

CHAPTER VII.

ARTS, INDUSTRIES AND MANUFACTURES.

I. INTRODUCTORY.

THE State is favourably situated in regard to the production of most of the raw materials needed for the development of its industries. Agricultural raw materials of considerable value are raised every year and the most important of these are cotton, coffee, oil-seeds, mulberry, and sugar-cane. Cotton, wool and silk and other fibres constitute the raw materials required for the textile industries. The forest products are also valuable. Besides sandalwood, the forest yields different kinds of timber that may be used for a variety of purposes. The minor forest products consist of tanning barks, myrabolams, gums, soap-nuts, bamboos, etc. Amongst the minerals of the Indian Empire, gold from the Mysore Mines stands second in point of value. Iron ores are widely distributed throughout the State, while other mineral resources include manganese, chromium, mica, asbestos, corundum and different kinds of building stones and clay. The Cauvery Hydro-Electric Works supply power annually to the extent of about 48,000 H.P. There are other water falls in the State which also possess large power potentialities. There are no deposits of coal in Mysore and its distance from the important coal-fields in India and its land-locked position add considerably to the cost of transporting coal into the State. But the resources of wood fuel are extensive and in recent years numerous plantations of casurina have been coming into existence in most of the *maidan* districts.

Of the indigenous industries, the most important is the hand-loom weaving which is dealt with in a separate

Position of
Mysore for the
development
of arts and
manufactures.

section. Next to it in importance is silk rearing and reeling. The most generally practised industrial arts are those connected with metallurgy, pottery, carpentry, tanning, manufacture of jaggery, extraction of oil and the manufacture of earth salt. The chief artistic industries are sandalwood carving, ivory inlaying and toy making. Mention may also be made of other small industries, as basket making, carpet making, coir making, rattan works, manufacture of scents, etc. The artistic industries, when practised on a large scale, have shown a tendency to become centralised in a few important towns, where special facilities for their development are available.

II. INDIGENOUS ARTS AND INDUSTRIES.

(a) Textiles
(1) Cotton
Weaving.

Next to agriculture, hand-loom weaving is the most important industry in the State and is also one of the oldest. With the extension of the cheap and rapid means of communication, hand-loom has found a very formidable rival in the power loom. It is to be noted that after so many years of competition with power-looms—Indian and European—hand-loom weaving is still the most important industry, not only in respect of the value of the raw material consumed but also of the number of persons engaged in this industry. The total production of textile fabrics by the hand-loom weaver is estimated to be worth on the average about a crore of rupees and nearly a third of the local demand for piece goods is met by the production of these looms.

Accurate information regarding the number of hand-looms in the State, the total value of output, etc., cannot easily be obtained. As the industry is scattered all over the country, detailed and definite enquires can only be made with great difficulty. It is, however, estimated that there are nearly 30,000 looms in the State for the manufacture of cotton cloth. Besides these, there is also a large number of hand-looms for the weaving of silk and

woollen fabrics. Nearly four-fifths of the hand-looms used for cotton and silk weaving in the State have been fitted with the fly shuttle slays and such slays have also been adopted for weaving woollen *kumbli*s in a few places.

The spinning of cotton into yarn or thread was at one time the occupation of large numbers of women. Before the cotton was ready for the spinning wheel, it was cleaned or separated from the seed by passing through a rude gin and then, as it was too lumpy for spinning, it was fluffed up with a bow. It was then corded into rolls handy for the spinner. The wheel was turned by means of a handle with the right hand whilst with the left which held the cotton, the thread was spun on to the reel. After the bobbin was full, the yarn was rewound on to a swift. This was done by placing the axle of the swift perpendicularly on the ground and keeping it in rapid motion by a touch with the third and fourth fingers of the left hand. The thread was then reeled off on to a bigger reel and finally into a large skein passing round five small stakes set up in the ground in the form of a square. The skein was next dressed for the loom. The requisite number of threads was fastened firmly to fixed points and being separated by small sticks was supported by cross sticks. The cleaner then took a brush of cocoa-nut fibre and dipping it in a preparation of flour and water, passed it steadily up and down the entire length of the skein, using at the same time one of the small dividing sticks to facilitate the operation. The loom was usually placed over a kind of well or hole, large enough to contain the lower portion of the machinery, which was worked on the pedal principle with the toes, the weaver sitting with his legs in the hole for the purpose. The combs were supported by ropes attached to beams in the roof, working over pulleys and stretching down into the well to the toes of the weaver. In his right hand he held the shuttle which contained the thread

Cotton spinning.

and which, when passed rapidly through the spaces created by the combs, formed the pattern. The principal comb was held in the left hand. As the cloth was coarse, it was wound on the beam by slightly easing the rope on the right hand and turning round the lever.

Hand-loom
fabrics, their
local distri-
bution.

Hand-loom weaving in cotton is carried on in all the *maidan* districts of the State, nearly 40 per cent of the industry being concentrated in the Bangalore District. The fabric turned out of these looms constitute mainly *saries*, *kiriges*, *kanas*, in cotton or mixture of cotton and silk, *panches* with or without silk border, *duppaties*, checks, *vastras*, tape and tent cloth. Preparation of *saries* is concentrated at Bangalore, Dod-Ballapur and Anekal in the Bangalore District, at Molakalmuru in the Chitaldrug District and some places in the Tumkur and Kolar Districts. *Panches* are made at most of the looms in Melkote and Kikkeri in the Mysore District and at Hole-Narsipur in the Hassan District. *Duppatties* are woven in Hole-Narsipur and in several parts of the Bangalore, Mysore and Tumkur Districts and checks in the Bangalore, Hassan and Kolar Districts. Tent cloth of strong texture is made in the Central Jail, Bangalore. Yarn used generally varies with the nature of the cloth to be prepared out of it. 20s and 30s are highly in demand for *saries* and 40s for an admixture of silk.

Condition of
the weavers.

At present, the weaver is illiterate, ignorant and hopelessly conservative. He does not devise new patterns and even if they are brought to his notice, he does not readily adopt them. Some important changes have, however, come over the condition of the hand-loom weavers. They have now begun to buy supplies of either European or Indian mill spun yarn as the spinning of yarn as a domestic industry is fast disappearing:

The introduction of the fly shuttle on an extended scale in recent years is chiefly due to the efforts made by Government to improve the hand-loom weaving. Attempts are also being made to devise better appliances for winding, warping, sizing, beaming, etc. Along with the introduction of new methods in weaving and of new appliances for preliminary operations, every effort is being made to emancipate the weavers from the control of the middlemen, as they have no organisation among themselves. The Section headed *Miscellaneous* gives a brief account of the help rendered to the weavers by Government through the Department of Industries and Commerce.

In the State, there is only one variety of silkworm, and that is mulberry silk of the multivoltine breed. The silk produced in the State is noted for its good qualities and is partly consumed in it and partly exported outside. The waste-silk is chiefly exported to European countries, preferably France and Italy. The total yield of cocoons every year roughly amounts to 10,000,000 lbs. capable of being reeled into 7,00,000 lbs. of raw silk. The annual value of silk produced exceeds a crore of rupees and the total number of persons engaged in the several branches of the industry is 1,50,000. The quantity of raw silk exported by rail during the year 1921-22 was 7,790 Bengal *Maunds* valued at Rs. 77,04,000. The export trade in silk waste came up to 6,700 *Maunds* valued at Rs. 5,92,000.

(2) Silk, ✓
varieties and
production.

The silk industry is wholly a cottage industry. The worms are reared in the producers' houses and are fed with bush mulberry leaves plucked from the fields. Mulberry, on which the worm feeds, is grown as a field crop in the State and nearly 40,000 acres are under mulberry cultivation every year. The cocoons are spun on trays and are killed by being dried in the sun. The reeling is done by means of simple appliances over a fire, two threads of uneven thickness being drawn at a time.

The methods of reeling in vogue at present, are capable of considerable improvement. The market for Mysore silk is very much limited at present chiefly owing to defective reeling. There is no doubt that any improvement in reeling will fetch higher prices for the silk in outside markets. The looms generally used in weaving silk are the primitive pit looms and it is only recently that fly shuttles have been introduced in several places. The chief operations prior to weaving are twisting, degumming, dyeing and warping. Silk fabrics of stout texture and excellent designs are made chiefly by *Pattegars* and *Khatris* in Bangalore, Molkalmuru, Dod-Ballapur, Anekal and a few other places. Silk fabrics produced in the State consist of *Saries*, *Kanams* and articles of conventional dress as *Vastrams*, etc. Silk *Saries* and *Kanams* with gold and silver or gilt lace borders are largely manufactured in Bangalore. Owing to the improvement in the hand-loom industry and the introduction of new designs, the export trade of the State in silk fabrics has been steadily expanding.

(3) Wool.

Wool is the next important textile raw material. The chief areas of production of wool are the taluks of Pavagada, Sira and Chiknayakanhalli in the Tumkur District, Hole-Narsipur and Arsikere Taluks in the Hassan District and almost all taluks in the Chitaldrug District.

The fleece is shorn twice a year, once in the cold season known as *mage coonne* and the other before the rainy season known as *kare coonne*. Before the sheep are shorn, they are well washed. The wool, when it has been shorn, is teased with the fingers and then beaten with a bow, like cotton, and formed into bundles for spinning. This operation is performed both by men and women, partly on the small cotton wheel and partly with the distaff. Some tamarind seeds are bruised, and after

having been infused for a night in cold water, are boiled. The thread when about to be put into the loom is sprinkled with the cold decoction. One main defect in the local wool supply is that it is composed of a mixture of the inferior varieties.

The shearings from nearly three million sheep in the State constitute the local source of supply. In addition to this, wool is also imported into the State. During the year 1921-22, 18,943 *maunds* of wool were imported valued at 3.50 lakhs of rupees. The import is mostly of wet wool from the tanneries from the Madras Presidency. As this is of low grade and inferior in quality, it is used mainly for preparing the cheaper kinds of *kumbli*s for the use of coolies in the coffee and other plantations in the *Malnad*.

Of woollen fabrics, *kumbli* is an indispensable article of covering for almost all classes. Its manufacture is the staple industry of the Chitaldrug and Kolar Districts and of Mandya and Hunsur taluks in the Mysore District. The finest kinds are made only in the Chitaldrug District, and as these are of superior value are rarely made except to order. The fleece from the first shearing when the sheep are about six months old, must be used in making these *kumbli*s. The high price of the finer kinds is primarily owing to the great trouble taken in selecting wool sufficiently fine, the quantity of which in any one fleece is usually small. There are about 6,500 looms in all for weaving *kumbli*s for use in and outside the State.

Woollen
Fabrics.

The loom is of the same simple type as that used in cotton weaving. *Dhāvalies* or thinner *kumbli*s of finer wool, with or without fine silk borders, are woven at Mandya and these are largely exported to places outside the State. *Ujju kumbli*s or thicker *kumbli*s are made at Hunsur and Chiknayakanhalli, and these are used as

warm blankets. The *kumbli*s vary in size from 6 cubits long and 3 cubits wide to 8 or 10 cubits long and 3 cubits wide.

The bulk of the demand for *kumbli* comes partly from the *malnad* areas in the State and partly from the Nilgiris and Ceylon. It is a recognised custom that the coolies employed in the plantations should be presented with *kumbli*s every year before the commencement of the monsoon season.

(4) Carpets.

Bangalore carpets are well known for their durable quality and for the peculiarity of having the same pattern on both sides. The number of men generally engaged in this industry varies with the demand for carpets and the number of looms now in use for making carpets may come up to a hundred. From a commercial standpoint, the industry is not a big one. The total value of carpets manufactured every year by cottage owners does not exceed Rs. 2,00,000. Owing to the fact, however, that the woollen mills have each a department for the manufacture of carpets, the output is at present likely to be increased on a large scale. For making low grade carpets, aniline colours are used and the vegetable dyes are used for the better quality. There is not much demand in the local market for plush or pile carpets, though the plain carpets find a ready sale locally. In foreign countries, as England, the United States of America, Australia, etc., there is a steady demand for high grade Bangalore carpets.

Bangalore
Central Jail
carpets.

The Central Jail at Bangalore has had a reputation for many years for production of carpets of good weave and attractive soft colouring. They are made in many excellent old patterns. About 70 convicts are now employed at carpet making. There are 16 looms of different sizes varying in width from 21 to 29½ feet. The wool

used in the jail is of local origin and is supplied by a contractor. Vegetable dyes are mostly used. The sizes in great demand are 6 feet by 3 feet and 7 feet by 4 feet. Some of the good designs usually demanded are 'Sirdar,' 'Peacock,' 'Hashamkhani,' etc.

The following commendation of Bangalore carpets by Sir George Birdwood may be usefully quoted from his sumptuous work prepared for the Austro-Hungarian Government :—

Testimony of
Sir George
Birdwood.

"The wonderful carpets of Bangalore probably approach in their bold scale of design and archaic force of colouring nearest to their Euphratean prototypes.....The Italianesque style introduced in the treatment of modern Persian carpets, and, with local modification, of the Masulipatam and other denominations of Indian carpets, is a departure from the traditionary Euphratean mode, is yet undeniably pleasing, and on account of its broken patterning and generally diffused colouring, better adapted to carpets intended for European rooms, where they are overcrowded and overshadowed by the furniture, than the several co-ordinated designs and immense masses of clearly-defined, deep-toned colours of the carpets of Ushak, Koula and Bangalore.

"Notwithstanding, however, the sweet charm of the Abbasi Persian carpets of modern trade, the palm for pre-eminent artistic merit above that of all other denominations of Oriental carpets now manufactured for merely commercial gain must be awarded to those of Masulipatam and Bangalore, to the former for their perfect adaptability to European domestic uses, and to the latter on account of the marvellously balanced arrangement of their colossal proportions and the Titanic power of their colouring, which in these carpets satisfy the feeling for breadth, and space and impressiveness in State furniture, as if they were indeed made for the palaces of kings and the temples of the gods; and these Southern-Indian carpets, the Masulipatam, derived from the Abbasi-Persian, and the Bangalore, without a trace of the Saracenic, or any other modern influence, are both relatively to their special applications the noblest designed of any denominations of carpets

now made, while the Bangalore carpets are unapproachable by the commercial carpets of any time and place."

(b) Metallurgical arts.

The various metallurgical arts form an important group of indigenous arts next to the textile industry. Every large village and every town has its own goldsmiths and ironsmiths. There are no means of ascertaining accurately the number of persons engaged in these industries nor the total value of the several articles manufactured by them every year. Gold and silver have always been employed to a very large extent in making jewellery and this has been the favourite method with the masses, of investing their savings. There are certain areas in the State where a very small quantity of gold must once have been obtained from washings of the alluvial soil. At present, there is a regular trade in gold and silver bullion. In ornaments proper as manufactured articles, there is hardly any carrying trade worthy of being noticed and the import of such articles by private persons for their own use does not constitute an important item of trade in them from a commercial point of view.

The common agency for the distribution of the precious metals inside the State is that of "shroffs," an indispensable complement to the goldsmith's trade and in many cases, the shroffs act as capitalist middlemen between the intending customers and the goldsmiths.

The Village Goldsmiths.

The village goldsmith often works alone and sometimes takes his near relations to work as apprentices. He confines himself generally to the manufacture of simple ornaments and a single artizan will often turn his hand to what would in large centres of trade be looked upon as separate occupations as embossing, chasing, etc.

Further, the goldsmith and the silversmith are almost universally the same in rural parts and there has been no clear distinction between the two branches of trade except

in large towns. The village goldsmith is not always appreciated by his customers and the popular ideas about him are never flattering. His procrastination is proverbial. He is as often as not in debt and the silver or gold placed in his hands with today's order is invariably utilized in making ornaments ordered months ago.

Goldsmiths as a class are not always in a prosperous condition and most of the members of the class in the interior parts of the State are poor and it is this poverty that may compel them to have recourse to doubtful practices often complained of by their customers. Such of the goldsmiths as are prosperous have acquired their wealth by money lending or agriculture or some other occupation.

Goldsmiths are generally paid for their work at a fixed rate per *tola* on the weight of the finished article, the material on which they have to work being usually supplied by the customer. The remuneration of a goldsmith is, therefore, practically the payment for his labour only and it is regulated according to the nature of the labour required. The actual profits of the trade—if any—constitute a matter on which it is very difficult to get definite information. The wear and tear of tools, consumption of charcoal and the like, form the outlay to be incurred by the goldsmith. When he is employed by the customer to procure him gold and silver on which to work, as well as to do the work itself, he will have greater opportunities for making profits.

The chief instruments used by the ordinary goldsmith are hammer, blow-pipe, forceps, mould, different kinds of pincers, stamp dies, crucible, anvil, chisels, files, scissors and compasses, bellows, and brushes. Besides the above, there is a variety of instruments which are practically moulds or instruments of the form to which the metal is to be shaped. Most of these are made in iron or steel or bell-metal. The stock of materials commonly required

for his trade are salt, saltpetre, red earth, alum, calomel, sulphuric and nitric acids and borax. He needs for his fire, charcoal, cow-dung and wood.

The commonest method of assaying gold is by rubbing it on the touchstone and the quality of the gold is recognised by the shade of the mark on the touchstone or by comparing it with marks made by pieces of gold of known purity. The purer the gold, the redder will be the tinge of the streak made but an experienced eye is required to estimate the amount of alloy used. Gold, if alloyed, will give a paler and yellower colour than pure gold. A copperish tinge in the mark indicates the presence of copper in the gold and a white streak that of silver. Silver is roughly tested by its ring in the manner wellknown for testing coins or it may be rubbed on the touchstone in the same way as gold.

The Indian method of purifying gold is, to take equal quantities of brickdust and common salt, a good handful, which is put between two pieces of potter's ware and into it the gold. These are placed in the midst of a heap of dried cow-dung (*brathis*), and lighted at top in a place where the wind cannot produce a strong fire. The pieces of gold when taken out appear incrustated with a black crust, which must be removed and the process as often repeated as the same is reproduced.

Gold and
silver
ornaments,
vessels, etc.

It is rather difficult to arrive at any estimate approaching precision as to the proportion of the value and amount of gold ornaments to those of silver already in use. Gold is confined mainly to the richer classes and numerous ornaments are largely worn by their womenfolk on festive or other special occasions. The ornaments of the lower classes are made by silver and a good portion of it is in daily and constant use. The following are some of the ordinary gold and silver ornaments worn by the people:—

Ragate, Kyadige, Jedebille, Chauri, Cuppe, Bavali, Vole, Padaka, Addike, Kankani, Vanki, Bajuband, Dābu, Ruli, Kālu-gejje, Pilli, Udidhara, Karadige, Tayiti, Sunnada Kāyi, etc., etc.

Vessels made in silver or gold such as cups, plates, dishes, tumblers, attar dānis, etc., are largely used by the richer classes and are given as presents on festive occasions. The images in the big Hindu temples are often made of gold and silver. Besides these, the temples receive as offerings from the worshippers, silver-plated lamps, *lotas* and other service vessels, ear-rings, necklaces, belts, bangles, bracelets, gold umbrellas, silver sticks, cases for holding torches, etc.

Observances relating to the use of ornaments vary from place to place. The use of one kind of ornament rather than another is at times enough to distinguish different sects or grades of society. But what constitutes a distinction in one area may be no distinction in another. Invariably, every woman, Hindu or Moslem, if not a widow, will have some ornaments on her body. During marriage occasions, the brides are often bedecked with a vast amount of jewellery.

The ornaments now in use are lighter and more fanciful in workmanship than those of a generation ago. They are also lighter in make-up. Mangalore patterns and designs have been widely in vogue in the Cities of Bangalore and Mysore. There has been no great change, however, in the prices of the ordinary ornaments used by the middle class people. Ornaments set with precious stones are chiefly used by the higher classes. False jewellery is largely sought after by the poorer folk.

From an economic point of view, the excessive use of ornaments has done great harm to Indian society generally. A large amount of wealth is locked up in jewellery and is thus not available for its employment in profitable channels. There is no doubt that the economic development of the society can be materially accelerated if a diminution in the stock of ornaments in use is effected. The spread of education among the masses, development of trade and manufactures, opening up of better

Hoarding and
its economic
effects.

opportunities for investment, etc., may reduce to some extent at least, the desire for and the use of ornaments.

**Iron work
and Steel.**

Iron ores are widely distributed in the State and the supplies are ample to meet all demands that may be made upon them. As the ores are variable in character, it is only in a few places they can be had in sufficient abundance and purity so as to facilitate their being worked on a commercial scale. In past times, iron smelting was carried on in most parts of the State. The production of iron by the indigenous method is now almost extinct. This is due to the fact that the local iron cannot successfully compete with the imported iron and steel received in the form of bars, rods, sheets, plates, etc.

Every village has its own blacksmith who generally works in or near his dwelling place. The more common articles of iron made by him are agricultural implements as ploughshares, scythes, axes, and tyres for carts. The chief domestic utensils are frying pans, laddles and vessels of different sizes to draw water. The manufacture of most of these things is now being abandoned as the imported articles turned out on a large scale with the aid of machinery sell at cheap rates.

**Iron
foundries.**

There are four foundries in Bangalore, where some casting work is done and articles like ornamental railways, stands for garden seats, etc., are prepared. The old foundry at Chick-Ballapur is now only a workshop for repairs.

**Musical wire
drawing.**

Musical-wire drawing is an industry peculiar to Channapatna. It dates from the days of Haidar Ali, who, it would appear, created a demand for it by sending the wire to Delhi. The special character of the wire was due to the peculiar tempering and the high class local steel used,

viz., the old Indian "Wootz." The industry declined owing to decrease in demand for the wire and the difficulty of getting a proper kind of good steel; the local industry of making steel from the Mysore made superior wrought iron has practically died out. The workers have decreased in number and the skill is also being practically lost. A substitute for the steel is now used as attempts are being made to revive the industry in a small scale. The present process may be thus briefly described:—The workmen buy some good imported steel, beat it into thin rods and draw them out thinner and thinner, through various sized holes in a wire drawing plate, just as they draw silver in Bangalore. After the required thinness is obtained, the wire is tempered by being heated in a butt of molten tin and cooled slowly in a dry chamber. It is kept free from rusting by being immersed in quicklime powder. It is stated that the German piano makers prize it highly and that there is demand for it all over India.

Brass and copper vessels play a very large part in the ordinary daily life of both Hindus and Muhammadans. Gifts of utensils made in these metals are usually made on the occasion of weddings, festivals and ceremonies. In the Hindu temples, vessels of brass and copper are largely employed and their shape and design differ according to the sect to which the temple belongs. It is only in some rich temples that vessels made of gold and silver are employed and that too only to a limited extent. With the exception of a few copper vessels used either for sanctity or for ceremonial purposes, vessels made of pure copper are not generally used by Hindus, whereas, Muhammadans use copper vessels more freely than those made of brass or bell-metal.

Manufacture of brass and copper vessels used to be carried on formerly by a particular caste known as the

Brass and copper.

Manufacture of brass and copper vessels.

Bhogars, but at present persons belonging to other castes as well have taken to this business. Though the industry is localized to a great extent, every large town has usually a shop or two for the sale of these vessels, and generally pedlars go from village to village or visit important fairs to sell their wares to the people.

The casting process.

The casting process falls into two sub-divisions, moulding and casting proper. A core of mud is first made of the shape of the inner surface of the intended hollow casting of metal and turned true. A lining of bees-wax of the thickness of the casting required is then laid over this turned surface and also turned true under a bow lathe. Lastly, an outer layer of mud is superimposed on to this wax lining. Two openings are left, one at the bottom for the melted wax to be run out and the other near the top for the molten metal to be poured in. A coating of rough mud is now put on the mould and the whole carefully dried. The mould is then heated and the bottom opening is left open to allow the molten bees-wax to run out. The molten brass is next run in through the opening on the top and after it is cooled, the earth inside and outside is removed. The cast article is then filed by hand and turned under a strong lathe worked by two men.

Casting and sheet metal work are carried on to some extent at four places in the State, namely, Magadi, Nagamangala, Sravana Belgola and Sitakal. The casting work at Nagamangala is more extensive and varied than at Magadi. The casting is mostly in brass and to some extent in bell metal. The articles prepared from castings of brass are images of the various Hindu Gods, *Vāhanams* or riding animals of different Gods, lamp-stands, candle-stands, tumblers, sounding bells, cups and boxes.

The beating process.

In the beating process, the imported sheet metal is chiefly used. If old vessels are utilized, they are cast into

plates locally and from these plates new vessels are beaten. The beating process is in vogue both at Sravana Belgola and at Nagamangala. At Sravana Belgola, brass vessels beaten from sheet metal constitute the greater bulk of production, while those from copper sheets come next. The articles prepared out of sheet metal at Nagamangala are *prabāhvalis*, platings over doorways in temples, *sūrya-haras*, *vimānas* and *mantapas*.

The following table shows the total quantities and values of brass and copper, unwrought and manufactured, imported into the State during the last two years. To facilitate comparison, similar figures for the year 1913-14 are given. It has been possible to obtain accurate statistics of the internal movements of brass and copper ware from district to district within the State:—

Trade in
brass and
copper.

	1913-14		1919-20		1920-21	
	Mds.	Rs.	Mds.	Rs.	Mds.	Rs.
Brass Unwrought	4,400	1,72,800	2,127	1,65,099	6,589	4,45,363
do Manufactured	8,900	6,33,200	6,867	7,57,755	10,742	9,52,773
Copper Unwrought	3,100	1,59,900	640	50,119	2,658	1,79,938
do Manufactured	5,200	3,74,209	3,350	3,66,639	3,784	3,36,684

It will be seen from the above table that the imports of brass and copper articles are greatly in excess of the total weight of brass and copper imported in an unwrought condition. Formerly, the alloys used to be mostly mixed here in the country and vessels used to be made mostly out of old utensils melted down or of plates cast locally. The demand for vessels has outgrown the supply of old vessels, and local casting and moulding has suffered owing to the large imports of ready made articles and also the manufacture here of vessels, etc., by beating out imported brass sheets. With regard to copper, imported sheets have been mostly in demand from the beginning, as copper cannot be melted easily.

Pottery.

The potter as a member of the village community is found in almost every large village. Owing to the brittle character of the ware and the difficulties of transport in the way of exploiting distant markets, the industry has not been localized. The numbers of potters in the State as returned at the Census of 1921 is 23,457 as against 26,229 in 1911 and 24,182 in 1901. The principal tools employed by them are the wheel, a convex stone and a series of flat bat-like mallets for tapping vessels. The clay is usually obtained from the beds of tanks, rivers and *nālas*. The articles most commonly manufactured are vessels of different shapes and sizes, having narrow or wide mouths, cooking plates and dishes, stoves, flower pots, tobacco-pipes, rough images of Gouri and Ganesha. Bricks are made in the usual wooden moulds. Country roofing tiles are also made on the wheel in the form of cylinders and are afterwards divided into two parts by a wire or a knife. Reference also may be made to the manufacture of large jars for storing grains, six feet or more in height.

Sculpture.

For sculpture, potstone or soapstone is the common material used. From this stone superior cooking vessels are also made, besides images of the Gods, and various ornamental articles. The Jain statue of Gummatēsvara at Sravana Belgola, 57 feet high, standing on the summit of a rocky hill, which rises to 400 feet, is one of the most remarkable works of Indian art. In the opinion of Fergusson, the decorative sculpture of the Halebid and Belur temples offer "the most marvellous exhibitions of human labour to be found even in the patient East;" such labour as, he believes, "never was bestowed on any surface of equal extent in any building in the world." The erection of the New Palace at Mysore has afforded an opportunity of reviving the artistic skill of local and other sculptures. (See Volume II, Chapter I—*Architecture*).

Of the art of engraving, the best examples are to be found in the numerous inscriptions on copper or stone scattered over the country. Some of the oldest on stone (as those of the Bāna kings at Srinivasapur) are deeply and heavily cut, on ponderous and massive slabs, as if by the hands of a giant race. But the Kadamba inscription of the fifth century on a stone pillar at Talgunda is a beautiful example of a regular and ornamental engraving in the so-called box-headed character. Some of the old rock inscriptions at Sravana Belgola are also fine specimens. The Ganga grants on copper of the fifth to the eighth centuries are most artistically incised both as to form and execution. Many of these are the work of a Visvakarma, and as the Kadamba inscription of about the third century on a stone pillar at Malvalli, in the Cave characters, was also engraved by a Visvakarma, it is evident that there was a family of this name attached to the court as engravers, first under the Kadambas and then under the Gangas. With the Chālukyas the style improves, and later on, the Chōlas covered some of the eastern temples with inscriptions in old Tamil deeply and well cut. But it is under the Hoysalas, perhaps, that we find the most perfect specimens. Their inscriptions, on beautifully polished slabs of hornblende, are masterpieces of the art. The letters are of ornamental design, varied to suit their positions, and the whole so well fitted and harmonized together that no space is left where a single additional letter could be introduced. Sometimes, the initial letters are formed into designs imitating birds or other animals.

Sandalwood carving is an old indigenous art peculiar to Mysore. It is done by a class of workmen called Gudigars, about 400 in number, who live in Sagar and Sorab taluks of the Shimoga District. The designs with which they entirely cover the boxes, desks and other articles made, are of an extremely involved and elaborate

Carving in wood and inlaying : Sandalwood carving.

pattern, consisting for the most part of intricate interlacing foliage and scroll work, completely enveloping medallions containing the representation of some Hindu deity or subject of mythology, and here and there relieved by the introduction of animal forms. The details, though to some extent incongruous, are grouped and blended with a skill that seems to be instinctive in the East, and form an exceedingly rich and appropriate ornamentation, decidedly oriental in style, which leaves not the smaller portion of the surface of the wood untouched. The material is hard, and the minuteness of the work demands the utmost care and patience. Hence the carving of a desk or cabinet involves a labour of many months, and the artists are said to lose their eyesight at a comparatively early age. European designs are also imitated to perfection.

The articles that are usually prepared are:—images of the various Hindu deities, animals, combs, fans, caskets, boxes, desks, photo frames, walking sticks, etc. A good deal of elaborate carving is introduced into almost every one of these articles and the details of the ornamentation are sometimes so elaborate and costly that they fail to attract the attention of modest purchasers. The Gudigars cannot always keep a large stock of articles for sale. They show their skill only when especially large orders are placed with them and the requisite money is paid in advance. The bulk of the articles manufactured by them is now sold through the Government Depôt organized to provide a market for all artistic products in the State.

Many old Hindu houses possess beautiful specimens of ornamental wood-carving in the frames of doors, and in pillars and beams.

Inlaying.

The art of inlaying ebony and rosewood with ivory, which seems to have been cultivated by Muhammadans and of which the doors of the mausoleum at Seringapatam

are good examples, has been recently revived at Mysore. As a result of this, several many useful and ornamental articles are being turned out. Similar work is also met with in choice musical instruments, especially the *Vīna*. The Muhammadan workers are advanced either money or ivory and the articles prepared delivered to a central depôt which advances a part of the price to enable the workman to produce the articles, the full price being paid when the article is sold.

The manufacture of *Tambūri*, *Vīna* and *Sitār*, at costs varying from Rs. 15 to 60 each, according to the nature, quantity and quality of the material used, is being carried on to some extent at Magadi in the Bangalore District. The *Sitārs* are in great demand in Hyderabad, while the other two are disposed of locally. Halasu or jack wood is mostly used and the nature of the work is such as to demand manual skill and the use of machinery does not offer any special advantages. Musical instruments.

This art is, principally, if not entirely, applied to the manufacture of bangles or glass rings, worn on the wrists like bracelets by all classes of women. Till very recently, glass for bangles was being prepared in several places of the State, *viz.*, Molakalmuru, Muttod and Anivala in the Chitaldrug District, Julupalya and other villages in the Bagepalli taluk, Thimmasandra, Gazalahosahalli in the Sidlaghatta taluk, Kattapalli, Koratagere and Pavagada in Tumkur. The decline of this once flourishing industry is chiefly due to the scarcity of cheap fuel and alkali earth and the importation at low prices of bangles of much higher quality from Austria and Japan. Bangle glass of three different colours, deep cobalt, blue, deep emerald, green and deep black was being manufactured at Molakalmuru in the Chitaldrug District. The industry is now practically extinct. Glass making.

The furnace
at Molakal-
muru.

The furnace at Molakalmuru is situated in the open country, about a mile to the east of the town and about a furlong to the south of the road to Rayadurg. The furnace used in making glass is approximately in the form of a cylinder surmounted by a truncated cone of a short height, the smaller section of the cone constituting the top. The height of the cylindrical part is 12' 6" and its diameter 15' 0" whereas the height of the conical part is 4' 6", the diameter measuring 2 feet, 2 inches. A small circular opening about 9 inches in diameter lies in the centre of the furnace. At the height of about 4 feet from the base of the furnace, there is a circular platform projecting from the inner walls and towards the centre of the furnace leaving an opening at the centre. There is a small opening to one side in the lower part of the walls of the furnace between its base and the platform and through this opening the furnace is lighted. Inside the wall of this top and from the mouth of the furnace is lined with potstone, the thickness of the lining being about 18 inches and the outside is built of roughly burnt bricks.

The pots fully charged are piled up on the circular platform so as to form eight rows, one above the other, the pots in each row breaking joint with those in rows above and below. The mouth of each pot is exposed to the centre of the furnace while its base is turned towards the wall, the entire pot having a downward tilt towards the base. Twenty-two pots make up a row, those forming the topmost row being of smaller size than the rest. One hundred and seventy-six pots thus piled up fill the furnace to a height of about eight feet above the circular platform.

Fuel used is the ordinary jungle wood. The furnace is kept under a steady fire. Firewood is introduced in regular quantities and none put in till that in the furnace is completely burnt up into ashes. Irregular or imperfect burning of firewood is stated to retard the melting of the

charge or to spoil the colour of the glass produced. The fire in the furnace is gradually raised and kept for eight days continuously, night and day, and is worked by shifts. When coloured glass is to be produced, the furnace is worked for 12 days. Three weeks are allowed for cooling, after which period the pots are taken out through the mouth of the furnace, which is now widened out.

The materials used in the preparation of glass are earth-soda, quartz and colouring matter, as oxide of copper, and oxide of cobalt.

The different kinds of glass made are the following:—

(1) By using a mixture of impure varieties of soda and quartz in the proportion of 2 to 1, a pale greenish yellow glass is obtained which is called *bija*, meaning seed.

(2) Deep cobalt glass is prepared by fusing a mixture in the proportion of 18 seers of the yellowish glass, 24 of the purer variety of earth soda and 12 of quartz with 12 tolas of cobalt oxide.

(3) Green glass results from fusing a mixture of 18 seers of yellow glass, 24 of the purer variety of earth soda, and 12 of quartz; with 6 tolas of the colouring matter, black oxide of copper.

Four charges of 176 pots each are taken out every year. The average weight of the glass in one pot is about one and one-sixth maunds of 24 lbs. per maund. The total quantity of glass produced per year from this furnace is 821 *maunds* or slightly less than 9 tons.

The village carpenters working in the rural parts are chiefly engaged in providing the *raiyat* with agricultural implements and also building materials. To a limited extent they undertake the construction of bullock carts. A few factories for working in wood have recently come into existence in different parts of the State.

(c) Carpentry
and turning.

Saw-mills.

Power driven saw-mills have been established in the Kolar Gold Fields and in Bangalore City and to a smaller extent in the two industrial schools worked by Missionary bodies in the towns of Tumkur and Kolar and in the Chamarajendra Technical Institute at Mysore. The Kolar Electrical Saw Works were started with a view to meet the needs of the Gold Mines. The two Mission Industrial Schools work their sawing plant by oil engines, using all the types of saws, *viz.*, the circular, the frame and the hand saws. These power-worked saw-mills have been established with a view to afford useful and practical training to the students. Agricultural implements are, however, being prepared in the Kolar Industrial School in addition to meeting occasional demands for furniture.

**Carpentry,
workshops,
etc.**

Carpenters' workshops and country cart factories are in existence at Bangalore, Tarikere, Hunsur, Tiptur and other trade centres. They supply the local demands for country carts and other articles required by the *raiyat*. Each factory produces, on an average, about 30 to 50 carts per year. The demand for carts appears great, considering the number of carts in use in the State. A few furniture factories are also working in Bangalore and a few other large places where good cabinet work is turned out, mostly copied from English designs. Coach and carriage building is also being successfully carried on.

Lac-turnery.

Lac-turnery is an old indigenous industry in Mysore, practised chiefly at Channaptna, by a class of people called *Chitragārs*. The wood used is *Hale* or *Eiji* which grows abundantly on waste lands round about Channapatna. It is soft and of fine grain, admitting of being turned under a bow-lathe, worked by one hand. The people cut the logs and thick branches of the wood into smaller pieces, turn them under the lathe and apply variously coloured lac, by pressing it gently against the

articles under the bow-lathe, in which process the lac melts and coats the toys. By dexterous handling, various shades of colour are imparted to the different parts of the toys turned by the lathe.

Since the introduction of the subject in the local industrial school, boys of other classes trained in the school have taken to the profession and are earning an independent living. The introduction of power driven lathes has facilitated the increase of production and training of men of different classes in the manufacture of these toys.

The toys for which Channapatna is noted are remarkably well suited for their purpose and much sought after by all classes of people, including the Europeans. These toys are of brilliant colours, smooth and hard and the colour never comes off. Large toys, representing various animals, are made from a soft wood like touch-wood *bhurige-mara*. They are elaborately painted by hand; the birds especially, and some fruits, being very fairly modelled and painted to imitate nature.

The old rural industry of curing hides has been very largely replaced by organised bark or chemical tanning on a large scale.

(d) Leather dressing.
Bark tanning.

The indigenous process of tanning is the same in all places. The salted hide is immersed in *chunam* or lime water for 6 or 8 days, after which the hair is removed. It is again immersed in fresh solution for about 4 days, after which the fleshings are scraped off. The hide is then immersed in water charged with the bark of *Thangadi* (*Acacia Auriculata*) and the process is repeated thrice. Three days of further immersion in bark water and gallnut completes the tanning process, by which time the tanning extracts would have permeated completely throughout the thickness of the hide. It is then scraped, washed and oiled with *honge* oil (*Pongamia glabra*). Rubbing with oil and fat is the next process

after which it is dried, and when half wet, American flour is spread and a plank run on with some more fat and oil. One day's final drying finishes the whole process, after which the leather is packed ready for transit.

The materials generally used in the bark tanning process are *thangadi* bark (*Acacia Auriculata*), *chunam* gallnut, oil, fat and lastly flour. On an average, $22\frac{1}{2}$ lbs. of bark are required for every 10 lbs. of the tanned hide or about 25 lbs. of the raw hide. One and a half measuring *seers* of *chunam* are consumed in the process of unhairing the above quantity of hide, $3\frac{1}{2}$ lbs. of gallnut, about $\frac{5}{8}$ lb. of oil, half a pound of fat and $\frac{5}{16}$ lb. of flour.

The work of collecting hides and skins from the various parts of the State is almost entirely in the hands of the *Labbes* or Tamil speaking Muhammadans from Vaniyam-bādi and Vellore excepting at a few places where the local Muhammadans replace them.

In all towns and in almost every important village, store houses for hides and skins, known as *Mandis*, have been established by the *Labbes* who work both as wholesale merchants and retail buyers and sellers. Every *Mandi* employs a number of hands who roam about the country and collect the hides by buying them from the *Culavādis* and *Talayāris*.

Red Morocco
Tanning.

A very pretty kind of red morocco is manufactured at Harihar by a set of people called *Muchikars*.

It is in the first place tanned. The goat skins (these only are employed) are dried in the sun for one day; next day they are washed in the river, rolled up and put into a pot, with a mixture (for each skin) of one handful of common salt, as much water, and half of that quantity of the milk of wild cotton (*Asclepias Gigantea*). After the skins have been soaked in this mixture for four days, the pot is filled up with water, and the leather suffered

to remain four days longer in it: the hair now comes easily off the skins when scraped by a piece of broken pot. The leather thus cleaned is laid in the shade, and when dry is rolled up and kept in a house for two or three days, in a place secure from smoke and from insects; it is then soaked for eight hours in pure water, and scraped with a piece of earthenware till it becomes quite white. Before the leather is dyed, it is soaked for one night in a *pakka seer* of water which has been mixed with a handful of cholam meal (*Holcus Sorghum*) and warmed on the fire; in the morning, it is taken out and dried with a piece of cloth: when well dried, it is soaked again for half an hour in water with which one seer of tamarinds has been mixed; it is then spread on a mat and the colour applied.

For the red colour, take $\frac{1}{4}$ *kachcha seer* of lac (18 drams); *alli toppalu* (leaves of the *Mimecylon Capitellatum*) $\frac{1}{8}$ of a *dub* weight; and the same quantity of the salt extracted from washerman's earth (carbonate of soda); pound these ingredients together; boil $\frac{1}{4}$ of a *seer* of water in a place where there is no wind; put the pounded mass into it and keep it for a quarter of an hour over a slow fire. To ascertain whether it has acquired the requisite consistence, dip a cholam straw into it; if the liquid does not run down the straw when turned up, it is sufficiently done, but if it runs, the boiling must be continued for some time longer.

The leather (previously extended on a mat) is, at three different times, rubbed over with this liquid; it is then thrice sprinkled over with tamarind water, and lastly it is steeped for five or six days in a liquid composed of 3 *seers* of water and one *seer* of pounded *tungadi* bark. Every morning it is taken out, washed a little, and again replaced, till at last it is well washed in clear water and dried: thus prepared, it has a fine crimson colour, and is very soft.

(e) Oil Mills.
Oil-pressing—
“Gānas.”

The indigenous oil pressing industry scattered all over the country is practised by the class of people called Gānigars. The work of crushing the oil seeds is done mostly in the primitive wooden or stone oil mills, called *gānas*. These are in the form of an immense mortar and pestle. In the kind driven by two bullocks, the mortar is a block of granite 6 feet 9 inches above the ground, with a pedestal let into an equal distance under ground. A wooden beam, 17 or 18 feet long, pressing at one end closely against the foot of the mill has an arm projecting upwards at about a third of its length, which is attached to the head of the pestle. The mill is driven by oxen yoked at the farther end of the beam, who pull it round and round.

The stone *gānas* are in use mainly in parts of the Kolar District. At Tiptur, besides oil seeds, copra is also milled in these *gānas*. On an average, about 50 measuring *seers* or about four local *maunds* of seed are crushed in one *gana* per day with an average yield of one *seer* by weight of oil for one measuring *seer* of about 2 pounds, *i.e.*, 30 per cent of the weight of the seed used.

There were about 3,572 *gānas* 30 years ago and the number has fallen to about 2,500 in 1921, owing partly to the introduction of power oil-mills and partly perhaps to the increasing export of oil seeds.

Screw
presses and
power mills.

There are four screw presses at Bangalore and Arsikere, used solely in extracting oil from castor seeds and four Anderson Oil Expellers, three in Bangalore and one in Davangere. Another Anderson Oil Expeller is in the course of erection at Mysore.

Rotary mills.

Rotary mills have also been started in various places in the State. About half a dozen of such concerns using rotary mills varying in number from two to about twelve are now working successfully in the State.

Full data are not available for estimating the quantity of production of the various kinds of oil in the State, as the capacities of local *gānas* vary as to the rate of yield of oil. Moreover, several kinds of seeds are used, *viz.*, gingelly, *hutchellu*, *honge*, *Hippe*, (*bassia latifolia*), ground-nut and even castor, the same mill using the different seeds in different parts of the year.

Tinsel of silver white and golden yellow colour is woven into tapes in Bangalore City. Tapes of breadths varying from nine to forty threads of the tinsel are woven, *kōra* silk and mercerised cotton being used for the weft. Most of the production in Bangalore is of 20 threads. Each tape woven is termed a "thān" and is 35 yards in length.

(f) Other industries.
Tinsel.

There is only one factory in Bangalore weaving tinsel with the aid of electric power while about 170 looms are worked by hand. The weavers work for wages, the raw materials being supplied by the merchants. The daily outturn in handlooms is reported to be $22\frac{1}{2}$ *thāns* per loom, being 75 per cent of that from the power loom.

This is the smallest textile industry engaging about 20 families of Muhammadans in Bangalore City. Tape is largely sold in the market and is used for cots, tents, horses' girth, etc. The State Military Department consumes a large quantity of tape annually.

Cotton tape and rope.

At Sindaghatta, Krishnarajpet taluk, there is the small industry of weaving silk threads which are styled *udidāra*, or *nadukattu* (waist bands) as well as silk twists for borders of *panches*, *kumblis* and for ornamental work on the military uniform and for *namdas* over horses, elephants, etc. The silk used for all this work is either what is spun by hand by women from the silk waste or *kōra* silk. These are sorted into various grades of fineness, dyed and woven or worked as above.

Silk thread, etc.

Pierced cocoons are reeled to a certain extent in the State at present, the silk so spun being used in making sashes, etc. Silk waste is almost entirely exported.

Dyeing.

Dyeing is largely carried on with the help of artificial dyes, though in the case of silk, natural dyes are still preferred.

Calico printing.

Calico printing is another industry that is carried on on a small scale.

Sisal and other fibres.

The fibre from sunnhemp is woven on a large scale at present for making sacks, etc. The methods are very primitive. Though jute is not grown in Mysore, other fibres of great commercial importance can be produced in the State. The country is naturally suited for the growth of sisal hemp and very valuable results have been attained at Mr. Brigg's Factory near Bangalore. The pulp of this plant has been found suitable for paper pulp and straw boards. About 500 acres of land have been planted and the question of providing a sufficiently large area of land to start a large factory is being investigated by the Department of Industries.

III. FACTORY INDUSTRIES.

(1) Cotton, etc., Mills. Factory employees.

Mysore is primarily an agricultural country. According to the Census of 1921, the total population engaged in agriculture is 47,03,846 and that in industries 54,922. Of these, 40,032 are employed in factories and the others in minor industries.

Large industries.

The number of large industrial concerns at the end of 1920-21 was 133. The most important of them are:— Gold Mining Works, Cotton, Woollen and Silk spinning and Weaving Mills, one Hydro-Electric Works, Manganese and Chrome Works, Sandal Oil Factory, one

Essenflour Products Company, one Asbestos Works, one Pharmaceutical Works, one Metal Factory, four Brick and Tile Works, four Saw Mills, two Carpet Factories, Cotton Ginning Factories and Presses and other miscellaneous industries using mechanical power.

Of these industries, the Hydro-Electric works which have been installed at Sivasamudram are owned by Government. The Sandal Oil Factory, which is dealt with in detail below, is also a Government concern. Government have also recently started a large Iron Works at Bhadravati in the Shimoga District.

As cheap electric power is easily available, in the Cities of Bangalore and Mysore, a large number of small concerns such as Flour Mills, Ground-nut Decorticators, Rotary Oil Mills, pumping presses, etc., have come into existence. The total quantity of electric power used by large industries such as Gold Mines, Cotton Mills, etc., is 29,000 H.P. and that by small industries is 5,740 H.P.

In the year 1913, with a view to encourage the adoption of machinery for various industrial purposes within the State, a system of loans was introduced and various other concessions began to be extended. As a result, a large number of industrial plants, owned chiefly by individuals, using about 7,000 H.P., were installed in different parts of the State. The power is derived from oil, gas and steam and the industries in which such power is used consist chiefly of pumping installations, sugar-mills, oil and flour-mills, ginning factories, rice mills, etc.

Bangalore is one of the most important distributing centres for the textile trade in Southern India. The total value of such goods is estimated at 1.30 crores of rupees. The climate of Bangalore, which is more or less

Small industries.

(1) Cotton, etc., Mills.

The two premier mills in Bangalore.

uniform throughout the year, is eminently suited for the establishment of large cotton mills. The first mill to be started in the Mysore State was in the year 1884, now known as the Mysore Spinning and Manufacturing Mills. It is also known as the Maharajah's Mills. The next mill was started in 1887 and is now known as the Bangalore Woollen, Cotton and Silk Mills. Both these Mills have had a very chequered career. They were started by local capital, but owing to the concerns not having been successful from the beginning, the bulk of the shares have been sold to outside people and the Managing Agents have also come from outside. In either case, large concessions were given by Government, such as the supply of suitable sites and facilities to obtain water. Government also subscribed towards the share capital. The difficulties which such concerns have generally to face in their initial stages and the defects incidental to their management were soon remedied. After working for a number of years quite successfully, they are both now in a prosperous condition.

The Mysore
Spinning and
Manufacturing
Company.

The Mysore Spinning and Manufacturing Co., Ltd., was started with a nominal capital of Rs. 4,50,000. It sustained heavy losses during the first nine years and would have gone into voluntary liquidation in 1901 but for the liberal financial assistance afforded by Government. The Managing Agency was changed and after some further struggle, the mill gradually began to make good its past losses. Its present position is satisfactory. After discharging all its liabilities, it has built up a good reserve fund and has been able to secure the additional capital required for its extension.

The Banga-
lore Woollen
Cotton and
Silk Mills,
Ltd.

The Bangalore Woollen, Cotton and Silk Mills, Ltd., was started with a capital of six lakhs of ordinary shares and four lakhs of preferential shares. The concern has

also passed through several vicissitudes but is now in a flourishing state. It has invested large amounts in the construction of comfortable residential quarters for the European staff and is providing funds on an adequate scale for providing accommodation for its labour. It has also carried out large extensions, the capital having been provided out of the profits issued to the share-holders in the form of additional shares.

The two mills together have been consuming on an average 60,000 Bengal *maunds* of raw cotton per annum.

The Bangalore Mills in addition to cotton goods manufacture blankets and carpets and during the Great European War were of substantial assistance in meeting the requirements of Government for blankets for troops on active service.

The following statement gives full information regarding the total capital invested in each of these concerns, and the existing number of spindles and looms, the labour employed and the annual outturn:—

STATISTICS RELATING TO COTTON MILLS IN BANGALORE
FOR THE YEAR 1921.

	Total Number of Looms	Total Number of Spindles	Total Number of Persons employed daily (average)	
			Men	Women
1	2	3	4	5
The Mysore Spinning and Manufacturing Co., Ltd., Bangalore.	240	20,068	754	126
The Bangalore Woollen Cotton and Silk Mills, Ltd., Banga- lore.	434	23,024	2,423	644
Total ...	674	43,092	3,177	770

STATISTICS RELATING TO COTTON MILLS IN BANGALORE
FOR THE YEAR 1921—*concl'd.*

	Total Number of Persons employed daily (average)		Total amount of Capital		
	Child- ren	Total	Autho- rised	Paid up	De- ben- tures
	6	7	8	9	10
The Mysore Spinning and Manufacturing Co., Ltd., Bangalore.	212	1092	15,00,000	11,92,700	...
The Bangalore Woollen Cotton and Silk Mills, Ltd., Banga- lore	240	3307	26,25,000	26,25,000	...
Total ...	452	4399	41,25,000	38,17,700	...

The Sri
Krishna-
rajendra
Mills.

The boom in cotton mills and the advantages and the prosperity which the industry enjoyed during the war stimulated the starting of new mills within the State under the auspices of His Highness the Maharaja. The Sri Krishnarajendra Mill was registered in Mysore in 1920 with a capital of 50 lakhs of rupees. Machinery was obtained from England and the mill started work early in 1924. The mill has at present 25,000 spindles. It has a complete up-to-date hosiery plant. Besides subscription of shares to the extent of five lakhs of rupees by His Highness the Maharaja, the concern has been materially assisted by Government in regard to securing a suitable site for its location and to supplying electric power at concession rates for a certain period.

The Minerva
Mills.

The Minerva Mills with a capital of 30 lakhs of rupees have been started in Bangalore. This mill is to be equipped with 20,000 spindles. Government have acquired for the mill about 70 acres of land and given it at cost price.

A weaving shed with 100 looms has been started at Yesvantpur known as the Bangalore Spinning and Weaving Mills.

The Bangalore Spinning and Weaving Mills.

The weaving of woollen blankets, *kumblis* and carpets has been an important industry in the State from time immemorial. The recent War, however, proved the possibility of developing the industry. The Bangalore Woollen, Cotton and Silk Mills Co., Ltd., Bangalore, which had a plant for the purpose, found the demand far in excess of its capacity to supply. In addition to local supplies of wool, Bangalore is an important centre for the export of skeins; large quantities of these come from other parts of India and there is no lack of supply of wool, as these skeins also contribute materially to add to the local supplies.

Woollen Mills.

The Kaiser-I-Hind Woollen Mill was started at Bangalore in 1922 as a private Company, with a capital of five lakhs of rupees and erected a plant with 600 mules—six sets of units and 12 looms. The concern was converted into a public joint-stock company with a capital of Rs. 50 lakhs in 1923.

Kaiser-I-Hind Woollen Mills, Ltd.

The Mahalakshmi Woollen Mill was started with a nominal capital of 20 lakhs of rupees and its machinery is also partially erected. In addition to the direct manufacture of woollen goods, this Mill aims at supplying yarn to the *kumbli* weavers and as a natural result of this, there is likely to be a great development of these cottage industries by the use of fly shuttle looms for weaving *kumblis*.

The Mahalakshmi Woollen Mills.

The chief difficulty in using Mysore silk in power looms is the want of uniformity in the thread and its frequent liability to break. An experimental filature

Experimental Silk Filatures at Mysore.

with 12 basins has been installed in Mysore and the quality of silk reeled is of a high standard. The success of this experiment has induced some local capitalists to take up a scheme for putting up a large filature and it is expected that at no distant date sufficient quantities of this silk will be available to allow of the weaving industry itself being developed on factory lines.

(2) Tanneries.
Factories and
their
distribution.

Like many others of its kind, tanning, once a cottage industry practised all over the State, has developed under modern conditions into a well regulated industry run on factory lines. The latest developments in the tanning of hides and skins are represented in the State by the Mysore Chrome Tannery, Ltd., situated about a mile to the west of Bangalore City.

The number of factories as returned at the Census of 1921 is 17, of which only the Mysore Chrome Tannery, Ltd., is worked by power, the rest being worked by manual labour. The total number of persons engaged in the industry is 696 males and 111 females excepting a few scattered in the Kolar and Mysore Districts. Most of the bark tanneries, which are controlled by Lubbay merchants, are to be found in the vicinity of Bangalore.

The tanners collect skins of goat and sheep and hides of bullocks, cows and buffaloes from all parts of the State and also import these from places in British India as far as Calcutta, Cawnpore, Amritsar, etc. All these tanneries excepting the Mysore Chrome Tannery and to some extent the tannery at Chintamani (Kolar District), send out the hides and skins usually in a half tanned state. The reason is that the raw and wet hides are bought at more favourable rates by foreign countries, especially America, than tanned leather. Madras is the biggest market for tanned leather and hence all the finished leather goes to that place.

The Mysore Chrome Tannery, Ltd., was formed in April 1908 with the object of organising and developing the leather industry in Mysore on modern lines. With a view to encourage the industry, the Government of His Highness the Maharaja was pleased to subscribe for shares in this concern to the value of Rs. 60,000. The average output of the factory at present is 400 hides per day. With the existing machinery, the output can be increased to nearly 1,000 hides. The factory is equipped with complete up-to-date machinery, which is worked by electric power. The Company was declaring good dividends from 1917 but in recent years the slump in the leather trade has interfered with its prosperity.

The Mysore
Tannery,
Ltd.

The concern was until recently under the management of Messrs. Chari & Co., Ltd., of Calcutta. It is now managed by Messrs. Best & Co., Ltd., Madras. The subscribed capital of the Company is Rs. 1,67,790 while the Reserve Fund amounts to Rs. 45,000. Raw materials are obtained both locally and from Madras. The finished leather is in demand all over India, and even beyond India, in the United States of America, England, the Federated Malay States, South Africa, Egypt and other foreign countries.

Since the above paragraphs were written, the Company has gone into liquidation and is now being wound up. (1928).

The manufacture of spirits is a Government monopoly. In the Government Distillery at Bangalore, the manufacturing operations are carried on by private agency under a system of contracts periodically renewed. The operations, however, are under Government supervision and control. A detailed description of the several systems of manufacturing different kinds of beer is given in the section on *Excise* in Volume III Part II *Administrative*, of this *Gazetteer*.

(3) Breweries.
Government
Distillery,
Bangalore.

Breweries in the Civil and Military Station, Bangalore.

The three breweries in the Civil and Military Station, Bangalore, supply various beer taverns at Bangalore and the Kolar Gold Fields with what is called country beer. There is also another brewery which prepares a superior beer for the soldiers' canteens in barracks.

(4) Brick and Tile Works. General.

The manufacture of flooring and roofing materials for buildings occupies a prominent place in the group of ceramic industries. Formerly the occupation of village potters, it has now attained to the position of a middle grade industry and moved its habitation to urban areas. The village potters at present are neither able to meet the full demand for building materials nor able to produce bricks and tiles of superior quality and designs; consequently, a number of factories have sprung up at places where the necessary material is available and turn out various kinds of building materials, including fire bricks, drain pipes, etc.

Brick and Tile Works, Ltd., Bangalore City.

The oldest and the largest ceramic Industrial Company in the State is the City Brick and Tile Works, Ltd., Bangalore (formerly known as the Arbuthnot Industrials) now managed by the Directors of the South Indian Industrials, Ltd., whose Head Office is at Madras. It manufactures on a large scale roofing, ceiling, flooring and ridge tiles, wire cut bricks and pipes.

Number and distribution of Factories.

According to the latest census returns, there are 22 factories in the State, employing 905 males and 393 females. Mechanical power is used in 10 factories. The total output of these factories comes up to about 100 lakhs of tiles per annum. It may be remarked that many of these are small concerns managed with comparatively small capital and turn out largely tiles of the Mangalore pattern. They are distributed all over the State, *i.e.*, Mysore, Tumkur, Dod-Ballapur, Channapatna, Sringeri,

Saklespur, Sagar, Tirthahalli and other places. The factory at Mysore is, however, a large one. Two smaller factories have been established at Kolar and Tumkur and are flourishing. Some of the factories are not working satisfactorily mainly because the kilns have not been properly designed. In some cases, the want of working capital has been a contributory cause of their failure. A large tile factory which in addition to the manufacture of tiles will undertake the manufacture of sanitary ware is under construction at Yelahanka about 10 miles from Bangalore. Another factory for making bricks, specially fire bricks, started work on the Mysore Road, Bangalore, but went into liquidation in 1926.

About 40,000 acres of land are annually under sugar-cane cultivation in the State. The principal growing areas in it are in the East and South and the extension of the acreage under cane depends on further irrigational facilities. All the sugar-cane grown in the State is used solely for making *gur* or jaggery. The methods of cultivation of cane have reached a high state of improvement in several parts of the State and the outturn is relatively high, being in many cases, as in the Bangalore and Kolar Districts, as much as five tons of jaggery per acre. There are three chief indigenous varieties of sugar-cane grown in Mysore, 'Chein,' 'Rasatale' and 'Pattā Patti,' the last one being grown over the major portion of the area. Of the imported varieties, mention should be made of 'Red Mauritius' and 'Mysore Java.' The sugar content in cane ranges from 15 to 20 per cent and glucose about 0·5 per cent. The percentage of fibre is low and is generally between 8 and 10. The mills used for crushing the cane are mostly bullock driven and the juice is boiled over the ordinary furnaces. The quality of the jaggery produced in some places has maintained a high reputation in the market. The bulk of the sugar-cane is grown

(5) Jaggery
and Sugar
making.

under tanks, wells and channels and as a rule, the acreage under sugar-cane in any particular locality is not large. It is not, therefore, possible to start large sugar factories under existing conditions. Owing to the fluctuations in the price of *gur*, sugar refining is by itself not sufficiently profitable unless the price of sugar is itself relatively high.

Introduction
of crushing
plants and
furnaces.

Owing to the absence of facilities for starting an up-to-date sugar factory, the holdings being small and scattered, the attention of Government has been concentrated in the past in improving the present process of manufacturing *gur* which is crude and inefficient. The primitive wooden roller bullock mill has almost everywhere been replaced by the three roller iron mills which are efficient if properly adjusted. To reduce the strain on the cattle, they are often deliberately slackened. The amount of juice left in the megasse is considerable. During the process of boiling, about a fifth of the sucrose in the juice is converted or destroyed. The frequent removal of pans from the furnace involves great waste of fuel. Experiments have been made with power driven crushing plants and furnaces that could be continuously operated by burning the megasse or dried sugar-cane refuse have been introduced. The initial difficulties have thus been just overcome and there is a likelihood of power driven plants with improved furnaces being taken up on a large scale in future where the areas to be dealt with exceed 50 to 100 acres. Reference may also be made in this connection to the introduction of the improved varieties of sugar-cane and the successful efforts made to popularise the use of oil cakes as manures.

(6) The Sandal
Oil Factories.

The most valuable of the essential oils that can be got from the raw materials available in the State is

sandalwood oil. It is obtained by distilling the chips of the heart wood of the sandal tree. The oil possesses valuable medical properties and is also largely used in perfumery and in the manufacture of toilet soaps. It emits a sweet and delicate fragrance. The percentage of oil varies in different parts of the tree from 5 to 7 per cent.

In Mysore, sandalwood trees wherever they may grow belong to the State. They are found in all districts except in Kolar and Chitaldrug, where the growth is scanty on account of the unfavourable climate. The average yield per annum is 2,000 tons for the whole State. Previous to the outbreak of War in 1914, it was customary for the Forest Department to dispose of more than three-fourths of this quantity by auction sales and the rates obtained for the wood were about Rs. 500 a ton. The bulk of the wood thus disposed of found its way to Germany, where oil was extracted from it.

Disposal of
Sandalwood
prior to 1914.

Towards the close of 1914, when the State was threatened with the loss of a fruitful source of revenue by a sudden fall in the demand for sandalwood, Sir Alfred Chatterton, then Director of Industries, proposed to Government the establishment of distilleries in the State for extracting the oil. The indigenous methods of manufacturing the oil were crude and wasteful; nearly 10 to 20 per cent of the available oil being left in the wood unrecovered. A number of experiments were, therefore, conducted with a view to discover the most efficient and most economical process of distillation. The result achieved was highly satisfactory. It was found that the business of sandalwood oil distillation was sure to be a commercial success by the adoption of improved scientific processes. In 1915, Government sanctioned a lakh of rupees for the establishment of a factory. At first, the outturn was about 200 lbs. of oil per month. A suitable

Bangalore
and Mysore
Sandalwood
Oil Factories.

site for the factory was found to the north of Bangalore City, not far away from the Indian Institute of Science. The factory started work in May 1916 and its capacity increased in the course of two or three years and the output rose from 2,000 to 6,000 lbs. a month. A second factory having an ultimate capacity of 20,000 lbs. of oil per month was started in Mysore in 1917.

Process of
distillation,
etc.

The process of distillation is very similar to that of rose water. The wood is converted into filings by means of a large cast iron chipper and the chips boiled in a copper pan tinned inside. Mixed vapour is received in a condenser and the oil is separated from the condensate. A big pan takes several days to distil completely. The refused wood is used for fuel. The oils obtained at both the factories are of absolute purity and of the finest quality, and satisfy the standards prescribed in England, America and Europe. The Japanese have a slightly different standard, and the oil required to satisfy this standard is manufactured separately. There is a growing demand for sandal-wood oil in the English and American markets.

Yield and
realization.

The factories started work at a time when the market was most favourable. The price of a lb. of oil which was selling at 21 shillings in 1914 rose to 50 shillings in 1917. In 1917-1918 the industry was considered to be firmly established. Between May 1916, the date of inception of the Sandalwood Oil enterprise in the State, and October 1918, 2,113 tons of wood were distilled altogether in the two factories yielding 14,12,371 lbs. of oil. The realisations of the sale of oil amounted to Rs. 7,59,489 in 1916-17 and Rs. 27,50,422 in 1917-18. The average yield from sandal-wood was about 100 lbs. of oil per ton of wood. During 1920-21, the factories distilled 1,602 tons of sandalwood.

The demand was fair up to 1920 but with the commencement of a general trade depression throughout the world, the market for the oil soon became restricted. As the stocks began to accumulate and sales dropped, arrangements were made in 1921 to close down the factory at Mysore, till the surplus stocks were disposed of. One hopeful feature worthy of mention is that in spite of the extremely unfavourable trade conditions, the combined sales of wood and oil have reached 39 lakhs during the two years. There is no doubt that when normal conditions are restored, the demand for the oil will revive as of old and the Mysore distillation will play an important part in meeting the world's market for the sandalwood oil.

Effect of trade depression.

There are two Cigarette Factories in Bowringpet. One of these is the South Indian Manufacturing Company which was started in 1911 with a capital of about Rs. 50,000. It is owned by the members of a single family. The other known as the Star Tobacco Manufacturing Company was started in 1905, with a capital of about Rs. 75,000 for plant and buildings. An oil engine of 9 H.P. is used in the first and a steam engine of 7 H.P. together with an oil engine of 4 H.P. in the second. About 100 persons are engaged in both the factories, some on monthly payments and others on daily wages. About 25,000 *maunds* of tobacco are reported to be consumed in the two factories in the manufacture of cigarettes valued at about a lakh of rupees per year. The supply of tobacco from Bettadpur and other places in the State is not suited for these factories as it is too strong. They get their supplies from Guntur, Bezwada and Salem and other places at remunerative rates.

(7) Miscellaneous industries.
Cigarette Factories.

IV. CONCLUSION.

To regulate labour in factories in the State, a Regulation was first passed in 1892, which was further

The Mysore Factories Regulation.

amended in 1914. The main provisions of the Factories Regulation of 1914 are briefly summarised below. The Regulation applies to all concerns wherein steam, water or other mechanical power or electric power is used in any process and wherein at least 50 persons are simultaneously employed. Government can by notification in the *Gazette* extend the application of the Regulation to concerns employing 20 persons. Mines, electric generating and transforming stations, indigo factories, and factories situated on coffee and tea plantations are exempted. The Regulation applies to all Government factories.

Provision is made in the Regulation for the appointment of Inspectors and certifying Surgeons. Every factory should, before it commences work, keep the Inspector informed of its name and address, work, and nature and amount of power used. Every factory should be kept clean, well ventilated and lighted. If any water is used for producing artificial humidity, the water used should be pure drinking water. There should be sufficient and suitable latrine accommodation for the employees and good drinking water should be made available to them in sufficient quantities. The doors should open outwards and there should also be sufficient means of escape in case of fire. If the Inspector is satisfied that the factory is not provided with any of these things, he is empowered to specify proper measures and to enforce their adoption before a specified date.

No one should be employed in a factory on a Sunday or in lieu of Sunday a full day holiday should be granted within three days before and after a Sunday.

At intervals not exceeding six hours, the employees should be allowed half an hour's rest. No child should be employed unless it is certified by the certifying Surgeon that it is not less than nine years old and is fit for employment in a factory. No factory should allow

women and children to begin work before 5-30 in the morning nor should they be allowed to work after 7 o'clock in the evening. Maximum number of hours of work prescribed for one day for women and children are eleven and seven hours respectively. The textile factories should not work for more than twelve hours a day and no child be allowed to work therein for more than six hours in any one day.

Factories should keep registers showing therein the names of women and children employed therein and their respective employment. They should put up notices regarding hours of work, rest, etc. To avoid accidents, the machinery should be kept well fenced. All accidents causing death or injury whereby the employees are prevented from returning to work for three days will have to be reported to the authorities appointed in this behalf. Penalty prescribed for all breaches of any provision of the Regulation is a fine extending up to Rs. 200.

At the Census of 1921, the following scheme of occupations was adopted for purposes of enumeration :—

General
statistics
relating to
occupations.

A.—Production of raw materials :—

- (i) Agriculture (exploitation of animals and vegetation).
- (ii) Exploitation of minerals.

B.—Preparation and supply of material substances (or transformation and employment of raw materials):—

- (iii) Industry.
- (iv) Transport.
- (v) Trade.

C.—Public administration and liberal arts :—

- (vi) Public force.
- (vii) Public administration.
- (viii) Professions and liberal arts.

D.—Miscellaneous :—

- (ix) Persons living on their income.
- (x) Domestic service.
- (xi) Insufficiently described occupations.
- (xii) Unproductive.

The scheme is in its essence based on that of Mr. Bertillon. As outlined above, there are in it four main classes and twelve sub-classes.

The following table shows the percentage of actual workers and dependants under each sub-class. The ratio of dependants to workers is greatest in sub-class I (Exploitation of animals and vegetation) and least in sub-class X (domestic service).

Sub-Class	Percentage	
	Workers	Dependants
I. Exploitation of animals and vegetation	25	75
II. Exploitation of minerals	39	61
III. Industry	33	67
IV. Transport	38	62
V. Trade	34	66
VI. Public force	35	65
VII. Public administration	28	72
VIII. Professions and liberal arts.	33	67
IX. Persons living on their income	31	69
X. Domestic service	58	42
XI. Insufficiently described occupations	42	58
XII. Unproductive... ..	49	51

The table given below sets out by sub-classes the number of female workers per 1,000 male workers. It will be seen that the number varies from thirty-one in sub-class VI (Public force) to 789 in sub-class XII (Unproductive). Female workers are found employed, it may be added, largely as field labourers, cotton-spinners, silk-spinners, basket-makers, rice pounders and huskers, bakers, butter-makers and sellers, book-

binders, sweepers, dealers in hay, grass and fodder etc., midwives, etc.

Sub-Class	Number of females per 1,000 male workers
I. Exploitation of animals and vegetation	239
II. Exploitation of minerals ...	56
III. Industry	195
IV. Transport	52
V. Trade	366
VI. Public force	31
VII. Public administration	54
VIII. Professions and liberal arts ...	118
IX. Persons living on their income ...	323
X. Domestic service	351
XI. Insufficiently described occupations.	429
XII. Unproductive	789

The occupation statistics of the sub-classes may be briefly reviewed here. The population supported by sub-class I (exploitation of animals and vegetation) has increased during the last decade by 12·4 per cent. This increase has been at the expense of the population supported by industry, which cannot be considered a good sign. The increase especially under groups four and five (farm servants and field labourers) has been nearly two-fold and cannot be viewed with satisfaction as many of them are living on the margin of subsistence. Another matter which must cause some concern is the large decrease in the population supported by "raising of farm stock." The total occupied area of the State according to the Season and Crop Report for 1919-20 is 7,861,120 acres giving about two acres per "land-holder." As under the classification adopted, the term "land-holder" includes both actual worker and dependant, the total number of land-holders, as given in the Season and Crop Report is

less than one-third of the total number of "land-holders" returned by the population Census. The average extent of cultivated area per head of the total population of the State is somewhat more than one acre, which is the approximate calculated average for all India.

The population supported by sub-class III (Industry) has declined during the last decade by 1·7 per cent, the decreases being largely under textiles, hides and skins, chemical products, food industries, industries of dress and the toilet, and the furniture industries; *per contra* there have been increases under wood, metals and building industries. This may be set down generally to the trade depression prevailing in the country as a consequence of the late Great European War (1914-1918) and its after effects.

There has been an increase of 32·3 per cent in the population supported by sub-class IV (Transport). During the decade there has been a large increase in motor vehicles of all kinds, and transport by motor buses is becoming popular both in Bangalore and Mysore Cities and in the districts as well. The population supported by sub-class V (Trade) has increased by eleven per cent during the decade. There has been a decrease of nineteen per cent in sub-class VI (Public force). Under sub-class VII (Public Administration), the decrease has been 20·6 per cent. Under sub-class VIII (Professions and Liberal Arts), there has been an increase of 19·1 per cent. Sub-class IX (Persons living on their income) shows a decrease of 7·4 per cent. Sub-class X (Domestic Service) shows an increase of 23·6 per cent on the whole of the population supported by it. There has been a decrease of 22·4 per cent in the group of private grooms, coachmen, etc., owing to a corresponding increase in the number of persons supported by the group of persons connected with motor works. Under sub-class XII (Unproductive), there is a decrease of 23·3 per cent in the population supported by it. There have been decreases:

especially under the groups of inmates of jails, etc., and beggars, etc.

In connection with the census operations of 1921, a special industrial census was taken in the State. It was wider in its scope than the corresponding Census of 1911, when the minimum strength of an establishment qualifying for inclusion in the census was fixed at 20. The law relating to this Census is contained in the Mysore Census Regulation of 1920, sections 4 (l) (d), 9 and 10. This Census did not include, as in 1911, cottage or family industries, where the work was carried on by the members of a family and the profit derived shared among themselves. The total number of industrial establishments of all kinds censused was 553, the most numerous of these being coffee estates, 238 in number. Other important industries are gold mining (5) and textile and connected industries (53). The Coffee plantations are distributed mainly in the Kadur and Hassan Districts, while gold mining is confined to Kolar Gold Fields. The large cotton mills engaged in production on a large scale are situated in Bangalore City, while one is in Mysore. Cotton ginning factories are in Chitaldrug district and the silk manufacturing establishments (reeling factories and silk farms) are located in Kolar, Bangalore and Mysore Districts. Thirteen of the seventeen tanneries enumerated are in the Bangalore District, two in Kolar, and one each in Tumkur and Mysore Districts. Rice mills are found in all districts except Tumkur. Of the 553 establishments, 42 are owned by Government or local authorities, 61 by registered companies, and the rest by private individuals. Eighty establishments use electricity, 64 steam, 30 oil, 8 gas, and 4 use water for motive power. The bulk of the steam power is used in mining and textile industries as also in rice and in water works. The 553 industrial establishments employ

Industrial
Census.

57,052 persons, of whom 402 are managers, 1,043 belong to the supervising and technical staff, 1,171 are employed in clerical work, 14,140 are skilled workmen and the rest (41,136) are unskilled labourers.

Occupations
by Caste.

Among the castes which have kept up their so-called hereditary occupations are the Vokkaligas, Tigalas, Panchalas, Neygi, Kunchitigas and Komatis. More than 50 per cent of the total strength in these castes engage in their ancestral calling. Some castes, like the Bedas, Besthas, Upparas, Kurabas and Madigas, are getting on more and more dissociated from their traditional calling, the percentage of workers following the specified calling being less than 10 per cent in each case. Some castes, like the Agasas, Devangas, Ganigas, and Holeyas are still dividing their strength fairly between their hereditary occupations and others. Although the Lingayets are said to have no hereditary calling, the vast majority of them are agriculturists. It may be remarked that the number of workers in some of the castes is not insignificant when compared to male workers. The Panchamas (or depressed classes) consist of Holeyas and Madiga castes, which consist of 650,453 and 281,227 persons respectively. The total number of these castes is thus more than nine hundred thousand and forms a little less than one-sixth of the total population of the State. The total number of actual workers (both male and female) among the Holeyas is 212,685 persons, each having on the average about two to three dependants. Similarly, the number of actual workers among the Madigas is 83,332, who have each, on the average, two or three dependants. Of the actual workers among Holeyas, 34·5 per cent are village watchmen and agricultural labourers and 29·5 per cent cultivators of lands. Similarly, of the actual workers among Madigas, 37·5 per cent are cultivators of lands and 33·4 per cent are field labourers.

BIBLIOGRAPHY.

- B. L. RICE.—*Mysore Gazetteer*, Volume I. (1897).
SIR GEORGE WATT.—*Industrial Arts of India* (1880).
The Mysore Factories Regulation No. IV (1894).
The Mysore Factories Regulation No. III (1914).
The Mysore Census Report (1921).
-