

CHAPTER V

INDUSTRIES

THE Shimoga district is richly endowed with natural resources in agriculture, forests, minerals and hydro-electric power. It has a tradition of industrial efforts. The extension of a metre gauge railway line from Birur to Shimoga in 1899 connected the district with Bangalore and Bombay. The district is particularly noted for steel industry and production of power which are kingpins of industrial development. The establishment of large industrial undertakings, particularly the Mysore Iron and Steel Ltd., and execution of hydro-electric power-generating schemes in the district have helped the industrial progress of the district. The successive Five-Year Plans have given impetus to industrialisation of the area.

Small-scale industries can flow fast from basic and mother industries. But in the case of this district, there was a long pause of slender growth of such industries since 1918, the year of establishment of the Mysore Iron and Steel Ltd. It is only in recent years that there is some growth of small-scale as also large-scale industries.

Old-time industries

The district had been the home of many old-time industries. Several of them are now extinct. Traditional handicrafts and minor industries thrived well under the patronage of rulers of different dynasties both in the *malnad* and the *maidan* parts. An important handicraft which has survived is sandalwood-carving by the *Gudigars* of Sagar and Sorab. It is practised more or less as an art rather than an industry. It was the strong and tenacious local craftsmanship that accounted for the survival of this craft rather than any organisation.

Smelting of iron was an important industry of the area for centuries. Dr. Buchanan has spoken much about it in his account. The steel made out of the superior iron ore found at Kabbina-Gudda (iron hill) in Tirthahalli taluk of the district was very popular. Steel manufactured in the *malnad* parts was in great demand in other parts also. Thammadihalli was a well-known

steel-making centre. The district was noted for high skill in blacksmithy. Swords and other lethal weapons manufactured by its workmen enjoyed a reputation for their quality. The indigenous steel industry of the area became almost defunct in the modern period owing to lack of encouragement.

Among the minor industries and other crafts which suffered a decline but continued to support a considerable number of families in the district were metal industries and other cottage industries like carpentry, basket-making, mat-weaving, rope-making, oilseed-pressing, jaggery-making, weaving of coarse cloth and woollen blankets, etc. Striped carpets of Shikaripur, chintz of Shimoga and Ayanur, hand-loom cloth of Honnali taluk, large soap-stone articles of Kavaledurga and silver cups of Tirthahalli were popular items. The old method of oil extraction, though still found in various parts of the district, is being gradually replaced by modern oil mills. In the modern days, several occupations and industries such as tailoring, furniture-making, laundering, construction articles and printing have shown a significant growth, but altogether the important rural industries suffered a decline.

The beginning of industrial development in the modern period can be traced to 1881, the year in which the Government recognised the importance of industrial development in the State by giving assurance to the people that every attention would be given to suggestions for industrial development. Gold-mining was said to be the earliest such industry taken up in the district. Messrs Wilson & Co. were the pioneers in taking up the work of gold-mining in the Honnali Gold Fields at Kudurekonda in about 1883. But their work was closed down by about 1885 owing to influx of water and heavy loss. The Mysore-Nagar Company, which started the work of gold-mining near Bhadravati, in about the same period, met with no success, either. An industrial concern called the Technical Institute Ltd., was started at Tirthahalli in 1897 with the main purpose of manufacturing iron and wooden articles. Little is known as to how it fared and when it was closed. When the Russia-Japan war broke out in 1904, the price of manganese ore shot up in the international market. Hence attempts were made to locate a few promising mines in Shankaragudda range. The Shimoga Manganese Company came into being in 1907. Subsequently, two more companies were started for the extraction of manganese ore. There was a great rush for obtaining allotment of lands containing this ore and the Government had to stop granting lands for the purpose at one stage. This tempo did not, however, continue long after the ending of the Russia-Japan war as the price of this ore fell significantly. However, the three manganese companies continued their work in a rather depressed condition for some years.

Between
1881 and 1918

In 1911, a District Committee of the Government-sponsored organisation called the "Mysore Economic Conference" was formed under the presidentship of the Deputy Commissioner of the district. This body strove to explore the possibilities of developing the material resources of the district. A system of granting loans to industries from public funds was started during the same year. In 1912, an industrial survey was taken up in the State. A special scheme for the development of the *malnad* area was introduced in 1914. Efforts were made to impart industrial training to batches of young men. In order to give a fillip to the co-operative movement and thereby to help the development of industries, a separate division under an Assistant Registrar of Co-operative Societies with his headquarters at Shimoga was formed. A limited concern called the Tile and Sanitary Works for the manufacture of pots and terracotta articles was started at Tirthahalli in 1917*. At the State-level, a central industrial and commercial museum was opened and a scheme for granting loans to cottage and minor industries was initiated in 1918. Chief among the industrial concerns started and managed by the Government during the year 1918 was the Mysore Iron and Steel Works, Bhadravati. In the same year, a tile factory called the Varada Tile Factory started functioning at Sagar. In 1919, there was a statutory imposition of the duty of helping to promote economic development on the District Boards.

From 1919 to
1948

In 1921, Shri Gopada Vyavasaya Sangha Ltd. was started at Hanasavadi in Shimoga taluk with the main objects of establishing nurseries of fruit and flower plants and seed farms on modern lines. A limited concern called the United Steel Companies, which was established at Ickles, Sheffield, England, with an authorised capital of Rs. 93,43,915 in 1918, started an office at Shimoga in 1921. The main object of this firm was to carry on business in iron and steel manufactures and also in mining. By the end of 1921, there were two rice mills and a Government-owned saw mill at Shimoga, two tile factories and a co-operative society at Sagar, a tile factory at Tirthahalli and an iron-smelting factory at Bhadravati. By the end of 1927, there were two tile factories, seven flour mills, four water-pumping plants, three printing presses, one weaving factory, two saw mills, an iron-smelting factory and a ferrous foundry in the district. Running of tile factories had been found to be, however, not quite profitable. There were already a district industrial workshop and two industrial training schools functioning in the district. In 1928, the State Government established the Central Land Mortgage Bank at Bangalore, its operations being confined to the *malnad* taluks of Sagar, Koppa and Manjarabad and the *maidan* taluk of Tumkur. The economic conference with its

*Statistical Abstract of Mysore, 1916, p. 174.

constituent Boards was, however, kept in abeyance in 1931. In 1936, the Mysore Paper Mills at Bhadravati and in 1938, the Government Cement Factory, an adjunct of the Mysore Iron and Steel Ltd., were also started. The Mysore Match Manufacturing Company which was started as a private company in 1927 at Shimoga was taken over by the Government in 1939-40. The Birur-Shimoga section of the railway line, which was opened for traffic in 1899 and which was handed over to the State Government in 1918, was extended upto Ragihosahalli in 1930, Arasalu in 1931, Anandapuram in 1934, Sagar in 1938 and lastly Talaguppa in 1940. This provided a long-felt infrastructure facility for industrial development of the *malnad* parts. In 1942, it was enumerated that the number of industrial units at the time was 151 and the number of persons employed therein was 6,080. In the year 1944, the Government Sandalwood Oil Factory was founded at Shimoga, while the first unit of the Mahatma Gandhi Hydro-Electric Works was commissioned near Jog falls in 1948.

With the inauguration of the First Five-Year Plan in 1951, a new era began in the region as in other parts of the country. In 1954-55, a notable development was the extension of operation of the Rural Industrialisation Scheme of Dr. M. Visvesvaraya to this district. Under this scheme, about 40 rural industrial co-operative societies were started at the *hobli*-level. These were later on amalgamated with the taluk industrial co-operative societies. By the end of the Second Five-Year Plan, ten cottage industry centres, a model carpentry and smithy centre (in addition to the existing industrial schools at Shimoga and Sagar) were functioning. In 1959, these centres were substituted by the Rural Artisan Training Centre at Sagar. The later years witnessed a faster industrial development. It was estimated by the Bureau of Economics and Statistics that the total value of gross output of industries was Rs. 8,87,46,000 in 1962 and Rs. 17,66,53,000 * in 1966. By 1973, the total number of small-scale and village and cottage industries (both registered and unregistered) was 5,698 with a total employment of 10,290 persons. This was in addition to large and medium-scale industries.

The district is favourably situated in respect of raw materials needed for development of several industries. Nearly a third of the total area of the district is under forests which have valuable species of timber like *teak*, *beete*, *honne*, *nandi*, etc., to a good extent. Sandalwood, a foreign exchange earning forest species, is being largely utilised by the two Government-owned factories located at Shimoga and Mysore for producing sandalwood oil. Bamboos, another forest species, are being exploited by the

From 1950
onwards

Industrial
climate

*Statistical Abstract of Mysore, 1971, p. 101.

Mysore Paper Mills, Bhadravati, for the manufacture of paper. The timbers feed a number of private and Government-owned saw mills. Softwood is being used by the Western India Match Company and by a few other units manufacturing splints in the district. Among the minerals, iron, dolomite, fire-clay and quartz are being exploited by the Mysore Iron and Steel Ltd., Bhadravati, while kaolin is exclusively mined by the Karnataka Board of Mineral Development. Iron ore is also mined by the State Department of Mines and Geology, the Karnataka Board of Mineral Development and a few private agencies. The Mysore Minerals, a Government of Karnataka undertaking, is exploiting manganese ore. Agro-based, mineral-based and also forest-based industries are finding further scope for development in the area.

In spite of the availability of abundant natural resources and the establishment of some large-scale industries like the Mysore Iron and Steel Ltd., the Mysore Paper Mills and the Tungabhadra Sugar Works, etc., the district has not yet made much headway in industrial development. There has been lack of adequate infrastructure and banking facilities and also entrepreneurial spirit, initiative and skill. It may be said that the encouraging help of various kinds being extended by the Government, improvement of infrastructure facilities, new developmental schemes, commissioning of more hydro-electric generating units and helpful change of policy of the commercial banks in recent years have generated a new momentum for industrial progress. A sound liaison between small-scale industrial units and large-scale industries by the establishment of a few medium-scale industries of importance would help considerably the growth of small-scale industries.

Industrial employment

During the close of the first decade of the present century, there was a decrease of population in the *malnad*, the decline in Shimoga district being by about 14,318 people. That trend continued for some time more. But it was then reversed and there has been a large increase of population (*see* Chapter III). The extent of people engaged in industries is also an indicator of industrial development. In 1971, in this district, 37,294 persons were engaged in various factories, small-scale and cottage industries, the employment in these two categories taken separately being 25,574 and 11,720 respectively. This amounted to about 8.95 per cent of the total working population, which was less than the State average of 10.20 per cent. However, the district's percentage is more than that of Hassan (4.59 per cent), Coorg (4.85 per cent), Chikmagalur (5.0 per cent), and Chitradurga (8.1 per cent), but it is far less than that of South Kanara (20.42 per cent). Bhadravati is the biggest industrial town of the district, more than one-third of the district's total industrial employment being in this town. Among the villages, Bandigudda in Honnali taluk and Talaguppa in Sagar taluk have comparatively more number of

industrial workers. The table given below shows the taluk-wise distribution of industrial population as in 1971 :—

Sl. No.	Name of taluk	Number of persons engaged in		
		Factories	Cottage/ Small-scale industries	Total
1	Bhadravati	14,552	1,470	16,022
2	Channagiri	296	1,675	1,971
3	Honnali	503	1,594	2,097
4	Hosanagar	361	608	969
5	Sagar	2,079	833	2,912
6	Shikaripur	783	1,388	2,171
7	Shimoga	5,784	1,934	7,718
8	Sorab	351	1,153	1,504
9	Tirthahalli	865	1,065	1,930
Total		25,574	11,720	37,294

POWER GENERATION

The district has the proud privilege of providing a major portion of electric power generated in the district to several parts of Karnataka as also to the neighbouring States of Tamil Nadu, Kerala and Maharashtra and the Union Territory of Goa. It has also the largest single unit of hydro-electric power generating station in the whole country. According to the records available, there were no thermal stations for producing electricity in the district before the production of hydro-electric power. The waters of the Sharavati river have now been made use of for generating power. It is said that about 80 per cent of the annual yield of water in this river flows during the monsoon months of July and August alone. As it passes mainly through deep valleys of the Western Ghats, the scope for using its waters for irrigation purposes is not much. Since the commissioning of the power generating unit at Shivanasamudram in 1902 and later at Shimsha in 1940, attempts were made to harness the waters of the Sharavati river. The power supply in the district was restricted to Bhadravati and Shimoga cities and it was obtained from Shivanasamudram *via* Mysore. The Mahatma Gandhi Hydro-Electric Station was commissioned in 1948, with an installed capacity of 48,000 K.Ws. which was further increased to 1,20,000 K.Ws. during the succeeding six years. By the end of 1964, generation of hydro-electric power by utilising the waters of the river Bhadra was also taken up near the Lakkavalli village with an installed capacity of 33,200 K.Ws. The very next year witnessed the commissioning of the first generating unit of the Sharavati Valley Power Scheme. This is being carried out in stages. As on 31st March

Power Supply

1973, the total installed capacity of all the generating stations in the district, put together, was about 8,66,000 K.Ws. There is a main receiving station at Shimoga called the Sharavati Receiving Station. There are also five sub-stations in the district, *i.e.*, Sagar, Bhadravati, Tirthahalli, Honnali and Lingadahalli (Channagiri). The Sharavati Receiving Station at Shimoga is the largest one of its kind in the State.

Rural
electrification

Out of the total number of 12 towns and 1,741 inhabited villages, all the towns and about 1,064 villages were electrified by the end of March 1974, the percentage of coverage being 61.80, which was more than the State average (54.4 per cent). During the last two decades, the number of pumpsets energised has increased manifold. The statement given below shows the number of pumpsets energised between 1956 and 1974 :—

<i>As in</i>	<i>Number of towns and villages electrified</i>	<i>Number of irrigation pumpsets energised</i>
1956	255	227
1961	849	543
1966	486	1,288
1971	782	2,886
1972	872	3,048
1973	1,033	3,247
1974	1,076	3,444

Channagiri taluk has the largest number of irrigation pumpsets energised followed by Honnali, Tirthahalli and Shimoga taluks. The details of installations in Shimoga district connected to the Karnataka Power Grid system as on 1st January 1972 and the total quantity of electricity consumed is given below :—

<i>Sl. No.</i>	<i>Name of section</i>	<i>No. of installations</i>	<i>Total K.Ws.</i>
1	Shimoga	536	3,601
2	Honnali	57	565
3	Nyamati	70	414
4	Shikaripur	78	928
5	Kumsi	25	249
6	Tirthahalli	200	684
7	Sagar	142	808
8	Hosanagar	23	223
9	Sorab	32	354
10	Anavatti	40	381
11	Shiralkoppa	56	544
12	Anandapuram	28	231
13	Bhadravati	166	1,38,315
14	Holehonnur	21	205
15	B.R. Project	41	477
16	Channagiri	57	388
17	Santhebennur	47	309
18	Basavapatna	34	263
Total		1,653	1,48,939

In all, there were, as on 31st March 1974, about 56,906 installations for domestic lighting, 15,519 for street lights, 9,442 for commercial lighting, 4,743 for irrigation pumpsets, 1,699 for industrial power (low tension), 2,383 AEH installations, 486 for commercial purposes, 59 for water works, and 13 for industrial power (high tension). The *per capita* consumption of electricity in the district was 15 units per month in 1968-69 and it had increased to 35 units in 1969-70 and 43 units in 1973-74.

In February 1948, the first generating unit of 12,000 K.Ws. was commissioned as a part of the first stage of the Jog Power Scheme, the total capacity being 48,000 K.Ws. By that time, the works connected with the construction of a dam across the river Sharavati at a village called Hirebhaskar, upstream of Jog Falls, capable of storing 708 million cum. of water, and the connected power house were completed and the power began to flow from the station. The dam had submerged 6,800 acres of land in about 62 villages of Sagar and Hosanagar taluks. (Later on, another dam across the same river was constructed at Linganamakki for providing water for the Sharavati Hydro-Electric Station). By 1952, the work on the Second Stage was also completed, the additional capacity being 72,000 K.Ws. The total installed capacity of the Station is 1,20,000 K.Ws.

**Mahatma
Gandhi Hydro-
Electric Station**

A pick-up weir was also built across the Sharavati river at Kargal, upstream of the Jog Falls, popularly known as Kargal Anicut. Water drawn from this weir is conducted through a channel upto a distance of about 5.23 kilometres and here it enters the "Sirur Balancing Reservoir". Water is further conducted through a power channel to the forebay which provides for four gates with four penstocks of 182.88 cms. of diameter each. The four penstocks are further divided into eight branches and each branch is connected to a turbine. The distance between the forebay and the generators is put at 366 metres. The first four turbines have the capacity of producing 12 m.w. each, while the remaining four have the capacity of 18 m.w. each. The first four generators are connected to transformers of 15 MVA capacity each and the other to those of 22.5 MVA each. The total energy that is generated per annum is put at 630.720 million units at a load factor of 60 per cent. The power thus generated is taken to the Sharavati Receiving Station and from there distributed to other centres.

The Bhadra Project, mainly an irrigational project, was taken up by the State Government in 1947 and the work on this project was continued upto 1972. A masonry dam of about 440 metres long is built across the river Bhadra and about 1,785.15 M.Cmt. of water is impounded near Lakkavalli in Tarikere taluk of Chikmagalur district. The inter-district boundary line between Chik-

**Bhadra Hydro-
Electric Station**

magalur and Shimoga districts passes almost at the centre of the dam. The waters of this reservoir are utilised for irrigation purposes in Shimoga, Chikmagalur, Chitradurga and Bellary districts, in addition to power generation at the dam site. By the end of 1964, the work of generating hydro-electric power was started. There are four generators installed at the dam site for producing 33,220 K.Ws. of power at its maximum. The power generated at this station is also taken to the Sharavati Receiving Station, Shimoga, and from there it is distributed to other places. The total revised estimated cost of this power project was Rs. 380 lakhs.

**Sharavati
Hydro-Electric
Project**

The Sharavati Hydro-Electric Project, formerly known as Honnemaradu Project, was taken up by the State Government in 1956, for harnessing the un-utilised portion of the potential of the Sharavati river. It has been one of the important undertakings of the State in the field of economic development. A dam of nearly 2.4 kms. long has been put across this river at Linganamakki in Sagar taluk of the district, at a distance of about ten kms. from the Jog Falls. It was so designed as to impound 4,368 M.Cmt. of water in an area of 326.34 sq. kms. submerging 5,062.5 hectares of wet land, 708.75 hectares of dry land and 390.82 hectares of garden land, the rest being waste and forest lands. The annual yield of water is estimated at 4,480 M.Cmt. In so far as the storage capacity of the dam is concerned, it is stated to be one-and-a-quarter times greater than that of the Tungabhadra dam, more than twice that of the Bhadra dam and about three-and-a-half times that of Krishnarajasagar.

**Water conductor
system**

The general course of the water-conductor system is both exhilarating and enchanting. The water drawn from the under sluices on the left bank of the dam is conducted through a power channel of 4,325 metres long, comprising an open channel for 1,728.13 metres R.C.C. duct for 2,542.78 metres, the Malali Tunnel for 648.12 metres. The power channel is 11.16 metres wide, designed for a discharge of 6,200 cusecs of water with a bed fall of 0.623 metre per kilometre. The Malali Tunnel, a non-pressure horse-shoe type one, 648.12 metres long with a bed fall of 1.245 metres per kilometre. The water that emerges out of this tunnel is again conducted through an open cut channel for a distance of 783.24 metres, where it terminates at the Talakalale Balancing Reservoir.

The Talakalale Balancing Reservoir is formed by throwing an embankment across the Talakalale stream, a tributary of the Sharavati, for a length of 484.95 metres capable of impounding 128.15 M.Cmt. (gross storage) of water in an area of 7.77 square kilometres. Two radial gates have been installed in the dam for flood disposal, the maximum flood discharge being 30,000 cusecs of water. Only the required quantity of water for power genera-

tion is drawn from the left bank of the waterspread and conducted through an open channel which again terminates at the mouth of two tunnels called "Vodenbyle tunnels". These are pressure tunnels, each running to a distance of 1,068 metres respectively, cutting through a ridge with a maximum over-burden of nearly 152.5 metres. Each tunnel discharges 5,200 cusecs of water. Water gushes through these tunnels and pours into two surge tanks each of 15.25 metres in diameter and 57.95 metres deep. The water from the surge tanks is conducted through ten penstocks to the ten turbines installed in the power house, the distance between the surge tanks and the generators being 1,411.54 metres. The water drops down in these penstocks with great pressure. In order to withstand this heavy pressure, the penstocks are fabricated out of mild steel in the upper reaches and of high tension steel in the lower reaches. By 1974, eight penstocks were laid out and put to work and the work on the other two were in the process of being installed.

The Anebylu Power Station, which is about five kms. from the Mahatma Gandhi Hydro-Electric Station in the deep valley, is the single biggest power station in the whole of South-East Asia at present. By 1974, eight units of verticle impulse-type turbines were installed in this house and the remaining two were in the process of being installed. Each generator is designed to produce 89.1 M.Ws. of electricity. A transformer of the capacity of 99 MVA is fitted up to each generator. The first unit producing 89,100 K.W. of power was commissioned in February 1965 and the remaining later on. The total electricity generated from all these eight units is put at 3,742 million units per year at the load factor of 60 per cent. The power thus generated is carried to the Sharavati Receiving Station at Shimoga and other sub-stations for purposes of distribution.

**Anebylu Power
Station**

It is proposed to install two generators at the toe of Linga-namakki dam. The installed capacity of each generator is estimated to be 27.5 M.Ws. It would yield about 280 million units of power. The capital cost of the project is tentatively fixed at Rs. 937 lakhs. It is also proposed to construct another dam at a suitable point near Gersoppa and put up a power house there. This would help to take the best advantage of the fall in the bed of the river Sharavati between the Anebylu power house and Gersoppa. Four generators with a capacity of 60,000 K.Ws. each will be installed. The additional power that would be generated annually from these units is put at 632 million units. The anticipated cost of the project would be about Rs. 480 lakhs.

Power potential

The total power potential available in the district at present and after the completion of the proposed projects is given below :—

Existing Projects :

1. Sharavati Valley Project ..	891,000 K.Ws.
2. Mahatma Gandhi Hydro-Electric Project ..	120,000 K.Ws.
3. Bhadra Hydro-Electric Project ..	33,200 K.Ws.

Future Projects :

1. Linganamakki Dam Power House ..	55,000 K.Ws.
2. Tail-Race Development of Sharavati ..	240,000 K.Ws.

Total ..	13,39,200 K.Ws.
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The electric power system in Karnataka State operates as an integral part of the Southern Regional Grid. The agencies entrusted with the task of implementation of the programmes in the State have been the erstwhile Hydro-Electric Construction Projects Department, the Karnataka Electricity Board and the Mysore Power Corporation Ltd. The Hydro-Electric Construction Project Department carried out the work of constructing the generating units of the Sharavati Hydro-Electric Schemes, laid a number of transmission lines and set up receiving stations and associated step-down transmission stations. On the other hand, the Karnataka Electricity Board transmits and distributes the power that is made available. Since 20th July 1970, the Mysore Power Corporation has taken up the work of the construction of the major projects. The construction of important transmission lines and receiving stations proposed during the Fourth Five-Year Plan period were a second 220 K.V. circuit from Sharavati to Hubli, single 220 K.V. circuit from Sharavati to Hubli, single 220 K.V. line from Shimoga to Mysore and another to Mangalore, third 220 K.V. circuit from Shimoga to Bangalore and receiving stations at Mysore, Mangalore and Munirabad.*

MINING

Early minings

Mining is being practised as one of the oldest industries in the district. There are several places where relics of ancient mining industry are found. Obviously, the people of the area in the old days were conversant with mining and metallurgy of ores. But details of mining and the metallurgical processes employed by them are not clearly known.

Availability of gold ore in the district is known for a long time and the possibility of its economic exploitation is being examined. The other metalliferous ores being mined in the

*Fourth Five-Year Plan, 1969-74 ('Policy and Programmes), p. 247.

district are iron and manganese. Of the non-metalliferous minerals, the district has large resources of limestone, dolomite, fire-clay, kaolin and quartz. Of these, gold, iron, manganese and limestone are more important. There are also other minerals occurring at different places (*see* Chapter I), but many of them cannot be exploited on a large-scale. There were 19 working mines in the year 1974. These mines provided employment to about 1,136 skilled and unskilled labour in addition to technical personnel.

In all, the district produced Rs. 13,20,197 worth of minerals in 1959. Manganese ore alone accounted for nearly 70 per cent of the total mineral production, while production of limestone amounted to nearly 20 per cent. In a period of 15 years from 1959 to 1973, the total value of mineral production, excluding the value of iron ore, went up by nearly 100 per cent. The production of iron ore gained greater prominence from 1961 onwards, when the Department of Mines and Geology and the Board of Mineral Development started their mining operations. Industrial exploitation of some important minerals is dealt with in the following paragraphs.

Gold-mining was, perhaps, the earliest known mining industry in the district. Mr. Bruce Foote, who made a geological survey of the region, had mentioned about the Honnali Gold Fields of the district in his Memoirs of 1881, 1888 and 1889 (*Honnu* means gold in Kannada). Subsequent investigations revealed occurrence of gold, firstly in veins, particularly in the form of thin lines and minute particles in the auriferous zone of Kudurekonda-Palavanahalli tract of the Honnali Gold Field area in Honnali taluk and Honnehatti area of Bhadravati taluk, and secondly in alluviums in the form of small gold deposits in the river banks of the Bhadra and the Tunga and also in the small *nullas* near the villages of Tadasa and Agaradahalli of the district.* The small *nulla*, about three-fourth of a km., north of Chilanahalli of Channagiri taluk, is also noted for alluvium washings for gold.

The Honnali Gold Field area covers the Kudurekonda-Palavanahalli tract, which runs from Palavanahalli in a west-north-west direction for a length of about 13 kms. to Kudurekonda and beyond, with an average width of about one-and-a-half kms. or so in the Honnali taluk. Small particles of gold were found to occur here and there in the area which naturally attracted the attention of miners. In 1880, many leases were taken out for mining in the neighbourhood of Kudurekonda and Palavanahalli. But the findings of gold were erratic, though not very deep, and the average results were not encouraging. The Honnali Gold

* Mineral Resources of Bellary, Chitradurga and Shimoga Districts, B. Rama Rao, p.13.

Mining Company, referred to earlier, closed down its work in 1885*. A few years later, another company called the Honnali Tribute Syndicate made efforts to mine gold in the area. But its work also did not yield any valuable results. In 1914-15, further efforts were made also by the Eastern Development Corporation. Sometime later, the State Geological Department took some samples and tried to examine the possibility of economic exploitation. About 1937-38, the Indian Mines Development Syndicate obtained a special prospecting licence for gold for a period of three years. But the work of this concern also did not progress.

**Palavanahalli
area**

In the Palavanahalli area, a company which had taken a lease, did some work at a point from about seven kms. of the Honnali mine. But it did not meet with ores of significant value. Later, the Eastern Development Corporation, another private concern, also made attempts but could not obtain any substantial results. In 1913, the State Geological Department conducted many washings and trial pannings, but could not, however, locate any promising occurrence. Later, in 1938-39, it took up some further exploratory operations, but owing to large inrush of underground water and non-availability of the required improved machinery, importing of such machinery being not possible as a result of the outbreak of the Second World War, further work had to be discontinued.

**Honnehatti
Gold Mine**

The Honnehatti Gold Mine is situated to the south of Bhadravati town near the Bhadra river. Investigations about economic mining of gold in this area were started in the beginnings of this century. Mr. Bosworth Smith and Captain Lethbridge, having carried out detailed investigations, were of the opinion that gold could be mined profitably in the saddle on the temple hill and attention had to be directed to the low ground between the hill and the river.

**Gold in alluvial
soils**

Small particles of gold are found widely in alluvial soils along water courses and river valleys, particularly on the banks of the Tunga and the Bhadra and their tributaries. Washings of such soils for extracting their gold contents were taken up, in the past, at several places, by professional *jalagars* (gold-washers). It was widely practised by them as the implements required for extracting this alluvial gold were simple and inexpensive. Near about the villages of Tadasa, Agaradahalli and Chilanahalli (Channagiri taluk), the industry flourished for sometime. Such washings were on a small-scale and the earnings were not much and, as such, this industry became extinct. In 1913, the Department of Mines and Geology conducted a good number of tests in this area in

* Mineral Resources of Bellary, Chitradurga and Shimoga Districts, B. Rama Rao. p. 9.

order to find out the possibility of reviving this industry. These tests were conducted on the alluvium in and near the bed of the Tungabhadra where it crosses the auriferous schists between Honnali and Shimoga. Considering the results of these early trials, the Department took up further investigations and made a series of trial washes, between the years 1936 and 1941, of the alluvial soils along the Tungabhadra and its tributaries and *nullas* flowing through the auriferous region of the Honnali taluk. In the same area, the largest nugget of gold which weighed about $4\frac{1}{2}$ ozs., was found in 1905. The richest piece of float quartz, found in 1939, weighed 16 seers ($9\frac{1}{2}$ lbs.) disclosing, on breaking, streaks and stringers of gold estimated to amount $4\frac{1}{2}$ seers (2.7 lbs.). Leaving such rare chance findings, the gold in the region is generally noticed in thin flakes and small grains which are considered to be of very poor yield. Owing to non-availability of sufficient water in the neighbourhood of the richer alluvial patches and the poor distribution of gold, commercial exploitation of gold in the region was found to be not economical.

Among the chief iron ore deposits, the Chattanahalli deposits near Kumsi in Shimoga taluk constituted one of the oldest centres in the district, regular mining of iron ores in the State being commenced in 1922 since the setting up of the iron smelting plant. There are some deposits in the Sorab and Shikaripur taluks also, but they are said to be of not much economic value. In about 1959-60, the Department of Mines and Geology conducted investigations in Kodachadri and Kotebare regions of the district and traced iron ore reserves of 23.75 million tons of grade 58.60 Fe. The chrome iron ores of Bhaktarahalli and Birapur blocks in the district are generally of high grade with high iron content. For the first two years, (*i.e.* 1923 and 1924) the required quantity of iron ore for the Mysore Iron and Steel Ltd., was supplied from the limonite deposits of Chattanahalli near Kumsi.* (The mining operations at Kemmangundi, which is in Chikmagalur district, was started in 1924). Recent investigations conducted by the Department of Mines and Geology have revealed the existence of many deposits of iron ore of medium grade in the district. The location of each such prospective mine, its estimated reserve and the quality of ore that would be available are indicated below :—

<i>Sl. No.</i>	<i>Locality</i>	<i>Reserves in million tons</i>	<i>Grade</i>
1.	Shankaragudda (Shimoga taluk)	5	56% to 58% Fe
2.	Chattanahalli block (Shimoga taluk)	3	56% to 68% Fe
3.	Agumbe-Nishanigudda (Hosanagar taluk)	1	58% to 60% Fe
4.	Kodachadri (Hosanagar taluk)	4	58% to 60% Fe
5.	Mattimane (Hosanagar taluk)	1	58% to 60% Fe
6.	Ambaragudda and Kotebare (Sagar taluk)	20	58% to 60% Fe

* An Outline Survey of Mineral Resources of Mysore, B. Rama Rao, p. 38.

It is stated that these iron ore deposits hold out bright prospects. Because of the proximity to the coast, their exporting also does not seem to present much difficulties. There are about six mining leases for iron ores at present (1974). A large number of ancient workings of mines and mounds of slag are also seen near about Siddarahalli, Joldal, Gangur and Sirigere. These deposits are not, however, easily accessible as they are covered with thick jungles. The Shankaragudda iron ore mine is situated about ten miles (16.1 kms.) west of Haranahalli railway station on the Shimoga-Talaguppa line. The ore from here can be transported to Honnavar or Coondapur, both of which are at a distance of about 160 kms. On either side of the Kumsi-Chattanahalli cart track, hard limonitic ore is found. The nearest railway station for this deposit is Kumsi. Agumbe and Nishanigudda deposits are located within about 90 kms. of the Mangalore port. In the Agumbe area, there are heavy spreads of laterite with residual concentrations of iron ore forming the Nishanigudda. The total reserves in the various deposits in the Kodachadri area (*viz.*, Chunchur deposits occurring on the top of the hill range and about 0.81 km. south of Chunchur, over an area of about 244 metres by 61 metres, Sampekatte deposits occurring on the top of the hill range of about 854.92 metres high, about 0.81 metre to the west of Sampekatte village, and other deposits at Dodbare and Thirthabare) have been estimated to yield about 3.8 million tons.* Extensive deposits of iron ore on the Kotebare plateau, in Sagar taluk, stretch over an area of about 945.50 metres by 366 metres, about 3.22 kms. west of Nagodi village and also about 70 kms. from Gangolli, the nearest sea port. About 3.22 kms. west-north-west of Kotebare plateau is the haematitic ore band of Ambaragudda deposits. The ore here occurs at a height of about 1,006.20 metres on the southern slopes and the estimated reserves of ore are put at 2,25,000 tons.

In Mattimane area, the ore is found in different blocks, important among them being (1) Jaddimane block, situated about 2.42 kms. north-north-east of Mattimane, occurring in the form of pebbles and small boulders to a depth of 3.05 to 3.66 metres, (2) Umbalamadake block situated about 0.80 km. to south-south-west of the above mentioned village (Mattimane), occurring in thin and lenticular band, (3) Surmnabailu block, about 3.22 kms. north-east of Mattimane block where the iron ore band runs to a distance of 106.75 metres long, 7.63 metres wide and 9.15 metres deep, (4) Madathorave block, about 4.83 kms. north-east of Mattimane, traceable to about 1,128.50 metres long, 18.30 metres wide and 9.15 metres deep, (5) Singarka block, about 4.03 kms.

* Mineral Resources of Bellary, Chitradurga and Shimoga districts, B. Rama Rao, p. 20.

north-east of Mattimane where the ore body is fairly extensive. The total estimated quantity of ore that would be available in all the blocks of the area amounts to about a million tonnes. It is stated that, in all, in the three prospective iron ore deposit areas of Kodachadri, Kotebare and Mattimane, there seems to be a reserve of about 26.4 million tonnes*. The work of mining iron ore in the Kotebare area, where mining had been stopped earlier, has been resumed by the Mysore Minerals Ltd.

The first discovery of manganese ore was made in 1905 or thereabouts, when H. K. Slater, in the course of his geological survey in the Shimoga district, traced fairly extensive deposits of low to medium grade in the neighbourhood of Kumsi in Shimoga taluk and in Bhadravati taluk. The Department of Mines and Geology has located four important zones of manganese ore, *viz.*, (1) Kumsi zone, passing southwards through Shankaragudda and Mandagadde deposits of good quality, (2) Shikaripur zone, consisting of Markande, Ittighalli, Ballur, Hosur and Kagenahalli, deposits of low grade, (3) zone covering Channagiri taluk of this district and Tarikere taluk of Chikmagalur district including small deposits to the south of Joldal, Bhadigund, Siddarahalli and Balekallu, of low-grade, and (4) the fourth zone in the neighbourhood of Shantisagar (Sulekere) forming high ridges to north-west and south-west of the lake, of low grade (35 per cent). About 40 to 50 thousand tons of low grade and 10 to 15 thousand tons of high grade manganese ore are being mined every year in the district for use in Mysore Iron and Steel Ltd., and also for export. The quantity of manganese ore mined in the district during 1971, was 68,151 tonnes, valued at Rs. 16,00,000. At present, the Mysore Minerals Ltd. is engaged in exploiting this mineral. The production during 1973 amounted to 63,326 tonnes valued at Rs. 20,00,000.

The industries in the district are mainly concentrated in and between Shimoga city and Bhadravati town. Among the relatively more important industries in the various towns of the district are: Sugar, sandalwood oil, general engineering and hume pipes in Shimoga city; ferro-silicon, alloy steel and paper in Bhadravati New Town; wooden furniture, ancillary industries in Bhadravati Old Town; groundnut oil, earthen-ware and bricks at Honnali, earthen-ware, mats and parboiling of rice at Hosanagar; groundnut oil, sodium silicate and earthen-ware at Nyamati; sandalwood, pith and ivory articles, timber products and articles made out of cane at Sagar; solvent extraction, parboiling of rice, Mangalore tiles, non-edible oil and groundnut oil at Shikaripur; sandalwood, pith and ivory articles at Sorab; and rice mills and dressing of granite stones at Tirthahalli. The

* Mineral Resources of Bellary, Chitradurga and Shimoga districts, B. Rama Rao, p. 23.

statement given below shows the category-wise number of registered industrial units as in 1970 :

<i>Sl. No.</i>	<i>Category</i>	<i>No. of units</i>
1.	Ceramics and glass products	7
2.	Chemicals	12
3.	Electrical appliances	1
4.	Ferrous and non-ferrous products	9
5.	Food, beverages and tobacco	98
6.	General engineering	38
7.	Leather and rubber products	2
8.	Paper, pulp and allied products	1
9.	Printing	16
10.	Wood products	27
11.	Miscellaneous	10
Total ..		221

Source : Mysore Industrial Directory, 1970.

Census of small industries

The Directorate of Industries and Commerce, made efforts to take a census of small-scale and village industries in the district recently. According to this report, there were in 1973, 5,698 small-scale and village industrial units (both registered and unregistered) in the district. Category-wise number of these units and the total number of persons employed in each category as in 1973 were as follows :—

<i>Sl. No.</i>	<i>Category</i>	<i>Total number of</i>	
		<i>Units</i>	<i>persons employed</i>
1.	Carpentry	894	1,468
2.	Blacksmithy	545	1,028
3.	Carpentry and blacksmithy	348	519
4.	Rice and flour mills	403	660
5.	Printing	48	156
6.	General engineering, including sheet-metal works	141	531
7.	Leather, rubber and allied industries	799	966
8.	Bamboo-work including mat-weaving	1,009	1,860
9.	Saw-mills and other wood-works	29	200
10.	Pottery	518	1,441
11.	Lime-burning	122	229
12.	Handloom-weaving	524	524
13.	Tile factories	9	118
14.	Oil mills	10	51
15.	Sandalwood, ivory and stone carving	115	188
16.	Others	184	351
Total ..		5,698	10,290

Source : Deputy Director of Industries and Commerce, Shimoga.

Of these industrial units, Honnali taluk has the largest number of units (1,370), followed by Channagiri (855), Shimoga (811), Shikaripur (656), Bhadravati (515), Sorab (510), Sagar (411), Hosanagar (399) and Tirthahalli (171). The Central Government has started the work of taking a systematic census of small-scale industries throughout the country. The reports of this census are awaited.

LARGE-SCALE INDUSTRIES

There are, at present (1974), four large-scale industries, three of which are Government-owned, namely, the Mysore Iron and Steel Ltd., Bhadravati, a joint venture of the State and Central Governments, the Mysore Paper Mills Ltd., Bhadravati and the Government Sandalwood Factory, Shimoga. The fourth one, viz., the Tungabhadra Sugar Works, is a private concern. The Mysore Match Manufacturing Company, which was started as a private enterprise at Shimoga, is not functioning at present. Efforts are being made to revive this industry.

The Mysore Iron and Steel Ltd., which had been originally named as the "Mysore Wood Distillation and Iron Works Ltd., is located on the bank of the river Bhadra at Bhadravati, about 19.02 kms. from the district headquarters city of Shimoga. It is interesting to note that Bhadravati was formerly known as Benkipura, i.e., 'Fire-town', by virtue of existence there of a number of small furnaces which were converting iron ore into iron by age-old methods. This concern was formerly owned solely by the Government of Karnataka and is now a joint venture of the State and the Central Governments. The Central Government recently made over to the Steel Authority of India Ltd. (SAIL), a new organisation, the 40 per cent of equity shares held by it. The authorised capital of the Mysore Iron and Steel Ltd., is 50,00,000 shares composed of equity shares of Rs. 100 each (Rs. 50 crores), and the subscribed capital is Rs. 33 crores. The company is now engaged in production of pig iron, mild steel sections, alloy and special steel sections, steel castings, cast-iron castings, cast-iron spun pipes, cast-iron railway sleepers, slag cement, fire-clay refractories, ferro-silicon, ferro-manganese and such other ferro-alloys. The main items of bye-products are foamy slag, blast furnace gas, electric pig iron furnace gas, pig iron ladle skull, sludge, coal breeze and burnt lime dust. Much of the bye-products is made use of by the concern itself in the process of manufacturing and only a portion of it is sold outside. For producing the various above mentioned articles, the company has installed one blast furnace, four electric pig iron furnaces, two open-hearth furnaces, one L.D. steel plant (two converters), three electric arc furnaces, two ferro-alloy furnaces, two cement kilns, four rolling mills, a central heat treatment shop, general

**Mysore Iron and
Steel Ltd.,**

foundry, steel foundry, cast iron spun pipe plant, plate sleeper foundry, three ferro-silicon furnaces, a refractory plant, etc.

Good quality iron ore (58 per cent to 60 per cent Fe) is mined at Kemmangundi captive mines in Bababudan hill ranges, about 58 kms. from Bhadravati. The total estimated reserve at this place is put at 15.23 million tonnes. The annual output of the mines is approximately two lakh tonnes as against the annual requirement of 3.10 lakh tonnes of the steel industry. The National Mineral Development Corporation suggested a two-phased programme of increasing the production by investing Rs. 30 lakhs for producing 1.5 lakh tonnes of ore at the ridge deposits in the first phase and 2.5 lakh tonnes in the second phase by investing Rs. 50 lakhs. The programme is being implemented in respect of the first phase now (1974). There is a proposal to install a primary crusher and a screening plant at the mine head to crush the iron ore produced at this mechanised mine. The uncrushed iron ore is taken to loading stations of bicable rope-way on tram lines and from there it is roped down to Tanigebyle at the foot of the hill by gravity, where it is crushed and screened and later transported to Bhadravati. The fines of iron ore are utilised for making sinter at the sintering plant located at Tanigebyle and the produce transported to Bhadravati. Limestone, which is required as a flux in the pig-iron and steel-making processes, is mined from the captive limestone quarries at Bhadrigunda, about 19.31 kms. from Bhadravati. The total estimated reserve of limestone in the district is put at 21.16 million tonnes and the annual requirement of the iron works at 2,03,500 tonnes. Dolomite, which is another basic refractory material required in the steel melting shop, is also mined from Bhadrigunda mines, the annual requirement being about 3,000 to 4,000 tonnes. Quartz, another raw material used in the production of ferro-silicon and pig iron, is mined at Bilikalbetta mine, while fire-clay, which is used in the manufacture of refractories, and black-clay, which is used in the manufacture of cement, are mined at Shankaragudda hills and Umbleyale fields, near Bhadravati respectively.

A preliminary investigation about the possibility of setting up an iron and steel factory at Bhadravati was made in 1915-16. The question of manufacturing pig iron on a small-scale with the aid of charcoal fuel was investigated by a firm of New York. Then, the late Maharaja of Mysore, Shri Krishnaraja Wodeyar, and his Dewan, the great engineer-statesman Mokshagundam Visvesvaraya, took an important decision to install a wood distillation plant for manufacturing charcoal and a blast furnace for smelting iron. The scheme was financed by the Mysore Government and the Tata Iron and Steel Company was appointed, in 1918, to manage the technical side of the works under the general supervision of a Board of Management. The erection of a blast furnace,

Development
between
1918 and 1935

Raw materials

which was taken up during the same year, was completed by December 1922 and the blast furnace was put to work on 18th January 1923. The years from 1918 to 1922 may be said to be the construction period for the works. In 1924, the agreement with the Tata Iron and Steel Company was terminated by mutual consent. An effective sales organisation was created in the same year. Agencies were established in Madras, Ahmedabad and Karachi and a branch sales office was also opened in Bombay. Then the capacity of the charcoal blast furnace was 60 tonnes per day and that of the wood distillation plant 200 tonnes per day. During the course of the First World War and afterwards, for sometimes, the products of the two plants had gradually lost their importance in the market. As a result of this, the manufacturing programme was changed from that of the original plan. The use of charcoal in the production of pig iron lowered the content of impurities like sulphur and phosphorus. As such, people gradually started preferring it to steel castings. Not only the production of pig iron was gradually stepped up, but it was also converted into finished products that could be readily sold in the market. So a pipe-foundry for casting 15,000 tonnes of vertically cast iron pipes per annum was installed in 1926 with the help of a German firm. By 1929, the capacity of the blast furnace was raised to 80 tonnes. Between 1923 and 1935, the production of pig iron was gradually increased from 4,817 tonnes to 20,321 tonnes. In spite of this increase in production, the works continued to suffer losses year after year except in 1928 and 1929 during which years the profit earned was Rs. 1.10 lakhs and Rs. 1.15 lakhs respectively.

The year 1936 was significant in the history of the development of the concern. A steel plant with an open-hearth furnace and a light section mill were added in that year. Another open-hearth furnace was also added in 1943. With this, the open-hearth furnaces could produce 41,000 tonnes of mild steel and the light section mill could roll 30,000 tonnes of steel ingot. A structural workshop to fabricate 3,000 tonnes of structures per annum was also added.

The year 1938 saw the establishment of a cement plant with a kiln of 60 tonnes capacity per day and to produce 20,000 tonnes of portland cement per annum. This enabled the works to make use of the blast furnace slag. In 1941, a steel foundry with 3½ tonnes electric arc furnace, an adjunct to the open-hearth furnace was installed. Realising the great demand for ferro-silicon in the market, the concern set up in 1943 two more electric furnaces with the capacity of 1,500 KVA each. These were first installed at Mysore and later shifted to Bhadravati for technical reasons. Another furnace of 9,000 KVA was added on during the same year. Further, in 1962, two more 12,000 KVA ferro-silicon

From 1936
to 1951

furnaces of 15,000 tonnes capacity per annum each were installed. In 1946, a strip-and-rod mill for producing 6 to 10 mm. rounds in coils was installed, and, in 1948 the production of cast iron plate sleepers was started to meet the demand of the railways. During the period of one-and-a-half decades, the annual production of pig iron had risen from 18,917 tonnes to 26,068 tonnes, ingot steel from 2,601 tonnes to 31,581 tonnes and steel sections from 371 tonnes to 30,402 tonnes. Similarly, the sales turnover was also increased from Rs. 16.26 lakhs to Rs. 173.13 lakhs, the increase of profit being from Rs. 0.94 lakh to Rs. 32.21 lakhs. The capital investment was also raised from Rs. 152.80 lakhs to Rs. 440.64 lakhs.

From
1951 to 1962

The period between 1951 and 1962 was a period of expansion and diversification of production. Hydro-electric power was made available to the works from the Mahatma Gandhi Hydro-Electric Station, Jog, in sufficient quantity. Two electric pig-iron furnaces of 12,000 KVA were installed in 1952-53, the combined capacity of both being 64,800 tonnes per annum. This was the first unit of the kind, adopting electric smelting of iron ore, in the country. The expansion work of the cement plant was also taken up in 1952 and its capacity was increased to 260 tonnes per day. Six years later, a spun-pipe plant was started, the capacity of this plant being 40 tonnes of pipes per day. After a pause of a decade, a sintering plant for crushing iron ore with a capacity of 75,000 tonnes per annum was started.

In a period of about ten years, the production of pig iron rose from 22,768 tonnes to 79,489 tonnes, ingot steel from 31,803 tonnes to 49,647 tonnes and steel sections from 33,115 tonnes to 40,982 tonnes. Likewise, the sales turnover increased from Rs. 254.73 lakhs to Rs. 638.09 lakhs, the increase of profit being from Rs. 32.21 lakhs to Rs. 48.30 lakhs. In conformity with the accepted policy of the Government of India of entrusting the management of public sector undertakings to autonomous bodies, the works was made a limited company in 1962.

From
1962 onwards

The company began to grow further from 1962, onwards. A new steel plant of the latest L.D. process for the production of mild steel, an electric arc furnace of 20 tonnes capacity in 1965 and another one of the same capacity in 1967 and the third one of 8 tonnes capacity in 1968 were commissioned, besides starting a blooming and heavy section mill and a second plate sleeper plant in 1964. An induction furnace in the general foundry was added.

The manufacture of fire-clay bricks was taken up in 1966 by establishing a new refractory plant. During the later years, the company added new plants and expanded the existing ones. The shifting and expansion of the structural workshop in 1967, expansion of roll-turning shop in 1968, commissioning of ingot annealing

and conditioning shop in 1968, setting up of a metallurgical laboratory in 1969, installation of a combined bar and rod mill for rolling the alloy and special steel to close tolerance in 1970, two electric reduction furnaces in 1971 and a heat-treatment shop in 1972 were the important additions and improvements of the period.

The production of ingot steel went up to 1,09,179 tonnes by the end of 1970-71 as against 45,705 tonnes in 1962. The sales turnover rose to Rs. 3,238.00 lakhs by the end of 1972-73. During the same year, an import substitution cell was constituted and items valued at about Rs. 39.61 lakhs were substituted by indigenous items. In spite of all these expansions, the company suffered losses year after year. It was only in 1971-72 that there was a significant increase in the sales turnover which helped the company to obtain a net profit of Rs. 24.13 lakhs. The Government appointed a commission headed by Shri R. C. Dutt, a former Secretary to Government of India, to enquire into the functioning of the Mysore Iron and Steel Ltd., and to submit a report thereon to Government. Its report was presented to the Government of Karnataka in May 1973. After the completion of all the stages of expansion, the position would be as follows :

<i>Product</i>	<i>Annual production capacity (in metric tonnes)</i>
Pig Iron	2,04,000
Steel Ingots	1,80,000
Steel Sections (Mild Steel)	50,000
Special and Alloy Steels	72,000
Ferro Silicon	21,000
Cement	1,00,000
Steel Castings	1,800

The table given below shows the growth of the Iron and Steel Industry at Bhadravati during the various stages :—

(Rupees in lakhs)

<i>Year</i>	<i>Capital invested</i>	<i>Sales turnover (net value)</i>	<i>Profit or loss</i>	<i>Men on roll</i>
1935	142.69	10.04	Loss 2.21	..
1951	440.64	173.13	Profit 27.39	6,122
1961	1,116.37	638.09	do 48.30	8,948
1970	4,737.74	1,917.21	Loss 176.92	10,505

Programmes

The company has on hand a few ambitious programmes. The work in respect of installing a forge plant of the capacity of 6,000 to 8,000 tonnes per annum for producing high-speed steels, die steels, tool steels, etc., is in progress, the total estimated cost of the project being Rs. 111 million. Under the casting plant and planning facilities, it is contemplated to produce about 1,09,900 tonnes of alloy and special steels consisting of 80,500 tonnes of rolled products, 13,800 tonnes of billets, 5,600 tonnes of forged bars and blocks, and in addition, about 45,000 tonnes of rolled mild steel sections, the total cost of this project including the forge shop would be about Rs. 199.5 million. During the Fifth Five-Year Plan, it is proposed to install a wire and rod mill of 60,000 tonnes capacity with the connected steel melting facilities at a total cost of about Rs. 30 crores. Steps are being taken for the expansion of the production capacity of cement plant from the present 1,00,000 tonnes per year to 1,40,000 tonnes per year. The additional investment on this project is estimated to be about Rs. 50 lakhs.

Mysore Paper Mills Ltd.

The Mysore Paper Mills Ltd., Bhadravati, was started as a joint stock company in April 1936, the Government taking share in its capital. The factory is located close to the river Bhadra about three kms. north of the present railway station. The foundation for the mills was laid in April 1937 and the regular manufacture commenced from September 1939. As in 1971-72, the total capital invested in the mills was Rs. 461.61 lakhs of which the owned capital was Rs. 313.01 lakhs and the rest was borrowed.

This factory largely makes use of bamboos, which are available in the forests of the district, for preparing paper. Bamboos are transported to the mills by using the tramways maintained by the Mysore Iron and Steel Ltd. There is a perennial supply of water from the Bhadra river and power from the Sharavati Hydro-Electric Station. Bamboos received from the forests are chipped and cooked to form pulp which is washed and bleached. This bleached pulp is either made into rolls and transported to the beater or pumped straight to the beaters where it is again beaten according to the required degree of fineness of paper. The rag pulp made out of hosiery-cuttings, tailor-cuttings (white and mixed sorts) and ground-waste paper are then mixed with the pulp. This beaten material emerges as a wound reel on the paper machine. Creamlaid, antiques, azurelaid, bonds, etc., are some of the important categories of paper made in the mills, in addition to manifolds, *badami* and buff and other coloured printing paper. Straw-boards are also prepared whenever they are in demand in the market. Some of the special items of paper are marked with the water mark 'Bison Brand', which has won a general reputation in the market.

The normal daily total output of paper was about 12 tonnes per day in the beginning. This was stepped up gradually and the present rated capacity is about 65 to 75 tonnes a day. The total value of turnover of the factory for 1971-72 was Rs. 514.07 lakhs, and it was Rs. 418.96 lakhs for 1969-70. The net profit after meeting depreciation and taxes was Rs. 58.67 lakhs in 1971-72, as against Rs. 4.15 lakhs in 1969-70. A small township called the Paper Town has come up very close to the paper mills. The Industrial Finance Corporation of India has sanctioned rupee loan assistance to an extent of Rs. 1,70,000 on concessional terms.

The Sandalwood oil industry is one of the pioneer industries in the district. Sandalwood, which is available in various parts of the district (except in places where the rainfall is very heavy), is being exploited mainly for purpose of extracting oil. Prior to 1914, sandalwood was exported to foreign countries and those countries were extracting sandalwood oil out of the sandalwood imported from our country. When the First World War broke out in 1914, there was a considerable fall in exports of sandalwood. As a result of this, the prices went down significantly and there was a heavy loss to the Government. Hence the Government took up the work of extracting oil for itself and exported it as it was found more remunerative. Two factories were started, one at Bangalore in 1916 and the other at Mysore in 1917. The factory at Bangalore was, however, closed down in 1930. The factory at Mysore had to face several problems when the Second World War broke out. Railway wagons were not readily available for transporting sandalwood and coal to the factory. Moreover, there was a heavy accumulation of sandalwood in the sandal *koti* at Shimoga. So, the Government installed a plant for the distillation of crude oil at Shimoga on 1st January 1944. After a fortnight, another plant with ten distilleries was installed very near to the Mysore Iron and Steel Ltd., Bhadravati. This latter unit at Bhadravati was started mainly with the purpose of making use of the huge quantity of water vapour which was going as waste at the Mysore Iron and Steel Ltd. The capacity of the plant was only 600 lbs. of crude oil per month. The crude oil produced at this unit was carried to Shimoga and from there it was taken to Mysore for purification and sale. This unit at Bhadravati was, however, closed down in April 1948 as it was found not necessary.

The Government Sandalwood Oil Factory, Shimoga, is located on the outskirts of Shimoga city, on the right bank of the Tunga. As already stated, it started functioning on the 1st of January 1944, as a supplementary to the sandalwood oil factory at Mysore. The total capital investment made by the Government in this factory as on the 1st of April 1972 was put at Rs. 51,98,382. During the initial stages, the factory was engaged in producing crude oil only,

**Sandalwood oil
industry**

**Government
Sandalwood
Oil Factory**

the final purification and sale of the oil being taken up by the factory at Mysore. In view of the increased demand for sandalwood oil in the international market as well as in the local market for the manufacture of perfumes, the Government decided to develop the factory into a full-fledged unit capable of handling the work at all stages. Added to this, after 1956, the question of exploiting the sandalwood trees in the integrated areas was also of immediate necessity. In October 1963, the work of purifying crude oil and effecting sales directly to customers within the country was entrusted to this factory, while its counterpart at Mysore was left to deal with the foreign market. During the first two Five-Year Plan periods, a sum of Rs. 3.80 lakhs was spent and the productive capacity was raised from 22,000 kgs. of oil to 40,000 kgs. of oil per annum. Between 1967 and 1969, an additional sum of Rs. 3.80 lakhs was spent on machinery, laboratory equipment, accommodation, etc. An amount of Rs. 20 lakhs was set apart during the Fourth-Five Year Plan for modernising the factory. The modernisation scheme, which is under completion, is intended to increase production upto 53,400 kgs. per annum.

The raw materials required for the factory are sandalwood, fuel wood and furnace oil. The Karnataka Forest Department is supplying sandalwood to the factory. The sandalwood rates payable have been fixed by the Government at Rs. 8,000 per metric tonne for heart-wood variety and Rs. 4,750 per metric tonne for mixed variety with effect from 1st April 1972 for a period of five years. The Indian Oil Company is supplying the furnace oil. The sandalwood oil is obtained by following the process of distillation.

The sandalwood tree, a small evergreen tree, rarely growing to a height of 12 metres with a girth of one-and-a-half metres, is the exclusive property of the Government of Karnataka according to the Karnataka Forest Act of 1969. Only dead and dying ones as also the matured ones are being exploited. They are uprooted and brought to sandal depot at Shimoga after dressing (removal of sapwood). Uprooting of the tree is necessary as the root portion of it contains maximum percentage of oil. The rough and dressed sandalwood is cut into billets of about one metre long each. The sapwood is chipped off to obtain the heart-wood which is again graded into 13 kinds according to the size, weight, quality, etc. The better class of sandalwood is also supplied to *Gudigars*. The bye-products are sandalwood oil factions, terpenes, residue, baloon dust and spentwood powder. Of these, the last two items are being exported occasionally to Japan and the remaining other items are sold within the country.

In 1973, there were three boilers and 14 stills in the factory and about 130 persons were engaged in the work of various processes of production. The basic selling price of the oil at the

Raw
materials

end of 1973 was put at Rs. 255 per kg. (ex-factory rate at Shimoga). The factory produced 5,92,392 kgs. of oil during a period of 25 years from 1944 to 1969. The table given below shows production and sale of oil and the net profit derived from 1965-66 to 1974-75 :—

Year	Production		Sales		Net profit (in lakhs of Rs.)
	Crude oil in kgs.	Pure oil in kgs.	Qty. in kgs. (in lakhs of Rs.)	Value	
1965-66	38,604	37,412	34,070	52.56	1.30
1966-67	39,403	37,347	36,089	70.40	3.62
1967-68	38,453	36,722	36,255	81.94	17.16
1968-69	45,339	43,365	41,784	99.35	21.08
1969-70	45,502	45,244	44,847	111.20	18.80
1970-71	45,541	43,318	40,219	100.39	8.73
1971-72	48,324	46,053	38,991	92.03	6.92
1972-73	52,748	50,524	50,593	121.18	8.89
1973-74	42,255	41,153	40,915	151.98	48.75
1974-75	29,714	29,109	25,282	233.39	88.87

The Tungabhadra Sugar Works, now a unit of a private mill of Bombay, was started as a limited company in January 1954. It is situated on the Bangalore-Honnavar Road, about 6.4 kms. from the Shimoga city towards Bhadravati and very near to the Harige village. The total capital investment of the mill is put at Rs. 110 lakhs (1973) and the rated sugarcane-crushing capacity of the mill stood at 2,000 tonnes for the crushing period in 1973. There is a proposal to raise it to 2,500 tonnes. The total number of employees as in 1973 was 614. Sugar industry

In order to have a steady supply of sugarcane to the factory, an area of about 38 to 50 sq. kms. has been reserved by the Government for growing only sugarcane. The cane grown in this area is to be supplied to this factory alone. The mill has only seasonal work and seasonal employment is provided to workers. There has been a steady progress in the production of sugar. In 1957-58, the production was 1,684.54 tonnes and by 1967-68 it was 6,107.99 tonnes. In between, there was a peak year (1964-65) during which the production was 15,295.34 tonnes. Later, the production was further stepped up. In 1972-73, for the first season alone, it was 27,998.75 tonnes. The bye-products are molasses and bagasse. The production of molasses was increased from 1,235.55 tonnes in 1957-58 to 12,004.72 tonnes in 1972-73. The factory is using an endless rake-type mechanical sugarcane unloader for purpose of unloading the sugarcanes from trucks at the factory.

MEDIUM-SCALE INDUSTRIES

Solvent
extraction

The Jayapadma Extraction Industries is located at Thimmalapura village, about three kms. from Shikaripur on Shikaripur-Shimoga Road. It is run by a partnership concern formed in 1969. The work of this industry was commenced in October 1972. The total capital invested is put at Rs. 20 lakhs, of which a sum of Rs. 5 lakhs is the working capital. Rice-bran oil, which is a non-edible oil used mostly in the manufacture of soap, paints, etc., is produced here. The main bye-product is de-oiled bran which is largely used in preparing cattle and poultry feed and also as manure. It is said that rice-bran contains about 15 to 20 per cent oil. An automatic 'baby' solvent plant is used for extracting oil from the rice-bran. This machine can extract 2.25 tonnes of oil out of 15 tonnes of rice-bran per day and the bye-product for the quantity is 12.5 tonnes of de-oiled bran. The oil is extracted by using a solvent called hexane. About 50 persons are employed in this factory. By working in two shifts, the factory produced 450 metric tonnes of rice-bran oil and 2,500 tonnes of de-oiled bran valued at Rs. 27,00,000 and Rs. 8,75,000 respectively in 1973-74. The oil produced at this unit is sent to oil mills at Cochin, Bombay and Bangalore. The de-oiled bran is sent to Bombay, Madras, Coimbatore, Hubli, Sangli and Kolhapur. There is a proposal to expand the industry as also to establish some ancillary units. Another solvent extraction unit is being set up at Shimoga by the National Education Society.

Government
Dairy

The Government Dairy, situated at Machenahalli about six kms. from Shimoga on the Shimoga-Bhadravati Road, was started in 1963. The actual work of processing the milk and filling it in bottles for supply to the public was commissioned in 1971. The main object of this unit has been to supply pure and wholesome milk to the public of Shimoga city, Bhadravati and Davanagere town (Chitradurga district). Milk, at present, is procured through co-operatives and individuals who supply milk at selected centres. There are four co-operatives and many individual suppliers, the area of procurement operation being more than 96 kms. around the existing plant. On an average, about 6,000 litres of milk are being procured and processed at this unit. It is proposed to increase the production rate to 10,000 litres a day (*see* also Chapter IV).

Manufacture of
dyestuffs

The Textile Service Corporation, a partnership concern, established in Bombay, in July 1961, has a factory and laboratory at Ripponpet in Hosanagar taluk. It was started in January 1969, with the main purpose of manufacturing dyestuffs for their own use. The total capital investment on the factory is stated to be Rs. 2.50 lakhs. The factory is engaged in preparing dyestuffs as per the directions of the parent body and sends the finished products to Bombay for dyeing woollen and silk cloths.

There is a laboratory where the colour-scheme is tested for accuracy. It is stated that the factory could not function economically for the first three years as it had to fall back upon the locally purchased raw material, *i.e.*, dyes-intermediates. The factory is organised on a small scale for producing acid-dyes of the triphenyl methane series. It is also engaged in preparing acids, acid metal complex and acid chrome dyes. Acid rhodamine 'B' is being manufactured here without any foreign collaboration.

The Mysore Match Company, Shimoga, was started as a **Match industry** private company in 1927. It is located on the Bhadravati-Shimoga road in an area of 5.2 hectares, by the side of the Tunga channel, about two kms. from Shimoga. The authorised capital of the company stood at Rs. 10 lakhs, ten per cent of the shares being held by the Government. The factory could produce 1,000 grosses of match boxes containing 40 matches each, per day. It employed about 300 persons. In 1940, the Government of Karnataka took over its assets and liabilities. The company functioned well upto the end of 1948. Thereafter, it had to incur losses year after year. However, the factory worked intermittently upto the end of 1956. The production of matches was stopped ultimately and preparation of wood-wool and packing materials was started and continued for several years. However, this was also given up later. Presently, efforts are being made to revive this industry. The Industrial Investment and Development Corporation has invested Rs. 2.99 lakhs in this industry and sanctioned a loan of Rs. 1,21,000 to it.

SMALL-SCALE INDUSTRIES

The Shimoga district has had a number of useful and flourishing small-scale and village industries, carried on with good local craftsmanship. These industries provided employment to a considerable number of people. Many of these industries declined consequent on the disintegration of the old type of economic life in villages. The transformation of some small-scale enterprises from the traditional to the modern type in the district appears to have commenced during the period of the Second World War. The existing small-scale enterprises include those that employ modern techniques and also those where traditional methods are used. The Government have taken several steps to render help to solve the problems of these industries. Their main problems were lack of credit facilities, outmoded methods and techniques, unsatisfactory arrangements for supply of raw materials, difficulties of marketing, etc.

The National Education Society, Shimoga, which is running **N. E. S.** various educational institutions (*see* Chapter XV) in Shimoga **Industrial units** city and also in other places, has also established an industrial complex mainly under the *khadi* and village industries programmes.

Important among industrial activities are manufacture of non-edible oils and soap, cottage match industry, hand-made paper industry, fibre industry and solvent extraction. The production of non-edible oil and soap was taken up by the Society in 1958-59. The total capital investment on this particular industry, as in 1974, was put at Rs. 10,39,885. The washing soap manufactured at this unit is sold locally and outside. There are nearly 50 full-time employees working in this unit. It is stated that the soap-manufacturing plant functioning here was designed and manufactured by the society itself.

There is an oil-expeller unit which was established in 1973 with a capital investment of Rs. 60,000. One hundred and sixty bags of neem seeds are being crushed every day in this plant. Seeds brought by private merchants are also crushed in this plant. There is a proposal to establish another expeller unit also.

In order to have a continuous supply of oilseeds, a regular seed-collection centre has been established. Many persons in the rural parts are encouraged to collect oilseeds in their localities and sell them to this unit. About Rs. 10 to Rs. 12 lakhs worth of oilseeds, are being collected in the districts of Shimoga, North Kanara, South Kanara and Chikmagalur every year. It is found that this method of collecting oilseeds has yielded encouraging results.

There is a match factory run by the Society as a cottage industry. It was established in 1957 with a capital investment of Rs. 34,712. The rated capacity of the plant is 50 grosses of matches per day. This industry provides employment to 15 full-time workers at the factory and 20 part-time workers in their own houses mostly engaged in preparing match boxes and also filling them with match-sticks. The hand-made paper industry is another unit run by the Society. It was installed in 1966-67. This unit is producing bond paper, filter paper, drawing paper and banana paper, the last one being exported to Bombay and foreign countries. Mill-boards are also made and supplied to big industries for making cartons. The Society has selected four centres for the manufacture of fibre from the stems of trees.

Considering, *inter alia*, the availability of oilseeds in the district of Shimoga and in the neighbouring districts, the Society has planned to install a 15-tonne capacity solvent extraction plant with the assistance of the Karnataka State Khadi and Village Industries Board. The total capital investment on this unit would come to about Rs. 15 lakhs. It is proposed to extract oil from the residual oil-cakes which were already subjected to such extraction as also from low-oil content seeds in the beginning by using a solvent like hexane. This helps in extracting almost complete oil content of the seeds and oil cakes. In addition to this,

the de-oiled cakes, which are found to contain much nitrogen, are relished by the animals and can be sold as cattle feed. The erection of this plant is in progress.

According to the Deputy Director of Industries and Commerce, Shimoga, there are (in 1974) 141 units engaged in engineering works employing about 531 persons. These industries are found clustered mostly in and around the city of Shimoga and the towns of Bhadravati and Sagar, the total number of units at these places being 89, 21 and 23 respectively. About 12 units are found engaged in manufacturing simple agricultural implements and 23 units in general type of work; among the general type, nine units are engaged in general engineering, eleven in automobile repairs and servicing, one in making automobile spare parts and two in making steel trunks. Almost all the nine general engineering units are composite units manufacturing more than one item. These units are engaged in the manufacture of window grills and steel structurals, steel furniture, etc. They also take up repair works. It was stated that these nine units, in general, were experiencing shortage of raw materials, of skilled workers and of capital and that the work-load in them was also insufficient.

**General
engineering &
other units**

Of the automobile repairs and servicing work-shops, about eleven units are fairly well organised. The growth of this category of units was helped, *inter alia*, by the several important projects undertaken in this district. By the end of 1973, there were more than 7,310 mechanised vehicles of all categories plying in the district. There are a few units engaged in the manufacture of spare parts like springs, hangers, kingpins, kingpin bushes, spring-pins and their bushes. There are also a few units manufacturing steel trunks. Only hand-tools are employed for the different operations involved in the manufacture of steel trunks. Though the quality of trunks made are not of a high quality, they are largely in demand in the rural areas as they are cheap. The main difficulty experienced by these units was the shortage of the required iron sheets.

The Mysore Lightweight Concrete Works is a housing factory functioning at Hutha village near Bhadravati town on the Bangalore-Honnavar Road. It was established in 1969 as a partnership concern with a capital investment of Rs. two lakhs. It is manufacturing prefabricated housing components from the slags of the blast furnace of the Mysore Iron and Steel, Ltd. New types of hollow concrete blocks, R.C.C. lintels, *chajjas*, joists, doubly-curved roof-slabs, cellular roof-slabs and other miscellaneous concrete items. They are made out of a special type of concrete called the "foam slag concrete" and are produced on a commercial scale under different grades, *viz.*, the feather-weight foamed slag, the medium weight concrete and the denser

**Lightweight
concrete works**

foamed slag. The foamed slags, light weight and insulating materials, serve several purposes in building works.

Fruit products

The Janfa Fruit Products, a small-scale industry, engaged in the preservation of ripe fruits for sale and later use and extraction of juice from pineapple fruits, is functioning at Mathikoppa farm in Sagar taluk since 2nd June 1965. A 15-acre farm having about 12,000 pineapple plants is attached to the factory. A pineapple fruit weighing about 1.5 kgs. is stated to yield 700 grammes of juice. At present, juice extraction from pineapples is resorted to during the rainy season only. In addition to juice extraction, the industry is also producing squashes, crushes, jams, and fruit concentrates according to specifications of the Central Technological Institute, Mysore. There are a pulper, fruit-juice extractor, punching machine, bottle-washing machine, basket press, cap-sealing machine, dehydrating plant, crown-corking machine, fruit-juice filling machine, etc. The total capital investment, as in 1974, was put at Rs. 1,80,000. The market for the finished products is mainly confined to Shimoga and the neighbouring districts. The Unit is growing guava fruits in an area of six acres and has plans to prepare fruit-bars, toffees, juice from guava, etc.

Rice and oil mills

As Shimoga is largely a paddy-growing area, there were, as in 1974, about 403 units engaged in rice and flour-milling, employing about 660 persons. They are found mostly in the taluks of Shimoga (89), Bhadravati (79), Honnali (66), Shikaripur (49) and Channagiri (35). In each of the remaining taluks, the number of units is less than 25.

There are also about ten small-scale oil mills, eight of them in Shimoga and two at Bhadravati, providing employment to about 51 persons (oilseeds are grown in this district only to a small extent). Some of the rice mills are combined with oil mills. There are 14 units, which have invested more than a lakh of rupees.

Forest-based industries

The forests of Ayanur, Tirthahalli, Sorab, Sagar, Agumbe and Shimoga bear excellent teak wood, rose wood, *nandi*, *honne*, white cedar, red cedar, *matti*, *kindal*, bamboo, etc. This has helped in establishing some important industries like the Sandalwood Oil Factory, Shimoga, Mysore Paper Mills, Bhadravati and Indian Plywood Factory at Talaguppa in Sagar taluk. The West Coast Paper Mills at Dandeli in North Kanara district is also sometimes fed by bamboos from Shimoga district. The timber is used also for the manufacture of agricultural implements, railway sleepers, furniture, carts, etc. There is a wood preservation plant at Shimoga for treating timber with preservatives, which increases the life of timber.

The Integrated Wood Industry, which is coming up at Bhadravati, aims at supplying quality timber for public under-

takings and for exporting. It uses small branch pieces also (which are otherwise used as firewood) for converting them into useful timber. It also supplies furniture and ready-made doors and windows to Government Departments and also to the public. This industrial establishment is headed by an Assistant Conservator of Forests. It employs about 75 permanent workers and 70 casual labourers.

There are about 29 saw mills in the district, which provide employment to about 200 persons. They are clustered largely in Shimoga and Bhadravati taluks. Timber-sawing is the main item of work in these units. Many of the proprietors of these units are also dealers in timber. There is plenty of work for these units and it is said that they are not able to cope up with the increasing demand expeditiously.

Among the wood-based industries, manufacturing of wood-charcoal and wood-tar is also gaining importance. The Industrial Commission invited particular attention to the advantages of wood-distillation as a method of obtaining charcoal and by-products like methyl, alcohol, wood-tar, etc. Industrial use of wood charcoal is said to have started with the establishment of a Wood Distillation Plant at Bhadravati with American collaboration in 1920. This plant was dismantled (as the maximum plant life of 40 years was completed) in 1960. It was stated that the plant could not be replaced for want of technical know-how. Therefore, natural burning of firewood to obtain charcoal was started. The yield from this method is as low as about 15 to 17 per cent and there are no by-products. It was said that the loss in yield could be minimised by following "destructive distillation of wood" and that the actual yield from this would be 33 to 35 per cent with by-products like methanol, methyl acetone, hardwood tar, etc.

**Manufacture of
wood charcoal**

A distillation unit was started in 1972 in the private sector. It is located in Navule village about five kms. from Shimoga city on Shimoga-Shikaripur Road. It is engaged in manufacturing wood-charcoal and wood-tar. The total investment on this plant is put at Rs. 1,25,000, the cost of the plant being Rs. 75,000. Manual labour is also employed as the process is not completely mechanised. The market for the products of this industry is assured. The capacity of this unit is only one tonne of charcoal per day. About 20 persons are employed in it. It has been recognised as an ancillary industrial unit for the Mysore Iron and Steel Ltd. for supply of charcoal; only a small fraction of the requirement of the M.I.S.L. is met by this unit. In June 1973, another unit was established at Urgadur village about five kms. from Shimoga city, on Shimoga-Mattur Road, with a capacity of producing two tonnes of charcoal per day. The total capital invested is Rs. 2 lakhs, the cost of the plant being Rs. 1,25,000. This unit

also meets only another fraction of the total demand in the district. There is also demand for industrial charcoal from outside the district. In view of this, five more distillates are being presently started at different places. The total capital investment of these five units is put at Rs. 25 lakhs. These units are expected to use only waste wood and the process of production that would be followed is "destructive distillation of wood and fractional distillation of chemicals". The capacity of each unit is about four tonnes a day and the employment potential is 30 persons in each unit. These are mechanised units. The products of all these units cannot meet the entire demand. Hence the Government are considering the question of establishing a large plant of the type.

Cotton handloom industry

The cotton handloom industry is one of the oldest village industries in the three taluks of the district, namely, Honnali, Shimoga and Sorab. In 1973, there were 524 cotton handloom units in the district. There is high concentration of these units in Honnali taluk, the number in it being 483. About 40 units are in Shimoga and a single unit at Sorab. A majority of the weavers are Devangas, Padmasalis and Thogatas. There are about ten primary weavers co-operative societies. About half the number of weavers are members of these societies. The rest work either under or for the master weavers in their own homes with their own looms and appliances. According to the Small Industries Service Institute, Bangalore, there were in 1964 more than 1,000 handlooms employing about 2,000 persons in the district. The reasons attributed to the fall in number are: the technique of production employed by them is outdated; they weave chiefly coarse cloth; the working capital with them is not adequate to buy yarn and to stock the output for favourable marketing; the demand for the product is seasonal and limited as they do not conform to specifications and are wanting in design and quality*.

Tyre-retreading

The Tyre-retreading industry is flourishing in the district. This is because of the large increase in the number of vehicles particularly commercial vehicles in the area. There are, at present (1974), nine units, five of which are located in Shimoga city and the remaining four in Sagar town. The total investment of all these units exceeds Rs. 1.6 lakhs and they employ about 43 persons. The installed capacity of all these units is estimated (in terms of value) at Rs. 10.5 lakhs per annum. The main problem faced by these units is scarcity of raw materials. Retreading compound is procured from Kerala and curing bags from several established rubber factories at Madras and Bombay. Most of the units have installed modern machines. In order to develop the leather industry in the State, the Karnataka State Leather and Leather-based Industries Board has been formed recently.

* Cottage and Small-Scale Industries in Mysore, T.K. Lakshman, 1966, p. 85.

The hotel industry has acquired greater significance in recent decades in view of the increasing mobility of population. The tourist traffic is also on the increase. The urbanisation is helping establishment of larger hotels and restaurants. The 1961 census classified Shimoga city and Bhadravti town as standard urban areas. The floating population visiting the urban areas has made the hotel business a lucrative one. According to the Commissioner of Labour in Karnataka, there were 584 hotels and restaurants in 1973 providing employment to about 1,912 persons in the district. Out of every 1,000 census houses enumerated in 1971, six were used as hotels and restaurants in the district as a whole, the break-up figures for urban and rural areas being ten and four respectively. This meant an increase of 76.20 per cent for the district from 1961 (the State average was 44.41 per cent). The percentage of rise in the urban areas was 85.97, while it was 65.88 in the rural parts in the district. Of late, hotels and restaurants with modern facilities, some with bars attached, are coming up in larger towns. This involves relatively heavier capital investment. There are about four bars in Shimoga city which are comparable to those in Bangalore. A multistoreyed and large posh hotel, the biggest in the district at the time, is under construction in Shimoga city, the total estimated capital investment on which is stated to be about Rs. 22 lakhs. About 85 persons will get employment in this unit (*see* also Chapter VIII).

Hotel industry

There are nine small units engaged in the manufacture of "Mangalore tiles". The Shikaripur taluk alone has four units, while Shimoga and Sagar have two units each and Hosanagar one. These have provided seasonal employment to 118 persons in all. For the rest of the time when the factory is not working, the workers try to engage themselves in subsidiary occupations like agricultural labour, making of mats and baskets, etc. According to the Deputy Director of Industries and Commerce, Shimoga, the total investment of all these units is estimated at Rs. 28 lakhs. The products manufactured are roofing tiles and ridge tiles. The earliest such tile factory was started in the district in 1918.

Other industries

Lime-burning is another small-scale industry which provides employment to about 230 persons. Honnali is the centre of this industry. Out of 122 units in the district, 51 units are located at Honnali, 25 at Channagiri, 16 at Shikaripur, 15 at Shimoga and 8 and 7 at Bhadravati and Sorab respectively.

The printing industry is another small-scale industry which has gained prominence in recent years. There were about 48 printing presses in the district in 1974, 50 per cent of them being concentrated in Shimoga taluk alone. There are five units each in Sagar and Bhadravati, four in Shikaripur taluk, three each in Hosanagar and Tirthahalli and two each in Honnali and

Channagiri taluks. These units have together provided employment to 156 persons. Generally, they do job work and occasionally some book work.

There are several other industries manufacturing beedies, agarbathies, match splints, soap, domestic utensils (copper and brass), etc., in the district. According to the Deputy Director of Industries and Commerce, there were about 184 such units in 1973 employing 351 persons.

**Rural Industries
Project**

The Rural Industrialisation Scheme, as prepared by the late Dr. Mokshagundam Visvesvaraya and adopted by the Government of Karnataka, was first introduced in the State in January 1950 in the first instance in Bangalore and Kolar districts. It was intended to putforth intensive efforts to develop small industries in selected areas and to have a judicious dispersal of industries so as to solve the growing unemployment problem in the rural areas. The work of this Rural Industrialisation Scheme was merged with the activities of the Industries and Commerce Department in January 1960. In 1962, the scheme was taken up on an experimental basis as a centrally sponsored scheme under a Rural Industries Project with the main objective of evolving techniques for establishing viable industrial units in the rural parts and to reduce the disparities in the levels of development among different regions. The Bhadravati—Shimoga area was one of the 45 areas in the country selected for development under the Rural Industries Project. The work here was started in 1966, the area of operation in the beginning being confined to the two taluks of Shimoga and Bhadravati. Subsequently, the jurisdiction of this Project was extended to the entire district with effect from 1st December 1971. Under this programme, financial assistance to the tune of Rs. 4,73,000 has been provided to 96 small-scale industrial units like dairy farms, wood-packing units, leather-goods manufacturing units, chemical-based units upto the end of 1973. The category-wise break-up of loans given to these units is given below (1973) :—

<i>Sl. No.</i>	<i>Type of industry</i>	<i>No. of units</i>	<i>Amount in Rs.</i>
1.	Forest-based units	23	1,27,100
2.	Dairy and poultry farms	33	1,43,900
3.	Agricultural processing units	10	55,000
4.	General engineering units	7	43,900
5.	Chemical-based units	4	19,000
6.	Others	19	84,100
Total		96	4,73,000

The Khadi and Village Industries of the district cater mainly to the requirements of the local people. They obtain their needed raw materials from the locally available resources. The Central Khadi and Village Industries Commission and the State Khadi and Village Industries Board help these industries. The latter body established under the Khadi and Village Industries Act of 1966, undertakes several development programmes. It has given assistance to many units engaged in industries pertaining to soap, oil, *neera*, palmgur, extraction of honey, pottery, fibre, leather goods, carpentry and blacksmithy, matches, hand-made paper, khadi, solvent extraction, etc. The details of financial assistance given to such units are given below (1973):—

**Khadi and
Village Industries**

Sl. No.	Type of units	No. of units	Amount of loan in Rs.	Grant given in Rs.
1	Soap-making	4	12,66,250	1,00,426
2	Village-Oil industry	6	51,300	5,600
3	<i>Neera</i> palmgur	2	2,090	886
4	Bee-Keeping	1	17,250	3,07,443
5	Hand-pounding of paddy	10	3,17,780	14,341
6	Village pottery	4	51,935	18,434
7	Fibre	6	78,470	24,475
8	Leather	4	30,880	5,170
9	Carpentry and Blacksmithy	3	21,550	10,950
10	Gur and Khandsari industry	4	46,190	6,200
11	Matches	1	28,250	8,150
12	Hand-made paper	1	47,000	26,220
13	Khadi	3	2,15,909	34,550
14	Solvent extraction	1	8,24,900	..

The National Education Society, Shimoga, by virtue of its running several important units, has obtained considerable help from the Board. Nearly a dozen of the societies which were assisted by the Board have become defunct and are placed under liquidation.

Apiary (bee-keeping) industry is popular in the *malnad* districts of the State. In Shimoga district, it is being practised in about 564 villages. While the total number of bee-keepers as in 1972, was 1,102, the number of bee-colonies working was 2,753. These colonies together yielded 14,070 kgs. of honey in 1971-72. There is a Bee-keeper's Co-operative Society at Tirthahalli having its jurisdiction over the entire district of Shimoga and Koppa, Narasimharajapura and Sringeri taluks of Chikmagalur district. It is functioning since 1957 and has 2,478 members on its roll with a subscribed capital of Rs. 12,910. The Society undertakes the work of collecting honey from the bee-keepers and processes it to the required standards and sells it directly to the customers. As a measure to help this industry in rural parts, the Society makes bee boxes and other needed articles and supplies them to the bee-

Apiary industry

keepers. It has also a trained staff who tender needed advice on bee-keeping. The Society covered about 475 villages comprising 1,523 bee-keepers by the end of 1973-74. It produced 13,215 kgs. of pure honey between the years 1971-72 and 1973-74, as against 6,760 kgs. of pure honey and 68 kgs. of wax between the years 1957-58 and 1961-62.

Bamboo industry

There are a large number of units engaged in this line. It was estimated that in the year 1973, there were a little more than a thousand units scattered all over the district, the total number of persons working in them being 1,860. The spread-out of these units is relatively larger in the rural parts because of the local demand for bamboo articles and the advantage of securing supplementary employment. The Hosanagar taluk had the largest number of 194 units followed by Honnali (169), Channagiri (134), Shimoga (133), Sagar (110), Bhadravati (109), Shikaripur (60), Sorab (55) and Tirthahalli (45). These units are engaged in making articles like baskets, *thatties*, chairs and mats out of bamboo and reeds. The bulk of the raw material needed is obtained from the forests of the area. The skill in preparing the articles is mostly hereditary. The craftsman being himself a proprietor works in his own hut or house and is assisted by the members of his family. Sometimes, they are found also squatting on footpaths and attending to their work briskly. The products are generally marketed locally or in a nearby *shandy* and are free from competition from the organised sector but there is a keen competition among the poor craftsmen of the industry for marketing their goods.

In 1965, a case study of the pattern of such industries was made.* It was found that out of the 480 units engaged in basket-making, 407 were in the rural parts and the rest in the urban parts, providing employment to more than 1,210 persons. An intensive study of six units disclosed that the products were made both to order as well as in advance to be sold in a nearby *shandy* or market place. The tools used by the craftsmen are very simple and primitive and hence the investment is almost negligible. Some local merchants act as middlemen in marketing these indigenous products. A large number of craftsmen are found to be in the grip of such local merchants. The turnover in these units is very small.

Carpentry

Carpentry is an ancient craft. Next to bamboo-artisans and mat-weavers, this industry is having the largest number of establishments in the district, the total number being 834 units (1973). These units provide employment to about 1,468 persons. There is increased demand for these products and services of artisans in house building and other construction activities. Channagiri has the largest number of 231 units followed by Shikaripur (124),

* Cottage and Small-Scale Industries in Mysore, T.K. Lakshman, 1966

Shimoga (114), Honnali (103), Sorab (83), Bhadravati (87), Hosanagar (44), Sagar (33) and Tirthahalli (15). Eventhough these units are spread over all the taluks of the district, they are found well-organised in Shimoga city and Bhadravati town. Except perhaps, in a very few units which are managed by some merchants the craftsman is both a worker and an entrepreneur. There is a large number of these units in the rural parts and they are mostly engaged in making agricultural implements during the rainy season, and door and window frames and shutters, carts and other house-building materials during summer. Making of furniture and artistic articles out of wood is followed by some units located in the urban areas.

According to the 1951 census, there were 1,401 carpenters, turners and joiners in the district. Out of them 1,023 persons were in the rural parts and 378 persons in the urban centres. The total number of such persons was 2,542 in 1961, 1,048 being in the rural parts and the rest in the urban centres. In 1964, about ten establishments were taken up for a survey in connection with a case study for ascertaining the pattern and role of cottage and small-scale industries in the district. The survey revealed that the rural units were not very lucrative as compared with those in the urban ones, the resources for all the units were inadequate, while the demand was limited and largely local in character and that they were widely scattered and only a few of the artisans had become members of the co-operative organisation.

There are a few units in Shimoga city and Bhadravati town where some merchants maintain and run carpentry establishments. According to the Deputy Director of Industries and Commerce, Shimoga, there were, as on 31st March 1972, 55 such units engaged in the manufacture of wooden products. The total investment of these units was about Rs. 32 lakhs and they employed more than 600 persons. Of these, two were fairly big in size. The two big units and others of like size in the district undertake bulk orders on tender basis and execute the work by employing skilled carpenters. Such units are having modern machinery for planning, disc-sawing, cutting, etc. They accept contracts from Government and private concerns. These units make a fairly good profit. One unit in Shimoga city is making also those wooden products which are used by children in nursery and primary schools. It is also making several of the items of sports goods.

Carts manufactured at Haranahalli in Shimoga taluk have been very popular since 1930s. There was a popular saying "*Hasanada Ettu mattu Haranahalliya Gadi*" which meant that Hassan bullocks and Haranahalli carts would make a fine combination. It is said that "Appaji Rao Karkhane" was the earliest establishment manufacturing carts here which earned a name in and around the district for quality carts specially in respect of the

Manufacture of
carts

special quality of the hub of the wheel and the seasoned wood used. It was immediately followed by others and several units sprang up. There were as many as 22 units by 1950. An Industrial Co-operative Society, exclusively for cart manufacturers, had been started in the earlier period. But this was, however, closed down by about 1950.

The main raw materials used for cart-making are wood and iron. Wood of a particular variety like *honne*, *saguvani* and jungle wood are needed. The practice of allotting wood by the Government under a quota system, which was in vogue for some time in the past, was, however, discontinued. The cart-manufacturers now purchase wood in the open auctions. Iron was supplied by the customers themselves in the earlier years, and subsequently, this practice was also given up. Now, iron is obtained under a quota system and also procured in open market. The hub or *gumbha* popularly known as Ambur hub is imported from Ambur in Tamil Nadu and also from Andhra Pradesh. It is claimed that five to six skilled workers can prepare a cart, working for about three to four days with the help of hand tools only. None of these cart units is making use of power. There is no problem of marketing. Orders from the neighbouring districts of Dharwar, Hassan, Chitradurga, Tumkur, etc., are being received by the units. They are not able to meet the demand fully. It is stated that provided the raw materials are available in sufficient quantity and on time, these units can produce 100 to 200 carts a year easily.

Sandalwood carving

Handicrafts in Karnataka may well be described as a symbol of its cultural heritage. Ivory and sandalwood carving and pith work by the *Gudigars* of Sorab and Sagar taluks have won high appreciation. The *Gudigars* have an age-old tradition of artistic and creative skill. It is difficult to determine the origin of this ancient craft. It thrived through the ages in intimate association with sculpture and architecture, largely under the patronage of royal families and nobility.

While the male members of the families of *Gudigars* are engaged in carving, the female members make wreaths, garlands and such other articles of pith. They admirably imitate any design that may be furnished to them. Now, very little ivory-carving is done owing to prohibitive cost of ivory and keen competition they have had to face from their counterparts in Kerala. Making of Ganesha images in clay keeps some of the *Gudigars* engaged in that work during the months of *Shravana-Bhadrapada* (about August-September). A few make also *basingas* (marriage coronets) in pith, etc., during the marriage season. In recent decades, some of the *Gudigars* took up land cultivation and allied avocations, and the educated ones get employed in other occupations.

The important centres of sandalwood-carving in the district are Sorab and Sagar, the other places of minor importance being

Jade, Bilegode, Tavanandi, Jambhalli, Herur and Talaguppa. The *Gudigar* families are also found in some centres of North-Kanara district like Sirsi, Kumta, Honnavar and Siddapur. In this district, in 1961, at Sorab, there were 37 households with a population of 212; out of the 37 households, 29 were engaged in sandalwood-carving. At Sagar, the number of households was 15 and their population was 115. Out of these 15 households, 13 were engaged in sandalwood-carving. The total numbers of actual carvers at Sorab and Sagar were 42 and 19 respectively.*

The *Gudigars* produce a wide range of choice articles carved with delicate workmanship, like image of deities such as Venugopala, Nataraja, Radha-Krishna, etc., panels of deities depicting mythological themes such as "Menaka-Vishwamitra", "Shakuntala-Dushyanta", caskets set on pedestals of rosewood, frames for photographs with the figure of a swan in pierced carving with rectangular or oval-shaped niche at the bottom, calendar-stands with designs of flower-traceries, creepers and carvings of figures in the centre, *vyasapeetha* (a stand for reading books) with carving, paper weights with the figure of an animal or bird carved on the top of the piece, other art pieces like *Geetopadesha* depicting a scintillating scene from the Mahabharata, elephants carved in the posture of fighting or pulling logs, flower pots, garlands and a host of utility articles like shirt-buttons, cuff-links, cigarette-holders and cases, pen-holders, pen-holder stands, *japamala* (rosary), combs, paper-knives with simple floral designs on the handles, walking sticks with carved handles, fans of circular or semi-circular shapes, etc. These sophisticated products over which much time and labour are spent cater to the refined and discriminating tastes of art-lovers in India and abroad. They are presented also as choice gifts of art.

**Delicate
workmanship**

The chief raw material used in this craft is sandalwood, the other raw materials of minor importance used being rosewood, yellow teak, ivory, sand-paper, polish, nails and screws, hinges and hasps. The *sreegandha* variety of sandalwood, which is yellowish-brown in colour and close-grained, is used for carving, while *nagagandha*, which is dark-brown in colour, is used for extracting oil from it. Rosewood is used for mounting caskets and carved figures. The tools used by the *Gudigars* generally are saw, plane, hand-drill, ruler, trisquare, hammer, screw-driver and several other small instruments.

They follow some general types or methods while carving, *viz.*, carving in round, carving in relief, incised carving, chip-carving and pierced carving. The designs generally followed by them are like those followed in respect of carving in stone found in many of the temples of Karnataka and other parts. Though the subjects and

**High artistic
value**

* Handicrafts Survey Monographs, Part VII-A, Census of India, 1961, Vol. XI (Mysore), 1965, p. 14.

motifs selected for carving are taken from Hindu mythology, there is also a tendency to imitate the picture, etc., found on calendars and the like to suit the taste and fashion of the day. They have been also now induced to give other modern touches to their artistic work, which helps marketing of the articles. The work is done in *verandahs* of the respective houses of *Gudigar* families. The articles produced by them are priced on their artistic value taking into account the skill and amount of labour involved and the sandalwood content. The products are marketed through their co-operative societies at Sagar and Sorab and also through dealers at Bangalore, Mysore, Bombay, Delhi, Madras and Calcutta. The main problem is that they do not get a ready market and the gap-periods between the actual dates of completion of the articles and the realisation of their price are often painfully long. This chills the enthusiasm of the craftsmen. Only a very few of the local *Gudigars* are dealers in sandalwood and such other articles (see also Chapters VI, VIII and IX).

Many of the *Gudigars* who are in the urban centres have taken up sandalwood-carving as their main occupation, whereas their counterparts in the rural centres have taken it as a subsidiary occupation. It is observed that some of the rural craftsmen engage themselves in making high priced articles and images which involve more time and labour. The reason mentioned for this is that they practise carving as a subsidiary occupation and are not keen on getting immediate return from this trade. This is not so in the case of those in the urban parts who cannot afford to wait so long for the realisation of the value of their products, and hence they take up making such of the items which move easily in the market.

Pith-work

The pith-work is carried on by the *Gudigar* households in the taluks of Sorab and Sagar, as a secondary occupation, mostly by *Gudigar* women folk. They make flowers, wreaths, garlands etc., out of pith. The craft is practised side by side with sandalwood-carving while men are found engaged in carving sandalwood in the *verandahs* of their houses, their women work in pith in the backyard. The pith-work is also a hereditary occupation and the girls start practising it early at the age of about 12. In 1963, there were 37 family units engaged in this craft in Sorab centre and 15 in Sagar centre, the number of workers being 64 and 25 respectively.

The raw materials used in producing pith garlands and decorative articles are pith, colour powders, thread, wire, lace, tin-foils and glass beads. The pith, which is the chief raw material, is a feather-weight material. It is locally known as *bendu*, which is the stem of a plant belonging to the family of water lily. It is found in considerable quantity as a wild natural growth in the taluks of Shimoga and Shiralkoppa. The *Gudigars* themselves collect the pith from the tanks and also buy them at the

local *shandy*. Other materials are brought from the local dealers. An ordinary steel knife and a pair of scissors are the chief tools used. They make flowers and flower buds like *mallige-moggu* (jasmine buds), *gulabi* flower (rose), *dahlia* and *sevanthige* (chrysanthemum), garlands, wreaths, *venis* for adorning the braids of women, *basingas* (marriage coronet) for brides and bridegrooms and *suggi turayi* an ornamental headwear of pith used occasionally by a section of local people. *Basinga* and *suggi turayi* are made by men with the assistance of female members. These two articles are made to satisfy the local demand only.

It is said that a woman can make about 50 *venis* and 20 garlands of pith in a month. The products are sold directly to local customers and sometimes sent to dealers in Bombay and other places. There are also some middlemen in Shimoga who purchase the articles from the *Gudigars* and sell them at a higher price during *jatra*, etc. The *Gudigars*' Co-operative Society takes only a very small proportion of the pith products. There is no co-operative society meant exclusively for pith-workers, but they are allowed to become members of the Sandalwood-carvers' Co-operative Society. There are no training facilities offered for pith-work. It is stated that between 1954 and 1959, a training centre at Sorab was offering training in making calendar boards, alphabetical letters, door curtains, wall panels, etc., in pith. Pith-work is not a paying one as that of sandalwood-carving. It is being practised more as a tradition than for the income it fetches.

Blacksmithy is another ancient craft which has been playing an important role in supplying some capital requirements of the farmers. As stated earlier, the district had a high reputation for blacksmithy products in the old days. In 1951, there were 574 establishments in the district. Of these, 430 were rural establishments and 104 urban ones, together providing full-time employment to 938 persons and part-time employment to 124 persons. At present (1974), there are 545 units employing about 1,028 persons. In addition to this, there are about 348 units employing 519 persons who are, in addition, also engaged in carpentry work. These units are spread over all the taluks of the district, Channagiri, Honnali and Shikaripur having a larger number of such units. All these units are engaged in making agricultural implements, hardware, cutlery-goods, horse-shoes, cart parts and household goods. Repairs of these products are also undertaken by these units. The implements used in the process of manufacture are simple and inexpensive.

A unit is generally managed by a single craftsman who employs two or three labourers depending upon the pressure of work. The demand for their work is mainly local, which varies from season to season. The chief raw materials used are iron, charcoal and paddy husk. Iron is sometimes supplied by customers and it is also purchased by the units occasionally. The

units are located either in the own houses of the craftsmen or nearby. The craftsmen usually invest their own money on the raw material, specially iron and charcoal. In recent years, they are provided with loans by the Government under the Rural Industrialisation Scheme. They get only a narrow margin of profit. These craftsmen have only their hereditary skill and do not have training in modern methods and have no modern equipment. As such, the products they produce are not of a high standard.

Pottery

Pottery is, perhaps, the oldest village industry. The services of the village potter appear to be almost indispensable to most of the rural folk. According to the 1951 census, there were 448 establishments in the district, of which 361 were in the rural parts and 87 in the urban areas, providing employment to about 939 full-time workers and 342 part-time workers. At present (1974), there are about 518 units in the district providing employment to 1,441 persons. The units are found in larger numbers in the taluks of Honnali (177) and Channagiri (111). In each of the remaining taluks, the number of establishments is not more than 50. The industry is localised in places where the suitable clay is available. The chief products of this industry are mostly domestic requirements such as household utensils, big and small pots, country tiles, flower-pots, etc.

The potter is the proprietor and also worker. He works on his own initiative with his own capital. The work is done on a small-scale to meet the local requirements. The chief raw materials are clay and fuel. The tools used by him are a potter's wheel, a bamboo stick to rotate the wheel, a convex stone, a few bat-like mallets for tapping the pots and a crude kiln. He works either in his own house or near it and takes the help of his family. No power is used. The finished products are sold in a nearby *shandy* or *jatra*. The poorer classes still use, by and large, clay utensils, but the use of aluminium utensils has been increasing. The pots, which are sun-dried, are piled one above the other and baked in a crude type of kiln. This causes considerable breakages and results in an unequal baking of the pots. In general, the pottery units are very small, their capital is inadequate, their products lack finish, quality and variety. As a result of this, their income is invariably low. The Central Khadi and Village Industries Commission and the State Khadi and Village Industries Board are making efforts to help this industry.

Leather industry

Leather industry has not made headway in the district. According to the 1951 census, there were 717 leather-industry units providing employment to 837 full-time workers and 245 part-time workers. Of these, 644 establishments were in the rural parts and only 73 in the urban areas. As at present (1974) there are 799 leather-industry units providing employment to about 966 persons. These are mostly found in Channagiri (153), Shikaripur

(136), Sorab (134), Shimoga (128) and Honnali (115). In each of the remaining taluks of the district, there are less than fifty units. There are no mechanised units manufacturing leather footwear or other leather goods in the district. There was a shoe-making industry of considerable size at Honnali at one time. It is said that there were about 49 noted families engaged in shoe-making in Honnali taluk.

According to a field investigation made by the Small Industries Service Institute, Bangalore, there were five cottage units in the district manufacturing leather footwear, mostly *chappals*, organised in a better manner. The investment in these five units was put at Rs. 28,000 and the annual production at Rs. 40,000 and they employed about 24 persons. The main products of the leather industry are sandals, shoes, *chappals*, etc. The rural craftsmen make specially *chappals* which are inferior in quality and finish. The chief raw materials are tanned leather and fittings like rivets, strap-fasteners, nails and polish. Tanned leather and other fittings are mostly imported from Madras and in small quantities from Bangalore.

In some interior parts, the cobblers themselves tan the leather in a crude way and use generally buff-sole and ox-leather. This is also now disappearing and they are depending more on imported products. The village cobbler makes use of simple tools like working stone, leather-tanning hammer, rumpies and small needles, while his counter-part in the urban area uses superior tools and also a sewing machine. The rural craftsmen work in their houses. Individual cobblers in the urban areas work either in a workshop or on the footpaths. The demand for locally made leather foot-wears is very limited. The local craftsmen make them to order and some extra ones made are sold in a nearby *shandy*. The cobblers are too poor to buy tanned leather and better tools and it is very hard for them to get credit facilities. However, in recent years, some efforts have been made to obtain for them credit facilities through rural co-operatives.

It is reported that the hides and skins collected from this district are of inferior quality. Only a small portion is used by the village tanners and the major portion is sent to tanneries in Madras and Bangalore. A rough estimation puts the availability of hides and skins in the district at 1,56,000 hides and 52,000 skins.

INDUSTRIAL FACILITIES

The Karnataka Industrial Areas Development Board, constituted under the Karnataka Industrial Areas Development Act, 1966, with the main object of promoting and assisting rapid and orderly establishment and growth of industrial areas, has taken up the work of development of the Shimoga-Bhadravati industrial area as one of the eleven growth areas in the State. An extent of 81 hectares of Government land of Machenahalli village of Shimoga

**Development of
Industrial Area**

taluk and 60.75 hectares in Jadikatte village of Bhadravati taluk was declared as an industrial area by the Government and handed over to the Board. The block-level survey of the area has been completed and the lay-out has been approved by the town planning authorities. The Board has taken up the work of providing infrastructural facilities like roads, drainages, water supply, power, etc.

The plots thus developed are allotted to intending industrial entrepreneurs for establishing industrial units. The allotment of land is on lease-*cum*-sale basis treating the instalments as rent for the purpose of the lease-agreement. The total period of loan is limited to eleven years. After the expiry of this period, the lease will be converted into a sale by executing a sale deed in favour of the allottee, provided all the payments are made and no breach of the covenants of the lease-agreement is committed. The lease-agreement and the sale-deed are exempted from payment of stamp duty and registration fees for the present. Concessions are also shown in respect of the price for the land. An allottee is expected to pay 20 per cent of the total cost of the land (ten per cent in the backward areas) as the initial deposit, within a specified period. The remaining 80 per cent is recovered in easy instalments spread over a period of ten years. Interest on the principal amount is charged at 8½ per cent per annum on the outstanding balance, subject to a rebate of one per cent for prompt payment.

Industrial estates

In order to help industrial enterprise and to see that more and more industries come up in the area, industrial estates are being established in the various parts of the State. These estates provide ready-built work space in a well-laid-out area, with roads and other communication facilities, with water and power connections. There are two industrial estates in the district, one at Sagar and another in Shimoga city, built at an estimated cost of Rs. 1.50 lakhs and Rs. 4.33 lakhs respectively. The Industrial Estate at Shimoga has 14 sheds of 'C' and 'D' types. Units manufacturing agricultural implements, paper envelopes and polythene bags, modern carpentry units and iron foundry units are housed in this Estate. There are also six sheds of 'C' and 'D' types at Shiralkoppa under the control of the Karnataka State Industries Corporation Ltd. This Corporation has been considered as the agent of the State Government for the construction, maintenance and administration of all the industrial estates in the State.

Common facility centres

The Department of Industries and Commerce has also started a few common facility centres equipped with necessary modern machines, etc., which the small industrialists cannot afford to purchase. One such centre is at Haranahalli which helps manufacturing of carts. The total investment of this centre is about Rs. 50,000. This centre provides facilities to cart-making

units of the place on payment of a nominal service charges and also technical know-how to the interested ones.

The State Government are advancing loans to industries under the Liberalised Loans Scheme, the State-Aid to Industries Act, Half-a-million Jobs Scheme, Rural Industries Project, etc. Financial aid is also given through the Karnataka State Financial Corporation, the Karnataka State Industrial Investment and Development Corporation Ltd., and a number of co-operative institutions. The various commercial banks also extend loans. The Industrial Investment and Development Corporation helps in preparation of feasibility and project reports and participates in the share capital of industries. It has assisted the Mysore Iron and Steel Ltd., Bhadravati, in preparing projects for the manufacture of ferro-chrome and ferro-silicon. The National Small Industries Corporation and the Karnataka Small Industries Corporation help in obtaining machines on hire-purchase basis to industries. The extent of financial assistance sanctioned to small-scale industries under various schemes, as at the end of 1972 is shown in the following table :*

**Industrial
finance**

<i>Sl. No.</i>	<i>Agencies</i>	<i>No. of units</i>	<i>Amount sanctioned in lakhs of Rs.</i>
1	The State Bank of Mysore	135	30.00
2	Other Commercial Banks	200	15.00
3	Under State-aid to Industries Act and Rural Industries Project Funds	118	18.00
4	Taluk Rural Industrial Co-operative Societies	2,400	27.00
5	District Industrial Co-operative Bank	130	6.00
6	Karnataka State Financial Corporation	3	25.00
7	Supply of machinery on hire-purchase basis through National Small Industries Corporation.	45	3.5

As on March 31, 1973, the Karnataka State Financial Corporation advanced loans to various industries in the district to the tune of Rs. 19.24 lakhs as indicated below :—

<i>Type of industry</i>	<i>Amount of loan sanctioned in lakhs of Rs.</i>
Food-manufacturing Industries :	
(a) Rice Mills	11.70
(b) Edible oils	1.34
Tiles	2.14
Saw mills	0.62
Fertilisers	1.00
General items of machinery	0.71
Transport	1.73
Total	19.24

* Industrial Survey of Shimoga District, 1972, p. 9.

According to the Deputy Registrar of Co-operative Societies, Shimoga, the District Industrial Co-operative Bank, Shimoga, released loans as detailed hereunder through the industrial co-operative societies (position as on 31st March 1973):

<i>Sl. No.</i>	<i>Particulars of loans</i>	<i>Amount in Rs.</i>
1	Goldsmiths society	1,12,672
2	Handicrafts	4,484
3	Short-term loans (industrial)	2,44,964
4	Short-term loans (institutions)	3,000
5	Godown loans	7,941
6	Project area loans (industrial)	3,11,213
7	Project area loans (institutions)	1,56,975
8	Development loans	4,000
9	S.S. Block loans	89,002
10	Cash credit loans	1,89,228
11	Key-credit loans	12,724

The Industrial Finance Corporation of India, has sanctioned rupee-loan assistance to the Mysore Paper Mills, Bhadravati, aggregating to Rs. 1,70,000 on concessional terms.

Industrial training

The district has considerable facilities for industrial training. There is a polytechnic at Bhadravati run by the Mysore Iron and Steel Ltd., which provides theoretical knowledge to employed persons, particularly the employees of the Mysore Iron and Steel Ltd., and technical education to the sons of these employees as also to others in the surrounding areas. This is the only institution offering a metallurgy course at the diploma-level in the whole of South India (*see* also Chapter XV). An Industrial Training Institute at Bhadravati offers training in various trades. There is a Rural Artisan Training Institute at Sagar, which was formed after reorganising the then existing eleven cottage industries centres and industrial schools in the district. A Model Carpentry and Smithy Centre at Shimoga offers training in carpentry and blacksmithy. In addition to these, the Department of Industries and Commerce conducts seminars, holds exhibitions and offers technical know-how in certain respects.

Industrial Training Centre

The Department of Employment and Training started an Industrial Training Centre at Bhadravati for imparting training in basic trades like those of fitter, turner, moulder, welder, carpenter. Formerly, it was attached to the Silver Jubilee Polytechnic and later on it was made independent. Another centre of similar type located at Shimoga was shifted to Bhadravati where it was merged with the Industrial Training Centre.

Artisan Training Institute

In order to rejuvenate the traditional industries in rural areas in the district, several cottage industries centres and industrial schools had been started. Just before the re-organisation of

States, there were eleven such centres in the district. They were Lacquerware Centre, Shimoga, Carpentry Centre, Anandapuram, Rattan Centres, Shimoga and Sagar, Mat Weaving Centres at Yennekoppa and Kumblur, Tanning and Flaying centre, Sagar, Tailoring Centre, Sagar, Pith and Hat Manufacturing Centre, Sorab, and Government Industrial Schools at Shimoga and Sagar. Some of these institutions were itinerant and they were following their own methods of training. For purposes of having uniformity in the system of training and syllabus, the Government recognised those training centres into a full-fledged Rural Artisan Training Institute at Sagar on 1st December 1959. After a lapse of four years (1963), this was reconstituted as the Artisan Training Institute. This Institute lays emphasis on providing training to the hereditary artisans in the use of improved tools and equipment so as to enhance their efficiency and skill and to see that they are settled in the industry. Training is offered in carpentry, smithy, tanning, sandalwood and ivory-carving, pottery, ceramics and making glass-beads, bamboo-work and mat-weaving, tailoring, etc. Normally, the period of training is of two years for each craft except in respect of leather-work for which it is of one-and-a-half years. During the period of in-service training, a sum of Rs. 40 is given to each trainee for the first 18 months and Rs. 50 for each of the remaining months. The intake capacity of the Institute under each craft is 15 candidates. During 1960-61 about 66 candidates were trained in this Institute, while in 1971-72 about 92 candidates underwent the training.

The Model Carpentry and Smithy Centre, which was formerly known as the Model Workshop, was started in 1957 at Shimoga by the Department of Industries and Commerce with the main object of giving training in carpentry. In 1962, a blacksmithy section was added. It is providing in-plant training which is compulsory for those who pass out from the Artisan Training Institute.

**Model Carpentry
and Smithy
Centre**

There is an Agricultural Machinery Centre at Sagar maintained by the Department of Industries and Commerce. It is imparting training in trades like smithy, welding and carpentry and servicing and repairing of agricultural implements. The duration of the training is one year.

**Agricultural
Machinery
Centre**