELOPMENT PROGRAMMES IN KERALA

### 1. Introduction.

The fishing industry occupies an influential and unique place in Kerala economy. The quantity, variety and value of fish and other products from different kinds of fisheries are considerable, but the ultimate worth and significance of fisheries are based on other factors which are difficult to measure in concrete terms. Fish provide a balanced diet to the undernourished people of the state. The food deficit in the state can be minimised by increasing the consumption of fish. Fish and fish products contribute considerable foreign exchange earnings. Above all the employment potential of the fishery and allied industries is very significant in the context of the grave situation of unemployment and underemployment in the state.

Though there was some progress in the growth of the fishing industry in the past decade, vast potentialities for the development of fisheries, especially in the field of marine fisheries, yet remain untapped. It is true that there is an increase in the annual landings of fish over the past decade. But it may be noted that the increasing trend in the annual fish landings in the country is not in pace with the growth in production in other parts of the world. During the period 1965 to 1974 the increase in production in Japan and the U.S.S.R. was almost 50% (6.91 to 10.25 and 5.10 to 7.76 million tonnes respectively). In China the increase was from 5.33 million tonnes to 7.57 million tonnes (42%) and the production in Thailand from 0.63 million tonnes to 1.68 million tonnes during the period. Increase in India's production during the period was from 1.33 million tonnes to 1.67 million tonnes (25%) (Vide table-1). In Kerala the increment was from 0.34 million tonnes to 0.45 million tonnes (32%) during the period. (See table-2). The stunted growth of the industry was due to the slow progress in the introduction of mechanisation and exploitation of the treasure in new areas. The dependance on the traditional methods of fishing in the limited and much exploited narrow inshore region bordering the coast line is the main reason for the slow progress in the fishing industry.

There are large potentialities in the development of fisheries in Kerala. The fishing industry provides employment opportunities not only in the primary sector, but in secondary and service sectors also. By the development of fisheries, ancillary industries like fish processing and canning, storage, ice plants are also flourishing and the employment potential in these fields is to be taken into account to have a clear picture of the impact of the fisheries development programmes on employment. In the present study an attempt is made to estimate the employment potential of the fisheries development

programmes for a period of ten years in the light of the progress so far achieved, fisheries potential which is not yet exploited and different projects proposed to be implemented.

## 2. Resource Potential.

### *Marine Fishery Resources:*

The marine fishery resources can be broadly classified into three groups. (1) Resources of the inshore fishing grounds, (2) Resources of the off-shore fishing grounds and (3) Resources of deep sea fishing grounds. The inshore area is defined as the traditional fishing zone along the coast upto 20-25 M. depth contour which is exploited by indigenous boats and gear. Many of the mechanised boats of small size are operating at the further end of this depth zone. The inshore belt of about 15 KM. from the shore, stretches about 590 KM along the coast line of Kerala. Since the beginning of 1960's shrimp trawling is carried out extensively in these waters. It is considered that not very substantial yield of pelagic fish is possible unless the area of fishing is extended further. The general pattern of fish distribution in grounds (18-50 m) revealed by exploratory surveys is that the elasmobranchs and miscellaneous fishes like small sciaenids, lizard fishes and flat heads are common all along the region from Cape Comorin to Calicut. In the northern sector from Calicut to Cannanore there is significant cat fish component.

In regard to deep sea fishing, most of the exploratory surveys conducted in the past were confined to depths upto 75 metres. Beyond this the continental shelf remained virtually a 'mare incognitum' as regards the occurrence of fishing grounds and potential yields. In the exploratory surveys conducted by the Indo-Norwegian project between 1966 and 1968, species like deep sea prawns were detected between Ponnani and South Alleppey.

The pelagic Fishery Project, Cochin, a joint venture of the Government of India, United Nations Development Programme and the Food and Agricultural Organisation which started functioning in 1971 has conducted several exploratory surveys. The Norwegian Agency for International Development (N.O.R.A.D.) also collaborated in the execution of the Project till March 1976. The project has established the fact that the resources of oil sardine and mackerel are much more than known. The average size of sardine and mackerel standing stock is estimated to be of the order of nearly 400,000 and 300,000 tonnes respectively. The average landings of oil sardine and mackerel for the last decade were only 208,000 and 79,000 tonnes. Hence there is considerable scope for increasing their catch further.

Apart from these two species, a continuous inshore belt of fish resources dominated by golden seads, silver bellies, glass perches etc., within the 15 M. depth line, was detected in the survey. The average standing stock of this shallow water resource per coverage period has been estimated to be about 60,000 tonnes. Beyond this depth dominant species are the white baits, cat fish, ribbon fish and horse mackerel. The white bait resources have been found to be particularly high in certain areas and times and an average stock of 5,00,000 tonnes have been estimated. It is found within 40 M. depths for most part of the year.

The resources of cat fish|ribbon fish are considerably large with an average stock of 200,000 tonnes. High concentrations of these are found in depths of 30 m and beyond mainly during May-August on the central and northern shelf and during January-May on the southern shelf. Another resource of considerable importance is the horse mackerel with an estimated average standing stock of 180,000 tonnes. These are found mainly in the middle and outer shelves during October-December and April-May. The Project surveys have also revealed the existence of resources of miscellaneous commercial fishes spread over the shelf. These are found to be of the order of about 390,000 tonnes.

The Pelagic Fishery Project is also of the view that the present level of exploitation of shallow mix resource is fairly high and offers little scope for further increase in the catches. But landings of white bait, cat fish, ribbon and horse mackerel are only marginal compared with their resources and there are possibilities for activating the operations based on these resources. Commercial quantities can be harvested using small boats rigged with pelagic trawls, bottom trawls and purse seines depending on the type of fish to be caught. An extension of the fishing season for mackerel and oil sardine is also possible using small purse seines during April-May, August-October when concentrations are found.

The continental shelf of India stretches along the coast line of about 5600 KM and it accounts for more than one-tenth of the entire country. Nearly 48 million hectares of fishable waters including off shore area is a blessing. The exploratory surveys indicate availability of 0.6 million tonnes of fish and prawns from the coastal belt upto 40 fathoms. At present except for about 5%, the entire fish production comes from inshore belt. The additional potential yield of the off shore area of different regions has been estimated as follows:



## Potential (Additional) Yield from off shore Area

State	Total area (Sq. miles)	Potential additional yield (Ton)		
		Shrimp	Other bottom fishes	Total (Rounded to '00)
Andhra Pradesh	5180	1088	25848	27000
Tamil Nadu	8400	7644	75852	83500
Kerala	7560	6880	30089	37000
Mysore	9240	5544	43613	49200
Maharashtra	14840	5194	124953	130100
Gujarat	28000	8680	260120	268800
Total	73220	35030	560475	595600

Thus it is revealed that there is a vast potential for commercial fishing in the Wadge Bank, especially for ground fishes. Similar trawling areas are also found in the Gulf of Cambay and the Gulf of Kutch.

The country is also blessed with extensive inland fishery resources also. The available culturable area the area that can be rendered suitable for sweet water fish farming and the area which can be developed for brackish water fish farming are estimated at 1.62 million hectares, 0.65 million hectares and 2.02 million hectares respectively. But of the total 4.29 million hectares of inland waters suitable for fish production, only about 0.61 million hectares (14.2%) have been partially utilised.

## Kerala

Kerala accounts for more than 25% of the total production in the country. With nearly 590 KM of coast line and other natural facilities, Kerala has very good fishing grounds. The most important economic species of the state are Sardine (20%), Prawns (13%), Mackerel (11%), Sharks (3%), Silver bellies (4%), Horse Mackerel (4%), Sole (3%) and Ribbon fish (3%). The continental shelf with an average width of about 50 KM has a fishable ground of nearly 25000 Sq. KM. But the present exploitation is limited to the inshore belt of 15 KM from the sea shore. The report published

by polish experts indicates the possibility of a ten-fold increase of fishing efforts and a five-fold rise in productivity as compared with the present annual average production in Kerala. The inshore belt is almost fully exploited and hence the Science and Technology sub-committee on Fisheries (Kerala) had recommended promotion of off shore and deep sea fishing by strengthening exploratory and experimental fishing outside the 40 fathom limit. The potential yield from the shelf region along Kerala coast alone is estimated at 1.30 million tonnes of fish of which the present exploited stock forms only one-third.

In a survey conducted to locate lobster fish 25 centres were identified, 8 centres in Kollengode area, 3 centres each in Varkala and Edava areas, 4 centres in Paravoor area and the remaining 7 centres in Quilon area. The total landings were estimated to be 3281 numbers in 1972-73 as against 3146 estimated in the previous year.

The inland fisheries consist of esturine fisheries and the fresh water fisheries. The former occurs in the esturine regions, the extensive back water areas running half way of the state from the south and the connected paddy fields, while the latter is seen in rivers, reservoirs and ponds. The state has a number of irrigation reservoirs, a large number of public tanks and ponds suitable for fish culture. Malampuzha, Walayar, Mangalam, Meenkara, Pothundy, Peechi, Periyar, Vazhani, Peringalkuthu, Neriamangalam, Kundala, Mattupetty, Sengulam and Neyyar are the important reservoirs in the state. At Sasthamcotta there is a fresh water lake.

There are 44 rivers in the state of which 41 are west flowing. Baliapatam, Anjarakandy, Chaliar, Bharathapuzha, Chalakudy, Pariyar, Moovattupuzha, Meenachel, Pamba, Manimala, Kallada and Neyyar are the important among them. The different types of Barbus SPP. (local carps) are commonly seen in the rivers. Estimated annual production of inland fisheries is about 8000 tonnes, 80% of which are Prawns and the scope for the development of fresh water fisheries is very limited. However, fisheries of exotic varieties are being developed in the reservoirs. The fishable waters of the state are classified as given under:

*Fishable waters ('000 hectares)*

1. Sea within 100 fathom limit	2439
2. Back waters	52
3. Lakes, Reservoirs, Ponds etc.	9
4. Paddy land for Prawn fisheries	4
5. Rivers (K. Ms.)	4827

*The following are the important fish landing centres*

- |                    |                   |
|--------------------|-------------------|
| 1. Manjeswar       | 15. Nattika       |
| 2. Kumbala         | 16. Azhikode      |
| 3. Adakath bail    | 17. Cochin        |
| 4. Hosdurg         | 18. Chellanam     |
| 5. Madai           | 19. Ambalappuzha  |
| 6. Cannanore       | 20. Valiyazheekal |
| 7. Tellicherry     | 21. Quilon        |
| 8. Badagara        | 22. Neendakara    |
| 9. Calicut         | 23. Edava         |
| 10. Tanur          | 24. Puthenthoppu  |
| 11. Parappanangadi | 25. Vizhinjam     |
| 12. Koottai        | 26. Poovar        |
| 13. Ponnani        | 27. Kollengode    |
| 14. Chowghat       |                   |

### 3. *Activities under the Five Year Plans:*

Fisheries development programmes in the country are on the emphasis that every effort to enhance the fish catches will provide an essential dietary supplement and will serve as a source of employment and foreign exchange. In the development of sea fisheries the tasks fall broadly under four heads: (1) Improvement of fishing methods, (2) development of deep sea fishing, (3) provision of fishing harbours and (4) organisation of fish transport, storage marketing and utilization of fish.

The employment potential of the fisheries development programmes also hinges on these schemes. Increasingly the emphasis in the development of fisheries is on a Co-ordinated approach to the social and economic life of villages and groups of villages whose main source of livelihood is fishing.

Over the first and second plan periods about 1800 boats had been mechanised in the country. The programme in the third plan was to mechanise 4000 more boats. There was special emphasis on the schemes like exploration of new fishing grounds, Co-operative marketing and development of refrigerated rail cars and insulated road trucks. There was considerable progress in the mechanisation of fishing industry in the third plan and in the subsequent annual plans. About 5700 mechanised boats were brought under operation during the period 1961 to 1969. The level of fish production during the period increased from 0.96 million tonnes to 1.8 million tonnes. The value of export increased from Rs. 4 crores

to 18 crores in 1967-68. The pattern of export of fish and fish products had also undergone a change during the period. The main development in exports was related to frozen prawns in place of cured fish.

A beginning was made in the III plan for the development of fishing harbours in the country. A programme of 16 small harbours was initiated during the period. The provision for landing and berthing facilities for mechanised boats had also been taken up at 30 other centres. For the development of deep sea fishing and export and for development of inland water areas Fisheries Corporations had been set up in different States. The Central Fisheries Corporation was set up in 1966 to promote regulated marketing of fish. In 1961 the Central Institute of Fisheries Education was established at Bombay. Later in 1968 two regional institutions were established one at Agra and another at Hyderabad for training operatives for inland fisheries. A central Institute of Marine Fisheries operatives was set up at Cochin in 1963 and had been supplemented by a unit at Madras in 1968. In 1967 the fisheries research institute were transferred to the I.C.A.R.

#### *Development Programmes in Kerala:*

The fishery development programmes under the I and II plans were meagre both in respect of out lay and target. Against the planned out lay of Rs. 15 lakhs for the I plan, the amount spent was only Rs. 2.74 lakhs. During the plan period three research stations were opened. Under the Indo-Norwegian project a boat building yard at Sakthikulangara was established.

In the second plan an amount of Rs. 64.36 lakhs was spent against the planned target of Rs. 93.37 lakhs. During the period a boat building yard at Vizhinjam and three Ice plants one each at Kayamkulam, Cochin and Blandad were established. The Neendakara Ice factory and refrigeration plant was also constructed. Modernisation of fish preservation and marketing through the use of ice and insulated vans were attempted systematically during the period.

As in the case of the national plan, the Third Plan schemes of the State comprised mainly mechanisation of fishing crafts, construction of fishing harbours, establishment of ice plants and cold storage and provision for other infrastructural facilities for marketing and distribution. As against the plan provision of Rs. 450 lakhs an amount of Rs. 334.01 lakhs (75%) was spent in the plan period. Total amount spent in the State sector as on 68-68 was Rs. 1085.91 lakhs. Five boat building yards, five fisherman training centres, 685 primary producers' co-operative societies and 9

marketing societies were the important achievements during the period. 1250 boats were constructed and issued to fishermen and a number of ice factories and cold storages were established.

By all these efforts, we could touch only a fringe of the resource potential. The off shore waters lying beyond 15-25 KM from the coast are practically untouched. The tapping of these virgin resources will provide large scale employment and better income to the people. Therefore, the Fourth Five Year Plan aimed at more speedy implementation of mechanisation programme and development of fisheries. An amount of Rs 1100 lakh had been provided in the State sector while the central sector provision for the state was Rs. 1089 lakhs. A co-ordinated and concerted effort had been made by launching integrated fisheries projects in different centres. The success of the Pilot Fisheries Project sponsored by the Indo-Norwegian project at Neendakara paved the way for the introduction of similar projects in the State. It not only helped for modernisation of fishing industry but also improved the living condition of the fishermen community. The following schemes are envisaged in the project.

1. Mechanised fishing
2. Trawler fishing
3. Boat yards and service station
4. Ice plants and cold storages
5. Training centres
6. Roads, and
7. Distribution of fish

Nine centres viz. Vizhinjam, Neendakara, Cochin, Azhikode, Ponnani, Beypore, Thalai, Moplay Bay and Baliapatam were selected for the implementation of the schemes on a phased programme.

The Fifth plan objective is to raise fish production to the level of 7 lakh tonnes (6.75 lakh tonnes from marine and the remaining from inland) in 1978-79. That is, the plan aims at exploiting half the estimated potential yield from the continental shelf. The following are the strategies adopted for achieving the target.

1. Diversification of fishing in the inshore region for different species of fish rather than confining mechanised fishing to shrimp trawling alone.
2. Off shore fishing by introducing large vessels.
3. Provision of infrastructural facilities; and
4. Assistance to traditional fishermen.

## PHYSICAL TARGETS:—

*State sector:*

Mechanised boats	540
Large fishing vessels	20
Calamarans fitted without board motors	100

*Private Sector:*

Mechanised boats	500
Deep sea fishing vessels	50

*Processing facilities:*

Production capacity	150 tonnes/day
Cold storage	380
Freezing	90
Frozen fish storage	1080
Canning	100

An amount of Rs. 20.00 crores is provided in the draft plan for development of fisheries and welfare activities. In addition to this it is expected that an amount of Rs. 22.00 crores will be forthcoming for central sector schemes during the Fifth plan period.

**A. R. C. Scheme**

In the development of fisheries the projects implemented by the assistance of the Agricultural Refinance Corporation deserve special attention. The main object of the project is to increase fish production by improved methods of fishing and to link production with processing, storage and other marketing facilities. The intensive development of fisheries in a particular area is visualised in the project. The project is implemented through the Regional Fish Marketing Co-operative society and its affiliated primary societies. The pattern of assistance to the scheme is that 25% of the total outlay is to be met by the State Government and the rest 75% by the A. R. C., Bombay as long-term loans covering a period of ten years. The scheme involves supply of mechanised boats (about 50 for one centre) with nets and implements, provision of ice plant, insulated van, workshop for boats etc. The boats are issued to groups sponsored by affiliated Societies and the groups will acquire ownership of the boats issued to them on payment of cost of the boats. The total cost of a project will come to Rs. 70.00 lakhs which will vary according to schemes contemplated. In the implementation of the scheme successfully, a project Officer in the status of the Deputy Director of Fisheries is appointed and he is assisted by seven Fishery Development Officers. Now three such projects are working with the assistance of A. R. C., one at Puthiyangadi, another at Vypeen and the third at Anjengo.

#### 4. Infrastructural Facilities

In the development of fisheries, it was realised that under the existing facilities and with the fishing equipments in use, the fishermen had reached the maximum limit of efficiency. Therefore, production could be increased by increasing the period of operation and improving the fishing equipments and techniques. As the scope for the development of inland fisheries is very limited the emphasis in the plan programmes is given to the development of fishing harbours, mechanisation of fishing crafts, provision of communication and marketing facilities. Thus along with the provision of infrastructural facilities for increasing production, the horizon for employment in the field of fisheries has also been widened.

##### Fishing Harbours and Landing Centres

Large scale mechanised fishing operations are possible only if there are suitable fishing harbours and landing centres. The harbours help in the operation of fishing boats and assist a large number of local crafts to extend their period of operation even during monsoon. At present Cochin is the only port from where bigger vessels can operate. The development of the port for fishing purposes is initiated by the Cochin port trust under central sector schemes. Works on two other fishing harbours at Vizhinjam and Moplay bay and for providing landing and berthing facilities at Ponnani, Beypore and Baliapatam taken up during the third plan period were almost completed. Detailed investigation for the development of Ponnani is now under way. Sixteen centres are selected for the development of fishing harbours in the State (appendix). The project reports on the harbours at Beypore, Neendakara and Vizhinjam throw light on the potentialities of production and employment due to mechanisation of fishing and provision of marketing facilities like storage, processing and distribution. The salient features of these projects are summarised below.

The harbour area at Vizhinjam was surveyed by a Swedish Engineer Earl R. Bjeike in the middle fifties. The scheme for the construction of the harbour in three stages was approved by the Central and State Governments and was taken up in 1962. The original estimate of Rs. 122 lakhs was revised to Rs. 193 lakhs in 1967. About Rs. 189 lakhs had been spent for the construction of the first stage of the project viz. sea ward break water.

Vizhinjam is strategically located for the exploitation of the following fishery resources. (1) The huge potential of the wadge Bank lying partly in the Indian Ocean and partly in the Arabian Sea. Of the 4000 Sq. Miles of the wadge Bank area an area of 500 sq. miles is considered to be very good for intensive fishing. This

fishing ground is only 40 KM. from Vizhinjam, (2) The deep sea prawn and lobster resources off Quilon, (3) The off shore resources and (4) The gill net fishery available at Vizhinjam. The project report consists of the following programmes:

1. Completion of the first stage project.
2. Construction of a second sea ward break water of 360 metre length.
3. Provision of landing quay of 710 metre length.
4. Construction of 210 x 30 metres auction hall.
5. Provision of 3 ice plants of 300 tonnes capacity.
6. Provision of 5 freezing plants with 30 tonnes capacity and production of 100 tonnes of ice.
7. Other infrastructural facilities like roads etc.

Total cost of the project is estimated at Rs. 183 million of which an amount of Rs. 39.81 million is earmarked for the stage II expansion of the harbour. The project also contemplates introduction of 297 mechanised vessels (gillnetters, 8m-210), trawlers (16m-75 and trawlers 23m-12) in a phased programme within a period of ten years. With the operation of these vessels a total catch of 39600 tonnes of fish is anticipated during the period.

The fishing personnel required for the operation of vessels proposed from the Vizhinjam port within a period of ten years are estimated as follows:

Skipper (for 297 vessels)	297
Engineer (for trawlers 87)	87
Mate	87
Engine driver	87
Oiler (for 16 m vessel-1, 23 m vessel-2)	99
Cooks - do -	99
Radio operator (23 m-1)	12
Bosum - do -	12
Deck hands (@3 for 8 m, 6 for 16 m and 8 for 23 m vessels)	1176

Total

1956



Personnel required for the shore establishment will be as follows:

Vessel management and servicing	100
Ice plants	75
Processing and freezing plants	220
Auction hall and cold chain	90
Project office	110
Port management	13
<b>Total</b>	<b>608</b>

### Beyppore:

Beyppore is an estuarine port on the mouth of river, Chaliar. Attempts for the development of the river mouth and the adjoining area were made as early as in 1880. The Hydrographic survey branch of the Indian Navy had conducted a complete survey in 1956. There was another fulfilled survey in 1967. The project report for the development of the port is based on the proposals of the Hydrographic survey wing of the State port department. Total cost of the project is estimated at Rs. 1045 million of which Rs. 60 million is for 258 fishing vessels (10 m type 210 and 16 m type 48). After completion of the project 27000 tonnes of fish are expected to be produced additionally every year.

The requirement of fishing personnel for the project is estimated as follows:

Skipper	258
Engineer (16m vessels)	48
Mate "	48
Engine driver "	48
Oiler "	48
Deck hands cooks	1386
	<b>1836</b>

### *For shore establishments*

Ice plants	70
Freezing plants	205
Auction hall and cold chain	90
Vessel management	75
Project office	100
	<b>540</b>

**Neendakara:**

The Integrated Fisheries Development project for Neendakara envisages only minimum requirements for the development of the Neendakara port for fishing and allied activities. They are: (1) constructing landing and berthing facilities for 16 meter and 8 meter vessels; (2) providing an auction hall; and (3) providing one 100 tonne ice plant with storage facility for ice and fish. A workshop for servicing, 16 meter vessels is also provided. The two fishing villages, Sakthikulangara and Neendakara on either side of the Ashtamudi lake were selected by the Indo-Norwegian project in 1952 for the establishment of fishing and community development programmes. The success of the project in the development of mechanised fishing, processing and marketing has helped very much to start similar integrated projects in other centres.

The total cost of the new project is estimated at Rs. 696 million of which an amount of Rs. 36.9 million is for the distribution of vessels. It is expected that within a period of ten years 210 eight metre vessels and 30 sixteen metre vessels can be supplied along with increasing provision for landing and berthing facilities and storage capacity. Additional employment due to the implementation of the project is estimated as follows:

**Fishing personnel**

Skipper (8 meter vessels 210 and 16 meter-30)	240
Engineer (16 metre vessels)	30
Mate "	30
Engine Driver	30
Oiler	30
Deck hands/cooks	840
	<hr/>
	1200
	<hr/>

**Shore establishments**

Ice plants	21
Auction Hall	70
Vessel management	75
Project office	80
	<hr/>
	246
	<hr/>

**5. The Master Plan**

In this connection the master plan prepared by the State Government and submitted to Government of India in 1969 for the comprehensive development of fisheries sector is worth mentioning.

The plan envisages a total financial commitment of the order of Rs. 305.92 crores for the implementation of the development programmes within a period of 20 years. In proposing the outlay investment possibilities both in public and private sectors are taken into consideration. The following are the important targets fixed to be achieved.

1. 555 large vessels and 8100 mechanised boats
2. Ice plants with an additional production capacity of 950 tonnes per day and 2200 tonnes of storage capacity.
3. Fourteen new boat building yards
4. Twenty-two centres for the construction of canoes
5. Two modern boat building yards capable of constructing steel hulled trawlers
6. Nineteen repair and refitting workshops
7. Four Wireless stations
8. One net making factory
9. Six industrial estates
10. Ten canning plants
11. Fourteen fish meal plants
12. one marine diesel engine factory
13. 4050 primary societies
14. 35000 houses for fishermen.

The reference to the master plan in this context is significant as it provides employment to 2.91 lakh persons at the end of 1989, directly and indirectly. In estimating the figure labour component for the construction of harbours, factory buildings and roads are excluded. The master plan estimated four categories of personnel involved in fishing industry.

1. Fishermen, labourers and technicians at various levels of skill;
2. Managers, accountants, etc., and similar staff;
3. Administration with varying range of responsibility; and
4. Research workers in various applied industries.

The following is the estimate of employment that would be created during the master plan period:-

<i>Direct employment ('000)</i>	
Indigenous canoes	35.20
Mechanised boats below 50 feet	64.80

Trawlers	7.80
Processing and Marketing	117.00
Other fishing establishments	1.53
Supervisory, technical	0.50
Administrative, Managerial	0.50
Research workers	0.10
	<hr/>
	227.43
	<hr/>

*Indirect employment ('000)*

Fishing personnel on—	
1. Canoes	19.10
2. Mechanised boats below 50 feet	38.90
3. Trawlers	4.70
4. Labour in processing plants	1.00
	<hr/>
	63.70
	<hr/>

Total employment at the end of the Master Plan period will be of the order of 2.91 lakhs.

## 6. Training

The training programme for the man power required for fishing industry was only sporadic since 1947. An important pre-requisite for the development of this industry is the supply of certificated personnel required for the sea-going fishing vessels under the Indian Merchant Shipping Act, 1958. The availability of technical staff required for the ancillary establishments on shore is also important. In view of this the Central Institute of Fisheries Operatives was established in 1963 at Cochin and training is given in fishing second hands, engine driving, radio telephone operations, etc. In 1968 another unit was started in Madras to satisfy the growing demand for the trainees.

The following are the courses conducted in the institution:-

Course	Duration	Strength
1. Fishing second hands	15 months	40
2. Engine driving of fishing vessels	15 "	40
3. Boat building Foremen	15 "	20
4. Shore mechanics	12 "	10
5. Gear technicians	9 "	15
6. Radio Telephone Operators	9 "	15

These courses are institutional in nature. The Institute also provides facilities for the post institutional training for fishing second hands and engine drivers. There are facilities in the Institute for ad hoc training courses for teachers in fishermen training centres of the State Governments and for updating courses for engine drivers holding lower certificates for qualifying themselves as engine drivers of fishing vessels.

There are five fishermen training centres run by the State Fisheries Department at Vizhinjam, Neendakara, Ernakulam, Bepore and Cannanore. In these institutions training is given in mechanised fishing for a period of 38 weeks to the fishermen candidates selected from the nominees of M. U. C. S. by the Regional Advisory Committee. The sanctioned intake capacity in each centre is fixed as 40. The trainees selected are given a monthly stipend of Rs. 125 during the training period. More than 2500 candidates were so far trained in these institutions.

When the scheme of the distribution of mechanised boats at subsidised rate was started in 1959-60, a group of five or six trained fishermen was benefited by the scheme. Later this scheme was modified and one or two boats were distributed to each selected society. It may be better to revive the old scheme, as it will give an incentive to the trained personnel by providing self employment opportunities to those who have entrepreneurial ability and talent. A detailed study by an expert committee on the employment of the trained personnel, present system of training and reorientation of the training programme may be necessary to equip the trainees with experience in some other connected trades also.

## 7. Employment potential of the programmes by 1985.

### Assumptions:

The level of achievement in the fisheries in 1973-74 due to the development programmes both in traditional and mechanised fishing is as shown below.

	Traditional fishing	Mechanised fishing
No. of landing Centres (No.)	249	23
Crafts (Nos.)	25100	2105
Fishermen employed (No.)	99807	10805
Total Landings (kg.)	369294 (82.3%)	79446 (17.7%)

The Fifth Plan target is to increase production to the level of 7 lakh tonnes (6.75 lakh tonnes from marine fish

landings). To achieve this target 1050 mechanised boats and 70 large vessels are expected to be introduced during the Plan period. In view of the slow progress during the past years it is doubtful whether these targets could be achieved by the end of the Fifth Plan, i. e. by the end of 1978-79. But it may be noted that between the period 1960 and 1971, the two peak production years, the production had increased from 3.47 lakh tonnes to 4.45 lakh tonnes with the introduction of nearly 1700 mechanised boats. Again, during the period 1967 to 1974 the increase was from 3.64 lakh tonnes to 4.53 lakh tonnes, with the addition of nearly 1100 mechanised boats. During this period about 5000 country crafts were also newly introduced. Though the inshore belt is almost fully exploited, scope for deep sea and off shore fishing is bright. Therefore, there is every possibility to raise the production to the level of 8 lakh tonnes in 1985, by introducing 1750 mechanised boats and 250 large vessels. Here, new projects with the assistance of A.R.C. and with foreign collaboration are expected. There may be doubts in regard to the introduction of small mechanised boats during the period as the inshore belt, where these are to operate is almost fully exploited with the existing number of mechanised boats and country crafts. But, for the reasons such as; (1) small entrepreneurs will come forth to invest in small boats as its cost is small compared with large vessels used for deep sea fishing; and (2) even with the introduction of more than 2000 boats which are now in operation marginal profit is still higher, there is every possibility for the introduction of 1750 mechanised boats during a period of ten years.

There were five boat building yards in the public sector with a total production capacity of 107 boats in a year. Of these, only two, one at Sakthikulangara and another at Beypore are now working. The boat building yard at Vizhinjam is completely dismantled. The closure of the boat building yards is not due to lack of demand but for various administrative reasons. There are nearly 30 boat building yards working in the private sector. Most of them are working under capacity. However, it is expected that a few more yards may be established in the private sector.

There were 115 registered factories for ice manufacture in 1974 providing employment to 623 persons. In addition to this, there were 19 ice plants and freezing plants in the public sector. Establishment of new ice factories is now discouraged as most of the existing units are not working with optimum capacity. But with the expected increase in production of fish, demand for ice and freezing plants will be on the increase and a few more such units will be coming up during the Sixth Plan period.

Disposal of the products in 1974 was as indicated below.

	Quantity (Tonnes)	Percentage to Total
Fresh consumption	278888	61
Frozen	53552	12
Dried	113514	25
Canned, etc.	8027	2
	<u>453981</u>	<u>100</u>

The distribution of the products marketed according to location of market was as follows.

	Quantity (Tonnes)	Percentage to Total
Intra District	61559	13
Inter District	321807	71
Inter State	8593	2
Export	62022	14
	<u>453981</u>	<u>100</u>

The above pattern of distribution of products may change slightly when the production especially that of crusteasians which are mainly for export, is increased due to diversification of fishing operations. Hence the pattern of disposal of the 8 lakh tonnes of total catch in 1985 may be as follows:—

	distribution	Quantity (lakh Tonnes)
Fresh consumption	55%	4.40
Frozen	20%	1.60
Dried	20%	1.60
Canned, etc.	5%	0.40
	<u>100.00</u>	<u>8.00</u>

Frozen and canned products are mainly for export. Dried fish are gone for inter-district and inter-state marketing. Of the above, about 0.40—0.50 lakh tonnes will be wasted in processing which can be used for fish meal and manure. The marketing of products is assumed as follows:

Location:	distribution	Quantity (lakh Tonnes)
Intra district	10%	0.80
Inter District	60%	4.80
Inter State	5%	0.40
Export	25%	2.00
	<u>100.00</u>	<u>8.00</u>

From the above, it is obvious that there is scope for starting ancillary industries and a large number of persons can be absorbed in these industries and in transportation and marketing. An estimate of additional employment that would be created in 1985 in fishing industry is made as follows:—

*Additional employment in fishing.*

Skipper— for 1750 small boats	..	1750
for 250 large vessels including 100 trawlers		250
Engineer do.	..	250
Mate	..	250
Radio operators for 100 trawlers	..	100
Bosum	..	100
Engine driver for 250 vessels	..	250
Oiler (for 150—1' each for 100—2 each)	..	350
Deck hands (1750—3 each, 150—6 each, 100—8 each)		6950
Cooks (150—1 each, 100—2 each)	..	350
For 5200 country boats @ 5 persons	..	10600
		26000
		<hr/>
		36600
		<hr/>
Processing, drying etc.	..	15000
Marketing	..	43500
Ice plants, freezing plants, boat building and repairs etc.		1500
		<hr/>
		96600
		<hr/>

It is estimated that there will be employment for more than 200 days in a year in mechanised fishing and employment in mechanised fishing can be considered as full employment. In other sectors under employment will prevail due to seasonal variations in catch. This seasonal under-employment or unemployment can be minimised by starting industries for net making and repairs on cottage basis. It is stated that in addition to the housing programme, there are programmes for constructing nearly 200 roads in coastal areas to be implemented by the Department of Fisheries. There will be about 10 lakh man days for the construction of these roads, the cost of which is roughly estimated at Rs. one crore. If the works are taken in the off seasons under employment will be minimised to a large extent.



The level of employment in fishing and allied industries by 1985 may be indicated as follows:—

**Employment in Fisheries and Allied Industries**

Item	1973-74	Addition till 1985	Position in 1985	
			Total	Percentage increase
Production level (Lakh Tonnes)	4.53	3.47	8.00	76.6
Mechanised boats (No)	2105	1750	3855	83.1
Country crafts (No)	25100	5200	30300	20.7
<i>Employment (No)</i>				
Mechanised Boats	10805	10600	21405	98.1
Country crafts	99807	26000	125807	26.0
Processing, canning etc.	18000	15000	33000	83.3
Marketing	58500	43500	102000	74.4
Ice plants, freezing	2000	1500	3500	75.0
<b>Total employment</b>	<b>189112</b>	<b>96600</b>	<b>285712</b>	<b>51.1</b>

The level of achievement anticipated in 1985 is moderate in view of the fifth plan programmes in which 7 lakh tonnes of production and 1040 new mechanised boats are anticipated. Even if the target could not be achieved within the period, it is reasonable to assume the level of production of 8 lakh tonnes in a decade with the introduction of 1750 mechanised boats and 5200 country crafts. As the employment, income and level of living of the fisher folk, per capita consumption of fish, foreign exchange earnings, all these hinge upon the annual production of fish, all plans in fisheries sector will be production oriented and we can very well expect that the production target of 7 lakh tonnes if not achieved during the fifth plan period, it will hit the target of 8 lakh tonnes by 1985, thereby involving about 2.86 lakhs workers in this sector.

TABLE 1

## Fish landings of top ten fish producing countries

(In Million tonnes)

Country	1965	1966	1967	1968	1969	1970	1971	1972
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Japan	6.91	7.10	7.85	8.67	8.61	9.31	9.89	10.25
2. U.S.S.R.	5.10	5.35	5.78	6.08	6.50	7.25	7.33	7.76
3. China	5.33	5.63	5.19	5.40	5.54	6.26	6.88	7.57
4. Peru	7.63	8.84	10.20	10.55	9.24	12.71	10.61	4.77
5. Norway	2.31	2.87	3.27	2.86	2.49	2.98	3.04	3.16
6. U.S.A.	2.70	2.52	2.41	2.45	2.46	2.76	2.77	2.65
7. Thailand	0.63	0.73	0.85	1.08	1.27	1.45	1.57	1.63
8. India	1.33	1.37	1.40	1.53	1.61	1.75	1.85	1.67
9. Spain	1.34	1.36	1.44	1.52	1.50	1.50	1.50	1.62
10. South Africa	1.24	1.20	1.58	2.05	1.85	1.56	1.08	1.12
World Total	53.20	57.30	60.40	63.90	62.60	69.60	69.40	65.60

Source: Bank of India Bulletin—June 1975

TABLE 2

## Production of Fish in Kerala 1960-1974

(Tonnes)

Year	Crustaceans		Other crustaceans	Total crustaceans	Pelagic	Fish Demersal	Total	Total fish and crustaceans
	Penacid Prawn	Non-penacid Prawn						
1960	12793	23	175	12991	279976	53712	333688	346679
1961	20627	43	105	20775	216962	30887	247849	268624
1962	29688	..	22	29710	121174	41586	162760	192470
1963	22228	76	90	22394	146345	34503	180848	203242
1964	35220	..	72	35292	249658	33023	282681	317973
1965	14327	84	130	14541	287699	36933	324632	339173
1966	28120	259	557	28936	270910	46898	317808	346744
1967	27164	88	58	27310	290453	46366	336819	364129
1968	25356	33	177	25568	282013	37720	319733	345301
1969	34334	34	435	34803	210250	49734	259984	294787
1970	36940	14	556	37510	285316	70054	355370	392880
1971	31294	1519	523	33336	352008	60003	412021	445347
1972	34997	711	157	35865	200953	55461	256214	292079
1973	85063	981	1829	87873	269406	91461	360867	448740
1974	63711	1008	1823	66542	253742	133697	387439	453981

Source: Department of Fisheries.

TABLE 3

## Marine Fish Landings in Kerala

(In '000 tonnes)

<i>Species</i>	1961-62	1966-67	1969-70	1970-71	1971-72	1972-73	1973-74
1. Prawns	15.8	26.1	60.9	63.3	58.3	69.6	74.7
2. Oil Sardines	153.4	96.9	142.8	160.6	93.6	99.7	54.2
3. Other Sardines	7.9	22.3	2.6	5.8	14.6	8.2	6.2
4. Mackerel	7.9	9.6	52.1	44.2	71.1	70.4	45.9
5. Sharks	2.5	1.7	1.9	11.2	15.7	14.8	15.1
6. Tunnies	..	1.7	1.0	7.3	15.5	14.6	13.2
7. Cat Fish	4.5	8.2	10.4	2.4	12.3	10.7	11.2
8. Soles	6.1	4.4	9.7	2.9	12.8	10.8	10.7
9. Skate Rays	1.4	0.5	0.7	6.4	11.3	8.4	11.8
10. Ribbon Fish	4.6	4.3	0.3	0.8	5.8	5.4	7.1
11. Scianindas or Jew Fish	1.0	0.7	1.1	3.1	12.0	7.2	9.1
12. Lactarius	1.5	1.4	0.8	1.0	2.9	4.0	5.4
13. Sabre Fish	0.7	2.2	1.2	0.9	2.3	2.7	3.0
14. Horse Mackerel	1.4	4.2	0.6	1.0	3.2	3.6	4.3
15. Anehovies	..	0.6	1.2	0.5	2.7	0.9	3.0
16. White Bait	3.7	2.0	1.5	0.6	2.7	1.9	1.3
17. Silver Bellies	6.6	7.1	4.1	0.9	2.3	3.2	2.8
18. Seer Fish	3.7	0.8	1.9	1.0	1.7	3.2	1.6
19. Pour fret	0.7	1.0	1.1	0.9	0.1	3.8	2.1
20. Others	33.3	31.8	76.4	65.0	64.6	59.6	55.2
Total	256.7	227.5	372.3	379.8	405.5	402.7	337.9

Source: Department of Fisheries.

TABLE 4

## Progress in the Introduction of Mechanised Boats 1960-1974 (Cumulative)

<i>Year</i>	25'	28'	30'	35½'	32'	36'	40'	43½'	50'	<i>Total</i>
1960	8	..	8	..	..	..	..	..	..	16
1961	10	..	14	..	..	..	..	..	..	24
1962	66	..	42	..	3	..	..	..	..	111
1963	86	2	98	..	20	..	..	..	..	206
1964	107	12	163	..	28	5	..	..	..	315
1965	113	12	260	..	90	26	..	..	..	501
1966	148	12	412	..	142	74	..	..	..	788
1967	151	12	509	..	193	104	2	..	1	972
1968	154	12	669	..	320	144	4	..	..	1304
1969	162	12	710	20	416	175	7	1	2	1505
1970	165	12	730	61	449	175	7	1	2	1602
1971	172	12	743	131	484	227	7	2	2	1780
1972	185	12	752	197	560	227	7	2	2	1944
1973	185	12	768	265	564	227	7	2	2	2032
1974	185	12	780	322	568	227	7	2	2	2105

Source: Department of Fisheries.

## APPENDIX

## Centres for the development of fishing harbours

1. Vizhinjam
2. Neendakara
3. Kayamkulam
4. Thottappally Bar
5. Andhakara Azhi
6. Cochin
7. Azhikode
8. Chettuvai
9. Ponnani
10. Beypore
11. Thalai
12. Mepla Bay
13. Baliapattom
14. Palacodu
15. Cheruvatur
16. Chandragiri



5

**MAN POWER INVOLVEMENT IN THE SCHOOL EDUCATION  
OF KERALA**





## MAN POWER INVOLVEMENT IN THE SCHOOL EDUCATION IN KERALA

### Introduction

Kerala State maintains a high level of educational facilities and spends a large share of its income for the purpose. The enrolment ratio, the ratio of enrolment to the number of children in the corresponding age group in the State is very high when compared to those of other States in the Indian Union. Kerala has also the highest percentage of literacy among the States in India. This is being maintained for decades inspite of the abnormal growth in population which necessitates additional facilities for the school going children in the form of new schools and the appointment of the required number of teachers and other staff. It is interesting to study the manpower and other resources involved behind this huge task of maintaining this high percentage of literacy among the people of Kerala.

Kerala occupies an area of 38864 sq. K.Ms. which is only 1.18% of the total area of the Indian Union. The population of the State according to 1971 census is 213.47 lakhs which accounts for 3.9% of the total population in India. The population of the State increased from 1.69 crores in 1961 to 2.13 crores in 1971 and the estimated population for the year 1974 is 2.30 crores. According to 1961 census 42.63 per cent of the population belong to the age group 0-14. Considering the school going age group along (5-14) the percentage works out to near about 28 which means that about 47.3 lakhs were in this group in 1961. The percentage in this age group has decreased a little according to 1971 census and it works out to 26.25. Accordingly the eligible school going population in 1974 would be 60.37 lakhs, thereby depicting an increase of nearly 13 lakhs who are to be provided additional facilities for school education during the course of 13 years from the year 1961. This works out to an addition of a lakh of students on the average per year.

In this study it is proposed to assess the involvement of manpower, especially teaching and its gradual growth during the past years along with the other amenities for meeting out the requirements of the school going population. The growth of population, the increase in the number of schools and enrolment of students etc. are discussed in this study along with the budgetary growth for the past few years. The required details are mostly obtained from the statistical unit of the Directorate of Public instruction.

#### (1) Growth of population:

The population of Kerala is estimated to be 2.30 crores in 1974. According to 1971 census the population in the state is 213.47 lakhs. At the beginning of the century it was 63.96 lakhs. The population grew at a fast rate in the State and it had nearly tripled during the last seventy years. When compared to 1941 census figures it has nearly doubled by the year 1974. The decennial rate of growth of population which was 11.8 percent in the beginning of the century rose sharply to 26.3 percent in the last decade. The density of population rose from 165 persons per sq. K.M. in 1901 to 549 persons in 1971. The All India figure for the year 1971 is only 178 persons per sq. K.M. which is even less than the density of population of Kerala in 1911.

**Growth of population in Kerala**

<i>Years</i>	<i>Population in lakhs</i>
1901	63.96
1911	71.47
1921	78.02
1931	95.07
1941	110.31
1951	135.49
1961	169.04
1971	213.47
1974	227.50 (projected)

The decade 1961-1970 has witnessed the highest rate of population increase in this century in the State as for the country as a whole. As regards the growth of population in Kerala the year 1941 may be considered as the dividing line as the pattern of growth during the four decades subsequent to 1941 presents a sharp contrast to what was observed during the four preceding decades.

**Decadal variation in the Population of Kerala**

<i>Year</i>	<i>Population in lakhs</i>	<i>Decadal variation in lakhs</i>	<i>Percentage Decennial growth rate</i>
(1)	(2)	(3)	(4)
1901	63.96		
1911	71.48	7.52	1.18
1921	78.02	6.54	0.92
1931	95.07	17.05	2.19
1941	110.32	15.25	1.60
1951	135.49	25.17	2.28
1961	169.04	33.55	2.48
1971	213.47	44.43	2.63

The movement in the growth rate of population was zigzag till 1941. But it moved straight upwards from the year 1941 onwards.

The growth of population in Kerala is discussed above so as to bring forth the corresponding growth in the school going population which belong to the age group 5-14. Nearly 28 per cent of the total population came under this group in 1961 which works out to nearly 47.3 lakhs. According to 1971 census the eligible number of school going children would be 26.25 percent (5-14 age group) and the school going population for the year 1974 would be 60.37 lakhs. The increase in this particular age group comes to near about 13 lakhs during the last thirteen years which means an addition of a lakh of students per year. The State had to provide additional facilities for these increased numbers by way of space, teachers, other personnel and other equipments. The State maintains a high level of literacy when compared to the situation in the other States of the country.

## Literacy in Indian States

Sl. No.	State	Percentage of Literacy	
		1961	1971
(1)	(2)	(3)	(4)
1	Andhra Pradesh	21.2	24.56
2	Assam	27.4	29.81
3	Bihar	18.4	19.79
4	Gujarat	30.5	35.72
5	Haryana	..	26.69
6	Himachal Pradesh	..	31.32
7	Jammu & Kashmir	11.0	18.30
8	Kerala	48.8	60.42
9	Madhya Pradesh	17.1	22.12
10	Maharashtra	29.8	39.08
11	Mysore	26.4	31.54
12	Nagaland	..	27.33
13	Orissa	21.7	26.12
14	Punjab	24.2	33.39
15	Rajasthan	15.2	18.79
16	Tamil Nadu	31.4	39.39
17	Uttar Pradesh	17.6	21.64
18	West Bengal	29.3	33.05
	INDIA	24.2	29.32

Source: Census records

Kerala State has the distinction of having the highest percentage of literacy among the States in India. So as to maintain this distinction and to achieve the ultimate aim of nearing the centum in literacy the Government have to shell out a sizable share of its revenue from the Exchequer and find out additional resources vis-a-vis. the corresponding growth in the school going population.

## (2) Educational system in Kerala

Usually a child is admitted after the completion of five years of age to the 1st standard of the primary section. Formerly there were cases of children seeking admission to higher standards after receiving necessary coaching at home. Such admissions are relatively less now a days. In olden days children learned their vernacular alphabets in 'Kalaris' and then sought admission to the primary section. But times have changed and Kalaris very rarely exist now. Wherever facilities permit children are being sent to nursery schools before they begin their school career, some seeking admissions in English medium classes and others in the Malayalam medium classes. Formerly there was a craze and rush for admission to the English medium classes but that gets lessened recently mainly owing to the waining importance of the language in our country. The students have to cover 4 years in the

primary section, three years in the upper primary and three years in the secondary section. Reforms in the educational set up were attempted to many a time in the recent past, changes in optional systems, frequent changes in the syllabus, introduction and stoppage of basic education in schools and public examinations at certain levels. The three language formula has been accepted and it is now in force in the schools of Kerala.

School Education is completely free in this State and it was introduced on a phased programme. Scheduled castes and scheduled tribes (students) are given money by way of grants to facilitate their studies. A student had to remit Rs. 15 as examination fees when he appeared for the S.S.L.C. at the end of his school career which was the only official receipt of money from a student during the course of his entire school days till 1970. Even this levy of Examination fee had been abolished with effect from the S.S.L.C. examination of March 1971 for regular students of government and aided schools for the first appearance. The scheduled castes and scheduled tribes are exempted from this levy for two appearances. Of course, a nominal amount is collected every year towards game fees. At the same time unaided but recognised schools collect fees from 1st standard onwards. All the staff in the schools except the unaided ones receive their salary direct from Government. The private school teachers and other staff now enjoy pension and other benefits too. The entire expenditure is met by Government, together with the maintenance grants given to the school managements, thus swelling the Government expenditure for school education considerably. The Private school teachers are appointed by the respective managements and their postings and transfers are done by the managements in corporate managements. Most of the disciplinary actions also rest with them. Staff fixations are done by the department in accordance with the provisions in the Kerala Education Rules and the working of the school both technical or otherwise are subject to periodical inspections by the officers of the education department.

### (3) Growth of Institutions

To cope up with the requirements of the ever growing school going population new schools are being opened and existing ones are upgraded in most of the years. Generally, there are three broad types of managements of schools, Government, Private aided and Private unaided but recognised. From the very olden days private managements played a crucial role in the educational set up of the State. Formerly Government schools especially high schools were few in number and the requirements of the society to a considerable extent were fulfilled by private schools. Christian missionaries had a leading role and they were the pioneers in the field of education in Kerala. Other communities also entered the field gradually and there are at present a number of schools of all types, Primary, Upper primary and Secondary in the corporate and individual managements of various communities, prominent among the managements being Christians, Nairs, Ezhavas and Muslims.

Generally, as already stated, there are three sections of schools in the State, the Lower Primary, the Upper Primary and the Secondary or High schools. There are secondary schools with the Lower and Upper Primary sections attached and without them, then there are the Lower and Upper Primary sections together and a good number of Lower Primary Schools exist by themselves.

Recent years witnessed substantial progress in respect of the number of educational institutions, enrolment, number of teachers and expenditure on education.

### *High Schools*

Rapid strides in the establishment of educational institutions have been made during the past independence era.

<i>Year</i>	<i>Government Schools</i>	<i>Private Schools</i>	<i>Total</i>
(1)	(2)	(3)	(4)
1960-61	244	651	895
1961-62	276	653	929
1962-63	312	703	1015
1963-64	315	705	1020
1964-65	345	801	1146
1965-66	345	806	1151
1966-67	391	884	1275
1967-68	394	888	1282
1968-69	440	941	1381
1969-70	441	941	1382
1970-71	442	942	1384
1971-72	446	947	1393
1972-73	448	951	1399
1973-74	452	952	1404
1974-75	551	952	1503

It can be seen from the above table that the number of high schools in the State has increased from 895 in 1960-61 to 1503 in 1974-75. As has been already stated the number of high schools run by Government were few when compared to the participation in the sector by the private managements. In 1960-61 there were only 244 Government High Schools as against the 651 High Schools under private managements. When the growth in the number of high schools is examined we find that the number of Government High Schools has more than doubled while the number of private high schools has scored nearly a 50 % increase.

### *Upper Primary Schools*

In the case of Upper Primary Schools the index of growth works out to 137 when 1960-61 is considered as the base. There were 1932 Upper Primary Schools in 1960-61 but the number rose up to 2639 in 1974-75.

Year	Government Schools	Private Schools	Total
1960-61	530	1402	1932
1974-75	904	1735	2639

*N.B.* Detailed table is furnished in the appendix.

Eventhough the private managements still hold the lion's share in the number of schools the growth rate clearly shifts to the Government sector which is evident when the growth rates of the two sectors are worked out separately. Government U. P. schools increased by 70 per cent when the U.P. schools owned by private managements indicated only near about 24 per cent growth. On an average 50 upper primary schools were newly coming up every year to contain the growth in the school going population for the past 14 years.

#### *Lower-Primary Schools*

In the year 1960-61 there were 6705 lower primary schools out of which 2718 were Government schools and the rest belonged to private managements. In 1974-75 the corresponding figures were 2964 (Government) and 4077 (Private), thus raising the total to 7041. The percentage increase works out to only 5 per cent and the corresponding average increase in the number of schools per year comes to 24. The increase in the number of Lower Primary Schools is not so conspicuous since a good number of them is being upgraded every year.

Year	Government Schools	Private Schools	Total
1960-61	2718	3987	6705
1974-75	2964	4077	7041

*N.B.* Detailed table is furnished in the appendix.

Out of the total number of 6764 Private schools (all categories) 3194 are owned by Hindus, 2338 by Christians, 919 by Muslims and 313 by other communities.

#### Number of Schools according to Community-wise

Name of Community	(1974-75)			Total
	H.S	U.P.S	L.P.S	
(1)	(2)	(3)	(4)	(5)
(a) Hindus				
(1) Nair	162	418	848	1428
(2) Ezhava	73	289	490	852
(3) Other Hindu	110	268	536	914
<b>TOTAL</b>	<b>345</b>	<b>975</b>	<b>1874</b>	<b>3194</b>

(1)	(2)	(3)	(4)	(5)
(b) Christians				
(1) Syrian	224	227	543	994
(2) Latian	83	68	210	361
(3) Other Catholic	17	24	90	131
(4) Marthoma	22	44	171	237
(5) Jacobites	64	55	90	209
(6) C.S.I.	40	34	164	238
(7) Other Xians	14	29	125	168
<b>TOTAL</b>	<b>464</b>	<b>481</b>	<b>1393</b>	<b>2338</b>
(c) Muslims	45	186	688	919
(d) Other Communities	98	93	122	313
<b>GRAND TOTAL</b>	<b>952</b>	<b>1735</b>	<b>4077</b>	<b>6764</b>

The above table indicates that the largest number of private schools (all categories) is owned by the Nair Community closely followed by Syrian Christians, Muslims, other Hindus and Ezhavas. Among the high school sector the Syrian Christians dominate with 224 high schools under their management followed by Nairs with 162 high schools and other Hindus with 110 schools. Among the U.P.S. and L.P.S. section the Nairs top the list with 418 and 848 schools in the respective sections. The Syrian Christians come next with 227 and 543 schools respectively under their management. For administrative convenience, in the school education department, the State is divided into three educational regions, each headed by a Regional Deputy Director, and 28 educational districts under District Educational Officers. The 28 educational districts are again sub divided into 147 sub districts.

The revenue district and the educational district are not co-terminus. In a revenue district, there may be one or more educational districts.

**Revenue district-wise distribution of Schools  
in Kerala (1974-75)**

Sl.No.	Revenue District	H.S	U.P.S	L.P.S	Total
1	Trivandrum	143	198	534	875
2	Quilon	185	270	706	1161
3	Alleppey	182	229	643	1054
4	Kottayam	159	201	519	879
5	Idukki	54	76	196	326
6	Ernakulam	189	200	522	911
7	Trichur	163	222	561	946
8	Palghat	95	215	546	856
9	Malappuram	91	234	833	1158
10	Kozhikode	112	322	878	1312
11	Cannanore	130	472	1103	1705
<b>TOTAL</b>		<b>1503</b>	<b>2639</b>	<b>7041</b>	<b>11183</b>



As regards the total number of schools (all categories included) district-wise, Cannanore has the largest number (1705) closely followed by Kozhikode (1312). As regards the number of high schools in each district, Erankulam, Quilon and Alleppey top the lists with 189, 185 and 182 schools respectively.

#### (4) Enrolment of Students

The student population (school going) which was 32.70 lakhs in 1960-61 rose upto 53.59 lakhs by the year 1974-75 registering an increase of 64 per cent during the course of 14 years. The enrolment percentage to total population in 1974-75 was 23.06 while it was 19.34 per cent in 1960-61.

Percentage distribution of students to total population in Kerala

Year	Population (lakhs)	Enrolment (lakhs)	Enrolment as percentage to total population
(1)	(2)	(3)	(4)
1960-61	169.04	32.70	19.34
1961-62	173.02	34.58	19.99
1962-63	177.02	36.22	20.46
1963-64	181.26	38.18	21.06
1964-65	185.52	40.10	21.61
1965-66	189.82	41.58	21.90
1966-67	194.35	43.29	22.27
1967-68	198.92	44.53	22.39
1968-69	203.48	46.15	22.68
1969-70	208.15	46.99	22.58
1970-71	213.47	48.00	22.48
1971-72	217.36	49.80	22.91
1972-73	222.35	51.56	23.19
1973-74	227.39	52.71	23.18
1974-75	232.45	53.59	23.06

*N.B.* Population figures since 1971-72 are as per revised projections by the Government of India.

It can be seen from the above table that nearly one fourth of the total population in the State are school going. In the year 1960-61 the primary section had on the whole 2,939,408 students (L.P. & U.P. together) while the number of students in the secondary stage alone was 330,893. The corresponding figures for the year 1974-75 were 4,423,247 and 936,042 respectively. Considering 1960-61 as the base the indices of variation for the primary stage as well as the secondary stage students were 155 and 283 respectively. When the total student population are considered for the two years the index of variation works out to be 164.

Of the total school going population in 1974-75 girls constitute 47.6 per cent. Sex-wise enrolment of students in schools in the different districts of the State for the year 1974-75 is indicated in the table furnished below:-

Sl.No. Revenue District	Boys		Girls		Total
	No.	per cent	No.	per cent	No.
1 Trivandrum	284706	52.4	258807	47.6	543513
2 Quilon	236556	52.4	305869	47.6	542425
3 Alleppey	291194	52.2	267138	47.8	558332
4 Kottayam	270836	50.8	262677	49.2	533513
5 Ernakulam	326491	51.6	306340	48.4	632831
6 Trichur	292124	50.6	285644	49.4	577768
7 Palghat	198696	55.0	162610	45.0	361306
8 Malappuram	227505	54.1	192803	45.9	420308
9 Kozhikode	283307	53.3	248070	46.7	531377
10 Cannanore	298308	53.5	259608	46.5	557916
<b>TOTAL</b>	<b>2809723</b>	<b>52.4</b>	<b>2549566</b>	<b>47.6</b>	<b>5359289</b>

\*Separate figures for Idukki are not available.

In the year 1973-74 there was a fall of 0.40 lakh students in standard I when compared to the year 1972-73. But the year 1974-75 recorded an increase of 0.13 lakh students. Similarly the year 1972-73 also recorded a sizable drop in admission to standard I when compared to the previous year.

Year	No. of students in standard I (lakhs)	Increase or decrease in Std. I (lakhs)
1971-72	8.84	—
1972-73	6.86*	-1.62
1973-74	6.46*	-0.40
1974-75	6.59*	+0.13

\*Whole promotion and hence no stagnated students.

The drop in admissions to standard I for the years referred to above was considered to be the after effects of active implementation of the family planning programmes, canvassed and encouraged among the people for the past few years. Among the revenue districts Alleppey, Kottayam, Ernakulam and Trichur exhibited a declining trend in enrolment in standard I while the remaining revenue districts revealed an increase ranging from 0.63% (Quilon) to 13.85% (Kozhikode).

Standard-wise distribution of students in the State is furnished below—  
(1934-75)

<i>Standard</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>
I	340160	319212	659372
II	350972	326541	677513
III	368183	336444	704627
IV	431621	395081	826702
V	309754	275023	584777
VI	270337	237267	507604
VII	245864	216788	462652
VIII	196762	171771	368533
IX	120268	108821	229089
X	175802	162618	338420
<b>TOTAL</b>	<b>2809723</b>	<b>2549566</b>	<b>5359289</b>

(5) **Teaching Staff**

The total number of teachers was 1.54 lakhs in 1973-74 (latest available figure). Excluding the teachers in basic training schools the number of teachers in schools for general education rose from 1.09 lakhs in 1960-61 to 1.52 lakhs in 1973-74 thereby absorbing near about 43 thousand persons in the teaching profession in schools during the course of the last 13 years to meet the additional requirements consequent on the fabulous growth in the population of the State. On an average nearly 3300—3400 persons come in to the teaching profession annually in the schools.

**Number of teachers—Section-wise 1960-61 to 1973-74**

<i>Year</i>	<i>H.S</i>	<i>U.P</i>	<i>L.P</i>	<i>Total</i>
1960-61	13675	33027	62155	108867
1961-62	15901	35084	63996	114981
1962-63	19679	32739	63540	115958
1963-64	19929	35081	62131	117141
1964-65	21192	36244	63862	121298
1965-66	22496	37756	64570	124822
1966-67	24334	38886	66028	129248
1967-68	25036	40452	67424	132912
1968-69	25692	41696	68054	135442
1969-70	26392	43065	68813	138270
1970-71	28471	44140	69694	142305
1971-72	29470	44731	72233	146434
1972-73	30723	45495	74550	150768
1973-74	31376	47392	73621	152389

From the above table it is clear that 31376 teachers were engaged in the high school section, 47392 teachers in the upper primary section and 73621 in the lower primary section. The increase in the strength of these teachers in the respective sections from the year 1960-61 to 1973-74 is 17701, 14365 and 11466. The yearly average absorption in the respective sections works out to be 1362, 1105 and 882.

The participation of women in the teaching profession in the State is considerably high. Just as in the case of girls students who constitute near about 47 per cent of the total school going population, the lady teachers also maintain the same proportion among the teaching population of the school sector. Because of the high literacy among the women of Kerala when compared to the other States in the Indian Union and the attractive nature of the job, since it is handy, women seek their employment preferably in the education department. It is really an achievement on the part of educated women in Kerala to bag a good percentage of the teaching jobs at this juncture when the unemployment position is acute especially among the educated classes.

## 1973-74

<i>Sector</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
High Schools	27860	24789	52649
U.P. Schools	23974	21688	45662
L.P. Schools	27053	27025	54078
<b>Total</b>	<b>78887</b>	<b>73502</b>	<b>152389</b>

When the engagement of women in the teaching profession in the schools is examined according to the type of management it can be seen that in the Government sector males dominate while in the private aided sector both males and females share the job more or less equally. But in the private unaided sector, females occupy nearly 69% of the jobs. In the U.P. and L.P. schools in this private unaided sector, male employment is considerably poor.

<i>Type of management</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
1 Government	31775	26901	58676
2 Private aided	46710	45727	92437
3 Private unaided	402	874	1276
<b>Total</b>	<b>78887</b>	<b>73502</b>	<b>152389</b>

When we examine the district-wise employment of teachers we find that Cannanore and Quilon districts top the list closely followed by Ernakulam and Trichur. Of course this has a bearing on the number of schools under each category and to the number of students attending to schools in each section.

The teaching staff are classified into 'Regular' hands and "Special" hands. These special teachers are employed in the school for teaching subjects like music, tailoring etc. In the year 1974 there were on the whole 12950 special teachers in all the schools together. This works out to one special teacher for one school on an average since the total number of schools in that year was 11288. There might have been more than one such special teachers in certain schools. In the Lower Primary section, it is significant to note that nearly 93 per cent of the special teachers are women.

Section	Regular			Special			Total		
	M.	W.	T.	M.	W.	T.	M.	W.	T.
H.S.	16282	12423	28705	1574	1097	2671	17856	13520	31376
U.P.	20935	19490	40425	3870	3097	6967	24805	22587	47392
L.P.	35987	34322	70309	239	3073	3312	36226	37395	73621
TOTAL	73204	66235	139439	5683	7267	12950	78887	73502	152389

Teachers with the necessary training qualifications are generally appointed in the schools. Very few untrained hands are appointed as teachers but they acquire their training degrees/certificates at the earliest. Out of 152389 teachers in 1973-74 only 5652 are seen to be untrained which comes to nearly 0.04 per cent.

#### Distribution of teachers—trained and untrained by type of schools

School	Trained			Untrained			Total		
	M.	W.	T.	M.	W.	T.	M.	W.	T.
H.S.	17666	13305	30971	190	215	405	17856	13520	31376
U.P.	23411	21021	44432	1394	1566	2960	24805	22587	47392
L.P.	34789	36545	71334	1437	850	2287	36226	37395	73621
TOTAL	75866	70871	146737	3021	2631	5652	78887	73502	152389

In the high school section there were only 405 untrained hands. In the U.P. and L.P. sections, the corresponding figures were 2960 and 2287 respectively.

There are on the whole 19 training colleges in the State with an intake capacity of 1950 students. Of these 19 colleges 4 are under Government management while the rest are under Private Management. The T.T.C (Teacher's Training Certificate) course are conducted in the Basic Training Schools. This is meant for the undergraduates mainly in the U.P and L.P Sections. There are more than a hundred of these schools in the State (105 in 1973-74); 31 Government and 74 Private schools with an intake capacity of nearly 10500 students annually. This certificate course was in great demand since it provided easy employment to those who had passed the S. S. L. C. and undergone this training. But the position has reversed in recent years and the problem of unemployment has become acute both among the B.Ed. degree holders as well as the certificate holders. The Government had to intervene and restrict admission to the T.T.C. In 1973-74 no admissions were made at all and the training sections were utilised for giving inservice training to the teachers.

There were 536 teachers in 1974-75 in the training sections of the Basic training schools out of whom 320 were males and 216 females.

#### (6) Teacher-Student ratio

Section-wise Teacher-Student ratio is worked out for the years from 1961-62 to 1974-75 are furnished below:—

<i>Year</i>	<i>Primary Sector I—VII</i>	<i>Secondary Sector VII—X</i>	<i>All I—X</i>
1961-62	31	26	30
1962-63	33	25	31
1963-64	34	28	33
1964-65	34	28	33
1965-66	35	27	33
1966-67	35	26	33
1967-68	35	27	33
1968-69	36	27	34
1969-70	36	27	34
1970-71	36	25	34
1971-72	36	25	34
1972-73	36	25	34
1973-74	36	28	35
1974-75	35	28	34

From the above table it can be seen that more or less a steady level is maintained in the teacher-student ratios for the past years. An over all assessment tells that the teacher-student ratios for all the classes together lie

between 30 and 35 for the last 14 years. For the past six or seven years the ratio rests steadily around 34. When the teacher-pupil ratios are examined separately for the primary and secondary sectors, the primary sector being from standard I—VII and the secondary sector standard VIII—X, the ratios in the former case lie between 31 and 36 and in the latter between 25 and 28. In the primary sector the ratio was maintained at 36 for the recent past years excepting the year 1974-75 where it was only 35 while in the secondary sector it was lying between 25 and 28 for the past seven or eight years. There is a limitation in the calculation of the ratios especially in the secondary sector. The specialised teachers were also taken into account in the calculation of the teacher-pupil ratios which is not necessary in the right sense since these teachers may not be holding class charges. The data on special teachers were not readily available for the past years in question and hence the teacher-student ratios could not be worked out excluding the number of special teachers.

Based on the table above it may be concluded that Government are maintaining the teacher-student ratio more or less steadily which involves recruitment of teaching staff every year to cope up with the growth of the student population. Ultimately Government have to spend more and more every year to maintain the same level of ratios.

#### (7) Budgetary Growth on School Education

Unlike other States in India expenditure on education in Kerala constitutes a major share of the total budgeted expenditure of the State. The budgeted expenditure on school education rose from Rs. 16.83 crores in 1960-61 to Rs. 86.42 crores (revised estimate) in 1974-75. It was Rs. 65.47 crores during the previous year. The school expenditure has gone up by 413 per cent over a period of 14 years. Out of a total provision of 90.90 crores for education in the State 74.14 (Budget estimate) crores or 82% of the budgeted expenditure is meant for school education alone. Primary education claims the lion's share of the provisions under school education, nearly 68% while only 24 per cent is spent on secondary education. The percentage distribution of educational expenditure among the different stages of education is given below:—

<i>Stage of education</i>	<i>*Percentage of expenditure to total exp. on education</i>
Primary education	56.65
Secondary education	25.20
University education	12.26
Technical education	3.37
Others	2.52
Total	100.00

\*Revised estimates 1974-75.

Nearly 62 per cent of the budget expenditure under school education is spent on private schools. From the above it can be seen that Government spend a considerable amount on school education for the maintenance of the high literacy in the State and for providing additional facilities for the growing school going population of the State. Government expenditure on education forms 37 per cent of the total expenditure while it is only 24 per cent for all India.

The per capita expenditure on education in 1960-61 was only Rs. 9.56. It went up to Rs. 34.83 in 1973-74 and Rs. 39.10 in 1974-75. The cost per pupil on primary education was Rs. 49.30 in 1965-66 which increased to Rs. 117.52 by 1974-75. The corresponding figures for secondary education are Rs. 90.37 and Rs. 217.90 respectively.

### (8) Wastage in School Education

Eventhough huge amounts are spent every year for the education of the children in the Schools, wastage in school education is considered to be very much. A good number of students discontinue their studies at different periods of their school career on account of various socio-economic reasons. Some studies conducted by the education department revealed that nearly 6 per cent of the students who joined the I standard come out successful with a pass in the S.S.L.C within the stipulated period of the course. It was found that only 63 students out of the 1000 who joined the Standard I in 1963-64 got out successful in their S.S.L.C. examinations conducted in 1972-73. When this was studied separately for boys and girls it was found that 67 boys and 59 girls out of thousand each came out with their S.S.L.Cs. within the stipulated period from 1963-64 to 1972-73. The tables relating to this study are reproduced below for ready reference.

Wastage in school education—Boys 1963-64—1972-73

Year	Standard	Students	Failure and drop out indices
1963-64	I	355084	1000
1964-65	II	325097	916
1965-66	III	307428	866
1966-67	IV	290483	818
1967-68	V	241921	681
1968-69	VI	206402	581
1969-70	VII	175722	495
1970-71	VIII	166237	468
1971-72	IX	142850	402
1972-73	X	83390	235
Passed S.S.L.C. April 1973		23628	67*

\*Out of 1000 boys admitted to Std. I only 67 passed.



## Wastage in school education—Girls 1963-64—1972-73

<i>Year</i>	<i>Standard</i>	<i>Students</i>	<i>Failure and drop out indices</i>
1963-64	I	319647	1000
1964-65	II	288159	901
1965-66	III	267503	837
1966-67	IV	250240	783
1967-68	V	198836	622
1968-69	VI	170108	532
1969-70	VII	149097	466
1970-71	VIII	142460	446
1971-72	IX	123075	385
1972-73	X	72726	228
Passed S.S.L.C April 1973		18839	59*

\*Out of 1000 girls admitted to Std. I only 59 students passed the S.S.L.C. Examination held at the end of the course.

### (9) Administrative machinery

The Director of Public Instruction is the Head of the Department of School Education who is assisted in the field by three Regional Deputy Directors, 28 District Educational Officers and 147 Assistant Educational Officers, each of the above officers having separate offices and staff. The Director of Public Instruction is also the Commissioner for Government Examinations for which an examination wing is functioning under the immediate control of a Joint Commissioner. There is also a State Institute of Education under the Directorate of Public Instruction. The State Institute is headed by a Director in the cadre of Joint Director. A Text Book branch is also functioning under the immediate control of a Deputy Director.

The Joint Commissioner for Examinations, in the cadre of Joint Director, is assisted by a Secretary in the the grade of Deputy Director, and Assistant Secretary in the grade of Assistant Director, and three Senior Superintendents and 83 non-gazetted staff. Under the State Institute of Education, a science institute and a Primary Institute of education, each under the immediate control of a Deputy Director are also functioning. These three units (Institute wing) consist of 33 gazetted officers and 66 non-gazetted staff. The Text Book branch, headed by the Deputy Director, consists of a Text Book Officer, an Accounts Officer, both gazetted and 52 non-gazetted staff.

Besides the above units, the Directorate proper is manned by about 42 gazetted officers and 329 non-gazetted staff members.

In the office of the Regional Deputy Director, there are seven gazetted posts supported by nearly 85 non-gazetted staff under various categories. Similarly the staff pattern in the office of the District Educational Officer consists of 3 gazetted posts and 38 other officials under other categories. The Assistant Education Officer (non-gazetted) is assisted in his office by 9 other officials. Apart from the regular posts of Assistant Educational Officers, there are twenty posts of Additional A.E.Os. Thus there are altogether 3517 officials out of which 189 are gazetted officers, engaged in the administrative set up of the department. Apart from the teaching staff in the schools there are clerks and 1st grade staff to assist the heads of the institutions. On an average there may be one clerk and four peons in a Government high school (with U.P. section), two peons in the U.P. sector and one peon in the Lower Primary School. Thus a total number of 5520 persons will be engaged for clerical assistance and last grade service in the educational institutions run by the Government. Similarly in the schools under the Private Managements near about 8670 persons will be engaged in administrative assistance, 5 persons in the high schools (with U.P. section), two persons in the U.P. schools and a peon in each Lower Primary School. Based on the above, the total number of administrative staff in all the schools together comes to nearly 14196. The over all picture of the persons involved in the administrative set up is furnished in the following table. More than 17700 persons are involved in the administrative machinery of the school education department including the schools under the Private Managements.

*No. of persons engaged in the Administrative set up*

Director of Public Instruction	..	1
Director of Public Institute	..	1
Joint Commissioner for Examination	..	1
Deputy Director (Text Book)	..	1
Other Gazetted Officers in the Directorate (proper)	..	41
"    Examination Wing	..	5
"    State Institute for education	..	32
"    Text Book Office	..	2
Gazetted Officer in the Regional offices	..	21
"    Educational districts	..	84
		<hr/>
Total G.Os		189
		<hr/>
Non Gazetted staff in the Directorate	..	329
"    Examination Wing	..	83
"    State Institute	..	66
"    Text Book Office	..	52
"    *Regional offices	..	244
"    D.E.O's offices	..	1064
Assistant Educational officers		167
Staff in the A.F.O's office		1323
Clerks & Peons in Govt. schools		5520
Do.    in private schools		8670
		<hr/>
Total Non-gazetted staff		17518
		<hr/>
GRAND TOTAL		17707

\*Existing No. varies in each office from the approved pattern given in the appendix.

## (10) Summary and Conclusions

Kerala State maintains a high level of literacy when compared to the situation in the other States of the country. It has the distinction of having the highest percentage of literacy among the States in India. To maintain this distinction the Government spends a sizable share of its revenues every year. This study attempts to assess the involvement of manpower and other resources in the school education of Kerala for the past few years.

The population of Kerala increased from 1.69 crores in 1961 to 2.13 crores in 1971 and to 2.30 crores (projected) in 1974. The corresponding growth in the school going population which belong to the age group, 5—14, indicates an increase of near about 13 lakhs during the last 13 years. The State had to provide additional facilities for these increased numbers by way of space, teachers, other personnel and other equipments.

The students have to cover 4 years in the primary section, three years in the upper primary and three years in the secondary section. School education is completely free in this State and it was introduced on a phased programme. All the staff in the schools except the unaided ones receive their salary direct from Government. The private school teachers and other staff now enjoy pension and other benefits too. Generally there are three broad types of managements of schools—Government, Private aided and Private unaided but recognised. The schools are categorised into three, high schools, upper primary schools and lower primary schools. Recent years witnessed substantial progress in respect of the number of educational institutions, enrolment, teachers and expenditure on education. The number of high schools in the State has increased from 895 in 1960-61 to 1503 in 1974-75. New schools are being opened in most of years. If the year 1960-61 is considered as the base nearly 43 high schools on an average were newly opened every year, the index of growth being 168. The index of growth in the case of the Upper primary schools is 137 (1974-75) when 1960-61 is considered as the base. Government Upper primary schools increased by 70% when private management U.P. schools indicated only 24 per cent growth. On an average 50 Upper primary schools were newly coming up every year to contain the growth in the school going population for the last 14 years. The corresponding increase with respect to the Lower Primary Schools works out to only 5% and the average increase in the number of L.P. Schools per year comes to 24. The largest number of private schools (all categories) is owned by the Nair Community closely followed by the Syrian Christians, Muslims, other Hindus and Ezhavas.

The student population (school going) which was 32.70 lakhs in 1960-61 rose up to 53.59 lakhs by the year 1974-75, recording an increase of 64 per cent during the course of 14 years. The enrolment percentage to total population in 1974-75 was 23.06 while it was 19.34 per cent in 1960-61. The number of students in the primary sections (L.P and U.P together) increased from 2939408 in 1960-61 to 4423247 in 1974-75. The corresponding figures for the high school section or the secondary stage were 330893 and 936042. The

indices of variation, taking 1960-61 as the base for the primary stage as well as the secondary stage students were 155 and 283 respectively. When the total school going population are considered for the two years, the index of variation works out to be 164. Of the total school going population in 1974-75 girls constitute 47.6 per cent.

The total number of teachers was 1.54 lakhs in 1973-74 (latest available figure). The number of teachers for general education (excluding teachers in Basic training schools) rose from 1.09 lakhs in 1960-61 to 1.52 lakhs in 1973-74 thereby absorbing on an average nearly 3300-3400 every year into the teaching profession (school education). The yearly average absorption of teachers in the high schools, U.P. schools and L.P schools was of the order of 1362, 1105 and 882 respectively. The participation of women in the teaching profession in the State is considerably high. Just as in the case of girls students lady teachers also constitute 47 per cent of the total teaching population in the schools. In the Government sector males are more in number while in the private aided sector both males and females share the jobs more or less equally. But in the private unaided sector females occupy nearly 69% of the jobs.

Generally trained hands are appointed in the schools. Out of the 152389 teachers in 1973-74 only 5652 are seen untrained which comes to nearly 0.04 per cent. There are on the whole 19 training colleges in the State with an intake capacity of 1950 students. The T.T.C. course is meant for the undergraduates. The Government had to intervene and restrict admissions to the T.T.C. recently to arrest the growth of unemployment among the trained hands. In 1973-74 no admissions were made at all.

A more or less steady level is maintained in the teacher-student ratios for the past years. The teacher-student ratios for all the classes together lie between 30 and 35 for the last 14 years. Government have to spend more and more every year to maintain the same level of ratios. Expenditure on education in the State constitutes a major share of the total budgeted expenditure. The budgeted expenditure on school education rose from 16.83 crores in 1960-61 to Rs. 86.42 crores in 1974-75, there by recording 413 per cent increase over a period of 14 years. Primary education claims nearly 68% of the provision under school education while only 24% is spent on secondary education. Nearly 62 per cent of the budgeted expenditure under school education is spent on Private schools. Government spend a considerable amount on school education for the maintenance of the high literacy in the State and for providing additional facilities for the growing population of the State. The per capita Government expenditure on education worked out to Rs. 39.10 in 1974-75. The cost of Government per pupil on primary education was Rs. 117.52 and for secondary education Rs. 217.90.

Wastage in school education is considered to be very much. A good number of students discontinue their studies at different periods of their school career on account of various socio-economic reasons. Studies conducted by the School Education Department revealed that nearly 6 per cent of the

students who joined the I standard come out successful with a pass in the S.S.L.C. within the stipulated period of the course.

Apart from the teaching staff there is a good number of persons engaged in the administrative machinery in the school education system, including those in the private schools also. Nearly 189 gazetted officers (Headmasters of high schools not included) and more than 17700 non-gazetted staff are involved in this administrative set up.

	1974-75			
	H.S.	U.P.S.	L.P.S.	Total
1 No. of schools	1503	2639	7041	11183
2 No. of students	936042	1555033	2868214	5359289
3 No. of teachers (1973-74)	31376	47392	73621	152389
4 Administrative staff				17707
5 Budgeted Expenditure (Revised Estimate)				86.42 crores

## APPENDIX

TABLE NO.-I

## Growth of Institutions—Upper Primary Schools

<i>Year</i>	<i>Government Schools</i>	<i>Private Schools</i>	<i>Total</i>
1960-61	530	1402	1932
61-62	576	1409	1985
62-63	711	1574	2285
63-64	705	1580	2285
64-65	758	1670	2428
65-66	761	1686	2447
66-67	778	1697	2475
67-68	782	1697	2479
68-69	797	1738	2535
69-70	797	1735	2532
70-71	809	1734	2543
71-72	811	1740	2551
72-73	811	1739	2550
73-74	809	1739	2548
74-75	904	1735	2639

TABLE NO.—II

## Growth of Institutions—Lower Primary Schools

<i>Year</i>	<i>Government Schools</i>	<i>Private Schools</i>	<i>Total</i>
1960-61	2719	3987	6705
61-62	2835	3910	6745
62-63	2985	3919	6904
63-64	2928	3991	6919
64-65	2998	4032	6930
65-66	2904	4050	6954
66-67	2201	4072	6938
67-68	2864	4076	6940
68-69	2805	4112	6917
69-70	2805	4123	6928
70-71	2804	4091	6895
71-72	2804	4091	6895
72-73	2798	4089	6887
73-74	2807	4097	6904
74-75	2964	4077	7041

TABLE NO.-III

**Educational District-wise Number of Assistant  
Educational Officers**

<i>Sl. No.</i>	<i>Educational District</i>	<i>No. of A. E. O. Offices</i>
1.	D.E.O Neyyattinkara	4
2.	" Trivandrum	3
3.	" Attingal	5
4.	" Quilon	5
5.	" Kottarakara	6
6.	" Pathanamthitta	5
7.	" Alleppey	6
8.	" Mavelikara	5
9.	" Thiruvalla	5
10.	" Kottayam	4
11.	" Palai	5
12.	" Kanjirappally	3
13.	" Idikki	5
14.	" Ernakulam	4
15.	" Muvattupuzha	2
16.	" Alwaye	5
17.	" Irinjalakuda	4
18.	" Trichur	3
19.	" Chowghat	5
20.	" Palghat	6
21.	" Ottappalam	5
22.	" Tirur	7
23.	" Malappuram	7
24.	" Kozhikode	7
25.	" Badagara	9
26.	" Tellicherry	7
27.	" Cannanore	8
28.	" Kasargode	7
		<u>147</u>

TABLE NO. IV

## Staff Pattern

## Directorate of Public Instruction

<i>Category</i>	<i>Scale of pay</i>	<i>No. of Posts</i>
1. Director of Public Instruction	1600-2000	1
2. Administrative Officer	950-1450	1
3. Finance Officer	950-1450	1
4. Joint Director	850-1450	1
5. Deputy Directors	750-1200	2
6. Accounts Officer	710-1200	1
7. Law Officer	710-1200	1
8. Special Officer-Care	710-1200	1
9. Accounts Officer (P.F.)	600-1000	1
10. Hindi Education officer	560-1100	1
11. Administrative Assistant	560-1100	2
12. Assistant Directors	560-1100	2
13. Asst. Provident fund Officers	560-1100	3
14. Financial Assistant	560-1100	1
15. Special Officer (A.N.P)	560-1100	1
16. P.A. General	535-835	1
17. P.A. Employment	535-835	1
18. Research Officers (statistics)	510-995	2
19. Senior Superintendents	495-835	14
20. Chief Accountant	495-835	1
21. P. A. to the Secretary, State Education Advisory Board	495-935	1
22. Arabic Special officer	535-835	1
23. Organiser for Sports & Games	535-835	1
		42
24. Non Gazetted staff like Junior Superintendents, Clerks, Typists, Librarian, Research Assistants, Stenos, Binders, Driver, Last grade employees etc.		329



TABLE NO. V (a)

## Staff Pattern

## Examination wing under the Directorate

<i>Category</i>	<i>Scale of pay</i>	<i>No. of posts</i>
1. Joint Commissioner	850-1250	1
2. Secretary to Commissioner	750-1250	1
3. Assistant Secretary	560-1100	1
4. Other Gazetted Officers]	495-835	3
		<hr/> 6
5. Non Gazetted staff like Junior Superintendents, Clerks, Typists, Binders, Store clerk, Driver, Last grade employees		<hr/> 83
<b>Text Book Branch (b)</b>		
1. Deputy Director	750-1250	1
2. Text Book Officer	560-1100	1
3. Chief Accountant	495-835	1
		<hr/> 3
4. Non-gazetted staff (as indicated above)		<hr/> 52

TABLE NO. VI

## Staff pattern of State Institute of Education

<i>Category</i>	<i>Scale of pay</i>	<i>No. of posts</i>
1. Director	850-1250	1
2. Deputy Directors	750-1250	6
3. Assistant Directors	560-1100	1
4. Education Officer	560-1100	1
5. Research Officers	560-1100	5
6. Statistics Officer	560-1100	1
7. Education Survey Officer	560-1100	1
8. Evaluation Officer	560-1100	1
9. Other Gazetted Officers like Science consultants, Instructors, Senior superintendents, Technical Assistant etc.		<hr/> 16
		<hr/> 33
10. Non-gazetted staff		<hr/> 66

TABLE NO. VII (a)

**Staff Pattern of the Regional Deputy Director  
of Public Instruction's office**

Category	Scale of pay	No.
(1)	(2)	(3)
1. Regional Deputy Director of Public Instruction	750-1250	1
2. Administrative Officer/ Administrative Assistant	710-1200 600-1100	1
3. Accounts officer	560-1100	1
4. Senior Superintendents	495-835	4
5. Junior Superintendents	405-660	6
6. Fair Copy Superintendent	330-575	1
7. Stenographer	240-540	1
8. Projector Operator	215-540	1
9. U.D. Clerks	275-525	26
10. L.D. Clerks	230-385	33
11. U.D. Typists	275-525	5
12. L.D. Typists	230-385	2
13. Cleaner	196-265	1
14. Attenders	215-370	2
15. Duffeder	200-285	1
16. Class IV	196-265	10
17. Driver	215-370	1
18. Teacher cum Librarian cum public city officer	405-660	1

TABLE NO. VII (b)

**Staff Pattern of the District Educational Officer's office.**

1. District Educational officer	560-1100	1
2. Personal Assistant	535-835	1
3. Care Supervisor	495-835	1
4. Junior Superintendent	405-660	3
5. Head Clerk	330-575	1
6. Inspector for Muslim Education.	405-660	1
7. U.D. Clerks	275-525	12
8. L.D. Clerks	230-385	10
9. U.D. Typists	275-525	3
10. L.D. Compiler	230-385	1
11. Counter	200-235	1
12. Attender	215-370	1
13. Store Keeper	275-525	1
14. Class IV	196-265	4

*Note:* R.D.D. Offices 3 Nos.

TABLE NO. VII (c)

## Staff Pattern of the Assistant Educational Officer's office

<i>Category</i>	<i>Scale of pay</i>	<i>No.</i>
1. Assistant Educational Officer	405-660	1
2. Head Clerk	330-575	1
3. U.D. Clerks	275-525	2
4. L.D. Clerks	230-385	3
5. L.D. Typist	230-385	1
6. Class IV	196-265	1
7. Full Time Contingent Menials	196-265	1

*Note:* There are 147 Assistant Educational offices and 147+20 Posts of AEOs.

TABLE NO.VIII

## Teaching Staff

<i>Category</i>	<i>Scale of pay</i>
1. Headmaster (H.S.)	535-835
2. Do. (Graduate) UPS	405-660
3. Do.	285-540
4. Headmaster (Non-Graduate) Spl. grade	330-575
5. Do. (primary school)	285-540
6. H.S.A. I Grade (including language teachers)	405-660
7. H.S.A II Grade (including language teachers)	285-540
8. H.S.A (Specialist)	405-660
9. Do.	330-575
10. Do.	285-540
11. Do.	235-395
12. Do.	465-775
13. Do.	435-775
14. Do.	330-575
15. Do.	285-540
16. Do.	240-445
17. Do.	235-395
18. Do.	230-385
19. Do.	215-370
20. P.D. Teachers (I grade)	285-540
21. Do. (II grade)	235-395
22. Instructors	330-575

6

**UNEMPLOYMENT AMONG B. Ed. DEGREE HOLDERS  
IN KERALA**



# UNEMPLOYMENT AMONG B. Ed. DEGREE HOLDERS IN KERALA

## Introduction

The problem of educated unemployment especially among the technical and professional hands is engaging the attention of Government. Lack of reliable information on the various aspects of the problem such as the extent of unemployment, utilisation pattern of the job seekers on the live register, employment opportunities etc., has hampered the formulation of effective employment policies and man power planning. Hence studies to assess the unemployment situation of educated man power under various disciplines in the State have become a necessity.

In this study it is proposed to assess the extent of unemployment among the B. Ed. degree holders. It is a fact that this small State in the Indian Union has the highest literacy among the States and the man power involvement in the educational set up of this State is considerably large. Kerala has been making astounding advancement in the field of education. Consequent on the increased enrolment of students every year the State has to provide additional amenities by way of space, appointment of teachers and other staff etc. The quantitative expansion of educational institutions in the State has been spectacular during the post independence era. By 1974-75 there were 105 Basic Training Schools, 1503 High Schools, 2639 U. P. Schools and 7041 L. P. Schools. 53.59 lakh students were studying in these schools and 1.54 lakh teachers were engaged in teaching these students. Consequently the demand for trained graduate teachers was also increasing every year. But gradually supply outgrew the demand for teachers and the B. Ed. degree holders coming out of the Training Colleges every year had to face unemployment and the situation is worsening day by day.

In the absence of comprehensive data on the extent of unemployment among the B. Ed. degree holders, reliance has been placed on the data available with the employment exchanges, taking into consideration the limitations involved therein. A sizeable proportion of the candidates registered with the employment exchanges may be employed already but still they may be maintaining their names on the rolls for seeking better employment.

For the purpose of this study a sample is selected out of the registrants randomly and the various aspects of the case were brought under observation.

## Object of the Study

The object of the study is to assess the extent of unemployment among the B. Ed. Degree holders in Kerala.

### *Scope and Coverage:*

The study covers on a sample basis of the B. Ed. degree holders borne on the Live Register of Employment Exchanges in the State as on 31-3-1975.

**Sampling Design:**

A 10% sample of the B. Ed. degree holders who were registrants in the Live Register of Employment Exchanges in each District as on 31-3-1975 was randomly selected for the purpose of the study.

**Method of collection of data:**

The details required were collected from the selected persons by personal contact by the field staff of this Bureau. A specimen copy of the questionnaire used for the purpose is given as Appendix III.

**Teachers' Training Facilities**

Facilities for teachers' training have expanded considerably during the first three plan periods. There were only 5 training colleges in the State in 1956-57. Seven more colleges were started during 1957-58. In 1960-61 the number of training colleges rose to 18. One more college was started during 1961-62. Thus there are 19 training colleges (4 Government Training Colleges and 15 Private Training Colleges) in the State at present. The sanctioned intake capacity in these 19 colleges in 1965-66 was 2380 which was curtailed to 1970 in 1973. Details showing sanctioned intake, actual intake and out-turn of B. Ed. degree holders during the period 1965-66 to 1974-75 are given in Tables 1 and 2 of Appendix I.

**Requirements of B. Ed. degree holders**

There were 1503 High Schools in the State during 1974-75. Of these 551 are Government Schools and the remaining 952 are Private Schools. The total number of teachers working in these schools was 32816. The progress of enrolment of students in High Schools and the number of teachers are given in Table 3, Appendix I.

The additional enrolment in the High School section for the V. Plan period is estimated as 1.25 lakhs. To meet the normal development during the V Plan period 4147 trained teachers are required. The requirement of teachers for replacement of stock by death, retirement etc., is estimated as 2294 during the plan period. Thus the total number of teachers required in High School section during the V Plan comes to 6441. After allowing the quota of special teachers the net requirement of B. Ed. degree holders is 4831. Therefore the annual demand for B. Ed. degree holders will be 966. But the average annual out-turn of B. Ed. degree holders from the 19 training colleges in the State is 1629 (considering the out-turn during the period 1972-73 to 1974-75 when intake was reduced to 1970). From the above it is clear that there is acute unemployment among the B. Ed. degree holders in the State.

If these requirements are worked out based on the average annual absorption of teachers in the High School section it can still be seen that the supply from the training colleges outpaces the average annual demand. Over a

period of 10 years the number of teachers in the High School sector rose from 22495 in 1965-66 to 32816 in 1974-75. The annual average growth works out to 1032 while the average out-turn from the training colleges was nearly 2000 during the period. Government are maintaining more or less the same teacher-student ratio every year by appointing the required number of additional teachers to contain the increase in the enrolment of students.

The total number of B. Ed. degree holders on the Live Register of Employment Exchanges in the State as on 31-3-1975 was 2837. The number of B. Ed. degree holders in the Live Register in 1972 was 2560.

### Results of the Survey

Out of 2837 B. Ed. degree holders in the Live Register of Employment Exchanges as on 31-3-1975, 283 registrants (10%) were selected at random for the study. The particulars required were collected from these persons by the method of personal contact by the Investigators of the Bureau. The response for the survey was 71%. Details regarding the number of persons selected and the number responded in each district are given in Table 2. The non-response was mainly due to change of residential addresses. The survey reveals that 42% of the registrants contacted were graduates in Arts, 55% were graduates in Science, 2% were Post-graduates in Arts and 1% Post-graduates in Science. Among the persons responded 24% has passed their B. Ed. degree examination before 1970, 16% in 1970, 20% in 1971, 14% in 1972, 15% in 1973 and about 11% in 1974 (Vide Table 2, Appendix II).

#### Demographic particulars:

(a) *Age:* Age distribution of the persons contacted for the study is furnished below:—

<i>Age Group</i>	<i>No of respondents in the age group</i>	<i>Percentage to total</i>
20 and below	Nil	..
21—24	41	20.4
25—28	109	54.2
29 and above	51	25.4
Total	201	100.0

From the above table it can be seen that the maximum number of respondents representing 54.2% of the total came in the age group of 25-28 years. 51 Respondents or 25.4% had crossed the age limit of 28 years.

#### (b) *Sex and Marital Status:*

Out of 201 respondents for the study 28% were males and the rest 72% were females. As regards marital status it was found that 44% were married and the remaining 56% were unmarried.



**Employment Pattern:**

It was observed in the survey that 16% of the respondents were employed. The distribution of persons according to employment status is as follows:—

<i>Employment status</i>	<i>Percentage of persons employed</i>
Self employed	Nil
Employer	Nil
<i>Employees:</i>	
1. Central Government	3
2. State Government	47
3. Private	50
	100

Distribution of persons employed according to year of passing and year of appointment are given in Table 3 and employment status in Table 4 of Appendix II.

The survey showed that 84% of the respondents were unemployed. It is found that 24% were called for interview by the Employment Exchanges. Details of persons called for interview are furnished in Table 5, Appendix II.

None of them secured employment through Employment Exchanges. 34 persons (16%) got employment through other sources.

**Characteristics of employed persons:**

It is seen that out of the 34 employed persons 21% were satisfied with their present jobs. The remaining 79% have expressed that they were not satisfied with their present job. But 74% had stated that they intended to retain their names in the Live Register while the remaining 26% had not expressed such intentions.

**Monthly earnings:**

Out of the employed persons only 6% were earning monthly salary of Rs. 500 and above. 62% were in the salary range of Rs. 300-500 and the remaining 32% were earning less than Rs. 300. The distribution of the employed persons according to their monthly earnings is given in Table 6, Appendix II.

**Conclusion**

The study to assess the extent of unemployment among the B. Ed. degree holders was conducted with a sample size of 10% of the Registrant degree holders on the Live Register maintained by the Employment Exchanges in Kerala as on 31-3-1975. Out of 283 B. Ed. degree holders selected for the study only 201 (71%) could be contacted. Of these 201 respondents 34 persons (16%) were found to be employed and the remaining 167

persons (84%) unemployed. Among these registrants contacted 55% were graduates in science, 42% were graduates in Arts and the remaining 3% were Post-graduates. Out of the 201 persons 90% have passed their B. Ed. degree examination before 1974. More than 50% were in the age group of 25-28. Only 20% were below 24 years of age. 28% of the respondents were males and the remaining 72% females. It was also found that 44% were married while the remaining 56% unmarried. The study revealed that 49 persons (nearly one-fourth of the respondents) were called for interview by the Employment Exchanges. But none of them got employment. 34 persons secured employment through other sources. 50% of those who got employment were in the private sector, 47% were under State Government and 3% under Central Government. As regards monthly earnings of the employed persons 62% were in the salary range of Rs. 300-500 only 6% were getting more than Rs. 500 and 32% getting less than Rs. 300. 79% of the employed persons were not satisfied with their present jobs.

The survey revealed that 84% of the respondents were unemployed. In other words, 16% of the B. Ed. degree holders in the Live Register of employment exchanges in the State were actually employed, even though they are maintaining their names in the Live Register for better employment. But three-fourth of the respondents were not even called for interview. Bulk of them were females. The average annual out-turn of B. Ed. degree holders from the training colleges in Kerala is 1629 while the annual demand is 960. There is thus a substantial gap between the supply and demand for B.Ed. degree holders in the State.

## APPENDIX-I

TABLE-1

Distribution of Training Colleges by districts and sanctioned intake 1974-75

District	Government		Private		Total	
	No. of colleges	Intake	No. of colleges	Intake	No. of colleges	Intake
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trivandrum	1	150	2	200	3	350
Quilon	..	..	2	200	2	200
Alleppey	..	..	3	300	3	300
Kottayam	..	..	4	400	4	400
Idukki	..	..	..	..	..	..
Ernakulam	..	..	2	200	2	200
Trichur	1	120	..	..	1	120
Palghat	..	..	1	100	1	100
Malappuram	..	..	..	..	..	..
Kozhikode	1	100	1	100	2	200
Cannanore	1	100	..	..	1	100
Total	4	470	15	1500	19	1970

Source:—Training Colleges

TABLE-2

Sanctioned intake-actual intake and out turn of B. Ed. degree holders  
1965-66 to 1974-75

Year	Sanctioned intake capacity	Actual intake	out-turn
(1)	(2)	(3)	(4)
1965-66	2380	2394	2177
1966-67	2380	2398	2173
1967-68	2380	2401	2178
1968-69	2400	2483	2172
1969-70	2400	2417	2144
1970-71	2400	2429	2127
1971-72	2380	2400	2138
1972-73	1970	1982	1689
1973-74	1970	1982	1507
1974-75	1970	1994	1690
Total	22630	22780	19995

Source:—Training Colleges

TABLE 3

## Progress of enrolment of students in High Schools

Year	No of Schools			No. of Students	No. of Teachers
	Government	Private	Total		
(1)	(2)	(3)	(4)	(5)	(6)
1960-61	244	651	895	330893	13675
1961-62	275	653	929	416364	15901
1962-63	312	703	1015	490564	19679
1963-64	315	705	1020	554819	19929
1964-65	345	801	1146	585336	21192
1965-66	345	806	1151	615143	22496
1966-67	391	884	1275	639959	24334
1967-68	394	888	1282	666773	25039
1968-69	440	941	1381	702381	25692
1969-70	441	941	1382	709290	26392
1970-71	442	942	1384	724724	28471
1971-72	446	947	1393	750198	29470
1972-73	448	951	1399	780886	30723
1973-74	452	952	1404	865861	31376
1974-75	551	952	1503	936042	32816

\* Source:—Department of Public Instruction.

## APPENDIX-II

TABLE-1

Number of persons selected and number responded in each District

<i>District</i>	<i>No. of B.Ed. Degree holders on the Live Register as on 31-3-1975</i>	<i>Number selected (10%)</i>	<i>Percentage of respondents</i>
(1)	(2)	(3)	(4)
Trivandrum	406	41	13.1
Quilon	340	34	7.1
Alleppey	256	26	3.9
Kottayam	354	35	12.4
Idukki	163	16	1.4
Ernakulam	342	34	9.9
Trichur	293	29	8.8
Palghat	52	5	1.4
Malappuram	312	31	4.2
Kozhikode	169	17	5.6
Cannanore	150	15	3.2
<b>Total</b>	<b>2837</b>	<b>283</b>	<b>71.0</b>

TABLE- 2

Distribution of respondents according to year of passing

<i>Year</i>	<i>No. passed the B. Ed. degree</i>	<i>Percentage to total</i>
(1)	(2)	(3)
Before 1970	49	24.4
1970	32	15.9
1971	41	20.4
1972	28	13.9
1973	30	14.9
1974	21	10.5
<b>Total</b>	<b>201</b>	<b>100.0</b>

TABLE-3

## Distribution of persons according to year of passing and year of appointment

Year of passing	Year of appointment						Total
	Before 1970	1970	1971	1972	1973	1974	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Before 1970	..	..	..	2	2	6	10
1970	..	..	..	..	..	5	5
1971	..	..	..	..	1	6	7
1972	..	..	..	..	2	2	4
1973	..	..	..	..	2	2	4
1974	..	..	..	..	..	4	4
Total	..	..	..	2	7	25	34

TABLE-4

## Employment status of persons employed

Year of passing	Self Employed	Central Government	State Government	Private	Total	Percentage to total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Before 1970	..	..	5	5	10	29
1970	..	..	3	2	5	14
1971	..	..	5	2	7	21
1972	..	..	2	2	4	12
1973	..	..	..	4	4	12
1974	..	1	1	2	4	12
Total	..	1	16	17	34	100

TABLE-5

Distribution according to year of registration and year of first call for interview

Year of registration	Year of first call						Total
	Before 1970	1970	1971	1972	1973	1974	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Before 1970	2	..	..	..	..	..	2
1970	..	2	1	3	1	7	14
1971	..	..	..	1	2	5	8
1972	..	..	..	1	3	2	6
1973	..	..	..	..	1	2	3
1974	..	..	..	..	..	16	16
Total	2	2	1	5	7	32	49

TABLE-6

Classification of employees according to present monthly earnings

Year of passing	Less than Rs. 300	Rs. 300-500	Rs. 500 and above	Total	Percentage to total
(1)	(2)	(3)	(4)	(5)	(6)
Before 1970	4	6	..	10	29
1970	3	2	..	5	14
1971	2	5	..	7	21
1972	1	3	..	4	12
1973	1	2	1	4	12
1974	..	3	1	4	12
Total	11 (32%)	21 (62%)	2 (6%)	34 (100%)	100

## APPENDIX-III

BUREAU OF ECONOMICS &amp; STATISTICS, TRIVANDRUM

**Study to assess the extent of unemployment among  
B. Ed. Degree holders in Kerala**

## QUESTIONNAIRE

*A. Identification Particulars:*

1. Name
2. Address as given for registration
3. Age
4. Sex
5. Marital status
6. Whether belongs to Scheduled Caste/  
Scheduled Tribe/Backward Class  
(if yes, specify)

*B. Educational Details:*

1. Basic Degree for registration in the  
Employment Exchange
2. Year of Passing
3. Subject taken
4. Additional qualification/specialisa-  
tion/foreign training

*C. Unemployment Particulars:*

1. Date of first registration and register  
number
2. Name of the Exchange
3. Whether renewed periodically
4. If not, give reasons
5. Date of subsequent registration and  
number and name of Exchange
6. Call for interview:  
(a) Whether called for interview



- (b) If yeas, month and year of first call
- (c) Number of subsequent calls
- (d) Called by whom

I call II call III call IV call

Central Government  
 State Government  
 Local Bodies  
 Govt: Undertakings  
 Private Bodies

- (e) Whether attended for interview
- (f) If not, reason for non-attendance
- 7. Whether tried for employment through other sources
- 8. If yes, result of the trial
- 9. Whether prepared to accept employment within the State only or anywhere in the country
- 10. Whether willing to start own industry/trade if financial assistance is received

*D. Details of previous employment if any:*

- 1. Period of employment
- 2. Monthly emoluments (Rs.)
- 3. State whether the employment was obtained through Employment Exchange
- 4. Reason for retrenchment

*E. Details of present employment if any:*

- 1. Month and year of employment:
- 2. Employment status
- 3. State whether the employment is obtained through Employment Exchange/Public Service Commission/others (specify)

Employer/Employee/Self  
 Employed/apprentice/others  
 (specify)

4. State whether the employment is permanent/temporary
5. Designation/occupation
6. Whether in Central Government/ State Government/Government Undertakings/Private
7. Monthly emolument (Rs.)
8. Do you consider your present (a) job and (b) emolument suited to your educational status and training
9. If no, give reasons
10. Whether intends to maintain your names in the live register for better employment

Place:  
Date:

Signature of Respondent.

Signature with name and designation of the field staff who canvassed the questionnaire

1947

1. The first part of the report deals with the general situation of the country and the progress of the work during the year.

2. The second part deals with the work of the various departments and the results achieved.

3. The third part deals with the financial position of the organization and the budget for the next year.

4. The fourth part deals with the work of the various committees and the results achieved.

5. The fifth part deals with the work of the various departments and the results achieved.

6. The sixth part deals with the work of the various departments and the results achieved.

**7**

**EMPLOYMENT TRENDS AMONG ENGINEERING  
GRADUATES ON THE LIVE REGISTER OF  
THE EMPLOYMENT EXCHANGES—1974.**

THE UNIVERSITY OF CHICAGO  
DIVISION OF THE PHYSICAL SCIENCES  
DEPARTMENT OF CHEMISTRY  
5780 SOUTH CAMPUS DRIVE  
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# EMPLOYMENT TRENDS AMONG ENGINEERING GRADUATES ON THE LIVE REGISTER OF THE EMPLOYMENT EXCHANGES—1974

## 1. Introduction

Technical man power like 'Engineering, plays a crucial role in the era of economic planning and development. A qualified Engineer is an asset to the nation. By the advent of planning in India, the availability of technical man power at the right time in sufficient numbers was keenly felt by the planners. There was awareness of the need for developing educational and training facilities in the country. A large number of Engineering Colleges was started throughout the country with a view to safeguard the supply of Engineers for the proper implementation of construction programmes connected with the planned development. Consequently there are at present six Engineering Colleges in Kerala with an annual intake capacity of 1012 for the degree classes. Three of these Engineering Colleges are run by the Government (one is Regional Engineering College, while the other three are under Private Management.

By the end of the Third Plan a peculiar situation arose which indicated an imbalance between the supply and demand of Engineers. In spite of job oriented programmes the out-turn of Engineering Graduates could not be balanced with the demand for them both in the Public and Private Sectors. Gradually the Engineering Graduates in Kerala had to face unemployment which began to increase rapidly. This is wastage of valuable human resources. It involves heavy public and private cost to turn out an Engineer. The severity of unemployment among the Engineers attracted the attention of authorities who were anxious to assess the intensity of unemployment from time to time.

In Kerala, the State is the biggest employer of engineers. Industries are not so developed as to absorb the bulk of the out-turn of graduates from the engineering colleges. Under these circumstances a study to assess the intensity of unemployment among the engineering graduates assumes importance.

The man power planning unit of the Bureau of Economics and Statistics has undertaken such a study based on the enrolment of the Live Register' of the Employment Exchanges. Lack of reliable information regarding the level of unemployment among technically qualified persons has hampered the formulation of effective employment policies and man power planning. Much reliance has been placed on the limited data available at the employment exchanges. Bearing in mind the limitation of Employment Exchange records in respect of their capacity to reflect the state of unemployment at a point of time, the emphasis in this study has been placed primarily on the distribution pattern of the registrants and only marginally on their absolute numbers. One of the major limitations of the data available with the Employment Exchanges is that often

a sizeable proportion of the candidates registered with the Employment Exchanges are already employed and yet they keep themselves in the Live Register of the Exchange with the object of securing better employment.

## **II Object scope and Coverage of the Study**

The problem of the educated unemployed especially those of the technically qualified persons is an integral part of the problem of the optimum utilisation of human resources. The object of this study is to assess the extent of unemployment among engineers who are registrants in the live register of the employment exchanges. The study will throw light on the severity of unemployment among the engineers and the important characteristics of the unemployed personnel. The study mainly aims at determining the distribution of the unemployed Engineers according to their fields of specialisation, duration of unemployment, employment status of those who are employed at present and other related aspects. The results of the study may be useful for vocational guidance and future educational planning.

The study has covered all the Engineering Graduates who are on the Live Register of the Employment Exchange as on the end of November, 1974.

### *(2) Sampling design.*

A twenty per cent sample of the registrants has been taken by the systematic sampling method, the registrants being arranged according to the date of registration. The Engineers have been stratified as Civil, Mechanical, Electrical and others. There were 1448 registrants (Engineers) on the Live Register of the Employment Exchange as on 30-11-1974 out of which 290 were selected for the purpose of the study.

### *(3) Method of collection of data.*

The selected Engineers were contacted personally by the field staff of this Department and the required information was collected in a questionnaire designed for the purpose. A copy of the questionnaire used for the study is given in the Appendix.

The field work was supervised by the District Statistical Officers.

### *(4) Reference period.*

The reference period for the survey was fixed as December, 1974. Particulars of employment status of the registrants were however collected with reference to the week preceding the date of enquiry.

(5) *Limitations of the study.*

Even though 290 Engineers had been selected for the purpose of the study only 196 Engineers could be contacted and the required information collected from them. This accounts near about 68 per cent of the selected sample. The rest of the Engineers could not be contacted as they were neither available at the address obtained from the Live Register of the Employment Exchange nor their present whereabouts could be located within the stipulated time of the study.

**III. Results of the Study**(1) *Registration.*

According to the study, there were 1448 Graduate Engineers as job seekers on the rolls of the Employment Exchange as on 30-11-1974. There has been an increasing trend in the registration of the job seeking Engineers in the Live Register of the Employment Exchange over the past few years. This indicates that the level of unemployment among the Engineering Graduates has been going up. The following table indicates the increasing trend in the registration of engineering job seekers in the Live Register of the Employment Exchange. The data furnished relate to the total number of registrants as on 31-12 of every year, but the same for the year 1974, which is considered for the study is as on 30-11-1974.

**Engineering job seekers on the Live Register as on  
31-12 of every year**

<i>Year</i>	<i>Males</i>	<i>Females</i>	<i>Total</i>
1970	1796	160	1956
1971	1915	151	2066
1972	1949	166	2115
1973	2025	110	2135
*1974	1381	69	1450

\* Data upto 30-11- only

It is evident from the above table that the number of engineering job seekers is increasing every year but for the year 1974. This does not indicate a fall in the level of unemployment among the Engineers in 1974. The data for the year is not complete and there might have been cancellations due to want of renewals in time and new registrations were yet to be made.



(2) *Composition of the registrants.*

The Engineering Registrants considered for the study have been broadly classified into four categories viz. (1) Civil, (2) Mechanical, (3) Electrical and (4) Others. The number of Engineering personnel falling into each category of specialisation are furnished in the following table:

**Distribution of registrants by specialisation**

<i>Sl. No.</i>	<i>Category</i>	<i>Number</i>
1.	Civil	35
2.	Electrical	73
3.	Mechanical	73
4.	Others	15
	Total	196

Of these 196 registrants who were personally contacted for the study 13 were females, their distribution according to specialisation being, Civil Engineers—3, Electricals—5, Mechanical—2 and other specialisation—3. This accounts for nearly 7 per cent of the total\* registrants responded for the study which more or less corroborates with the percentage of female registrants every year on the Live Register of the Employment Exchange. The percentage registration of female Engineers in the preceding years (1970-1973) varies between 6 to 8 per cent of the total registrants on the live register.

**Female Engineers in the Sample**

	21-24	25-27	28 and above	Total
Civil	1	2	..	3
Electrical	1	3	1	5
Mechanical	1	..	1	2
Others	..	2	1	3
Total	3	7	3	13

\* Registrants responded for the study which more or less corroborates.

2 (a) *Marital Status.*

Of the 196 Engineering Graduates contacted for the study 31 were married, and 165 were unmarried. Among the 31 married, 24 were males and 7 were females. When expressed as percentages it is seen that 16% of the total registrants contacted are married. Among the female registrants 54% are married while the percentage of married males among the contacted male registrants works out to only 13.

**Marital Status**

<i>Males</i>		<i>Females</i>		<i>Total</i>	
<i>Total</i>	<i>Married</i>	<i>Total</i>	<i>Married</i>	<i>Total</i>	<i>Married</i>
183	24	13	7	196	31

(3) *Age and year of passing of the registrants.*

It is observed from the study that all the registrants contacted for the study, both males and females are above twenty years of age. Because of the school admission age and the number of classes to pass through it is not generally possible to come out of the Engineering College before one attains the age of 21. On an analysis of the age composition of the contacted registrants, it is seen that 69 out of the 196 engineers belong to the age group 21-24 years which accounts nearly 35% while 83 Engineering Graduates come in the age group 25-28 years accounting 42% of the selected registrants. The remaining 44 persons are above 28 years of age which means 23% of the total registrants contacted for the study. The electrical and mechanical graduates account for nearly 75% of the total registrants contacted for the study.

Of all the persons considered for the study 54 persons took their degree in 1974 itself. This comes to nearly 28 per cent of the contacted registrants. One hundred and eleven persons (57%) secured their Engineering Degree during the year 1972-73 and 1974 while 33% (65 persons) became degree holders during 1970 and 1971. Twenty registrants accounting nearly 10% of the registrants got their degree before 1970. The distribution of engineering job seekers according to age and year of passing has been depicted in the table provided in the Appendix.

**Distribution of Engineering Job Seekers according  
to year of passing**

<i>Discipline</i>	<i>Persons contacted</i> <i>No.</i>	<i>Year of Passing (In per cent)</i>						
		<i>Before 1970</i> <i>%</i>	1970	1971	1972	1973	1974	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Civil	35	18	5	14	26	20	9	26
Electrical	73	37	11	9	20	13	18	29
Mechanical	73	37	12	16	20	16	14	22
Others	15	8	6	20	7	7	7	53
<b>Total</b>	<b>196</b>	<b>100</b>	<b>10</b>	<b>14</b>	<b>19</b>	<b>15</b>	<b>14</b>	<b>28</b>

**(4) Year of Registration.**

The maximum number of registrations were seen made in 1974. Sixty-seven persons out of the 196 registrants had their registration with the Employment Exchange in 1974 which accounts to nearly 34%. The registrations in 1970 and before that year together working years 1971, 1972 and 1973 are 16, 18 and 19 respectively. Correlating the year of passing with the year of registrations from the year 1970 to 1973 it can be seen that near about 52% register their names with the Employment Exchange during the year of passing itself. The groups 'before 1970' and the year 1974 are excluded from the purview of the above since the specific year of passing cannot be fixed in the first case and the registrants have no alternate choice in the latter case.

<i>Year</i>	<i>No. passed</i>	<i>No. registered with the Employment Exchange</i>
1970	27	11
1971	38	19
1972	30	14
1973	27	19
<b>Total</b>	<b>122</b>	<b>63</b>

(5) *Year of first call.*

Registration with the Employment Exchange before the year 1970, and those for the years 1970 to 1974 were considered in this study to assess the chances of employment of the registrants. On an analysis of the calls for interview from the Employment Exchange to the 196 Engineering Graduates, it is seen that 58 per cent of them remain on the rolls of the Live Register even without a call for interview so far. Only 82 persons, which works out to 42% of the contacted registrants have been called for interview upto and including the year 1974. The years 1973 and 1974 recorded the maximum number of interview from among the Engineering Graduates who are registrants under consideration while it was very poor during the former years. Of the 39 registrants called for interview in 1974, 8 were Civil Engineers, 15 were Electricals, 13 were Mechanical hands and three were from other categories. This works out to 21% calls for Civil Engineers, 38% for Electricals, 33% for Mechanical hands and nearly 8% of the calls for other specialisation in the year 1974. Taking all the branches of specialisations together it is seen that 20% of the registrants under study was called for interview in the year 1974. Considering the specialisations separately we find that 23% of the Civil Engineers got their interviews call in 1974. Similarly 21% of the Electrical hands and 18% of the Mechanical Graduates were called for interview in this year. Twenty per cent of other specialisation received their interview cards this year.

Thirty-nine per cent of the Civil hands under study, 55% of the Electricals, 68% of the Mechanical graduates and 67% of the other specialisation remained on the rolls of the Live Register without even a call for interview. The detailed table indicating the distribution of Engineering job seekers according to year of first registration and year of first call is furnished in the Appendix.

It is curious to note that only 11 per cent of the registrants were called for interview during the same year of registration. Hence the vast majority of the registrants had to wait longer period even for a call for interview.

<i>Year of Registration</i>	<i>Registrants</i>	<i>No. called for interview</i>
1970	19	3
1971	31	1
1972	35	2
1973	38	4
1974	67	11
<b>Total</b>	<b>190</b>	<b>21</b>

**(6) Employment.**

The main objective of the present study is to assess the intensity of unemployment among engineering degree holders in the State. From the analysis of the data, obtained by personal contact of the selected engineering registrants on the Live Register of the Employment Exchange as on 30-11-1974, it is observed that only 52 persons out of the 196 contacted for the study were employed depicting as low a percentage as 26% employment. In other words, 74 per cent of the Engineering Graduates contacted for the study remain unemployed. Thirty-five persons out of the 52 employed which works out to 67% of the employees got their job only in 1974. Twenty of the registrants considered for the study acquired their degree before the year 1970 but only seven of them had secured a job so far, two in the year 1973 and five in 1974. After years of waiting still 13 of them remain unemployed. The following table depicts the position correlating the year of passing and the year of present employment.

<i>Year of passing</i>	<i>Number contacted</i>	<i>Year of present employment</i>						<i>Total employed</i>
		<i>Before 1970</i>	<i>1970</i>	<i>1971</i>	<i>1972</i>	<i>1973</i>	<i>1974</i>	
Before 1970	20	..	..	..	..	2	5	7
1970	27	..	..	1	3	1	3	8
1971	38	..	..	..	1	5	6	12
1972	30	..	..	..	..	3	4	7
1973	27	..	..	..	..	1	9	10
1974	54	..	..	..	..	..	..	8
Total	196	..	..	1	4	12	35	52

It is evident from the above table that the prospects for securing jobs for the engineering degree holders without undue waiting were meagre for the last few years. Only very few hands were able to secure jobs during the same year of passing. One out of the 27 registrants got such a chance in 1973 while 8 persons out of 54 passed in 1974 secured jobs in the same year itself. The period of waiting to get a job after coming out of the college with the Engineering Degree can very well be assessed from above table. The period of waiting in certain cases extends beyond 4 years.

**(7) Employment status and sectors of employment.**

When we consider the employment status of the Engineering job seekers, it is seen that out of the 52 employed hands, one is self employed and the rest are employees. Among the employees themselves 30 are seen to be regular hands while 21 are only apprentices.

The major share of the employment is seen to be provided by private undertakings. Eighteen out of the 30 regular hands sought their employment in private undertakings. Two of them are employed in Central Government, three in State Government Service and seven hands find their jobs in Government undertakings.

**Percentage distribution of employed engineers according to sectors of employment and employment status**

Discipline	Employed Engineers		Self employed	Employer	Employees				Apprentices
	No.	%age to total job seekers			Central Government	State Govt. undertakings	Private		
Civil	13	37	..	..	8	16	..	38	38
Electrical	15	20	..	..	7	7	27	33	26
Mechanical	22	30	..	..	..	..	14	32	54
Others	2	13	50	..	..	..	..	50	..
Total	52	26	2	..	4	6	13	35	40

It can be seen from the above table that 8 per cent of the Civil Engineers who are employed secured their jobs in the Central Government service, 16 per cent in State Government service and 38 per cent in Private Concern. The remaining 38 per cent are apprentices. Similarly the percentage distribution of the Electrical hands who are employed is as follows:

Seven per cent in Central Government; 7% in State Government Service, 27% in Government Undertakings; and 33% in private concerns. The remaining 26% are apprentices. As regards the Mechanical Degree holders 54 per cent are apprentices while 14% are in Government Undertakings and 32% in Private Service. Among the other specialisations only two persons are employed, one is self employed and the other one is an employee in a Private Concern. The detailed table indicating the employment status and sectors of employment of the Engineering job seekers who are employed at present is furnished in the Appendix.

#### (8) *Emoluments.*

It has already been stated that one of the employed hands is self employed. Out of the remaining 51 employees 18 persons

including 15 apprentices are working, receiving monthly emoluments less than Rs. 300. Another 16 employees including 6 apprentices receive emoluments between Rs. 300-500 monthly. The remaining 17 engineers get Rs. 500 and above a month. Nearly two-thirds of the employed hands receive below Rs. 500 as their monthly emoluments. This clearly indicates the pitiable plight of the engineering degree holders which is also a pointer towards acute unemployment among the Engineering graduates.

Another feature worthy of notice is that persons who had taken their degrees as far as before 1970, 1970, 1971 and 1972 still continue to draw less than Rs. 500 and in some cases less than Rs. 300 a month as their emoluments without being able to secure better jobs and consequently better emoluments even after years of waiting and they still continue on the rolls of the Live Register of the Employment Exchanges hoping for better opportunities. The table containing the distribution of employees (Engineering) according to year of passing and level of emoluments is presented in Appendix.

#### (9) Willingness for self-employment.

When the willingness for self-employment was discussed with the selected registrants at the time of personal contact it was revealed that a good majority of the job seekers was willing to start their own industries and concerns if the required finance were made available to them avoiding complicating procedures. It was assessed that 70% of the contacted registrants (137 out of 196) expressed their willingness for self-employment. Sixty-three per cent of the Civil Engineers, 75% of the Electrical hands, 66% of the Mechanical Degree holders and 80% of the other specialisations are seen to be prepared for self-employment if the required funds are forthcoming.

#### Willingness for self-employment of the engineering job seekers

Branch	Total contacted	Persons willing to start their own industries	%age to the total
Civil	35	22	63
Electrical	73	55	75
Mechanical	73	48	66
Others	15	12	80
Total	196	137	70

**(10) Mobility.**

The study has revealed that 77 per cent of the registrants considered for the study were willing to take up work anywhere in the country. 23 Civil hands, 58 Electricals, 58 Mechanical degree holders and 11 from others expressed their earnest willingness to work anywhere in the country. Guidance Bureau and information centres could provide them the necessary information regarding the availability of jobs and the ways and means to apply for the same. The remaining 23% were not willing to leave the State.

**Engineering job seekers willing to work anywhere in the country**

<i>Branch</i>	<i>Total contacted</i>	<i>Persons willing to work any where in the country</i>	<i>%age to the total</i>
Civil	35	23	66
Electrical	73	58	80
Mechanical	73	58	80
Others	15	11	73
Total	196	150	77

**(11) Sources of employment.**

The majority of the employees got their employments through direct applications while very few only got their chances through Employment Exchange.

**IV. SUMMARY AND CONCLUSION**

The purpose of this study is to assess the extent of unemployment among the Engineering Graduates which is consequent on the imbalance between supply and demand of Engineers. The out-turn of Engineers could not be balanced with the demand for them both in the Public and Private Sectors in spite of job oriented programmes. It is also desired to study the characteristics of the employed Engineers who are registrants with the Employment Exchange. For the purpose of the study a systematic sample of 20% of the Engineering Graduates who were registrants on the rolls of the Live Register of the Employment Exchange as on 30-11-1974 was selected and the required data was collected through personal interviews by the field staff of this Bureau. Only 196 Registrants could be contacted for the study out of the 290 included in the sample



Among the 196 Engineers who had responded for the study, there were 35 Civil Engineers, 73 each of Electrical and Mechanical degree holders and 15 Engineers belonging to other specialisations when categorised. Of these 196 registrants 183 are males and 13 are females. On the whole 31 were married of which 24 were males and 7 were females. On an analysis of the age composition of the contacted registrants it is seen that 69 persons belong to the age group 21-24 years (35%), 83 hands are in the age group 25-28 years (42%) and the remaining 44 (23%) are above 28 years of age.

Of all the persons contacted for the study 54 people took their degrees in 1974 which is 28% of the contacted registrants while 111 persons or 57% secured their degree during the period 72, 73 and 74. Among the registrants there were people who took their degrees even before 1970, in 1970 and 1971. Correlating the year of passing with the year of registrations from the year 1970-1973 it is seen that 52 per cent register their names with the Employment Exchange during the same year of passing. It is strange to note that 58 per cent of the registrants including those who took their Engineering Degrees before 1970 & 1971 remain on the rolls of the Live Register even without a call for interview. The years 1973 and 1974 recorded the maximum number of interviews.

As regards the question of employment it is observed that only 52 persons out of 196 contacted were employed depicting as low a percentage as 26 per cent which means 74 per cent of the engineering graduates contacted for the study remain unemployed. This indicates the severity of unemployment among engineering degree holders. It is clear from the study that the prospects for securing jobs for the engineering degree holders without undue waiting were meagre for the last few years. Only very few hands were able to secure job during the very same year of passing. One out of the 27 registrants got such a chance in 1973 while 8 persons out of 54 passed in 1974 secured jobs in the same year itself. The period of waiting in certain cases extends beyond 4 years which is a clear indicator to the intensity of unemployment among the graduate engineers who become so after spending a lot of private as well as public money.

Of these 52 Engineers who are employed at present, one is self employed and the rest are employees of which 30 are regular hands and 21 are apprentices. Though Government are considered to be the biggest employer for the Engineers it is seen that the trend is otherwise in the last few years under study, 18 out of the 30 regular hands sought their employment in Private Undertakings. The remaining 12 were shared by the Central Government, State Government and Government Undertakings. It is another indicator to the effect that demand for Engineers from the Government side cannot cope up with the out-turn of Engineers every year.

The low monthly income of the majority of the Engineering Graduates who are employed is another pointer towards the severity of unemployment among Engineering Degree holders. It is pitiable to note that a good percentage of the employed hands receive monthly emoluments less than Rs. 500. One third of them receive less than Rs. 300 a month whenever IV grade officers in Government offices and Public Undertakings receive more than that. Most of the registrants contacted (nearly 70%) expressed their willingness to start their own industries or concerns if the required finance were made available to them in easy terms. The study has revealed that 77% of the registrants are willing to take up work anywhere in the country.

## APPENDIX I

TABLE NO. 1.

Distribution of Engineering Job seekers according to age and year of passing

Age group	Branch	Total Number	Year of Passing					
			Before 1970	1970	1971	1972	1973	1974
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
20 and below	Civil	..	..	..	..	..	..	..
	Electrical	..	..	..	..	..	..	..
	Mechanical	..	..	..	..	..	..	..
	Others	..	..	..	..	..	..	..
21-24	Civil	10	..	..	..	1	2	7
	Electrical	25	..	..	2	1	8	14
	Mechanical	27	..	..	2	5	7	13
	Others	7	..	1	..	..	..	6
25-28	Civil	12	1	2	2	4	1	2
	Electrical	34	..	4	12	7	4	7
	Mechanical	32	7	7	9	5	3	1
	Others	5	..	2	..	1	..	2
Above 28	Civil	13	1	3	7	2	..	..
	Electrical	14	8	3	..	2	1	..
	Mechanical	14	2	5	3	2	..	2
	Others	3	1	..	1	..	1	..
All	Civil	35	2	5	9	7	3	9
	Electrical	73	8	7	14	10	13	21
	Mechanical	73	9	12	14	12	10	16
	Others	15	1	3	1	1	1	8
	All Branches	196	20	27	38	30	27	54

TABLE NO. II

**Distribution of Engineering Job seekers according to Year of Passing  
and Year of Registration**

Year of Passing	Branch	Total	Year of Registration					
			Before 1970	1970	1971	1972	1973	1974
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Before 1970	Civil	2	2	..	..	..	..	..
	Electrical	8	1	5	..	1	..	1
	Mechanical	9	3	2	2	..	..	2
	Others	1	..	1	..	..	..	..
1970	Civil	5	..	1	2	2	..	..
	Electrical	7	..	4	1	1	1	..
	Mechanical	12	..	6	4	2	..	..
	Others	3	..	..	3	..	..	..
1971	Civil	9	..	..	4	3	2	..
	Electrical	14	..	..	7	6	..	1
	Mechanical	14	..	..	8	6	..	..
	Others	1	..	..	..	..	..	1
1972	Civil	7	..	..	..	4	3	..
	Electrical	10	..	..	..	4	6	..
	Mechanical	12	..	..	..	6	6	..
	Others	1	..	..	..	..	1	..
1973	Civil	3	..	..	..	..	3	..
	Electrical	13	..	..	..	..	8	5
	Mechanical	10	..	..	..	..	7	3
	Others	1	..	..	..	..	1	..
1974	Civil	9	..	..	..	..	..	9
	Electrical	21	..	..	..	..	..	21
	Mechanical	16	..	..	..	..	..	16
	Others	8	..	..	..	..	..	8
All	Civil	35	2	1	6	9	8	9
	Electrical	73	1	9	8	12	15	28
	Mechanical	73	3	8	14	14	13	21
	Others	15	..	1	3	..	2	9
	All Branches	196	6	19	31	35	38	67

TABLE NO. III

**Distribution of Engineering Job seekers according to year of First  
Registration and Year of First Call**

Year of registration	Branch	Total registrants contacted	Year of first call						No call
			Before 1970	1970	1971	1972	1973	1974	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Before 1970	Civil	2	..	1	1	..	..	..	..
	Electrical	1	1	..	..	..	..	..	..
	Mechanical	3	..	..	..	..	..	2	1
	Others	..	..	..	..	..	..	..	..
1970	Civil	1	..	..	1	..	..	..	..
	Electrical	9	..	3	2	..	3	1	..
	Mechanical	8	..	..	..	..	3	2	3
	Others	1	..	..	..	1	..	..	..
1971	Civil	6	..	..	1	2	1	1	1
	Electrical	8	..	..	..	..	4	4	..
	Mechanical	14	..	..	..	..	..	4	10
	Others	3	..	..	..	1	..	1	1
1972	Civil	9	..	..	..	1	4	2	2
	Electrical	12	..	..	..	1	3	3	5
	Mechanical	14	..	..	..	..	5	..	9
	Others	..	..	..	..	..	..	..	..
1973	Civil	8	..	..	..	..	1	3	4
	Electrical	15	..	..	..	..	1	3	11
	Mechanical	13	..	..	..	..	2	2	9
	Others	2	..	..	..	..	..	..	2
1974	Civil	9	..	..	..	..	..	2	7
	Electrical	28	..	..	..	..	..	4	24
	Mechanical	21	..	..	..	..	..	3	18
	Others	9	..	..	..	..	..	2	7
All	Civil	35	..	1	3	3	6	8	14
	Electrical	73	1	3	2	1	11	15	40
	Mechanical	73	..	..	..	..	10	13	50
	Others	15	..	..	..	2	..	3	10
	All Branches	196	1	4	5	6	27	39	114

TABLE No. IV

Distribution of Engineering Job seekers according to year of passing and year of present employment

Year of Passing	Branch	Total registrants contracted	Year of present employment					Total employed	
			Before 1970	1970	1971	1972	1973		1974
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Before 1970	Civil	2	..	..	..	..	..	1	1
	Electrical	8	..	..	..	..	..	2	2
	Mechanical	9	..	..	..	..	2	2	4
	Others	1	..	..	..	..	..	..	..
1970	Civil	5	..	..	..	2	1	..	3
	Electrical	7	..	..	..	..	..	2	2
	Mechanical	12	..	..	1	1	..	1	3
	Others	3	..	..	..	..	..	..	..
1971	Civil	9	..	..	..	..	..	2	2
	Electrical	14	..	..	..	..	5	1	6
	Mechanical	14	..	..	..	1	..	3	4
	Others	1	..	..	..	..	..	..	..
1972	Civil	7	..	..	..	..	1	1	2
	Electrical	10	..	..	..	..	..	1	1
	Mechanical	12	..	..	..	..	2	2	4
	Others	1	..	..	..	..	..	1	..
1973	Civil	3	..	..	..	..	1	2	3
	Electrical	13	..	..	..	..	..	2	2
	Mechanical	10	..	..	..	..	..	4	4
	Others	1	..	..	..	..	..	..	..
1974	Civil	9	..	..	..	..	..	2	2
	Electrical	21	..	..	..	..	..	2	2
	Mechanical	16	..	..	..	..	..	3	3
	Others	8	..	..	..	..	..	1	1
All	Civil	35	..	..	..	2	3	8	18
	Electrical	73	..	..	..	..	5	10	15
	Mechanical	73	..	..	1	2	4	15	22
	Others	15	..	..	..	..	..	2	2
	All Branches	196	..	..	1	4	12	35	52

TABLE No. V

**Employment status of Engineering job seekers who are employed at present**

Year of Passing	Branch	Total employed	Self employed	Empl- yer	Employee				
					Central	State	Govt. under takings	Pri- vate	Appren- tice
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Before 1970	Civil	1	..	..	..	1	..	..	..
	Electrical	2	..	..	..	..	..	2	..
	Mechanical	4	..	..	..	..	2	2	..
	Others	..	..	..	..	..	..	..	..
1970	Civil	3	..	..	1	..	..	2	..
	Electrical	2	..	..	..	..	..	2	..
	Mechanical	3	..	..	..	..	..	2	1
	Others	..	..	..	..	..	..	..	..
1971	Civil	2	..	..	..	..	..	1	1
	Electrical	6	..	..	..	1	3	..	2
	Mechanical	4	..	..	..	..	..	1	3
	Others	..	..	..	..	..	..	..	..
1972	Civil	2	..	..	..	..	..	1	1
	Electrical	1	..	..	..	..	..	1	..
	Mechanical	4	..	..	..	..	1	1	2
	Others	1	1	..	..	..	..	..	..
1973	Civil	3	..	..	..	1	..	..	2
	Electrical	2	..	..	..	..	1	..	1
	Mechanical	4	..	..	..	..	..	1	3
	Others	..	..	..	..	..	..	..	..
1974	Civil	2	..	..	..	..	..	1	1
	Electrical	2	..	..	1	..	..	..	1
	Mechanical	3	..	..	..	..	..	..	3
	Others	1	..	..	..	..	..	1	..
All	Civil	13	..	..	1	2	..	5	5
	Electrical	15	..	..	1	1	4	5	4
	Mechanical	22	..	..	..	..	3	7	12
	Others	2	1	..	..	..	..	1	..
All Branches		52	1	..	2	3	7	18	21

TABLE No. VI

Distribution of Employees (Engineering) according to level of Emoluments and year of passing

Year of Passing	Total employees	Monthly emoluments		
		Less than Rs. 300	300-500	Rs. 500 and above
Before 1970	7	..	3	4
1970	8	..	3	5
1971	12	6	4	2
1972	7	3	2	2
1973	9	6	1	2
1974	8	3	3	2
Total	51	18*	16**	17

\*15 persons are apprentice trainees.

\*\* 6 persons are apprentice trainees.



BUREAU OF ECONOMICS AND STATISTICS, TRIVANDRUM  
STUDY OF THE TECHNICAL & PROFESSIONAL JOB  
SEEKERS ON THE LIVE REGISTER (ENGINEERING  
GRADUATES)

*Introduction.*

The problem of the educated unemployed is an integral part of the problem of the optimum utilisation of human resources. The Centre and the State Governments have taken measures in the Five Year Plans to increase the avenues of employment. Even then, the number of work seekers on the Live Register of Employment Exchange continued to swell. Even degree holders in engineering are reportedly unemployed. The number of engineering graduates on the live register is on the increase. They are maintaining their names in the live register perhaps to get better employment even though some of them may be either self employed or employed in private undertakings.

*Object of the survey.*

The object of the study is to assess the extent of unemployment among engineers, who are job seekers, in the live register of employment exchanges. The study will throw light on the severity of unemployment among them. Hence the results of the study may be useful for vocational guidance and future educational planning

*Coverage and sampling design.*

The study will cover engineering graduates who are on the live register of employment exchange as on November 1974. A 20% sample of the engineers will be taken by systematic sampling method, the registrants being arranged according to the date of registration. In the selection of the sample, the engineers will be stratified as Civil, Mechanical, Electrical and Others.

*Method of collection of data.*

The details will be collected by personal contact by the field staff of this Bureau

BUREAU OF ECONOMICS & STATISTICS, TRIVANDRUM  
Study on the Technical and Professional Job Seekers  
on the Live Register—1974

QUESTIONNAIRE

A. *Identification particulars:*

1. Name
2. Address as given for registration
3. Age
4. Sex
5. Marital Status
6. Whether belongs to Scheduled Caste/Scheduled Tribe/Backward Class (If yes, specify)

B. *Educational details:*

1. Basic Degree for registration in the Employment Exchange
2. Year of Passing
3. Subject taken
4. Additional qualification/specialisation/foreign training

C. *Unemployment particulars:*

1. Date of first registration and register number
2. Name of the Exchange
3. Whether renewed periodically
4. If not give reasons
5. Date of subsequent registration and number and name of Exchange
6. Call for Interview:
  - (a) Whether called for interview
  - (b) If yes, month and year of first call

(c) Number of subsequent calls

(d) Called by whom

Central Government

State Government

Local Bodies

Government Undertakings

Private Bodies

(e) Whether attended for interview

(f) If not, reason for non-attendance

7. Whether tried for employment through other sources
8. If yes, result of the trial
9. Whether prepared to accept employment within the State only or anywhere in the country
10. Whether willing to start own industry/trade if financial assistance is received

D. Details of previous employment if any:

1. Period of employment
2. Monthly emolument (Rs)
3. State whether the employment was obtained through Employment Exchange
4. Reasons for retrenchment

E. Details of present employment if any:

1. Month and year of employment
2. Employment Status

Employer/Employee/Self  
employed/apprentice;  
others (specify).

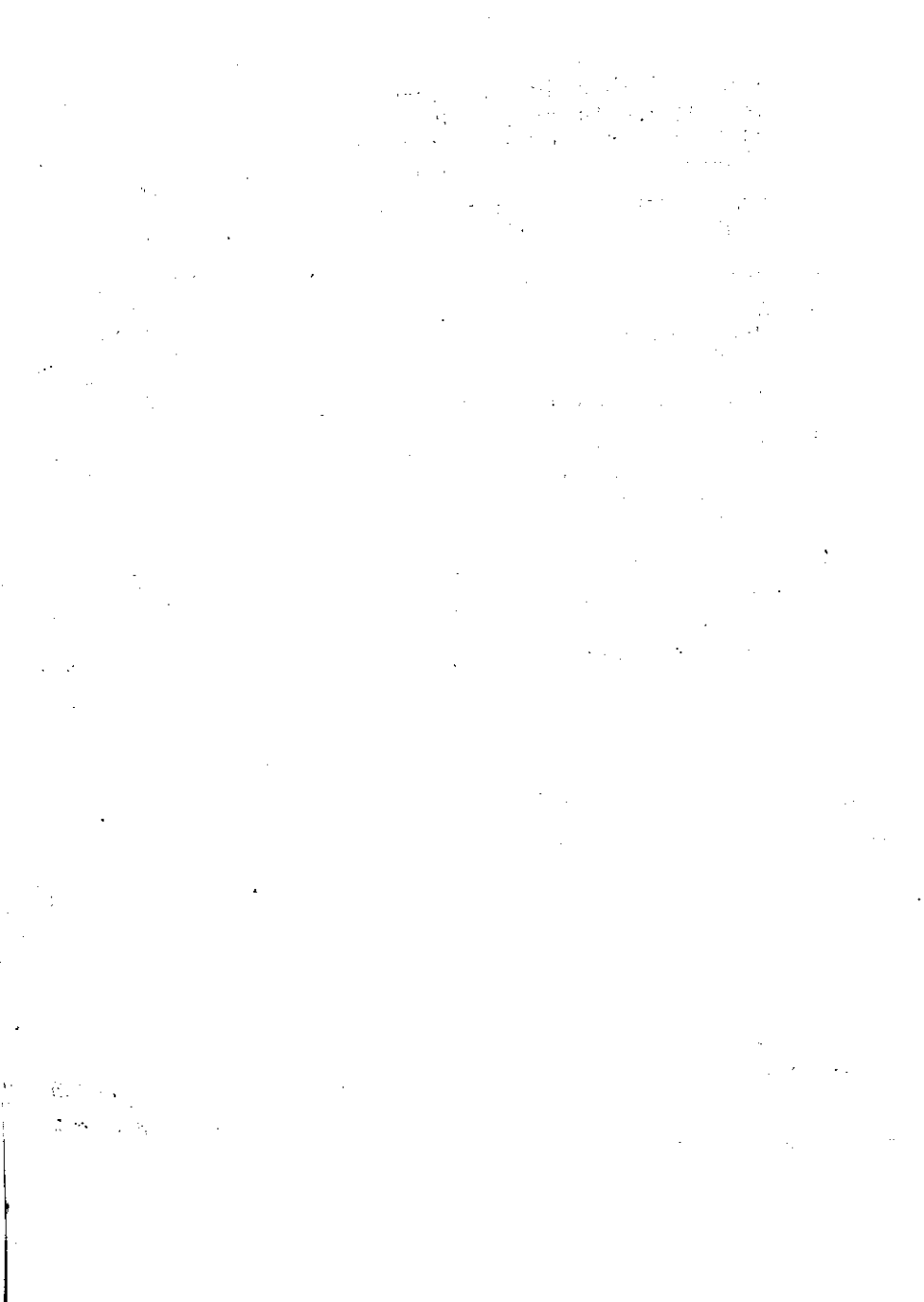
3. State whether the employment is obtained through Employment Exchange/Public Service Commission/Others (specify)
4. State whether the employment is permanent/temporary
5. Designation/occupation
6. Whether in Central Government; State Government/Government Undertakings/Private
7. Monthly emolument (Rs.)
8. Do you consider your present (a) job and (b) emolument suited to your educational status and training
9. If so, give reasons
10. Whether intends to maintain your name in the Live Register for better employment

Place: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_  
Signature of Respondent.

\_\_\_\_\_  
Signature with Name and Designation  
of the field staff who canvassed  
the questionnaire.



**8**

**EMPLOYMENT OF ENGINEERING PERSONNEL IN KERALA**

THE UNIVERSITY OF CHICAGO PRESS

# A STUDY ON THE EMPLOYMENT OF ENGINEERING PERSONNEL IN KERALA

## I. Introduction

The most important pre-requisites for the achievement of economic development is the availability of trained man power in required number at the proper time. By the advent of the planning era, to achieve this aim, a large number of institutions for technical education was started throughout the country. After the implementation of the three Five Year Plans it was found that a surplus of qualified men, even in some technical subjects, exist side by side with shortage in some other specialities. In order to ensure a balance between supply and demand of technical man-power, planning is highly essential and aims at minimising wastage of human resources. In this context man-power planning assumes great importance.

The biggest employer of engineers in this state is the Government and its various departmental agencies. During the last two decades employment in Government institutions has increased tremendously due to development activities under the Five Year Plan programmes. The employment opportunities in the private undertakings and self employment programmes of the individuals themselves are also to be specially mentioned. But Industries have not expanded sufficiently enough to provide employment to many engineers who seek employment after their education. Under these circumstances, a study of the demand and supply of engineers will throw light on the various aspects of the problem.

The study is intended to highlight the scope of employment opportunities of the engineering personnel in the public and private institutions and the present stock position of engineers.

### *Coverage:*

The study covers all private and public manufacturing units in Kerala along with the employment in Government Departments. The list of institutions is taken from the employers' register maintained by the Employment Exchanges and list of medium and large industries from the Department of Industries and Commerce. The details of Degree and Diploma holders are also covered in the study.

## II. Engineering Education in the State

During the First plan period there was only one Engineering College in the State with limited intake capacity. In order to meet the growing demand for qualified engineers, facilities for engineering education at the degree level were increased considerably during the period 1956-66. Five more Engineering Colleges were opened during this period. 50% of the seats in the Regional Engineering College at Calicut is reserved for students from outside the State.



In all the Engineering Colleges there are degree courses in varied branches of Engineering and Technology. The details of Engineering Colleges are given in the Appendix.

The intake capacity in Graduate course in Engineering Colleges for the the year 1975 is given below:—

TABLE 1

Sl. No.	Name of the College	Intake capacity in each course						Total
		Civil	Mechanical	Electrical	Telecommunication	Chemical Engineering	Architecture	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1.	College of Engineering, Trivandrum	51	41	45	45	..	15	197
2.	T. K. M. College of Engineering, Quilon	52	44	48	..	..	..	144
3.	Mar Athanasius College of Engineering, Kothamangalam	36	28	32	..	..	..	96
4.	*Engineering College, Trichur	37	29	33	..	40	..	139
5.	N.S.S. College of Engineering, Palghat	36	28	32	..	..	..	96
6.	Regional Engineering College, Calicut	66	94	90	..	..	..	250
Total		278	264	280	45	40	15	922

\*In addition to the regular course there are Part-time courses in Civil, Mechanical and Electrical Engineering, intake capacity being 15 candidates for each course.

Source: Department of Technical Education.

The first Engineering College of the state was started during the year 1939-40 and the last one in the year 1960-61. Since the supply of Engineering Graduates out-stripped the demand for them unemployment among Engineering Graduates swelled considerably and the question of starting new Engineering Colleges did not arise for the last few years. Out of the six Engineering Colleges, three are under private managements, two under the State Government and the other under the Central Government. All the six Engineering Colleges have courses in Bachelors' Degree in Civil, Mechanical and Electrical Engineering. Graduate course in Architecture was started in the year 1962-63 and in Telecommunication in 1964-65 in Trivandrum Engineering College. In the Trichur Engineering College, Graduate course in Chemical Engineering was started during 1962-63. There are facilities for post Graduate course in Civil, Mechanical and Electrical in Trivandrum, Trichur and Calicut. In addition to this post Graduate course in Micro wave Engineering was started in 1973-74 in the Trivandrum Engineering College and post Graduate course in Chemical Engineering was started in 1973-74 in the Trichur Engineering College.

Intake of Engineering Graduates. Branch-wise during the years 1966-67 to 1974-75 is given below:—

TABLE 2

## Intake of engineering graduates—branch-wise 1966-67 to 1974-75

Year	Branch-wise actual intake						Total	
	Sanctioned intake	Civil	Mechanical	Electrical	Architecture	Telecom-munication		Chemical
(1)	(2)	(3)	(4)	(5)	(5)	(7)	(8)	(9)
1966-67	1064	272	349	311	58	10	30	1030
1967-68	1159	270	366	345	58	10	30	1079
1968-69	946	187	313	278	58	10	30	876
1969-70	875	98	330	290	44	10	45	817
1970-71	836	83	317	216	45	10	45	716
1971-72	830	96	279	172	45	5	45	642
1972-73	830	95	275	181	45	43	45	684
1973-74	929	267	287	287	10	45	36	932
1974-75	922	260	264	230	15	45	40	854

Source: Director of Technical Education.

From the above table it can be seen that during 1966-67 and 1967-68 the intake of Engineering students was above 1,000 and it decreased to 642 and 684 in the years 1971-72 and 1972-73 respectively due to stoppage of the 3 year Degree course in Engineering Colleges as sufficient number of Graduates are available. But during the last two years i.e. 1973-74 and 1974-75 the intake capacity has been increased and the number of seats among various disciplines has been changed according to the demand.

The actual intake of students in Post Graduate courses in Engineering Colleges from 1966-67 to 1974-75 is given below:—

TABLE 3

Year	Actual intake of students					Total
	Civil	Mechanical	Electrical	Chemical Engineering	Electronics	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1966-67	12	16	22	..	..	50
1967-68	10	18	21	..	..	49
1968-69	6	14	8	..	..	28
1969-70	13	16	21	..	..	50
1970-71	11	17	22	..	..	50
1971-72	22	28	33	6	..	89
1972-73	36	31	31	6	..	104
1973-74	36	31	31	6	10	114
1974-75	36	31	31	6	10	114

This Table shows that the intake capacity of students in Post Graduate course is on the increase.

There are 18 Polytechnics offering Diplomas in various disciplines in the State. The courses conducted in these Polytechnics are Civil, Mechanical, Electrical, Automobile, Chemical, Textile Technology, Printing Technology, Electronics and Instrument Technology. Three, out of the 18 are Women's Polytechnics. These institutions offer diploma courses in Costume design, Dress making, Commercial practice and Electronics. Out of these 18 Polytechnics, 11 are managed by the Government and the rest are private institutions.

The total intake capacity in all the 18 Polytechnics are 2144 during the year 1974-75 including 310 students in the Womens' Polytechnics.

The minimum Educational qualification prescribed for admission in the Post Graduate course is graduation in Engineering in the concerned subject and for the Degree course is Pre-degree with Mathematics, Physics and Chemistry as special subjects. For admission to Polytechnics, S.S.L.C. is the minimum qualification prescribed. The duration of the Post Graduate course is 2 years, Graduate course 4 years and 3 years for Polytechnics.

### III. Supply of Engineering Personnel

The importance of Technical Education for achieving planned development in the country has been well recognised. This has resulted in an increase in the intake of students in the Engineering Institutions and also starting of new institutions during the second and third plan periods. Consequently, the out-turn of Engineering Personnel both Degree and Diploma holders registered a steady increase since the beginning of the sixties.

During 1960-61, the intake capacity of the Engineering Colleges (for Degree courses) was 570 and it was almost doubled during 1965-66. Including the 3 year Degree course, the intake capacity during 1965-66 was 1,000. It was further increased to 1159 during 1967-68.

The three year degree course in Civil, Mechanical and Electrical Engineering exclusively meant for Graduates was introduced during the year 1963-64 in order to meet the increased requirements of the national emergency. This course has been abolished in 1968-69.

Estimation of the present stock of Engineering Personnel is difficult due to the non-availability of information. The main source of information in this respect is the Census of India, 1961.

The detailed information on the Technical Education collected in the enumeration slips in the 1961 census was tabulated only for the urban areas. The distribution of Graduates and Diploma holders in Engineering and Technology is available sector-wise. It is seen that the total number of Degree holders was only 1031 and Diploma holders only 3386. In the

absence of any idea regarding the rural urban concentration of engineering personnel, it is not possible to estimate the total number of engineers in Kerala.

Another attempt to collect the data on technical man power was made in the 1961 census, by issuing special cards to qualified persons. But all these special cards were not returned. Among the engineering personnel only 1275 graduates and 2739 diploma holders returned these cards duly filled-in. Of these 1197 graduates and 2179 diploma holders were employed. The above estimates obviously are under estimates.

The Institute of Applied Manpower Research, New Delhi has analysed the 1961 census data in great detail and has arrived at the conclusion that the stock of graduate engineers is a net under count and the stock of diploma holders is a net over count. Assuming similar defects are present in the census figures for Kerala also the number of employed graduate engineers has been arbitrarily increased by 10% to arrive at the stock of graduate engineers in 1961. The speciality-wise stock of graduate engineers in 1961 is worked out by using inter se-ratios and given below:

TABLE 4

<i>Speciality</i>	<i>Number of Graduate Engineers</i>
Civil	652
Mechanical	192
Electrical	306
Others	166
Total	1316

The actual out-turn of engineering graduates from 1961-62 to 1974-75 is given below. Speciality-wise figures are given in Table 7 of the appendix from 1966-67 onwards.

<i>Year</i>	<i>Cumulative total allowing 1.5% depletion annually</i>
1965-66	3517
1970-71	8398
1974-75	9864
1978-79	11818

Beyond the period 1974-75 the out-turn is estimated after giving due allowance for wastage (15%) in engineering education at the degree level. In estimating the future out-turn, the possibility of under utilisation of the available intake capacity has not been considered.

Taking into consideration the 1316 graduate engineers in 1961, the total stock at the beginning of the sixth plan will be 11818.

#### *Diploma holders.*

In the 1961 census, of the 2739 diploma holders who returned the census cards duly filled-in only 2179 diploma holders were employed. This obviously is an undercount. In the urban areas alone there were 2727 technical diploma holders who were actually employed. The Institute of Applied Manpower Research holds that this is an overcount due to the inclusion, by mistake of non-technical diploma holders. In the absence of any other information regarding this aspect, it may be assumed that the number of diploma holders will be of the order 2727 by 1961.

The supply position of diploma holders from 1961-62 to 1974-75 is given below:

TABLE 5

<i>Period</i>	<i>Out-turn</i>	<i>Cumulative</i>
Till 1961	2727	2727
1961-66	5765	8492
1966-71	6180	14672
1971-75	1335	16007
1975-79*	1257	17264

\* Estimated figures on the basis of the out-turn for the period 1971-72 to 1974-75.

Total number of engineering diploma holders at the beginning of the Sixth Five Year Plan will be of the order of 17264.

#### **IV. Utilisation of Engineering Personnel**

Assessment of the utilisation of the existing stock of engineering personnel is very difficult due to paucity of information. Therefore, for this study the details were collected from various industrial institutions both in the private and public sectors in addition to the data available from Government departments. The 1971 census figures relating to engineering personnel are not available since they have not been published.

The speciality-wise number of engineering personnel obtained in the study is furnished below.

TABLE 6

Number of Engineers by speciality (Degree and Diploma) 1974-75

Sl.No.	Speciality	Government Departments including Engineering Colleges, K.S.E.B. & K.S.R.T.C.			Private and public undertakings			Total	
		Degree (3)	Diploma (4)	Total (5)	Degree (6)	Diploma (7)	Total (8)		
1.	Civil	1637 (87.12)	2160 (86.40)	3797 (86.71)	242 (12.88)	340 (13.60)	582 (13.29)	1879 2500	437 (11)
2.	Electrical	1025 (83.13)	1640 (85.59)	3665 (84.63)	208 (16.87)	276 (14.41)	484 (15.57)	1235 1916	314
3.	Mechanical	736 (67.09)	913 (69.27)	1649 (68.28)	361 (32.91)	405 (30.73)	766 (31.72)	1097 1318	241
4.	Others	118 (33.71)	272 (69.21)	390 (52.49)	232 (66.29)	121 (30.79)	355 (47.51)	350 393	74
5.	Total	3516 (77.12)	4985 (81.36)	8501 (79.55)	1043 (22.83)	1142 (18.64)	2185 (20.45)	4559 6127	1068

\*Figures in brackets indicate percentages.

According to the above table there are 10686 engineers (both degree and diploma) working in various Government departments and the public and private undertakings in Kerala. Out of this 3516 degree holders and 4985 diploma holders are working in Government Departments including Kerala State Electricity Board, and Kerala State Road Transport Corporation. This will come to 77.12% of the total degree holders and 81.36% of the diploma holders. Nearly 80% of the employed engineers both degree and diploma holders in the State are in Government Departments including K.S.E.B. and K.S.R.T.C. Of the total employed engineers, 42.6% are degree holders and 57.4% diploma holders.

Ours is a socialistic pattern of society where in the State and Central Governments play a dominant role in the economic activity of the States by directly participating in major fields of development programmes. Mention may be made of the decisive role played by the centre in the field of heavy industries and distribution of goods and services, especially of essential commodities and scarce raw materials, and the States, in the field of small scale and medium industries. An analysis of the structure of employment of engineers in the public and private sectors would indicate the share of public and private sectors in the field of employment of engineering personnel.

The Department of Technical Education controls the Engineering Colleges and Polytechnics in the State. The Regional Engineering College, Calicut is functioning under a registered society and is governed by a Board of Directors of which the Director of Technical Education is the Chairman. The State Board of Technical Education is the biggest body in the State in regard to technical education. The board consists of 36 members with the Minister (Education) as Chairman and the Director of Technical Education as the ex-officio Secretary. The Board of Studies in Engineering and Technology advises the State Board of Technical Education in academic matters at and below the diploma level. This board consists of 13 members, with the Director of Technical Education as chairman.

The academic control in respect of Engineering Colleges rested with the University and that of all the remaining institutions at and below the Diploma level rested with the State Board of Technical Education. The degree examinations are conducted by the University and all the other examinations for diploma or certificate are conducted by the examination wing attached to the Department of Public Instruction on behalf of the Department of Technical Education.

There are six Engineering Colleges and 18 Polytechnics including three Women's Polytechnics in the State. 583 Engineering Graduates are employed in the six engineering colleges and 105 are employed in the 18 Polytechnics including three Women's polytechnics in the State. The total number of diploma holders in the Technical Educational Institutions comes to 579 of which 342 are in polytechnic. The staff pattern of the engineering colleges consists of the Principal, Professors, Assistant Professors, Lecturers/Tutors etc. and in Polytechnics, Heads of Departments, Lecturers/Instructors, etc.

The qualification required for the post of Principal is Post Graduate degree in engineering with some years of teaching experience. For the post of Professor and Assistant Professor the qualification required is the same as that of the Principal with less teaching experiences. Generally the above posts are promotion posts from their feeder categories. For the post of Lecturer, the qualification prescribed is 1st class engineering graduate in concerned subjects, i.e. Civil, Mechanical, etc. and for the posts of instructors diploma in the concerned subjects.

In Polytechnics, the Heads of Departments are generally engineering graduates in the concerned subjects and Lecturers/Instructors are diploma holders.

The distribution of staff according to qualifications in the engineering institutions including Junior Technical Schools and Industrial Trading Institutes can be seen from the table given below:

TABLE 7

1974-75

<i>Speciality</i>	<i>Degree and above</i>		<i>Diploma</i>		<i>Total</i>	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Civil	226	32.75	181	31.26	407	32.07
Mechanical	227	32.90	188	32.47	415	32.70
Electrical	175	25.36	171	29.53	346	27.26
Others	62	8.99	39	6.74	101	7.97
Total	690	100.00	579	100.00	1269	100.00

There are 690 degree holders and 579 diploma holders working in the six Engineering Colleges and 18 Polytechnics including three Women's Polytechnics, 21 junior Technical Schools and I.T. Is in the State. The branch-wise distribution of teachers in, Civil, 407 (32.07)%, Mechanical 415 (32.70%), Electrical 346 (27.26%), and others 101 (7.97%).



*Government Departments.*

There are 2826 engineering degree holders and 4406 diploma holders in the Government Departments. The speciality-wise details are furnished in the table furnished below:

TABLE 8  
Number of Engineering Personnel working in Government Departments  
(1974-75)

Sl.No.	Speciality	Degree and above	Diploma	Total	
				No.	%
1.	Civil	1441	1979	3590	46.88
2.	Mechanical	509	725	1834	17.06
3.	Electrical	850	1469	2319	32.06
4.	Others	56	233	289	4.00
Total		2826	4406	7232	100.00

From the above table it can be seen that out of the total 7232 Engineers 39.08% are degree holders and above and the remaining 60.92% are diploma holders. 46.88% of Engineering Personnel are qualified in the Civil, branch 32.06% in the electrical branch and the Mechanical branch accounts for 17.06%.

In the Departments like public Works Department, Public Health Engineering Department and Town Planning, the degree holders usually enter the service as Junior Engineer/Assistant Town Planner and the Diploma holders as Surveyor/Overseer/Draftsman etc.

At present there are 5 Chief Engineers in the Public works Department, i.e. Chief Engineer for Road and Buildings, Irrigation, Projects Architecture and National Highway. There is a Chief Engineer in the Public health Engineering Department. The Chief of the Department of Town Planning is the Chief Town Planner. There are 4 Chief Engineers in the Kerala State Electricity Board.

Generally the Chief Engineer is assisted by the Deputy Chief Engineer/ Superintending Engineer in the head office and by Superintending Engineers in the field for each circle. Superintending Engineer is assisted by Executive Engineers for each Division who is executing the work through Assistant Engineer and Junior Engineers.

## Public and Private Undertakings

Though the major employer of Engineers is the Government, employment of the Engineers in the private and public undertakings is bright due to industrialisation programmes under the Five Year Plans. Therefore efforts were made to collect the present stock of Engineers and future requirements in these institutions by mailing questionnaires and personal contact. Details from 110 units were collected. Of these, FACT, Cochin Ship Yard, Cochin Refineries, Hindustan Machine Tools, Travancore Rayons, Premier Tyres, Indian Aluminium Industries, Gwalior Rayons and the Rare Earths etc., are the major employers.

There are 2185 Engineering Personnel (both degree and diploma) working in the various public and private undertakings in Kerala. The table given below shows the stock positions of Engineers working in these institutions.

TABLE—9

(1974-75)

Undertakings	Diploma					Degree & above					Grand Total
	C	M	E	O	T	C	M	E	O	T	Total Diploma & Degree
Central Government	190	202	106	59	557	132	214	98	143	587	1144
State	59	31	23	22	135	22	55	14	47	138	273
Quasi	71	64	64	26	225	37	38	60	11	146	371
Private	20	108	83	14	225	51	54	36	31	172	397
Total	340	405	276	121	1142	242	361	208	232	1043	2185

Out of the 2185 Engineers working in industrial undertakings 1142 are Diploma holders and 1043 are Graduates and above. The percentage of Degree holders and above and Diploma holders are 47.73 and 52.27 respectively.

An analysis of the data on the qualifications prescribed for various posts in the public and private undertakings it was observed that 9% of the persons were over qualified for the posts for which diploma was fixed as the minimum qualification. The over qualified persons working in the posts for which the minimum qualification was degree were negligible. Further it was observed

that persons with lower qualifications are promoted in virtue of their experience in the particular field. 22% of the posts for which degree is prescribed as the minimum qualification were filled up by diploma holders.

## 5. Requirements

Man power requirements have to be estimated with the long run perspective and the employing agencies which are to supply the data, usually do not have any idea, whatsoever regarding their future pattern of expansion over such a long period. This is equally true of the private and public sectors. There is also the difficulty that in the public services, which absorb the majority of the engineering personnel, scientific project reports, which indicate the relationship between the various economic variables associated with their projects and programmes are not usually worked out.

Considering the requirements in the departments due to expansion programmes and vacancies due to retirements etc.\* the total additional requirements of engineering graduates in the Government departments may come to 940 by 1978-79. In the case of diploma holders it will come to 1400.

The total additional requirements of engineering personnel (both degree and diploma) till the end of the Fifth Five Year Plan will be about 1150 in the public and private sector industries including self-employment opportunities. In this connection the expansion, programme of the enterprises like Kerala Electronics Corporation, Hindustan Paper Corporation, Velloor, Hindustan Machine Tools, Ship Building Yard and Appollo Tyres deserves special mention.

## 6. Conclusion

The six engineering colleges in the state are sending out on an average 765 graduate engineers annually and the out-turn from 18 Polytechnics comes to 570 per annum. As a result the stock of engineering graduates had increased to 9864 in 1975-76 and is expected to reach 11818 in the year 1978-79. In the case of diploma holders the position is 16007 in 1975-76 and 17264 in the year 1978-79 i.e., at the end of the Fifth Five Year Plan.

In regard to the employment of engineers the biggest employer is the state Government. Nearly 80% of the engineers are in the Government departments including Kerala State Electricity Board & Kerala State Road Transport Corporation. Only 20% of the employed engineers are in the industrial undertakings. Even of this 87% are absorbed in the public sector undertakings.

Despite the massive efforts made by the Government to absorb engineering personnel in Government departments and other undertakings, the

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\*Retirements vacancies, etc. is calculated at 1.5% per annum.

number of unemployed engineers is on the increase. This problem can be solved only by reducing the supply and diversification of courses according to future needs.

As the future expansion of the Government departments is very much limited the other alternative is starting of new industries in private and public sectors. The self employment of engineers may also be considered. The Mini Industries Estate Programme of the State Industries Department can help a long way in this field.

Considering the number of job seekers through employment exchanges in 1975 (1825) and the annual out-turn from 1975 to 1979 from the six engineering colleges, the total number of engineering graduates in the employment market will be about 4439. But the employment opportunities till the end of 1978-79 is estimated at 1400 for engineering graduates. Therefore the number of unemployed engineering graduates will be 3039 at the end of V Plan. Similarly the number of job seekers with diploma is estimated at 6680 during the above period. Job opportunities for diploma holders during the period are estimated nearly at 2100. Hence the unemployed diploma holders at the end of the Fifth Plan period will be about 4580.

As per the estimates, the stock of total engineering graduates in 1975 is 9864 and diploma holders 16007 respectively. Out of this only 4559 engineering graduates and 6127 diploma hands are seen employed in the Government Departments and the public and private undertakings during the period. Accordingly 3480 degree holders and 5480 diploma hands are seen unaccounted, considering 1825 degree holders and about 4400 diploma hands registered with the employment exchanges as job seekers.

From the above it can be seen that a number of engineers are not in the employment market. Many of them might have migrated to other states or foreign countries for better employment. Even though a number of engineers are going out of the state, the exact number of migrants is not estimated. In this connection it may be desirable to undertake a study on the migration of engineers from the state to highlight the proportion of engineers going outside the State/Country for employment.

The huge wastage of skilled man power resources could have been avoided had any attempt at balancing the supply of and the demand for engineering personnel been made sufficiently in advance. Any attempt at limiting the out-turn of engineering personnel, should start at the stage of intake in the appropriate year in consideration of the duration of the course. The Institute of Applied Man Power Research in 1965-66 has cautioned, "the process of expansion of intake capacity of engineering educational institutions has reached a stage at which a dynamic balance between supply and demand has been reached in the quantitative sense". In the second phase of development process, the probable aim may be the establishment of a dynamic balance in the quantitative sense.

This study, in spite of its limitations, has brought out that the problem of unemployment among engineers is likely to assume very serious proportions during the years to come, if the present rate of intake is continued.

The state is incurring a heavy expenditure for the training of every engineer. This is an investment on man power, with the good faith that such trained man power, will contribute significantly to the Nations' Welfare. Therefore an appraisal of our present technical educational system in the context of improved technology and limited scope for certain specialities is an urgent need.

## SUMMARY TABLE

Number of Engineering Graduates estimated at the end of 1974-75	9864
Number of Diploma holders do.	16,07
No. of Engineering Graduates employed in 1974-75 (both in the private and public sectors)	4559
No. of Diploma holders employed in 1974-75 (both in the private and public sectors)	6127
Unemployed engineering graduates in the Live Register	1825
Unemployed Diploma holders in the Live Register	4400
Unaccounted Engineering Graduates as per the estimated stock in 1974-75	3480
Diploma holders	5480
<i>Unemployment at the end of 1978-79:</i>	
New entrants of graduates 1975-76 to 1978-79	2624
Additional employment opportunities during the period	1480
Total unemployed at the end of 1978-79	3039
New entrants of Diploma holders	2280
Additional employment opportunities	2100
Total unemployed diploma holders	4580

## APPENDIX

TABLE 1

## Progress of technical educational institutions in Kerala—Engineering Colleges

Name of Institution	Year of establishment	Government or Private	Courses started during the year of establishment	New course started	Year of new courses started
(1)	(2)	(3)	(4)	(5)	(6)
1. Engineering College Trivandrum	1939-40	Government	Graduate course in Civil, Mechanical & Electrical Engineering	1. P. G. course in Civil, Mechanical & Electrical Engineering 2. Graduate course in Archi- tecture 3. Graduate course in Telecommunication 4. P. G. course in Micro wave Engineering	1958-59 1962-63 1964-65 1973-74
2. T. K. M. Engineering College, Quilon	1958-59	Private	Graduate course in Civil, Mechanical and Electrical Engineering		
3. Mar Athanasius College of Engineering, Kothamangalam.	1961-62	Private	Graduate course in Civil, Mechanical and Electrical Engineering		
4. Engineering College, Trichur	1958-59	Government	Graduate course in Civil, Mechanical and Electrical Engineering	1. Graduate course in Chemical Engineering	1962-63
5. N.S.S. Engineering College, Palghat	1960-61	Private	Graduate courses in Civil, Mechanical and Electrical Engineering	2. P. G. course in Civil, Mecha- nical and Electrical Engineering 3. P. G. course in Chemical Engineering	1971-72 1973-74
6. Regional Engineering College, Calicut	1960-61	Government	Graduate course in Civil, Mechanical and Electrical Engineering	P. G. course in Civil, Mecha- nical and Electrical Engineering	1972-73

Source: Department of Technical Education.

TABLE 2

## Progress of technical educational institutions in Kerala, Polytechnics

Name of Institutions	Year of establishment	Government or private	Courses started during the year of establishment	New courses started	Year of new courses started
(1)	(2)	(3)	(4)	(5)	(6)
1. Kerala Government Polytechnic, Calicut	1946-47	Government	Diploma course in Civil, Mechanical, Electrical and Chemical Engineering		
2. Maharajas Technological Institute, Trichur	1947-48	Government	Diploma course in Civil, Mechanical and Electrical Engineering		
3. Government Polytechnic Kalamassery	1951-52	Government	Diploma course in Civil, Mechanical, Electrical, Automobile and Chemical Engineering Technology.		
4. Thyagarajas Polytechnic, Alagappanagar	1956-57	Private	Diploma course in Civil, Mechanical and Electrical Engineering		
5. Sree Narayana Polytechnic, Kottiyam, Quilon	1957-58	Private	Diploma course in Civil, Mechanical and Electrical Engineering		
6. Central Polytechnic, Trivandrum	1958-59	Government	Diploma courses in Civil, Mechanical Electrical Engineering and Textile Technology	Diploma course in Electronics	1971-72
7. Government Polytechnic, Cannanore	1958-59	Government	Diploma course in Civil, Mechanical, Electrical Engineering and Textile Technology		
8. Carmal Polytechnic, Alleppey	1958-59	Private	Diploma course in Civil, Mechanical and Electrical Engineering		
9. N.S.S. Polytechnic, Pandalam	1958-59	Private	Diploma course in Civil, Mechanical and Electrical Engineering		

10.	Sree Rama Polytechnic, Tripayar	1958-59	Private	Diploma course in Civil, Mechanical and Electrical Engineering	
11.	Government Polytechnic, Kottayam	1960-61	Government	Diploma course in Civil, Mechanical and Electrical Engineering	
12.	Government Polytechnic, Perinthalmanna	1961-62	Government	Diploma course in Civil, Mechanical and Electrical Engineering	
13.	Women's Polytechnic, Trivandrum	1961-62	Government	Costume Design, Dress Making and Commercial Practice	Instrument Technology 1973-74
14.	S.S.M. Polytechnic, Tirur	1962-63	Private	Diploma course in Civil, Mechanical and Electrical Engineering	Diploma course in electronics 1971-72
15.	Women's Polytechnic, Trichur	1962-63	Government	Diploma courses in costume design, dress making, electronics and commercial practice.	
16.	Women's Polytechnic Calicut	1963-64	Government	Diploma courses in costume design dress making and commercial practice.	
17.	Swami Nityananda Polytechnic, Kanhangad	1966-67	Private	Diploma courses in Mechanical and Automobile Engineering	
18.	Institute of Printing Technology Shoranur.	1967-68	Government	Diploma in Printing Technology	

Source: Department of Technical Education.



TABLE 3  
Intake capacity in diploma course in Engineering—Institution wise—1975

Sl.No.	Name of Institution	Intake capacity in each course					(7)	(8)	(9)	Total
		(3)	(4)	(5)	(6)	(8)				
(1)	(2)	Civil, Mechanical & Electrical	Automobile	Textile Technology	Chemical Engineering	Electronics	Chemical Technology	Printing Technology		
1	*Central Polytechnic, Trivandrum	96	..	30	..	20	..	..	146	
2	S.N. Polytechnic, Quilon	144	..	..	..	..	..	..	144	
3	Government Polytechnic, Kottayam	96	..	..	..	..	..	..	96	
4	Carmal Polytechnic, Alleppey	144	..	..	..	..	..	..	144	
5	N.S.S. Polytechnic, Pandalam	144	..	..	..	..	..	..	144	
6	Thyagaraja Polytechnic, Alagap-panagar	144	..	..	..	..	..	..	144	
7	Government Polytechnic, Kalamasserry	132	30	..	..	..	20	..	181	
8	*Maharajas Technological Institute, Trichur	96	..	..	..	..	..	..	96	
9	Sree Ram Polytechnic, Valappad	96	..	..	..	..	..	..	96	
10	Government Polytechnic, Perinthalmanna	96	..	..	..	..	..	..	96	
11	Institute of Printing Technology, Shoranur	..	..	..	..	..	..	..	..	
12	S.S.M. Polytechnic, Tirur	96	..	..	..	..	..	30	30	
13	*Government Polytechnic, Calicut	168	..	..	30	24	..	..	120	
14	Government Polytechnic, Cannanore	168	..	..	..	..	..	..	198	
15	Swami Nityananda Polytechnic, Kanhangad	30	30	..	..	..	..	..	198	
Total		1590	60	60	30	44	20	30	1834	

\*In addition to the regular course there are part time courses in Civil, Electrical and Mechanical Engineering intake capacity being 16 for each.

## Intake Capacity in Diploma Course conducted in Women's Polytechnics—1975

Name of Institution	Intake capacity in each course					Total
	Costume design and dress making	Electronics	Commercial Practices	Instrument Technology		
(1)	(2)	(3)	(4)	(5)	(6)	
1 Women's Polytechnic, Trivandrum	30	..	50	30	110	
2 Women's Polytechnic, Trichur	30	40	50	..	120	
3 Women's Polytechnic, Calicut	30	..	50	..	80	
Total	90	40	150	30	310	

Source: Department of Technical Education.

TABLE 4

## Intake capacity in Graduate courses in Engineering College-wise—1975

Sl.No.	Name of College	Intake capacity in each course						Total
		(3)	(4)	(5)	(6)	(7)	(8)	
(1)	(2)	Civil	Mechanical	Electrical	Telecommuni- cation	Chemical	Architecture	(9)
1	College of Engineering, Trivandrum	51	41	45	45	..	15	197
2	T. K. N. College of Engineering, Quilon	52	44	48	..	..	..	144
3	Mar Athanasias College of Engineering, Kothamangalam	36	28	32	..	..	..	96
4	*Engineering College, Trichur	37	29	33	..	40	..	139
5	N.S.S. College of Engineering, Palghat	36	28	32	..	..	..	96
6	Regional Engineering College, Calicut	66	94	90	..	..	..	250
Total		278	264	280	45	40	15	922

\*In addition to the regular course there are part-time courses in Civil, Mechanical and Electrical Engineering, intake capacity being 15 candidates for each course.

Source: Department of Technical Education.

TABLE 5  
Intake of Engineering Graduate—Branch-wise—1966-67 to 1974-75

Year	Branch-wise actual intake								Total
	Sanctioned intake	Civil	Mechanical	Electrical	Architectures	Telecommunication	Chemical Engineering		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
1966-67	1064	272	349	311	58	10	30	1030	
1967-68	1159	270	366	345	58	10	30	1079	
1968-69	946	187	313	278	58	10	30	876	
1969-70	875	98	330	290	44	10	45	817	
1970-71	836	83	317	216	45	10	45	716	
1971-72	830	96	279	172	45	5	45	642	
1972-73	830	95	275	181	45	43	45	684	
1973-74	922	267	287	287	10	45	36	932	
1974-75	932	260	264	230	15	45	40	854	

Source: Director of Technica I Education.

TABLE 6

## Sanctioned and actual intake of students in post-graduate courses in Engineering 1966-67 to 1974-75

Year	Sanctioned intake	Actual intake					Total
		Civil	Mechanical	Electrical	Chemical Engineering	Electronics	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1966-67	50	12	16	22	..	..	50
1967-68	50	10	18	21	..	..	49
1968-69	50	6	14	8	..	..	28
1969-70	50	13	16	21	..	..	50
1970-71	50	11	17	22	..	..	50
1971-72	85	22	28	33	6	..	89
1972-73	104	36	31	31	6	..	104
1973-74	114	36	31	31	6	10	194
1974-75	114	36	31	31	6	10	114

Source: Director of Technical Education.

TABLE 7

**Out-turn of Engineering Graduates—Branch-wise—1966-67 to 1974-75**

Year	Branch-wise out-turn						Total
	Civil	Mechanical	Electrical	Architecture	Telecommu- nication	Chemical Engineering	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1966-67	204	282	229	17	31	22	785
1967-68	198	379	297	17	36	25	952
1968-69	262	433	363	26	46	15	1145
1969-70	328	533	542	30	88	32	1553
1970-71	175	327	302	34	57	30	925
1971-72	80	234	162	18	29	29	552
1972-73	67	230	80	8	22	20	527
1973-74	57	245	185	..	28	29	544
1974-75	45	180	115	3	38	33	414

The five year Engineering course started during the year 1962-63 was discontinued from the year 1966-67 and three year Engineering Degree was also discontinued from the year 1968-69. No examination for them was conducted from 1971-72.

Source: Director of Technical Education.

TABLE 8

## Intake of diploma holders—branch-wise 1966-67 to 1974-75

Year	Sanctioned intake	Branch-wise actual intake									Total
		Civil	Mechanical	Electrical	Telecom- munication	Chemical Engineering	Chemical Technology	Automobile Engineering	Textile Technology		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
1966-67	2469	767	702	618	30	29	20	30	57	2253	
1967-68	2294	787	690	609	30	26	20	60	160	2282	
1968-69	1921	568	620	522	30	26	20	60	60	1906	
1969-70	1968	566	626	521	40	28	20	60	66	1921	
1970-71	1869	568	587	484	60	30	20	60	60	1869	
1971-72	1905	561	591	495	85	30	20	59	60	1901	
1972-73	1804	..	*1577	..	50	30	20	60	60	1797	
1973-74	1804	..	*1395	..	61	30	20	60	63	1629	
1974-75	1804	..	*1568	..	52	30	20	50	60	1780	

*Note:* The institute of printing technology which was started in 1967-68 with intake capacity of 30 student is excluded.  
*Source:* Director of Technical Education.  
 \* Civil, Mechanical and Electrical.

TABLE 9  
 Out-turn of diploma holders--Branch-wise 1966-67 to 1974-75

Year	Branch-wise actual out-turn									Total
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
	Civil	Mechanical	Electrical	Telecommuni- cation	Chemical Engineering	Chemical Technology	Automobile Engineering	Textile Technology		
1966-67	406	521	414	24	3	11	16	20	1415	
1967-68	441	657	447	23	20	24	16	32	1660	
1968-69	377	654	424	21	27	11	30	46	1590	
1969-70	348	617	331	30	26	11	38	24	1425	
1970-71	233	383	291	28	22	21	35	23	1036	
1971-72	134	293	225	32	18	11	35	24	772	
1972-73	110	200	185	16	10	11	21	26	579	
1973-74	124	145	175	15	10	7	5	21	502	
1974-75	87	139	132	13	3	8	24	29	435	

Printing Technology excluded (intake capacity 30)

Source: Director of Technical Education



TABLE 10

## Stock of diploma holders in Kerala

<i>Year</i>	<i>Stock in the beginning</i>	<i>Out-turn</i>	<i>Net availability after allowing 1.5% depletion</i>
(1)	(2)	(3)	(4)
1961-62	2727	1072	3742
1962-63	3742	2570	4924
1963-64	4924	1159	5992
1964-65	5992	1428	7309
1965-66	7309	1312	8492
1966-67	8492	1415	9758
1967-68	9758	1660	11247
1968-69	11247	1590	12645
1969-70	12645	1425	13859
1970-71	13859	1036	14672
1971-72	14672	772	15213
1972-73	15213	579	15555
1973-74	15555	502	15816
1974-75	15816	435	16007
1975-76	16007	570*	16328
1976-77	16328	570	16645
1977-78	16645	570	16957
1978-79	16957	570	17264

\*Estimated on the basis of the out-turn for the period 1971-72 to 1974-75.

TABLE 11

## Stock of engineering graduates in Kerala

<i>Year</i>	<i>Stock at the beginning</i>	<i>Out-turn</i>	<i>Net after allowing 1.5% depletion</i>
(1)	(2)	(3)	(4)
1961-62	1316	166	1460
1962-63	1460	379	1312
1963-64	1812	586	2362
1964-65	2362	616	2933
1965-66	2933	638	3517
1966-67	3517	785	4238
1967-68	4238	952	5112
1968-69	5112	1145	6163
1969-70	6163	1553	7600
1970-71	7600	925	8398
1971-72	8398	552	8815
1972-73	8815	527	9202
1973-74	9202	544	9600
1974-75	9600	414	9864
1975-76	9864	546*	10254
1976-77	10254	581*	10673
1977-78	10673	788*	11289
1978-79	11289	709*	11818

\*Estimated.

**9**

**MEDICAL MAN POWER (ALLOPATHIC) IN KERALA**



## MEDICAL MAN POWER IN KERALA

### I. Introduction

1.1 In a welfare state like India, providing the people with adequate Medical and Health amenities becomes one of the most important functions of the Government. These amenities include, among other things, provision of cheap medical relief, prevention of communicable diseases, family planning and health education. If per capita expenditure on health is reckoned as one of the criteria for judging the achievements in this field, then Kerala has made considerable progress. The per capita expenditure on health services in the state rose from Rs. 9.87 in 1973-74 at the end of the Fourth Five Year Plan to Rs. 11.23 in 1974-75 during the first year of the Fifth Five Year Plan. The per capita expenditure in Kerala is above the All India average for 1973-74 and 1974-75 and at the same time it is below the rates of many other states as may be seen from the following table.

<i>Sl. No.</i>	<i>State</i>	1973-74	1974-75
1.	Andhra Pradesh	7.30	8.24
2.	Assam	6.42	7.28
3.	Bihar	3.38	4.87
4.	Gujarat	9.27	10.35
5.	Haryana	..	11.08
6.	Himachal Pradesh	17.00	17.47
7.	Jammu & Kashmir	15.90	15.40
8.	Kerala	9.87	11.23
9.	Madhya Pradesh	7.69	8.29
10.	Maharashtra	11.88	12.02
11.	Manipur	12.08	14.92
12.	Meghalaya	19.55	20.17
13.	Karnataka	8.90	10.13
14.	Nagaland	55.17	50.33
15.	Orissa	6.87	7.94
16.	Punjab	13.85	13.98
17.	Rajasthan	9.67	11.06
18.	Tamil Nadu	..	9.78
19.	Tripura	11.12	12.86
20.	Uttar Pradesh	5.31	5.64
21.	West Bengal	8.97	9.83
All India		7.90	8.81

The norms prescribed by the Mudaliar Committee remain yet to be achieved in several respects. The phenomenal increase in population and the financial constraints are the two main reasons for the short fall in achievements.

### 1.2. *Mudaliar Committee Report. 1961*

The Health, Survey and Planning Committee set up by the Government of India in 1961, prescribed the following norms to be achieved by the end of the Fourth Five Year Plan:

Doctor	..	One doctor for 3000 to 3500 of the population
Dental Surgeon	..	One doctor for 3000 to 3500 of the population
Nurse-Midwife	..	One for 2000 of the population by 1981.
Auxiliary Nurse-Midwife	..	One for 5000 of the population by 1976.
Pharmacist	..	One for every three doctors.
Bed strength	..	One for every thousand of population.
Medical Colleges	..	One for every 50 lakhs of the population.

Kerala with a population of 2.13 crores (1971) has four Medical Colleges. At the end of 1974-75 there were 881 Medical and Public Health Institutions in the State with a total bed strength of 25,312. Hence the target fixed for 'bed strength' has also been achieved. Under the other items the targets have not been attained.

### 1.3. *National Strategy on Health*

The National strategy on health formulated by the Ministry of Health and Family Planning has laid down among other things the following objectives.

- (i) Establishment of one primary Health Centre for every 30,000 and one sub centre for every 5000 of the population.
- (ii) Upgrading about 2000 Primary Health Centres, to 25 bedded rural hospitals with doctors in charge of medicine, surgery, Obstetrics and Gynaecology with laboratory and 'X' Ray plant.
- (iii) Increasing the number of beds in hospitals in rural areas.
- (iv) Provision of a minimum package of health services covering curative and preventive medicine, mother and child health care, family planning and health education to the population.

Future requirements of medical and para medical personnel have to be worked out based on the Mudaliar Committee recommendations. This has been attempted to in section IV of this paper. It may also be necessary to take into account the National Policy on health laid down by the Ministry of Health and Family Planning.

### 1.4. *Unemployment among Doctors*

Employment among the Doctors, as in the case of Engineers was not a problem in the past. With the growth of medical institutions in the state coupled with the incapacity of the state to provide employment avenues to the new Doctors due to inadequate finance has already paved the way for unemployment of a large number of Doctors. The number of Doctors in the live register of the Employment Exchanges during the years 1966-75 is a clear indicator of a malady that is going to assume serious proportions in the years to come.

## Number of job seekers in the live register of employment exchange

<i>Year</i>	<i>No. in the live register</i>
1966	19
1967	20
1968	48
1969	185
1970	281
1971	405
1972	671
1973	902
1974	726
1975	809

In the present study, efforts are made to highlight the salient features of the medical education, administration and employment (supply and demand) of medical and para medical personnel in the State.

It is well known that a Doctor should have certain minimum financial resources if he has to establish his own practice without waiting for employment in the Government or other private institutions. The solution to the problem of unemployment among doctors rests with the provision of the required finance and steps to attract the experienced doctors to the rural areas by giving attractive perquisites and they may be the steps in the right direction instead of reducing the intake capacity of the colleges.

### II. Medical Education in Kerala

2.1. The first Medical College in Kerala was established in Trivandrum in 1951 prior to the reorganisation of States. During the second Five Year Plan, the Second Medical College was established at Calicut and during the Third Five Year Plan two more Medical Colleges were established one at Kottayam and the other at Alleppey. Kerala with a population of 2.13 crores (1971) has now four Medical Colleges. It has thus achieved the norm of one College for 50 lakhs of population proposed by the Mudaliar Committee. With the establishment of these Colleges the supply of Medical man power in the State has considerably increased. The intake capacity, courses offered etc., in those colleges vary and these details are given in the following paras.

#### 2.2. Courses offered in the Medical Colleges

All the four Colleges in Kerala coach up students for the M.B.B.S. Degree course. Post-graduate degree courses are also being conducted in the three Medical Colleges at Trivandrum, Kottayam and Calicut. B. Pharm course is being conducted in Trivandrum Medical College only. There is also a Dental College at Trivandrum with an intake capacity of 30 students per year.

In the beginning only M.B.B.S. courses were conducted in these colleges. Later on new courses like B.D.S., M.D., M.S. etc., have been introduced in these colleges. The names of the courses introduced, the year of introduction, duration and admission capacity are given in Appendix—I.

In addition to these certain other courses are also proposed to be introduced during the Fifth plan period in the Medical College, Trivandrum, the details of which are given below:—

<i>Name of Course</i>	<i>Duration</i>	<i>Admission capacity</i>
1. D.T.C.D. (Diploma in Tuberculosis and Chest Diseases)	2 years	4
2. M. S. Laryngology and Otology	3 years	2
3. M. S. Psychiatry	3 years	2

### 2.3. Admission Policy for Degree Courses

The minimum qualification prescribed for admission to the M.B.B.S. course is a pass in the Pre-degree examination with Physics, Chemistry and Biology with atleast 50% marks in each of the optional subjects. The selection is based on the total marks secured in the optional subjects. A fixed number of seats are set apart for graduates in Science subjects prescribed for Medicine. Relaxation of 5% marks in allowed to candidates belonging to Scheduled Castes/Tribes and educationally backward classes. Thirty Five percent (35%) of the total number of seats is reserved for the above communities as detailed below:—

Scheduled Caste/Tribe	10%
Ezhava	9%
Muslim	8%
Other backward Hindus	5%
Latin Catholic other than Anglo Indians	2%
Other Christians	1%
<b>Total</b>	<b>35%</b>

Preference is also given to candidates having special proficiency in sports and games. Performance at Inter-state, Inter-Collegiate and Inter-University level will only be considered for awarding marks for proficiency in sports. The selection of candidates for all the four medical colleges is done at the Trivandrum Medical College and then the candidates are assigned to each

College. The number of candidates admitted in 1975 for the main courses in the four Medical Colleges are given below:

**Medical Colleges**

<i>Name of Course</i>	<i>Trivandrum</i>	<i>Calicut</i>	<i>Kottayam</i>	<i>Alleppey</i>	<i>Total</i>
M. B. B. S.	185	179	80	80	524
B. D. S.	30	--	--	--	30
B. Pharm.	25	--	--	--	25

2.4. *Duration of the course and subjects taught*

M.B.B.S. course covers a duration of 4 1/2 years in three semesters of 1 1/2 years each while the B.D.S. and B. Pharm courses are for 4 years each. Securing the degree (M.B.B.S.) after 4 1/2 years' academic course, the students have to undergo 1 year compulsory Rotating House Surgeoncy. The subjects taught for each year for the M.B.B.S., B.D.S. and B. Pharm. courses are given in Appendix—II.

2.5. *Fees and others items of expenditure*

The total tuition fee for the degree courses are given below:—

M.B.B.S.	Rs. 1800
B.S.D.	Rs. 1440
B. Pharm	Rs. 1440

No library fee or fee for practical is realised from the students. But the students have to remit Rs. 15 per year at the time of joining, for sports and games. In addition to the tuition fees mentioned above, examination fees at the rates given below are realised from the candidates appearing for the three degree courses.

* M.B.B.S.	Rs. 330
* B.D.S.	Rs. 200
* B. Pharm	Rs. 540

The tuition fees realised in the colleges at Calicut, Kottayam and Alleppey are also the same as given above with slight difference in the amount of fees realised for items other than tuition fees. Similarly there is slight difference in the examination fees realised in the other colleges.

\* For the whole course



All the four colleges have attached hostels. The number of rooms available in the four colleges are given below:—

Name of College	No. of hostels for			No. of rooms available for		
	Gents	Ladies	Total	Gents	Ladies	Total
M. C., Trivandrum	3	1	4	291	130	421
M. C., Calicut	5	3	8		660*	660
M. C., Kottayam	1	1	2	50	60	100
M. C. Alleppey,	2	2	4	110	26	136

\* Separate figures not available.

The mess charges are realised at the rate of Rs. 150 per mensem from the students in each college. But room rent, lighting etc., are realised at Rs. 20 p.m. in the Medical College, Trivandrum and at the rate of Rs. 14 p.m. in the other colleges.

## 2.6. Examinations

The standards of pass and the percentage of marks required for the same are as follows:—

Pass	50%
Second Class	50%
First Class	60%

The examinations are conducted in the conventional pattern with written, practical and viva-voce.

The students who come out successful in the examination for M.B.B.S. have to spend one year for House Surgeoncy. During this period they are paid a stipend of Rs. 250 p.m.

## 2.7 Nursing Education

In the Medical College, Trivandrum there is a College of Nursing coaching students for the B.Sc. degree in Nursing. Only students who have passed pre-degree examination in Science are admitted to this course which has a duration of 4 years. The admission capacity is only 25. The General Nurses Training certificate courses are held in the schools of Nursing attached to important hospitals in the private and public sectors. This course is conducted for a duration of 3 1/2 years. The minimum qualification for admission to the course is a pass in the S.S.L.C. Examination. There are nine schools of

nursing in the Public Sector, one each attached to the Medical College, Trivandrum and Calicut and the remaining seven schools attached to the District Hospitals. These schools can train 250 nurses every year. But admissions are limited to the actual requirements and availability of funds. Apart from the above nine schools of nursing there are three A.N.M. Training centres also under the state.

In the private sector also there are 17 schools of Nursing attached to important private hospitals. These schools have an intake capacity of 275 students. Thus the total intake capacity of the institutions in the private and public sector come to 525. Allowing a reasonable margin for failures and drop-outs the state can coach up about 450 nurses every year. But due to migration of nurses in large numbers to outside the state and even outside the country there is a short supply of qualified nurses.

### 2.8. *Pharmacy Course*

There are Degree and Diploma courses in Pharmacy. B. Pharmacy course is conducted only in the Medical College, Trivandrum. But Diploma course in Pharmacy is conducted in all the four colleges. The minimum qualification prescribed for the Degree course is the same as that for the M.B.B.S. course and for Diploma course it is a pass in S.S.L.C. The duration of the degree course is 4 years and that of Diploma is only one year. The total intake capacity for Diploma course in all the four medical colleges is 260 per year and for the Degree course it is 25.

According to the Bhore Committee Report there should be one Pharmacist for every three Doctors. Allowing 10% for failures and drop outs the out-turn from the four Medical Colleges will be only about 236 or 240. This is approximately 50% of the estimated out-turn of Doctors from the four Medical Colleges against 33 1/3% recommended by the Bhore Committee. The Pharmacy course was started in the Medical College, Alleppey only during the year 1973-74. There will be an initial shortage in the stock of Pharmacist compared to the stock position of Doctors. Therefore the present intake capacity for this Diploma course has to be continued for some more time to meet this initial shortage and future requirements of qualified Pharmacists in the state.

## III. Utilisation of Medical Man Power

3.1. There are Institutions both in the public and private sector providing employment opportunities to the qualified Doctors and para-medical personnel coming out of the colleges and schools in the state. But a significant proportion of these persons migrate to other states in India and seek employment even outside India. Precise figures of such migration are not available. Those who continue to stay in the state take up employment either under Government or in private Institutions. A good number of Doctors are also unemployed as seen from the live register of the employment exchange. Statistics of Doctors

who have set up independent practice are not available. The state has not so far achieved the norm of one Doctor for 3000 population recommended by the Mudaliar Committee. The non-achievement of the above goal in spite of the availability of large number of Doctors, based on the unemployment register, may be due to the limited employment opportunities in the private and public sectors and the migration of Doctors out-side the state.

### 3.2. *Distribution of Medical Man Power*

As in other states one of the peculiarities in the distribution of Medical Man Power is the sharp difference between the number of persons employed in urban areas and the number of persons working in rural areas. The over all availability of beds in hospitals for the state of Kerala, the number of beds available per lakh of population in the rural and urban areas are given below:

	<i>Total population (in lakhs) mid year (1974-75)</i>	<i>Total No. of beds (1974-75)</i>	<i>No. of beds per lakh of population</i>
For the whole State	23.45	25312	109
For cities and towns	37.74	17328	451
For rural areas	194.71	7984	41

It is true that the Medical Institutions in the urban areas serve the rural population as well to some extent. But the need to strengthen the medical man power in the rural areas has to be stressed. This may be done by giving all possible attractions such as free furnished accommodation, special allowance to doctors, free travel facilities, educational allowances to the children etc.

### 3.3. *Utilisation of medical personnel in the Teaching Institutions*

For each important branch of medicine taught in the Medical Colleges there is a Director with a Professor under him. Under the Professor there are a number of Associate/Assistant Professors and Tutors. The staff pattern in the colleges are given below:

<i>Name of Medical College</i>	<i>Director</i>	<i>Professor</i>	<i>Associate Professor</i>	<i>Assistant Professor</i>	<i>Tutor</i>
Trivandrum	10	24	44	82	132
Calicut	5	16	37	58	126
Kottayam	3	14	18	37	96
Alleppy	..	13	16	35	86

The scale of pay of the teaching staff are as follows:

Director	Rs. 1050-1550	plus allowances
Professor	Rs. 1050-1550	”
Associate Professor	Rs. 950-1450	”
Assistant Professor	Rs. 710-1200	”
Tutor	Rs. 510-995.	”

The Directors and Professors must have a Post-Graduate Degree on the subject with at least 10 years teaching experience.

Professor/Associate Professor must have a Post-Graduate Degree with 5 years teaching experience and three years experience for the Assistant Professor. The tutors must be Graduates in medicines.

In the Medical College, Trivandrum Principal/Directors spend about 10 hours for teaching. The average working time spent by the other teaching staff in the Medical College are given below:

Professor	12 hours a week
Associate Professor	15 ”
Assistant Professor	18 ”
Lecturer/Tutor	18 ”

#### 3.4. *Medical Man Power in the Public Sector*

The net work of Medical Institutions under the Health Services Department and Medical Colleges provide medical aid and medicines to the public. There were 874 medical institutions (Allopathic) in the state at the commencement of the fifth five year plan as detailed below:

Government Hospitals	122
Government Dispensaries & T. B. Clinics	581
Primary Health Centres	163
Secondary Health Centre	1
Grant-in-aid Institutions	6
Subsidised Rural Dispensaries	N.A.
Medical College Hospital Centre	1
<b>Total</b>	<b>874</b>

The strength of medical personnel in the public sector as on 1-4-1974 is given below:

<i>Category</i>	<i>Public sector</i>
Doctors	2719
Dental Surgeons	66
Nurses	3246
Pharmacists (A & B)	1384
A. N. Ms.	1622

The state Government continues to be the main employer of the medical and para medical personnel. A major portion of these personnel are utilised in the Health Services Department. The main activities of the Health Services Department on a functional basis are (1) Control of communicable diseases (2) Family Planning, (3) Employees State Insurance Scheme, (4) Food Administration. The department also has a state Health Education wing besides its own Medical Stores and Transport Organisation. The Public Health Laboratory and the Government Analysts Laboratory are also functioning under the Directorate of Health Services.

### 3.5. Control of Communicable Diseases

Under this unit come the schemes for the control and eradication of infectious diseases like Small Pox, Malaria, Leprosy, Filariasis, Tuberculosis etc. For each of these schemes there is an Assistant Director of Health Services at the Directorate with medical and para-medical staff at the lower levels. The staff pattern for these schemes is given below:

#### STAFF PATTERN

##### Control of communicable diseases

#### 1. NSEP Small Pox

Assistant Director of Health Services	1	Rs. 850-1450	} Attached to D.H.S., Trivandrum.
Health Inspector	1	Rs. 405-660	
Para Medical Assistants	20	Rs. 405-660	} Staff under the district
Vaccination Supervisor	108	Rs. 285-550	
Basic Health Worker	400	Rs. 230-385	

#### 2. Leprosy Control Programme NLCP

Assistant Director of Health Services	1
District Medical Officer	1
Medical Officers	5
Leprosy Health Visitors	25
Non-Medical Supervisor/ Circle Supervisor	9

#### 3. Malaria

Assistant Director, Health Services	1
Assistant District Medical Officers	11

Medical Officers	143
Entamologist	1
District Laboratory Technicians	11
Laboratory Technicians	143
Health Supervisors	33
Health Inspectors	300
Basic Health Workers/ Health Assistants	1887
Insect Collectors	2

4. *Filaria Control*

Assistant Director	1	} Attached to D. H. S.
Assistant Entamologist	1	
Laboratory Assistant	2	

5. *Sherthalai Filaria Control unit (Technical only)*

Assistant Entamologist	1
Filaria Supervisor	1
Filaria Research Assistant	1
Maistry	4
Field Workers	21

6. *T. B.—Tuberculosis*

Assistant Director of H.S.	1
Director, State T. B. Centre	1
Supervising Medical Officer— B.C.G. Campaign	1
District T. B. Officers	10
Laboratory Technicians	
Health Visitors	
X-Ray Technician/Radiographer	
X-Ray Attender	

7. *Cholera Control*

Medical Officer	1	} This is a Cholera combat team for the whole State
Health Inspector	1	
A.N. Ms.	2	
Auxiliary Health Workers	2	
Laboratory Technician	1	
Driver	1	
Last Grade Employee	1	

The duties and responsibilities of these staff have been laid down in detail and their performance is watched through periodical returns received by the Supervisory Officers.

### 3.6. Family Planning Programme

Family Planning is considered as one of the key factors for the success of the national plans for the economic development and social progress. The population problem is very acute in Kerala which has a high density of population among the Indian States. This is quite evident from the population figures of the various States in India.

<i>Name of State</i>	<i>Area (Sq. Km.)</i>	<i>Population 1971 Census (lakhs)</i>	<i>Density</i>
Andhra Pradesh	276814	435.03	157
Assam	78523	149.58	190
Bihar	173876	563.53	324
Gujarat	195984	266.97	136
Haryana	44222	100.37	227
Himachal Pradesh	55673	34.60	62
Jammu & Kashmir	222236	46.17	21
Kerala	38864	213.47	549
Karnataka	191773	292.99	153
Madhya Pradesh	442841	416.54	94
Maharashtra	307762	504.12	164
Manipur	22356	10.73	48
Meghalaya	22489	10.12	45
Nagaland	16527	5.16	31
Orissa	155782	219.45	141
Punjab	50362	135.51	269
Rajasthan	342214	257.66	75
Tamil Nadu	130069	411.99	317
Tripura	10477	15.56	148
Uttar Pradesh	294413	883.41	300
West Bengal	87853	443.12	504

The steadily increasing population besides necessitating larger expenditure on Medical and Public Health amenities has adversely affected the per capita achievements of the State in other fields. Hence the economic prosperity of the State depends upon the success of this scheme and it has therefore to be accorded a very high priority among the State's plan schemes for economic development. The details of expenditure on 'Family Planning' during the years from 1966-67 to 1974-75 are given below:

<i>Year</i>	<i>Total expenditure on Family Planning (Lakhs of Rupees)</i>
1966-67	88.58
1967-68	131.84
1968-69	184.72
1969-70	198.88
1970-71	227.43
1971-72	333.33

1972-73	324.27
1973-74	260.50
1974-75	259.54

Family Planning is a centrally sponsored programme and hence the progress of the scheme depends upon the central allocation of funds from year to year. The main objective of the programme is the welfare of the family as a whole by family limitation warranted by a non-stop increase in population. Family limitation is adopted by various methods such as sterilisation, I.U.C.D. insertion, distribution of conventional and oral contraceptives, tubectomy operations etc. Targets have been fixed for the whole State under each of the above items.

The programme of Family Planning covers a number of aspects such as education and motivation for Family Planning, provision of services, education and training of doctors and other personnel required for the programme, research and the production and distribution of Family Planning devices. Some parts of the programme are handled through the normal medical and health services especially those rendered through the primary health centres, voluntary organisations and private doctors. It is therefore extremely difficult to identify in precise terms the additional man power required for each of these aspects.

Government of India appointed a committee with the Secretary, Ministry of Health and Family Planning as Chairman "to review what additions and changes are necessary as a result of the greatly altered situation due to the I.U.C.D. having come to the forefront of the programme in the staffing pattern, financial provisions etc.". The committee known as the Mukherjee Committee made its recommendations in 1966. The recommendations made by the Committee are the following:—

1. There should be a separate cell in the State Secretariat dealing exclusively with Family Planning schemes.
2. There should be a State Family Planning Bureau for each state and a state level Implementation Committee to review the progress of Family Planning schemes in the State.
3. There should be a District Family Planning Bureau for each district with three divisions, an Administrative Division, Education and information Division and Field Operation and Evaluation Division. There should also be implementation committees for each district with the District Collector as the Chairman to review the progress of the scheme.
4. Family Planning in urban areas should be implemented through the Urban Family Welfare Planning Centres, there being one such centre for every 50,000 population.



5. In the rural areas there should be Rural Family Planning Centres attached to the Primary Health Centres in Community Development Blocks to look-after Family Planning work.

The Secretariat Cell under a Deputy Secretary is functioning at the Secretariat to deal with all matters connected with the Family Planning Programmes. The State Family Planning Bureau is functioning in the Directorate of Health Services under the control of the Director of Health Services. He is assisted by an Assistant Director of Health Services (FP), Assistant Director of Health Services (MCH) and Medical Officer, I.U.D., State Mass Education and Media Officer, Demographer, Administrative Assistant and also a Senior Accountant.

Attached to each District, a District Family Planning Bureau is functioning with District Family Planning Medical Officer in charge of the District Administration. At the Block level, a Rural Family Welfare Planning Centre is functioning under the Medical Officer attached to each primary Health Centre.

The Man power pattern of the State Family Planning Bureau, District Family Planning Bureau, Urban Family Planning Welfare Centre and Rural Family Welfare Centre are given in Appendix-III.

### 3.7. *Employees State Insurance Scheme.*

With a view to provide social security to the employees, the Employees State Insurance Scheme was introduced in Kerala during the year 1956. In the beginning it was introduced only in four districts of the State, viz., Quilon, Alleppey, Ernakulam and Trichur. Now the scheme has been extended to all districts except Malappuram and Idukki. Under this scheme medical care is extended to nearly 2,01,000 employees and their families. In the earlier years of implementation of this scheme the families of the employees were not eligible for hospitalisation facilities. With the introduction of the full medical care from 1st May 1971 in this State which is the first State to do so in the whole country, this facility is extended to the families of the employees also.

Medical benefits under the scheme are extended through a number of full time E.S.I. hospitals and through a number of beds reserved in Government Hospitals (referred to as Referred Hospitals). Details of these hospitals and beds available as on 1974 are given below:

	<i>No. of Hospitals</i>	<i>No. of beds</i>
<i>General:</i>		
I. E.S.I. Hospitals	9	695
II. Referred Hospitals	9	64
		759
<i>Maternity:</i>		
I. Referred Hospitals	7	23
II. <i>T. B. Hospital:</i>		
1. E.S.I. Hospital	2	124
2. Referred Hospital	1	6
		130

In addition to these there are also full time Dispensaries, Panel Dispensaries Part-time Dispensaries and Mobile Dispensaries. The following are the number of hospitals and dispensaries in the State as on 1976.

	<i>Number</i>
E.S.I. Hospitals	10
T.B. Annexure	1
E.S.I. Dispensaries	70
E.S.I. Mobile Dispensaries	2
Part-time Dispensaries	17

The staff pattern in a full time E.S.I. Dispensary is given below:

Insurance Medical Officer	1
Pharmacist	1
Auxiliary Nurse Midwife	1
Nursing Assistant	1
L.D. Clerk	1
Health Assistant, Grade II	2

There are 1 doctor type, 2 doctor type, 3 doctor type, 4 doctor type and 5 doctor type dispensaries in the State and the total number of doctors in E.S.I. scheme is 252 including one First Grade Civil Surgeon and 2 Second Grade Civil Surgeons.

The services of the specialists in almost all branches of medicines were made available.

Statement showing the number of specialists made available in the E.S.I. Hospitals is furnished below:

	<i>Full Time</i>	<i>Part Time</i>
Medicine	7	8
Obstetrics	7	5
Surgery	7	8
E.N.T.	..	5
T.B.	1	6
Eye	..	5
Radiologist	1	4
Skin & V.D.	1	2
Dental	5	3
Orthopaedics	..	3
Leprosy	..	2
Mental	..	1
Total	29	52

### 3.8. *Food Administration*

Prevention of 'Food Adulteration Act, 1954, is enforced in this State. In the Corporation and Municipalities the above Act is administered by the respective local bodies through their own staff. But in all the panchayats in the State the enforcement machinery is administered by the Director of Health Services. In the organisational set up for administration of this act the following staff are employed.

#### *State level*

Food administration section under a Technical Assistant in the Directorate with clerical staff.

#### *Regional level*

Regional Food Inspector with clerical staff each having jurisdiction over 3 to 4 Revenue Districts.

#### *Panchayat level*

Food Inspectors each having jurisdiction over 15 to 20 Panchayats, assisted by the L.D.C. and Peons.

In addition to the above there is also a mobile vigilance squad consisting of one Chief Food Inspector and 2 Food Inspectors for the whole State to make surprise inspections as laid down in P.F.A. (Prevention of Food Adulteration) Rules.

### 3.9. *Auxiliary Units under the D.H.S.*

Under the Health Services Directorate the following units are also functioning.

1. Government Medical Stores.
2. Health Transport Organisation.
3. Health Nutrition unit.

#### IV. Requirements and availability of Medical and Para Medical Personnel

4.1. In this section the requirements and availability of medical and para medical personnel are worked out. The requirements are based mainly on the norms suggested by the Mudaliar Committee.

##### 6.2. Availability of Doctors

The total number of Doctors working in the public and private sectors as on 1-1-1974 works out to 4705. The total number of Doctors in the live register of the employment exchanges as on 1974 is 726. Thus the total stock available in 1974 can be taken as 5431. The total number of Doctors as per the Medical Council register comes to 6512 during 1974. But if the stock position is worked out based on 1961 census figures and providing for actual/anticipated out-turn every year from the Colleges and 2% depletion for deaths, retirements etc., the stock position during 1974 would be 5311 as may be seen from the following table. So the data available with the medical council cannot be utilised to assess the stock position of Doctors on a particular reference date.

**Stock of Doctors during 1961 to 1981 (based on 1961 census)**

Year	No. of active Doctors at the beginning	Actual/estimated		Net after allowing 2% depletion
		Out turn	Gross total	
1961	1500	96	1596	1564
1962	1564	120	1684	1650
1963	1650	209	1859	1822
1964	1822	193	2015	1975
1965	1975	340	2315	2269
1966	2269	342	2611	2559
1967	2559	370	2929	2871
1968	2871	397	3268	3203
1969	3203	361	3564	3493
1970	3493	397	3890	3812
1971	3812	426	4238	4154
1972	4154	488	4642	4550
1973	4550	486	5036	4936
1974	4936	483	5419	5311
*1975	5311	464*	5775	5660
1976	5660	480†	6140	6018
1977	6018	480	6498	6368
1978	6368	480	6848	6711
1979	6711	480	7191	7047
1980	7047	480	7527	7377
1981	7377	480	7857	7700

\* Actual outturn † Estimated outturn.

#### 4.3. Requirements of Doctors

According to the Mudaliar Committee there should be one Doctor for every 3000—3500 of the population at the end of the IVth plan period (1974) and this target should be attained even in the Rural areas. Based on this norm, the total requirements of Doctors have been worked out as follows:

<i>Year</i>	<i>Population in lakhs</i>	<i>No. of Doctors required</i>
1971	213.47	7116
1974	227.39	7580
1979	249.90	8330
1981	257.67	8589

The number required has been worked out on the basis of one Doctors for 3000 of population.

#### 4.4. Availability compared with requirements:

<i>Year</i>	<i>Requirements</i>	<i>Availability</i>	<i>Deficit</i>
1971	7116	4154	2962
1974	7580	5311	2269
1979	8330	7047	1283
1981	8589	7700	889

The requirements are based on one Doctor for 3000 population. If the norm is taken as one Doctor for 3500 population the demand will be met even before 1981. But this does not mean that the entire stock of Doctors are fully employed. This is evident from the increasing number of job seekers registered with the employment exchange.

The additional requirements of Doctors during the V plan period for the public sector alone is estimated as 650. No separate study has been conducted to estimate the requirements of Doctors in the private sector.

#### 4.5. Requirements and availability of Dentists

The Bhoré Committee has recommended as early as in 1946, that there should be one Dental Surgeon for every 4000 of population by 1981. According to the medical council register, the number of A Class Dentists registered

with the council at the end of the year 1976 is 365 and B Class Dentists is 337. A Class Dentists are qualified hands and B Class Dentists are those who acquire experience by working with qualified hands.

According to 1971 census the population of Kerala was 213.47 lakhs. If there should be one Dentist for every 4000 population there should be about 5300 Dentists in the State. It is impossible to achieve such an ambitious target in the near future. It is more realistic to have a target of one Dental Surgeon for every 25000—30000 of population.

As in the case of Doctors the number of Dental Surgeons registered with the medical council is also on the higher side. But the number of fresh registrations every year broadly corresponds to the out turn from the Dental College, Trivandrum which has an intake capacity of 30 out of which 14 seats are reserved for students from out side the State till 1975. Later the number of seats reserved for other states have been reduced to 2.

Assuming the stock of Dental Surgeons at the end of 1976 (Medical Council figures) as the basis i. e. at the beginning of 1977 and providig for annual addition of 14 new entrances upto 1979 and 25 new entrances from 1980 onwards (allowing 10% wastage) and 2% depletion the probable supply of Dental Surgeons can be worked out as follows:

Year	Stock at the beginning	New entrances	Total	Net stock at the end of the year after 2% depletion
1977	365	14	379	371
1978	371	14	385	377
1979	377	14	391	383
1980	383	25	408	400
1981	400	25	425	416

From the above the requirements and availability of Dental Surgeons can be summarised as follows:

Year	Population	Requirements 1/250000	Availability	Deficit
1977	241.66	966	371	395
1979	249.90	1000	383	617
1981	257.67	1030	416	614

It is clear from the above table that the supply of Dental Surgeons will not match the requirements worked out even at the very low rate of 1 surgeon for 25000 population.

The additional requirements of Dentists during the V Plan period for the public sector is estimated at 40 based on the programme (source D.H.S.) No separate study has been conducted to estimate the additional requirements of Dentists in the private sector and hence data are not available.

#### 4.5. Requirements and availability of General Nurses:

According to the Medical Council Registers the number of Nurses registered with the Council is 3542 in 1971 and 5375 in 1974. But the actual stock of Nurses during 1974 both in the private and public sectors works out to 5178. There are 9 Institutions in the public sector with an intake capacity of 250 per year for training Nurses Apart from this, there are 17 schools of Nursing in the private sector with a total intake capacity of 175. Thus the total intake comes to 525 per year. Precise figures of out-turn from these schools are not available. Even the actual intake depends upon the requirements from time to time. Providing a 10% wastage on the intake capacity, the probable out-turn from these Institutions may be taken as 475. But the actual out turn during the year 1974-75 was 464 and during 1975-76 was 308. For the subsequent years an estimated outturn of 475 is provided. Mudaliyar Comm ittee has recommended a norm of 1 Nurse for every 5000 of population by 1971 and one Nurse for 2000 of population by 1981. In assessing the requirements of Nurses the following phased programme is adopted.

Year	Population (Lakhs)	Norm	Requirements
1971	213.47	1 : 5000	4269
1974	227.39	1 : 4100	5546
1979	249.90	1 : 2600	9611
1981	257.67	1 : 2000	12884

The availability of Nurses may be worked out as follows:

Year	Stock at the beginning	Actual/Probable out-turn	Total	Stock after allowing a depletion of 2%
1974	5178	464	5642	5530
1975	5530..	308	5838	5722
1976	5722	475	6197	6073
1977	6073	475	6548	6417
1978	6417	475	6892	6756
1979	6756	475	7231	7087
1980	7087	475	7562	7411
1981	7411	475	7886	7727

From the above tables, the requirements and availability of General Nurses are as follows:—

Year	Requirements	Availability	Deficit
1974	5546	5530	16
1979	9611	7087	2524
1981	12884	7727	5157

In the case of Nurses migration rate is very high. So the availability of Nurses to serve the State given above will be on the higher side. Hence the actual deficit is likely to be more.

The additional requirements of Nurses in the public sector during the V plan period is estimated at 1000 on the basis of programmes (Source D.H.S.). The figures relating to private sector are not available since no attempt has been made to estimate the same.

#### 4.6. Requirements and availability of Auxiliary Nurse-Midwives

According to the Medical Council Register the number of Auxiliary Nurses/Midwives registered during the years 1975 and 1976 are 1085 and 1728 respectively and the midwives for the above periods are 5711 and 6817 respectively. The registration of ANMs has started in the Medical Council only from 1975. It is seen from the above figures that about 700 fresh registrations have been made during 1976. But the probable outturn per year is only 110. Hence it is presumed that many of the ANMs who have not yet registered might have registered their names during 1976.

The stock of ANMs during the year 1974 in the public and private institutions as reported by the Directorate of Health Services and the Medical Colleges is 2425. This stock far exceeds the number registered in the Medical Council. Hence there will be under-registration in the Medical Council. The actual stock position as on 1974 collected from the various sources may be taken as the base for estimating the future availability.

There are 3 ANM training centres with an intake capacity of 10 each and 6 ANM schools with an intake capacity of 15 each. The total intake capacity for the above 9 institutions comes to 120 per year. Providing a 10% wastage on the intake capacity, the probable outturn from these institutions may be taken as 110 per year. The actual out-turn during 1973-74 and 1974-75 were 97 and 105 respectively. For the subsequent years the estimated out turn of 110 is provided. During 1974-75 one more ANM Training Centre has started functioning.



By about 1968 there were 18 institutions in the State imparting training to ANMs. But the number has subsequently been reduced to 9 due to non-availability of suitable equipments for giving employment to the ANMs coming out from these institutions.

Mudaliyar Committee has recommended a norm of 1 ANM for every 5000 population by 1976. According to this norm about 4700 of this category will be required by 1976.

The availability of ANMs may be worked out as follows:—

<i>Year</i>	<i>Stock</i>	<i>Actual/anticipated out-turn</i>	<i>Total</i>	<i>Stock after allowing 2% depletion</i>
1974	2425	97	2522	2472
1975	2472	105	2577	2526
1976	2526	110	2636	2583
1977	2583	110	2693	2639
1978	2639	110	2749	2694
1979	2694	110	2804	2748
1980	2748	110	2858	2801
1981	2801	110	2911	2853

The requirements of A.N.Ms. may be worked out as follows based on the above norm.

<i>Year</i>	<i>Population in lakhs</i>	<i>Norm</i>	<i>Requirements</i>
1976	237.37	1:5000	4747
1979	249.90	1:5000	4998
1981	257.67	1:5000	5153

From the above tables the requirements and availability may be summarised as follows:—

<i>Year</i>	<i>Requirements</i>	<i>Availability</i>	<i>Deficit</i>
1976	4747	2583	2164
1979	4998	2748	2250
1981	5153	2853	2300

As in the case of nurses the migration rate of A.N.Ms. is also very high. So the availability of A.N.Ms. given above will be on the higher side. Hence the actual deficit is likely to be more.

The additional requirements of A.N.Ms. in the public sector during the V plan period is estimated at 125 based on schemes (source—D.H.H.S.). The requirements in the private sector may be more, about which no figures are available at present.

#### 4.7. Requirements and availability of Pharmacists:

The total stock of Pharmacists both in the public and private institution during 1974 as reported by the D.H.S. and the medical colleges comes to 2183. This stock comprises only A and B class Pharmacists. According to the Medical Council Register, the number of Pharmacists registered at the end of 1976 comes to 6663. This includes A, B, C & D class Pharmacists.

The availability of pharmacists has been worked out based on the stock position as on 1974 reported by the D.H.S. and Medical Colleges.

Now the Pharmacy courses are being conducted in the 4 Medical Colleges. The D Pharm course in Alleppey Medical College was started only during 1973-74. The intake capacity of the B pharm course is 25 per year and that of D pharm course is 205 per year. Thus the total intake capacity is 230 per year. Providing a 10% wastage on the intake capacity the probable out turn may be taken as 210 per year. The Bhore Committee has recommended a norm of 1 Pharmacist for every 3 Doctors. Based on the above norm, the requirements of Pharmacists have been worked out as follows:

Year	No. of Doctors required 1:3000 population	No. of Pharmacists required 1:3 Doctor
1974	7580	2527
1975	7748	2583
1976	7912	2637
1977	8055	2685
1978	8195	2732
1979	8330	2777
1980	8461	2820
1981	8589	2863

The availability of pharmacists may be worked out as follows:

<i>Year</i>	<i>Stock at the beginning</i>	<i>Anticipated out-turn</i>	<i>Total</i>	<i>Stock after allowing 2% depletion</i>
1974	2183	210	2393	2345
1975	2345	210	2555	2504
1976	2504	210	2714	2660
1977	2660	210	2870	2813
1978	2813	210	3023	2963
1979	2963	210	3173	3110
1980	3110	210	3320	3254
1981	3254	210	3464	3395

From the above tables the requirements and availability may be summarised as follows:

<i>Year</i>	<i>Requirements</i>	<i>Availability</i>	<i>Deficit/Excess</i>
1974	2527	2345	-182
1975	2583	2504	-79
1976	2637	2660	+23
1977	2685	2813	+128
1978	2732	2963	+231
1979	2777	3110	+333
1980	2820	3254	+434
1981	2863	3395	+532

It may be seen from the above table that the availability matches with requirements by the end of 1976. After 1976 there will be surplus of Pharmacists and the surplus will continue to increase progressively if the present intake capacity continues.

The above figures are arrived at based on the norms suggested by the Bhole Committee. Even according to the actual availability of Doctors and Pharmacists both in the public and private institutions as on 1974, it is seen

that the pharmacists are in excess. It may be noted that there is self employment opportunities for Pharmacists. Every medical store requires a Pharmacist and hence no unemployment problem is likely to arise among Pharmacists.

The additional requirements of Pharmacists during the V Plan period in the public sector based on schemes is estimated at 150 (source-D.H.S.). The requirements in the private sector has not been estimated.

## V. Summary and conclusions

5.1. This study has been made to assess the total requirements and estimated supply of various medical and para medical personnel based on the norms prescribed by the Mudaliar Committee and Bhore Committee and information received from the Director of Health Services, Medical Colleges and other sources.

5.2. The Mudaliar Committee recommendation in regard to the establishment of Medical Colleges has been achieved in this State as there are already four Medical Colleges.

5.3. The growing unemployment among doctors may apparently call for a reduction of the intake capacity of the colleges. But considering the fact that Mudaliar Committee recommendations on doctor population ratio has not been achieved in this state, such a course of action would not be justified. On the contrary more job opportunities to doctors have to be provided both in the public and private sectors to reduce the growing unemployment among them. More employment in private sector is possible if adequate financial assistance to those who wish to set up their independent practice preferably in the rural areas is made available.

5.4. The intake capacity for the Dentistry course has not been increased in the Medical College, Trivandrum where alone this course is now conducted in the State. The norms prescribed for Dentists seem to be unrealistic. Even at the rate of one Dentist for 25,000 population the requirements are not satisfied.

5.5. The figures relating to availability of nurses in the State are not very reliable since the rate of migration under this category cannot be precisely assessed. Here the available stock is less than the number required. As the supply is short of demand and as large scale migration continues under this category the intake capacity for the nurses course in the various institutions has to be raised.

5.6. The State Government continues to be the main employer of the medical and para medical personnel in the State. The scope for setting up private practice remains very limited; future employment scope depends upon the expansion of the medical and primary health institutions in the State and

encouragement of migration of doctors to other States. It may be remarked here that the Government of India have prescribed the yard stick of one primary health centre for every 30,000 population and one sub centre for every 5000 population. The State has at present 163 primary health centres and 1761 sub centres. Based on the yard stick it is necessary to establish 600 more primary health centres and 2900 sub centres. Along with this 36 primary health centres have to be upgraded into 25 bedded rural hospitals with doctors in charge of medicine, surgery, obstetrics and gynaecology with laboratory and X-ray plant. When these schemes are implemented and the bed strength of the rural hospitals is increased, it may be possible to employ more medical and para medical staff.

## APPENDIX—I

## The Courses newly introduced in the various Medical Colleges

<i>Name of the Medical Colleges</i>	<i>Name of the Course</i>	<i>Year of introduction</i>	<i>Duration of the course</i>	<i>Admission capacity</i>
Trivandrum	1. B.D.S. (Bachelor of Dental Surgery)	1959	4 years	30
	2. M.D. General Medicine	1959	3 years	13
	3. M.D. General Surgery	1959	3 years	20
	4. M.D. Obstetrics & Gynaecology	1959	3 years	8
	5. Diploma in Clinical Pathology	1959	2 years	3
	6. Diploma in Child Health	1964	2 years	6
	7. M.D. Pharmacology	1964	2 years	4
	8. M.D.S. Operative Dentistry	1966	2 years	2
	9. Diploma in Ophthalmology	1968	2 years	3
	10. Diploma in Orthopaedics	1968	2 years	3
	11. Diploma in Laryngology and Otology	1968	2 years	3
	12. M. D. Anatomy	1969	3 years	2
	13. M. D. Physiology	1969	3 years	2
	14. M. D. Bio Chemistry	1969	3 years	2
	15. M. D. Pathology	1969	3 years	6
	16. Diploma in Public Health	1969	2 years	discontinued
	17. M.D.S. Prosthetics	1969	2 years	2
	18. M. S. Orthopaedics	1969	3 years	2
	19. Diploma in Anaesthesia	1969	2 years	4
	20. Diploma in Medical Radiology	1969	2 years	3
	21. M.D. Paediatrics	1969	3 years	3
	22. M.D.S. Orthodontia	1970	2 years	2
	23. M.S. Ophthalmology	1971	3 years	4
	24. M.D.S. Periodontia	1972	2 years	Not this year
	25. M. Ch. in Paediatric Surgery	1972	2 years	2
	26. Diploma in Psychiatry	1973	2 years	6
	27. Diploma in Physical Medicine and Rehabilitation	1975	2 years	4
	28. M.D. Forensic Medicine	1974	3 years	2
Kottayam	1. M.D. (General Medicine)	1973	3 years	2
	2. M.S. (General Surgery)	1973	3 years	2
	3. M.D. Physiology	1974	3 years	1
	4. M.D. (Anacs).	1975	3 years	1
	5. M.D. (Gynaecology)	1975	3 years	2
	6. D.A.	1975	2 years	6
	7. D.G.O.	1975	2 years	6
Calicut	1. Laboratory Technical Course	1962-63	1 year	8
	2. Health Inspector Training Course	1964-65	1 year	57
	3. Pharmacy Course	1967	2 years	60
<i>Post-Graduate Course:</i>				
	1. Diploma in Obstetrics and Gynaecology	1967	2 years	8
	2. M. D. Medicine	1970	3 years	6
	3. M.S. Surgery	1970	3 years	6
	4. M.D. Obstetrics & Gynaecology	1970	3 years	4
	5. M.D. Bacteriology	1970	3 years	2

<i>Name of the Medical Colleges</i>	<i>Name of the Course</i>	<i>Year of introduction</i>	<i>Duration of the course</i>	<i>Admission capacity</i>	
Calicut	6. M. D. Physiology	1970	3 years	2	
	7. Diploma in Dermatology and Venereology	1972-73	2 years	2	
	8. M. Sc. Biochemistry	1972-73	3 years	3	
	9. Pharmacology	1972-73	3 years	3	
	10. Diploma in child Health	1972-73	2 years	6	
	11. Diploma in Ophthalmology	1972-73	2 years	6	
	12. Anatomy (S)	1973-74	3 years	2	
	13. Forensic Medicine (M.D.)	1973-74	3 years	2	
	14. Diploma in Orthopaedics	1974-75	2 years	4	
	15. Diploma in Anaesthesiology	1974-75	2 years	2	
	16. Dermatology & Venereology (M.D.)	1974-75	3 years	2	
	17. Ophthalmology (M.S.)	1974-75	3 years	2	
	18. Diploma in Clinical Pathology	1974-75	2 years	4	
	19. Diploma in Laryngology & Otology	1975-76	2 years	3	
	20. Orthopaedics (M.S.)	1975-76	3 years	3	
	21. Social & Preventive Medicine (M.D.)	1975-76	3 years	2	
	Alleppey	Diploma in Pharmacy	1973	2 years	25

*Source:* Medical Colleges.

## APPENDIX—II

## Subject taught in each Course in every Semester/Year

	<i>Subject</i>
<b>1. M.B.B.S.</b>	
1st year (1½ years)	1. Anatomy 2. Physiology 3. Biochemistry
2nd year (1½ years)	1. Pharmacology 2. Pathology 3. Bacteriology
Final year (1½ years)	1. Ophthalmology 2. Social & Preventive Medicine 3. Forensic Medicine 4. Medicine 5. Surgery 6. Obstetrics & Gynaecology
<b>2. B.D.S.</b>	
1st year	1. General Human Anatomy & Histology 2. General Human Physiology & Biochemistry 3. Material used in Dentistry
2nd Year	1. Pharmacology and Therapeutics 2. General Pathology & Bacteriology 3. Oral and Dental Anatomy, Physiology and Histology.
3rd Year	1. Oral Medicine 2. Oral Surgery 3. Dental and Oral Pathology and Dental Bacteriology.
Final	1. Dental Prosthesis including crown and Bridge. 2. Periodontia, Oral Diagnosis and treatment planning including oral Medicine. 3. Operative Dentistry & Dental Radiology 4. Oral Surgery, Exodontal and local and General Anaesthesia. 5. Preventive Dentistry Paedodontia and Orthodontia.
<b>3. B. Pharm.</b>	
1st year	1. Biology I 2. Mathematics II 3. Biology II 4. Engineering & Drawing 5. General Chemistry 6. German
2nd Year	1. Pharmaceutical Engineering 2. Mathematics II 3. Human Anatomy & Physiology 4. Inorganic & Organic Pharmaceutical Chemistry 5. Analytical Chemistry



3rd year

1. Pharmaceutical Chemistry
2. Applied Biochemistry
3. Preparation Pharmacy
4. Dispensing Pharmacy
5. Forensic Pharmacy
6. Pharmacognosy I
7. Microbiology
8. Pharmaceutical Engineering

Final year

1. Pharmaceutical Chemistry II
2. do. III
3. Pharmaceutical Engineering
4. Pharmaceutical Preparation
5. Pharmacology
6. Pharmacognosy II
7. Principles of Hospital and Industrial Management.

## APPENDIX—III

**Staff Pattern of the Technical personnel in the Family Planning  
Programme 1974-75**

<i>Secretariat Cell:</i>		
Deputy Secretary	..	1
Assistant Grade I	..	1
Stenographer	..	1
Peon	..	1
 <i>State Level Organisation:</i>		
Joint Director of Health Services (F.P. & M.C.H.)	..	1
Assistant Director of Health Services (F.P.)	..	1
Administrative Assistant	..	1
Medical Officer-in-charge of I.U.C.D. Programme	..	1
Chief Health Education Officer	..	1
Demographer	..	1
Social Scientist	..	1
Mass Education and Media Officer	..	1
 <i>City and District Family Planning Bureau</i>		
District Family Planning Medical Officer	..	10
Assistant Surgeon	..	12
Administrative Assistants	..	10
Mass Education and Information Officer	..	10
District Extension Officer	..	20
Operation Theatre Nurse	..	10
Family Planning Health Assistant	..	21
Auxiliary Nurse/Midwife	..	11
 <i>Rural Family Welfare Planning Centre:</i>		
Assistant Surgeon	..	158
Block Extension Educator	..	159
Health Visitor/P. H. Nurse	..	272
Family Planning Health Assistant	..	870
Auxiliary Nurse/Midwife	..	1316
 <i>Urban Family Welfare Planning Centre:</i>		
Assistant Surgeon	..	18
Urban Extension Educator	..	18
Welfare Workers	..	18
 <i>Other Services and Supplies:</i>		
Assistant Professor	..	4
Senior Medical Officers	..	8
Lecturer in Health Education & Family Planning (Non-medical)	..	4
Lecturer in Paediatrics	..	4
Anaesthetists (Assistant Surgeon)	..	12
Medical Officers (Male & Female)	..	24
Nurses	..	28
Nursing Assistants	..	27
Extension Educator (Male)	..	12
P. H. Nurse/Lady Health Visitor	..	12
Auxiliary Nurse Midwives	..	12

*Intensive District Programme:*

Assistant Surgeon	..	2
Extension Educator	..	3
Operation Theatre Nurse	..	2

*Regional Family Planning Training Centre:*

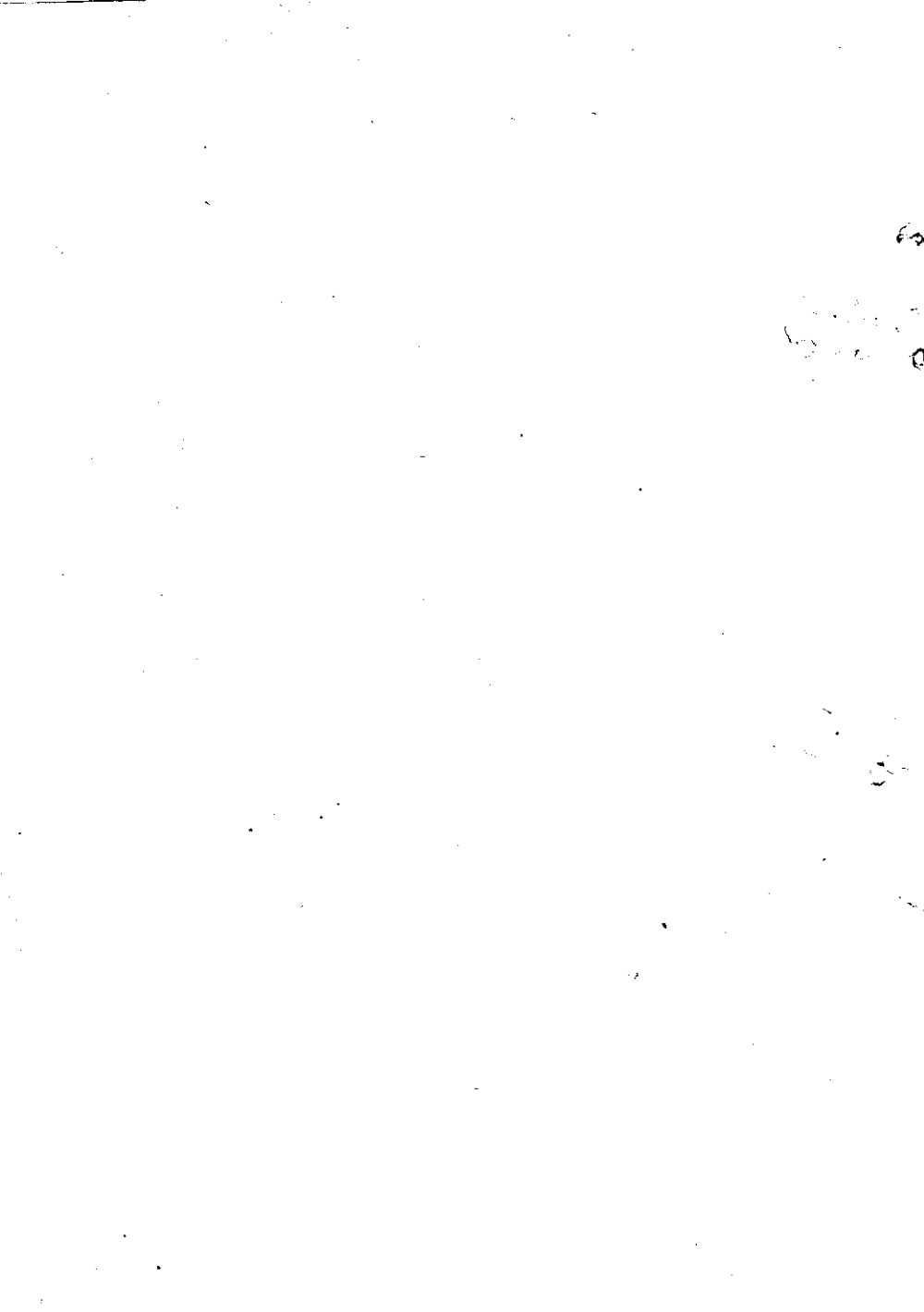
Principals	..	2
Medical Lecturer-cum-Demonstrator	..	2
Health Educator—Instructor	..	2
Health Educator Extension Officer	..	8
P. H. Nurse Instructor	..	2

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*Source:* Budget estimates of the Government of Kerala—Appendix-I, 1975-76.

10

**UNEMPLOYMENT AMONG ALLOPATHIC  
DOCTORS IN KERALA**



# UNEMPLOYMENT AMONG ALLOPATHIC DOCTORS IN KERALA

## I. Introduction

The problems of the educated unemployed is an integral part of the problem of the optimum utilisation of human resources. In Kerala the problem is very acute. The number of educated work seekers having qualification S. S. L. C. and above, increased from 86,210 on 31-12-1966 to 3,13,785 on 31-12-1974. It accounts for more than a half of the total job seekers on 31-12-1974. The situation is found to be more serious when the increase in the number of work seekers in the professional, technical and related works (eleven thousand in 1961 to thirty-four thousand in 1974) is separately considered. Despite the measures taken by the State and Central Governments to increase the avenues of employment by the implementation of plan schemes, even the number of doctors in the Live Register of employment exchanges continued to swell. This is indicated below.

<i>Period</i>	<i>No. of Doctors in the Live Register</i>
31-12-1966	19
31-12-1967	20
31-12-1968	48
31-12-1969	185
31-12-1970	281
31-12-1971	405
31-12-1972	671
31-12-1973	902
31-12-1974	726

But these figures may not be a clear indicator of unemployment among doctors as at least a few of them were maintaining their names in the Live Register to find out better employment, they may be self employed or under employed

### *Object of the study:*

The object of the study is to assess the extent of unemployment among doctors in the Live Register of Employment Exchanges. It touches different aspects like the duration of employment after acquiring the qualification, employment status of those employed and their monthly emoluments etc.

*Coverage and Sampling Design:*

A 20% sample of the medical persons in the Live Register as on 30-11-1974 was taken by systematic sampling method, the registrants being arranged according to the date of registration. The details required in the prescribed questionnaire (Appendix II) were collected by personal contact by the field staff of this Bureau.

**II. Intake and Out-turn of Allopathic Doctors:**

There are four Medical Colleges in the State, of which one was started in the First Plan, one during the Second Plan and the other two in the Third Plan period. They are located at Trivandrum, Calicut, Kottayam and Alleppey. The admission capacity of these institutions for M. B. B. S. course is 545. There is only a slight variation in the number of actual intake and sanctioned strength. The actual intake and out-turn of Medical Graduates from 1966 to 1974 are as given below.

**Intake and out-turn of Medical Graduates in Kerala**

<i>Year</i>	<i>Intake</i>	<i>Out-turn</i>
1966	543	342
1967	585	370
1968	537	397
1969	543	361
1970	544	397
1971	542	426
1972	543	488
1973	541	486
1974	521	483

**Stock:**

The register maintained by the Registrar of Medical Council is one source of information regarding stock of Doctors. But the figures available from the records have certain limitations as there is no practice of periodical revision of register taking into account the death, transfers etc., of the registrants. The following table gives the number of registered medical practitioners (Modern Medicine) in the State according to the register of Medical Council.

<i>Year</i>	<i>Medical Graduates</i>	<i>Licenciate</i>	<i>Others</i>	<i>Total</i>
(1)	(2)	(3)	(4)	(5)
1957	756	385	..	1141
1962	1451	420	688	2559
1966	2500	448	822	3770
1972	5362	635	904	6901
1974	6512	635	904	8051

Thus according to the Registrar of Medical Council, Kerala there were 6512 Medical Graduates in the State. This did not include about 400 Doctors in Malabar area who had registered in Madras Council. Hence there were 6912 Medical Graduates in the State as on 1974. But this seems to be not realistic.

We can have another estimate of Doctors, perhaps more realistic, based on the 1961 Census figures. According to 1961 Census, there were about 1500 Doctors in the State. If we add the out-turn of Doctors (2428) from the Medical Colleges for the period 1961-69 and about 2% depletion per year is allowed for death, inactivity and migration, the stock of Doctors in 1968-69 would be round about 3500. The No. of Doctors at the end of the Fourth Plan was 5300 which would be around 7100 by the end of the Fifth Plan.

#### Stock of Doctors during 1961 to 1979

<i>Year</i>	<i>No. of active Doctors at the beginning</i>	<i>Out-turn</i>	<i>Gross Total</i>	<i>Net after allowing 2% depletion</i>
(1)	(2)	(3)	(4)	(5)
1961	1500	96	1596	1564
1962	1564	120	1684	1650
1963	1650	209	1859	1822
1964	1822	193	2015	1975
1965	1975	340	2315	2269
1966	2269	342	2611	2559
1967	2559	370	2929	2871
1968	2871	397	3268	3203
1969	3203	361	3564	3493
1970	3493	397	3890	3812
1971	3493	426	4238	4154
1972	3812	426	4642	4550
1973	4154	486	5036	4936
1974	4550	483	5419	5311
1975	4936	480	5791	5675
1976	5311	480	6155	6032
1977	5675	480	6512	6382
1978	6032	480	6862	6725
1979	6382	480	7205	7061
	6725	480		



Out-turn for the period 1975 to 1979 is estimated in view of the trend during 1971 to 1974.

### III. Requirements:

The requirement of Doctors is best assessed on the basis of the Doctor-population ratio which also indicate the level of medical facilities available to the people in a given period. Economically developed countries would necessarily be in a better position in the availability of medical facilities when compared to the developing countries. In 1960 there was one Doctor for every 480 persons in the U. S. S. R., 670 persons in U. S. A., 820 persons in Canada, 900 persons each in Japan and France. In India the corresponding ratio for the year was one Doctor for 5952 persons. According to the recommendations of the Bhole Committee (1946) there should be one Doctor for every 2000 persons by the year 1970. Later the Health Survey and Planning Committee set up by the Government of India in 1961 (Mudaliar Committee) had suggested a modest target of one Doctor for every 3000-3500 persons in 1971. The Doctor-population ratios in India and Kerala in different periods are as given under.

#### Doctor-population ratio in India and Kerala

<i>Period</i>	<i>India*</i>	<i>Kerala</i>
Third Plan	1:5494	1:7461
Fourth Plan	1:4300	1:4309
Fifth Plan**	1:3700 (estimated)	1:3500

The Doctor-population ratio in Kerala is worked out in the following way.

<i>Period</i>	<i>Population (Lakhs)</i>	<i>No. of Doctors</i>	<i>Doctor-population ratio</i>
1966	191.37	2600	1:7361
1971	213.47	4200	1:5083
1974	227.37	5300	1:4290
1979	249.90	7100	1:3520

\*I.A.M.R. Working Paper No. 2/1969

\*\*Steering Group on Employment and Man Power—February 1973.

Thus it may be observed that the norm, one Doctor for 3500 persons is being achieved by the end of the Fifth Plan. Based on this norm the employment opportunities of Doctors in the State is not bad in the Fifth Plan period. In 1974 one Doctor had to serve on an average 4300 persons. But this number would be very large in rural parts where medical facilities are meagre compared to urban areas. In certain pockets in the rural areas the dearth of medical personnel is very acute. In the programme for the extension of medical facilities. Government have encouraged to start Hospitals and Dispensaries in rural areas in the Co-operative sector. In 1974-75 there were 60 Co-operative Dispensaries and 6 Co-operative Hospitals functioning in the programme and nearly 80 Doctors were working in these institutions. Government have also proposals to open rural dispensaries in addition to the 144 Primary Health Centres functioning in the rural areas. There is another scheme to provide residential buildings to Doctors working in the rural areas.

In spite of these measures taken by Government, the number of M. B. B. S. Degree holders in the Live Register of Employment Exchanges is increasing year by year. Government have given opportunities to them for self Employment by organising Co-operatives. There are self employed persons with their own dispensaries among the Registrants. The characteristics of the Doctors selected for the study are depicted in the following paragraphs.

#### IV. Result of the Study:

There were 665 Medical Graduates in the live register as on 30-11-1964. Of these, 133 persons were selected (20% sample) for the enquiry. These registrants were contacted by the Investigators working in the field and the schedules were canvassed by them. The response works out to 95% of the persons selected. It may also be noted that all of those who come out with the degree are not registering their names in the Employment Exchange. In the study it was observed that only 60% of them had registered their names in the same year of passing. The study also revealed the fact that 63% of the respondents were employed. The distribution of persons employed according to employment status is as shown below:—

<i>Employment Status</i>	<i>Persons employed (%)</i>
Self employed	22
Employer	..
Employee	78
1. Central Government	..
2. State Government	5
3. Government undertakings	3
1. Co-operative	8
5. Private	62
	100

In the sample study 37% of the total respondents were found to be unemployed. Most of them had taken their Degree only in 1973 or 1974. Even among those passed in 1974, 30% were employed in Private establishments. This is discussed in detail in the section dealing with the time lag between year of passing and year of appointment. It may also be seen that 62 per cent of the persons employed were in Private Institution. It comes to 39 per cent of the total respondents. They were maintaining their names in the live register not because they were unemployed but to seek better employment opportunities inspite of their present employment in Private Institutions. The same reason holds good in the case of other employed person also for retaining their names on the rolls of the live register.

#### *Age Distribution:*

In regard to the age distribution of Medical job seekers it was observed that more than half of them were in the age group 25-28 years of age. Those who passed 28 years were only nearly one-third of the total respondents. It is given in the following table.

**Age distribution of medical Job Seekers who had responded**

<i>Age group</i>	<i>No. of respondents</i>	<i>Percentage to total</i>
20 and below:	..	..
21—24	21	17
25—28	66	52
Above 28	39	31
<b>Total</b>	<b>126</b>	<b>100</b>

#### *Sex Ratio and Marital Status:*

The proportion of Males and Females among the Medical Job Seekers in the register during the period 1972 to 1974 was as follows:—

**Number in the Live Register of Employment Exchange**

<i>Year (as on 31-12)</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
1972	462(69)	209(31)	671
1973	691(77)	211(23)	902
1974	495(68)	231(32)	726

Figures in Brackets Indicate the percentage to the total.

The marital status and sex ratio of the respondents were given under:—

<i>Marital status</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
Married	30	21	51
Not married	64	11	75
Total	94	32	126

Here one-fourth of the respondents are females of which two-thirds were married. Of the total 126 selected medical job seekers 40% were married; the proportion of married male registering being 32%.

**Distribution of medical job seekers selected according to year of passing**

<i>Year of passing</i>	<i>Number of persons</i>	<i>Percentage to total</i>
Before 1970	3	2
1970	6	5
1971	10	8
1972	21	17
1973	53	42
1974	33	26
Total	126	100

From the above table it could be seen that more than two-third of the registrants had passed in 1973 or 1974. Only 15% of the registrants passed in 1971 or earlier.

**Time lag between year of passing and year of registration:**

In the enquiry it was observed that nearly 60% of the total registrants included in the samples registered their names in the Employment Exchanges in the same year of passing or in the succeeding year. The doctors who came out of the colleges in earlier years were found to be reluctant to go to the employment exchanges. The three registrants who passed before 1970 registered their names only in 1974. Among those who passed in 1970, 1971 and 1972 only one-third had gone to the employment exchanges in the same year of passing. But in 1973 more than half of them registered their names in the same year. (For details vide table 2 Appendix-I).

*Time lag between year of registration and the year of first call.*

Of the 126 registrants selected for the enquiry only 45% were called for interview, 38% of them being in 1974. Two-third of the persons registered in 1971 were called for interview in 1974 while the others were still waiting. Of the 57% of the job seekers who registered in 1974, only 32% had received memos for interview.

Number of persons called for interview upto 1974 among registrants of each year is as shown below:—

<i>Year of registration</i>	<i>Number of registration</i>	<i>Percentage of person called up to 74</i>	<i>Percentage of person waiting</i>
1971	6	67	33
1972	10	80	20
1973	38	64	36
1974	72	32	68
Total	126	45	55

The distribution of persons called for interview in different years is given in table 3 Appendix-I.

*Time lag between year of passing and year of employment.*

Of the 126 selected registrants 63% had got employment, 3% in 1972, 13% in 1973 and the remaining 47% in 1974. Among those who passed in 1974, 30% were employed in the same year. The low percentage of employment among the total sample registrants is due to the low percentage of employment of those who came out in 1974. If the registrants who passed in 1974 were excluded it would be seen that nearly 73% of them were employed.

**The distribution of employed medical graduates in the sample according to the time lag in getting employment after obtaining the degree.**

<i>Time lag in getting employment</i>	<i>Employed doctors</i>		<i>Percentage to total respondents</i>
	<i>No.</i>	<i>Percentage</i>	
Less than one year	14	18	11
1—2 years	41	52	33
2—3 years	16	20	13
3 years and above	8	10	6
Total	79	100	63

It is seen from the above table that 18% of the employed doctors or 11% of the total respondents secured their jobs within a year after obtaining their degree. Only 10% of the employed doctors or 6% of the total respondents had to wait for 3 years or more to get employment. 70% of the employed doctors or 44% of the total respondents could secure their jobs within two years. The distribution of doctors according to year of passing and year of present employment is shown in table 4 Appendix-I

*Source of employment:*

78% of the persons who reported to be employed at present were employees. Only 20% of them had got employment through employment exchanges. 5% of the total respondents were reported to be employed previously for low salaries. Most of them relinquished their jobs for better employment only a few had to leave because of short vacancy. None of them had stated that their previous employment was due to registration of names in the employment exchanges. However, they were optimistic to maintain their names in the live register. Almost all of these employed at present including the self employed persons (84%) wanted to continue their registration to secure better employment. Only 16% of them were discontinuing as their present employment was suitable to them. It may also be noted that 30% of the employed persons who found their present job suitable were also willing to continue their registrations with the employment exchanges for better employment opportunities.

Year of passing	Employees		Distribution according to source of employment %	
	No.	Percentage	Employment Exchange	Others
1971	8	13	25	75
1972	14	22	15	85
1973	32	52	13	87
1974	8	13	50	50
Total	62	100	20	80

*Monthly emoluments of the employees:*

The monthly emoluments of the employees were not very bad. Of the 62 employees in the sample, 87% were receiving Rs. 500 and above as monthly emoluments. Only 28% of the employees who

passed in 1972 and, 13% of the employees who passed in 1973 reported their monthly salary ranging between Rs. 300-500. The distribution of the employees according to their monthly emoluments is given in table-6 Appendix-I.

#### *Willingness to start own dispensaries:*

Of the 126 persons responded more than one-third were willing to start their own dispensaries if financial assistance were available. But among those who were still unemployed (47) 60% of them were prepared to start dispensaries. Finance was a major problem to them.

#### *Mobility:*

The study revealed that nearly 50% of the job seeking medical graduates including those unemployed at present were prepared to work any where in the country. The percentage did not change significantly when females were considered separately. But when the unemployed doctors among the selected registrants were taken into consideration it was observed that more than two-thirds of them were prepared to go any where in the country to get a job.

### **V Summary and Conclusion**

The study on the extent of unemployment among doctors was conducted by selecting a 20% sample of the medical persons in the Live Register of employment exchanges as on 30-11-1974. The records maintained in the Divisional Employment Officer (Professional and Executive) were made use of for getting details of the registrants. The prescribed questionnaire was canvassed by personal contact by the field staff of the Bureau.

Of the 133 medical job seekers selected, 126 were contacted and the details collected. Of these 126 registrants 79 person were found to be employed and the remaining 47 persons unemployed (37%). Most of the unemployed persons had taken their degree only in 1973 or 1974. Even among those passed in 1974, 30% were found to be employed.

In regard to the age of the selected registrants, it was observed that 69% of them were below 28 years.

In the distribution of the registrants, according to year or passing only 15% were found to have taken their degree in 1971 or earlier.

The time lag between year of passing and year of registration was significant among those who passed in earlier years. Nearly

60% of the total selected registrants registered their names in the same year of passing or in the succeeding year.

Of the 126 registrants, only 45% were called for interview. Two-thirds of the persons registered in 1971 were called in 1974, the others were still waiting. In regard to the source of employment, 20% of the employees got their jobs through employment exchanges.

Of the 62 employees, 87% were receiving Rs. 500 and above as their monthly emoluments. No one had received an amount below Rs. 300.

Nearly half of the selected registrants including those employed at present were willing to work any where in the country. Considering the unemployed doctors alone separately, more than two-thirds were prepared to go any where in the country to get a job.

Of the 126 selected medical job seekers more than one-third were willing to start their own dispensaries. Among those who were still unemployed 60% were prepared to start dispensaries. But finance was a major problem to them.

Unemployment of the medical graduates may not be a severe problem in the near future. The demand for doctors in the ratio one doctor for 3500 persons as per the norm fixed will be satisfied more or less by the end of the Fifth Plan. But it may be pointed out that all of those who are coming out with the degree may not get employment in the State sector and this phenomenon does not mean unemployment of doctors. Avenues for employment in the rural areas and in the field of specialisation are still bright. The doctors are willing to start their own hospitals/dispensaries if financial assistance is made available to them adequately.



## APPENDIX—I

TABLE-I

Distribution of medical job seekers according to age and year of passing.

(In percent)

Age group as on December 1974	Persons in each Age group		Percentage distribution according to year of passing							
	Number	Percentage	Before 1970	1970	1971	1972	1973	1974	All	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
20 and below	..	..	..	..	..	..	..	..	..	
21—24	21	17	..	..	..	..	..	73	27	
25—28	66	52	3	3	3	25	42	24	100	
Above 28	39	31	..	10	20	15	26	30	100	
All	126	100	2	5	8	17	42	26	100	

TABLE—2

## Distribution of medical job seekers according to year of passing and year of registration

(In percent)

Year of passing	Persons passed in each year		Percentage distribution according to year of Registration							All
	Number	Percentage	Before 1970	1970	1971	1972	1973	1974	(10)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
Before 1970	3	2	..	..	..	..	..	100	100	
1970	6	5	..	..	33	33	..	34	100	
1971	10	8	..	..	40	..	20	40	100	
1972	21	17	..	..	..	36	36	28	100	
1973	53	42	..	..	..	..	53	47	100	
1974	33	26	..	..	..	..	..	100	100	
<b>All</b>	<b>126</b>	<b>100</b>	<b>..</b>	<b>..</b>	<b>5</b>	<b>8</b>	<b>30</b>	<b>57</b>	<b>100</b>	

Source: Bureau of Medical Job Seekers, Washington, D.C., based on data from the Bureau of Medical Job Seekers, Washington, D.C., 1970-1974.

NOTE: Percentages may not total 100 due to rounding.

TABLE—3

## Distribution of medical job seekers according to year of first registration and year of first call

(In percent)

Year of Registration	Persons registered		Persons called for Interview (%)							
	Number	Percentage	Before 1970	1970	1971	1972	1973	1974	No. Call	
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Before 1970	..	..	..	..	..	..	..	..	..	..
1970	..	..	..	..	..	..	..	..	..	..
1971	6	5	..	..	..	..	..	..	67	39
1972	10	8	..	..	..	20	20	40	40	20
1973	38	30	..	..	..	..	10	44	44	46
1974	72	57	..	..	..	..	..	32	32	68
All	126	100	..	..	..	2	5	38	38	55

TABLE—4  
Distribution of medical job seekers according to year of passing and year of present employment

Year of passing (1)	Persons passed in each year		Percentage distribution according to year of employment													
	Number (2)	Percentage (3)	Before 1970													
			(4)	(5)	(6)	(7)	(8)	(9)	(10)							
Before 1970	3	2	..	..	..	..	..	..	..	..	..	..	..	100	..	
1970	6	5	..	..	..	..	..	..	..	..	..	..	..	67	..	
1971	10	8	..	..	..	..	..	..	..	..	..	..	..	40	20	
1972	21	17	..	..	..	..	..	..	..	..	..	..	..	18	54	
1973	53	42	..	..	..	..	..	..	..	..	..	..	..	4	67	
1974	33	26	..	..	..	..	..	..	..	..	..	..	..	..	30	
All	126	100	..	..	..	..	..	..	..	..	..	..	..	13	47	63

Percentage of candidates registered according to year of passing and year of present employment

TABLE—5

## Distribution of employed doctors according employment status

Year of Passing	Persons employed		Distribution according to employment status (in Percent)							
	Number	Percentage	Self Employed	Employer			Employees			
				Central Government	State	Government undertakings	Private	Co-operatives		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Before 1970	3	4	100	..	..	..	..	..	..	
- 1970	4	5	100	..	..	..	..	..	..	
1971	8	10	..	..	..	25	..	75	..	
1972	17	22	22	..	..	..	11	67	..	
1973	37	46	16	..	..	5	..	64	15	
1974	10	13	20	..	..	..	..	80	..	
All	79	100	22	..	..	5	3	62	8	

TABLE—6

## Distribution of employees according to the level of emolument and year of passing

Year of passing (1)	Employees		Distribution according to level of emolument (In percent)		
	Number (2)	Percentage (3)	Less than Rs. 300 (4)	Rs. 300-500- (5)	Rs. 500 and above (6)
Before 1970	..	..	..	..	..
1970	..	..	..	..	..
1971	8	13	..	..	100
1972	14	22	..	28	72
1973	32	52	..	13	87
1974	8	13	..	..	100
All	62	100	..	13	87

TABLE--7

## Distribution of employees according to source of employment and attitude towards present job

Year of passing	(In percent)							
	Employees		Source of Employment		Attitude towards present job		Those who maintain name in L. R.	
	Number	Percentage	Through Employment Exchange	Others	Suitable	Not suitable		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Before 1970	..	..	..	..	..	..	..	..
1970	..	..	..	..	..	..	..	..
1971	8	13	25	75	25	75	100	100
1972	14	22	15	85	30	70	70	70
1973	32	52	13	87	56	44	81	81
1974	8	13	50	50	50	50	100	100
All	62	100	20	80	46	54	84	84

## BUREAU OF ECONOMICS AND STATISTICS, TRIVANDRUM

*Study on the Technical and Professional Job seekers on  
the Live Register—1974*

## QUESTIONNAIRE

A. *Identification Particulars.*

1. Name.
2. Address as given for registration.
3. Age.
4. Sex.
5. Marital Status.
6. Whether belongs to scheduled Caste/Schedule Tribe/Backward class (if yes, specify).

B. *Educational Details:*

1. Basic Degree for registration in the Employment Exchange.
2. Year of Passing.
3. Subject taken.
4. Additional qualification/specialisation/foreign training.

C. *Unemployment Particulars:*

1. Date of first registration and register number.
2. Name of the Exchange.
3. Whether renewed periodically.
4. If not give reasons.
5. Date of subsequent registration and number and name of exchange.



## 6. Call for interview:

(a) Whether called for interview.

(b) If yes, month and year of first call.

(c) Number of subsequent calls.

(d) Called by whom.

Central Government.

State Government.

Local Bodies.

Govt. Undertakings.

Private Bodies.

(e) Whether attended for interview.

(f) If not, reason for non-attendance.

I Call II Call III Call IV Call

7. Whether tried for employment through other sources.

8. If yes, result of the trial.

9. Whether prepared to accept employment within the State only or any where in the country.

10. Whether willing to start own industry/trade if financial assistance is received.

D. *Details of Previous Employment if any:*

1. Period of employment.

2. Monthly emolument (Rs.).

3. State whether the employment was obtained through Employment Exchange.

4. Reason for retrenchment.

E. *Details of Present Employment if any:*

1. Month and year of employment.
2. Employment status.      Employer/Employee/Self employed/  
   apprentice others (specify)
3. State whether the employment is obtained through Employment Exchange/Public Service Commission/others (specify).
4. State whether the employment is permanent/temporary.
5. Designation/occupation.
6. Whether in Central Government/State Government Undertakings/Private.
7. Monthly emolument (Rs.)
8. Do you consider your present (a) job and (b) emolument suited to your educational status and training.
9. If no, give reasons.
10. Whether intends to maintain your name in the live register for better employment.

Place:

Signature of Respondent.

Date:

Signature with name and designation of the field staff who canvassed the questionnaire.

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**11**

**NURSING PROFESSION IN KERALA**

MISSION PROVISION IN INDIA

# A REPORT ON THE 'NURSING PROFESSION' IN KERALA AND THE SUPPLY OF AND DEMAND FOR NURSES IN THE STATE

## Introduction

With the advancement in the various branches of science. Health Services have expanded and the horizon of Nursing has also widened. Health is considered as a basic factor of all human activities. Any service which helps to reduce human sufferings and pains is indeed the noblest of all services. Based on this unquestionable truth, it can be seen that the Nursing profession is an invaluable service and one of the most vital links in the Health care system. The Nurse is busy in the general ward, in the labour room, in the operation theatre, in the paediatric wards, in the intensive care unit, speciality wards, in the rural areas etc. rendering services to the world at large from "Womb till tomb". It was "the lady with the lamp"—Florence Nightingale—with her sincere efforts and utmost patience uplifted the Nursing Profession to its present day status.

Nursing can be traced from the earliest primitive days. through ancient temple and Roman Matron, through Monastery lepor house and battle field to the city hospitals and modern institutions growing stronger and wider in its conception until today, where there is no part of the civilised world without some form of Nursing service. It is only after the second decade of the 19th century that the new Era in Nursing began. In 1860, the Florence Nightingale Nurses' Home and Training School for Nurses were opened attached to the St. Thomas Hospital in London. The School has been a model for many hospitals not only in England but all over the world.

## *Nursing in Ancient India.*

Nursing in ancient India was remarkably advanced. It was professionally advanced, universally recognised and respected. Men did the nursing and only in special cases women were appointed. In ancient India nurse was trained in all fields of medical sciences. Miss A. Wilkinson in her pioneering work "A brief History of India and Pakistan" says that there are more details of Nursing in the old Indian records than those of any other country in the world.

The modern nursing began in India with the establishment of British rule by the East India Company. The Trained Nurses Association of India (TNAI) which was formed in 1908 and the Nurses' Auxiliary of the Christian Medical Association of India,

formed in 1930, have done a great deal to arise the standard of Nursing. Another International Organisation for aiding the sick and suffering is the Red Cross Society. It has an extensive influence on Nursing and to-day functions under the following heads—Public Health Nursing especially in rural areas nursing relief in time of disaster, first reserve in the Army and the Navy and the teaching of hygiene and home nursing.

### *Development of Nursing Education in Kerala.*

The steady growth and advancement of the modern healing science made it necessary to find out people with more understanding knowledge and skill in the art. In 1864, when his Highness Avilyam Thirunal Maharaja ruled in Travancore 'New Civil Dispensary' which later became 'the General Hospital' Trivandrum came into existence. At that time care of the sick people was mainly carried out by untrained people both men and women and very little work was assigned to them. Dr. Punnen, who was the first Superintendent of the General Hospital, Trivandrum took great interest in the training of Nurses. A two year programme in Nursing and Midwifery was started in 1906 in the General Hospital, Trivandrum under the leadership of Dr. Punnen Lukose.

At that time Nursing was looked down upon in Kerala. The need for proper education was not recognised. The working and living conditions of the Nurses were not so attractive as today. Social restrictions and taboos have further hampered the progress of Nursing. In other states of India the conditions of working and living were better and many educated girls from Kerala turned to those centres. But some of the Nurses trained in other states also joined the state service.

The London Mission Hospital, Neyyoor was one of the pioneering Training Centres. The Medical College Hospital, Velloore with its Medical and Nurses Training Schools influenced greatly the concept of Nursing in South India. In Kottayam as far back as 1917 Religious sisters appeared in the field of nursing. Dr. D. S. Sahib, was the Superintendent of the district Hospital, Kottayam. The Superintendent felt the need for better Nurses with some sort of training. Accordingly 4 nun-sister were permitted to work in Hospitals. They were given 1½ years of training by the doctor himself. After an examination, all the four were awarded Certificates.

From 1928, there existed a 3 year training of Nurses in the Cochin State. In 1943, a revised Certificate Course in General Nursing and one year Midwifery was started in the school of

Nursing attached to the General Hospital, Trivandrum. 33 Matriculates were admitted to the School of Nursing. In 1953, two years after the starting of the Medical College, Trivandrum, the school of Nursing was shifted to the Medical College Campus. A Post Certificate Course of 10 months duration for departmental candidates below 45 years was started in the school of Nursing attached to the Medical College, Trivandrum. But this was discontinued on completion of the course of the first batch of 10 candidates because higher qualification was no more considered a requisite. In 1960, a Diploma Course in Nursing was started and recognised by the University of Kerala. B.Sc. Degree Course in Nursing was also started functioning in 1963 in the College of Nursing, Trivandrum. In the year 1972, four year Basic B. Sc. Degree Programme was started functioning in the College of Nursing, Trivandrum.

### *Development of Community Nursing in Kerala.*

Community Nursing includes all activities relating to the Nursing Component of the total Community Health Programme carried out in various situations such as the home, the school, the industry, the health centre and so on. The Nurses and the Auxiliary Personnel engaged in these activities consist of Public Health Nurses, Health Visitors, Midwives and Auxiliary Nurse Midwives, all working within the framework of the health team led by the Medical Officer.

Community Nursing which is the present day nomenclature for Public Health Nursing, was in the correct sense, started in our state early in the 1950's with the establishment of the Community Development Programme on national level. Prior to this, there was no organised system for catering to the health needs of the people of the community, except in case of the Sick who were cared for in the hospitals. Delivery was considered as something unclean and untouchable. Therefore to attend to women in labour the persons available were the native Midwives. Hence the need for having qualified Midwives to attend to the mothers and new born was widely felt.

In Kerala, Public Health Nurses hold various levels of position such as supervisors in P. H. Units, P. H. Nurses in Hospitals, for special programme, P. H. Nursing Tutors in Schools of Nursing, P. H. Nursing Instructors in Health and Family Planning Training Centres Senior Public Health Nurses with further training in administration and Supervisors are holding positions as District public Health Nurses. It is worth mentioning here that Kerala is the first state in India to have supervisory public Health Nurses posted at the district level. Senior Nursing Staff were



deputed abroad such as America, U. K., Japan, Canada, South America etc. to secure higher qualification and they were appointed to the higher posts. Accordingly an Assistant Director of Nursing service had been appointed in the Directorate of Health Services in June 1975 and administration in almost all matters related to the Nursing personnel in the State was entrusted with the Assistant Director.

### *Supply of and demand for Nurses in Kerala.*

Medical and Public Health activities recorded steady progress in the past few years and as a result of planned efforts the number of medical institutions and beds have increased steadily. The per capita expenditure on Health Services for 1973-74 and 1974-75 are Rs. 9.87 and Rs. 11.23 respectively as against the all India figures Rs. 7.90 in 1973-74 and Rs. 8.81 in 1974-75. In spite of the increase in per capita expenditure, physical achievements in several aspects such as availability of Nursing personnel, Pharmacists etc. have yet to be achieved more. The increase in population and limited financial resources may be the main hindrance for the short fall in the achievements. During the years 1973-74 and 1974-75, there were 874 and 881 medical institutions respectively with a total bed strength of 24106 in 1973-74 and 25312 in 1974-75. The bed population ratio works out to 106 per lakh of population in 1973-74 and 105 in 1974-75. It can be seen that the target for bed strength has been exceeded.

### *Stock and supply of Nursing Personnel.*

The register maintained by the Registrar of Kerala Government Nurses and Midwives Council is one of the source of information regarding the stock of Nursing Staff in the State. The table appended below gives the number of registered Nursing Personnel in the state registered through the Kerala Government Nurses and Midwives Council (K.G.N.M.C.).

TABLE I

Category	Years of Registration and Numbers							
	1969	1970	1971	1972	1973	1974	1975	1976
Nurses	2662	3157	3542	4127	4646	5375	6183	6933
Midwives	2407	2742	3071	3572	4397	5165	5711	6817
A. N. Midwives				Nil			4085	1728

Source: Register of Kerala Government Nurses & Midwives Council.

But we cannot depend solely on this register since cancellations due to deaths, transfer, foreign assignments etc. have not been given effect to in the register.

Considering the recommendation of the Task Force in regard to the implementation of the V Five Year Plan proposals, there will be need to expand the facilities for training of Doctors, Nurses, Dentists and other Para-medical staff. On the basis of the requirements indicated, the existing number under most categories has to be increased in the state of Kerala. The increase has especially to be large with respect to Nursing Personnel and Pharmacists.

An estimate made by the Central Task Force indicates that at the end of the V Five Year Plan even assuming that the training programmes are implemented fully, there will be a deficit of 18,000 Nurses in the country as a whole. There would be a more than proportionate short-fall in Kerala as our stock is initially low. It is in this perspective that the task force has framed the proposals for the V Plan. Though we have achieved the target of 1 bed for 1,000 population by 1969-70 there is some imbalance in the requirements of Nurses which needs correction during the V Plan.

The requirement of Nurses may be assessed on the basis of Nurse population ratio which depends on the level of medical facilities. The Health Survey and Planning Committee (Mudaliar Committee in 1961) has recommended the following norms.

Doctor	One Doctor for 3000 to 3500 of the population
Dental Surgeons	do.
Nurse & Midwives	One for 2000 of population by 1981
Auxiliary Nurse Midwife	One for 5000 of population by 1976
Pharmacist	One for every three Doctors
Bed—strength	One for every 1000 of population
Medical Colleges	One for every 50 lakhs population

The supply of the Nursing Staff is catered at present by the 9 Government and 21 Private Nursing schools and one College of Nursing (for imparting training courses to General Nurses). But in 1974-75, there were 10 Government and 17 Private hospitals giving training courses to Nurses. (vide list of training centres)

### Training Centres for General Nurses in 1976-77

#### A. Government Institutions:

1.	College of Nursing	Trivandrum
2.	School of Nursing	Trivandrum
3.	Do.	Quilon
4.	Do.	Alleppey
5.	Do.	Kottayam
6.	Do.	Ernakulam
7.	Do.	Trichur
8.	Do.	Palghat
9.	Do.	Kozhikode
10.	Do.	Cannanore

#### B. Private Institutions:

		District		
1.	School of Nursing	Holy Cross Hospital, Kottayam	Quilon	
2.	do.	Benzegar Hospital, Quilon	do.	
3.	do.	S.N.T. Medical Mission Hospital, Quilon	do.	
4.	do.	Thiruvalla Medical Mission Hospital, Thiruvalla	Alleppey	
5.	do.	Sacred Heart Hospital, Sherthalai	do.	
6.	do.	Pushpagiri Hospital, Thiruvalla	do.	
7.	do.	St. Thomas Hospital, Changanacherry	Kottayam	
8.	do.	Caritas Hospital, Kottayam	do.	
9.	do.	M.M. Hospital, Manganam	do.	
10.	do.	I.H.M. Hospital, Bharananganam	do.	
11.	do.	M.G.D.M. Hospital, Kangazha	do.	
12.	do.	St. Mary's Hospital, Manarcad, Kottayam	do.	
13.	do.	M.M. Mission Hospital, Kolencherry, Ernakulam	Ernakulam	
14.	do.	Lourde Hospital	Ernakulam	do.
15.	do.	Lisic Hospital, Ernakulam	do.	
16.	do.	Little Flower Hospital, Ankamaly	do.	
17.	do.	St. Joseph's Hospital, Kothamangalam	do.	
18.	do.	Samaritan Hospital, Kizhakambalam (via), Alwaye	do.	
19.	do.	Jubilee Mission Hospital, Trichur	Trichur	
20.	do.	Nirmala Hospital, Calicut	Kozhikode	
21.	do.	Malicue Decnar Hospital, Kasargode	Cannanore	

Out of this; 3 schools, Sacred Heart Hospital, Sherthalai, St. Mary's Hospital, Manarcad and St. Joseph's Hospital, Kothamangalam have started functioning only during the year 1975-76.

The training schools trained on an average 525 Nurses every year, 250 in the Government sector and 275 in the private sector. The minimum qualifications for the students admitted for general Nursing are S.S.L.C. for Certificate courses and pre-degree with science as special subjects for Basic B. Sc. degree course. In all most all schools, hostel accommodation is given to the students admitted for the training courses. In the Government schools students are given stipends. But in some private schools, students give fees. In the college of Nursing students are admitted as in the case of other University Education Courses. In this connection it may be pointed out that no students were admitted in the Government Training Schools from the year 1972 to 1975 due to lack of accommodation facilities. During the year 1976, 20 male candidates have been also selected for training in General Nursing in the public sector. Moreover 68 candidates from the scheduled caste/tribes have been admitted in the college of Nursing, Trivandrum. One School of Nursing is proposed to be started in Idukki district also.

**Categories of Nursing Staff in position in the Government Allopathic Institutions in Kerala**

	<i>Scale of Pay</i>
	<i>Rs.</i>
1. Assistant Director of Nursing Service	600-1200
2. Nursing Superintendent (Gazetted)	495-835
3. do. (Non-gazetted)	410-715
4. Head Nurses	330-575
5. Nursing Tutors	330-575
6. Staff Nurse	285-550
7. District Public Health Nurses	410-715
8. Public Health Nursing Tutors	345-580
9. Public Health Nurses	330-575
10. Health Visitors	330-575
11. Auxiliary Nurse Midwives	255-455

*The strength of Nursing staff as on 1-4-1974 is given below:*

	<i>(General Nurses)</i>
Superintendent of Nursing Service (The post has since been upgraded as Assistant Director of Nursing service on 18-6-1975)	1
Nursing Superintendent (Gazetted)	2
do. (Non-gazetted)	43
Nursing Tutors	33
Head Nurses	501
Staff Nurses	2306
District Public Health Nurses	11
Public Health Nurses	136
Public Health Nursing Tutors	9
<b>Total</b>	<b>3242</b>
<b>Private Total</b>	<b>1936</b>
<b>Grand Total</b>	<b>5178</b>

### Estimation of Requirements and Availability of General Nurses.

The actual intake capacity in our state, both Government and private sector, per year accounts to 525, 250 in Government and 275 in the private Institutions. After allowing 10% wastage on the intake capacity, the probable out-turn works out to  $525 \times 90/100 = 472.5 = 475$  approximately. But the actual out-turn during the year 1974-75 was 464 and 308 in 1975-76. For subsequent years, an estimated out-turn of 475 can be accepted. But Mudaliar Committee has recommended a norm of 1 Nurse/5,000 population by 1971 and 1 Nurse/2,000 population by 1981.

The projected population of Kerala (Mid-year) from 1971-1981 are as follows:

1971	213.47 lakhs (1971 census figures)
1972	217.36 " (estimated)
1973	222.35 " "
1974	227.39 " "
1975	232.45 " "
1976	237.37 " "
1977	241.66 " "
1978	245.84 " "
1979	249.90 " "
1980	253.84 " "
1981	257.67 " "

TABLE 2

The total requirement may be estimated in the following phased manner

Year	Population (in lakhs)	Norm	Requirement
1971	213.47 (actual)	1:5000	4270
(V Plan starting) 1974	227.39 (estimated)	1:4100	5546
(V Plan ends) 1979	249.90 (do.)	1:2600	9611
1981	257.67 (do.)	1:2000	12884

TABLE 3

Availability can be worked out as follows

Year	Stock at the beginning	Actual/anticipated out-turn	Total	Stock after allowing 2% depletion
1974	3242 + 1936 5178 actual	464	5642	5530
1975	5530 do.	308	5838	5722
1976	5722 estimated	475	6197	6073
1977	6073 do.	475	6548	6417
1978	6417 do.	475	6892	6756
1979	6756 do.	475	7231	7087
1980	7087 do.	475	7562	7411
1981	7411 do.	475	7886	7727

From the above Tables (2 + 3) availability and requirements during the years 1974, 1979 and 1981 may be rearranged as shown below

TABLE 4

Year	Requirement	Availability	Deficit or shortage
1974	5546	5530	16
1979	9611	7087	2524
1981	12884	7727	5157

The table above reveals that if the norms of the Mudaliar Committee are accepted the total requirement of General Nurses at the end of the Fifth Plan will be much higher than the availability. It is well known that, every year a large number of Nursing Personnel is migrating to other States in India as well as foreign countries to take assignments and the immigrants will always be less than the migrants. Hence the actual deficit will be more than the figure shown in Table 4.

At this juncture, it may be pointed out that the additional requirement of General Nurses according to the scheme-wise details of development programmes to be implemented at the end of the Fifth Plan has been estimated as 1,000 including replacement needs due to retirement. But the figure relating to requirements in the private sector is not available. But in 1975 and 1976, more Schools of Nursing have been started functioning in the private institutions and more students have been admitted. In addition to these, admissions have been increased in the Government sector also. If the number of admissions continues like this, the gap between the requirement and the availability will be bridged to a certain extent. However acute shortage will be experienced at the end of the Fifth Plan.

#### *Auxiliary Nurse Midwives and Midwives.*

As part of the National Community Development Programmes, Public Health Units were established during the first half of 1950's in order to cater to the health needs of the rural population. Maternal and child health (M.C.H.) programme was given prime importance. In order to prepare a suitable training field in M.C.H. a project was started by the State Government with the assistance of W.H.O. and UNICEF. All the Midwives posted in the various centres were given orientation in domiciliary midwifery in order to equip them better for their work in the M. C. H. service in the community. Then the need of qualified Nursing Personnel to supervise the midwives/Auxiliary Nurse Midwives was evidently felt. But the number of Public Health Nurses in the State was too small to be accommodated for the purpose. Thus in line with the National Plan, the State Health authorities decided to start a Health Visitor's Training School in order to meet the immediate needs of the time. It was started in 1956 to impart training to Midwives to be qualified as Health Visitors. The course was for 18 months and 37 senior Midwives were recruited for the same. In three batches 96 Health Visitors were trained.

In the mean while, the need of better trained Midwives for M.C.H. work in the community was widely recognised all over the country. Therefore the Indian Nursing Council took up the responsibility of revising the curriculum for Midwives. It was then decided to replace the Midwifery Course by A.N.M. Course.

There are at present 10 institutions in the State both Government and Private to impart training to Auxiliary Nurse Midwives. The names of these Institutions are given below.

<i>Government</i>	<i>District</i>
1. Government Hospital, Peroorkada, Trivandrum.	Trivandrum
2. Women & Children Hospital, Thycaud, Trivandrum.	do.
3. Government Hospital, Palghat.	Palghat
4. Government Hospital, Calicut.	Kozhikode

<i>Private</i>	
1. Sree Ramakrishna Mission Hospital, Sasthamangalam.	Trivandrum
2. S.S.N. Medical Mission Hospital, Varkala.	Trivandrum
3. L.M.S. Boy's Brigade Hospital, Kundara.	Quilon
4. St. Thomas Mission Hospital, Kattanam.	Alleppey
5. N.S.S. Medical Mission Hospital, Pandalam.	Alleppey
6. S.N. Medical Mission Hospital, Sherthalai.	Alleppey

Of these, in the Government Hospital at Peroorkada, Harijan students are admitted and even S.S.L.C. failed candidates from the scheduled caste/tribes are also admitted.

Minimum qualification for the training course is S.S.L.C. for ordinary students. As per the register of K.G.N.M. Council, the number of A. N. Ms. registered during the years are given below.

<i>Year</i>	<i>No. of registered A.N.Ms.</i>	<i>Midwives</i>
1975	1085	5711
1976	1728	6817

The registration of A.N.Ms. has been started only from the year 1975 onwards.

#### *Stock.*

The stock of A.N.Ms. and Midwives during the year 1974 in the public as well as private sector is 2425, 1622 in Government and 803 in private Institutions. During the year 1974-75, there were 3 Government and 6 private A.N.M. Training Schools in the State with an intake capacity of 10 each in Government and 15 each in private training centres. The total intake capacity in both



the sectors accounts to  $10 \times 3 + 15 \times 6 = 30 + 90 = 120$  years. Allowing 10% wastage on the intake capacity, the probable out-turn works out to  $120 \times 90/100 = 108$  i.e. 110/year approximately. But the actual out-turn during 1974 and 1975 are 97 and 105 respectively. For the estimation of requirements for the subsequent years 110 may be accepted.

Mudaliar Committee has recommended a norm of 1:5000 population by 1976. As per this norm 4747 (nearly 4750) A.N.Ms. will be required by 1976.

**The requirement of Auxiliary Nurse Midwives can be estimated as follows**

TABLE 5

<i>Year</i>	<i>Population in lakhs</i>	<i>Norm</i>	<i>Requirement</i>
1976	237.37	1:5000	4747
1979	249.90	1:5000	4998
1981	257.67	1:50000	5153

TABLE 6

**The availability of Auxiliary Nurse Midwives can be worked out as shown below**

<i>Year</i>	<i>Stock</i>	<i>Actual/anticipated out-turn</i>	<i>Total</i>	<i>Stock after allowing 2 % depletion</i>
1974	2425	97 (actual)	2522	2472
1975	2472	105 (,,)	2577	2525
1976	2525	110 (anticipated)	2635	2583
1977	2583	110 „	2693	2639
1978	2639	110 „	2746	2894
1979	2694	110 „	1804	2748
1980	2748	110 „	2858	2801
1981	2801	110 „	2911	2853

TABLE—7

Requirement and availability are re-arranged as follows

Year	Requirement	Availability	Deficit
1976	4747	2583	2164
1979	4998	2748	2250
1981	5153	2853	2300

As in the case of General Nurse, A.N.Ms. and Midwives also are in short supply.

A.N.Ms./Midwives also migrated to other States and foreign countries. Hence the availability of A.N.Ms. will be less than the figures as shown in Table 7. Hence the gap between the requirement and availability will be more wide.

In this connection, it may be stated that the additional requirement of this category based on the programme already drawn up to be implemented by the end of the Fifth Year Plan is estimated to be 125. As in the case of General Nurses the figure relating to requirements in private sector of this category also is not available.

#### Conclusion.

In order to attract more people to the Nursing profession, the Mudaliar Committee has recommended that attractive stipends and free boarding and lodging may be provided to the students admitted for training courses. It is also necessary to discourage migration of Nurses from Kerala to other States and countries by making the service conditions in the State more attractive. Recently, certain improvements have been made in the service conditions of Nursing personnel by the State Governments and the Government of India. It is praise worthy to state that Smt. Amina Mustafa, the District Public Health Nurse, Alleppey was the recipient of the National Award for Nursing in 1975 and she had been given a cash award of Rs 1000 by the State Government also. Nurses' Week is also celebrated in the State in a befitting manner from 6th to 12th May every year connected with the Birth Anniversary of Florence Nightingale. In addition to these the Government of Kerala have constituted 'The Kerala Government Nurses' Welfare Fund'.

The first part of the document discusses the general principles of the law, including the concept of the state and the role of the government. It emphasizes the importance of maintaining order and justice within the society.

In the second part, the author details the specific laws and regulations that govern the state's actions. This includes provisions related to the rights of citizens, the structure of the government, and the process of law-making.

The third section addresses the practical application of these laws in various situations. It provides examples of how the government should handle different types of disputes and how citizens should interact with the state.

Finally, the document concludes with a reaffirmation of the state's commitment to its principles and a call for continued vigilance and participation from its citizens.

**12**

**DIRECTORY OF TECHNICAL & PROFESSIONAL  
INSTITUTIONS IN KERALA—1974**

15

OFFICE OF THE ATTORNEY GENERAL  
STATE OF NEW YORK

**AGRICULTURE, VETERINARY, FOREST & FISHERIES**

**(i) Agriculture and Veterinary**

<i>Sl. No.</i>	<i>Name and address of Institution</i>	<i>Type of Management</i>	<i>Course of Study</i>	<i>Duration of course</i>	<i>Minimum qualification for admission</i>	<i>Annual intake capacity</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	College of Agriculture, Vellayani, Trivandrum.	Government	B.Sc. (Ag.)	4 years (12 Trimesters)	Pre-Degree in Science	80
			M. Sc. (Ag.)	2 years (6 Trimesters)	B. Sc. (Ag.)	24
			Ph. D.	2 years (6 Trimesters)	M. Sc. (Ag.)	10
2	College of Veterinary and Animal Science, Mannuthy P. O., Trichur	"	B. V. Sc.	4 years (12 Trimesters)	Pre-Degree in Science	40
			M. V. Sc.	2 years (6 Trimesters)	B. V. Sc.	22
			Ph. D.	2 years (6 Trimesters)	M. V. Sc.	9
3	College of Horticulture, Mannuthy P. O., Trichur	"	B. Sc. (Hort.)	4 years (12 Trimesters)	Pre-Degree in Science	20
<b>(ii) Forest</b>						
1	Kerala Forest School, Walayar	"	Foresters Training Forest Guards Training	1 year 6 months	S. S. L. C. S. S. L. C.	30 30
<b>(iii) Fisheries</b>						
1	Fishermen Training Centre, Vizhinjam P.O. Trivandrum District.	"	Operation of Mechanised Boats and im- proved methods of fishing	38 weeks	Ability to read and write Malayalam	40

(1)	(2)	(3)	(4)	(5)	(6)	(7)
2	Fishermen Training Centre, Neendakara P. O., Quilon District	Government	Operation of Mechanised boats and improved methods of fishing	38 weeks	Ability to read and write Malayalam	40
3	Fishermen Training Centre, Thevara, Ernakulam	"	do.	do.	do.	40
4	Fishermen Training Centre, Beypore P.O.	"	do.	do.	do.	40
5	Fishermen Training Centre, Cannanore	"	do.	do.	do.	40
6	Staff Training Centre, Ernakulam	"	Training in all activities of the department	10 months	..	*10

\* Only departmental hands namely Inspectors and Sub Inspectors of Fisheries are eligible.

## MEDICINE

### MEDICAL COLLEGES:

Sl. No.	Name and address of Institution	Type of Management	Course of Study	Duration of course	Minimum qualification for admission	Annual intake capacity
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Medical College, Trivandrum	Government	<b>A. Post Graduate Courses</b> 1. M. D. in General Medicine 2. M. D. in Obst. & Gynaecology 3. M. D. in Paediatrics 4. M. D. in Anatomy 5. M. D. in Physiology 6. M. D. in Pathology 7. M. D. in Bio-Chemistry 8. M. D. in Pharmacology 9. M. D. in Punction Medicine 10. M. S. in General Surgery 11. M. S. in Ophthalmology 12. M. S. in Orthopaedics	3 years do. do. do. do. do. do. do. do. do. do. do. do.	M. B. B. S. do. do. do. do. do. do. do. do. do. do. do. do.	13 8 3 2 2 6 2 4 2 20 4 2



(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>B. Degree Courses</b>						
1.	M. B. B. S.			4½ years	Pre-Degree in Science	185
2.	B. D. S.			4 years	do.	30
3.	B. Pharmacy			4 years	do.	25
4.	B. Sc. Nursing			4 years	do.	25
<b>C. Diploma Courses</b>						
1.	Diploma in General Pathology			2 years	M. B. B. S.	3
2.	Diploma in Obst. and Gynaecology			do.	do.	6
3.	Diploma in Child Health			do.	do.	6
4.	Diploma in Ophthalmology			do.	do.	3
5.	Diploma in Orthopaedic Surgery			do.	do.	3
6.	Diploma in Laryngology and Otology			do.	do.	3
7.	Diploma in Public Health			do.	do.	12
8.	Diploma in Anaesthesiology			do.	do.	4
9.	Diploma in Medical Radiology			do.	do.	3
10.	Diploma in D. Pharm			1 year	S. S. L. C.	50

**D. Certificate Courses :**

1. C. R. A.	2 years	S. S. L. C.	20
2. M. L. T.	1 year	do.	24
3. Opticians and Refractionist Course	2 years	do.	5
4. Orthoptics	2 years	do.	5
5. Dental Hygienist Course	1 year	do.	10
6. Dental Mechanic Course	2 years	do.	5
7. Health Inspector Course	1 year	do.	60

**2. Medical College, Kottayam****A. Post Graduate Courses**

1. M. S. in General Medicine	3 years	M. B. B. S.	5
2. M. D. in General Medicine	3 years	do.	2
3. M. D. in Physiology	3 years	do.	2

**B. Degree Courses**

1. M. B. B. S.	4½ years	Pre Degree in Science	80
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**C. Diploma**

1. Pharmacy Course D. Pharm.	1 year	S.S.L.C.	50
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**D. Certificate**

1. Health Inspector Training Course	1 year	S.S.L.C.	70
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(1)	(2)	(3)	(4)	(5)	(6)	(7)
3	T. D. Medical College, Alleppey	Government	<b>A. Degree Courses</b> 1. M. B. B. S.	4½ years	Pre Degree in Science	80
			<b>B. Diploma</b> 1. Pharmacy Course	1 year	S. S. L. C.	25
4	Medical College, Calicut		<b>A. Degree Course</b> 1. M. B. B. S.	4½ years	Pre Degree in Science	180
			<b>B. Diploma</b> 1. Pharmacy Course	2 years	S. S. L. C.	80
			<b>C. Laboratory Technicians Training</b> 1 year	1 year	S. S. L. C.	26
<b>COLLEGE OF NURSING</b>						
1	College of Nursing, M. C. Hospital Trivandrum.	"	B. Sc. Nursing	4 years	Pre Degree in Science	25
<b>SCHOOL OF NURSING</b>						
1	School of Nursing, Government Hospital, Trivandrum	"	General Nurses Training	3½ years	S. S. L. C.	*No. of seats to each school not specified.
2	School of Nursing, District Hospital, Quilon	"	do.	do.	do.	Students are admitted according to necessity and availability of funds

3	School of Nursing, District Hospital, Alleppey	"	do.	do.	do.	do.
4	School of Nursing, District Hospital Kottayam	"	do.	do.	do.	do.
5	School of Nursing, District Hospital, Ernakulam	"	do.	do.	do.	do.
6	School of Nursing, District Hospital, Trichur	"	do.	do.	do.	do.
7	School of Nursing, District Hospital, Palghat	"	do.	do.	do.	do.
8	School of Nursing, Medical College Hospital, Calicut	"	do.	do.	do.	do.
9	School of Nursing, District Hospital, Cannanore	"	do.	do.	do.	do.
<b>A. N. M. TRAINING CENTRE</b>						
1	College of Nursing, Medical College, Trivandrum	"	General Nurses Training for A. N. Midwives	2 years	do.	do.
2	A. N. M. Training Centre (Malayalam Medium), Government Hospital, Percoorkada	"	do.	do.	do.	**
3	A. N. M. Training Centre, (Malayalam Medium) Government Hospital, Calicut	"	General Nurses Training for A. N. Midwives	2 years	S. S. L. C.	10
<b>LEPROSY TRAINING CENTRE</b>						
1	Leprosy Training Centre, Noornadu	"	Leprosy Health Visitors Training	6 months	do.	55†

\*At present 250 in the senior batch and 275 in the Junior Batch are being trained in these 9 Schools.

\*\*Financed by the Harijan Welfare Department.

†50 candidates selected by the P.S.G. and 5 by the Department.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
SCHOOL OF NURSING						
1	School of Nursing, Holy Cross Hospital, Kottayam, Quilon	Private	General Nursing and Midwifery	3 1/2 years	S. S. L. C.	25
2	School of Nursing, Benzegar Hospital, Quilon	"	do.	3 1/2 years	do.	17
3	School of Nursing, S. S. Memorial Hospital, Quilon	"	do.	do.	do.	10
4	School of Nursing, Medical Mission Hospital, Thiruvalla	"	do.	do.	do.	15
5	School of Nursing, Pushpagiri Hospital, Thiruvalla.	"	do.	do.	do.	14
6	School of Nursing, St. Thomas Hospital, Chethipuzha, Changanacherry.	"	do.	do.	do.	12
7	School of Nursing, Caritas Hospital, Theilakorn, Kottayam	"	do.	do.	do.	25
8	School of Nursing, M. M. Hospital, Mannam Nagar, Kottayam	"	do.	do.	do.	12
9	School of Nursing, I. H. M. Hospital, Bharanganam, Palai	"	do.	do.	do.	15
10	School of Nursing, M. M. M. Hospital, Kolencherry, Ernakulam	"	do.	do.	do.	20
11	School of Nursing, Green Gardens, Sertthalai	"	do.	do.	do.	12
12	School of Nursing, Lissie Hospital, Ernakulam	"	do.	do.	do.	26
13	School of Nursing, Paustee Hospital	"	do.	do.	do.	15
14	School of Nursing, Little Flower Hospital, Ankamaly	"	do.	do.	do.	15
15	School of Nursing, Jubilee Mission Hospital, Trichur	"	do.	do.	do.	15
16	School of Nursing, Nirmala Hospital Calicut	"	do.	do.	do.	12
17	School of Nursing, Malik Decnar Charitable Hospital, Kasargode	"	do.	do.	do.	15

A. N. M. SCHOOL									S. S. L. C.	15
1 S. R. K. Mission Hospital, Sasthamangalam, Trivandrum	Private	General Nursing and Midwifery	2 years	do.	do.	do.	do.	do.	do.	15
2 S. S. N. M. M. Hospital, Varkala	"	do.	do.	do.	do.	do.	do.	do.	do.	15
3 L. M. S. Hospital, Kundara	"	do.	do.	do.	do.	do.	do.	do.	do.	15
4 St. Thomas Hospital, Kattanam	"	do.	do.	do.	do.	do.	do.	do.	do.	15
5 N. S. S. Mission Hospital, Pandalam	"	do.	do.	do.	do.	do.	do.	do.	do.	12
6 S. N. M. Mission Hospital, Shertallay	"	do.	do.	do.	do.	do.	do.	do.	do.	12
AYURVEDA COLLEGE/RESEARCH CENTRE										
1 Post Graduate Centre, Ayurveda College Building, Trivandrum.	Government	1. M. D. (Ay.) (Kayachikitsa) 2. (Pharmacy and Dravyaguna)	3 years	do.	do.	do.	do.	do.	Degree in Ayurveda	20
		B. A. M.	5 1/2 years	do.	do.	do.	do.	do.	Pre Degree in Science	30
2 Government Ayurveda College, Trivandrum	"	B. A. M.	do.	do.	do.	do.	do.	do.	do.	30
3 Government Ayurveda College, Dhanwanthriyam, Thrippunithura Ernakulam District.	"	B. A. M.	do.	do.	do.	do.	do.	do.	S. S. L. C.	30
1 Ayurveda College, Kottakkal, Malappuram	Private Aided	D. A. M.	do.	do.	do.	do.	do.	do.	S. S. L. C.	30
2 Ayurveda College, Shoranur, Palghat District.	"	do.	do.	do.	do.	do.	do.	do.	S. S. L. C.	30
HOMOEOPATHIC COLLEGES										
1 Athurasram Homoeopathic Medical College, Kurichy, Kottayam	Private Aided	Diploma Course in Homoeopathy (D. H. M. S.)	4 years	do.	do.	do.	do.	do.	do.	60
2 Homoco Medical College, Trivandrum-20.	"	do.	do.	do.	do.	do.	do.	do.	do.	60
3 Royal College of Homoeopathic Physicians, Ernakulam, Cochin-11.	"	do.	do.	do.	do.	do.	do.	do.	do.	60

# ENGINEERING

Sl. No.	Name of Institution	Type of Management	Course of Study	Duration of Course	Minimum qualification for admission	Annual intake	Capacity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

## ENGINEERING COLLEGES

1	College of Engineering, Trivandrum	Government	1. Degree course B.Sc. Engineering  Civil Electrical Telecommunication Mechanical Architecture  2. Post Graduate course M.Sc. Engg. Civil Mechanical Electrical Architecture Electronics  3. Part-time Course (Post-Graduate) Civil Mechanical Electrical	4 years	Pre-Degree with Mathematics, Chemistry, Physics	17 60 60 60 10	*
2	Engineering College, Trichur	Government	1. Degree course B.Sc. Engg.	4 years	Pre-Degree with Mathematics, Physics and Chemistry	2 2 2	2 2 2

9								
60	Civil							
30	Mechanical							
45	Electrical							
	Chemical Engg.							
	2. B. Sc. Engg. Part-time	3 years					Diploma in Engineering	
30	Civil							
30	Mechanical							
30	Electrical							
	3. M. Sc. (Engg.)	2 years					B.Sc. Engg.	6
	Civil							6
	Mechanical							6
	Electrical							
	Degree course (B.Sc. Engg.)	4 years					Pre-Degree with Maths., Physics & Chemistry	24
60	Civil							60
60	Mechanical							60
	Electrical							
	Degree course (B.Sc. Engg.)	4 years					Pre-Degree with Maths., Physics & Chemistry	16
	Civil							40
	Electrical							40
	Mechanical							
	Degree course (B.Sc. Engg.)	4 years					do.	16
	Civil							40
	Electrical							40
	Mechanical							

\* Elective Subjects are structural Engg., Hydraulics, Soil Mechanics, Heat Power, Mechanic Design Power System, Electrical Machine Design Control System and Architecture



(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Regional Engineering College, Calicut	Central and State Govern- ment	Degree course (B.Sc. Engg.)  Civil Mechanical Electrical M. Sc. Engg. Civil Mechanical Electrical	4 years  2 years	Pre-Degree with Maths, Physics & Chemistry  B.Sc. Engg.	66 94 90  6 6 6
<b>POLYTECHNICS</b>						
1	Central Polytechnic, Trivandrum	Government	1. Diploma in Engineering Civil Mechanical Electrical  2. Part-time course in Engineering Civil Mechanical Electrical  3. Diploma in Elec- tronics  4. Diploma in Textile Technology  5. Certificate in Text- tile Technology	3 years  4 years  3 years  3 years  2 years  3 years	S. S. L. C.  S. S. L. C.  S. S. L. C.	32 32 21  16 16 16  20  30*
2	Government Polytechnic, Kottayam	Government	Diploma in Engg. Civil Mechanical Electrical	3 years	S. S. L. C.	32 32 32

3	Government Polytechnic, Kalamassery, Ernakulam	"	1. Diploma in Engineering Civil Mechanical Electrical Automobile Engg. Chemical Technology	3 years	S. S. L. C.	44 44 44 30 20
			2. Part-time Diploma course Civil Mechanical Electrical	4 years	S. S. L. C.	16 16 16
4	Maharajas Technological Institute, Trichur	Government	1. Diploma in Engineering Civil Mechanical Electrical	3 years	S. S. L. C.	32 32 32
			2. Part-time Diploma course Civil Mechanical Electrical	4 years	S. S. L. C.	16 16
5	Government Polytechnic, Perinthalmanna, Malappuram	"	Diploma in Engg. Civil Mechanical Electrical	3 years	S. S. L. C.	32 32 12
6	Kerala Government Polytechnic, Calicut	"	1. Diploma in Engineering Civil Mechanical Electrical Chemical	3 years	S. S. L. C.	56 56 56 30

\* The Textile Technology functioned separately with Central Polytechnic in 1970-71.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
			2. Part-time course			
			Diploma	4 years	S. S. L. C.	16
			Civil			16
			Mechanical			16
			Electrical			
7	Government Polytechnic, Cannanore	"	Diploma in Engg.	3 years	S. S. L. C.	36
			Civil			36
			Mechanical			36
			Electrical			30
			Textile Technology			
<b>WOMEN'S POLYTECHNICS</b>						
1	Womens Polytechnic, Trivandrum	"	Diploma in Commercial Practice	3 years	S. S. L. C.	50
			Costume Design and Dress Making	2 years	S. S. L. C.	30
2	Womens Polytechnic, Trichur	"	Diploma in Commercial Practice	3 years	S. S. L. C.	50
			Costume Design and Dress Making	2 years	S. S. L. C.	30
			Electronics	3 years	S. S. L. C.	40
<b>WOMENS POLYTECHNIC</b>						
3	Womens Polytechnic, Calicut	Government	Diploma in Commercial Practice	3 years	S. S. L. C.	50
			Costume Design and Dress Making	2 years	S. S. L. C.	30
<b>POLYTECHNICS (PRIVATE)</b>						
1	Sree Narayana Polytechnic, Kottiyam, Quilon	Private	Diploma in Engineering	3 years	S. S. L. C.	48
			Civil			48
			Mechanical			48
			Electrical			48

2	N.S.S. Polytechnic, Pandalam	"	Diploma in Engineering Civil Mechanical Electrical	do.	do.	60 48 36
3	Carmel Polytechnic, Alleppey	"	Diploma in Engineering 3 years Civil Mechanical Electrical	S.S.L.C.		48 64 32
4	Thyagarajar Polytechnic, Alagappanagar, Trichur	"	Diploma in Engineering 3 years Civil Mechanical Electrical	S.S.L.C.		48 32 64
5	Sree Rama Polytechnic, Valappad, Trichur	"	Diploma in Engineering 3 years Civil Mechanical Electrical	S.S.L.C.		48 24 24
6	Seethi Sahib Memorial Polytechnic, Tirur, Malappuram	"	Diploma in Engineering 3 years Civil Mechanical Electrical Electronics	S.S.L.C.		30 30 30 30
7	Swamy Nithyananda Polytechnic, Kanhanged, Cannanore	"	Diploma in Engineering 3 years Mechanical Automobile	S.S.L.C.		30 30
<b>PRINTING TECHNOLOGY</b>						
1	Institute of Printing Technology, Shoranur, Trichur	Government	Diploma in Printing Technology Letter Press Group	3 years	S.S.L.C.	30
<b>JUNIOR TECHNICAL SCHOOLS</b>						
1	Junior Technical School, Atingal	Government	J.T.S.L.C.	3 years	A pass in VII Std.	60
2	Junior Technical School, Nedumangad	do.	do.	do.	do.	60
3	Junior Technical School, Ezhukone, Quilon	do.	do.	do.	do.	60

(1)	(2)	(3)	(4)	(5)	(6)	(7)
4	Junior Technical School, Adoor, Quilon	Government	J.T.S.L.C.	3 years	A pass in VII Std.	60
5	Junior Technical School, Krishnapuram, Alleppey	do.	do.	do.	do.	60
6	Junior Technical School, Sertallay, Alleppey	do.	do.	do.	do.	60
7	Junior Technical School, Palai, Kottayam	do.	do.	do.	do.	60
8	Junior Technical School, Pampady, Kottayam	do.	do.	do.	do.	60
9	Junior Technical School, Perumbavoor, Ernakulam	do.	do.	do.	do.	60
10	Junior Technical School, Cranganore, Trichur	do.	do.	do.	do.	60
11	Junior Technical School, Koratty, Trichur	do.	do.	do.	do.	60
12	Junior Technical School, Kunnamkulam, Trichur	do.	do.	do.	do.	60
13	Maharajas Technical Institute (J.T.S. Attached) Trichur	do.	do.	do.	do.	60
14	Junior Technical School, Chittoor, Palghat	do.	do.	do.	do.	60
15	Junior Technical School, Shoranur, Palghat	do.	do.	do.	do.	60
16	Junior Technical School, Manjeri, Malappuram	do.	do.	do.	do.	60
17	Kerala Government Polytechnic (J.T.S. Attached) Kozhikode	do.	do.	do.	do.	30
18	Junior Technical School, Badagara, Kozhikode	do.	do.	do.	do.	60
19	Junior Technical School Cheruvathoor, Cannanore	do.	do.	do.	do.	60
20	Junior Technical School, Mattannur	do.	do.	do.	do.	60
21	Government Polytechnic (J.T.S. attached), Cannanore	do.	do.	do.	do.	60

## INDUSTRIAL AND COMMERCIAL INSTITUTIONS

## INDUSTRIAL TRAINING INSTITUTES

Intake in each trade

Sl. No.	Name of Institute	Blacksmith	Carpenter	Mechanic (Diesel)	Mechanic (Motor Vehicle)	Mechanic (Tractor)	Moulder	Painter	Plumber	Sheet Metal worker	Welder	Mechanic (Refrigeration (Air))
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<b>Government</b>												
1	I. T. I., Dhanuvachapuram	32	48	32	32	..	32	..	16	48	72	32
2	I. T. I., Trivandrum	32	48	..	32	..	32	..	16	48	72	32
3	I. T. I., Attingal	16	32	..	32	..	..	..	..	16	48	32
4	I. T. I., Quilon	32	32	16	32	..	32	16	16	16	72	16
5	I. T. I., Chengannur	32	32	..	32	32	32	..	16	16	72	..
6	I. T. I., Ettumanoor	32	32	..	32	..	32	16	16	32	72	..
7	I. T. I., Kalamassery	32	32	..	32	..	32	..	16	16	72	..
8	I. T. I., Chalakudy	16	16	..	32	32	16	..	16	16	72	..
9	I. T. I., Palghat	16	..	..	16	..	..	..	16	16	..	..
10	I. T. I., Malappuram	16	32	32	32	..	..	..	16	16	24	16
11	I. T. I., Calicut	16	32	..	32	..	32	..	16	16	48	..
12	I. T. I., Cannanore	..	32	..	..	..	..	..	..	..	..	..
	Total intake	272	368	80	368	64	272	32	160	256	672	128
	Total Units	17	23	5	23	4	17	2	10	16	56	8



Sl. No.	Name of Institution	Filter	Draftsman (Civil)	Draftsman (Mechanical)	Surveyor	Machinist	Radio & Tele-communication
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
5	Bharathamatha I.T.C., Kottiyam	32	32	..	24	32	24
6	V. I. T. C., Quilon	..	32	..	..	..	..
7	Institute of Electronics and Modern Physics, K.P. Karunagappally	13	32	16	16	..	..
8	Mohans I.T.C., Kayamkulam	64	32	64	..	..	32
9	National I.T.C., Chengannur	64	32	..	..	..	32
10	Mar Basellos I.T.C., Mavelikara	64	32	..	..	..	..
11	Institute of Engineering Technology, Palace Road, Alleppey	32	32	..	..	..	32
12	Marthoma I.T.C., Kozhencherry	64	32	..	..	24	..
13	The Radio and Electrical Engineer- ing Institute, Kozhencherry	..	..	32	..	..	..
14	Industrial Training Centre, Thiruvalla	32	..	32	..	..	..
15	Pins X I. T. C., Edathua	32	..	..	..	..	..
16	Welfare Technical Institute, Welfare Centre, Vaikom.	32	..	..	..	..	..
17	Industrial Training College, Palai	32	..	..	..	..	..
18	Little Flower Engineering Institute, South Kalamassery	32	..	..	..	..	..
19	Jubilee Memorial Technical Training Institute, Cochin	32	..	..	..	..	..
20	Social Welfare Technical School Association, Alwaye.	32	..	..	..	..	..
21	Kanjoor I. T. C., Kaladi	32	..	..	..	..	..
22	Don Bosco Technical Institute, Vaduthala, Ernakulam	32	..	..	..	..	..
23	Amulia I.T.C., Ernakulam	32	..	..	..	..	..
24	Social Welfare Centre, Kalamassery	32	..	..	..	..	..
25	CSI I.T.C. Muttom, Thodupuzha	32	..	..	..	..	..
26	K.G.M.I.T.C. Koonammavu, North Parur	32	..	..	..	..	..
27	St. Marys Orphanage Vocational Training Institute, Trichur	..	..	..	..	24	..
28	C.S.I. Industrial School, Nazareth, Manjeri	..	..	..	..	..	..
29	C.S.I. I.T.C. Nettoor, Tellicherry	32	..	..	..	..	..



INDUSTRIAL TRAINING INSTITUTES

Sl. No.	Name of Institution	Welder	Sheet Metal worker	Carpenter	Blacksmith	Motor Mechanic	Turner	Electrician	Moulder	Pattern maker
		(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
<b>Private</b>										
14	Industrial Training Centre, Thiruvalla	..	..	..	..	..	..	..	..	..
15	Pins X. ITC, Edathua	24	..	..	..	..	..	32	..	..
16	Welfare Technical Institute, Welfare Centre, Vaikom	24	..	..	..	..	..	..	..	..
17	Industrial Training College, Palai	..	..	..	..	..	..	..	..	..
18	Little Flower Engg. Institute, South Kalamassery	..	..	..	..	..	..	..	32	32
19	Jubilee Memorial Technical Training Institute, Cochin-1	..	..	..	..	..	24	..	..	..
20	Social Welfare Technical School Association, Alwaye	32	..	..	..	..	..	..	..	..
21	Kanjoor ITC, Kaladi	24	..	..	..	..	..	..	..	..
22	Don Bosco Technical Institute, Vaduthala, Ernakulam	..	..	..	..	..	24	..	..	..
23	Amulia ITC, Ernakulam, Cochin	..	..	..	..	..	..	..	..	..
24	Social Welfare Centre, Kalamassery	..	..	..	..	..	..	..	..	..
25	C.S.I. I.T.C. Muttom, Thodupuzha	..	..	..	..	..	..	..	..	..
26	K.C.M.I.T.G. Koonammavu, North Parur	24	..	..	..	..	..	..	..	..
27	St. Marys Orphanage Vocational Training Institute, Trichur	12	..	..	..	16	..	..	..	..
28	C.S.I. Industrial School, Nazareth, Manjeri	..	..	16	..	..	..	..	..	..
29	C.S.I. I.T.C. Nettoor, Tellicherry	..	..	..	..	..	..	..	..	..



## INDUSTRIAL TRAINING INSTITUTIONS

Minimum qualifications prescribed and duration of course for each trade

Sl. No.	Name of Trade	Duration of Training	Minimum qualification
(1)	(2)	(3)	(4)
	Refrigeration and Air Conditioning		S. S. L. C.
1	Electrician	One year	do.
2	Pattern Maker	Two years	do.
3	Draftsman (Civil)	do.	do.
4	Draftsman (Mechanical)	do.	do.
5	Surveyor	do.	do.
6	Mechanic (Instrument)	do.	do.
7	Mechanic (Radio & Television)	do.	do.
8	Electroplater	do.	do.
9	Blacksmith	do.	do.
10	Carpenter	One year	Std. VIII
11	Mechanic (Diesel)	do.	do.
12	Mechanic (Motor Vehicle)	do.	do.
13	Mechanic (Tractor)	do.	do.
14	Moulder	do.	do.
15	Painter	do.	do.
16	Plumber	do.	do.
17	Welder (Gas and Electric)	do.	do.
18	Sheet Metal Worker	do.	do.
19	Fitter	do.	do.
20	Turner	Two years	do.
21	Machinist (Miller)	do.	do.
22	Machinist (Grinder)	do.	do.
23	Machinist (S. S. P.)	do.	do.
24	Machinist (Composite)	do.	do.
25	Wireman	do.	do.
26	Building Constructor	do.	do.
27			

**INDUSTRIAL AND COMMERCIAL INSTITUTIONS**

Sl. No.	Name and address of Institution	Type of Management	Course of Study	Duration of course	Minimum qualification for admission	Annual intake capacity
(1)	(2)	(3)	(4)	(5)	(6)	(7)

**Art Schools**

1 School of Arts, Trivandrum

Government Certificate course in:

1. Drawing & Painting      2 years      Pass in Std. VII      15
2. Clay Modelling      do.      do.      5
3. Ivory and Wood Carving      4 years      do.      4
4. Silver Smithy and Kutuary work      do.      do.      4
5. Rattan and Basket making      2 years      do.      8
6. Lacquer work      do.      do.      5
7. Carpet and Durrie Weaving      do.      do.      5

2 Ravi Varma School of Painting,  
Mavelikara

Certificate course in :

1. Drawing and Painting      2 years      do.      30
2. Modelling & Sculpture      do.      do.      20
3. Diploma course in:
  - (i) Painting      do.      do.      30
  - (ii) Sculpture      do.      do.      20
  - (iii) Post Diploma in Painting      1 year      do.      15

10

do.

do.

(iv) Post Diploma in Sculpture

Certificate course in :  
(Both Higher & Lower)

3 Government Occupational Institute,  
Trichur

15

S. S. L. C.

2 years

1. Drawing

15

do.

do.

2. Painting

15

do.

do.

3. Engraving

**Commercial Institutes**

1 Government Commercial Institute,  
Ernakulam.

Certificate course in Higher & Lower.

60

S. S. L. C.

2 years

1. Accountancy Theory and Practice

60

do.

do.

2. Banking Commercial Geography

60

do.

do.

3. Shorthand & Typewriting

30

S. S. L. C.

2 years

Part-time Diploma Course in Shorthand and Typewriting

2 Institute for Diploma Course in Short hand and Typewriting, Trivandrum.

# INDUSTRIAL AND COMMERCIAL INSTITUTIONS

## PRE-VOCATIONAL TRAINING CENTRES

Sl. No.	Name and address of Institution	Type of Management	Course of Study	Duration of course	Minimum qualification for admission	Annual intake capacity
(1)	(2)	(3)	(4)	(5)	(6)	(7)

- |   |  |            |   |    |    |    |
|---|--|------------|---|----|----|----|
| 1 | Pre-Vocational Training Centre, Attingal, Trivandrum District. | Government | Vocational Training in different trades | NA | .. | 30 |
| 2 | Pre-Vocational Training Centre, Manjeri, Malappuram District.  | "          | do.                                     | NA | .. | 45 |

## GOVERNMENT INDUSTRIAL SCHOOLS

- |   |   |   |   |         |          |    |
|---|---|---|---|---------|----------|----|
| 1 | Government Industrial School, Njarakkal, Ernakulam District     | " | Diploma Course in Tailoring and Garment making      | 1 year  | Std. VII | 40 |
| 2 | Government Industrial School, Tripprayar                        | " | Diploma Course in Weaving                           | do.     | do.      | 20 |
| 3 | Government Industrial School, Wadakkancherry, Trichur District. | " | Two Year Diploma Course in Tailoring and Embroidery | 2 years | do.      | 20 |
| 4 | Government Industrial School, Irinjalakuda, Trichur District.   | " | do.   | do.     | do.      | 50 |

**TAILORING AND GARMENT MAKING CENTRES AND  
TRADE SCHOOLS**

		Government Diploma in Tailoring and Garment making	1 year	Std. VII	60
1	T. G. M. Trivandrum				
2	Do. Quilon	do.	do.	do.	20
3	Do. Kottayam	do.	do.	do.	20
4	Do. Trippunithura, Ernakulam	do.	do.	do.	20
5	Do. Trichur	do.	do.	do.	40
6	Do. Palghat	do.	do.	do.	20
7	Do. Badagara	do.	do.	do.	20
8	Do. Tellicherry	do.	do.	do.	16
9	Do. Payyannur	do.	do.	do.	16
10	Tailoring Trade School, Haripad, Alleppey	do.	do.	do.	20
11	Tailoring Trade School, Devicolam, Idikk	do.	do.	do.	20

# INDUSTRIAL AND COMMERCIAL INSTITUTIONS

## RECOGNISED INDUSTRIAL SCHOOLS

Sl. No.	(1) Name and address of Institution	(2)	(3) Type of Management	(4) Course of Study	(5) Duration of course	(6) Minimum qualification for admission	(7) Annual intake capacity
1	Joseph Weaving School, Pulluvila, Trivandrum		Private	Handloom Weaving (Higher Grade)	1 year	Pass in Lower Grade	9
2	Paraniyam Weaving School, Poovar, Trivandrum		"	do.	do.	do.	9
3	Kuttaninnattal Weaving School, Poovar, Trivandrum		"	do.	do.	do.	9
4	David Wilson Technical School, Olathanni, Trivandrum		"	do.	do.	do.	9
5	Kottakal Charuvila Weaving School, Trivandrum		"	Tailoring and Garment Making Certificate Course	do.	Std. VII	12
6	Sivananda Vijayam Weaving School, Amachal, Trivandrum.		"	Handloom Weaving Higher Grade	do.	Pass in Lower Grade	9
7	Konniyoor Mylam Weaving School, Peyad, Trivandrum.		"	do.	do.	do.	9
8	Kattakada Weaving School, Trivandrum		"	do.	do.	do.	9
9	Hindu Mahila Mandiram Weaving School, Poojapura, Trivandrum.		"	do.	do.	do.	9
10	Sree Yesu Asramam Technical School for Girls, Kunnappuzha		"	do.	do.	do.	9
11	Vattiyoorakavu Weaving School, Trivandrum.		"	Tailoring and Garment Making Certificate Course	do.	Std. VII	12
12	Sree Leela Vilasom Painting School, Artingal		"	Handloom Weaving Higher Grade	Pass in Lower Grade	Pass in Lower Grade	9
13	Attigal Weaving Institute, Trivandrum		"	Drawing and Painting Lower Grade	2 years	Std. VII	12
			"	Handloom Weaving Higher Grade	1 year	Pass in Lower Grade	9

14	Sacred Heart Convent Industrial School, Anjengo, Trivandrum.	Needle work (Certificate course)	2 years	Std. V	12
15	Weaving School, Thirupuram	Handloom Weaving Higher Grade	1 year	Pass in Lower Grade	9
16	Sree Yeso Asram Technical School for Boys, Kunnappuzha	Handloom Weaving (Higher Grade)	1 year	do.	9
17	Nazareth Orphanage Weaving School, Quilon	do.	do.	do.	9
18	P.R.D.S. Weaving School, Thiruvalla	Carpentry Certificate Course	3 years	do.	9
19	G.M.S. Industrial School, Kottayam	Handloom Weaving Higher Grade	1 year	Std. V	12
20	St. Thomas Weaving School, Mookannur	Handloom Weaving (Higher Grade)	1 year	Pass in Lower Grade	9
21	C.C.P. Luiz Memorial Industrial School, Kalamassery	Needle work Certificate Course	2 years	Std. V	12
22	Cochin School of Arts, Ernakulam	Drawing and Painting-Lower Grade	2 years	Std. VII	12
23	Abalasaranoam Girls Industrial School, Ernakulam	Handloom Weaving Higher Grade	1 year	Pass in Lower Grade	9
24	St. Joseph Industrial School, Karthedam	Needle work Certificate course	2 years	Std. V	12
25	St. Marys Convent Girls Industrial School, Ollur	do.	do.	do.	12
		do.	do.	do.	12
26	St. Ritas C. C. G. Industrial School, Cherpu	Handloom Weaving Higher	1 year	Pass Lower	9
27	Mullooth Industrial School, Nadavaramba	do.	do.	do.	9
28	St. Peters Industrial School, Karumannur	Needle work Certificate course	2 years	Std. V	12
29	Maharaja Memorial Needle Work School, Chiralayam	Handloom Weaving Higher	1 year	Pass Lower	9
30	Womens Industrial Home, Chiralayam	Needle work Certificate course	2 years	Std. V	12
31	St. Vincent Girls Industrial School, Calicut.	Handloom Weaving Higher Grade	1 year	Pass Lower	9
32	Industrial School for Women, Palai	Needle work Certificate course	2 years	Std. V	12
		Tailoring & Garment making Certificate course	years	Std. VII	12
33	Little Flower Industrial School, Ernakulam	Handloom Weaving Higher	1 year	Pass Lower	9
		Needle work (certificate course)	2 years	Std. V	12



OTHER TECHNICAL INSTITUTIONS (COACHING FOR KERALA GOVERNMENT TECHNICAL EXAMINATIONS)

Sl. No.	Name of Institution	Subject taught	Minimum qualification for admission	Yearly intake capacity
(1)	(2)	(3)	(4)	(5)
<b>Private (59)</b>				
<b>Trivandrum (10)</b>				
1	M. V. T. Institute of Civil Engineering Vakkom, Kadakkavoor, Trivandrum	Civil	Completed S.S.L.C. Course	75
2	S. V. Institute of Civil Engineering, Kattakkada, Trivandrum.	Civil	do.	20
3	Kerala Institute of Technology, Trivandrum.	Civil	do.	75
		Electrical	do.	60
		Civil	do.	125
		Mechanical	do.	75
		Electrical (Radio)	do.	120
		Tele-Communications	do.	75
		Electrical (City & Guilds)	do.	120
		Civil	do.	60
		Automobile (K. G. T.)	do.	90
		Automobile (City & Guilds)	do.	45
		Automobile (City & Guilds)	do.	90
		Civil	do.	30
		Civil (K.G.T.E.)	do.	90
		Electrical (M.G.T.E.)	do.	45
		Mechanical (K.G.T.E.)	do.	30
		Electrical (K.G.T.E.)	do.	30
		Electrical	do.	15
<b>Quilon (9)</b>				
11	S. R. V. College of Engineering, Paravur, Quilon	Civil	do.	60
12	J. S. Institute of Engineering, Paravur, Quilon	Electrical	do.	15

13	S. N. Technical College, Beach Road, Quilon	Civil	Completed	60
14	V. Telegraph & Wireless Institute, Quilon	Automobile	S.S.L.C. Course	160
		Civil	do.	185
		Electrical	do.	195
		City & Guilds	do.	120
		Mechanical	do.	135
		Telecommunication	do.	165
		Automobiles (City & Guilds)	do.	45
		Electrical (City & Guilds)	do.	45
15	Janatha Institute of Electrical Engineering, Pathanamthitta	Civil	do.	35
16	S. P. College of Engineering, Adoor, Quilon	Electrical (City & Guilds)	do.	45
17	Bharath School of Engineering, Punaloor, Quilon	Civil	do.	15
18	National Engineering Technology, Pathanamthitta	Tele-Communication	do.	30
19	Kerala Engineering Institute, Puthenpeddik, Omallur	Mechanical	do.	30
		Automobile	do.	30
		Civil Engineering	do	
<i>Alleppey (12)</i>				
20	Multipurpose Training School, Chengannur	Tele-Communication	do.	30
21	National Engineering Institute, Alleppey	Electrical (City & Guilds)	do.	60
		Tele-Communication	do.	45
		Civil	do.	60
		Mechanical	do.	45
		Automobile	do.	30
		Civil	do.	75
22	N. V. T. Institute, Thiruvalla	Civil	do.	75
23	Mohana Technical Institute, Kayamkulam	Electrical	do.	90
		Tele-Communication	do.	15
		City and Guilds	do.	90
		Mechanical	do.	75
		Automobiles	do.	30
		Civil	do.	45
24	U. T. College of Engineering, Kumbanad, Alleppey			

(1)	(2)	(3)	(4)	(5)
25	Master College of Civil Engineering, Mavelikara	Civil	Completed S.S.L.C. Course	25
26	National Institute of Technology, Chengannur	Electrical Civil Automobile Mechanical Tele-Communication	do. do. do. do. do.	60 75 45 45 30
27	Bharath Civil Engineering College, Alwaye	Civil	do.	45
28	Radio and Electrical Engineering Institute, Kozhencherry	Tele-Communication Electrical	do. do.	45 30
29	Institute of Engineering Technology, Alleppey	Civil Electrical City and Guids Mechanical Tele-Communication	do. do. do. do. do.	75 75 90 30 30
30	Johnsons Technical Institute, Mallappally	Electrical Engineering	do.	15
31	St. Marys Technical Institute, Pandalam	Civil Electrical Mechanical	do. do. do.	16 15 15
<i>Kottayam (6)</i>				
32	Civil Engineering Institute, Puthuppally	Civil	do.	30
33	Ninan's Technical College, Kottayam	Tele-Communication	do.	45
34	Welfare Institute of Engineering, Kottayam	Civil Electrical (City & Guilds) Tele-Communication	do. do. do.	30 15 45
35	Kerala Institute of Engineering Technology, Kottayam	Civil Mechanical Electrical (City & Guilds)	do. do. do.	15 15 75
36	Sreekumar Electrical Engineering, Institute, Changanacherry	Electrical (City and Guilds) Tele-Communication Civil	do. do. do. do.	75 30 45 45
37	Indian Technological Institute, Panachippara, Poonjar.	Civil	do.	15



## Ernakulam (7)

38	Nalanda College of Engineering Perumanoor, Ernakulam	Civil	do.	60
39	The Victory Technical Institute, North Parur	Civil	do.	60
40	Social Welfare Centre, Kalamassery	Electrical	do.	30
41	Oxford College, Muvattupuzha	Civil	do.	45
42	St. Christopher Motor School, Ernakulam	Automobile	do.	90
43	Kerala Telegraph and Wireless Institute, Ernakulam	Telegraphy and Wireless	do.	15
44	St. Marys Engineering Institute, Koothattukulam	Civil	do.	30

## Trichur (9)

45	Institute of Civil Engineering, Chendamangalam Nair Samajam, Chendamangalam.	Civil	do.	30
46	St. Marys Orphanage Institute of Engineering, Trichur.	Civil	do.	30
47	Good Shepherd Technical Institute, Kunnankulam	Civil Mechanical	do. do.	45 20
48	Royal Institute of Civil Engineering, Cranganore	Electrical	do.	45
49	The Victory Technical Institute, Irinjialakuda	Civil	do.	75
50	Institute of Engineering Technology, Kunnankulam	Civil	do.	45
51	Phonetic Commercial Institute, Trichur	Electrical City and Guilds	do. do.	45 60
52	Rama Varma Institute of Civil Engineering, Trichur	Tele-Communication, City and Guilds	do. do.	60 60
53	Kerala Technological Institute, Trichur	Civil	do.	75
		Electrical	do.	30
			do.	30

## Palghat (3)

54	Radio Training Centre Industrial Estate Puthupariyaram, Palghat	Electrical (City and Guilds)	do.	30
55	Polytechnical Institute, Sultannpet, Palghat	Civil Mechanical	do. do.	90 60
		Electrical	do.	60
		Automobile	do.	16
56	Kerala Wireless and Telegraphs Institute, Palghat.	Tele-Communication	do.	15

(1)	(2)	(3)	(4)	(5)
<i>Malappuram</i> (1)	57 A. C. E. Institute, Nilambur	Civil	do.	30
<i>Kozhikode</i> (1)	58 Central Technical Institute, Moonalingal, Calicut.	Civil	do.	45
<i>Cannanore</i> (1)	59 Excelstor Polytechnical Institute of Engineering, Tellicherry.	Civil	do.	50

## TRAINING COLLEGES

Sl. No.	Name of Institution	Course of Study	Duration of course	Minimum qualification for admission	Intake capacity
(1)	(2)	(3)	(4)	(5)	(6)
<b>Government (4)</b>					
1	Government Training College, Trivandrum	B. Ed. Degree	1 year	Graduation	150
2	Government Training College, Trichur	do.	do.	do.	100
3	Government Training College, Calicut	do.	do.	do.	100
4	Government Training College, Tellicherry	do.	do.	do.	100
<b>Private (15)</b>					
1	Mar Theophilus Training College, Trivandrum	B. Ed. Degree	1 year	Graduation	100
2	S. N. Training College, Nedunganda, Varkala, Chirayinkil, Trivandrum	do.	do.	do.	100
3	Karmal Rani Training College, Quilon	do.	do.	do.	100
4	M. T. Tabor Training College, Pathanapuram, Quilon	do.	do.	do.	100
5	Titus II Teachers Training College, Thiruvalla	do.	do.	do.	100
6	N. S. S. Training College, Pandalam	do.	do.	do.	100
7	F. T. Memorial Training College, Mavelikara	do.	do.	do.	100
8	St. Thomas Training College, Palai	do.	do.	do.	100
9	Mt. Carmel Training College, Kottayam	do.	do.	do.	100
10	St. Thomas Training College, Mannanam	do.	do.	do.	100
11	N. S. S. Training College, Changanacherry	do.	do.	do.	100
12	S. N. M. Training College, Moothakunnam	do.	do.	do.	100
13	St. Josephs Training College, Ernakulam	do.	do.	do.	100
14	N. S. S. Training College, Ottappalam, Palghat	do.	do.	do.	100
15	Feroke Training College, Kozhikode	do.	do.	do.	100

## LAW COLLEGES

<i>Sl. No.</i>	<i>Name of Institution</i>	<i>Course of Study</i>	<i>Duration of course</i>	<i>Minimum qualification for admission</i>	<i>Intake capacity</i>
(1)	(2)	(3)	(4)	(5)	(6)
<b>Government (3)</b>					
1	Government Law College, Trivandrum-1.	1. L. L. B. 2. L. L. M.	3 years 2 years	Graduation L. L. B.	100 10
2	Law College, Ernakulam, Cochin-11.	1. L. L. B. 2. L. L. M.	3 years 2 years	Graduation L. L. B.	200 6
3	Law College, Calicut.	1. L. L. B.	3 years	Graduation	278
<b>Private (1)</b>					
1	The Kerala Law Academy, Trivandrum-5.	1. L. L. B.	3 years	Graduation	200

## CO-OPERATION

<i>Sl. No.</i>	<i>Name of Institution</i>	<i>Whether Government/ Private</i>	<i>Course of study</i>	<i>Duration of course</i>	<i>Minimum qualification for admission</i>	<i>Intake capacity</i>
(1)	(2)	(2)	(4)	(5)	(6)	(7)
<b>Private Unaided</b>						
1	Co-operative College, Trivandrum	"	H. D. C.	1 year	Graduation	150
2	Co-operative College, Trichur	"	H. D. C.	1 year	do.	150
3	Co-operative College, Kozhikode	"	H. D. C.	1 year	do.	150
4	N. S. Co-operative College, Kottayam	" Aided	J. D. C.	8 months	S. S. L. C.	175
5	Co-operative Training Centre, Trivandrum	"	J. D. C.	8 months	do.	150
6	Co-operative Training Centre, Trichur	"	J. D. C.	8 months	do.	175
7	Co-operative Training Centre, Kozhikode	"	J. D. C.	8 months	do.	175

**TRAINING CENTRES RUN BY THE HARJAN WELFARE DEPARTMENT**

Sl. No.	Name of Institution	Course of Study	Duration of course	Minimum qualification for admission	Intake capacity
(1)	(2)	(3)	(4)	(5)	(6)
<b>Government (93)</b>					
<b>TRIVANDRUM DISTRICT</b>					
1	Model Welfare Training Centre, Medical College, P. O. Kadakampally Colony, Trivandrum	(Certificate course for) Weaving Rattan	2 years	VII Std.	36
2	I. T. C. Kovalam, Trivandrum	Carpentry	do.	do.	36
3	Weaving Training Centre, Vattiyoor kavu P. O., Anchamada Colony, Trivandrum	Screw pine Mat Weaving	do.	do.	12
4	Tailoring School, Cantonment, Trivandrum	Weaving	do.	do.	24
5	Model Welfare Training Centre, Nedumangad P. O., Perumala, Trivandrum District.	Cutting & Tailoring	do.	do.	36
6	Model Welfare Training Centre, Vellanaad, Nedumangad P. O., Trivandrum.	Weaving Rattan Carpentry	do.	do.	12
7	Model Welfare Training Centre Peringamala	Carpentry	do.	do.	12
8	Near Iqbal College, Nedumangad, Trivandrum District Craft Centre, Chettiampara P. O., Near Vinoba Nagar, Nedumangad Taluk, Trivandrum District	Cutting & Tailoring Tailoring Rattan	do.	do.	12
9	Craft Centre, Nanniyode P. O., Pachamala, Nedumangad Taluk, Trivandrum District.	Rattan	do.	do.	12
10	Craft Centre, Madathara P. O., Kalayapuram, Nedumangad Taluk, Trivandrum District.	Kora Grass	do.	do.	12
11	Model Welfare Training Centre, Chengal P. O., Mariapuram, Neyyattinkara Taluk, Trivandrum District	Mat Weaving Weaving Rattan	do.	do.	36
12	Industrial Training Centre, Kanjiramkulam P. O., Neyyattinkara Taluk	Carpentry Screw pine Mat Weaving	do.	do.	24



(1)	(2)	(3)	(4)	(5)	(6)
13	Craft Centre, Vazhichal P. O., Kuttamala, Neyyattinkara Taluk, Trivandrum District.	Rattan	2 years	VII Std.	12
14	Craft Centre, Punnalur P. O., Maranellur, Neyyattinkara Taluk, Trivandrum District	Weaving	do.	do.	12
15	Craft Centre, Poovar, P. O., Neyyattinkara Taluk Trivandrum District	Rattan	do.	do.	12
16	Model Welfare Training Centre, Sreenivasapuram, P. O. Varkala, Chirayinkil Taluk, Trivandrum District.	Weaving Rattan Carpentry	do.	do.	36
17	Model Welfare Training Centre, Korani P. O., Edakode, Chirayinkil Taluk, Trivandrum District.	Weaving Rattan Carpentry	do.	do.	36
QUILON DISTRICT					
18	Model Welfare Training Centre, Kalakode, South Paravur P. O., Quilon District	Weaving Rattan Carpentry	do.	do.	36
19	Model Welfare Training Centre, Kulakkada P. O., Kottarakkara Taluk, Quilon District	Weaving Rattan Carpentry	do.	do.	36
20	Model Welfare Training Centre, Anchal P. O., Pathanapuram Taluk, Quilon District	Weaving Rattan Carpentry	do.	do.	36
21	Model Welfare Training Centre, Vettikavala, P. O., Kottarakkara Taluk, Quilon District	Weaving Rattan Carpentry	do.	do.	36
22	Craft Centre, Kadiminchira Anakayam, P. O., Pathanapuram Taluk, Quilon District	Weaving Rattan Carpentry	do.	do.	12
23	Craft Centre, Chittaramanakayam, Chittair, P. O., Anakayam, Quilon District.	Rattan	do.	do.	12
24	Industrial Training Centre, Oachira, Karunagappally Taluk, Quilon District	Rattan Screw pine mat weaving Weaving	do.	do.	24
25	Industrial Training Centre, Ayacaud, P. O., Parakkode, Kunnathur Taluk, Quilon District	do.	do.	do.	24
26	Industrial Training Centre, Bharanikavu, P. O., Sasthamkotta, Kunnathur Taluk, Quilon District	Cutting & Tailoring	do.	do.	24

27	Model Welfare Training Centre, Thingalkarikagom, Viz. Anchal, Pathanapuram Taluk, Quilon District	Rattan	2 years	VII Std.	36
28	Model Welfare Training Centre, Shendurny, Quilon District	Rattan	do.	do.	12
<b>Kottayam District</b>					
29	Model Welfare Training Centre, Madappally P.O., Changanacherry, Kottayam District	Weaving, Rattan Carpentry	do.	do.	12
30	Weaving Training Centre, Sachivothampuram Colony, Changanacherry Taluk, Kottayam.	Weaving	do.	do.	12
31	Industrial Training Centre, Maduraveli P.O., Vaikom Taluk, Kottayam District	Carpentry	do.	do.	24
32	Industrial Training Centre, Madukovuzal, Erumeli P.O., Vechoochira Road Kanjirappally Taluk, Kottayam District	Weaving	do.	do.	24
33	Model Welfare Training Centre,	Carpentry	do.	do.	12
<b>Idukki District</b>					
34	Craft Centre, Adimali, Valara P.O., Irumpupalam, Idukki District	Weaving	do.	do.	12
35	Craft Centre, Kumily P.O., Idukki District	Rattan	do.	do.	12
36	Craft Centre, Pathippally Arakulam P.O., Thodupuzha, Idukki District	Weaving	do.	do.	12
37	Model Welfare Training Centre, Poomala, Pannikattom P.O., Thodupuzha, Idukki District	Rattan	do.	do.	12
<b>Alleppey District</b>					
38	Model Welfare Training Centre, Pandalam P.O., Alleppey District	Rattan Weaving	do.	do.	36
39	Model Welfare Training Centre, Kuttupuzha P.O., Thiruvalla, Alleppey District	Rattan Carpentry	do.	do.	36
40	Model Welfare Training Centre, Purussery, Chengannur, Alleppey District	Weaving, Rattan Carpentry	do.	do.	36
41	Model Welfare Training Centre, Haripad P.O., Alleppey District	Weaving, Rattan Carpentry	do.	do.	36

(1)	(2)	(3)	(4)	(5)	(6)
42	Industrial Training Centre, V.V. Gram, Kuruppankulangara P.O., Shertalloy, Alleppey District	Carpentry	2 years	VII Std.	24
43	Industrial Training Centre, Mannancherry P.O., Kalavoor, Alleppey District	Coir Works	do.	do.	24
<b>Ernakulam District</b>					
44	Model Welfare Training Centre, Paipra, Muvattupuzha P.O., Ernakulam District	Weaving, Rattan Carpentry	2 years	VII Std.	36
45	Model Welfare Training Centre, North Parur, P. O. Kottuvally, Ernakulam District	Weaving, Rattan Carpentry	do.	do.	36
46	Model Welfare Training Centre, Nayazambalam P.O., Edavanakad, Ernakulam District	Weaving, Rattan Carpentry	do.	do.	36
47	Industrial Training Centre, Perumbavoor, Rayonpuram P.O., Ernakulam District	Carpentry	do.	do.	24
<b>Trichur District</b>					
48	Model Welfare Training Centre, Talappilly Taluk, Trichur District	Weaving, Rattan Carpentry	do.	do.	36
49	Industrial Training Institute, Mayannur P.O., Talappilly Taluk, Trichur District	Carpentry	do.	do.	24
50	Weaving Training Centre, Puduruthy P.O., Talappilly Taluk, Trichur District	Cutting & Tailoring Weaving	do.	do.	12
51	Model Welfare Training Centre, Erumappetty P.O., Talappilly Taluk, Trichur District	Weaving, Rattan Carpentry	do.	do.	36
52	Model Welfare Training Centre, Pulloot P.O., Kodungallur Taluk, Trichur District	Weaving, Rattan Carpentry	do.	do.	36
53	Model Welfare Training Centre, Edathurithy, Chooloor P.O., Via Valapad, Trichur District	Weaving, Rattan Carpentry Weaving	do.	do.	24
54	Industrial Training Centre, Arattupuzha P.O., Trichur District.	Weaving	do.	do.	12
55	Weaving Training Centre, Herbert Nagar, Nedupuzha P.O., Trichur-7	Weaving	do.	do.	12
56	Weaving Training Centre, Mathaipuram, Valoor P.O., Via Trichur	Weaving	do.	do.	12

57	Weaving Training Centre, Vijayaraghavapuram, Chalakudy P.O., Trichur District	Weaving	do.	do.	12
58	Model Welfare Training Centre, Athirappally, Vazhachal P.O., via Chalakudy, Trichur District	Carpentry	do.	do.	12
<b>Palghat District</b>					
59	Model Welfare Training Centre, Thamarachira, Chittoor P.O., Palghat District	Rattan, Carpentry, Kora grass Mat Weaving	2 years	VII Std.	36
60	Model Welfare Training Centre, Kuriarkutty, Parambikulam, Palghat District	Kora grass Mat Weaving	do.	do.	12
61	Craft Centre, Peringottukavu, Chittoor, Palghat District	do.	do.	do.	12
62	Model Welfare Training Centre, Agali P.O., Mannarghat Taluk, Palghat District	Bamboo & Reed work Rattan	do.	do.	12
63	Model Welfare Training Centre, Eloor, Kottathara, Agali P.O., Mannarghat Taluk, Palghat District	Weaving	do.	do.	12
64	Model Welfare Training Centre, Sholayar P.O., via. Anakkatty, Palghat	Carpentry	do.	do.	12
65	Craft Centre, Mattathukad, Anakkatty, P.O., Mannarghat Taluk, Palghat District	Rattan	do.	do.	12
66	Craft Centre, Mukkali P.O., Mannarghat Taluk, Palghat				
<b>Malappuram District</b>					
67	Model Welfare Training Centre, Keraladeswarapuram, Tanur, Malappuram	Weaving, Rattan Carpentry	do.	do.	36
68	Model Welfare Training Centre, Pathiakara, Perunthalmanna P.O., Malappuram.	Weaving, Rattan, Carpentry	do.	do.	36
69	Craft Centre, Chandakunnu, Nilambur P.O., Malappuram	Weaving	do.	do.	12
<b>Kozhikode District</b>					
70	Model Welfare Training Centre, Kuravangad.	Weaving, Rattan Carpentry	do.	do.	36
71	Model welfare Training Centre, Muthunga P.O., via S. Battery South Wymad, Kozhikode District	Cutting & Tailoring	do.	do.	12

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(4)

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(6)

## Cannanore District

72	Model Welfare Training Centre, Madai P.O., Payyanganadi, Cannanore District	Weaving, Rattan	2 years	VII Std.	24
73	Industrial Training Centre, Talap P.O., Cannanore	Cutting & Tailoring	do.	do.	24
74	Model Welfare Training Centre, Bela P.O., Kasargode Taluk, Cannanore District	Carpentry, Rattan	do.	do.	24
75	Industrial Training Centre, Nileswat, Cannanore District	Weaving	do.	do.	12
76	Craft Centre, Muzhakunnu P.O., Kakkavayal via. Irutty, Cannanore District	Rattan	do.	do.	12
77	Craft Centre, Kannavam P.O., Kannavam, via. Kothuparamba, Cannanore District	Rattan	do.	do.	12
78	Craft Centre, Kattakulam P.O., via. Manantoddy, North Wynad, Cannanore District	Rattan	do.	do.	12
79	Craft Centre, Valliyurkavu, Manantoddy P.O., North Wynad, Cannanore District	Cutting Tailoring Rattan	do.	do.	12
80	Craft Centre, Vythur, Ujikkal P.O., via. Irutty, Cannanore District		do.	do.	12

## SUPPLEMENTARY LIST OF INSTITUTIONS

81	Production-cum-Training Centre, Singarathope Colony, Manakad P.O., Trivandrum	Weaving, Rattan Carpentry	do.	do.	18
82	Production Training Centre, Attipra, Manvila Colony, Kulathoor P.O., Trivandrum	Weaving, Rattan Carpentry	do.	do.	28
83	Production-cum-Training Centre, Anchamada, Anchamada Colony, Vattiyoor kavu P.O., Trivandrum	Rattan, Koragrass Mat Weaving	do.	do.	19
84	Production-cum-Training Centre, Sooranad, Poruvazhi P.O., Bharankavu, Quilon District	Weaving	do.	do.	12
85	Production-cum-Training Centre, Poonjar P.O., Meenachil Taluk, Kottayam	Weaving	do.	do.	12
86	Production-cum-Training Centre, Thekkekara Colony, Mavelikara P.O., Alleppey	Weaving, Rattan Carpentry	do.	do.	28

87	Production-cum-Training Centre, Edappally, Vytila P.O., Ernakulam.	Carpentry	do.	do.	12
88	Production-cum-Training Centre, Varavoor P.O., Talappally Taluk, Trichur	Carpentry, Weaving	do.	do.	19
89	Production-cum-Training Centre, Nadathara, Trichur	Carpentry, Weaving Rattāñ	do.	do.	28
90	Production-cum-Training Centre, Ponnani, Malappuram District	Carpentry, Weaving	do.	do.	12
91	Production-cum-Training Centre, Palappuram P.O., via. Ottappalam, Palghat	Carpentry	do.	do.	12
92	Production-cum-Training Centre, Chingeri Colony, Ambalavayal P.O., South Wynad, Kozhikode District	Weaving	do.	do.	12
93	Production-cum-Training Centre, Azhikode, Cannanore District				

1064

