

CHAPTER V

INDUSTRIES

RAICHUR, though potentially a rich region, remained industrially backward quite long after the dawn of modern era. Neither the broad-gauge railway line, laid as far back as 1871, connecting Raichur with Bombay and Madras and the metre-gauge line, opened in 1885, linking the district with Machilipatnam in the east and Marmagoa in the west, touching many important trade and industrial centres between them, nor the two world wars altered materially the predominant agricultural character of the district. "Poverty amidst plenty" would have been, perhaps, the remark of an industrialist when his eyes surveyed the expansive black soil of the Raichur doab. He would fain visualise the time when a harmonious blend of increased agricultural and industrial activities would put an end to poverty and assure a high standard of living for the people of the district. Thanks to the mighty Tungabhadra Project, the various developmental schemes under it and under the successive Five-Year Plans are imparting a new measure of diversity to the economy of the district and industries have started coming up. There is ample scope for starting new industries, both big and small.

The occupational classification of the people of the district discloses the fact that only a very small percentage of the population is depending upon industries for their livelihood. According to the 1951 census, out of the total population of 9,53,640, 77.3 per cent depended upon agriculture and only 6.3 per cent on production other than cultivation, commerce claiming 4 per cent. If we take into consideration the percentage distribution of the working force between primary, secondary and tertiary sectors for the year 1961, it is 77.1, 8.9 and 14.0, respectively. Out of the total number of 2,378 factories in the State, employing 1,91,913 people, only 179 factories, employing 4,284 people, were in Raichur district in the year 1961. Even as a secondary means of livelihood, industry had only a poor base in the district. In the past, factors like non-availability of power and irrigational facilities, poor condition of agriculture and infra-structure, lack of finance and incentives and enterprise in the

industrial field among the people were responsible for the industrial backwardness of the district.

**Mineral
resources**

Though Raichur is poor in forest resources, it is rich in mineral wealth. The Dharwar rocks of the district are fairly rich in economic minerals, important among them being gold, iron, copper, galena, quartz, mica, feldspar, ochres, ilmenite, building stones and laterite brick earth. Raichur is a gold-producing district and its history of gold-mining dates from as far back as the Ashokan times. Several old workings are found scattered over parts of Hutti, Wandalli, Maski and Topaldoddi. Next to Kolar, Hutti is the biggest centre of production of gold in the country. Feldspar of ceramic use is found in Raichur taluk. The gritty murrum, which is a very good material for the manufacture of tiles, bricks and pottery, occurs near Maski and Kavatgi.

The various types of granites, gneisses and dyke rocks occurring in the district are of a high decorative value. They serve as a good material for building and also as road metal. The sand-stones of Kushtagi taluk have been found to be well suited for carving purposes. Iron ore of low and medium grades is found near Rajavoli and white quartz reefs suitable for glass and ceramic industries occur at several places in the district. Raichur, Sindhanur and Lingsugur are some of the important places where saline salts are found. There is red ochre near Kushtagi. (See also Chapter I).

**Old-time
industries**

The excavations conducted by archaeologists at Maski and some other places in the district revealed that the area was at one time an important centre of craft industries. A number of old specimens of jewellery, beads, artistic pottery, metalware, arms, coins, tools and implements that were found in the region give an idea of the high degree of craftsmanship that existed then. The decay of these arts and crafts is a sad story. Frequent wars and recurring famines and pestilences ravaged the country. The rainfall decreased due to the denudation of forest area, making the fertile lands less productive. The village artisans fell on hard days with the constant decline in the prosperity of the region. To add to their difficulties, later they were faced with competition from cheap, machine-made, imported goods. The artisans, unable to reconcile themselves with the rapidly changing economy of the country, began to depend on local *sahukars* or money-lenders who exploited them to the maximum possible extent. All these causes led to the decline of the old industries. Despite these adverse conditions, several arts and crafts were surviving even during the recent past. Among these, leather work, pottery, manufacture of handloom products, hand-embroidery and making of wooden idols and toys had their own pride of place in Raichur district.

Recent years have seen the rise of some new industries; cotton-ginning and pressing factories and oil mills have been started; a sugar mill at Munirabad, reinforced cement concrete manufacture at Raichur and gold-mining at Hutti are the other industries, and a review of these is made in the course of this chapter. The execution of the Tungabhadra Project is ushering in a new era of prosperity. The power development schemes undertaken by the Government are affording electricity for starting a large number of new industries and the Government are giving every other possible facility and concession with a view to helping industrial development of the State at a quicker pace.

Hydro-electric power began to flow in the district of Raichur very late. Its supply began, for the first time, in 1963 from the Munirabad Power House, which is on the left side of the Tungabhadra Dam, heralding a new era of prosperity in the district. Till then, only diesel power was available at a few important places. Raichur town received power generated from diesel sets in the year 1935. Three diesel sets of 180 kw. each, installed at Raichur, supplied power for Raichur town and Devarsugur Water Works. In 1955, power was supplied to Koppal and Gangavati towns from the thermal set installed at Munirabad for feeding the project area. The district had to wait for sometime more, till the implementation of the Tungabhadra Project, for the arrival of hydro-electric power. The Tungabhadra Project, though primarily an irrigation project, is also generating power. The Tungabhadra Hydro-Electric Scheme on the left bank of the river was started by the Government of Hyderabad and, on the reorganisation of the States, it was transferred to the Government of Mysore.

The total power potential of the various power sites was estimated at 1,72,500 kw., 1,00,500 kw. on the left bank and 72,000 kw. on the right bank. The Government of Mysore decided to take up construction of the power house at the foot of the dam, on the left bank only. The sanctioned scheme envisaged the construction of a power house with two units of 9,000 kw. each, with provision for two more units of the same capacity, and the laying of transmission lines, interconnecting the power house and sub-stations in the districts of Raichur and Gulbarga and beyond. The power generated was proposed to be transmitted to a distance of 190 miles through 110 KV lines, to a distance of 117 miles through 33 KV lines and to a distance of 250 miles through 11 KV lines. The project also envisaged the construction of step-down stations at Sindhanur, Raichur, Shahapur, Shahabad, Hutti, Maski, Yadgir, Gulbarga and Humnabad.

Turbines and generators were supplied by Messrs. Hitachi Limited, Japan. Turbines of 12,500 H.P. each, when operating under the net head of 65 feet, with a rating capacity of 1,000 KVA

at .9 power factor, were of verticle shaft single runner connected directly to vertical shaft generators. The Government decided to get the machinery erected by its own engineers, and so, four engineers were deputed to Japan to study the various components of the machinery. During the Second Five-Year Plan the power house was completed and one of the generating units was installed. The outlay for the purpose during the Second Plan was about Rs. 330 lakhs.

Considerable progress was achieved in the development of hydro-electric power during the Third Plan period and three units of 9,000 kw. each under the left bank (Munirabad) scheme, were commissioned. Construction of 110 KV, 33 KV and 11 KV lines was taken up in the year 1961 with sub-stations at Raichur, Sindhanur, Maski and Hutti. The 110 KV line, starting from Munirabad Power House, was extended upto Raichur and further on to Gulbarga side. The length of the 110 KV line is nearly 146 miles and it costs about Rs. 1,00,00,000. A sub-station has been installed at Sindhanur to tap the power from this line for further distribution on 33 KV and 11 KV lines to feed the industrial units of Hutti Gold Mines, etc. The cost of these two lines is placed at about Rs. 13,00,000. Two more sub-stations have also been installed at Maski and Hutti at a cost of nearly Rs. 18 lakhs. A new 110 KV line has been drawn from Sindhanur to Hutti, a distance of 35 miles, for meeting the enhanced power requirement of Hutti Gold Mines. A sub-station of 20 MVA capacity has also been installed at Hutti.

With the commissioning of the sub-station at Sindhanur at the end of 1962, Sindhanur and surrounding villages received power. The transmission lines were further extended upto Raichur city and it received hydro-electric power and light in June 1964.

**Rural
Electrification**

There was hardly any village served by electricity before the advent of hydro-electric power. But now more and more villages are being covered by the rural electrification programme. The demand for pumpsets is mostly from the taluks of Koppal, Yelburga, Kushtagi, Deodurg, Lingsugur and a part of Raichur taluk which have not been served by irrigation facilities provided by the Tungabhadra Project. In 1966-67, more than 50 villages were electrified and more than 300 irrigation pumpsets were serviced in the district. The corresponding numbers during the years 1967-68 and 1968-69 were 95 and 1,234. The following statement shows the number of villages electrified and irrigation pumpsets serviced upto end of March 1969 in the various taluks of the district :—

Sl. No.	Name of taluk	No. of villages electrified	No. of irrigation pumpsets serviced
1	2	3	4
1.	Raichur ..	26	158
2.	Manvi ..	25	170
3.	Sindhanur ..	28	81
4.	Gangavati ..	25	27
5.	Kushtagi ..	17	90
6.	Lingsugur ..	37	325
7.	Deodurg ..	16	115
8.	Koppal ..	46	542
9.	Yelburga ..	20	230
Total ..		240	1,738

It was also proposed to supply power to about 30 villages and service 800 irrigation pumpsets during 1969-70. From 1964 to the end of April 1969 the extension of 11 KV lines covered a total distance of more than 800 miles. The cost of this scheme, including that of electrification of villages and servicing of pumpsets, was about Rs. 800 lakhs.

The hydro-electric power of the Tungabhadra Project is not only serving the needs of the farmers but also that of the industrialists. It has provided a sound base for industrial expansion and development in the district. Among the few notable industries developed after the advent of hydro-electric power, mention may be made of Hutti Gold Mines, Chemicals and Fertilisers, Sugar, Pulp and Board at Munirabad. About 800 kw. of power has been earmarked for the proposed co-operative spinning mill at Raichur which is expected to go into production very shortly. In the rural areas also, the people have not failed to realise the importance of power for industrial purposes.

Power for industries

The arrival of abundant power in the district has raised new hopes in the minds of the people. It is leading them into new fields of adventure on the developmental front. More and more people are coming under its spell and the number of consumers has gone up to 20,000. The revenue realised from diesel sets had been less than a lakh of rupees per annum. Now it has gone up to Rs. 45 lakhs per annum. It is proposed to have step-down stations at Koppal, Gangavati and Kushtagi to meet the demand from both agricultural and industrial sectors.

The magic of electric power has attracted the attention of the housewives too. It is slowly making its way into kitchens as well. In urban areas like Raichur city, Hutti and Gangavati and

other places, the demand for "All Electric Houses" is on the increase. The numbers of connections provided for this purpose by 1969 were about 60 in Raichur city, about 30 in Hutti and about 10 in the Koppal sub-division.

It is estimated that the demand for power is increasing at the rate of five per cent per annum. Action has already been taken to supply also Sharavathi power from Hubli to the Munirabad region. The Munirabad area will be fed on 220 KV lines after the new receiving station at Munirabad is completed. The work relating to this is now progressing.

**Administrative
set-up**

The generating station at Munirabad is under the control of the Mysore State Electricity Board. The revenue district of Raichur has been made a part of the Munirabad Circle, which came into existence on the 31st August 1968, with its Circle Office at Munirabad, while the district itself forms the Raichur Division, which was established in the year 1964, with its Divisional Office at Raichur. There are three sub-divisions at Raichur, Sindhanur and Koppal in the division, each with an Assistant Engineer. There is an Executive Engineer (Electrical) for the Division, who is under the administrative control of the Superintending Engineer (Electrical) who is in charge of the Munirabad Circle. Maintenance and distribution of power, maintenance of sub-stations, construction work relating to electrification of villages and towns and arranging supply of power for irrigation pumpsets—these are the main functions of the Divisional Office headed by the Executive Engineer. There are about 130 members of staff working under the control of the Executive Engineer, including three Assistant Engineers, two Junior Technical Assistants, twelve Junior Engineers, 29 Supervisors and other technical and ministerial staff.

LARGE-SCALE INDUSTRIES

Next to Kolar, Raichur district has the distinction of having gold mines which are of economic importance to the State and the country. Gold occurs in the region in reefs of quartz in the belts of the Dharwar schists, particularly in the Maski-Hutti-Shorapur belt.

**Gold-Mining
Industry**

The history of gold-mining in the Hutti area is said to have its beginning in the pre-Ashokan period. Hutti gold mines are considered to be one of the most ancient metal workings in the world. Prospecting in recent times had disclosed a large number of ancient workings scattered throughout this area. It is evident from the remains of these workings that, at some unknown date, this area was systematically explored, prospected and mined for a long period by some race of people highly skilled, not only in mining but also in the extraction and metallurgy of gold. Some

of these ancient workings are of considerable depths and at Hutti, there is the deepest known ancient working in which the people followed a gold-bearing vein to a depth of 640 feet below the surface. "Numerous old workings for gold scattered in various parts of Raichur doab and Surapur taluk of Gulbarga district afford ample evidence that at some unknown date this country was systematically explored, prospected and mined for gold by a race of people highly skilled in mining and simple practical methods of metallurgy. The old Hutti workings which reached a phenomenal depth of 640 feet—unknown in any other part of the world in ancient metal mining—testify to the skill of these prehistoric miners," says A. M. Herson*. This may be said to be a tremendous achievement of those days. It was very necessary to clear the water from the workings. It was a great problem for the miner, that too at that depth. The bottoms of these ancient workings were completely filled with broken *chatties* or pots which would indicate that the water entering the working was removed by means of these *chatties* passed from hand to hand, a long human chain from the bottom of the working to the surface. In addition, they were well aware of the ease with which timber could be used for the support of underground workings. Timber props have been removed from the ancient workings in this area, still in a good state of preservation, showing the original axe marks where they were cut to fit against each other. Some of these timbers also contain deposits of minerals in the interior of the timber showing that they must have been in these workings for many hundreds of years. One piece of timber taken from an ancient working was tested to determine its age and the tests confirmed that this particular piece of timber is approximately 2,000 years old.

Examination of some of these old workings has shown that the miners used 'fire-setting' as the means of breaking the rock before carrying it to the surface for gold to be extracted. Fire-setting is a very simple operation consisting of the lighting of a fire against the face of the rock. When it is sufficiently hot, cold water is thrown on to the face of the rock with the result that the sudden cooling of the rock produces a rapid contraction and pieces of the rock break off. Fire-setting is necessarily a slow method of breaking a rock and that a long period of time would have been required for any working to reach the depth of 640 feet.

The gold-bearing quartz was crushed on the surface between a hollow block and a curved rolling block (now known as Mul-lackers) and a large number of these crushing stones have been

*A Popular Geology of Hyderabad (Hyderabad Geological Series - Bulletin No. 6) by A. M. Herson, Government Press, Hyderabad, Deccan, 1948.

found in the area. A number of them were still in use at the mines in recent times, for the crushing of samples of gold-bearing quartz. Gold was recovered by passing the crushed ore, mixed with water, over goat skins, the fur trapping the heavy particles of gold while allowing the lighter minerals to be washed off. The final stage was the smelting of these concentrates of small particles of gold in an earthenware crucible, when the particles melted and were poured into some form of mould to form a solid mass of gold. This lump or mass of gold could then be utilised for making ornaments or for such other purposes for which it was required. In this connection, it is interesting to note that there is some evidence to show that these ancient miners were also aware of the fact that gold would combine with mercury to form an amalgam, and that this process, which is used today for the purpose of extracting gold from gold-bearing ore, may have, in fact, also been used by them.

At some remote time, this mining activity, for reasons unknown, ceased, and during the succeeding centuries, all traces of the ancient workings at surface were rubbed out, as the workings became filled with surface soil. For a long period of time, might be about two thousand years, therefore, the evidence of the skill and ingenuity of these ancient miners lay hidden.

Modern mining

Modern mining operations at Hutti commenced in 1886 when the Hyderabad (Deccan) Company was formed to carry out systematic investigations and prospecting for gold in the area. This company carried out extensive prospecting operations for about 12 years from 1887-1899, and discovered more than 300 ancient workings in the Hutti, Topaldoddi, Wandalli, Maski, Budinni and Uti areas in the Raichur doab and at Manglur in the Shorapur taluk of Gulbarga district. But only in the case of a very few of these workings, actual testing upto the bottom portions was carried out. Soon, they realised that diffused operations of this sort would be an unprofitable venture, when Hyderabad (Deccan) Company formed three subsidiary companies—(i) the Hutti (Nizam's) Gold Mines Ltd., (ii) the Topaldoddi Gold Mines Ltd., and (3) the Wandalli (Deccan) Gold Mining Company Ltd., with a view to undertaking detailed investigations and taking measures for development of the mines.

The Topaldoddi Gold Mines Limited.—The Topaldoddi Gold Mines Limited started its mining operations in the year 1905 in the neighbourhood of Topaldoddi and Chinchkerki, both of which are situated about ten miles away from Hutti. It produced 2,132 ozs. of gold worth about £8,319 (Rs. 1.12 lakhs) in 1908. The ore of this mine was reported to have proved to be of low grade. The company closed down the mines in the year 1908 and its assets were transferred to the Hutti Company.

The Wandalli (Deccan) Gold Mining Company Limited.—This company commenced its operations in the year 1891 in the vicinity of the village Wandalli, about seven miles east-north-east of Hutti, where a large number of old workings were traced. Five shafts were sunk through the old workings to different depths, totalling, in all, about 1,100 feet. A few trial crushings were reported to have shown 9 to 10 dwts. of gold per ton. Mainly, east-west reef lodes were mined. The yield of gold varied from place to place. It ranged between nil and six-and-a-half ozs. per ton of ore. Pyrites and arsenical pyrites were stated to have been associated with the gold found in this reef.

The highest production in this mine was in the year 1899 when 18,970 tons of ore yielded 7,882 ozs of gold. It was said that almost the entire production of gold in the former Hyderabad State during 1898-1900 came from this mine. Mr. Bosworth Smith, a well-known mining engineer of those days, examined this mine later. The ancient miners, according to him, had gone vertically more than 400 feet down. As regards the work of the company, he observed that exploration had not been carried out thoroughly in the region and mining then had never gone below 750 feet in depth. He was of the opinion that Wandalli Mines had great possibilities.

The Hutti Gold Mining Company Limited.—This company started its operations in the auriferous lodes in the Hutti field. Its crushing operations commenced in the year 1903 with a production of 3,809 ozs. of gold. It went up to 21,200 ozs. in 1914, the average output during the period from 1914 to 1918 being 16,539 ozs., which was valued at £63,463 (Rs. 8.36 lakhs). The total bar-gold produced during the period from 1903 to 1920 was about 256,747 ozs., valued at £1,010,757 (Rs. 1.36 crores). The total quantity of ore treated was about 417,000 tons. The yield, on an average, stood at 11.37 dwts. per ton. During the operations of this company, much of the gold was extracted from the auriferous quartz of the Main Reef Mine. The workings were reported to have reached a depth of 3,500 feet below the surface.

From 1904 to 1916, dividend was paid regularly. But after the outbreak of the First World War, things changed. The company came to the conclusion that the richer portions in the reef were exhausted and money was required for further exploration and development. But it could not raise sufficient funds on account of the adverse conditions prevailing because of the First World War. The company was closed down in the year 1920, mainly due to lack of funds and technical difficulties.

The World War, more than anything else, had brought about the end of the gold mining industry in this area. The subsequent

period of about 20 years passed with very little interest evinced in the industry. After this period, there was a revival of interest in this industry due to the rapid rise in the price of gold. The Geological Department of the former Hyderabad State took up, in 1932, a revision survey of the gold-bearing rocks of the Raichur doab and the Manglur field of Gulbarga district. In addition to the old areas, new areas, in the Maski band, were also prospected. A long line of ancient workings was newly discovered in the auriferous zone near Hunkuni in Deodurg taluk. Encouraged by the results of these attempts, the Government of former Hyderabad State launched upon a programme of detailed prospecting in the most favourable zones of Hutti, Maski and Manglur areas.

Hutti Mines

Messrs. John Taylor and Sons started a detailed prospecting of the Hutti Mines, located fifty miles due west of Raichur, in December 1937, under the control of the Hyderabad Government. Numerous old workings were trenched. Geophysical prospecting was adopted wherever possible and diamond-drilling operations were conducted. These investigations brought to light that the reefs in the area run altogether for a length of more than 11,000 feet. Till then, only a length of 3,000 feet had been prospected. It was decided to re-open the mines at Hutti and to bring the mines into production by erecting, in the first instance, a pilot plant to treat 150 tons of ore a day, with provision for expansion to 300 tons a day. Additional funds were made available for this purpose by the Hyderabad Government. The designing of the plant and the programme of underground exploration were completed; but due to the deteriorating international situation, it became difficult to obtain some of the heavier crushing machineries. During the three years from 1939 to 1942, however, a considerable part of the development programme was completed. The Village Reef Mine, near the old Hutti Mine, and the Oaklay's Reef Mine were de-watered and developed with detailed re-sampling. By 1942, 229,536 tons of ore reserves, of an average yield of 4.62 dwts. of gold per ton, were proved. The cost of these operations was about £100,000 (roughly about Rs. 13.60 lakhs). Finding the results of this venture satisfactory, the Hyderabad Government sanctioned a further sum of £250,000 (Rs. 33.75 lakhs) for re-establishing this gold mining industry. But unfortunately, because of the outbreak of Second World War, all the operations had to be suspended. In May 1942, the Hyderabad Government decided, in view of the position then obtaining in India, to place the mines on a care-taker basis, *i.e.*, to keep the underground workings open and buildings and machinery in good condition until such time as it would be possible to proceed with the project.

At the end of the war, in the middle of 1945, the Government of India sanctioned licences for import of machinery under the

Post-war Reconstruction Scheme and in October 1945, the Hyderabad Government sanctioned the purchase of the necessary plant and equipment. Early in 1946, active operations were resumed at Hutti after a break of four years.

The operations at Hutti between 1937 and 1947 were under the control of the Hyderabad State Railway Board, but on successful completion of the original development and prospecting programme, it was finally decided that a company with an authorised capital of one crore of rupees (Osmania currency) and an issued capital of O.S. Rs. 60 lakhs should be floated to continue operations. The Hyderabad Government purchased 80 per cent of the shares and the remaining 20 per cent were available for public subscription. A company called "The Hyderabad Gold Mines Co. Ltd.," was formed in 1948 and registered with the Registrar of Joint Stock Companies, Hyderabad, and shortly afterwards, the issued capital was increased to O.S. Rs. 70 lakhs. In January 1949 the issued capital was again increased by O.S. Rs. 10 lakhs to a total of O.S. Rs. 80 lakhs. With the reorganisation of States in 1956, this company was transferred to the Mysore State and came under the control of the Mysore Government. The name of the company was then changed to "The Hutti Gold Mines Company Ltd."

Hutti Gold
Mines Co. Ltd.

The total investment of the company till about the end of December 1968, was about Rs. 5.1 crores—about Rs. 57 lakhs in the form of share capital and the remaining amount of Rs. 4.53 crores being in the form of loans from the State and the Central Governments. These loans were provided for exploratory and developmental purposes, and it has been envisaged to raise the production to 910 tons per day from the present level of 400 tons per day. The loans will have to be repaid in a period of 15 years, after the schedule of enhanced production is reached.

The gold-bearing reefs are explored and developed horizontally along the strike by means of tunnels or 'drives', and downward by means of 'rises' and 'winzes'. The drives are developed at vertical intervals of approximately 30 to 35 metres. After the initial exploration and development, stoping (or production) operations are started to extract the ore between two successive levels. The stoping method adopted here is known as 'Shrinkage' or 'Magazine' stoping.

Mining
operations

Pneumatic drills operated by compressed air are used for all mining operations. Water, entering the mine, is collected in large sumps at different levels and pumped up to surface. About 150,000 gallons of water per day is pumped out of this, most of which is utilised in the gold-recovery plant in the treatment of the ore and recovery of gold.

**Process of
gold recovery**

The ore, found in the underground workings, is broken into pieces by drilling and blasting before it is hoisted up to the surface. Then it is sent to the mill where it is crushed and ground to fine powder. This powder is then mixed with water and passed over tables covered with blankets which trap the free gold. The further purification of this concentrate of gold is effected by melting it with fluxes to remove the impurities. Then it is cast into bars, weighing about 25,000 gms. each. These bullion bars are sent to the Government of India Mint in Bombay for refining. The gold which is not recovered by the blankets is either very fine or is associated with other minerals such as iron sulphide. This is, therefore, agitated in a weak solution of sodium cyanide which dissolves the major portion of the gold. The cyanide solution containing dissolved gold is passed over zinc shavings which causes the gold to be precipitated. This gold precipitate is treated in acid and then roasted to remove impurities and then cast into bullion bars which are also sent to the Bombay Mint for refining.

The gold bars, sent to the Bombay Mint, are further purified to the international standard of 999.5 fine (1000 fine is 24 carat gold) and made into 'standard' pieces of guaranteed weight and purity, of 19 gms., 50 gms., 100 gms., 200 gms. and 500 gms. These pieces are sent to various centres where they are sold to industrial consumers who hold permits under the Gold Control Act, 1968, at a price approved by the Gold Control Administrator.

Production

Production has increased steadily since the inception of this company, the gold recovery plant having been modified and expanded from time to time. Oaklay's Reef, Middle Reef, Zone I Reef, Village Reef, Strike Reef and Prospect Reef—these are the six reefs which are being actively worked at present, through three major shafts *viz.*, Mallappa Shaft, Central Shaft and Village Shaft, each of which is about 550 metres in depth. The main mine (Main Reef), which was extensively worked in previous years and from which almost all the gold production during previous mining operations came, is now water-logged. It can be re-opened only after de-watering and reclamation. This is rather a major operation requiring considerable amount of money and time. It is expected that it will be re-equipped and re-opened in course of time.

During the first six years after the formation of the company, a total quantity of 55,116 ounces of gold, valued approximately at Rs. 1.38 crores, at an average rate of Rs. 250 per ounce, was recovered. A pilot plant was set up and the crushing was commenced in the month of September 1948. It was replaced by the main mill in November 1949. A cyanidation plant was put up in August 1950, for recovering gold from the tailings. Later, the

capacity of the mill was increased to 300 tons a day from 150 tons a day.

A total quantity of 97,186 ounces of gold, valued approximately at Rs. 2.91 crores, at an average rate of Rs. 300 per ounce, had been recovered during the next six years ending with 1959-60. In 1960-61, the recovery of gold was 21,098 ounces, the value estimated being Rs. 78.48 lakhs at Rs. 372 per ounce. The total production of ore from the Hutti Mines since September 1948, until December 1968, has been 16,86,011 tons, which yielded 3,71,390 ounces of gold at a recovery grade of 4.41 dwts/ton* and a feed grade of 4.79 dwts/ton.

In addition, 54,872 tons of old tailings yielded 3,622 ounces of gold making a total return of 3,75,012 ounces. The current rate of production of ore is approximately 400 tons per working day, yielding approximately 2,500 ounces of gold a month, at an average recovery grade of 5.00 dwts/ton. Annual productions of gold and other metals—silver and copper (*i.e.*, metals produced along with gold)—at the Hutti Mines from the year 1953-54 to 1967-68 are indicated in Table I appended at the end of the chapter.

The original estimate, worked out in the month of May 1948, of ore reserves of 194,536 tons of quartz, with an average recovery of 4.54 dwts. of gold per ton, was revised to 4,11,635 tons of proved reserves of ore of an average recovery of 4.97 dwts. of gold per ton at the end of September 1961, and the latest estimate (March 1968) has put the ore reserves at 9,53,326 tons of 5.80 grade, which is quite encouraging. On Strike Reef, the development between the 1,300 and 1,500 levels added 40,214 tons at 9.76 dwts/ton to the proved ore reserves. The extensive development carried out on Oaklay's Reef, mainly at the 1,400 and 1,500 levels has resulted in the addition of 62,276 tons at a grade of 6.48 dwts. ton; 5,030 tons of high grade ore (9.28 dwts/ton) have been also added from the Middle Reef.

Year-wise estimated figures of ore reserves

Year ending with	Tons	Grade
30th September 1951	1,28,502	5.32
30th September 1952	1,55,372	5.39
30th September 1953	1,84,296	5.43
30th September 1954	1,07,377	5.82
30th September 1955	95,762	5.77
30th September 1956	84,303	5.42
30th September 1957	1,05,984	4.91
30th September 1958	1,49,923	4.94

*dwts/ton = dwts. of gold per ton (of ore).

<i>Year ending with</i>	<i>Tons</i>	<i>Grade</i>
30th September 1959	2,21,005	4.70
30th September 1960	2,90,315	4.90
30th September 1961	4,11,635	4.97
30th September 1962	5,98,307	5.69
30th September 1963	6,67,267	5.61
31st March 1964	6,98,995	5.54
31st March 1965	7,36,683	5.43
31st March 1966	7,62,233	5.45
31st March 1967	8,46,975	5.68
31st March 1968	9,53,326	5.80

The above estimates of proved reserves are on the conservative side, being based on very strict requirements, but a better appreciation of the total amount of ore that can be mined can be obtained from the fact that during the past 20 years, over 50 per cent of the tonnage of mine ore, other than from development (*i.e.*, ore from stopes or production areas) has been obtained from outside the reserves. As a rough guide, therefore, it may be assumed that for every ton of payable ore reserves calculated as definitely proved, at least one additional ton of payable ore will also be available from outside reserves, although such tonnages cannot be calculated in the normal manner or with any degree of accuracy. The substantial increase in the ore reserves since 1956 is the result of increased development footage achieved. This has to be further increased by exploration and development schemes.

Working results

These mines had their ups and downs in the past but have now turned the corner. There has been a gradual improvement in the output of gold. The company has succeeded in making this risky venture a profitable industry. The following table and also tables II and III appended at the end of the chapter throw some light on the working results of this venture:—

Particulars of tonnage treated and gold recovered at the Hutti Gold Mines

<i>Year</i>	<i>Tonnage treated</i>	<i>Fine ounces of gold recovered</i>	<i>Recovery grade dwts/ton</i>
1	2	3	4
1948-49	4,315	2,457	11.83
1949-50	29,235	6,482	4.43
1950-51	31,903	9,079	5.69
1951-52	38,556	9,682	5.02
1952-53	46,755	10,488	4.48
1953-54	68,344	16,928	4.95

1	2	3	4
1954-55	82,804	17,493	4.28
1955-56	83,343	18,099	4.34
1956-57	90,052*	16,144	3.73
1957-58	92,579††	14,160	3.06
1958-59	93,353**	15,248	3.37
1959-60	1,05,638†	16,041	3.05
1960-61	1,15,209	21,098	3.66
1961-62	1,21,777	25,113	4.12
1962-63	1,21,443§	28,986	4.79
1963-64			
(Half year ended			
31-3-1964)	58,564	13,41	4.69
1964-65	1,13,613§§	25,323	4.68
1965-66	1,15,926‡	26,765	5.70
1966-67	1,17,768	29,607	5.03
1967-68	1,19,698	29,608	4.95

* Includes 6,274 tons of old company tailings re-treated.

†† Includes 7,085 tons of old company tailings re-treated.

** Includes 4,969 tons of old company tailings re-treated.

† Includes 523 tons of old company tailings re-treated.

§ Includes 717 tons of old company tailings re-treated.

§§ Includes 7,952 tons of old company tailings re-treated.

‡ Includes 27,352 tons of old company tailings re-treated.

Of the seven known reefs in the region, four have not been developed below 1,500 feet from surface and three below 1,000 feet. An extension of reef, which is known to have a length of 4,000 feet on surface, south of the present workings, has not yet been explored. The main mine, which was worked by the previous company to a depth of 3,500 feet and which remains to be de-watered and re-claimed, holds possibilities of payable ore reserves within the areas developed by the old company. In addition, extensions are known to exist to north and south which have not yet been explored. There are good prospects of discovering further ore on these extensions. The Hutti Mines, although of lower average grade, have geological conditions similar to those of the Kolar Gold Fields where the continuity of payable gold-bearing reefs has been proved for a depth of more than 10,000 feet.

Though gold occurs chiefly in the fissure-filled quartz veins (known as reefs), its deposition may extend several feet to the country rock on both sides of the reefs. This whole zone of

mineralisation is called 'lode matter'. The width of this lode matter exceeds, in some places, 100 feet. The distribution of gold within the reef is often erratic, which makes it difficult to include all the ore in the proved ore reserves. Although these wide mineralised zones of country rock usually show lower proportion of gold contents, they contain large quantities of payable ore. To-date, nearly all development rock, much of which was of very low grade, 2 dwts/ton or less (3.43 gms./M. tonnes or less), has been treated in the recovery plant and the grade of ore has averaged 4.92 dwts./ton (7.51 gms./M. tonnes) over twenty years of operation. To maintain the minimum payable grade of ore, it has been found necessary to mine and blend the higher grade portions in reserve. Development has confirmed the overall low-grade nature of the reefs as shown by the following table :—

Statement showing the different grades of ore reserves in the Hutti Gold Mines

Year	Total feet	Payable									
		Unpayable		Low Grade		Medium Grade		High Grade			
		below 2 dwts/ton		2-4 dwts/ton		4-6 dwts/ton		6-10 dwts/ton		over 10 dwts/ton	
		ft.	%	ft.	%	ft.	%	ft.	%	ft.	%
1950-51	3,149	1,171	37	994	32	303	10	134	4	547	17
1951-52	3,484	1,070	30	1,071	31	1,072	31	175	5	93	3
1952-53	3,956	1,934	49	955	24	509	13	274	7	284	7
1953-54	6,003	2,780	46	2,165	36	320	5	472	8	266	5
1954-55	6,565	3,997	60	1,420	22	503	8	456	7	189	3
1955-56	5,677	3,381	60	1,321	23	578	10	262	5	135	2
1956-57	6,952	4,660	67	1,120	16	335	5	494	7	343	5
1957-58	14,583	9,744	67	2,427	17	1,116	7	705	5	591	4
1958-59	15,553	11,056	71	2,420	16	622	4	702	4	753	5
1959-60	13,852	10,320	75	1,552	11	751	5	473	3	756	6
1960-61	17,185	10,780	63	2,844	16	1,410	8	1,167	7	984	6
1961-62	15,320	9,190	60	2,319	15	1,112	7	965	6	1,734	12
1962-63	10,620	5,663	53	2,261	21	08	8	886	8	1,002	10
1963-64 (1/2 year)	7,016	3,590	51	1,396	20	718	10	666	10	646	9
1964-65	8,774	3,907	45	2,618	30	1,102	12	713	8	434	5
1965-66	8,056	4,098	51	1,746	22	884	11	490	6	838	10
1966-67	13,471	6,739	50	2,980	22	1,009	8	934	7	1,809	13
1967-68	13,490	6,625	49	3,450	26	1,130	8	1,007	7	1,278	10
Total	1,73,706	1,00,705	58	35,059	20	14,282	9	10,975	6	12,685	7

**Development
Schemes**

Recommendations were made to the Planning Commission in 1955 for a development scheme under the Second Five-Year Plan, designed to prove the existence of sufficient ore reserves at Hutti to warrant the erection of a treatment plant capable of handling 1,000 tons of ore per day, as that would allow the mines to be put on a really profitable basis by distributing overhead charges over a large tonnage, thereby reducing working costs, while, at the same time, exploiting the low grade reserves to the maximum and giving the mines a long working life.

There are large quantities of low grade ore at Hutti, much of which could not be worked, as the low content of gold was insufficient to cover the cost of mining and treatment on a small scale. The existing treatment plant is limited to 400 tons per day. The ultimate object is, therefore, to increase production from 400 to 1,000 tons per day, thus very considerably reducing the cost per ton so that even this low grade ore is profitably worked. The scheme consisted of two stages. The first stage was to explore and develop the reefs as quickly as possible by increasing the annual development footage to 15,000 feet. It was impossible to say what the results would be, but the chances were good and the expenditure was warranted. As confidently expected, the development scheme resulted in the proving of sufficient ore reserves to justify the production of 1,000 tons of ore per day, and a decision was taken in 1963 to proceed with the second part of the expansion scheme.

The first part of the scheme was drawn up to cover seven years as recommended by the Planning Commission and the expenditure, year by year, was as given below :—

<i>Year</i>	<i>Expenditure in lakhs of Rs.</i>
1957-58	14.00
1958-59	17.00
1959-60	18.50
1960-61	20.00
1961-62	25.00
1962-63	17.00
1963-64	4.00
Total	115.50

The scheme provided for a minimum total of 43,000 feet (say eight miles) of exploratory development (excluding normal mine development amounting to about 36,000 feet) during the seven years. This covered the underground exploration of all the known reefs over their then known length, and to a depth of about

1,500 feet or about twice the average working depth of the mines in 1957. A new and valuable reef was found during February 1958 by underground development and has since been under active exploration.

The following table gives the yearwise details of development from 1953-54 to 1967-68 :—

<i>Year</i>	<i>On reef feet</i>	<i>Off reef shafts, etc.</i>	<i>Total feet</i>
1953-54	6,003	336	6,339
1954-55	6,565	953	7,518
1955-56	5,677	535	6,212
1956-57	6,952	784	7,736
1957-58	14,583	794	15,377
1958-59	15,553	1,808	17,361
1959-60	13,852	3,039	16,891
1960-61	17,185	2,779	19,964
1961-62	15,320	2,672	17,992
1962-63	10,620	2,532	13,152
(1/2 year)			
1963-64	7,016	701	7,717
1964-65	8,774	1,616	10,390
1965-66	8,056	2,195	10,251
1966-67	13,471	1,439	14,910
1967-68	13,490	1,544	15,034

The cost of production, excluding depreciation and interest on loans and royalty, at production of 1,000 tons a day, has been estimated and is given below along with the actual cost of 1966-67 and 1967-68 :—

<i>Particulars</i>	1966-67	1967-68	At 1,000
			tons a day
Tons treated per month (Mine ore only).	9,814	9,975	26,000
Working cost per ton— (in Rs.)	74.3	84.70	62.50
Working cost in terms of dwts/ton at current gold price (average for year).	3.36 (Rs. 14.25 per gm.)	3.46 (Rs. 15.6 per gm.)	2.50 (Rs. 16.8 per gm.)

It can thus be seen that it would be possible to mine and treat ore of a grade of nearly one dwt/ton less than that of the present grade without incurring losses, which is a very important

factor in the profitable working of a low-grade mine such as Hutti. A major benefit will be in the form of steady employment to a large number of persons for a considerable number of years, thus contributing to an improvement of the economy of the district. The scheme includes a new crushing plant and gold recovery plant for treating 910 metric tons per day and procurement and erection of new electric hoists, new headgears etc., and development of mines at different depths. It also provides for the construction of a large number of residential quarters for officials and employees. More than 75 per cent of the work under the scheme has been completed. The rest will be completed soon.

Employment

The gold mining industry is providing employment to about 2,500 people and disbursed about Rs. 59 lakhs as wages in 1967-68. The number has gone up to 2,685 as per the figures for the end of June 1969, among whom there were 2,556 men and 129 women. Since 1948, when there were 689 employees, the number has been steadily rising. The year-wise particulars relating to the number of employees and wages paid are as given below :—

<i>Year</i>	<i>No. of Employees</i>	<i>Wages paid (in Rs.)</i>
1952—53	1,384	12,38,000
1953—54	1,242	14,36,000
1954—55	1,304	15,60,000
1955—56	1,496	16,66,000
1956—57	1,548	17,76,000
1957—58	1,530	16,90,000
1958—59	1,800	17,30,000
1959—60	1,890	20,30,000
1960—61	2,150	25,00,000
1961—62	2,380	29,40,000
1962—63	2,220	33,90,000
1963—64	2,260	18,30,000
1964—65	1,950	32,90,000
1965—66	2,330	37,20,000
1966—67	2,370	47,20,000
1967—68	2,420	59,25,000

Welfare amenities

Various welfare amenities have been provided by the company for its employees. About 1,200 quarters have been built as per the design approved by the Government, under a subsidised housing scheme. Rent charges vary from 64 paise to Rs. 1.50 per month depending upon the type of quarters for daily paid employees. The rent charged for the monthly-paid employees is also very low. Over 1,600 employees have been provided with quarters. Sanitation and housing facilities are looked after by a Sanitary and Housing Officer.

The company is maintaining a well-equipped hospital, with three qualified medical officers, a matron, nurses and other necessary staff. The average number of out-patients seeking medical aid in this hospital is about 350. Among out-patients treated, about 70 per cent are outsiders (*i.e.*, those who are not employed in the mines) from neighbouring villages. There are 27 beds in the male ward, ten beds in the female ward, four beds in the maternity ward and six beds in the isolation ward. Eye patients are treated at the air-conditioned mobile hospital of the Holston Hospital, Yadgir, which frequently visits Hutti.

Periodical mass vaccination and inoculation work against small-pox, cholera, etc., is carried out among employees and the general public. The total annual expenditure now on these medical facilities is stated to be about Rs. 1.25 lakhs. About 1,90,000 gallons per day of filtered and chlorinated drinking water are supplied from the Krishna river. A school building and quarters for the teachers have also been provided by the company. A co-operative store is run by the employees for making available provisions, tinned stuff, cloth, shoes, etc. The company, apart from holding shares in this society, has provided a large rent-free building for the store. The co-operative store is running also a flour mill and an aerated water factory. The company is supplying rice, wheat and jowar to the employees at subsidised rates. There is a fully equipped 'C' type creche provided by the company. There are free weekly cinema shows, reading room and library, parks and facilities for indoor and outdoor games for the benefit of the employees.

Kodini Mines.—This mining block lies about four miles north-east of Hutti. It is stated that the results of investigations here were rather disappointing on the whole. The auriferous reef here was found to be narrow. **Other Gold
Mines**

Uti (Ootoo) Mines.—The reef in this mine lies about four to five miles north-east of Wandalli. The average assay value in most of the portions here was found to be too low for working the reef profitably.

Maski Mines.—The ancient miners seem to have paid great attention to this block, which lies about 15 miles due south of Hutti. There are two prominent lines of old workings distributed in the Maski and the Udbal village lands. A shaft sunk on one of the large old workings in Maski village showed varying values in depth ranging from two to twelve dwts. of gold per ton. The reasons as to why the work in the mine was discontinued in spite of the good results are not yet known.

Udbal Mines.—This block lies about four miles east-south-east of Maski. The report available on the workings in the mine is

not clear as to the depth to which the mine had reached. A quartz reef, discovered by chance, when a well was being dug, had yielded, on assaying, a value of an ounce of gold per ton.

Hunkuni Workings.—There are six adjacent old workings near Hunkuni, about three miles south-east of Deodurg. These old workings were discovered by Captain L. Munn in 1905. He considered this mine by far the biggest old working. It had been left untouched by the Deccan Mining Company and he recommended that it deserved a careful investigation.

**Salar Jung
Sugar Mills**

The sugar mills at Munirabad, which is a large-scale industry in the district, owes its origin to the imagination and sagacity of a group of entrepreneurs of the area headed by Sri S. A. Agadi of Koppal and the encouragement given by Nawab Salar Jung. They thought that it would be a great boon to the area if the waters of the Tungabhadra could be utilised, using the irrigation facilities provided by the Vijayanagara canals, for extensive cultivation of sugarcane so that a large-scale sugar factory could be started. An extent of land of about 3,720 acres in Koppal taluk was obtained for this purpose from Nawab Salar Jung, the Jagirdar of Koppal. The Salar Jung Sugar Mills, named after him, with its registered office at Hyderabad and with Messrs. Agadi and Company as its Managing Agents, came into being as a limited company, in April 1944. The authorised capital of the company, at the time of its inception, was Rs. 50,00,000 (O.S.) with an issued and subscribed capital of Rs. 40 lakhs (O.S.) comprising 80,000 shares. As importation of new machinery from abroad was not possible at the time, a second hand machinery, with a crushing capacity of 250 tons, was installed at Munirabad for manufacturing white sugar.

The sugar factory at Munirabad is ideally located, being connected to important places of the district by road and being connected to Hubli, Hospet and Bellary by rail. Situated on the Hubli-Guntakal metre gauge railway line, it is just 8 km. away from Hospet, an important trade and industrial centre. The climate of the place is salubrious and the places round about have perennial source of water for irrigation. This pioneering venture proved to be the beginning of development of the area into an industrial complex, providing opportunities to the people round about to widen their sphere of agricultural and industrial activities and to enable them to earn more. Later, the management of the company was transferred to a group of entrepreneurs of Hyderabad.

Unfortunately, the sugar mills suffered damage at the hands of the Razakars who looted it prior to the Police Action in 1948. During 1953, the share capital of the company was reduced to Rs. 7,20,000 (80,000 shares of Rs. 9 each). The authorised capital

also was reduced to Rs. 45 lakhs divided into five lakh ordinary shares of Rs. 9 each and the company came to be a subsidiary of Messrs. India Sugars and Refineries Limited, Hospet. The then existing Managing Agency system was terminated with this change and the management of the company came under the control of a Board of Directors. The share capital of the company has now been increased to Rs. 50 lakhs by capitalising Rs. five lakhs out of the general reserves and thereby increasing the nominal value of each share from Rs. 9 to Rs. 10. During the season of 1952, a quantity of 350 tons of white sugar was produced. The production continued against heavy odds and it was necessary to improve the working of the plant and to effect substantial expansion. The company secured the required machinery, of a crushing capacity of 700 tons, on lease from its holding company, M/s. India Sugars and Refineries Limited, Hospet. The new machinery was installed in 1956. The mill was able to crush about 550 to 600 tons of sugarcane per day thereafter. But even this was not enough to make it a fully economic unit. And so, further expansion was envisaged and an industrial licence was obtained in 1960 for raising the crushing capacity to 1,000 tons per day. The Mysore State Financial Corporation sanctioned a loan of Rs. 20 lakhs for the purpose. As a result of expansion and increased efficiency of the plant, the company's working results underwent a change for the better and it has been able to earn profits. During the season from November 1967 to February 1968, the mill crushed 76,845 tons of sugarcane and produced 7,887 tons of sugar at an average recovery of 10.33 per cent.

The company handed over to the Government of Hyderabad 2,224 acres of land, out of the lands given by the late Sir Salar Jung Bahadur, for rehabilitation purposes. The present holding of the company is about 1,500 acres, consisting of about 780 acres wet land and the rest dry. Most of these lands had been lying fallow for a long time and had been leased out to M/s. ISA Farms Private Limited, for reclaiming the barren and rugged terrain. These lands were taken over by the company in October 1962 and intensive cultivation, with proper supervision, has been taken up to ensure maximum yield from them. Approach roads, causeways and bridges have been constructed to enable easy vehicular traffic so that fresh and timely supplies of sugarcane are ensured. About 650-700 acres are being utilised for sugarcane cultivation. The company has a scheme for sinking bore wells at suitable points in the dry area. It is also advancing loans to cultivators for installing pumpsets, digging of wells, etc. Besides, with the implementation of the Tungabhadra Project, large tracts of land in the area have been brought under irrigation. About 5,500 acres of land are reserved for sugarcane cultivation. Although the per-acre yield is not yet commendable at present, it is expected that with mechanised and improved methods of cultivation and adequate inputs, the yield would be improved.

**Labour
welfare
measures**

About 80 single-room tenements have been constructed for the workers of the mills under an Industrial Housing Scheme. Residential quarters have been provided to the staff. There are a dispensary, a recreation club and a consumers co-operative society for the benefit of the employees and also a building for the workers' union. A school building has been also constructed in the colony. Sports activities are also encouraged by the management of the factory.

**Tungabhadra
Pulp and
Board Mills**

Being predominantly an agricultural area, the important raw-material required for the manufacture of straw boards is available in plenty at Munirabad. The Tungabhadra Pulp and Board Mills Limited was established at Munirabad for the manufacture of straw boards, with an initial production capacity of ten tonnes per day, utilising paddy straw as the raw-material. This is a limited concern managed by a Board of Directors. The authorised capital of the company at the time of its inception was Rs. 16 lakhs, divided into 16,000 ordinary shares of Rs. 100 each. This has been recently increased to Rs. 25 lakhs by issuing further shares, all of which have been subscribed by M/s. Salar Jung Sugar Mills Limited, Munirabad.

That this industrial unit has had rather a chequered career is evident from the 28th annual report of the company for the year ended on 31st March 1968. The report says—"The year's working, as you would observe, has resulted into a loss of Rs. 8,10,301 after providing for depreciation amounting to Rs. 97,333 and development rebate reserve of Rs. 36,000. The total accumulated loss of Rs. 38,24,567 upto the end of the year is carried forward to the next year. Your Directors had reported to you last year that the factory had to be closed down on 27th April 1967, in view of its uneconomical working continuously for the last three years. Therefore, during the year under report, the factory had hardly worked for 27 days and 143 M. tons of goods were only produced." It was stated that the income from sales during the year 1967-68 amounted to Rs. 6.87 lakhs only, as against Rs. 23.51 lakhs of the previous year.

During 1968, M/s. Salar Jung Sugar Mills Limited, Munirabad, became the holding company and the Tungabhadra Pulp and Board Mills, a subsidiary company. Now the factory has been showing signs of recovery and stability. Previously, only straw boards were manufactured, but now the production has been diversified and different types of boards are being manufactured. Wrapping paper, which is used as corrugation media, for which the company anticipates a good demand, is also being now produced in the factory. Additions have been made to the plant to step up the capacity of the unit. Efforts are being made to improve the efficiency of the mills and to step up the sales and it

is expected that the factory would soon be able to run with good returns on the investment.

The Chamundi Chemicals and Fertilisers Ltd., is another big industrial unit of the district. This factory is also located at Munirabad with its registered office at Mysore. It has a licensed capacity of 16,500 tons of sulphuric acid and 40,000 tons of superphosphate per annum. The company came into existence in 1961. The subscribed capital of the company is Rs. 40,00,000, the authorised capital being Rs. 1,25,00,000.

**Chemicals and
Fertilisers**

Commercial grade sulphuric acid is produced from sulphur, while superphosphate is produced from rockphosphate. Both sulphur and rockphosphate are imported, the former from America and the latter from African countries.

According to the fifth annual report of the company, *i.e.*, for the year ended on 31st December 1965, 18,681 tonnes of superphosphate were produced during the year. Due to foreign exchange difficulties, sufficient quantities of raw materials were not allotted and due to the non-availability of the raw materials, the factory had to stop production for more than 200 days during the year. The production for the year 1966 (till the end of May, 1966) was about 12,000 tonnes of superphosphate. The annual requirements of imported raw materials were placed at 6,000 tonnes of sulphur and 60,000 tonnes of rock-phosphate.

The profits earned by the company during the year 1964-65 was Rs. 2,70,768, without taking into account the depreciation charges. The company has organised a net-work of 20 depots for sales promotion in association with the Coorg and Mysore Coffee Works Limited. The sales officers are agricultural graduates. It appears that because of the accumulated heavy stock of the products of the factory, production has been stopped for sometime now.

Raichur district is quite rich in oil-seeds, and so, there is good scope for vegetable oil industry. Messrs. Faruk Anvar Company's oil mills which was established in 1944-45 at Raichur started crushing groundnut seeds with modern expellers. The crushing capacity of the Mills, which was only 50 tons per day in the beginning, was gradually raised to 125 tons per day. Later, the Company wanted to start solvent extraction industry also, utilising the oilcakes obtained from the expellers. After obtaining the licence, an automatic extraction plant (made in Belgium) was installed. This plant was commissioned in the year 1962. The total investment on this most modern plant was about Rs. 25 lakhs. This industrial unit is said to be one of the biggest units of its kind in South India.

**Faruk Anvar
Oil Mills**

The de-oiled cakes obtained from the plant are an excellent manure and there is a great demand for them abroad. Most of the production is exported, either directly or through agents, to foreign countries like the United Kingdom, Russia, Japan and the Continent. Groundnut being a seasonal crop, during the summer months and after *Diwali* the production in the Mills is at its peak. There are about 130 workers employed in the factory. It has a fleet of six lorries to transport raw materials and finished goods. It has also two bore wells which supply water to the plant. The firm has maintained a workshop of its own and has also got a moulding shop.

The Company decided to set up also a Vegetable Oil Refinery to produce 20 tons of fully refined vegetable oil per day. The erection of this automatic refining plant has started and it is expected to go into production in the early part of 1970.

Co-operative Spinning Mill

There will soon be an important addition to the number of industries in the district. A Spinning Mill, in the co-operative sector, is expected to go into production by the end of 1969-70. The Co-operative Spinning Mill Ltd., Raichur, which was registered in 1961, has been licensed to spin 20s and 26s counts of yarn with 12,000 spindles.

This is mainly a cotton-growers' co-operative spinning mill, established with the objective of utilising the local cotton. Most of the shareholders are cotton-growers. This industry will help diversify the economy of the region. This major co-operative endeavour will benefit not only the cotton-growers, but also the handloom-weavers. A large area is under cotton cultivation in Raichur district and the total acreage is placed at about 6,76,500. New and improved varieties are being grown. A comprehensive cotton development scheme has also been introduced. There is also a large number of handloom-weavers. At present, the entire requirement of yarn is being met from mills situated at Adoni, Sholapur and other places. Therefore, a spinning mill in Raichur district is a long-felt need.

The authorised capital of the co-operative society is Rs. 50 lakhs. The particulars relating to the subscribed capital and paid-up capital are as follows :—

<i>No. of shares</i>	<i>No. of members</i>	<i>Subscribed capital</i>	<i>Paid-up capital</i>
1	2	3	4
		Rs.	Rs.
92	25	4,600	4,600
3,797	441	3,97,650	3,97,646

1	2	3	4
		Rs.	Rs.
2,532	2,232 Individual Members	3,79,800	3,79,795
1,000	Government of Mysore	20,000	10,00,000
1,275	Apex and Co-operative Central Banks ..	2,55,000	2,55,000
Total ..		30,37,050	20,37,041

This is a capital-intensive project and the estimated total cost is about Rs. 93 lakhs. The society has approached the Industrial Finance Corporation of India for a loan of Rs. 50 lakhs.

The total output per year is expected to be about 8,054 bales of 400 lbs. each. The particulars of expected annual (300 working days) production of yarn of each count in this mill and its value are as follows :—

Count	Production in bales	Value in Rs.
20s	4,981	59,77,000
26s	3,073	42,10,000
Total ..	8,054	1,01,87,000

As an incentive to the cotton-growers, it is proposed to distribute the part of the profits among them, by amending the bylaws of the society. Due to the increase in the numbers of power-looms and ordinary looms, the demand for yarn is expected to increase. It is also proposed to make provision for the payment of rebate to weavers' co-operative societies on the purchase of yarn from this mill.

Cotton pressing and ginning is by far the most prominent industry of this district. The cultivation of cotton on an extensive scale, especially of foreign varieties, has given rise to the pressing and ginning industry. In the modern period, it had its beginning in 1870s. The settlement report of Raichur taluk, prepared in the year 1889, says—"There are two press houses in Raichore—one belonging to Messrs. Harvey & Co., and the other to Sabapathy and Co; the former was built by Messrs. Dymes and Co., in 1871 at a cost of Rs. 35,000, the building itself and the machinery about 25,000; this building was subsequently sold in 1882 to a joint stock company, under the name of Rippon Press Company; the daily pressing of cotton bales is from 70 to 100 bales, each bale weighing 392 lbs. The coolies employed in

**Cotton
Ginning**

the establishment are from 60 to 80 hands, both men and women, and their daily wages vary from two annas to five annas, according to the quality of work done by them. The quantity of cotton pressed last year is about 5,000 bales and the charges for pressing is Rs. 4-8-0 a bale. The full working season is from May to September

“ Messrs. Sabapathy and Co.’s Press was built in 1878 at a cost of Rs. 35,000 ; the quantity of cotton pressed last year amounted to 8,745 bales of 400 lbs. each; out of this, 6,063 bales were their own and the rest outsiders’.”

According to the Imperial Gazetteer of India (1909), there were three cotton presses at Raichur in 1901.

Prior to the introduction of ginning machines, manual labour was employed for ginning cotton. Cotton was spread on mats and beaten with sticks to remove the dirt and to loosen it. Then it was spread on a stone slab and rolled by a thick iron roller up and down by feet. This separated the seeds from the cotton. Ginning wheels were also used on an extensive scale. Both these methods continued in rural areas even after the introduction of ginning machines. But this was a very slow and laborious process. The first ginning factory was started at Raichur in 1915 under the name Rippon Ginning Factory (the present Umamaheshwar Ginning and Pressing Factory, Raichur).

The First World War gave an incentive to the development of the industry and this period recorded an increase in the number of ginning and pressing factories. The pace of expansion was retarded after 1925 and the depression that set in about this time was perhaps responsible for this. The period of the Second World War witnessed an increase in the number of such enterprises as a result of increase in demand and high prices of cotton during that period. The total number of ginning factories at present in the district is 159, whereas the number was only 93 in 1959. The distribution of these factories over different places of the district is indicated below :—

<i>Taluk</i>	<i>No. of factories in</i>		<i>Total number of gins in</i>	
	1959	1969	1959	1969
I	2	3	4	5
Raichur town ..	10	18	195	247
Raichur taluk (places other than the town area).	5	11	32	48
Deodurg taluk ..	3	13	26	64

1	2	3	4	5
Manvi ..	10	30	53	119
Lingsugur ..	15	26	66	112
Sindhaur ..	12	18	82	108
Kushtagi ..	7	9	35	43
Gangavati ..	11	7	72	72
Koppal ..	9	11	41	47
Yelburga ..	11	16	32	49
Total ..	93	159	633	909

The tools and equipment required in this industry consist of steam or oil engine, boilers, single roller or double roller gins, cotton operators, drilling machines, high pressure and low pressure cotton presses, etc. A majority of ginning factories are run by electric power. Steam engines are used in the big factories. Double roller ginning machines have been mostly used in these factories. The total number of gins in the 159 factories in the district is 909, eighteen large units in Raichur town alone having 247 gins. The remaining gins are in factories scattered over the other parts of the district. The cotton pressing factories use hydraulic presses and steam engines. There are at present seven such pressing factories at Raichur and one at Koppal.

Ginning begins during the harvesting season, from the middle of February, and it continues till the month of June. During the busy season, all the factories work to capacity and in the remaining period, some of them are kept idle. The industry is mainly seasonal in character, and so the employment in factories is also seasonal. The source of labour supply in urban areas is the town itself in which the factories are situated, and in the rural areas labour is recruited from the villages nearby. Workers are employed on both piece-wage and time-wage basis. The types of workers employed in the factories are gin feeders, coolies and lashers. Women are also employed as feeders and cleaners.

Besides these workers, engineers, firemen, engine drivers, oilmen and carpenters are also employed. The number of workers employed in all these factories is about 3,000. It is estimated that about 1,000 to 1,500 additional persons are employed in the ginning and pressing factories during the busy season. The usual wages paid are Rs. 3 for men and about Rs. 1-50 for women.

Raichur being an important cotton growing district, about 14,000 to 16,000 bales of cotton are pressed every year. Due to failure of the crop in 1965, only 8,892 bales were pressed in that

year. The years 1966 and 1967 saw an increase in the quantity of cotton pressed, which stood at 14,800 and 16,782 bales, respectively. During 1968, 12,006 bales (400 lbs.=one bale) of cotton were pressed in the factories of the district. Rates for cotton ginning vary from place to place. Generally, it is Rs. 11-50 per quintal. The pressing rates charged are Rs. 4-75 for the same quantity. A notable feature of the pressing factories in Raichur district is that they have formed a pool to share profits. This has eliminated unhealthy competition among the different units. The cotton trade is in the hands of big merchants who are mostly Marwaris. They get adequate credit facilities from the scheduled banks. The merchants have trade connections with merchants and owners of textile mills at Bombay, Sholapur, Ahmedabad and such other places. Bullock carts and motor trucks are the means of transport of cotton within the district. The entire quantity of cotton ginned and pressed is exported outside the district from Raichur and to a certain extent from Koppal. The availability of long staple cotton and power facilities are the favourable factors of growth of this industry. The industry has a good future in the district as cotton production is expected to increase considerably with the availability of more and more irrigational facilities under the Tungabhadra Project.

Oil Mill Industry

The vegetable oil industry is also fairly old in this district. Prior to the establishment of oil mills, oil was produced by means of village *ghanas*. At first, the progress was slow on account of depression. During the Second World War and the post-war period, when the demand for groundnut oil increased considerably for manufacturing Vanaspati ghee (hydrogenated oil), the oil mill industry in the district made a rapid progress. Oil mills with rotary *ghanas* as well as with expellers were started. Oil expellers were installed only in the mills at Raichur and Koppal. Rotary *ghanas* were, however, scattered throughout the district. There are at present 62 *ghanas* in about ten units.

There are altogether 40 oil mills with expellers of standard size in the district. Out of these, 18 mills are located at Raichur, 18 at Koppal and two each at Yelburga and Gangavati. The largest among these consists of 17 expellers and the smallest consists of two expellers. It is estimated that the amount invested on a single expeller ranges between Rs. 10,000 and Rs. 15,000. The machines used in the vegetable oil industry are steam engines, boilers, expellers, rotary machines, filter presses and decorticators. The expellers and their spare parts are not manufactured within the district. However, some of the oil mills maintain small foundries and get simple expeller parts made at the factories themselves.

The production of groundnut oil and oil-cakes in the oil mills has increased from 19,679 tons in 1954-55 to 35,014 tons in

1957-58 and the oil extracted increased from 8,007 tons to 15,156 tons during the same period. The production of oilcake stood at 19,273 tons in 1957-58, whereas it was 10,525 tons in 1954-55.

During the period from 1963 to 1968, the average quantity of kernel crushed stood at 35,000 metric tons per year, and the oil extracted was 15,000 metric tons per year, the figure for oilcake production being 15,000 metric tons per year.

The decortication of groundnut is a small-scale industry recently developed in this district. Decorticators were introduced, for the first time, after the period of depression during 1930s. The availability of abundant oilseeds in the district led to a great expansion of this industry and during 1941, there were 86 decortication machines attached to different oil mills and ginning factories. It is now estimated that there are about 100 such decorticators in about 75 factories and industrial establishments. Decortication is a seasonal industry working from March to September after the harvest of groundnuts. The tools and implements used are oil engines, steam engines, electric motors and rollers. Automatic feeding machines are also used. Coal and groundnut husk are the chief sources of fuel. Engineers, firemen, engine drivers, valvemmen and labourers are required for this industry. Women are also employed.

Decortication

The abundance of cotton, and therefore, of cotton-seeds, has given rise, in recent years, to the manufacture of refined cotton-seed oil, decorticated cotton cakes, hulls, soaps, etc. A few factories of this type are working at Raichur. Here the cotton-seeds are first cleaned and stones, mud, cotton bolls, etc., are separated. The cleaned cotton seeds are decorticated in specially designed decortication plants. Decorticated meats are pressed for oil through a battery of expellers. The crude oil is refined in a refinery plant and the soap-stock, which is the by-product of the refinery, is converted into crude washing soap. The cotton-seed oil is sold mostly to Vanaspati manufacturers of Bombay. Cotton-seed cakes are exported to the United Kingdom and hulls and soaps are sold locally.

Cotton-seed oil

Oil-extraction from castor, gingelly and safflower is being done in the district on a cottage industry basis with traditional means like *ghanas*. Castor oil and gingelly oil are being consumed locally. The demand is met, to some extent, by small expellers which have been installed in houses or backyards. The *ghanas* are driven by a pair of bullocks. In some places, *ghanas* of the new Wardha-type have been set up under the Rural Industrialisation Programme and they give an increased yield of oil. Since the production is not adequate, large quantities of these oils are imported from Bombay and elsewhere. No large-scale mills

Other kinds of oil

have been established in Raichur for the extraction of these oils, and the small *ghanas* continue the age-old methods of producing oil. Karadi oil is also produced in a small quantity by these *ghanas* and consumed locally.

R. C. C. Pipes

Reinforced cement concrete pipes are manufactured by Messrs. Indian Hume Pipe Company Ltd., at their factory at Raichur. This factory was established in 1946 with the main object of manufacturing reinforced cement concrete pipes and collars, hume steel pipes and reinforced cement concrete poles. The reinforced cement concrete pipes and collars are manufactured by the centrifugal process. Between 1946 and 1950, production was not much. During 1952-53, production was of the order of Rs. 1,31,996 (O.S.). With the increase in demand for such products, the years after 1953 saw an increase in production. But, however, in 1955, production was again low when compared to previous years, the value being Rs. 1,00,000. There was a gradual increase in production to Rs. 1,50,000 in 1956, to Rs. 2,50,000 in 1957 and to Rs. 2,70,000 in 1958. During 1957, 3,263 pipes and 3,340 collars were produced. During the years 1960 and 1961, Rs. 1,11,000 and Rs. 1,88,000 worth of products were manufactured. The total wages paid to labourers now is estimated at Rs. 3,500 per month and the present production value of the factory is Rs. 50,000 per month. There are about 45 men workers in the factory; besides a few women workers are also employed on daily wage basis. The raw materials required are sand, cement and steel. Sand is obtained locally, cement from Shahabad and steel from the Tatas and Bhadravati. The products manufactured by this factory are now used for water works, drainage, irrigation and other purposes. The construction of culverts and causeways is also made easy by the use of these pipes.

The Raichur district has, since early days, been famous for its village and cottage industries like handloom-weaving, leather-working, salt-making, carpentry, pottery, hand-embroidery and a brief account of these industries is given below.

Handloom-weaving

Handloom-weaving is an important occupation of the rural population in Raichur district. According to the District Statistical Officer, Raichur, there were 2,431 handlooms in the district in 1967. Some of the important centres of handloom weaving are Kinhal, Bhagyanagar, Alawandi, Hoskanakapur, Hosahalli and Gondbal in Koppal taluk, Hanamsagar, Tawagera and Dotihal in Kushtagi taluk, Maski and Mudgal in Lingsugur taluk, Deodurg in Deodurg taluk, Manvi and Sirvar in Manvi taluk, Gangavati in Gangavati taluk, Raichur, Yergera, Gunjahalli Talmari and Idapnur in Raichur taluk and Balganur in Sindhanur taluk. The communities engaged in handloom-weaving

industry include the Devangas, Khattris, Jayandras, Padmasalis, Momins, etc.

Generally, fly-shuttle pit-looms are used. The antiquated throw-shuttle type of pit-looms are also used to a small extent. Dobbies are used according to the type of weaving. Frame looms, take-up motion attachments and pedal-looms are rare. A warping mill and a small calendering machine were installed at Kinhal. Four pedal-looms, a few frame-looms and take-up motion attachments and lattice dobbies were introduced in the district on a small-scale under the handloom development schemes. Dyeing of yarn is done mostly with synthetic dyes, with simple equipment.

**Tools and
implements**

The main raw materials required in the handloom-weaving industry are cotton yarn, art silk and silk for borders, colours and chemicals. Cotton yarn is brought mainly from Bombay and partly from Gadag and Sholapur by wholesale merchants in the district and is distributed among the weavers. The yarn is supplied to the weavers in bundles and knots. Pure silk, which is used especially for borders, is mainly imported from Bombay and Bangalore and art silk from Bangalore, Gadag and Hospet and the chemicals are got from Bombay.

Raw materials

The main handloom products of this district are sarees, *choli-khanas* (blouse pieces) and *dhoties* of both coarse and finer counts. Sarees of the Ilkal type of eight or nine yards' length, with a width of 50", are produced at Hanamsagar, Dotihal and Maski. These sarees are usually produced with three types of borders: *gomei*, *pharaspatti* and *ruiphul*. The first one is a small herring bone stripe, usually of white colour, between two small yellow stripes. There are generally four *gomeis* in one border. In the *pharaspatti* border, three or four lines of *gomei* of plain red colour are arranged with wider space in between. In the *ruiphul* border small flower designs are substituted in white colour for the *gomei*. These sarees generally have an attractive *seragu* or *pallo*. In hand-woven sarees, the width of such *pалlos* varies from 18" to 24"; when woven in solid colour, it is known as *tope padar* and if wavy designs are introduced, it is called *tope-teni padar*. The body designs of the sarees are of different types and are called by different names; *Khadi*, *Ragavali*, *Kundichikki*, *Garuli* and *Chadaranga-chikki* are some of the famous designs and among them the *Chadaranga-chikki* is an expensive variety. Sarees in *Gadidadi* designs are produced in 20s, 40s and 60s counts at Kuknur and Kinhal. Manvi is known for the production of *Mukonch* pattern of sarees of mostly 20s counts. *Gacchidadi* sarees of a very fine quality in cotton, art silk and mixed silk are produced at Kinhal, Gangavati and Tawagera. Besides these, *choli-khanas* of a width ranging between 32" and 36", both in spun silk of 80s counts and in silk and cotton mixed, are produced at Bhagyanagar and Hoskanakapur. These *khanas* are called locally *gardthar khanas*. Bhagyanagar

**Fabrics
produced**

and Hoskanapur are known also for the production of *dhoties* of 40s to 60s counts and for shirting cloth, both ordinary and mercerised. Gangavati, Maski, Deodurg and Tawargera are equally famous for *dhoties* and shirting cloth. Besides all these, the district is noted for the production of turban cloth. This is produced at Maski, Gangavati and Deodurg and is called *patga*, *nagar shalla* and *vastar*, respectively, in these three places.

Earnings of weavers

Almost all the weavers possess their own looms and the supply of raw materials like silk and yarn is made to them by local master-weavers or financiers who collect from them the finished products and pay them the weaving charges. Along with the weavers, their family members also work. The preparatory processes like winding, warping and sizing are attended to by women and children. A weaver, who has more than one loom, employs labour in accordance with his needs and pays daily wages. The earnings of handloom-weavers are poor. The rates vary according to the counts of yarn and the type of weaving. For coarse fabrics produced out of 20 counts, the weaving wages are paid at 40 paise per hank of yarn. The rate is 50 paise per hank of 40s. The rate of wages paid to weavers by the handloom weavers' co-operative societies at different places of the district vary from 40 paise to 45 paise. At Hanamsagar, Dotihal, Maski and Tawargera, a sum of Rs. 6-00 to 8-00 is paid as wages for a weaver who weaves a saree of nine yards of Ilkal type with *tope-teni padar*. For an Ilkal saree in *chadaranga-chikki* design, the wages are about Rs. 15-00. At Bhagyanagar, Rs. 20-00 are paid to the weaver for 12 *khana* pieces ($6\frac{3}{4}$ yards) of *gardhar* pattern. Rs. 10 for *dhoties* of nine yards of 60s, Rs. 8-00 for 40s and Rs. 5 per 21 yards of shirting are paid as wages. Compared to the wages paid by the co-operative societies, the wages paid by the master-weavers and *sahukars* are generally on a lower scale. Taking into consideration the working capacity of a weaver, his earnings range between Rs. 60 to Rs. 90 per month. This is low when compared to his hard work.

Marketing

Generally, master-weavers advance loans and raw materials to weavers and collect from them the finished goods. The dependence of weavers on master-weavers for supply of raw materials and sale of finished goods is the main cause of their low earnings. They are heavily indebted to *sahukars* and they are unable to get a fair price for their work.

With the establishment of co-operative societies, a section of the weaver population, however, is benefited with regard to marketing of finished goods. The weavers' co-operative societies, despite difficulties, are trying to promote sales by opening emporia in different places. Such sales emporia have been started at Raichur, Sindhanur, Koppal, Kinhal, Bhagyanagar, Gangavati, Kushtagi, Dotihal, Hanamsagar, Tawargera, Maski, Manvi and Deodurg.

Efforts have been made in recent years to free the weavers from the clutches of the master-weavers by the establishment of co-operative societies. The first handloom weavers' co-operative society in the district of Raichur was formed at Kinhal during 1949 with a membership of 1,361 persons. It has an area of operation extending to the whole of Koppal and Yelburga taluks. The society started production-*cum*-sales activities as early as 1951 with a special monthly quota of 1,000 lbs. of cotton yarn. Later on other societies were formed at different places. At first, their activities were limited to distribution of cotton yarn among member weavers. Subsequently, with the assistance made available under the handloom development schemes, they took up production and sales activities. There are, at present, 14 handloom weavers' co-operative societies functioning in the district and they are located at Raichur, Manvi, Deodurg, Maski, Tawargera, Dotihal, Hanam-sagar, Gangavati, Bhagyanagar, Kinhal and Hoskanakapur. The total number of handloom weavers brought into the co-operative fold so far is about 4,200.

Role of
Co-operatives

The societies make arrangements for purchase of cotton and silk yarn, dye stuff, etc., for their members. Raw materials are issued to weaver-members and finished goods are collected in return on payment of wages. Every effort is made by the societies to pay fair wages. The weavers' societies are also striving for improvement in working techniques in order to increase the production capacity of weavers and also to improve the quality of handloom products. The grant given by the Department of Industries and Commerce for conversion of throw-shuttle looms into fly-shuttle type of looms were utilised for free supply of fly-shuttle looms to members. Other improved tools and implements, such as take-up motion attachments and frame-looms, were distributed among weavers. Dye-houses were started with better equipment with the assistance given by the Department. Sales emporia were opened at different places to promote sales of handloom cloth by taking advantage of the price-differential. Financial assistance has been given in the form of loans, grants, subsidy, etc., to the industry. Loans and grants have been provided to thirteen different handloom and wool weavers' co-operative societies in the district. The total amount provided as loans and grants from 1954-55 to 1968-69 was Rs. 2,45,625. An amount of Rs. 1,06,500 was disbursed under the Reserve Bank of India Credit Scheme. The Wool Weavers' Co-operative Society, Gondbal, received a loan of Rs. 86,400 towards construction of 24 houses for the wool-weavers. Particulars of loans and grants provided to different weavers' co-operative societies for various purposes are given in table IV appended at the end of the chapter.

One hundred-and-six powerlooms have been sanctioned to seven cotton weavers' co-operative societies in the district. The total loan amount disbursed to these societies hitherto is

Rs. 3,33,887, the total grant being Rs. 13,485. A statement showing the number of powerlooms allotted and financial assistance provided for the purpose to weavers' co-operative societies in Raichur district is given below :—

<i>Sl. No.</i>	<i>Co-operative Society at</i>	<i>No. of powerlooms allotted</i>	<i>Total loans</i>	<i>Total grants</i>
			<i>Rs.</i>	<i>Rs.</i>
1.	Raichur	.. 12	35,650—00	1,140—00
2.	Dotihal	.. 6	22,575—00	1,410—00
3.	Maski	.. 25	81,437—50	3,525—00
4.	Bhagyanagar	.. 15	58,687—50	4,275—00
5.	Gangavati	.. 11	43,037—50	3,135—00
6.	Kinhal	.. 25	62,500—00	—
7.	Deodurg	.. 12	30,000—00	—
Total		.. 106	3,33,887—50	13,485—00

Price-differential subsidy

To enable handloom cloth to sell in competition with mill-made cloth, a price-differential subsidy was paid on sales of all varieties of handloom cloth. At first, the rebate was paid at two annas in a rupee. Later, it was reduced to one-and-a-half annas and was further reduced to one anna or six paise in a rupee. During festivals and observance of handloom weeks, an additional rebate is given.

Kambli weaving

Weaving of *kamblies* or blankets is also practised in a number of villages by the members of Kurubara community. *Kamblies* are produced with black and grey-black wool available locally. Grading and spinning of wool are carried out by weavers themselves with the help of members of their family. There are 148 kambli-weaving looms in the district. Four co-operative societies have been formed by the wool weavers. They have a total membership of 429 and are located at Raichur, Gondbal, Moranhalli and Lingsugur. Assistance towards working capital and share capital has been provided in the shape of interest-free loans under the handloom development schemes. Besides, improved tools and implements have also been supplied.

The handloom industry, being the most important cottage industry of the district, is receiving considerable attention. The untiring efforts of the All India Handloom Board and the State Government to revive and develop the handloom industry, which had fallen into a state of neglect, have now begun to bear fruit. The weavers too have to adopt themselves to the changing needs of a modern and complex society. The handloom industry has a bright future, side by side with the textile mill industry.

A large quantity of hides and skins is available in the district. But, at present, there is no organised unit doing tanning and leather working. Attempts were made to run the tanning industry on a sound footing in the past. According to the Imperial Gazetteer of India (1909), there was a big unit at Raichur. It says: "A tannery at Raichur turns out 500 skins per day and employs 60 persons. The skins and hides are sent to Bombay, Madras and Cawnpur".

**Leather-
working and
tanning**

It is said that M/s. Roshan N.M.A. Kareem and Company were running a large unit of tanning industry, for about 25 years, till 1949 at Raichur. The company was producing about 2,500 skins of sheep and 2,000 skins of goat per day and the number of workers employed was about 500. The raw skins were being collected from Gulbarga, Raichur, Hyderabad, Sholapur, Gadwal and other places and the tanned skins were being sent to Madras for exporting to other countries. Unfortunately, this unit was closed. The raw skins collected from various places by merchants are now being sent to outside places.

At present, this industry has remained as an important cottage industry in the district. Though statistical data about the number of persons engaged in the industry and the exact quantity of hides and skins tanned are not available, it may be said that it is an important subsidiary occupation of Harijans in many of the villages. Raichur, Sukhalpet, Hattigudda, Lingsugur, Koppal, Deodurg and Manvi are the important centres of this industry. Mostly, chappals and country-type shoes are manufactured at these centres. Salt is used to preserve the hides and skins of dead animals. The methods adopted for flaying and tanning are very crude, resulting in inferior leather which fetches low prices. Tanning materials such as *tarvad* bark and salts are available locally in plenty.

Every effort is being made by the Government to improve the condition of this industry. A centre for retanning and re-rolling of bark-tanned leather has been started at Koppal with a capital investment of about Rs. 45,211 on machinery and equipment. There is also a provision to train artisans at this centre. A Common Facility Centre has been started at Raichur with a capital investment of about Rs. 25,308. The artisans of Raichur engaged in this industry can avail of the services of improved machinery at this centre.

Pottery has been an ancient and important industry. excavations at Maski have brought to light some pottery pieces with embossed or incised designs and others coated with red or black slips. The most important of these pieces are those which represent the polychrome variety. Some pieces of this have got geometric designs painted upon them and also the trident and

Pottery

floral devices. Although the use of cheap metallic vessels greatly decreased the demand for earthen wares, there is still no house in the district, even of the rich, which does not use some type of earthen vessels. The potters in the district, for many centuries, have continued to make unglazed cooking pots. Among other articles produced mention may be made of earthen pitchers for drinking water, water jars, frying pans, dishes and other vessels. Special mention may be made here of the fancy earthen goblets and drinking vessels made in Raichur town.

Clays of various qualities are found widely distributed in the district. The clay, which is generally used, is a greyish loam and is mixed with horse-dung and ashes in the proportion of one basket of horse-dung and half a basket of ashes to four baskets of clay. Five to six cart-loads of clay is required for a potter family per month for this industry. The equipment of the potter consists of the traditional wheel, frames and buckets. Making of earthen products in this cottage industry depends more on the skill of hands than on equipment. The producers sell the products in the local shandies and markets and in the daily markets at Raichur. The daily average earning of a potter is estimated between Rs. 1.50 to Rs. 4 per day depending upon his capacity to produce and his skill in producing fine products.

**Carpentry and
Blacksmithy**

As elsewhere, carpenters and blacksmiths play an important role in the rural economy of the district. They are skilled artisans. Ordinary furniture of domestic use like tables, chairs and benches are manufactured in urban areas. Besides, doors, window frames, agricultural implements, carts and several other articles are also made by them. Good quality bullock carts are made at Koppal and Raichur towns by blacksmith-cum-carpenters. There are about a dozen workshops at Koppal and Raichur where these carts are manufactured and supplied to other parts of the district. The carpenters work in groups as well as in family circles and a carpenter earns from about Rs. 2.50 to Rs. 6 per day depending upon his skill and demand in the place. In each town, there are several carpentry establishments, including those which manufacture ordinary furniture. The number of such establishments is on the increase due to increased demand for furniture in recent years. Costly wood, such as teak and rosewood, are obtained from Hubli, Sholapur and such other places which are outside the district; screws and polishes are obtained from Bombay, Sholapur and Bangalore. Many of the individual carpenters are unable to purchase the requisite quantities of wood on account of their poverty and, therefore, they are working in bigger establishments on payment of wages. As regards blacksmithy, every town or big village has at least one or two or more families engaged in this industry. They produce agricultural implements, buckets, etc. The tools and equipment used by them are anvils, hammers, blowers, chisels and furnaces. The raw materials required are mainly iron

sheets, round bars and flats. It may be said that generally the earning of a blacksmith is a little less than that of a carpenter.

Basket and mat-making
 Basket and mat-making from bamboo and date-palm leaves provides full-time as well as part-time employment for a large number of persons in the rural areas. Baskets in different sizes and shapes, *thattis*, mats and other articles are made for domestic use. Mats from wild date-palm leaves are produced in fairly large numbers and are used for packing gur, chillies and tamarind. Besides basket and mat-making, bamboo provides the raw material for a large number of articles manufactured by manual labour and by people who have little or no capital at all. Very nice articles of household use, such as house-partitions and screens, tree guards, cots, chairs, tables and trays are made from bamboo. The earning of those engaged in this industry is from Rs. 2 to Rs. 3 per day. The bamboo-workers of this district have dexterity in their work, but they should be taught to move with the times and to make fashionable articles also, just as it is done by the craftsmen in other parts of India. Articles such as carriers for tiffin boxes, attractive and handy baskets with covers and handles from the outer parts of the bamboos can well be made and these will fetch good prices.

Salt-making Industry
 Salt-making is a seasonal industry in Raichur district. Manufacture of salt from salt-earth and saline water is carried on in several villages from time immemorial. The salt-makers, known as 'Uppers', are generally agricultural workers. During the off-season from January to middle of June, they collect salt-earth by scraping barren patches of fields and waste-lands and also from stream-beds. The saline water is obtained from streams and salt wells. Evaporation method is employed and both edible and tannery salts are manufactured. Edible salt is generally manufactured from salt-earth. A good deal of care and experience is necessary in the selection of salt-earth as the quality of salt manufactured depends mainly on the selection of salt-earth and water used for extraction. Saline waters of *nalas* and wells are also used for salt-making. Generally, they contain impurities such as sulphates and thus yield mostly tannery salt. The methods of manufacture differ according to the sources of salt. Where earth is the source, it is brought to the salt works known as *malis* and put into the extraction plant. The extraction plant is shaped like a funnel with a hole in the centre covered with sand. Sweet or saltish water is poured over the earth and concentrated brine called *chora* is taken through a channel to a pit made of lime concrete. The *chora* is allowed to settle here. The clear liquid is then transferred from the stock pits to salt-pans (*kattas*) which are of varying sizes from 5'×5' to 8'×8'. The depth of *chora* is kept from $\frac{1}{2}$ " to 1". It takes from four to five days to dry on hot days. Generally, there are four to five *kattas* in every salt *malis*. The salt is scraped with an iron scraper when it dries up completely.

The scraped salt is kept in heaps for a couple of days and then removed for consumption. This is the common process in most of the salt-earth *malis*. Bigger *kattas* are constructed in salt works where saline water is the source of salt-making. Water is poured directly into the *kattas* and allowed to concentrate. At some places, the water is transferred to another *katta* after it undergoes a certain amount of concentration. Here it is allowed to dry. The dried salt is scraped and heaped.

Both edible and tannery salts are produced at various places in Lingsugur, Sindhanur, Gangavati, Raichur, Manvi and Deodurg taluks. According to a recent estimate, the total annual production of edible salt was about 27,000 maunds and that of tannery salt 12,000 maunds. Edible salt is consumed locally in villages. Tannery salt is, however, exported outside the district. Of late, the production of both edible and tannery salts has decreased considerably. The system of annual auction of *malis*, low returns and at some places want of salt-earth and scarcity of saline water for extraction led to a fall in production. "The salt-producing industry, which was in a flourishing condition in the region in the past years, has now become extinct though attempts have been made now and then to revive it. Except for the production of salt by the local Uppars, for their domestic consumption, no large-scale extraction is being carried on at present."*

Handicrafts

Beautiful wooden idols, toys and theatrical equipments are manufactured at Kinhal, an interior village about eight miles from Koppal railway station. There are about twenty families of the 'Chitragar' community engaged in this industry. Certain varieties of soft-wood known as *Pallaki Katgi* and *Yelgatti* are used to produce these articles. The articles produced are of exquisite quality and finish. The entire work, which is done with modest tools, requires a high degree of craftsmanship. The articles produced are generally in traditional patterns and comprise the following :

- (i) Idols of deities such as Lakshmi, Saraswati, Shankara, Parvati, Hanuman, Garuda, Ganapathi, Gowri and several others. The idols are beautifully painted and produced in small, medium and also in big sizes.
- (ii) Animals, mostly of religious significance, such as bull, cow, monkey, elephant, deer and snake.
- (iii) Models of all sorts of fruits and vegetables in natural shapes and sizes with a realistic touch.
- (iv) Wooden headgears, costumes, masks and various other articles used in Indian ballet dances.

* Bulletin No. 23—Mineral Resources of Bidar, Gulbarga and Raichur districts, Department of Mines and Geology, Bangalore.

- (v) Cradles, *peethas* and such other articles in fascinating colours.

The artisans needed assistance in the shape of finance, supply of raw materials, improvement in working technique and also in marketing of finished goods. The Department of Industries and Commerce has taken measures to resuscitate this industry. Required varieties of wood, which were not available to artisans, were supplied, improved tools were given through grants to artisans and marketing of finished goods was arranged through Government Emporia. A scheme sanctioned by the All-India Handicrafts Board for training of artisans was taken up during the year 1958-59 at a cost of Rs. 5,130. A co-operative society named the "Chitragar Industrial Co-operative Society" was formed at Kinhal in 1958 with 29 members on its roll. This society was given a loan of Rs. 6,800 and a grant of Rs. 7,300. It also received some amount in the form of subsidy from the Handicrafts Board.

This cottage industry, which flourished well in the past, is unfortunately losing its hold. The number of families engaged in this craft has gone down. The co-operative society, started with the object of safeguarding the interests of the Chitragars of Kinhal, does not seem to have been able to help them much either. Sustained and earnest efforts are called for if this age-old craft is to survive long. The Handicrafts Survey Monograph, prepared in connection with the Census of India, 1961, has dealt with this craft of Kinhal and has observed as follows :—

"The fact that the craftsmen are pursuing the trade in spite of all its vicissitudes and are creating conditions favourable to their progenies also taking up the same avocation is indicative of their deep and unswerving respect to their hereditary craft In the conditions now obtaining, there is hardly any scope for improvement in their living conditions. The competition they have been compelled to face in the market after the advent of plastic toys has no doubt hit this industry which now seems to be falling on evil days. Yet these products by virtue of their durability and natural appearance can, doubtless, hold their own in the field, if only steps are taken to organise the craft scientifically and place it on a sound footing. The handicraft experts should, therefore, bestow their serious and earnest thought to the matter and suggest ways for resuscitating the craft and make it adequately paying for those who practise it."

The manufacture of leather foot-wear in traditional patterns, commonly known as Apa-shahi and Salim-shahi, is carried on from a long time in Raichur town by a section of the 'Mochis'.
Apa-shahi and Salim-shahi shoes
 "Raichur town is noted for its gilt and coloured soft native slippers, which are exported far and wide, and also for its fancy earthen goblets and drinking vessels" says the Imperial Gazetteer of India

(1909). The Apa-shahi shoes are a sort of slippers made entirely by hand. A cushion, which is provided beneath the insole, makes the shoe very soft and comfortable. Salim-shahi shoes (Charawa shoes) are produced in various attractive designs and patterns. Superb craftsmanship of the worker and the use of superior raw materials make the shoe not only light and highly comfortable but also durable. They are excellent for home use. Referring to these shoes, the report on the survey of handicrafts in eight districts of the Mysore State, conducted in 1960-61 by Shri S. S. Mensinkai of the Economics Department of the Karnatak University, says :—

“The art of manufacturing these particular types of shoes seems to have been learnt from Persian workers who migrated to Hyderabad years ago. This handicraft like Bidiriware originated in Persia and migrated to Hyderabad and is now confined to Raichur in the new Mysore State”. And further it observes : “The skill in manufacturing the shoes of the particular types lies in thinning the sole leather in such a way that when the shoes are ready for use, they will be so thin, light and comfortable that each one of the pair of shoes could be folded and inserted in an empty match box. This was actually observed by us.”

The industry, which once used to provide employment to a number of persons had, however, fallen on bad days on account of lack of local demand, which was partly due to change in the taste of consumers and partly due to competition from cheap machine-made slippers and chappals. Efforts were made to revive this industry in recent years with the assistance of the All-India Handicrafts Board. The only surviving master-craftsman was appointed as instructor and about 25 hereditary artisans were trained during the years 1955-56 and 1956-57 at a total cost of Rs. 8,560. In addition to this, a sum of Rs. 10,000 was given as loan to a co-operative society of the workers engaged in this industry towards its working capital. An amount of Rs. 14,360 was also provided to this society as a grant. But still this industry seems to be suffering from lack of the much needed publicity and marketing facility.

**Hand-
embroidery
Industry**

Hand embroidery is practised by a section of the Khatri community of Bhagyanagar, a village near Koppal. The embroidered pieces, done in line stitch and cross stitch, depict traditional motifs of parrot, peacock, temple and temple gate, various flowers and animals. Artistic *choli-ikhana* fabrics, embroidered sarees and garments of established reputation are produced here. The attractive and native motifs of embroidery, tastefully arranged in gorgeous colour schemes, are evidence of a high degree of craftsmanship.

In view of the cultural and economic aspects of this ancient craft, a scheme was drawn up to develop this industry. A training

centre was started at Bhagyanagar in March 1958 under the All-India Handicrafts Board. Later, the training centre was converted into a production centre and continued during the year 1958-59. The purpose of the scheme is to provide employment for workers and to modernise their motifs without disturbing their traditional skill. The budget grant of the scheme was Rs. 18,260 for 1958-59, including a loan of Rs. 7,000 sanctioned towards the working capital of the production centre.

Considerable efforts have been made to develop Khadi and Village Industries in Raichur district. The number of co-operative societies has gone up from 20 in 1961-62 to 58 during 1968-69. The total amount of financial assistance provided to these societies under different schemes, in the form of working capital, machinery loan, building loan, *kachha* structure loan, *pucca* structure loan, stocking loan, managerial grant, production subsidy, etc., stood at about Rs. 4,04,226 in 1968-69. The industries under this head include those relating to khadi, village oil, wool, pottery, leather, carpentry, lime, hand pounding of paddy, fibre, gur and khand-sari. The taluk-wise particulars of co-operative societies organised under khadi and village industries are given below :—

Name of taluk	No. of societies industry-wise	Financed	Not financed	Working	Defunct
1	2	3	4	5	6
Raichur	Village Oil	3	3	1	2
	Wool	1	1	..	1
	Pottery	3	2	1	1
	Leather	1	..	1	..
	Carpentry	1	..	1	..
	Lime	2	2	..	2
	Hand Pounding of Paddy	1	1	..	1
Manvi	Carpentry	1	..	1	..
	Leather	1	..	1	..
Sindhaur	Carpentry	1	1	..	1
	Leather	2	2	..	2
	Pottery	1	..	1	..
	Fibre	1	1	..	1
Koppal	Wool	1	1	..	1
	Village Oil	3	3	..	3
	Pottery	1	1	1	1
	Leather	4	3	1	4
	Fibre	1	..	1	..
	Carpentry	1	..	1	1

1	2	3	4	5	6	
Gangavati ..	Village Oil	1	1	..	..	1
	Pottery	1	1	..	1	..
	Leather	2	2	..	..	2
	Carpentry	1	..	1	..	..
	Hand Pounding of Paddy	2	1	1	1	1
	Gur and Khandsari	1	1	..	1	..
Deodurg ..	Village Oil	1	1	..	..	1
	Leather	4	4	..	1	3
	Pottery	1	1	..	..	1
Lingsugur ..	Wool	1	..	1	..	..
	Leather	1	..	1	..	..
Kushtagi ..	Leather	2	1	1	..	2
	Pottery	1	1	..	..	1
Yelburga ..	Village Oil	2	2	..	1	1
	Leather	5	4	1	..	4
	Fibre	1	1	..	..	1
	Carpentry	1	1	..	..	1
Total		58	42	16	13	34

There are four wool-weavers' co-operative societies, out of which only one society has been certified by the Khadi and Village Industries Commission. There are 44 looms and the total number of spinners and weavers is about 90 in these societies. The total value of production for the last two years was about Rs. 62,406 and of sales about Rs. 58,460. Out of ten oilmen's societies, only four are working. About 45 *ghanas* have been brought into the co-operative fold. Their particulars of production, etc., for the last two years were as given below :—

Total Production	Kg.	Value in Rs.	Employment		Wages paid in Rs.
			Full-time	Part-time	
475	98	1,68,523—75	13	39	7,283—00

Khadi industry is one of the important village industries of the district, cotton being available in plenty. The Karnataka Grama Seva Sangha, Raichur, which has been certified by the Khadi and Village Industries Commission, Bombay, was established in the year 1946 with the object of implementing constructive programmes of Gandhiji in the rural areas. A production centre was started at Mudgal by this Sangha. Later, it took charge of the Khadi Production Centres at Tawargera and Gadwal (which was then in Raichur district) from Karnataka Charkha Sangha, Hubli, and also of the Khadi Centre of Raichur city. Particulars of production centres, khadi bhandars, etc., run by this Sangha are given below :—

Year	Khadi Bhandars	Production Centres	Work-shops	Gramodyoga Units
1950	1	2	..	..
1956	3	3	1	..
1960	5	4	2	..
1968	10	7	2	6

The Sangha distributed 775 *ambar charkhas* during the period from 1955 to 1962. It has also been running an All-Metal Ambar Charkha Unit at Raichur. From 1952 to 1968, 2,000 old-type village *charkhas* were also distributed among the people in different parts of the district. The following industries have been organised in the district under the auspices of this Sangha: (1) khadi, (2) hand-made paper, (3) soap, (4) match making, (5) hand pounding of paddy, (6) carpentry and blacksmithy, (7) dyeing and printing and (8) fibre. Particulars of production and sales pertaining to these industries are given in the sub-joined tables :—

Statement showing the production and sales of khadi (in terms of value)
from 1961 to 1968.

Year	Khadi		Yarn	Wages paid (in Rs.)	
	Production Rs.	Sales Rs.	Production Rs.	to Artisans	to Gramodyoga Artisans
1961	1,76,762	1,10,147	94,935	49,159	6,161
1962	1,60,029	1,07,170	69,172	48,118	4,114
1963	1,81,057	1,22,223	61,926	58,850	4,778
1964	1,40,079	1,81,202	93,214	56,401	7,705
1965	1,50,738	1,58,617	1,50,501	1,02,952	7,511
1966	2,59,122	1,71,420	1,98,723	1,47,732	10,296
1967	2,61,071	1,67,525	1,35,676	1,02,390	10,190
1968	2,17,171	1,81,673	1,35,033	1,11,685	12,108

Statement showing the production, sales, etc., of various village industries
(in terms of value) from 1965 to 1968.

Industry		Year			
		1965	1966	1967	1968
		Rs.	Rs.	Rs.	Rs.
Hand-pounding of Paddy	Production	16,627	65,313	1,28,995	60,650
	Sales	11,011	70,308	1,25,083	65,666
	Wages	996	3,242	5,974	2,908
Hand-made paper	Production	833	3,759	3,271	5,166
	Sales	..	915	864	5,880
	Wages	684	1,507	1,317	2,183
Soap	Production	1,380	7,756	19,189	9,911
	Sales	963	7,481	14,441	12,013
	Wages	93	384	1,017	977
Matches	Production	..	..	5,863	2,296
	Sales	..	..	5,320	2,086
	Wages	..	..	1,197	590

**Industrial
Training
Institute**

The Department of Employment and Training is running an Industrial Training Institute at Raichur. This training centre came into being in 1958 with a view to imparting training in different trades. The institution prepares welders, fitters, wiremen, machinists, electricians, carpenters, etc. About 1,175 candidates were admitted to the Institute since its inception upto 1965 and over 500 candidates were trained. (See also Chapter XV).

**Cottage
Industries
Training
Centres**

Cottage industries training centres are of vital necessity for reviving craftsmanship, the loss of which cannot be measured in terms of money, and for developing cottage industries. The main object of such training centres is to impart training to village artisans in improved methods. Reference to two such centres, one at Kinhal and the other at Bhagyanagar, has already been made.

**Rural Artisan
Training
Institute**

The Rural Artisan Training Institute, Koppal, was started under the Tungabhadra Community Project Scheme, during October 1953, as a training-cum-production centre. The main object has been to impart training to village artisans and the industries selected were handloom-weaving, wool-weaving, dyeing and printing, hosiery, tanning, leather-goods making, blacksmithy and carpentry. It continued to function under the Tungabhadra Community Project Scheme till 31st March 1957 and later, consequent on the conversion of the Community Project Scheme into National Extension Service, it was transferred to the Department of Industries and Commerce with effect from 1st April 1957.

The work done by the Centre since its inception in respect of training of artisans, demonstration of improved methods, production and sales, prior to its transfer to the Department of Industries is shown below :—

Year	No. of candidates trained	Production	Raw-materials consumed	Sale of finished goods	No. of demonstrations conducted
		Rs.	Rs.	Rs.	
1953—54 ..	28	576	2,418	186	125
1954—55 ..	73	4,525	5,665	3,069	390
1955—56 ..	96	6,493	6,607	5,909	1,306
1956—57 ..	113	7,798	6,971	3,323	1,945
Total ..	310	19,392	21,661	12,487	3,766

The Centre has continued to function under the Department of Industries and Commerce since 1st April 1957 and the work turned out under different heads during the last three years is as follows :—

Year	No of candidates trained	Production		Raw-materials consumed		Sale of finished goods	
		Rs.	P.	Rs.	P.	Rs.	P.
1966—67 ..	53	3,277	—99	3,591	—20	1,385	—57
1967—68 ..	43	1,816	—84	1,733	—64	1,906	—58
1968—69 ..	47	3,865	—29	3,697	—00	4,647	—23

The total number of candidates trained since 1960 is 480. During the course of training, the trainees actually work with the artisans of the Centre and get themselves acquainted with the improved tools and equipment and also with the working techniques, new designs and patterns. In addition to regular training, suitable demonstrations in improved methods are also conducted by the technical staff, both at the premises of the Centre and also in villages. The duration of training is only three months and the trainees are paid stipends at Rs. 40 per month. After the completion of the training, the workers are induced to form their own industrial co-operative societies, as the assistance from the different All-India Boards such as the Khadi and Village Industries Board, the Handloom Board and the Handicrafts Board is channelised through the industrial co-operatives.

Prior to the reorganisation of States, each of the training centres in different parts of the State had its own syllabus and method of training. With a view to effecting uniformity in the system of training and syllabus, later, the Government re-organised

the existing training institutions. The Koppal Centre has been developed as a full-fledged Rural Artisan Training Institute with a branch at Gangavati.

**Embroidery
Production
Centre**

With a view to developing the ancient craft of hand embroidery practised by a section of the Khatri silk-weavers of Katarki village, later settled at Bhagyanagar near Koppal, a centre was started with the assistance given by the All-India Handicrafts Board, during 1957-58. At first, it functioned as a training-cum-production centre and then, since 1st August 1958, it became a production centre. The local workers, who had almost given up this industry, again took up this industry with the encouragement given under the scheme. Thus, the local craftsmen (who are mostly ladies) found a remunerative occupation for their spare time.

**Wooden Toy
Industry Centre,
Kihhal**

With a view to reviving and developing the wooden toy industry of Kihhal village, which is an ancient handicraft, a training centre was started under a scheme sanctioned by the All-India Handicrafts Board, during 1957. A local craftsman was appointed as instructor and several artisans were trained by him. For some of the trainees, stipends at the rate of Rs. 30 per month, were paid. An industrial co-operative society of the artisans engaged in the industry was also formed and most of the trainees became its members.

**Assistance to
Small
Industries**

The State Government, through the Department of Industries and Commerce, are giving all possible encouragement to small industrialists. About Rs. 4,40,300 worth of raw-materials, including Rs. 1,05,000 worth of imported raw-materials, have so far been made available to the industries in the district. Financial assistance to the tune of Rs. 1,05,025, in the form of loans and grants, has been provided. About Rs. 22,020 worth of machineries have also been supplied to the industrialists on hire-purchase basis. That apart, the Mysore State Financial Corporation has provided loans to the tune of Rs. 40,24,500 to half-a-dozen industrial units in the district upto 1969 as follows :—

<i>Sl.No.</i>	<i>Type of Industry</i>	<i>No. of Units</i>	<i>Amount sanctioned</i>
1.	Paper and Pulp	.. 1	18,25,000
2.	Sugar Industry	.. 1	20,00,000
3.	Cotton Ginning, Cleaning, etc.	.. 2	85,000
4.	Oil Mills	.. 1	85,000
5.	Transport	.. 1	29,000
	Total	.. 6	40,24,500

There are 96 Industrial Co-operative Societies in the district, which have been organised with the object of starting and running industries on a co-operative basis. A District Industrial Co-operative Bank came into existence in the year 1964 at Raichur. The Bank had advanced Rs. 3,51,826 to industrial co-operatives, individual industrialists, goldsmiths, etc., as loans, upto the end of June 1968. (See also Chapter VI).

**Industrial
Co-operatives**

Under the Rehabilitation of Displaced Individual Goldsmiths Scheme, an amount of Rs. 50.325 has been provided hitherto in the form of loans to 104 goldsmiths to start their own industrial units.

**Loans to
goldsmiths**

It had been proposed to have two Industrial Estates in the district—one at Raichur and the other at Lingsugur. But the inadequate response received at other places led to the revision of the proposal. The Government have now decided instead to make those two places Industrial Development Areas, and an amount of Rs. 4 lakhs has been provided for this purpose.

**Industrial
Development
Areas**

To sum up the industrial picture of the district, it can be said that there are, in total, 346 industrial units (excluding cottage and village industries), out of which 159 are cotton ginning and pressing units. Among the nine taluks, Raichur stands first, claiming 115 units. The taluk-wise and industry-wise particulars are given in the following statement :—

Statement showing the talukwise number of industrial units in Raichur district

<i>Name of Industry</i>	<i>Raichur</i>	<i>Manvi</i>	<i>Sindhavar</i>	<i>Gangavati</i>	<i>Koppal</i>	<i>Yelburga</i>	<i>Kushtagi</i>	<i>Lingsugur</i>	<i>Deodurg</i>	<i>Total</i>
1. Cotton Ginning and Pressing ..	29	30	18	7	11	16	9	26	13	159
2. Oil Mills ..	18	..	..	2	18	2	..	..	..	40
3. Rice Mills ..	8	1	2	10	..	..	..	..	..	21
4. General Engineering ..	14	..	..	2	3	..	..	..	..	19
5. Saw Mills ..	7	1	1	3	3	1	..	1	1	18
6. Printing Presses ..	12	1	1	1	3	..	1	1	1	21
7. Paper Pulp and Board ..	..	..	..	..	1	..	..	..	..	1
8. Chemicals and Fertilisers ..	1	..	..	1	1	..	..	..	..	3
9. Ferrous and Non-ferrous ..	7	1	1	3	2	1	2	2	2	21
10. Plastic Wares ..	..	..	..	..	3	..	..	..	..	3
11. Tyre-retreading ..	2	..	..	1	..	..	..	..	..	3
12. Leather Works ..	5	2	3	2	3	1	2	2	2	22
13. Cement Products ..	2	..	..	1	..	..	..	..	..	3
14. Soap ..	4	..	..	..	..	..	..	..	..	4
15. Agarbathi ..	1	..	..	..	..	..	..	..	..	1
16. Bread and Biscuit ..	3	..	..	..	2	..	..	..	..	5
17. Bag-making ..	2	..	..	..	..	..	..	..	..	2
Total ..	115	36	26	33	50	21	14	32	19	316

The Small Industries Service Institute, Bangalore, had carried out a survey of industrial development potentialities in Raichur district in 1961. After an analysis of the resources, the survey report has concluded that there is vast scope for expansion and modernisation of many existing industries and also for starting new industries.

Scope for
development of
industries

With the rise in the numbers of cotton-ginning and pressing factories, oil, rice and flour mills, irrigation pumpsets, transport vehicles, etc., there is a large scope for development and expansion of general engineering units. The new vista of development in the agricultural field opened up by the Tungabhadra Project has created and will continue to engender a heavy demand for agricultural implements. The progress achieved in the field of communications, especially the construction of better and new roads and bridges linking the district with different parts of the State as well as neighbouring States, has created considerable pressure on existing units of tyre-retreading and automobile repair works. Likewise, there is wide scope for the expansion of industries like wood-working, oil mills, confectionery, etc.

There is already a sugar factory at Munirabad and one more is expected to be started soon. Therefore, with the bagasse released from these two factories, it is not difficult to run a paper industry. At present, a large quantity of bones of animals collected in the district is being sent outside. This can very easily be used as raw material in the production of bone-meal for which there can be a rising demand in and around the district. So also, there is scope for a new unit of mixed fertilisers. As there is plenty of cotton available in the district, there will be good prospects for surgical cotton industry. The possibility of starting a textile mill can also be explored. If the natural resources available in the district and the various facilities provided by the Government under different programmes for development are made use of properly, the Raichur district may soon find an important place on the industrial map of the Mysore State.

TABLE 1

Total annual production of gold and other metals—silver and copper—(i.e., metals produced along with gold) at the Hutti Gold Mines

Particulars	1953—54	1954—55	1955—56	1956—57	1957—58	1958—59	1959—60
Tonnage treated (S. tons)—							
Ore	68,344	82,804	83,343	83,778	85,494	88,384	1,05,215
Old Tailings .. ..	..	..	..	6,274	7,085	4,969	523
Gold recovered (Mine weight)—							
Ounces	16,927.64	17,492.61	18,098.79	16,143.73	14,160.36	15,248.48	16,041.48
Grams	5,28,420	5,44,093	5,62,942	5,02,135	4,40,425	4,74,266	4,98,931
Average price realised—Rs.							
Per ounce	232	248	270	284	292	317	347
Per 10 gms.	74.58	79.73	86.80	91.30	93.88	101.91	111.56
Value of gold produced—Rs.	39,25,605	43,30,251	48,75,525	45,90,295	41,12,410	48,28,211	55,61,987
Silver recovered (Mine weight)—							
Ounces	1,035.49	1,077.04	1,122.25	1,254.10	1,183.00	1,237.55	1,365.93
Grams	32,207	33,500	34,906	39,007	36,795	38,492	42,485
Value of Silver realised Rs.	4,482	4,789	5,529	4,919	4,846	5,368	6,603
Copper recovered—							
Ounces .. ..	..	16.98	34.08	22.09	102.91	49.06	..
Grams .. ..	..	528	1,060	687	3,201	1,526	..
Value of copper recovered—Rs. .. ..	..	2.31	4.75	2.23	10.11	4.82	..
Total value realised—Rs.	39,30,087	43,35,043	48,81,059	45,95,216	41,17,240	48,33,583	55,68,590

TABLE 1 (Contd.)

Particulars	1960—61	1961—62	1962—63	1963—64 (1/2 year)	1964—65	1965—66	1966—67	1967—68
Tonnage treated (S. tons)—								
Ore	1,15,209	1,21,777	1,20,726	55,564	1,05,661	88,574	1,17,768	1,19,698
Old Tailings .. ..	..	..	717	..	7,952	27,352	..	..
Gold recovered (Mine weight)—								
Ounces	21,098.28	25,113.38	28,986.31	13,740.50	25,323.45	26,764.90	29,607.05	29,607.90
Grams	6,56,221	7,81,102	9,01,565	4,27,393	7,87,633	8,32,485	9,20,881	9,20,909
Average price realised—Rs.								
Per Ounce	372	380	320	350	369	394	451	527
Per 10 gms.	119.60	122.17	102.88	112.52	118.63	123.45	144.99	169.57
Value of gold produced—Rs. ..	78,58,440	95,38,759	92,68,654	48,12,434	93,49,561	1,02,65,909	1,33,46,253	1,56,16,148
Silver recovered (Mine weight)—								
Ounces	1,802.90	2,064.44	2,407.85	1,134.57	2,015.79	2,086.92	2,411.23	2,411.57
Grams	56,076	64,213	74,892	35,289	62,698	64,910	74,998	75,008
Value of silver realised—Rs. ..	9,284	11,486	14,688	6,935	15,750	16,475	20,719	30,174
Copper recovered—								
Ounces .. ..	..	..	..	..	..	..	..	..
Grams .. ..	..	..	..	..	..	..	..	..
Value of copper recovered—Rs. ..	..	..	..	..	..	..	..	..
Total value realised—Rs. ..	78,67,724	95,50,245	92,83,342	48,19,369	93,65,311	1,02,82,384	1,33,66,972	1,56,46,322

RAICHUR DISTRICT

TABLE 2

Profit and Loss Account of Hutti Gold Mines.

(Rs. in lakhs)

	1948-49	1953-54	1958-59	1964-65	1965-66	1966-67	1967-68
Revenue	7.41	39.48	48.86	95.43	109.85	142.73	162.74
Mining and Treatment	7.15	26.18	32.05	46.96	51.15	66.01	74.84
Other Costs	1.81	7.69	8.28	16.61	17.66	21.52	26.54
Total Working Costs	8.96	33.87	40.33	63.57	68.81	87.53	101.38
Working Profit .. ..	..	5.61	8.53	31.86	41.04	55.20	61.36
Working Loss	1.55	..	..	..	..	..	..
Provisions for —							
Interest on loans	0.40	1.29	2.20	9.12	15.65	21.61	21.32
Depreciation	3.00	7.77	7.01	11.39	9.77	9.68	10.46
Amortization .. ..	..	..	..	..	..	..	..
Wealth Tax .. ..	..	..	..	..	..	..	..
Royalty .. ..	..	..	3.02	6.24	7.42	9.08	9.94
Reserve .. ..	..	..	..	..	..	1.00	2.00
Income Tax .. ..	..	..	..	..	..	2.15	10.00
Development Rebate .. ..	..	..	..	1.26	0.83	0.51	1.87
Dividend .. ..	..	..	..	..	..	3.41	5.68
Net Profit .. ..	..	..	..	3.85	7.37	7.76	0.09
Net Loss	4.95	3.45	3.70	..	..	..	..
Progressive Profit(+) Loss(—)	-4.95	-17.64	-28.26	-15.09	-7.72	+0.04	+0.13

TABLE 3

Particulars of cost per ton of mine ore of production at Hutti Gold Mines

(In Rupees)

	1948-49	1953-54	1958-59	1964-65	1965-66	1966-67	1967-68
Mining and Treatment	165.7	38.3	35.7	44.4	57.8	56.0	62.53
Other Costs	49.9	11.2	9.4	15.7	19.9	18.3	22.17
Total working cost	215.6	49.5	45.1	60.1	77.7	74.3	84.70
<i>Add—</i>							
Interest on Loans	9.2	1.9	2.5	8.6	17.7	18.4	17.81
Depreciation	69.6	11.4	7.9	10.8	11.0	8.2	8.74
Royalty .. ..	..	..	3.4	5.9	8.4	7.7	8.30
Total	294.4	62.8	58.9	85.4	114.8	108.6	119.55
Average price realised per ounce (in rupees)	301	232	317	369	384	451	527

TABLE 4

Statement showing particulars of loans and grants disbursed for various purposes to Weavers' Co-operative Societies in Raichur district from 1954-55 to 1968-69.

Sl. No.	Weavers' Co-operative Society at	Working Capital loan			Share capital loan			Grants for dye-house	Loans for dye-house	Grants for conversion of looms	Loans under R.B.I. scheme
		Rs.	Rs.	P.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1.	Maski	19,800	..	..	4,560	2,000	850	30,600	
2.	Deodurg	13,800	..	..	..	..	725	25,000
3.	Kinhal	30,600	..	..	4,560	2,000	1,900	..	
4.	Hanamsagar	12,600	5,685	00	..	..	450	10,000	
5.	Dotihal	6,600	3,712	50	..	2,000	..	7,000			
6.	Tawargera	6,400	5,850	00	4,560	2,000	..	13,000			
7.	Manvi	3,300	..	..	..	..	..	10,000
8.	Bhagyanagar	41,400	1,620	00	..	..	2,000	..	
9.	Balganur	..	..	..	..	..	..	5,500
10.	Hoskanakapur	..	..	..	..	..	..	6,000
11.	Gondbal	3,400	340	00	..	..	..	..
12.	Raichur	30,000	3,000	00	..	..	..	..
13.	Moornahalli	2,000	200	00	..	..	..	..
14.	Liugsugur	25,000	2,712	15	..	..	..	..
Total		1,94,900	23,119	65	13,680	8,000	5,925	1,06,500			