



**GOVERNMENT OF INDIA
NATIONAL EMPLOYMENT SERVICE**

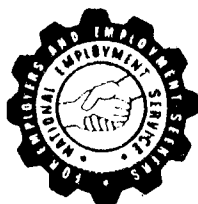
AREA SKILL SURVEY

BANGALORE

NIEPA DC



D00731



**DIRECTORATE GENERAL OF EMPLOYMENT & TRAINING,
MINISTRY OF LABOUR & REHABILITATION, NEW DELHI**

- 54871

331.11

IND - A

Sub. National Systems Unit,
National Institute of Educational
Planning and Administration
W-8, Saket, New Delhi-110017
DCC. No. D-731
Date..... 30/1/83

FOREWORD

The study which is third in the series, embodies the findings of the Area Skill Survey conducted in Bangalore district. The two earlier area reports that have been issued are for the districts of Ludhiana & Gorakhpur. Area Skill Surveys were taken up against the crucial need felt for tackling unemployment at the 'grass-root' level or district level. The basic aim of these surveys is to study current and prospective employment industry-wise and occupation-wise with a view to co-ordinating manpower needs and employment opportunities with the output of educational system and technical training facilities.

The Survey has thrown, for the first time, area-wise data on prospective employment opportunities both by industries and skills. It is hoped that this information will be of considerable importance in initiating employment programmes at the district level. The study also focusses attention to the inadequate coverage of the present Employment Market Information Programme both in terms of establishments and employment. This calls for need for improving and strengthening the E.M.I. Programme in the States.

I would like to express my thanks to employers and their associations, trade associations, heads of training institutions and Colleges, State Directorate of Employment, and district officials who extended their co-operation in the fullest measure to make the Survey a complete success. Thanks are also due to Shri Hari Krishan, Assistant Director of Employment Exchanges, and other members of the Survey Team for their hard labour in carrying out the survey operations and for their resourcefulness in achieving full response in the collection of field data.

The Survey was organised and conducted under the direction of Shri J. C. Gupta, Deputy Director of Employment Exchanges, who, besides attending to development of procedures provided technical guidance to field units as well as undertook analysis and interpretation of data including finalisation of the report. I would like to place on record my appreciation of his services.

Although every effort has been made to arrive at realistic and meaningful conclusions, I expect that improved estimates would be possible in future after the methodology and techniques have been further refined in the light of experience of current surveys and suggestions received in this behalf.



(B. N. RAMAN)

*Director General & Joint Secretary
to the Government of India*

SHRAM-SHAKTI BHAWAN,
RAFI MARG, NEW DELHI-110001.
6th July, 1973

**Sub. In-1 - I Systems Unit,
National Institute of Educational
Planning and Administration
17-B, SriAurobindo Marg, New Delhi-110016
DOC. No.....
Date.....**

CONTENTS

	<i>Page</i>
Scope & Methodology	vii
Technical Notes	ix
<i>Chapters</i>	
I Background of the Area	1
II Employment Growth	2
III Projected Employment in Smaller Private Establishments	10
IV Self-Employment	11
V Manpower Requirements	14
VI Training and Educational Facilities	18
VII Unemployment Trend	21
VIII Demand & Supply	22
IX Agricultural Farms	23
Results at a Glance	24

APPENDICES

I Employment Growth by Economic Activity	xii
II Employment Growth by Occupation	xiv
III Manpower Needs by 1977	xviii

SCOPE & METHODOLOGY

An Area Skill Survey is basically a method to determine in respect of a given geographic area, current availability of skills and requirements in the foreseeable future. Of the several methods designed to estimate future manpower needs, area skill surveys have some distinct advantages. Firstly, skill surveys aim at eliciting information by a direct approach to employers and training institutions instead of attempting manpower projections on the basis of assumed growth rates and targets. Secondly, in view of the well known fact that skilled manpower excluding perhaps high level manpower—has limited mobility, manpower planning to be effective must be at the area level. Thirdly in the National Employment Service, with its network of Employment Exchanges with whom a fund of information about local labour market is available, a base already exists which can be easily developed to undertake the work of collecting additional data required for skill surveys. Finally, because of the simplified process of data collection inherent in Area Survey Programme, a continuous analysis of labour market can be obtained enabling initiation of remedial measures to remove current and anticipated skill imbalances.

2. Broad objectives of area skill surveys are :

- (i) to assist in translating economic goals set forth in a planned economy into manpower terms;
- (ii) to provide specific information on changes that will be necessary in the training and apprenticeship programme to meet future requirements;
- (iii) to provide information for use in vocational guidance which depends for its success on a sound knowledge of changing job opportunities in different occupations in the area;
- (iv) to furnish details for use in job development and placement activities of the Employment Service
- (v) to provide area-wise information concerning manpower resources needed in connection with location and expansion of industries; and
- (vi) to supply information which will enable identification and development of avenues for self-employment.

3. To start with, fifteen districts in the country were taken up for conduct of Area Skill Surveys on pilot basis. The areas taken up for study were drawn from each of the following three types :

Type A —Highly industrialised urban areas with large skilled labour force and having complex employment market;

Type B —Districts having a fairly developed urban industrial base as well as rural base characterised by advanced and mechanised agricultural operations;

Type C —Predominantly rural areas marked by traditional agricultural activity where there is need for expansion of non-agricultural sector and avenues of self-employment.

4. This report embodies the findings of the survey conducted in Bangalore district which is highly industrialised urban area classified under category 'A' above.

5. The approach adopted for collection of information for Area Skill Surveys is based on what is known as 'Establishment Reporting' approach. In order to achieve satisfactory response and accurate data, the Enquiry Schedules (Questionnaires) designed for the survey were collected through personal interviews by trained staff. Following chart outlines the Enquiry Schedules that were canvassed for the collection of information :

<i>Schedule and agencies from whom information was collected</i>	<i>Type of information collected</i>
--	--------------------------------------

(i) *A.S.—I. Employers' Schedule*

All establishments in the public sector; All establishments in the private sector employing ten or more workers; 20 per cent of establishments employing 5-9 workers in the private sector.

Persons employed by occupation five years ago and currently; Working proprietors & partners; Seasonal employment; Expansion plans and factors hindering existing production or expansion or full utilisation of installed capacity; Future manpower needs by occupation two years hence and five years hence on the assumption that factors which were limiting expansion or production would be overcome; Separations and engagements; Manpower shortages; Economic activity; Year of establishment, etc.

(ii) *A.S.—II. Schedule for Emerging Establishments*

All emerging establishments known to be in the blueprint stage or in different stages of completion on the date of enquiry.

Likely date of commencement of production or activity; Nature of economic activity; Likely number of persons to be employed by occupation during next two years and five years.

(iii) *A.S.—III. Schedule for institutions imparting professional and technical education*

All institutes, polytechnics, universities, etc. imparting professional & technical education.

Likely out-turn by courses and professions during next five years at the certificate, diploma, graduate and post-graduate level.

(iv) *A.S.—IV. Schedule for agricultural farms*

Fifty largest agricultural farms in the area selected on the basis of size from each development block.

Employment; Manpower shortages; Farm equipment used; Financial assistance obtained, etc.

(v) *A.S.—V. Village Schedule*

Ten per cent of villages taken from each development block.

Existing avenues of self-employment other than agriculture; Additional opportunities for self-employment that could be created in the light of modernisation of agriculture, local resources and expanding need for maintenance and other services.

6. A mass of statistical data and information which was available from other sources was also studied in the presentation of area reports. Some of the important sources were—(i) data available from day-to-day operations of employment exchange, (ii) data collect-

ed under Employment Market Information Programme of Employment Service, (iii) decennial population census, (iv) district plans, (v) special employment generating schemes being implemented in the area, (vi) small-scale and rural industries, (vii) agricultural conditions, (viii) socio-economic surveys, (ix) reports of employers' associations, (x) records of local bodies, government departments, licensing authorities, employers' associations, etc.

7. The District Advisory Group on Area Skill Survey was constituted under the chairmanship of Director of Employment & Training, Mysore, to review progress in the collection of schedules and advise ways and means to ensure fullest co-operation from employers in the rendition of data. The other members nominated to serve on the District Advisory Group were drawn from the concerning departments of Planning, Education, Technical Training, Agriculture, Statistics, District Administration, Directorate of Land Army, Employers' Associations & Trade Unions and members of the State Legislature. The main recommendations of the Advisory Group were as follows :

(i) A letter may be addressed by the Chairman to the Director of Industries requesting him to issue an appeal to all the emerging establishments for extending co-operation in the matter of furnishing the relevant information.

(ii) A sample of 5 per cent of the households is in respect of about 1/4 of the selected villages may be subjected to further investigation and separate household schedules may be canvassed with a view to cross checking the data collected on the village schedule in respect of that sample.

(iii) The tour programme of the members of the survey team in rural areas may be made available to all the members of advisory group so as to enable them to synchronise their visits to the extent possible and to make suggestions, if any, on the spot during the course of collection of relevant information. It was stressed by all the members that while collecting relevant information from the villages, attention should be paid to ensure that the particulars of artisan skills are fully collected.

8. The concepts, assumptions and analytical techniques adopted are given in the "Technical Notes" that follows.

TECHNICAL NOTES

The following paragraphs outline the concepts, assumptions and analytical techniques on the basis of which findings and conclusions have been drawn for presentation in this report. It is hoped that as more experience is gained, the methodology and technique will be further refined to satisfy the users.

Reference dates.

2. Although the survey operations were spread over a period of about ten months during 1972, the data on employment, i.e., number of regular employees on pay-roll including working proprietors and partners relates to the following reference dates :

Employment 5 years ago —as on 31st March, 1967
 Current Employment —as on 31st March, 1972
 Anticipated Employment
 5 years hence —by 31st March, 1977

Establishments and Employment

3. The construction of a comprehensive and up-to-date frame of establishments, being an essential prerequisite, was done on the basis of employers' register maintained at the employment exchanges under Employment Market Information Programme and other available sources. This was further supplemented with reference to special street surveys carried out by the field staff in the district. A high degree of comprehensiveness in the construction of the frame was achieved. This would be apparent by a comparison of the establishments covered under Area Skill Survey vis-a-vis Employment Market Information Programme.

	No. of establishments covered under	
	Area Skill Survey	Employment Market Information programme.
A. Public Sector	653	526
B. Private Sector		
(i) Employing 25 or more workers	732	429
(ii) Employing 10-24 workers	1821	542
Total	2553	971
(iii) Smaller establishments with 5-9 workers	2935	141
Grand Total	6141	1638

4. While the smaller private establishments in the size-class 5-9 workers were studied on 20 per cent sample basis, all other establishments were studied on cent-per cent basis.

5. The employment revealed under Employment Market Information Programme (which does not cover private establishments employing less than 10 workers) was 2.06 lakhs in 1967 and about 2.54 lakhs in 1972. This gives an average growth rate of 4.7 per cent per year. As against this, comparable employment figures thrown up by area survey (excluding employment in smaller private establishments employing 5-9 workers) are 2.24 lakhs and 3.01 lakhs in 1967 and 1972 respectively giving a growth rate of 6.9 per cent per year. The wide variation between the two is due to lack of comprehensiveness of Employers' Register and possible errors in the estimations of employment in respect of defaulting establishments followed under Employment Market Information Programme (refer D.G.E. & T. Employment Review 1970-71, page 4.). To some extent, the 'Personal interview method' of collection of data followed under the Area Skill Survey appears to have yielded better results. The Dantwala Committee has recommended adoption of this approach for the collection of data under Employment Market Information Programme also. In so far as comprehensiveness of Employers' Register is concerned, the meeting of the Working Group of National Employment Service held in 1972 recommended the raising of teams for conduct of street surveys on a continuing basis.

6. Employment in the agricultural sector and in establishments having 1-4 workers being outside the purview of the survey has not been covered.

Response

7. The personal interview method coupled with an intensive programme of public relations undertaken from the very beginning, as well as the efforts of District Advisory Group resulted in achieving hundred per cent response.

Employment Forecast

8. Future employment growth has been worked out by taking into account under-mentioned components :

A. FORECAST FURNISHED BY EXISTING EMPLOYERS

(i) The employers were requested to estimate future employment in their respective establishments on the basis of their expansion plans and on the assumption that existing shortages and difficulties relating to raw materials,

power, finance, foreign exchange, etc. which may be hindering production or expansion or fuller utilisation of installed capacity would be overcome in the coming years.

- (ii) Forecasts were obtained at two points of time, namely, two years hence (*i.e.* by 1974) and five years hence (*i.e.* by 1977). There are several reasons to warrant forecast at two and five years' period from the date of enquiry. Firstly, shorter periods of projection yield more accurate statistics than long-term estimates. Secondly, training of skilled personnel normally takes 2-5 years' time. Considering, however, the fact that about a years' time was necessary for completion of the survey, the two years' projection has not been analysed and presented in this report.
- (iii) Experience has shown that public sector establishments at the district level were by and large not in a position to estimate their future employment as expansion and development plans in their case were still in the finalisation stage at higher levels. The sharp decline in the public sector growth rate from 4.2 per cent actually recorded between 1967-72 to 1.3 per cent estimated for 1972-77 is indicative of the inability of public sector employers to forecast. Further, employment which may be generated as a result of implementation of minimum social and welfare programmes of compulsory education, adult literacy, family planning, health, sanitation, communication, etc. may not be adequately reflected in the forecast presented in this area report.

B. EMPLOYMENT LIKELY TO BE GENERATED BY EMERGING ESTABLISHMENTS

- (i) As far as possible, attempts have been made to identify and list out new establishments which are currently known to be in blue-print stage or are in different stages of completion but are likely to emerge in the next five years. This led to the identification of 144 new establishments. It may, however, be mentioned that a comprehensive listing of new establishments is not possible because establishments and projects which may be planned subsequent to the date of enquiry cannot be brought within the ambit of the survey. Some idea of the inadequacy of listing emerging establishments can be had by an analysis of the past trends. During the preceding five yearly period of 1967-72, as many as 2,360 new establishments came up as against only 144 identified for 1972-77. In terms of employment, new establishments (2,360) which came up during 1967-72 contributed as much as 52.5 per cent to the total rise. As against this, the new establishments (144) which have been identified to come up during 1972-77 will contribute only 30.4 per cent of the total employment.

- (ii) Another limitation in building up a comprehensive frame of emerging establishments arises due to the fact that generally smaller private establishments do not require formal planning or preliminary action (*e.g.* land acquisition, licence, power connection, finance, etc.) to permit identification. For instance, smaller establishments such as trading shops, eating places, minor repairing and servicing units are likely to spring up in the normal course to meet the needs of population growth, urbanisation and expanding economy. Out of the 2,360 establishments which came up during 1967-72 (referred to in the foregoing paragraph), as many as 1,330 were smaller establishments (5-9 workers). As not a single such establishment could be listed for 1972-77, attempts have been made in this study to project employment for them on the basis of past trends. The employment projection thus made has been taken note of in balancing the supply of and demand for manpower but for obvious reasons has not been added to the anticipated employment growth forecast by identifiable, existing and emerging establishments themselves. The special features which permit projection in respect of smaller establishments are generally non-existent in the case of bigger establishments. It would be hazardous to assume that bigger-projects and manufacturing plants which came up in the preceding five years would also get repeated in the coming years. Hence, forecast on the basis of past trends has not been attempted in their case.

9. Data on self-employment in the non-agricultural sector in rural areas was collected from a sample of 10 per cent of villages in each development block. Of the total 2,731 villages in the district, 273 villages representing 16.6 per cent of rural population were studied. The 'Village Schedule' that was canvassed in this regard was filled in after discussions with block and panchayat officials, surpanchs and other village elders who possessed intimate knowledge of their well-knit village community and households. Since about 92 per cent of the total villages representing 59 per cent of population had less than 500 households (or 2,500 population) each and also because a small proportion of rural work-force is engaged in non-agricultural activities, a reasonably good count of these persons did not present any difficulty.

10. Village officials and elders were also requested to estimate additional opportunities for self-employment that could be created in the light of modernisation of agriculture, availability of raw-materials and expanding needs for maintenance and other services. It is believed that these estimates would be indicative of the self-employment potential in rural areas.

Urban Areas

11. A comprehensive coverage of self-employment and other mixed employment in urban areas

was outside the scope of the survey. However, a limited assessment in respect of those segments of economy for which information was readily available from existing records of Government departments, local bodies, employers' and trade associations, licensing authorities, etc. was made. Although no forecasts have been attempted on the basis of this data, its utility lies in the fact that it sheds interesting light on the trend of self-employment and other mixed employment in urban economy.

Working Proprietors & Partners

12. Information in respect of these persons has been obtained separately on Employers' Schedule. It is believed that to a considerable extent, the small establishments are the handiwork of a single individual or a group of individuals who besides supervising the establishment or enterprise also engage paid workers. Accordingly, an analysis of working proprietors and partners by economic activity has, in the context of economy and needs of the area, been taken to be indicative of avenues for self-employment.

Future Manpower Needs

13. Following component elements were taken into account to calculate future manpower needs :

- (i) Employment growth forecast by existing employers;
- (ii) Replacement needs due to attrition in the existing work-force—In conformity with the accepted norm, these have been calculated at the rate of 2 per cent per year;
- (iii) Employment expected to be generated by new establishments likely to come up in future;
- (iv) Projected employment for smaller private establishments (5-9 workers); and

- (v) Additional number of skilled workers needed for maintenance and other services in rural areas.

Unemployment

14. The Live Register figures of—(i) Sub Regional Employment Exchange; (ii) University Information & Guidance Bureau; and (iii) Professional & Executive Standard applicants residing in Bangalore and registered with State Professional & Executive Employment Office, Bangalore have been used to estimate current level of unemployment in the urban areas of the district. As all applicants on the Live Register are not necessarily unemployed, the Live Register figures were adjusted by applying correction factor to eliminate those who were employed or were student. The correction factors applied were taken from a D. G. E. & T. Survey conducted in 1968.

Balancing of Demand & Supply

15. Considering the fact that professional and higher technical personnel, such as engineers, scientists, doctors and technologists, have a high degree of mobility, the balancing of demand and supply has been restricted to the category of craftsmen and other skilled workers only. For this purpose, the future manpower needs have been balanced against the supply of manpower revealed by current unemployed and out-turns of training institutions and colleges during the next five years.

Agricultural Farms

16. A study of 50 largest agricultural farms was undertaken to reveal information about employment, manpower shortages, farm equipment used, financial assistance obtained, etc. It is apparent that such a survey can only be classified as a type study instead of being considered as a comprehensive analysis of agricultural conditions of the area.

Tabulation

17. All data has been tabulated manually.

CHAPTER I

BACKGROUND OF THE AREA

1.1 Bangalore district lies in the south-east of Mysore State. The southern end of Bangalore is bounded by Kaveri river which separates it from Mysore district. Arkavathi river flows through the district from north to south where it joins Kaveri river. The number of towns in the district is 14 and that of villages is 2,731 which are grouped into 11 talukas for administrative purposes—each forming one community development block. The total area of Bangalore district is of the order of 8100 sq. kilometres. A little more than half of the villages/towns were electrified by March, 1971.

1.2 Nearly 53 per cent of the area is under cultivation and another 9 per cent under forest. The soil is fertile red-loam found in every shade from light to dark and deep chocolate. Agriculture in the district is mainly dependent on rainfall which averages about 800 millimetres per year. The major sources of irrigation are tanks and wells whose number was of the order of 28,000 during 1968. The major crops are ragi, paddy and maize.

1.3 According to the provisional results of 1971 census, the district has a population of 33.5 lakhs (rural 14.9 lakhs and urban 18.6 lakhs) which is 33.6 per cent higher than the corresponding figure of 25.0 lakhs in 1961 (rural 11.5 lakhs and urban 13.5 lakhs). Thus, Bangalore is one of those rare districts where urban population exceeds the rural one. During 1961-71 the urban population increased by 37 per cent as compared to an increase of 29.6 per cent in the rural component. The density of population increased from 309 persons per sq. kilometres in 1961 to 418 persons per sq. kilometres in 1971—the highest among the districts of Mysore State. It may be of interest to know that inspite of rapid growth in population, the per capita income in Bangalore district showed an upward trend from Rs. 305 in 1960-61 to Rs. 532 in 1970-71. This is an indication of economic progress and level of living achieved by the district.

1.4 1971 census has enumerated 32 per cent of population as workers (30 per cent in case of rural and 34 per cent for urban). Of the total workers, 39 per cent were cultivators or agricultural labourers and the remaining 61 per cent were other workers. The higher proportion in the case of later is a unique

feature of this district and is attributed to growing industrial complex of Bangalore.

1.5 The literacy rate in Bangalore district increased from 34 per cent in 1961 to 43 per cent in 1971. There are three educational institutions at the level of university viz., Indian Institute of Science, University of Agricultural Science and Bangalore University. The Indian Institute of Science undertakes advanced studies and conducts original investigation in all branches of scientific knowledge. The agricultural farm attached to the University of Agricultural Science is utilised as a workshop for practical training and research. There are twelve medical colleges/institutions and six engineering colleges affiliated to the Bangalore University. In addition, there are seven polytechnics and 55 institutions including Arts & Science colleges, training institutes/centres.

1.6 Gneiss stone is quarried for building purposes and broken up for road metal. Lime-stone and pottery clay is also found. Although there are no mineral resources in the district, some of the favourable conditions for rapid industrialisation in Bangalore district are fine climate, dust-free atmosphere and availability of wide variety of raw material within the State. The Government is an important participant in the industrial development of Bangalore. The important undertakings set up by the government are Hindustan Aeronautics Limited, Indian Telephone Industries, Hindustan Machine Tools, Bharat Electronics Limited, Bharat Earth Movers and Government Electric Factory. The other important industries of the area are manufacturing of electronic equipment, motor vehicle engine parts & accessories, machine tools, electrical motors & generators, sundry hardwares, spinning, weaving & dyeing of cotton & silk, printing & stationery and hotel & catering services. Handloom is the largest small-scale industry of the district. Important small-scale industries of the area are—wood-work, manufacture of bidi, agarbatti, tiles & bricks. The development of industries in Bangalore has helped both in saving and earning foreign exchange. While many items which were formerly being imported are now being manufactured, some of the other products such as watches, machine tools, silk have captured foreign market.

CHAPTER II

EMPLOYMENT GROWTH

2.1. Wage and salaried employment (number of regular employees) went up from 2.35 lakhs in 1967 to 3.22 lakhs in 1972 or by 0.87 lakhs—there-

by showing an annual growth rate of 7.4 percent. The employment is likely to rise at an annual rate of 2.5 percent and will reach 3.62 lakhs by 1977.

EMPLOYMENT GROWTH (BANGALORE)

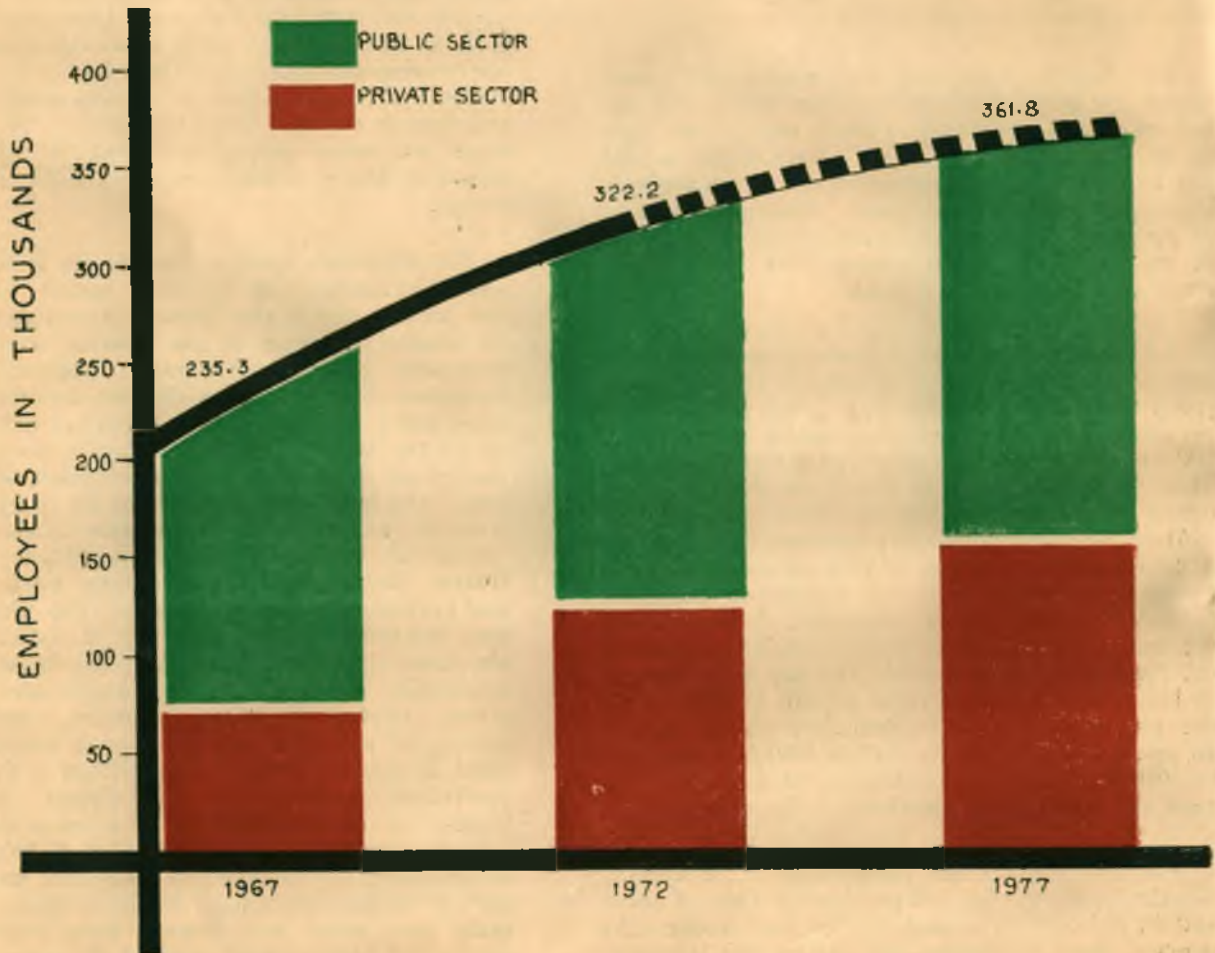


CHART I

2.2 *Sectoral Growth*—Employment in the public sector which accounted for nearly two-thirds of the total employment in 1967 increased at an average

annual growth rate of 4.2 per cent during 1967-72 as against a meagre yearly growth of 1.3 per cent forecast for the next five years. In the private

sector annual growth rate during 1967-72 was 14.0 per cent and the anticipated growth for the next five years is 4.1 per cent.

TABLE 1
Employment Growth

Sector	Employment			Annual Growth percentage	
	1967	1972	1977	1967-72	1972-77
Public	158061	191405	204062	4.2	1.3
Private	77211	130807	157699	14.0	4.1
Total	235272	322212	361761	7.4	2.5

2.3 *Employment in establishments/projects likely to come up*--Of the total increase of 39.5 thousand anticipated during 1972-77, the establishments/projects likely to come up in the near future are expected to be responsible for creating employment to the order of 12 thousand. Thus, the emerging establishments will generate employment opportunities at an annual rate of 2 400 during 1972-77. Production

of sugar and manufacture of scooters are the new fields in which there are proposals to start industries during the next five years in Bangalore district.

2.4 *Employment Growth by Economic Activity*--The growth in employment recorded between 1967-72 and the anticipated rise during the next five years by industrial divisions is given in the table below :

TABLE 2
Employment by Industrial Division

Industrial Division	Employment			Increase			
	1967	1972	1977	1967-72		1972-77	
				Number	Percent per Year	Number	Percent per Year
Agriculture Live Stock	1655	1791	1915	136	1.6	124	1.4
Manufacturing	125229	169692	198348	44463	7.1	28656	3.4
Construction	5038	12782	12880	7744	30.8	98	0.2
Electricity, Gas, Water & Sanitary Services	445	4977	6187	525	2.4	1210	4.9
Trade & Commerce	12979	21196	22505	8217	12.7	1309	1.2
Transport, Storage & communication	12165	14841	15640	2676	4.4	799	1.1
Services	73754	96933	104286	23179	6.3	7353	1.5
Total	235272	322212	361761	86940	7.4	39549	2.5

(Refer Appendix--1--Employment Growth by Economic Activity).

2.5 Of the total employment in 1972, about half (53 per cent) was engaged in manufacturing industries followed by services (30 per cent), trade & commerce (7 per cent), transport, storage & communication (4 per cent) and construction (4 per cent). The balance of employment (2 per cent) was engaged in electricity, gas, water & sanitary service and agriculture.

2.6 Substantial growth in employment during the last five years was reported in manufacturing industries (44463) followed by services (23179), trade & commerce (8217), construction (7744) and transport, storage & communication (2676). Although increases in employment by 1977 have been forecast in all the industrial divisions, these are not of the same order as revealed between 1967-72 in terms of abso-

lute numbers. Sizeable growth has, however, been anticipated for manufacturing and service sectors. In the case of electricity, gas & sanitary services, employment by 1977 is expected to rise by 1210 persons as against an actual rise of 525 person recorded in the preceding five year period. The downward trend projected for construction sector, in spite of a marked rise in the past, is due to apparent difficulties of coverage of private construction work. Similarly, difficulties of coverage have come in the way of projecting employment for trade & commerce which is expected to rise by only 1309 persons as against an actual rise of 8217 persons between 1967-72. The growth rates in these sectors have therefore to be viewed with certain degree of caution.

2.7 *Industries of the area*—Slightly more than half (53 per cent) of the total employed labour force is

engaged in manufacturing industries in Bangalore. Large labour force was employed in such industries as manufacture of electronic equipment, aeroplanes & accessories, cotton textiles, motor vehicle engine parts & accessories and silk textiles. Besides these, machine tools, medicines, cosmetics & agarbatties, heavy electrical machinery, sundry hardwares, printing & publishing also provide employment to sizeable number of persons. Public sector plays an important role in the manufacturing sector of the area. The five undertakings, viz. Hindustan Aeronautics Limited, Indian Telephone Industries, Bharat Electricals Limited, Bharat Earth Movers and Hindustan Machine Tools alone account for about one-third of the total employed labour force in manufacturing sector of the area during 1972.

TABLE 3
Employment Growth in important industries

Industry	Employment			Increase	
	1967	1972	1977	1967-72	1972-77
Food stuffs	924	1056	1081	132	25
Cigarettes & tabbaco	1681	2573	2573	892	—
Cotton textile	14877	15834	16840	957	1006
Silk textile	5978	10802	12595	4824	1793
Textile garments, raincoats & headgears	889	1837	2018	948	181
Wood and Wooden products	1376	3053	4174	1677	1121
Printing and publishing	4291	5085	5584	794	499
Medicines, cosmetics & agarbatties	4788	6899	8312	2111	1413
Turpentine, resin & plastic products	742	2545	3106	1803	561
Non-metallic mineral products except petroleum & Coal	612	1235	1338	623	103
Porcelain & its products	1674	1838	2083	164	245
Glass & glass products	424	1313	1428	889	115
Smelting, refining & rolling of iron & steel	583	1229	1728	646	499
Iron & steel furniture	647	1306	1873	659	567
Enamelling & electroplating	686	1389	1396	703	7
Sundry hardwares	2711	5674	6690	2963	1016
Basic metal & products	1184	2261	3008	1077	747
Machine tools	6798	7705	8244	907	539
Textile Machinery	1457	1490	1621	33	131
Heavy electrical machinery	5311	6757	8611	1446	1854
Electrical lamps, fans, wires	1791	2507	2826	716	319
Electronic equipment	21773	30758	34735	8985	3977
Other electrical machinery & equipment	3099	4638	5621	1539	983
Earth moving machinery	3924	4420	6021	496	1601
Motor vehicle engine parts & accessories	8252	12534	17622	4282	5088
Aeroplanes & accessories	20840	20840	20840	—	—
Watches & clocks	1174	1539	1717	365	178

(Refer Appendix I—Employment Growth by Economic Activity).

2.8 Significant increases in employment between 1967-72 as well as in the next five years by 1977 have been reported in manufacture of electronic equipment, motor vehicle engine parts & accessories, silk textiles, sundry hardwares, medicines, cosmetics & agarbatties, wood & wooden products, electrical

machinery & equipment, heavy electrical machinery and cotton textiles. The manufacture of aeroplanes & accessories has shown a stationary trend throughout. Industries such as manufacture of textile garments, rain-coats & headgears, cigarettes & tobacco, glass & glass products and enamelling & electro-

plating which showed significant increases in the preceding five years have forecast only marginal increases in the coming five years.

2.9 Employment in selected industries is illustrated in Chart 2.

EMPLOYMENT GROWTH IN SELECTED INDUSTRIES (BANGALORE)

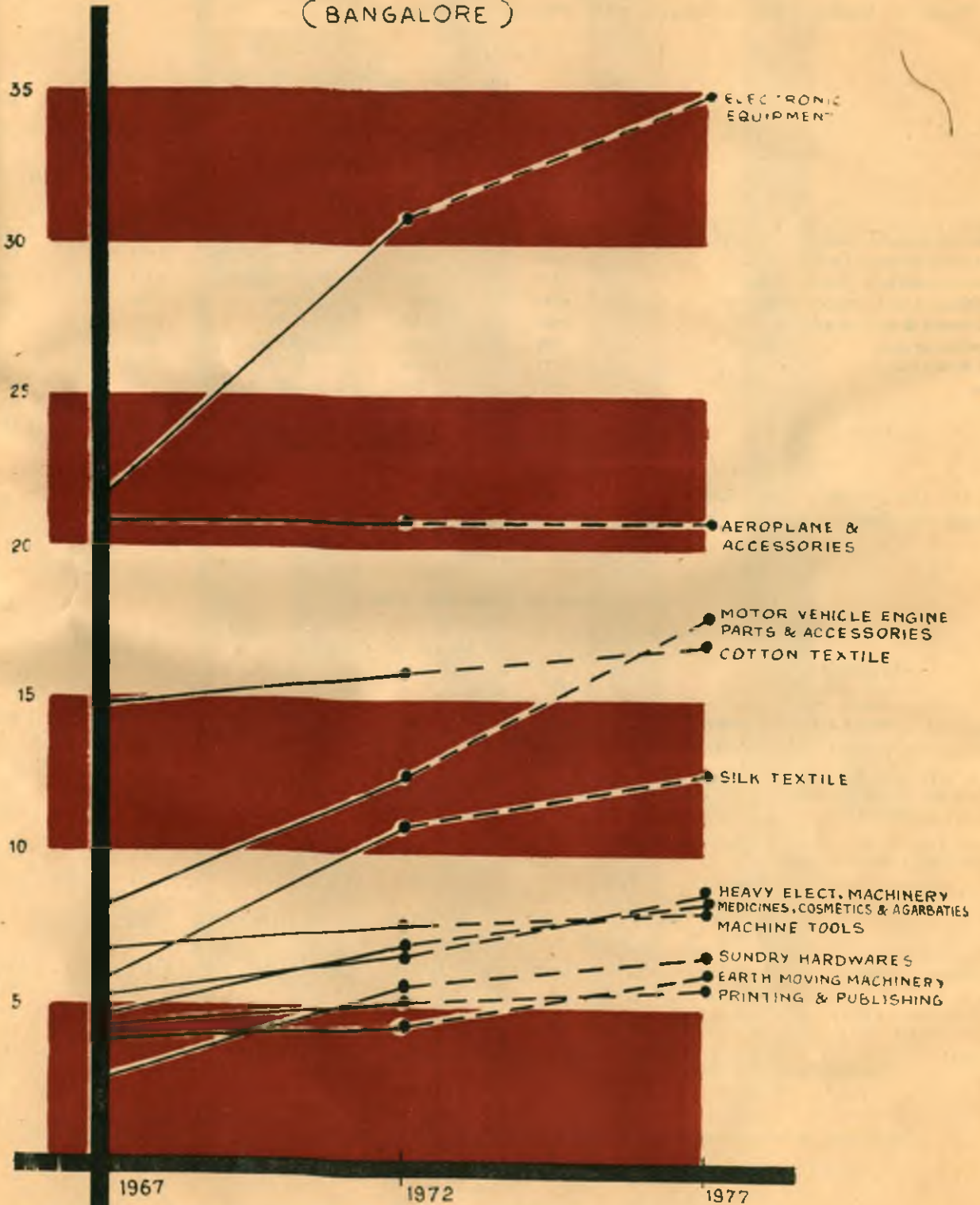


CHART 2

IN THOUSANDS

2.10 *Services*—Within the services sector, administrative services in the government, quasi-government offices and local bodies accounted for sizeable employment (37.5 thousand in 1972) which showed significant improvement during 1967-72 and is expected to pick up further by 1977. The non-technical educational services provided employment to 22.6 thousand employees during 1972 which was 4.8 thousand higher when compared with 1967

employment. Public health & medical services, hotel & catering and services in scientific & research institutions also recorded significant improvement in employment during preceding five years. For the next five years, only nominal gains have, however, been anticipated in respect of these services. The increase in employment in technical educational services is, however, expected to be at a uniform rate throughout.

TABLE 4
Employment growth in services

	Employment			Increase	
	1967	1972	1977	1967-72	1972-77
Administrative services in the government & quasi-government offices & local bodies	29876	37544	42122	7668	4578
Educational services—Technical	3448	4987	6449	1539	1462
Educational services—Non technical	17859	22632	22798	4773	166
Scientific services & research institutions	4796	6330	6494	1534	164
Public health & medical services	9684	11342	11591	1658	249
Recreation services	998	1643	1685	645	42
Hotel & Restaurant	5122	10064	10549	4942	475
Others	1971	2391	2598	420	217
Total	73754	96933	104286	23179	7353

2.11 The following table shows by broad occupational division changes in employment between

1967-72 and 1972-77.

TABLE 5
Employment by occupational divisions

Occupational Division	Number of Employees			Increase/Decrease	
	1967	1972	1977	1967-72	1972-77
Professional, Technical & Related Workers	34960	46254	51155	11294	4901
Administrative, Executive & Managerial Workers	10311	15933	16513	5622	580
Clerical & Related Workers (excluding Un-skilled Office Workers)	34011	45348	49167	11337	3819
Sales Workers	3353	5050	5424	1697	371
Farmers, Loggers & Related Workers (excluding Agriculture & Plantation Labour)	2512	2930	3146	418	216
Miners, Quarrymen & Related Workers	600	497	526	—103	29
Workers in Transport & Communication Occupation	9181	11491	11876	2310	385
Craftsmen & Production Process Workers (excluding Labourer)	90126	123320	145380	33194	22060
Services, Sport & Recreation Workers (excluding watchmen, Chowkidars, Cleaners, Sweepers & Watermen	14121	18108	21775	3987	3667
Unskilled	36097	53281	56799	17184	3518
Total	235272	322212	361761	86940	39549

(Refer Appendix II—Employment by occupations.)

2.12 Employment growth in selected occupations depicted in Chart 3.

EMPLOYMENT GROWTH BY OCCUPATIONS (BANGALORE)

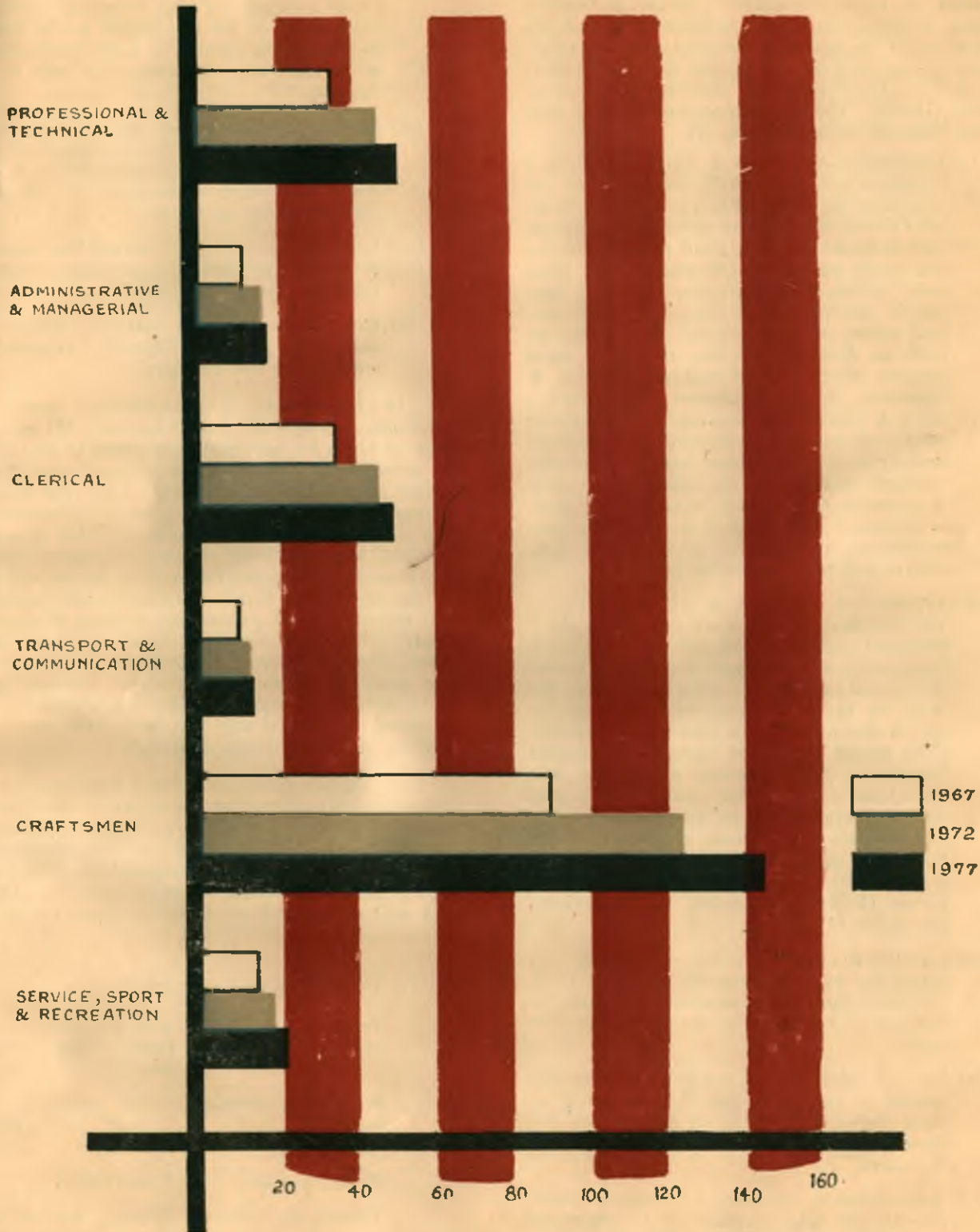


CHART 3 IN THOUSANDS

2.13 Due to pre-ponderance of manufacturing industries in the area, slightly more than half of the total number of employed persons in 1972 were found under the two key occupational categories viz. craftsmen & production process workers and professional, technical & related workers. Clerical & related workers (45348) were also significant followed by services, sport & recreation workers (18108), administrative, executive & managerial workers (15933) and workers in transport & communication occupations (11491). The other important features that emerge from the foregoing table are :

- (i) Craftsmen—As against a sharp rise of 33.2 thousand during 1967-72, the number of craftsmen are expected to rise by 22.1 thousand during the next five years. Occupations with a marked upward trend during both the five yearly periods in this category are spinners, piecers & winders, machine tool operators, electricians & electrical repairmen, and plastic product makers. The categories such as dyers & weavers, tailors & dress makers, fitters & tool makers, electrical & electronic fitters, mechanics & repairmen,—radio & television, sewers and wood working machinists which showed significant increases in the preceding five years have forecast only marginal increases in the coming five years. A constant rising trend, although marginal, is indicated in moulders & core makers, mechanics & repairmen, welders & flame cutters and brick layers & plasterers.
- (ii) Professional, technical & related workers—The number of such workers rose by 11.3 thousand during 1967-72 and will rise by 4.9 thousand during the next five years. Lower anticipated increase in employment during the next five years as compared to that in the past is due to negligible gain among teachers (278) during 1972-77 as against a substantial increase of 4217 recorded during the past five years. The other occupations with marked upward trend in this category during 1972-77 are mechanical engineers (809), electrical engineers (759), chemists & meteorologists (199), physicians & surgeons (387), nurses (1059) and nursing & mid-wifery attendants (317).
- (iii) Clerical & related workers—As against an actual rise by 11.3 thousand between 1967-72, their number is expected to show an increase of 3.8 thousand during the next five years.
- (iv) Service, sport & recreation workers—As against a rise by about 4.0 thousand in them between 1967-72, an increase of 3.7 thousand has been estimated for the next five years.
- (v) Administrative, executive & managerial workers—Of the total increase of 5.6 thousand recorded during 1967-72, 3.0 thousand was in working proprietors & partners, 1.7

thousand in administrative & executive officials of government and 0.7 thousand in directors & managers of financial institutions. Only a marginal increase of 0.6 thousand has been forecast in the next five years. The lower estimate for the future is, however, attributable to the fact that it is not feasible to forecast the number of working proprietors & partners who constitute the bulk in this category.

- (vi) Workers in transport & communication occupations—As against an increase of 2310 (mainly among motor vehicle drivers & conductors) a small increase of 385 has been anticipated for the future.
- (vii) Sales workers—In this category an increase of 374 is estimated as against an increase of 1697 recorded during 1967-72.
- (viii) Farmers, loggers & related workers—A sustained growth, although nominal, is indicated in this category.

2.14 *Employment in establishments located in rural areas*—Only a few establishments—221 out of a total of 6141 (3.6 per cent) were found to be located in areas which were classified as rural during 1971 census. They accounted for an employment of 10.8 thousand persons in 1972 as against 4.8 thousand in 1967. Of the total employment of 10.8 thousand in 1972, manufacturing of glass products engaged 1.2 thousand employees followed by cotton spinning & weaving in mills, sundry hardwares (each employed 1.0 thousand) and educational services (0.8 thousand). The other important rural industries employing about 0.6 thousand persons are agriculture, live stock & forestry, construction, machine tools and medicines & cosmetics. Only a small rise to 12.9 thousand persons during the next five years was forecast in the rural establishments.

2.15 *Factors hindering existing production and/or expansion*—Manufacturing industries in the private sector reported a number of difficulties which were hindering current production or fuller utilisation of installed capacity and/or expansion. The problems of employers were, however, discussed in a general way without quantifying them. A brief resume of this aspect is presented below :

(i) *Shortage of raw material*

Textile-silk	Raw silk, cocoons synthetic yarn machinery.
Wood & wooden products	Good quality wood, varnish & colours saw blades.
Paper products	Paper board.
Printing & publishing	Printing inks & colours, films for block making.

Medicines, cosmetics & agarbatties	Paraffin wax, chemicals.
Synthetic rubber & plastic products	Nitrate sheets, CABM powder, plastic grain.
Brass & bell metal products, iron & steel furniture, sundry hardwares, machine tools, textile machinery, auto-parts	Brass, copper, mild steel, cast iron, pig iron, copper coated wire, lead, antimony, coke.

(ii) *Import*

Textile-silk	Art silk.
Printing & publishing	Printing machinery.
Sundry hardwares	Filter paper.

(iii) *Licences*

Textile-silk	Licence to instal additional looms/char-khas.
--------------	---

(iv) *Financial assistance*

Textile-silk	Loan for purchase of machinery, running capital.
Printing & publishing	For purchase of machinery.
Wood & wooden products	Working capital.
Bidi making	Working capital.
Medicines, cosmetics & agarbatties	Loan for purchase of raw material.
Rolling of iron & steel, sundry hardwares, machine tools	Working capital.

CHAPTER III

PROJECTED EMPLOYMENT IN SMALLER PRIVATE ESTABLISHMENTS

3.1 The manpower forecast discussed in the preceding chapter is based on estimates furnished by existing establishments and such emerging establishments as were expected to come up during the next five years and were capable of identification. As clarified in the technical notes, the forecast is an underestimate due to difficulties of constructing a comprehensive frame of emerging establishments. An attempt has, therefore, been made in this chapter to bridge the gap to the extent it is possible to do so.

3.2 From a study of the data for the past five years (Table 6), it is noticed that almost the same

number of private establishments employing 5—9 workers except construction contractors and public carriers (which are difficult to identify and locate) have emerged year after year. Ample justification, therefore, exists in projecting manpower needs on the basis of past trends in so far as smaller establishments are concerned. Since characteristics which would warrant projection in respect of smaller establishments have not been observed in the case of bigger establishments, manpower projection on the basis of past trends will not be justified in their case (refer para 8-B of technical notes).

TABLE 6

Number of private establishments (5-9 workers) which came up during a year

	1967	1968	1969	1970	1971	Total
Production including repairing & servicing units	70	285	275	145	215	990
Construction contractors	-	-	-	-	5	5
Trading establishments	20	45	30	35	20	150
Public carriers	-	10	5	-	-	15
Eating places	10	45	20	25	70	170
Total	100	385	330	205	310	1330

3.3 Accordingly, the projected manpower needs for the next five years, i.e., by 1977, relating only to smaller private establishments have been worked out on the basis of past trends. These would be on the following lines :

Projection by Economic Activity

Activity	Number of workers
Production units including repairing & servicing units	
Food stuffs	150
Textile—cotton	400
Textile—silk	2000
Wood & Wooden products	200
Medicines & cosmetics	700
Synthetics, resin & plastic products	600
Iron & steel furniture	400
Sundry hardwares	850
Manufacture & repair of motor vehicle engine parts	300
Others	1550
Construction	50
Trading establishments	1100
Public carriers	100
Eating places	1150
TOTAL	9550

3.4 The requirement of different skills would be as follows :

Occupation	Number of workers
Professional & technical workers	100
Managers (including proprietors/partners)	1750
Clerical & sales workers	1050
Workers in transport & communication occupations	50
Craftsmen & Production process workers	
Spinners, piecers & winders	850
Drawers & weavers	1050
Moulders & core makers	100
Fitters & tool makers	250
Turners & machine tool operators	550
Mechanics & repairmen	150
Sheet metal workers	100
Welders & flame cutters	200
Printers & compositors	150
Millers & bakers	200
Tyre builders & vulcanisers	300
Plastic product makers	450
Others	1300
Service, sports & recreation workers	950

3.5 The above manpower requirements have been taken into account in arriving at future needs of the area by 1977 but for obvious reasons are not included in the employment growth discussed in Chapter II.

CHAPTER IV

SELF-EMPLOYMENT

A. RURAL AREAS

4.1 Information about self-employment in the non-agricultural sector in rural areas was collected from a sample of ten per cent of villages in the district. This involved a study of 273 villages representing 15.6 per cent of the total rural population*. The village schedules that were canvassed in this regard were completed after discussions with village elders and officials who possessed intimate knowledge of their respective village community and households.

4.2 The survey has revealed that 31 thousand persons were self-employed in 1972 in various non-agricultural activities while additional opportunities for self-employment to the extent of 18 thousand persons could be created in the light of modernisation of agriculture, local produce, other resources, expanding needs for maintenance and other services. The type of assistance needed for promoting self-employment among rural folks was mainly finance. The fields in which persons are currently self-employed and fresh employment opportunities that could be developed in the near future are indicated in the following table.

TABLE 7
Existing & future avenues of self-employment in rural areas

Field	Existing number of persons who are self-employed	Scope for future self-employment
Brick laying	1850	6950
Dairy farming	900	3350
Sheep rearing	50	1350
Weaving (handloom)	800	1350
Poultry	—	900
Weaving (power loom)	250	700
Rearing of silk worm (sericulture)	7950	500
Twisting (textile)	100	250
Bidi making	50	250
Carpentry & wood work	1850	250
Coir & mat weaving	500	250
Pottery	800	200
Retail selling	6600	200
Mechanics/electricians	150	200
Stone cutting	1500	100
Oil expelling	300	100
Shoe making	250	100
Tailoring	2400	100
Fishing	100	50
Blacksmithy	1500	50
Goldsmithy	550	50
Others	2500	600
Total	30950	17350

*'Bloating' of the data was done on the basis of population covered in the sample.

4.3 Chart 4 illustrates existing and future avenues of self-employment in rural areas.

4.4 As about half the population of the district lives in rural areas, there has been a spurt in the construction industry. It is due to this factor that significant scope for self-employment in the trade of brick-laying can be developed. As may be expected, considerable scope for self-employment also exists in such allied agricultural fields as dairy farming and sheep rearing. Poultry farming which has not made any headway in the district can also be developed to provide employment to a sizeable number. The traditional vocation of textile weaving can also be developed to provide self-employment to a large number of persons in the district. Because of suitable climatic conditions, a large rural population is engaged in rearing of silk worms. This activity can be further developed to provide scope of self-employment. Some other fields which can be developed from the point of view of self-employment are bidi making, carpentry & wood work, pottery and coir & mat weaving.

B. URBAN SECTOR

4.5 A comprehensive account of self-employment in the urban areas was outside the scope of the present survey. However, a limited assessment in respect of those segments of economy for which information was readily available from existing records of government departments, local bodies, employers' & trade associations, licensing authorities, etc. was attempted. The statistics presented below are in respect of sectors for which information was available. By and large, information relates to changes in the size of self-employment which may also, in certain cases, have an element of direct employment. While translating the number of licences, registrations, etc. into manpower terms, consideration will have to be given to the fact that these numbers do not necessarily represent an equal number of self-employed. For instance, each public carrier may provide employment to 4-8 persons whereas in the case of autos etc., 2-3 persons might be engaged plying it on shift basis.

TABLE 8

	1970	1972	Increase(+) Decrease(--)
<i>Number of licences issued For preparation/sale of :</i>			
(a) Arrack	93	273	+ 180
(b) Toddy	205	294	+ 89

AVENUES OF SELF-EMPLOYMENT IN RURAL AREAS-CURRENT & PROSPECTIVE (BANGALORE)

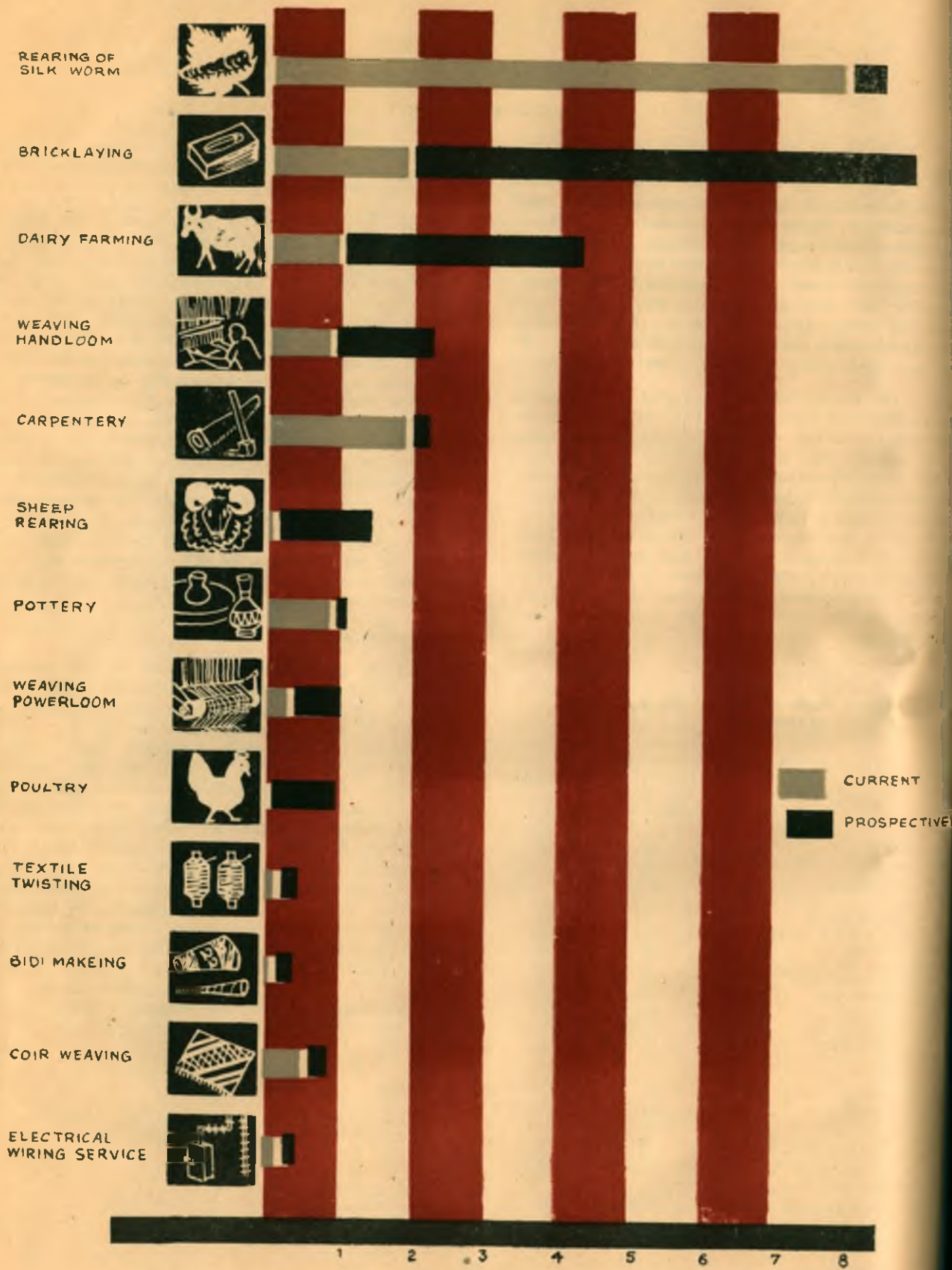


CHART 4 IN THOUSANDS

TABLE 8 (Contd.)

	1970	1972	Increase(+) Decrease(-)
(c) Beer Tavern	13	23	+ 10
(d) Sweetmeat	332	348	+ 16
(e) Bakery	442	455	+ 13
(f) Butter & ghee	97	105	+ 8
(g) Mutton	261	297	+ 36
(h) Milk	154	164	+ 10
Number of power looms	1556	1813	+ 257
Number of vehicles registered	1966	1970	
(a) Auto rickshaws	1662	5059	+3397
(b) Omni buses	200	489	+ 289
(c) Cabs (taxis)	761	757	- 4
(d) Goods carriers	4799	4474	-325
	1960	1965	
Number of driving licences issued	6922	13435	+6513
Number of licences issued under the Money Lenders Act and Pawn Broker's Act, 1961	1970	1972	
(a) Financial corporations	71	63	- 8
(b) Individual money lenders	105	75	-30
(c) Pawn brokers	660	713	+53
Number of advocates enrolled with Bar Council	1305	1395	+90
Number of new buildings constructed	633	680	+47
	1960	1964	
Number of medical practitioners registered	1153	1420	+267

4.6 It will be observed that expansion in employment opportunities has occurred in such fields as retail trading of beverages, eatables & confectionery, plying of auto rickshaws & omni buses, weaving on power-looms, pawn brokers and legal & medical practice. The increasing number of new buildings are now being constructed in Bangalore which is indicative of expansion scope of employment of construction workers.

C. WORKING PROPRIETORS & PARTNERS

4.7 As many as 4571 private establishments (out of 5488 in the district) reported that one or more proprietors & partners were actively engaged in day-to-day operation of their concerns. 92 percent of smaller private establishments (5-9 workers) reported existence of working proprietors & partners. Of the total employment of 20.9 thousand in these establishments, about 3.5 thousand or one-sixth were working proprietors & partners. Similar analysis of bigger establishments indicated that proprietors & partners were actively engaged in about 74 per cent of the total establishments and the proportion of proprietors & partners to total employment was 1 : 18.

4.8 Initiative of individual entrepreneurship resulted in the setting up of following industries. The data indicates the industries & fields which, in

the light of economic characteristics of area, provided scope for self-employment besides generating substantial paid employment.

Industries	Number of establishments	Employment	Number of working proprietors & partners
Food	135	2158	208
Bidi making	32	765	36
Cotton weaving in power looms	100	880	102
Spinning of silk other than in mills	503	6178	576
Weaving of silk textile by power loom	227	2017	250
Weaving of silk textile by hand loom	81	889	91
Printing & publishing	164	2318	226
Medicines, cosmetics & agarbatties	268	5454	488
Synthetic yarn, resin & plastics products	149	2082	193
Rolling & smelting iron & steel	37	1567	67
Structural steel products	44	836	66
Iron & steel furniture	121	1249	142
Sundry hardwares	351	5600	498
Machine tools	96	2097	131
Servicing of motor vehicles	98	1018	127

4.9 A study of occupational profile of working proprietors & partners revealed that majority of them had taken up managerial, clerical & sales job.

Occupation	Number of working partners & proprietors
Professional & technical	54
Administrative & managerial	6462
Clerical & sales	283
Craftsmen	76
TOTAL	6875

4.10 An analysis of the educational attainment of the working proprietors & partners revealed that no relationship existed between the level of education and type of work performed by them. Data below show the educational profile of working partners & proprietors :

Level of education	Number	Percentage
Below matriculation (including illiterates)	2860	41.6
Matriculates & above but below graduates	2460	35.8
Graduates & above but below post-graduates	944	13.7
Post-graduates	55	0.8
Professional & technical	556	8.1
TOTAL	6875	100.0

CHAPTER V

MANPOWER REQUIREMENTS

5.1 Manpower needs of the Area for the next five years (i.e., by 1977) presented in this chapter have been built up on the following component elements :

- (i) Employment growth forecast by existing employers and employment expected to be generated by new establishments which are currently in the blue-print or planning stage—*ibid* Chapter II.
- (ii) Replacement needs due to attrition in the employed work force—*ibid* Technical Notes para 13.
- (iii) Projected employment for smaller private establishments—*ibid* Chapter III; and
- (iv) Additional number of skilled workers needed for maintenance and other services in rural areas—*ibid* Chapter IV.

Manpower needs by occupational categories

5.2 The skill requirements by 1977 will be of the order of 80.9 thousand. This does not include requirement of unskilled workers which is likely to be 11.1 thousand. Following table gives requirements by broad occupational categories.

TABLE 10

Occupation	Number
Professional, technical & related workers	9633
Administrative, executive & managerial workers	3898
Clerical workers (excluding unskilled office workers)	8674
Sales Workers	1547
Farmers, fishermen, hunters & loggers etc. (excluding agricultural & plantation labour)	509
Miners & quarrymen	168
Workers in transport & communications	1594
Craftsmen & production process workers (excluding labourers)	50418
Service, sport & recreation workers (excluding watchmen, cleaners & sweepers etc.)	4471
TOTAL	80912

(Refer Appendix III— Manpower Needs by 1977)

5.3 The requirements for craftsmen & production process workers will be of the highest order (50.4 thousand) followed by professional & technical workers (9.6 thousand), clerical workers (8.7 thousand), service, sport & recreation workers (4.5 thousand) and administrative, executive & managerial workers (3.9 thousand). The manpower needs of the area will be comparatively smaller for transport & communication workers and sales workers. (Chart 5)

Professional & technical workers

5.4. The more important and crucial manpower needs among this category are :

<i>Engineers & Technologists</i>	3210
Architects & civil engineers	260
Mechanical engineers	1250
Tele-communication engineers	240
Electrical engineers	870
Planning engineers	260
Engineers & technologists	330
<i>Medical, Para-medical, Personnel & Scientists</i>	2680
Physicians, surgeons & dentists	470
Nurses	1160
Midwives & health visitors	100
Nursing & midwifery attendants	360
Pharmacists & vaccinators	210
Sanitation & health technicians	150
Chemists & meteorologists	230
<i>Teachers</i>	2270
University	360
Secondary school	670
Middle & primary school	1240

5.5 Out of a total of 3210 jobs likely to come up for engineers & technologists, 2380 will pertain to three principal branches of engineering viz., civil, mechanical & electrical and another 250 each for telecommunication & planning. The demand for medical & para-medical personnel during the next five years is likely to be of the order of 2450 (nurses 1160, physicians, surgeons & dentists 470, nursing midwifery attendants 360). The demand for teachers (2270) is also expected to be sizeable. (Chart 6)

Craftsmen & production process workers

5.6 The estimated requirement for craftsmen & production process workers may be seen at Appendix-III. Demand for some important categories are as follows :

<i>Engineering workers</i>	
Moulders & core makers	700
Watch makers & repairers	150
Fitters, general	1450
Machinists, general	2450
Turners	1900
Shapers, planers & millers	300
Grinders, general	250
Machine tool operators	3400
Mechanics aircraft engine (overhauling)	250
Mechanics automobile	500
Sheet metal workers	600
Welders & flame cutters	800
Electricians & electrical repairmen	1900
Electronic & electrical fitters	350
Mechanics & repairmen (radio & television)	900
Electronics mechanics	400
Telephone equipment manufacturing technicians	1000

MANPOWER NEEDS BY 1977 IN THOUSANDS (BANGALORE)

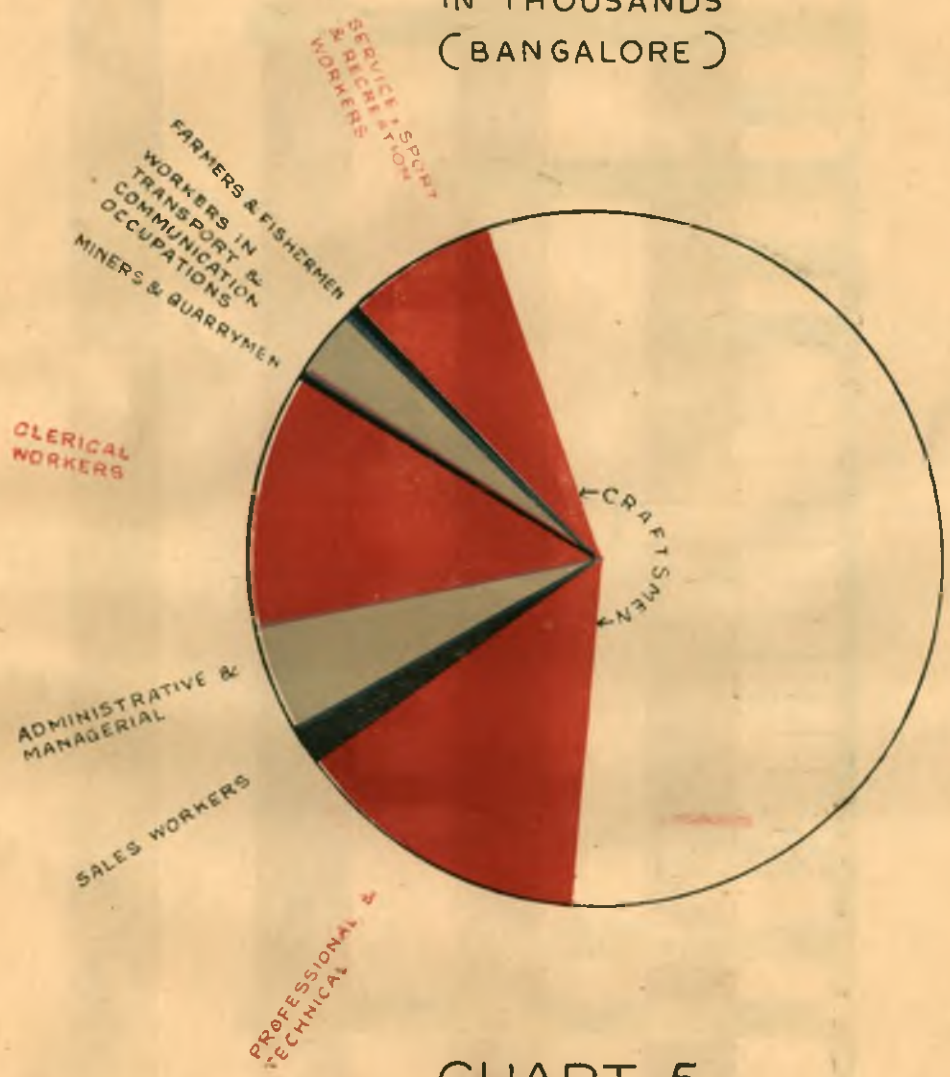


CHART 5

ENGINEERS SCIENTISTS & DOCTORS ETC. NEEDS BY 1977 (BANGALORE)



CHART 6

IN HUNDREDS

Textile workers

Fibre preparers, ginners, silk reelers	500
Twisters	950
Winders	1000
Reelers	700
Spinners & piecers	1000
Weavers power loom	2100
Weavers hand loom	1450
Drawers & warpers	700
Knitters & carpet makers	500
Tailors & dress makers	450

Non-engineering workers

Brick layers	7700
Compositors & proof readers	290
Printers (paper)	350
Khandsari & gur makers	370
Bakers & confectioners	250
Cigarette & bidi makers	850
Plastic product makers	1250

5.7 Amongst engineering and allied trades, substantial demands for machine tool operators ((3400), machinists (2450), turners (1900), electricians ((1900) and fitters (1450) are expected to be generated in the next five years. The other categories which will be needed in sizeable number are moulders & core makers, welders & flame cutters, sheet metal workers, radio & television mechanics, telephone equipment manufacturing technicians, carpenters & pattern makers. Anticipated expansion in cotton & silk textile industry would create employment opening for a large number of textile workers also. While the demand for weavers is expected to be 3550, the number of jobs in respect of spinners & piecers, winders & twisters will be about one thousand each. In so far as non-engineering workers are concerned, substantial requirements are anticipated for brick layers (7700), plastic product makers (1250), cigarette & bidi makers (850) (Chart-7).

Manpower requirements by educational level

5.8 Employers were also requested to furnish information about educational & technical qualifications of workers likely to be in demand during the next five years. Table 11 shows manpower

needs in terms of level of education and technical qualifications :

Table 11
Manpower needs by level of education

Level of education/experience	Number	Percentage
Below matric	14646	18.1
Matriculate	10149	12.5
Graduates & post graduates-science	1117	1.4
Graduates (Arts including law)	3049	3.7
<i>Professional & Technical</i>		
Engineering	5619	7.0
Medicine	1709	2.1
Other	889	1.1
Recognised certificate (such as those issued by ITIs & teachers training institutes etc.)	14841	18.4
Craftsmen & production process workers with experience irrespective of qualifications or ITI training	28893	35.7
TOTAL	80912	100.0

5.9 No formal institutional training or possession of recognised certificate or diploma has been considered as an essential criteria for recruitment of a sizeable number of craftsmen & production process workers. This may partly be due to the fact that demand for these workers includes occupations such as textile workers, brick layers, khandsari & gur makers, cigarette & bidi makers for whom no formal institutional training is normally required and in whose case the employers go more by experience and work performance. Nearly 15 thousand jobs will be for recognised certificate holders which include primary and middle school teachers, craftsmen & production process workers and para-medical persons. In case of 10.1 thousand vacancies the education level prescribed will be matriculate while for 4.2 thousand it will be graduate and above. All those who are illiterate or literate but have not passed matriculation will be eligible for about 14.6 thousand jobs during the next five years.

CRAFTSMEN NEEDS BY 1977 (BANGALORE)

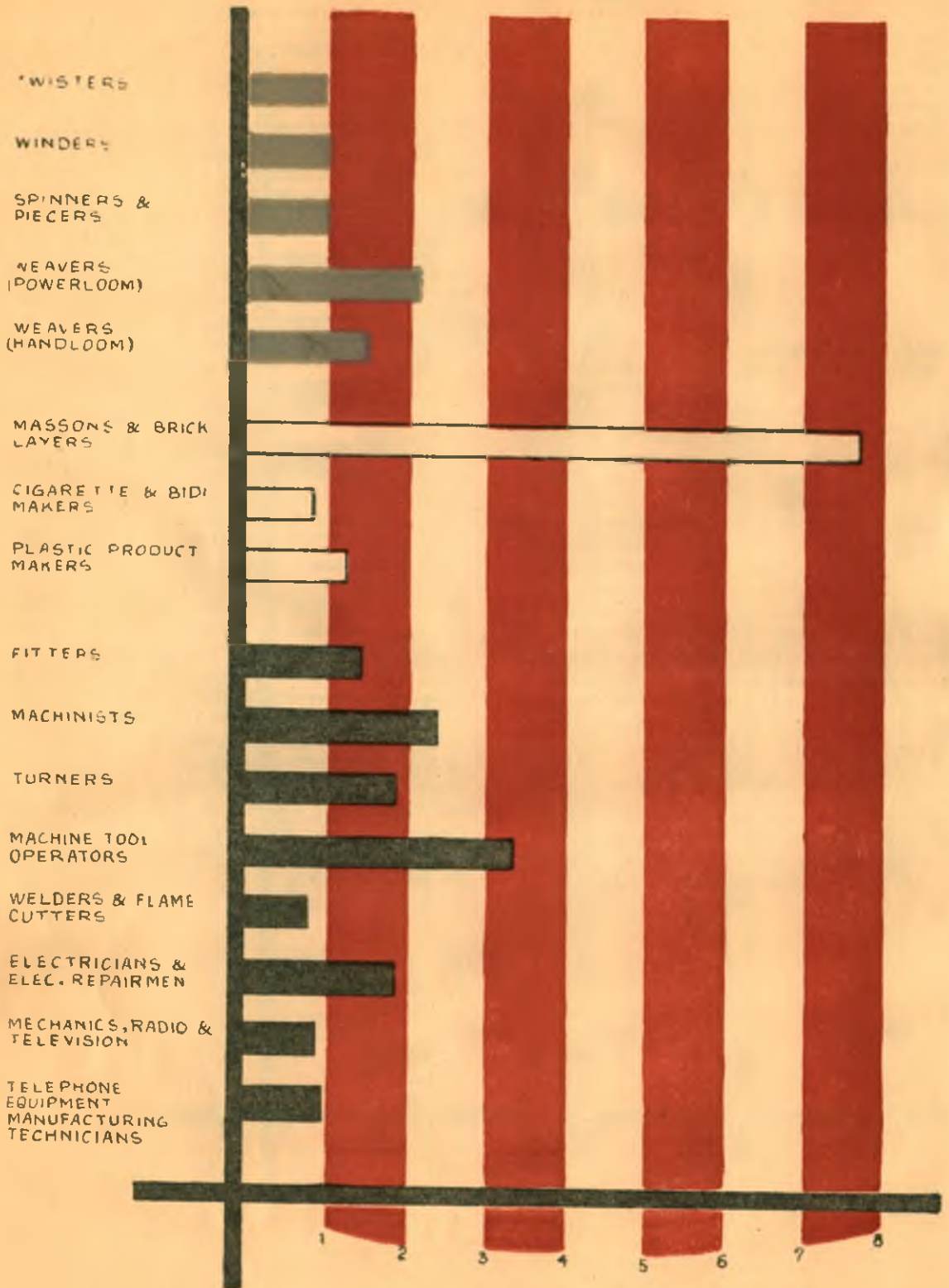


CHART 7

IN THOUSANDS

CHAPTER VI

TRAINING AND EDUCATIONAL FACILITIES

6.1 Information about the current and future trends of out-turn in respect of professional & technical education separately at the certificate, diploma, graduate and post-graduate level (including doctorates) was collected from all the recognised colleges and institutions in the area. In working out these estimates, the present intake capacity, admission targets set for the future as well as the information about educational wastage and stagnation, if any, at different levels of education were taken into consideration. The table below indicates the likely out-turn during the next five years (1972-77) at various levels of education.

Table 12
Out-turn from institutions

Field of study	Total out-turn in next	
	5 years	2
(a) Post-graduate level		5872
Engineering		1157
Civil		189
Mechanical		154
Aeronautical		155
Internal combustion		110
Electrical		178
Electrical communication		75
Chemical		110
Metallurgical		90
Physical engineering		50
Textile		46
Medicine		742
Industrial management		50
Molecular bio-chemistry		25
Veterinary science		60
Agriculture		101
Science		1538
Home science		80
Physics		250
Chemistry		245
Mathematics		345
Statistics		185
Botany		144
Zoology		144
Geology		145
Arts & Humanities		1890
Commerce		200
English		315
Kanada		305
History		235
Sanskrit		205
Sociology		240
Economics		390
Education		64
Law		195
Library (documentation)		50
(b) Graduate level		27091
Engineering		3310
Architecture		105

1	2
Civil	299
Mechanical	1402
Electrical	759
Electronics	190
Electrical communication	135
Electrical technology	135
Metallurgy	135
Textile technology	150
Medicine	1710
Bachelor of medicine & bachelor of surgery	1045
Bachelor of dental surgery	167
Bachelor of science & ayurvedic medicines	165
Bachelor of veterinary science	182
Bachelor of science (nursing)	16
Bachelor of pharmacy	135
Education (general)	979
Physical education	380
Law	1470
Science	19242
B.Sc. (Agriculture)	1106
B.Sc. (Fisheries)	80
B.Sc. (Horticulture)	25
B.Sc. (Hons.)	60
B.Sc. (pass)	17250
B.A. (Hons)	270
B. Com.	5451
(c) Diploma level	4153
Engineering	2317
Civil	463
Mechanical	465
Electrical	460
Telecommunication	210
Sound & television	50
Automobile	115
Heat power	50
Agriculture engineering	129
Textile technology	200
Machine tool	75
Instrument	50
Welding & sheet metal	50
Medicine	947
Pharmacy	300
Psychiatric nursing	122
Nursing & midwifery	525
Others	889
Cinematography	50
Printing	50
Ceramic	40
Costume design & dress making	98
Library science	81
Co-operation	225
Marketing	75
Secretarial practice	270
(d) Certificate level	7752
Engineering Trades	3757
Draughtsman (mechanical)	160
Electrician	425
Mechanic electronics	128
Mechanic instruments	128
Mechanic motor vehicle	395
Mechanic radio	75

1	2
Mechanic general	50
Electroplator	80
Moulder	80
Sheet metal worker	320
Welder	360
Machinist (grinder)	96
Machinist (composit)	240
Machinist	100
Turner	180
Fitter	240
Pattern maker	80
Tool & die maker	180
Carpentry	145
Blacksmithy	135
Wireman	160
Vocational Trades	1279
Cookery	94
Bakery	94
Hotel reception & booking clerk	94
Restaurant & counter Service	90
House keeping	43
Canning & food preservation	54
Lacquerware	140
Pottery	65
Weaving	75
Cutting & tailoring	220
Stenography	160
Scientific glass curetor	25
Agricultural training	125
Medicine	642
Dental mechanic	23
Dental hygiene	34
Laboratory technician	25
Health visitor	10
B.C.G. technician	50
T.B. control	500
Education	2074
GRAND TOTAL	44868

6.2 In addition to the out-turn from training institutions/colleges shown above, persons are also being trained through Apprenticeship Training Programme under the Apprentices Act, 1961 and under employers' own inplant training programmes. Table 13 shows the number trained during the last three years (1969-72).

Table 13
Number trained during three years
1969-72

Occupation	Trained under Apprentices Act	Trained through Employer's own training programmes	Total
Moulders	58	—	58
Fitters & tool makers	599	40	639
Turners	293	20	313
Machinists	299	—	299
Mechanics	97	47	144
Machine tool operators	—	61	61
Sheet metal workers	142	—	142
Welders	120	—	120
Electroplators & polishers	18	21	39
Electricians & wiremen	270	—	270
Carpenters & pattern makers	73	26	99
Compositors, printers & binders	71	60	131
Fibre preparer, coir	—	135	135
Assemblers & mechanics, precision instrument	—	92	92
Watch makers & repairers	—	155	155
Assembly operators (radio mfg.)	—	629	629
Radio mechanics	—	226	226
Printers (textile)	—	36	36
TOTAL	2040	1548	3588

6.3 It would be observed from the above table that a fairly large number of persons have been trained under the Apprentices Act in such trades as fitters & tool makers, turners, machinists, electricians & wiremen, sheet metal workers and welders. Employers' own training programmes were responsible for training of radio assembly operators (629), radio mechanics (226), watch makers & repairers (155), coir fibre preparer (135) and precision instrument assemblers (92). The employers' training programmes were organised mainly in meeting their own requirements. It would also be noticeable that although a large number of textile workers are trained by employers to meet the requirements of textile industry, no record of this was available as such programmes were only taken up on ad-hoc basis depending upon manpower needs.

CHAPTER VII

UNEMPLOYMENT TREND

7.1 The Live Register figures of—(i) Sub Regional Employment Exchange; (ii) University Information & Guidance Bureau; and (iii) Professional & Executive Standard applicants residing in Bangalore and registered with State Professional & Executive Employment Office, Bangalore have been used to study unemployment trend in the urban areas of Bangalore district. The total number of applicants seeking employment assistance and depending on the live register of these three employment exchanges was 46.6 thousand at the end of December, 1967 which rose to 75.6 thousand (by 62.3 per cent) at the end of June, 1972. Following table shows applicants on the Live Register according to their educational qualifications.

Table 14
Number of job seekers on the Live Register

Year	Total number on the Live Register				Total on the L. R. (including illiterates)
	Illiterates	Below matric	Matric & above but below graduate	Graduates & above	
1967	21477	11954	11903	1272	46606
1969	21489	11784	17704	2514	53491
1971	15363	27123	19866	4618	66970
1972 (June)	15760	25520	29611	4741	75632

7.2 It would be interesting to note that while there has been decline in the number of illiterate employment seekers, there has been significant rise among educated (matriculates & above) job seekers. In fact the rate of rise among graduates and above is of a higher order in comparison to the rise among matriculates and below matriculates. This incidentally reflects large-scale expansion of higher educational facilities in the district.

7.3 Following table shows the type of work sought by job seekers on the live register of the three employment exchanges functioning in Bangalore district.

Table 15

Category	1966	1969	1972 (June)
Professional & technical and administrative, executive & managerial workers	3792	2356	4130
Clerical & sales workers	1280	2245	4302
Farmers, fishermen & loggers and miners & quarrymen	178	291	183
Workers in transport & communication occupations	684	573	459
Craftsmen & production process workers	4518	3888	5071
Service, sport & recreation workers	361	691	422
Freshers (new entrants to the employment market)	19209	42342	59644
Unskilled	12846	1105	1421
TOTAL	42865	53491	75632

5—534 DGET/73

7.4 It will be observed that the growth of freshers and new entrants to the employment market has shown unprecedented growth between 1966-72. Freshers whose number was 19.2 thousand at the end of 1966 rose three times at the end of June 1972. As against this, there has been a marked decline among applicants seeking unskilled work whose number came down from 12.9 thousand during 1966 to 1.4 thousand at the end of June 1972. The number of craftsmen, clerical & sales work seekers and professional, administrative & technical applicants on the live register has shown little change between 1966-72.

7.5 As all applicants on the live register are not necessarily unemployed, the live register figures have to be adjusted by applying correction factors to eliminate those who were employed or were students in order to formulate an estimate of unemployment in the district. The following table shows number of job seekers who could be considered as unemployed after applying adjustment factors. The correction factors applied were taken from a D.G.E & T. survey conducted in 1968.

Table 16

Estimated number of unemployed persons during 1972

Category	Number of unemployed persons
Engineers & technologists	1670
Other professional & technical workers	470
Clerical workers	1160
Workers in transport & communication occupations	220
Craftsmen & production process workers	2580
Service workers	140
Graduates without professional/technical training or experience	2260
Matriculates without professional/technical training or experience	11290
8th class without professional/technical training or experience	2710
TOTAL	22500

CHAPTER VIII

DEMAND AND SUPPLY

8.1 By and large, mobility among craftsmen, production process workers and other lower categories is limited to the boundaries of an employment market area. The same will not, however, be true in respect of higher technical and professional categories such as engineers, technologists, doctors, scientists, etc. who have a country-wide mobility and may sometimes even move out of the country. Accordingly, while the exercise of balancing supply and demand for craftsmen and production process workers may lead to meaningful findings and help in the strengthening and diversification of current training programmes, a similar exercise in respect of engineers, etc. will not be valid and worthwhile. Attempt, therefore, has been made in this chapter to balance supply of manpower with the future demand by 1977 for craftsmen & production process workers only.

8.2 Data on the demand side, i.e. manpower requirements of the area, has been outlined in Chapter V. The component elements that have been taken into account to build up supply side are :

- (i) Out-turn from training institutions, colleges and polytechnics and persons likely to be trained under employers' own training programmes—ibid Chapter VI.
- (ii) Unemployed persons currently available for work—ibid Chapter VII.

Balancing of Demand & Supply

8.3 The balancing of supply of manpower with the future demand by 1977 has been worked out to identify skills in which—

- A—Supply is likely to be in excess of future needs;
- B—Demand is expected to be met by informal inservice training;
- C—Demand will outstrip supply indicating strengthening of existing training and educational facilities; and
- D— Short-term training is indicated to improve avenues of self-employment in rural areas.

A. Supply is likely to be in excess of future needs

Field	Number
Nursing attendants	200
Pharmacists & pharmaceutical technicians	250
Teachers-secondary school	750
Teachers-middle & primary school	950
Draughtsmen	300
Precision instruments, watch & clock makers	350
Fitters, tool makers & tool setters	700
Mechanics & repairmen	350
Printers (textile)	50

B. Demand is expected to be met by informal or inservice training.

Field	Number
Drivers motor vehicles	600
Fire fighters, policemen & guards	2455
House-keepers, cooks & maids	1450
Waiters & bar tenders	300

C. Demand will out-strip supply indicating strengthening of existing training & educational facilities.

Field	Number
Drawers & weavers	500
Spinners, piecers & winders	3700
Knitters & carpet makers	500
Tailors & dress makers	150
Moulders & core makers	100
Machine tool operators	2200
Sheet metal workers	100
Welders & flame cutters	250
Electroplaters	100
Electricians & electrical repairmen	1300
Assembly operators—radio & television	900
Mechanics repairmen, radio & television	450
Electrical & electronic workers	1350
Carpenters & pattern makers	300
Painters	350
Printers (paper)	300
Compositors & proof readers	200
Bakers & confectioners	100
Plastic product makers	1250

D. Short-term training programmes are indicated to improve avenues of self-employment in rural areas

Field	Number
Brick layers	6950
Dairy farmers	3350
Potters	200
Coir & mat weavers	250
Shoe makers	100
Poultry farmers	900

CHAPTER IX

AGRICULTURAL FARMS

9.1 A survey of 50 largest agricultural farms was carried out simultaneously with the Skill Survey of the area to study trends on such aspects as employment, manpower shortages, farm equipment, financial assistance, etc. Since, the selection of farms was done on the basis of size from each development block, the results presented in this chapter depict only general trends on the aspects taken up for study. Further, because of land reform measures and the consequent indifferent attitude of farm owners in furnishing information, the results may have to be viewed with caution.

9.2 The size of the holdings studied ranged between 10 to 600 acres. The total area of the farms was 3.7 thousand acres giving an average of 73 acres per farm. Of the total area, 3.1 thousand acres was irrigated and the remaining was unirrigated. 56 per cent of the agricultural farms were using wells/tube wells for irrigation and the remaining 44 per cent were using either tanks or canals in addition to wells for irrigation purposes. Major crops grown were ragi, paddy and maize. Some of the farms were also growing fruits and vegetables. Only 20 per cent of the agricultural farms have taken up dairy farming and 12 per cent poultry & piggery as well.

Mechanisation & Farm Equipment

9.3 The study has revealed that 28 per cent of farms were mechanised and were using intensive methods of cultivation. The type of equipment used by the agricultural farms is indicated below :

Type of equipment	Number of equipment	Number of agricultural farms using equipment
Tractor	33	26
Sprayer	25	10
Tiller	17	10
Weeder	2	2
Cultivator	16	7
Plough	61	16
Pump set	25	11
Harrow	9	3
Thresher	1	1
Seed driller	8	4
Super leveller	7	2
Rice farmer	3	1
Bund farmer	2	1
Dix mixer	4	4

Employment

9.4 Regular employment of the 50 farms (excluding-farm owners) was 682 in 1972 as against 448 five years ago (1967).

	1967	1972
Veterinary surgeons	—	1
Accountants	—	3
Clerks & salesmen	6	12
Managers & overseers	8	18
Farm workers	80	141
Agricultural labour	317	450
Tractor operators	17	32
Carpenters, electricians & mechanics	6	6
Driver car	1	1
Service workers	13	18
TOTAL	448	682

9.5 In addition to above employment, 35 owners and partners were also working on their farms. Besides exercising overall supervision, the owners were also operating tractor and other mechanical equipment.

9.6 Seasonal labour to the extent of 1.71 lakh man-days was engaged during the year in various agricultural operations.

9.7 Shortage of agricultural labourers was experienced only by such farms which were close to the urban areas and where rapid growth of industries had taken place.

Financial assistance

9.8 Financial assistance has been obtained by 34 per cent of the agricultural farms for purchase of tractors/pump sets. Some of the farms have also obtained financial assistance and loans for purposes of land development and poultry farming. Majority of the agricultural farms have, however, been able to meet their requirements from their own resources.

RESULTS AT A GLANCE

Wage & salaried employment (i.e. number of regular employees) went up from 2.35 lakhs in 1967 to 3.22 lakhs in 1972 or by 0.87 lakhs thereby showing a yearly growth rate of 7.4 per cent. The employment is likely to rise at an average annual rate of 2.5 per cent and will reach 3.62 lakhs by 1977.

2. Slightly more than half of the total employed labour force is engaged in manufacturing industries in Bangalore. Large labour force was employed in such industries as manufacture of electronic equipment, aeroplanes & accessories, cotton textiles, motor vehicle engine parts & accessories and silk textiles. The other promising industries of the area which rank second in importance are manufacture of machine tools, sundry hardwares and printing & publishing.

3. Significant increases in employment between 1967-72 as well as in the next five years by 1977 have been reported in manufacture of electronic equipment, motor vehicle engine parts & accessories, silk textiles, sundry hardwares, medicines, cosmetics & agarbatties, wood & wooden products, electrical machinery & equipment, heavy electrical machinery and cotton textiles. The manufacture of aeroplanes & accessories has shown a stationary trend throughout. Industries such as manufacture of textile garments, rain-coats & headgears, cigarettes & tobacco, glass & glass products and enamelling & electroplating which showed significant increases in the preceding five years have forecast only marginal increases in the coming five years.

4. Analysing occupationally, craftsmen & production process workers who rose by 33.2 thousand between 1967-72 are expected to increase by 22.1 thousand in the next five years.

5. Shortage of raw material was the main factor which was hindering existing production and/or expansion in the private industrial sector of the area. In a few cases, difficulties relating to import and financial assistance were also expressed.

6. Additional opportunities for self-employment to the extent of 18 thousand persons could be created in the rural areas in the light of modernisation of agriculture, local produce, other resources, expanding needs for maintenance and other services. Besides allied agricultural fields, viz. dairy & poultry farming and sheep rearing, considerable scope for self-employment exists in brick-laying, textile weaving & rearing of silk worm, bidi making, carpentry & wood work, pottery and coir & mat weaving. In

urban areas, self-employment opportunities are expected to expand in retail trading of beverages, eatables & confectionery, plying of auto rickshaws & omnibuses, weaving on power-looms, pawnbrokers and legal & medical practice.

7. Working partners & proprietors of private firms have played an important role in building up a sizeable industrial complex in the area. The principal industries which were built up by individual entrepreneurship are—spinning & weaving of silk, sundry hardwares, medicines, cosmetics & agarbatties, printing & publishing, food stuffs, machine tools and synthetic yarn, resin & plastic products etc.

8. Manpower needs of the area by 1977 will be of the order of 80.9 thousand (excluding unskilled workers which is likely to be of the order of 11.1 thousand). Some of the important and crucial manpower needs are estimated to be as follows :

Professional & Technical	
Engineering & technological	3210
Medical, para-medical & scientific	2680
Teaching	2270
Craftsmen & production process	
Engineering	23887
Textile	9949
Non-engineering	16582
Administrative, executive & managerial	
Clerical	8674
Sales	1547
Transport & communication	1594
Service, sport & recreation	4471

9. No formal institutional training or possession of a recognised certificate has been considered as an essential criterion for recruitment of a sizeable number of craftsmen & production process workers. This may partly be due to the fact that demand for these workers include occupations such as textile workers, brick layers, khandasari & gur makers and cigarette & bidi makers in whose case employers go more by experience and work performance.

10. Nearly 15 thousand jobs will be for recognised certificate holders which include primary & middle school teachers, craftsmen & production process workers and paramedical personnel. In case of 10.1 thousand vacancies, the education level prescribed will be matriculation while for 4.2 thousand it will be graduation and higher. All those who are illiterates or literate but have not passed matriculation will be eligible for about 14.6 thousand jobs during the next five years.

11. Balancing of demand for and supply of manpower among craftsmen & production process workers and other lower categories has revealed following imbalances :

- (a) Supply is likely to be in excess of future needs in respect of nursing attendants, pharmacists & pharmaceutical technicians, primary, middle & secondary school teachers, draughtsmen, precision instruments, watch & clock makers, fitters, tool makers & tool setters and mechanics & repairmen.
- (b) Demand will outstrip supply indicating strengthening of existing training and educational

facilities in respect of—drawers & weavers, spinners, piecers & winders, knitters & carpet makers, tailors & dress makers, moulders & core makers, machine tool operators, sheet metal workers, welders & flame cutters, electroplaters, electricians & electrical repairmen, assembly operators—radio & television, mechanics repairmen,—radio & television, electrical & electronic workers, carpenters & pattern makers, painters, paper, printers, compositors & proof readers, bakers & confectioners and plastic product makers.

D - 781

EMPLOYMENT GROWTH BY ECONOMIC ACTIVITY

Economic Activity	Number of Employees		
	1967	1972	1977
1	2	3	4
Agriculture, livestock, forestry & fishing	1655	1791	1915
Manufacturing	125229	169692	198348
Production of rice, atta & flour milling	604	968	1026
Production of sugar & syrup	36	25	702
Bakery products	372	866	1017
Dairy products	608	775	775
Foodstuffs—other	924	1056	1081
Beverages	415	746	1072
Manufacture of bidi	841	905	1434
Manufacture of cigarette & tobacco	1681	2573	2573
Cotton spinning & weaving in mills	13802	14084	14805
Cotton weaving in powerloom	583	1055	1127
Cotton textile, others	492	695	908
Woollen textile	257	77	77
Spinning & weaving of silk in mills	1264	1248	1248
Spinning of silk other than in mills	3286	6304	7882
Silk weaving—powerloom	997	2141	2226
Silk weaving—handloom	413	1044	1174
Silk textile, other	18	65	65
Textile garments, raincoats & headgears	889	1837	2018
Textile miscellaneous	271	585	765
Sawing & planing of wood	262	442	467
Manufacture of plywood & its products	610	1259	1896
Wood & wooden products—other	504	1352	1802
Paper & paper products	389	948	1165
Printing & publishing of newspapers	2556	2973	3145
Printing & publishing of books	569	657	696
Printing & publishing—other	1166	1455	1743
Leather & leather products	232	620	796
Rubber, petroleum & coal products	236	552	874
Medicines, perfumes & cosmetics	4788	6899	8312
Soap & other washing compounds	598	631	728
Turpentine, synthetic, resin & plastic products	742	2545	3106
Chemical products—other	309	550	1089
Non-metallic mineral products other than petroleum & coal	612	1235	1338
Structural clay products such as bricks, tiles	651	946	1211
Porcelain & its products	1674	1838	2083
Glass & glass products	424	1313	1428
Smelting, refining & rolling of iron & steel	583	1229	1728
Manufacture of iron & steel furniture	647	1306	1873
Manufacture of aluminium products	476	750	1217
Enamelling, galvanising & electroplating	686	1389	1396
Sundry hardwares	2711	5674	6690
Basic metal & their products—other	1184	2261	3008
Machine tools	6798	7705	8244
Textile machinery & accessories	1457	1490	1621
Heavy electrical machinery	5311	6757	8611
Electric lamps, fans, cables & wires & batteries	1791	2507	2826

1	2	3	4
Electronic equipment	21773	30758	34735
Other machinery & electrical equipment	3099	4638	5621
Manufacture of wagons & coaches	3924	4420	6021
Manufacture of motor vehicles, engine parts and repairing & servicing	8252	12534	17622
Manufacture & repair of aeroplanes & aeroengines	20840	20840	20840
Transport equipment—others	18	54	54
Assembling of watches & clocks	1174	1539	1717
Miscellaneous manufacturing	430	577	670
Construction	5038	12782	12880
Electricity, gas, water & sanitary services	4452	4977	6187
Generation & distribution of electricity & gas	3468	3734	4944
Water supply & sanitary services	984	1243	1243
Trade & commerce	12979	21196	22505
Banking, provident fund, insurance & similar type of financial institutions	6283	11518	12095
Wholesale & retail trade	6696	9678	10410
Transport, storage & communication	12165	14841	15640
Transporting by railways	1140	1082	1082
Transporting by bus services	5990	7202	7593
Transporting by air	152	152	152
Postal, telegraphic, wireless & signal communication	3301	4178	4271
Telephone communication	1303	1902	2217
Transport, storage & communication—others	279	325	325
Services	73754	96933	104286
Public services in administrative departments & offices of Central Government	4451	5434	5469
Public services in administrative departments & offices of quasi-government, municipal committees & local bodies	3582	4663	5097
Public services in administrative departments & offices of State Government	21843	27447	31556
Educational services rendered by technical institutions	3448	4987	6449
Educational services (non-technical)	17859	22632	22798
Scientific services & research institutions	4796	6330	6494
Public health & medical services	9684	11342	11591
Veterinary services	231	270	355
Religious & welfare services	74	73	73
Community services & trade & labour associations	905	989	999
Recreation services	998	1643	1685
Hotels & restaurants	5122	10064	10549
Personal services	761	1059	1171
GRAND TOTAL	235272	322212	361761

EMPLOYMENT GROWTH BY OCCUPATION

Occupation	Number of Employees		
	1967	1972	1977
1	2	3	4
Professional & technical workers	34960	46254	51155
Architects & civil engineers—other	306	483	553
Civil engineers—structural	406	446	464
Overseers—civil engineering	572	670	679
Mechanical engineers—production	661	935	941
Mechanical engineers—aeronautical	1485	1892	1932
Mechanical engineers—other	752	1419	2182
Radio & microwave engineers—telecommunication	754	1122	1131
Technicians—telecommunication	664	1164	1164
Electrical engineers	625	1258	2008
Chemical engineers	9	17	56
Metallurgical engineers	10	15	23
Mining engineers	4	9	9
Surveyors	371	406	405
Planning engineers	1463	1843	1886
Technologists & other engineers	810	1103	1303
Chemists & meteorologists	157	264	463
Geologists & geophysicists	76	110	110
Physicists, mathematicians & other physical scientists	15	37	37
Entomologists	139	149	149
Biologists & animal scientists—other	94	152	153
Veterinarians	67	100	111
Agronomists	97	172	172
Horticulturists	44	99	100
Silviculturists & other agricultural scientists	63	130	130
Physicians, surgeons & dentists	678	740	11127
Health officers	158	163	163
Nurses	931	1046	22105
Midwives & health visitors	310	319	383
Nursing & midwifery attendants	408	427	744
Pharmacists	398	422	431
Vaccinators	179	180	322
Sanitation technicians	696	684	735
Medical & health technicians—other	108	116	117
Teachers—university	1854	2786	22867
Teachers—secondary school	3624	4626	44819
Teachers—middle & primary school	9598	11728	111728
Manual training & other teachers	510	659	663
Judges, magistrates & legal practitioners	107	162	166
Accountants & auditors	2000	3204	3309
Labour & social welfare workers & social scientists	555	687	720
Editors & reporters	335	399	421
Artists, writers, etc.	92	146	167
Draughtsmen—civil	444	480	517
Draughtsmen—mechanical	557	749	769
Draughtsmen—electrical	305	446	501
Draughtsmen—other	11	19	19
Laboratory assistants	450	664	720

	1	2	3	4
Tracers		184	150	153
Laboratory attendants		417	700	714
Science & engineering technicians—other		188	309	311
Librarians		151	176	186
Preservation assistants & others		68	72	116
Administrative, executive & managerial workers		10311	15933	16513
Administrative & executive officials—government		3677	5354	5417
Directors & managers—wholesale & retail trade		673	937	943
Directors, managers & working proprietors—financial institutions		491	1222	1314
Directors, managers & working proprietors—other		5470	8420	8839
Clerical & related workers		34011	45348	49167
Book-keepers & cashiers		3146	5985	6437
Stenographers		1741	2439	2594
Typists & tele-typists		2532	3389	3589
Office machine operators		390	852	854
Clerical workers		26202	32683	35693
Sales workers		3353	5050	5424
Farmers, fisherman, hunters, loggers & related workers		2512	2930	3146
Miners & quarrymen		600	497	526
Workers in transport & communication occupations		9181	11491	11876
Boatmen		9	5	5
Tram car drivers		49	73	73
Motor vehicle drivers		3928	4889	5041
Road transport drivers—other		10	14	14
Traffic inspectors & controllers etc.		411	452	456
Telephone operators		478	670	770
Radio communications & wireless operators		177	229	229
Postmen		691	893	903
Messengers (including dak peons)		916	1040	1082
Inspectors & traffic controllers, communication		311	590	612
Sorters—mail etc.		372	454	508
Conductors—road transport		1829	2182	2183
Craftsmen & production process workers		90126	123320	145380
Cocoon cookers, silk		111	114	138
Reelers, silk		230	240	258
Fibre preparers, ginners etc.—other		82	52	362
Blow-room workers & carders		745	522	544
Piecers (textile)		1022	1030	1060
Twisters (textile)		1579	2364	2798
Winders (textile)		1083	2160	2624
Reelers (textile)		723	1203	1775
Spinners, piecers & winders—other		2910	3222	3309
Warpers & sizers		435	532	566
Weavers (power loom)		2773	3943	4018
Weavers (hand loom)		421	1110	1423
Drawer & weavers—other		2798	3722	3897
Bleachers, dyers & finishers (excluding printers)		722	620	718
Knitters & carpet makers		76	205	212
Textile examiners & jobbers		462	367	390
Tailors, dress makers & garment makers		785	1783	1974
Hat & head-gear makers		21	22	27
Upholsters		62	76	104
Cutters hand (textile products) makers & designers		115	133	143
Sewers, embroiderers & umbrella assemblers		223	211	224
Leather cutters, shoe makers & shoe repairers etc.		124	179	252
Furnacemen, metal		275	568	657
Annealers, temperers & related heat treaters		308	250	250

1	2	3	4
Rolling mill operators, metal	51	210	341
Blacksmiths, hammersmiths & forgemen	609	841	902
Moulders, general	633	936	1212
Core-makers	313	301	320
Moulders & core-makers—other	285	476	627
Metal drawers & extruders	160	290	363
Watch makers & repairers	795	985	1024
Precision instrument makers & repairmen	429	582	587
Goldsmiths & silversmiths	40	50	50
Fitters, general	3291	4805	5430
Fitters, bench	540	583	588
Tool makers	473	715	795
Tool setters, general	248	447	477
Tool makers & machine tool setters—other	918	2125	2357
Machinists—general	893	705	3077
Turners	2770	3623	4975
Shapers, planers & millers	1164	1735	1994
Drillers, general	565	694	736
Grinders, general	827	998	1143
Machine tool operators	4321	8074	10280
Assemblers & machine erectors (except electrical & precision instruments)	741	843	1007
Mechanics, aircraft engine (field service)	3506	3506	3506
Foreman mechanics, aircraft engine (field service)	199	199	199
Mechanics, aircraft engine (overhauling)	2350	2350	2350
Foreman, aircraft engine (overhauling)	339	339	339
Mechanics—automobile	1319	1293	1605
Mechanics—general	643	981	1209
Mechanics—repairmen—other	1138	1539	1599
Sheet metal workers	1083	1668	1962
Plumbers & pipe fitters	135	188	197
Welders & flame cutters	1255	1810	2252
Electroplators & dip-plators	248	444	592
Metal workers—other	385	557	610
Electricians & electrical repairmen	2554	4505	5726
Assembly operators (radio)	1976	2396	2396
Electronic & electrical fitters	453	856	1119
Electrial & electronic fitters—other	907	1017	1246
Mechanics & repairmen (radio & television)	1840	3346	3713
Electronic mechanics	130	779	1309
Installers & repairmen (telephone & telegraph)	182	226	251
Linemen & cable jointers	1461	1421	1529
Armature winders	291	665	791
Coil winders, machine	208	249	275
Cinematograph operators	272	328	430
Telephone equipment manufacturing technicians	8368	9235	9303
Carpenters, Jointers & pattern makers (wood)	1428	1711	1988
Sawyers & wood working machinists	1281	2009	2232
Coach builders, railway	796	873	873
Foremen coach builders, railway	301	288	288
Coach & body builders—other	15	20	22
Wood workers—other	190	235	343
Painters	1013	1090	1302
Brick layers, plasterers etc.	528	1000	1640
Type setters, photolitho operators, block makers etc.	259	346	365
Compositors & proof readers	1236	1320	1439
Printers (paper)	983	1638	1783
Printers (textile)	35	61	67
Book-binders	662	738	818
Furnacemen, glass	669	669	669

1	2	3	4
Blowers, benders & moulders, glass	129	496	595
Potters, kilnmen & clay formers	426	639	742
Millers & pounders, grain	315	531	550
Crushers & pressers, oil seeds	105	143	143
Khandsari & gur making	11	11	386
Bakers & confectioners	351	353	455
Food canners & preservers etc.	139	191	266
Paper & paper product makers	133	232	284
Chemical & related process workers	568	929	1114
Cigarette, cheroot, cigar & bidi makers	1783	2544	2880
Tyre builders, vulcanisers & related rubber product makers	152	296	351
Plastic product makers	449	1507	2137
Craftsmen—other	4429	4787	6045
Checkers, packers & labellers	749	1477	2201
Stationary engine operators	180	236	245
Boilermen & firemen	267	290	335
Riggers, crane & hoist operators	250	595	641
Earth moving machine operators	60	730	732
Oilers & greasers, stationary engines & motor vehicles	819	752	858
Excavating & lifting equipment operators	22	40	55
Service, sports & recreation workers	14121	18108	21775
Fire fighters, and policemen	8344	9337	12511
House-Keepers, cooks & maids	3841	5750	6153
Waiters & bartenders	1089	2002	2069
Barbers & hair dressers	74	72	72
Launderers, dry-cleaners & pressers	321	362	375
Physical training instructors, athletes & sportsmen	212	310	310
Photographers & related camera operators	168	187	197
Other service workers	72	88	88
TOTAL	199175	268931	304962
Unskilled	36097	53281	56759
GRAND TOTAL :	235272	322212	361761

MANPOWER NEEDS BY 1977

Occupation	Number
1	2
Professional & technical workers	9633
Architects & civil engineers—other	118
Civil engineers—structural	63
Overseers—civil engineering	76
Mechanical engineers—production	99
Mechanical engineers—aeronautical	229
Mechanical engineers—other	921
Radio & microwave engineers—telecommunication	124
Technicians, telecommunication	116
Electrical engineers	873
Chemical engineers	41
Metallurgical engineers	9
Mining engineers	1
Surveyors	41
Planning engineers	263
Technologists & other engineers	275
Chemists & meteorologists	230
Geologists & geophysicists	11
Physicists, mathematicians & other physical Scientists	4
Entomologists	15
Biologists & animal scientists—other	16
Veterinarians	21
Agronomists	18
Horticulturists	11
Silviculturists & other agricultural scientists	12
Physicians, surgeons & dentists	472
Health officers	16
Nurses	1164
Midwives & health visitors	96
Nursing & midwifery attendants	360
Pharmacists	51
Vaccinators	160
Sanitation technicians	119
Medical & health technicians—other	13
Teachers—university	360
Teachers—secondary school	671
Teachers—middle & primary school	1173
Manual training & other teachers	70
Judges, magistrates & legal practitioners	21
Accountants & auditors	460
Labour & social welfare workers & social scientists	102
Editors & reporters	62
Artists, writers etc.	34
Draughtsmen—civil	85
Draughtsmen—mechanical	95
Draughtsmen—electrical	100
Draughtsmen—other	1
Laboratory assistants	132
Tracers	18

1	2
Laboratory attendants	99
Science & engineering technicians—other	33
Librarians	28
Preservation Assistants & others	51
Administrative, executive & managerial workers	3898
Administrative & executive officials—government	598
Directors & managers-wholesale & retail trade	215
Directors, managers & working proprietors financial institutions	249
Directors, managers & working proprietors—other	2836
Clerical & related workers	8674
Book-keepers & cashiers	1180
Stenographers	404
Typists & tele-typists	549
Office machine operators	88
Clerical workers	6453
Sales workers	1547
Farmers, fishermen, hunters, loggers & related workers	509
Miners & quarrymen	168
Workers in transport & communication occupations	1594
Boatmen	1
Tram car drivers	7
Motor vehicle drivers	701
Road transport drivers—other	1
Traffic inspectors & controllers etc.	50
Telephone operators	167
Radio communications & wireless operators	23
Postmen	99
Messengers (including dak peons)	146
Inspectors & traffic controllers, communication	81
Sorters-mail etc.	99
Conductors—road transport	219
Craftsmen & Production process workers	50418
Cocoon cookers, silk	35
Reelers, silk	82
Fibro preparers, ginners etc.—other	315
Blow-room workers & carders	74
Piecers (textile)	133
Twisters (textile)	950
Winders (textile)	1010
Reeler (textile)	717
Spinners, piecers & winders—other	893
Warpers & sizers	107
Weavers (power loom)	2105
Weavers (hand loom)	1467
Drawers & weavers—other	577
Bleachers, dyers & finishers (excluding printers)	160
Knitters & carpet makers	515
Textile examiners & jobbers	70
Tailors, dress makers & garment makers	466
Hat & head-gear makers	7
Upholsterer	36
Cutters hand (textile products) makers & designers	23
Sewers, embroiderers & umbrella assemblers	34

Leather cutters, shoe-makers & shoe repairers etc.	
Furnacemen, metal	
Annealers, temperers & related heat treaters	
Rolling mill operators, metal	
Blacksmiths, hammersmiths & forgemen	
Moulders, general	
Core-makers	
Moulders & core makers—other	
Metal drawers & extruders	
Watch makers & repairers	
Precision instrument makers & repairmen	
Goldsmiths & silversmiths	
Fitters, general	1
Fitters, bench	
Tool makers	
Tool setters, general	
Tool makers & machine tool setters—other	
Machinists, general	2
Turners	19
Shapers, planers & millers	3
Drillers, general	1
Grinders, general	2
Machine tool operators	34
Assemblers & machine erectors (except electrical & precision instruments)	2
Mechanics, aircraft engine (field service)	3
Foremen mechanics, aircraft engine (field service)	
Mechanics, aircraft engine (overhauling)	2
Foremen, aircraft engine (overhauling)	
Mechanics—automobile	4
Mechanics, general	25
Mechanics repairmen—other	35
Sheet metal workers	57
Plumbers & pipe fitters	2
Welders & flame cutters	80
Electroplators & dip-plators	23
Metal workers—other	11
Electricians & electrical repairmen	192
Assembly operators (radio)	24
Electronic & electrical fitters	34
Electrical & electronic fitters—other	331
Mechanics & repairmen (radio & television)	90
Electronic mechanics	40
Installers & repairmen (telephone & telegraph)	4
Lineman & cable jointers	25
Armature winders	193
Coil winders, machine	7
Cinematograph operators	135
Telephone equipment manufacturing technicians	1011
Carpenters, jointers & pattern makers (wood)	726
Sawyers & wood working machinists	509
Coach builders, railway	87
Foremen coach builders, railway	29
Coach & body builders—other	4
Wood workers—other	198
Painters	391
Brick layers, plasterers etc.	7075
Type setters, photolitho operators, block makers etc.	54
Compositors & proof readers	286

1	2
Printers (paper)	364
Printers (textile)	27
Book-binders	194
Furnacemen, glass	67
Blowers, benders & moulders, glass	149
Potters, kilnmen & clay formers	425
Millers & pounders, grain	122
Crushers & pressers, oil seeds	152
Khandsari & gur makers	376
Bakers & confectioners	232
Food canners & preservers etc	94
Paper & paper product makers	116
Chemical & related process workers	292
Cigarette, cheroot, cigar & bidimakers	825
Tyre builders, vulcanisers & related rubbers product makers	160
Plastic product makers	1246
Craftsmen—other	2187
Checkers, packers & labellers	1042
Stationary engine operators	33
Boilermen & firemen	84
Riggers, crane & hoist operators	105
Earth moving machine operators	75
Oilers & greasers, stationary engines & motor vehicles	206
Excavating & lifting equipment operators	19
Service, sport & recreation worker:	4471
Fire fighters, policemen & guards	2455
House-keepers, cooks & maids	1563
Waiters & bartenders	367
Barbers & hair dressers	7
Launderers, dry-cleaners & presers	65
Physical training instructors, athletes & sportsmen	31
Photographers & related camera operators	34
Other services workers	9
TOTAL	80912
Unskilled workers	11058

Sub. National Systems Unit,
National Institute of Educational
Planning and Administration
17-B, SriAurobindo Marg, New Delhi-110028
DOC. No. 73
Date 3/1/80

