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craftsman even, is somewhat fallacious, for a brass and copper smith, who produced artistic wares, might also habitually produce common utensils. In spite of these somewhat obvious defects, the twofold division is in the main true. For though there was a common artisan industry in the towns, the handicrafts were by far the most important and significant section of urban economic activity in India.

There were, however, certain other industries in India, which cannot be included in any of the above classes. This group of industries, as a whole, was not very important, but it contained certain important industries. The group included the iron-smelters of Mysore, Chota Nagpur, Central Provinces and other places, the saltpetre worker, the bangle-maker, and the general worker in glass, also the paper-maker, etc. These cannot obviously come under any of the above groups. They were mostly localized industries, carried on only in some parts of India. A good many required special knowledge on the part of the workers. In many, organized working was necessary on account of the peculiarities of process and other reasons. The specialization of these industries, in peculiar localities, was almost entirely due to the nature of the supply of the raw material. This accounts for the location of the iron, the saltpetre and the glass industries. Some, such as iron-smelting, were industrially very important, and their products used to find their way all over the country. The methods employed were generally crude and uneconomical, but the products, as in the case of Mysore steel, were sometimes of a very high quality. But all these miscellaneous industries were already dying out. An unwise tariff and the discovery of Chile nitrates gave a serious shock to the saltpetre industry; the iron-smelting industry was suffering from the great rise in the price of charcoal—due to the reservation of forests and the extension of railways—and the competition of imported pig-iron. The glass and paper industries were also succumbing under the pressure of imported goods. Thus the opening up of the country was resulting in the killing of all indigenous industries.

CHAPTER IV

The Beginnings of Modern Industry

I. The Plantations

We now arrive at a consideration of the new form of industry which were being introduced into India at this time. It should be observed that there were two forms of such industrial activity now being introduced. The first was the plantation—a form of industry to be found extensively in most of the tropical possessions of European countries, and the other the factory industry—the peculiar product of the latest economic transition in Europe.

The plantation was the first to be introduced into India; from the beginning the industry was purely European. It was the beginning of European exploitation of Indian resources. It is perhaps surprising that till the middle of the nineteenth century there was very little part taken by Europeans in industrial activity in India. But the many restrictions placed on Europeans permanently acquiring land in India (placed by the East India Company to safeguard its interests), the trading monopoly of the Company which lasted till 1833, the lack of internal communications, and also the deplorable lack in India of fertile but sparsely populated tracts, hindered the early growth of such activity. But as some of these obstacles were slowly removed, we find an enormous growth of European industry in India, especially during the years 1860-70, as evidenced by growth of the tea, coffee and jute industries.

The indigo industry is an exception to the above statement, for the manufacture of indigo by European planters began in India before the end of the eighteenth century. Indigo had been grown in India from ancient times, having been chiefly produced, in Dr Watt's opinion, in Gujarat and Western India. The trade in the indigo dye was carried on

1 G. Watt, Pamphlet on Indigo (1800).
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which was sold to the planter at a certain fixed price.  Though the abuses of the system had been long recognized, nothing had been done to ameliorate the condition of the peasant. Advances were generally made at the beginning of the agricultural season to the peasant to grow indigo, and many a time they were forced upon him. The rye when he once took the advances was ruined. The Indigo Commissioners say in their Report: 'It matters little whether the rye took his original advances with reluctance or cheerfulness, the result in either case is the same; he is never afterwards a free man.' In view of the large areas under indigo in Bengal and Bihar the following extract from the Commissioner's Report is enough to condemn entirely the system under which indigo cultivation was carried on. They say: ‘Even the most advantageous statement made on favourable suppositions shows but a slight profit derivable to the rye from indigo, and it is quite clear from statements as to the production of rice, not to speak of the higher kinds of produce, that indigo as a paying crop must stand very low in the scale.’ Only one inference can be drawn from this, even apart from the direct evidence of coercion produced before the Commission, and that is that indigo cultivation was carried on a system which had no connexion with the welfare of the peasant. Such was the system of indigo cultivation and such it remained. The progress achieved in the spread of indigo cultivation in 1860 was not exceeded during the next twenty years. By then, the indigo industry had grown to almost the maximum of its capacity and henceforth it remained almost stationary.

1 The very small amount of sij cultivation, i.e. cultivation by the system of planters growing their own indigo, showed that the planters preferred the peasant to grow indigo for them and to buy it at a fixed price from him. Minute of the Lieutenant-Governor of Bengal on the Report of Indigo Commissioners (1865).


3 Ibid., p. 18. But the general conclusions of the Commissioners and also of the Lieutenant-Governor were that the cultivator did not make even a small profit. The planters generally insisted on one-sixteenth of the land of the ryots being under indigo. The loss on this is computed in the following case: 'This is as though a farmer in Great Britain farming under a long lease 160 acres of land at a rent of two pounds an acre, went, by some sort of pressure, forced to cultivate ten acres. Say in flax, which he was compelled

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extensively by the East India Company, but towards the end of the eighteenth century, on account of the competition from America and also on account of adulteration of the dye, the trade fell off a good deal; and the western Indian industry almost died out. The East India Company resolved to revive the industry and for this purpose they brought planters from the West Indies and settled them in selected districts of Bengal. The Company's officers were also allowed to trade in indigo. This was towards the beginning of the nineteenth century and the establishment of the indus-

try in Bengal gave the death-blow to the Gujarat industry. The next fifty years saw a rapid growth of the industry and by 1850 indigo was one of the most important exports from India. But though the trade and the profits of the foreign planter had been growing at such a rate, it is very doubtful how far the condition of the peasant had improved. As a matter of fact, his condition was worse in the indigo tracts

than in other parts of the country. Lord Macaulay wrote about 1840: 'That great evils exist, that great injustice is consequently committed, that many ryots have been brought, partly by the operation of the law, partly by acts committed in defiance of the law, into a state not far removed from that of partial slavery—is, I fear, too certain.' The planters were, as a matter of fact, a body caring little for the law, and being members of the ruling race had little concern for the interest of the peasant. The system on which indigo was cultivated was not strictly a plantation system. It was only rarely that the manufacturers of indigo cultivated their own lands by means of hired labour. The usual system was to enter into contracts with tenants of other landlords or of lands over which the planters themselves had acquired semiadual or talukdari rights, to sow a certain portion of their land with indigo.
The tea industry in India began much later than indigo. The indigenous tea plant growing in a wild condition in Assam was first discovered about 1820. The attention of the East India Company was directed towards it and after some inquiries an experimental garden was started by the Company in 1835. After working it for five years the East India Company made it over to the Assam Company—the first Indian tea company. The progress during the next twelve years was almost nil. In 1852 a private garden was started and then the number of gardens began to increase. It may be said, however, that the foundations of the present tea industry were laid between 1856 and 1859. From the latter date the rate of growth was indeed amazing, both in the number of estates and the outturn of tea. The following figures give the details for Assam which, at this time, was by far the most important area of tea production in India.

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of estates under distinct proprietors</th>
<th>Area under cultivation (acres)</th>
<th>Outturn of tea in lb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1850</td>
<td>1</td>
<td>1,076</td>
<td>216,000</td>
</tr>
<tr>
<td>1853</td>
<td>10</td>
<td>2,525</td>
<td>366,700</td>
</tr>
<tr>
<td>1859</td>
<td>48</td>
<td>7,599</td>
<td>1,205,659</td>
</tr>
<tr>
<td>1869</td>
<td>200</td>
<td>25,774</td>
<td>4,714,969</td>
</tr>
<tr>
<td>1871</td>
<td>295</td>
<td>31,303</td>
<td>6,261,443</td>
</tr>
</tbody>
</table>

The figures for 1869 do not show clearly the feverish growth which took place in the industry during the period 1859-69. To understand this phase of the industry, it is necessary to see how the industry was conducted at this time. The grants for tea lands in Assam were mostly made in the fifties, under the Assam clearance rule of 1845. These, though they did not protect the rights of the wild tribes inhabiting these tracts, provided against grants being reckoned to sell to a neighbouring manufacturer at a dead loss of £100 a year. *Minute of the Governor-General*, p. 12.

*Edgar, ‘Note on the Tea Industry in Bengal’, *Papers Regarding the Tea Industry in Bengal*, p. 7 (1870).

‘Memorandum by Mr Campbell on Tea in Assam’, ibid., p. 128.

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Lessly made to speculators, the guarantees being the deposit for making a proper survey and an obligation to bring a certain proportion of land under cultivation in a certain number of years, etc. The local officers at first exercised a good deal of discretion in favour of the rights of the native tribes, and they were careful to see that the applicant had sufficient means to cultivate the land before allowing his application. But in 1859 the speculators, naturally averse to these restraints, brought pressure to bear on the Government. The Government was very anxious to promote the industry and ‘the practice of requiring applicants to show that they had means to cultivate the land was forbidden’. A rush of applications followed and an orgy of speculation ensued. The estimates formed by everybody of the future of the tea industry were extremely rosy and, with the relaxation in the rules under which grants of land were made, the way of the speculator became extremely easy. As regards the survey of these grants Mr Edgar says: ‘In most cases the compass ameen [i.e. the Government Surveyor] sent in a fancy sketch of an almost imaginary tract of land, which was generally found, when the professional surveyor went over the ground some years later, to bear very slight resemblance to the real grant. Sometimes the grant had no real existence whatever, sometimes it was far away, in wild inhabited by wild tribes who owed merely a nominal allegiance to the Government and who would probably have taken the head of the grantee if he had attempted to take possession.’ But the grantee generally had no idea of taking possession; what he did was to sell the grant to companies financed in London for the purpose of working tea gardens; and even if the grantee took possession he had no idea of taking the cultivation of tea seriously. The general attitude of the actual planters is reflected by a saying, current amongst them at that time, ‘that it was doubtful whether it would ever pay to make tea, but there was no doubt that it was paid to make the gardens’. The gardens were not only planted carelessly but ‘often was a small garden made of 30 or 40 acres sold to a Company as

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150 or 200 acres. A most remarkable instance of such practices, given by Mr Campbell, occurred in the Newong district, where the Indian manager of a promoter of companies in London was advised by his employer to clear and plant a certain area of waste land for delivery to a company to whom he had just sold it as a tea garden.

Such enormous speculation and the hasty way of clearing wild waste and the planting of tea, brought up the question of labour in a very acute form. Up to about 1860 the local labour supply though scanty had been sufficient for the needs of the tea gardens. During the speculation craze the demand for more labour became insistent and coolies had to be imported from Bengal to meet the demand. These coolies were generally imported at this time through the agency of contractors of labour in Calcutta. The price of labour had risen very high and it paid the contractors to get together all kinds and conditions of coolies they could, and send them on to Assam. The method of transportation was extremely imperfect and a large proportion of these coolies died on the journey; and when they did reach the gardens, their miseries were in too many instances cruelly aggravated by the ill-treatment of their employers. The coolies were in most cases deceived as to their future prospects and when they reached Assam their position was that of virtual serfs, for the time of their contract. If they ran away they could be arrested and brought back and they could even be imprisoned for refusing to work. To this legal coercion were added many illegal practices of the planters, such as flogging. The position of the cooly was worst during those years of speculation and it tended to improve slightly in later years.

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The enormous speculation in gardens brought about a sudden reaction in 1866; all tea property depreciated and all the 'bubble' concerns failed. There was a great deal of distress among young men who had come out to manage tea gardens. The depression in the trade was very severe and lasted till 1869, when matters began to improve, and by 1871 the tea industry was placed on a firm basis. After this the progress of the industry was steady for more than two decades. The cultivation spread to other parts of the country such as the Punjab (Kangra) and the Nilgiris, and the industry, now on a sound basis, prospered greatly.

Coffee was first introduced into India by the Moor traders in the seventeenth century, and its cultivation was undertaken in many parts of south India. It did not attain importance, however, till its production was undertaken by European planters. The first coffee garden was planted by a European in 1840; the industry thus started did not, however, flourish till 1860, when causes, such as the decline in coffee cultivation in other countries, helped to increase the extent of the industry rapidly. The compiler of the Mysore Gazetteer, in reviewing the growth of the industry in the Kadur district, remarks: Since 1860 estates have sprung up between these points with such rapidity that European planters are settled in almost a continuous chain of estates from the south-west of Shimoga to the southernmost limits of Manjarabad, not to mention Coorg and Wynad beyond. During the first decade after 1860 alone the exports of coffee increased nearly tenfold and the same rate of increase continued till 1879. From 1860 to 1879 was a period of continuous and uninterrupted progress and prosperity for the coffee industry. But already in 1875 the boron disease was creating havoc among the plantations and it increased in its intensity in 1879. This was the beginning of the severe check which the industry suffered in the next decade.

Labour for working these plantations was imported from the neighbouring districts. A good deal of this labour was temporary and consisted of agriculturists who came in when

4 Ibid., p. 9.
5 Campbell, ibid., p. 115.
6 Edgar, ibid., p. 22.
7 Powers were given to planters by the Act of 1866 to arrest runaway coolies from their estates.
8 The usual methods of recruiting labour, afterwards, were through contractors, or through a selected employee (called a garden 'sirdar'), sent by individual employers to his home to get labour directly for the garden. The evils of this system are brought out well in the Report of the Committee on Labour Supply in Tea and Coir Industry (1866).
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The agricultural operations for the season were over. Here also there was an Act giving the planters control over their labour, but it was not very stringent. The labour force in this industry was not far removed from its home, nor were the districts in which the industry was conducted unhealthy and, therefore, the condition of labour was much better than that obtaining in the tea industry.

With the introduction of the investment of European capital in India, a new factor in its economic development was introduced. Hitherto the Europeans had been content with their share in the commerce of India. They were the carriers of India’s foreign trade, but had as yet taken little direct share in the growth of Indian industry. Now, with the growth of plantations and the jute industry, a new source for the finance and business management of Indian industries became available. This factor, which began to be prominent after the middle of the nineteenth century, was destined to play a very important part in the industrial progress of India.

II. The Factory

The factory industry, which is the form of industry which took the place of handicrafts during the nineteenth century almost everywhere, also finds its beginnings in India during this period. Attempts had been made for a considerable time to introduce the factory system in many industries, notably by Europeans. Some of them had at least a temporary success. For example reeling machinery had been introduced in silk factories by the East India Company and the industry had been for some time quite prosperous. But most of the other pioneering attempts had met with decided failure. Thus before the fifties there was— if we exclude the indigo factories—an almost entire lack of factory industry in India. It was during the fifties that the two industries which have always been the foremost among modern Indian industries were started.

The cotton industry, as being the more important, may be considered first. The company which built the first cot-

5 The Srinapore paper mills which were also built in the twenties continued to prosper for many decades.

\textsuperscript{5} See article in Watt, op. cit.
\textsuperscript{6} D. R. Wacha, A Financial Chapter in the History of Bombay (1919).
\textsuperscript{7} The statistics are taken from the evidence before the Bombay and Lancashire Cotton Spinning Inquiry (1885).

\textsuperscript{8} The Beginnings of Modern Industry

ton mill in India was the Bombay Spinning and Weaving Company which was formed about 1851; but the mill does not appear to have been in working order till 1854.\textsuperscript{4} The progress of the industry was naturally very slow at first and by 1861 only a dozen mills were in existence. The first mill was built very near Bombay though not on Bombay island itself, and the industry continued to grow round Bombay. The decade 1860-70 was not very favourable to the growth of the mill industry. One of the chief unsatisfactory features was the high price of raw cotton, on account of the American Civil War. This high price of cotton hit both the handloom industry and the young mill industry of India. The other reason was a severe trade depression in Bombay which followed the enormous cotton boom. This cotton boom has already been noticed as marking the advent of a new economic era in India. Its aftermath was also typical of the new conditions that were being introduced. The trade crisis, which followed the reckless floating of companies for all possible and impossible purposes and the resulting collapse of all credit, was the first of its kind in India.\textsuperscript{5} It might be noted here that this depression in western India coincided, in point of time, with the Assam tea trade depression. The collapse of credit in Bombay in 1865 was indeed so complete that normal conditions were not restored till 1871. The result was that there were only eighteen cotton mills in the Bombay Presidency and two in Bengal in 1872-3. The crisis, however, had one good result for the cotton mill industry. It demonstrated the impracticability of the numerous schemes that had been launched during the boom period and also showed that the cotton industry was the only stable and profitable industry. Thus as soon as trade confidence was restored there was a very great increase in the number of mills. The increase was specially marked in the year 1874-5. In 1874 the number of mills in the Bombay Presidency was nineteen, in 1875 it had risen to thirty-six, to thirty-nine in 1876 and forty-two in 1878.\textsuperscript{6}
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in the industry during this decade, especially after the effects on trade of the Franco-German War had passed away, was very considerable and it now definitely took the position of the most important factory industry in India. The extent of the industry in 1879 was:

<table>
<thead>
<tr>
<th>Mills</th>
<th>Spindles</th>
<th>Looms</th>
<th>Persons employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>56</td>
<td>1,451,000</td>
<td>13,000</td>
<td>43,000</td>
</tr>
</tbody>
</table>

Of these mills nearly three-fourths were situated in the Bombay Presidency and more than half the total on Bombay island itself. The number of looms as compared with those of the spindles was very small and, indeed, many of the mills were only spinning mills. This predominance of the production of yarn continued to be an important feature of the industry for a very long time.

Leaving aside the spinning and weaving industry, quite a considerable number of persons were employed in another cotton industry—the ginning and pressing factories. Till the sixties most of the cotton sent to the ports from the interior of the country was unpressed and a few presses were established in the more important ports like Bombay. But the impetus given to cotton cultivation by the American War and the rapid growth of communications had the effect of introducing the use of steam presses, and later on of steam gins, in the cotton tracts themselves. This introduction was not very rapid, and Mr Rivett-Carnac mentions that till 1867 presses were but little used in the Central Provinces. It was only after 1867 that their number began rapidly to increase in that province. Most of the cotton was, till then, sent to Bombay unpressed. Once introduced, the progress of gins and presses was rapid and by 1880 only a small quantity of cotton was sent unpressed to the ports out of the cotton tracts. This industry, though it employed considerable numbers and gave a very much needed occupation to one class of agricultural labourers in the country, was not one of very great importance in the industrial development of India. For, firstly, the industry was only a seasonal one and secondly, it did not convert raw produce into a manufactured article, but only helped towards the easy export of the raw produce.

Next in importance to the cotton industry comes the jute industry. The trade in jute had been important since the early days of the East India Company, the purposes for which it was chiefly used being the manufacture of cordage, ropes, etc. Till about 1889 the manufacture of gunny-bags and jute cloth was the monopoly of the Bengal handloom weaver. After this date, an active manufacturing industry having sprung up at Dundee, it was found more profitable to export raw jute than to produce gunnies on the handloom. Thus the years following 1889 saw a rapid decline in the jute handloom industry of Bengal. The importance of jute as a material for cordage, ropes, sacking, etc., was also growing rapidly and more and more land was being placed under jute annually. The rise in the importance of jute was greatly helped by the Crimean War, which for a time cut off the supplies of Russian hemp, a powerful competitor of jute.

The manufacture of jute with the help of machinery was not started in India till 1854. In that year a jute mill was established at Serampore by one Mr Ackland. From 1854 to 1865-6 only one more mill was built, but from 1865-4 onwards the growth of the industry was fairly rapid. Jute was a monopoly of India and in this the Bengal industry had a strong advantage. Hitherto Dundee, which had successfully killed the handloom industry, controlled the entire market. But the Bengal industry soon established its position. Of this Mr O'Connors, in 1876, remarks: "While Dundee had only hand-woven jute stuffs made in India to compete with, that city had practically the monopoly of the world's supply; but the development of the manufacturing industry here, in mills furnished with the best mechanical appliances moved by steam, has had the inevitable result of shutting Dundee out to a great extent from the Asiatic and Australian markets.

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1. Article on Jute in Watt, op. cit.

and even from a part of the American market. In 1882 there were in India twenty jute mills employing nearly 20,000 people. Of these mills eighteen were in Bengal and seventeen in the immediate vicinity of Calcutta. The industry was even more localized round Calcutta than was the cotton industry round Bombay. The first jute mill was started by a European and the industry remained always mainly in the hands of Europeans. With the growth of the export trade in raw jute, the jute pressing industry had also begun to acquire importance in Bengal. Apart from these factory industries modern methods had begun to be used in the mining of coal also. At this date coal was the only mineral product produced in considerable quantities in India. The commencement of the industry appears to date back to 1870 when a mine was opened in the Raniganj district in Bengal. For twenty years after this no new mine was opened and then only three mines were opened down to 1854. In that year the commencement of the East Indian Railway line, which was laid to run through the coal-bearing regions of the Damodara basin, gave an impetus to the mining industry and new pits were opened in large numbers. The progress was steady and this region, i.e. Raniganj and neighbouring districts, contained in 1879-80 altogether fifty-six mines at work. It was natural that with the building of railways in India coal mining should have received an impetus. Not only because before this there was very little demand for coal for industrial purposes, but also because it was impossible to transport coal from these districts cheaply enough without the help of railways. The railways themselves needed enormous amounts of fuel and when, with the rapid disappearance of the forests which lined the first railway lines, wood became dearer and dearer, the demand for coal became more insistent. This demand was the cause of an active import trade in coal from the United Kingdom to India.

Up to the year 1870 the Raniganj coalfields were the only ones to be exploited. These supplied coal to the East Indian Railway and sometimes coal from these fields was carried

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J. E. O'Conner, Memorandum, Account of the Trade and Navigation of British India, 1875-6, p. 31.

O'Conner, Notes of the Trade of India, 1878-9, p. 22.

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even to the Punjab, but the railway systems of the west and south of India were entirely without access to these supplies. In 1870 the Mohpani depot in the Central Provinces was opened up but the quantity produced there was insignificant, and they never became very important. In the same year coal was mined in the Kharharbi district of Bengal, which became quite important in a few years' time. In 1874-5 another coalfield, that of Warrata in the Central Provinces, was opened up. This helped partly to supply the Great Indian Peninsula Railway with fuel, but even so the Bengal coalfields remained by far the most important, and the needs of western Indian railway systems and industries were not at all adequately provided for. The opening of the Suez Canal temporarily depressed the Indian coal industry. The imports after 1870, i.e. after the date of the opening of the Canal, did not rise greatly, but the Indian production of coal seems to have suffered a temporary setback, for the production of coal, which was in 1869 approximately 467,000 tons, went down considerably in the next three years and did not again approach the old level till 1878.

From this date onwards it continued steadily to progress. But, though the production of Indian coal was increasing, the import of foreign coal was also increasing steadily. This was chiefly on account of the rapid extension of railways in India and on account of the fact that many of these railway systems were unfavourably situated as regards the Indian coalfields. Seventy per cent of the coal imports into India were taken up by the Bombay Presidency. Thus in spite of the growth of coal-producing activity, India in 1880 was still importing about 600,000 tons of coal annually, while there was almost no export of coal from India. The methods used in the industry varied greatly, for while in the larger concerns machinery was largely introduced even at this early date, in most of the smaller pits very little machinery was used; the number of the latter class of concerns was very much larger than of the former class. The coal industry in 1880 gave employment to about 20,000 people.

These three industries—the cotton and jute manufactures and the mining of coal—were the only important
industries in India in 1880. It will be seen from the number of people engaged in them how small even these industries were. But though these were the only industries which had grown by 1880, spasmodic attempts had been made to establish the factory system in many industries, which met with a varying degree of success. For example, in 1869 a beginning was made in the direction of producing leather manufactures by modern methods, when the Government established a factory for supplying leather goods to the army. Among the many other attempts made might be mentioned the various attempts towards establishing a glass factory in the North-Western Provinces and the earlier attempts to establish an iron industry in the Madras Presidency. An account of these is unnecessary, for the large majority of them bore no fruit.

There was an interesting industry in India at this time which has some claims to be called a modern industry. This was the Madras tanning industry. The industry owed its origin to one Charles De Sousa who, about 1845, introduced certain improvements in the methods used in tanning in India. This was in Madras City and slowly these improvements spread to the other important towns of the Madras Presidency. But the improvements never spread beyond this Presidency. They were adopted by a large number of tanners and an export trade in Indian tanned hides and skins grew up. At first the trade was carried on with the United Kingdom only, but after the Franco-German war Germany became very active in this trade and this, combined with the repeal of the 5 per cent duty on these exports in 1875 and the extension of railways, which opened up the country supplies of hides and skins to the Madras tanner, made the industry exceedingly prosperous; and by 1880 Madras was exporting a large number of tanned and half-tanned hides and skins to foreign countries. This Madras tanning industry showed an intermediate stage in the development of Indian industry, for it displays the effect of a slight adaptation of improved methods in industry, combined with cheap raw materials and cheap labour. The independent artisan

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A. Chatterton, Monograph, Tanning and Working in Leather in the Madras Presidency (1940).
being brought into the market. An even more striking instance is that of the deterioration in the quality of Indian cotton." The limits of Government action are clearly stated by Mr Jones (Berar) in his evidence before the Famine Commission (1880). He says: I am not singuline regarding the effects of model farms. The first cotton merchant who offered a fraction of an anna more for clean than dirty cotton, did more for Wardha cotton than I, with all the resources of the Government at my back, ever accomplished. Such were the limitations on Government action. Government could do a great deal in the way of improved methods, better seed selection, etc. But for these to spread and be successful, a patient and an exhaustive study of the wants of the peasant and the means at his disposal was necessary.

CHAPTER VI

Growth of Industry, 1880-95

The fifteen years from 1880 to 1895 were for the agriculturist on the whole favourable. The handicrafts had continued to decrease during this period, and the only forms of industry that showed any vitality were the factory and the plantation industry. The extent of the former was extremely small and its nature restricted in 1880. The Indian factory industry at this time was almost exclusively composed of the two textile industries, cotton and jute. It may be stated at the outset that during the fifteen years under review no great progress was made in any new industry. A few new industries were started, but none achieved any importance. Whatever progress there was, was made in the already established industries such as cotton and jute.

The cotton industry made very good progress during these fifteen years.

<table>
<thead>
<tr>
<th>Cotton Mills, 1880-95</th>
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<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Number of mills</td>
</tr>
<tr>
<td>Persons employed</td>
</tr>
<tr>
<td>Looms</td>
</tr>
<tr>
<td>Spindles</td>
</tr>
</tbody>
</table>

This table gives some idea of the progress of the industry. The rate of growth was not very rapid but it was remarkably steady and continuous; and there is an entire absence of any violent fluctuations throughout the period.

The rate of growth became specially prominent after 1885. The growth during the whole period Mr Graham Clarke writes: 'The year 1885 seems to have marked a turning
point in the upward climb, and with the great improvements in cotton mill machinery introduced into India about that
time, such as ring-spinning and the revolving top-flat card,
the mills began to make finer yarns and cloth of more variety
and to reach out after new markets for their goods. In the
five years from 1885 to 1890 there were added fifty mills
which marks the time of greatest expansion. There was a
fairly good business and healthy expansion up to about
1897.\(^1\)

Spinning is still a much more prominent factor in the
industry than weaving. But it will be observed that, though
during the first ten years the number of spindles grew at a
greater rate than the looms, during the last five years an
exactly opposite tendency was in operation. Now there is a
distinct tendency for looms to grow apace. It was only natural
that this should be so. For during the young days of the
industry competition with Lancashire in coarse yarns was
the most profitable and most likely to succeed; and then
the spinning shed was the really important section of the
factory. Having grown steadily for thirty years, the Bombay
industry had now succeeded in practically killing the home
hand-spinning industry and had captured the entire Indian
market for coarse yarns. But this was not all; the eighties had
seen a remarkable rise in the exports of Indian twist and
yarn, the export being chiefly sent to China and Japan.
The success of the Indian twist and yarn was so phenomenal
that the Manchester Chamber of Commerce conducted in
1887 an inquiry into the causes of the growth of the Bombay
trade. They came to the conclusion that the reasons for the
success were chiefly "geographical".\(^2\) Whatever the reasons,
there is no doubt that these exports grew rapidly and
continuously during this decade.

<table>
<thead>
<tr>
<th></th>
<th>1879-80</th>
<th>1885-6</th>
<th>1890-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports of Indian twist and yarn</td>
<td>26,304,716</td>
<td>79,234,341</td>
<td>170,518,804</td>
</tr>
</tbody>
</table>

\(^1\) W. A. Graham Clarke, Cotton Fabrics in British India and the Philippines, p. 14 (1907).
the growth in output or the number of hands employed. A glance at the table regarding the cotton mills would show that the number of hands employed and the number of looms and spindles rose during the period in a nearly equal ratio; but in the jute industry the case was different. This indicates that the expansion of the industry took the form of the extension or enlargement of the existing concerns rather than an increase in their number. The average unit of production, then, in this industry increased much more than in the cotton industry.

### Jute Mills, 1880-95

<table>
<thead>
<tr>
<th></th>
<th>1879-80</th>
<th>1884-5</th>
<th>1889-90</th>
<th>1894-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of mills</td>
<td>22</td>
<td>24</td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>Persons employed</td>
<td>27,494</td>
<td>51,902</td>
<td>62,739</td>
<td>75,157</td>
</tr>
<tr>
<td>Number of looms</td>
<td>5,946</td>
<td>6,026</td>
<td>8,204</td>
<td>10,048</td>
</tr>
<tr>
<td>Number of spindles</td>
<td>70,840</td>
<td>117,740</td>
<td>164,245</td>
<td>201,217</td>
</tr>
</tbody>
</table>

Out of these 29 mills 26 (and these all the larger) were in Bengal, centred round Calcutta.

Next comes the coal-mining industry. In 1880 it was very small and the wants of Indian railways and manufacturers were very inadequately provided for. The progress of this industry up to 1886 is very slow, but after this date the industry began to progress rather rapidly. The growth of this industry depended intimately on the extension of railways in India and on the freights.

### Coal-Mining, 1880-95

<table>
<thead>
<tr>
<th></th>
<th>1885</th>
<th>1886</th>
<th>1893</th>
<th>1894</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output (tons)</td>
<td>1,904,221</td>
<td>2,168,521</td>
<td>2,562,001</td>
<td>2,800,642</td>
</tr>
<tr>
<td>Number of persons employed</td>
<td>22,545</td>
<td>32,977</td>
<td>37,679</td>
<td>43,197</td>
</tr>
<tr>
<td>Number of collieries</td>
<td>68</td>
<td>82</td>
<td>96</td>
<td>123</td>
</tr>
</tbody>
</table>

The growth was most remarkable during the year 1893-4. This year indeed was the beginning of the rapid progress in mining activity in India that we find taking place during the next twenty years. Even up to 1895, with all the progress made during this period, the coal-mining industry of India was a very small one. Of the total mineral production of India the gold production from the Kolar mines still exceeding the total production of coal in value.

One of the greatest handicaps to a proper extension of the coal industry of India was the question of freights. The railway charges were high. The Bengal coalfields, which produced about three-quarters of the total Indian production, were situated far inland, and even the maritime freights were onerous at this time. This made it impossible for the Bengal coalfields to supply any coal to the west and the south of India. The chief advance made during this period was the capture of the Burmah market, and the complete ousting of foreign coal from eastern India. With the extension of the manufacturing industry of Bombay, the imports of coal were steadily rising. On the whole, though the growth was not large, there were clear signs at the end of the period that not only had Indian coal extended greatly in use on the railways, but its use in the manufacturing industry was also becoming more prominent. The exports of coal from India also began during this period. They rose from 26,356 tons in 1880-1 to 53,065 tons in 1894-5; but this was just a beginning, and the actual quantity was insignificant as compared with the more than 800,000 tons annually imported into India. Though the extent of the coal industry was not large in 1895, it then gave promise of rapid future growth.

These three industries—cotton and jute manufacture and the coal industry—still remained the only considerable industries that India possessed. In the financial and commercial statistics of India two other industries—the woollen and the paper mills—are given under separate returns as big industries. But the extent of these industries was very small. For in 1885 there were only six woollen mills and eight paper mills in India, employing in all just about 8,000 and 3,500 people respectively. The general state of Indian
industry can be gauged from the fact that these were, after cotton and jute, the biggest factory industries in India.

Of the plantation industries, tea had by now assumed very great importance. It was one which during the last thirty years of the nineteenth century enjoyed a period of continued prosperity and growth. But except for this there was nothing remarkable in its growth during this period. The area under tea, which in 1845 was 281,000 acres, rose to 435,135 acres in 1896. Assam, i.e. the Brahmaputra and the Surma valleys, still occupied the first position with 67.4 per cent of the total area in 1896. Bengal followed (chiefly Darjeeling and Jalpaiguri) with 24.3 per cent. But there was also a growth of the industry elsewhere—on the Himalayan slopes in the North-West Provinces (now Uttar Pradesh) and the Punjab and in the Nilgiris in the south. The other noticeable feature was that the production of tea was increasing in a greater proportion than the growth in the area under cultivation—a result largely due to better methods of cultivation and increased use of machinery in the manufacturing processes.

The condition of labourers in the industry had slightly improved, but the evils of the system of recruiting still remained and Kumar Dakinwswar Mallia—a member of the Tea and Coal Labour Commission—denounced the system in 1896 as a "vile pest to society."

The cultivation of coffee was almost wholly confined to Mysore, Coorg and the Nilgiri and Malabar districts of the Madras Presidency. Till about 1879 the industry was fairly prosperous, but during the ten years from 1879 to 1888, depressed prices combined with the havoc wrought by the borer and the leaf disease greatly discouraged coffee planting in India and Ceylon and the prospect of the industry seemed so forbidding that both in Ceylon and India much coffee land was placed under tea. The depressed prices were due to the dominant position of Brazil in the coffee market and the greater and greater production of cheap Brazilian coffee. The situation was made worse by the fact that nearly 96 per cent of the Indian coffee was grown for export and there

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4 Annual Note on the Cultivation of Coffee (1896).

Growth of Industry, 1880-95

was no home market to fall back upon. But there was a sharp rise in the price of coffee in 1889 which was maintained till 1896. The rise was mainly due to political troubles in Brazil. The industry therefore was revived and enjoyed a period of brief prosperity from 1889 to 1896. The replacement of coffee by tea had been almost complete in Ceylon, but in India the movement had not gone very far and was now definitely checked.

The third plantation industry, i.e. the indigo industry was almost stationary and there is nothing to record in its growth. Mr O'Connor says about the trade in indigo: "This is one of those long established trades of India like opium and silk which give no indication of progress." The same might be said about the industry. Yet there was a certain amount of increase, for in 1894-5 the exports of indigo from India reached the highest point that they were ever destined to reach.

For the rest, there were other industries which carried the raw material only a stage forward, thus facilitating its export or its further use in advanced stages of industry. The main representatives of this class in India were the cotton and jute pressing industries and the rice and timber mills. These industries employed during their season a fairly large number of people. There was a very definite limit to the growth of such industries in any particular tract. Of these the most rapid growth took place in the rice and timber mills—an industry which was, as yet, mostly confined to Burma. The lac manufactories were, in their nature, somewhat analogous to this group and there was a fair growth in their numbers.

Then again there was the class of auxiliary industries which specially came into prominence because of the extension of railways in India and the growth of manufacturing industries, e.g. the engineering workshop and the iron and brass foundries. This was a growing class, but its extent was limited by the amount of extension in the use of machinery in India.

Lastly might be noticed the class of semi-factory industries. Of these the most important—the Madras tanning industry

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2 J. F. O'Connor, Review of the Trade of India, 1880-85, p. 36.
was a very flourishing one. The spread of the industry throughout the more important towns of the Madras Presidency was rapid and its general growth was reflected in the rapid extension in the number of tanned and half-tanned hides and skins exported out of India. It is interesting to observe that the industry, which was obviously very paying, was confined to the Madras Presidency, though there were large exports of raw hides and skins from other parts of India. A somewhat similar industry was the brick and tile industry of the Malabar coast—an industry first introduced by a missionary settlement in Mangalore, and which rapidly spread from there as soon as its success became apparent.

On the whole, during these fifteen years—especially during their latter part—there was a certain amount of quickening in the development of Indian industries. The bigger and the already established industries grew at a rapid pace, and there was fair growth in the auxiliary and the smaller industries. The prospect for Indian industrial development looked hopeful and Mr Justice Ranade, reviewing this progress in the early nineties, observed at the end of his remarks on the 'Present State of Indian Manufacturers': 'I have placed before you what appear to me to be good grounds for the hope I entertain, that India has now fairly entered upon the path which, if pursued in the same spirit which has animated its capitalists hitherto, cannot fail to work out its industrial salvation.'

From the growth of the industry one naturally turns to the condition of the labour force in the industry. It has been pointed out above that in the old Indian economic structure there was no place for the casual general labourer. One of the first things that created the demand for this class was the operations of the Public Works Department: and this demand was intensified by the growth of the factory industry in India. It is impossible to generalize about the classes from which this labour was drawn or its living conditions; and the matter must be considered separately for each industry.

In the cotton industry in Bombay city itself the labour supply was chiefly drawn from the Konkan and Deccan districts of the Bombay Presidency. It was largely composed


of the landless labour class, which was growing rapidly in India. In Ahmedabad, another centre of the cotton industry, the labour supply was mostly local, i.e. drawn from the surrounding country districts. In the cotton ginning and pressing industry the labour was entirely local—and here the labour was mostly of old women. In the Calcutta jute industry the labour employed up to about 1885 was entirely local, but, henceforward, with the expansion of the industry and the need for more labour, labourers from the North-West Provinces (now Uttar Pradesh) and Orissa had to be imported. The proportion of this foreign labour was a steadily growing one. The Bengal coal-mining industry was also growing rapidly, but the demand for labour till the end of this period was generally satisfied by the supply of the local aboriginal labour. In most other places, wherever there were any industries, labour was local, except in Raigunj, where during the rice-milling season the labour for loading and unloading had to be imported from Madras.

The question of the regulation of the conditions under which labour worked was first broached in 1875 by the appointment of a committee by the Bombay Government to inquire into the 'condition of the operatives in the Bombay factories and the necessity or otherwise for the passing of a Factory Act'. This committee was divided on the question of the necessity for passing a Factory Act. The manufacturing interests and a large proportion of the public in India were generally opposed to any measure of this sort. After numerous bills had been drafted the first Act was finally passed in 1881. This Act was of a very elementary character. It only provided for the regulation of the working hours of children below 12 years of age. Children below 7 were not allowed to work in the factories and the working hours of children between 7 and 12 were fixed at nine. There was some provision for the fencing of machinery, but an entire lack of any sanitary provisions. The Act was meant to apply only to factories employing 100 or more hands and using 'mechanical power'. From the scope of the Act the tea, coffee and indigo establishments were excluded.

It was soon found that the provisions of this Act were
entirely insufficient to safeguard adequately the interests of the operatives. Another committee was appointed by the Bombay Government, but no general modifications on the lines recommended by the committee were adopted. Lancashire and Dundee were all this time complaining about the unfair competition of India on account of the lack of a Factory Act. The opinion in India itself—especially in the Bombay Presidency—in favour of further legislation on the matter was also growing. At last the Indian Government appointed a Factory Commission in 1889. An Act, largely based on the recommendations of this Commission, was passed in 1891. The advance over the former Act was that the Act now embraced all factories employing fifty hands, provided for a weekly holiday, fixed the minimum limit of the age of children employed at 9, and fixed the working hours of children between 9 and 14 at a maximum of seven. It also fixed the working day for women at eleven hours and prohibited night work for them (a provision which was largely vitiated by the exception made in the case of a shift system approved by the Local Inspector of Factories). It also made some provisions as regards sanitation and the inspection of factories.

But whatever legislation there was, it was very restricted in the scope of its application. The real restriction which robbed the Act of its value before 1891 was the application of the Act only to factories employing 100 or more hands. For it was the small factory in which the worst abuses existed. Another restriction was that the Act applied only to factories working more than four months in a year. On account of this provision a large proportion of the concerns engaged in seasonal industries, e.g., grinding and pressing of cotton, and rice-milling, escaped the operation of this Act.

On the other hand there was no legislation at all on behalf of the labour force in the mining industry. Women were extensively employed in all mines—especially in Bengal—and it was feared that any legislative interference would tend to hamper the development of the industry which was

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9 Employed Women and Children in Mines, Correspondence, etc. (Parliamentary Paper), (1889).


11 Hours worked in 1899. The hours of children were regulated by law. Figures taken from a table from the Bombay report in the above Parliamentary Paper.
the same. Though the men did not complain much about these hours they at least wanted a weekly holiday. In the Bombay industry the workers got only five complete days during the whole year; and even in mills where a regular weekly holiday was given the labourers were supposed to attend, for at least half the day, for the purpose of cleaning the machinery, etc. The real abuses, however, did not exist so much in the spinning and weaving mills as in the cotton ginning and pressing industry. Here the Khandesh industry was the worst. The evidence before the 1884 Factory Commission was of a terrible nature. One witness stated: 'In the busy season—that is in March and April—the gins and presses sometimes work both night and day and the same set of hands work both night and day, with half an hour's rest in the evening. The same set continue working day and night for about eight days.' It was all the worse because the hands were mostly women. Another witness stated: 'The women are looked on as part of the gins, and they belong to the same caste, and two or three hours is the longest time they can be absent out of twenty-three without any notice being taken of it.' After working eight days without stopping, 'they (the gins) are compelled to get another set of hands from Bombay.' All the other evidence on the Khandesh ginning industry was of the same nature.

As in the matter of working hours, so also in the matter of sanitation and ventilation the smaller concerns were the worst. In the bigger ones, which mostly came under the working of the Act, the sanitation, the ventilation and the fencing of machinery were fairly satisfactory. But apart from this the big industry, the conditions were not so good. The worst offenders in this respect were the cotton and the wool cleaning establishments in Bombay. Of one of these Col. Meade King remarks: 'I considered this place (in the absence of proper means of ventilation) utterly unfit for human beings.

On the small mills and factories he further remarks: 'In two-thirds of the works visited I have observed dangerous—in some cases most dangerous—machinery, mill gearing, fly wheels, etc., without any fencing whatever about them, and the marvel is that accidents are not of more frequent occurrence than they are.' But he adds: 'I am disposed to think that the want of ventilation and the proper means of carrying off injurious dust and gases is of even more vital importance than the fencing of machinery.'

The abuses, then, that existed in the Bombay Presidency were chiefly in the small non-regulated industry; and here the conditions were truly terrible.

Perhaps the most vehement opposition to factory legislation of any nature came from the Bengal Chamber of Commerce, and the then Governor of Bengal (Sir Ashley Eden) stoutly opposed the bill in the Viceroy's Council. Whatever might be said of this attitude, it must be admitted that the conditions of work were perhaps the best in Bengal—especially in the Calcutta jute mills industry. The regular hours for running the mills were the same in the Calcutta mills as in the Bombay industry—sunrise to sunset. But the mills in Calcutta were worked on a somewhat complicated shift system and the work people were individually employed on an average for about nine hours a day rising sometimes to ten. The exception to this rule were the weavers who generally worked the whole day.

The Bengal workers also got a full Sunday holiday every week, and this no doubt counted very greatly in favour of the health of the working classes. The internal condition of the factories is described as generally well-ventilated and clean and the fencing of the machinery as effective. There was another matter also in which the Bengali labourer was better off than his brother in Bombay. This was in the system of payment of wages. In Calcutta these payments were made weekly and, at the most, from about three days' to a week's

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8 Annual Report of H. M. Inspector of Factories (1886-7). Note by Mr. Brown on "Factory Conditions in India," See also evidence of Mr. Cockin before the Bombay and Lancashire Spinning Inquiry (1887).
10 Ibid., p. 19.
11 Ibid.
wages were kept in hand. But in Bombay the pernicious system of monthly payment of wages prevailed and nearly three weeks' wages were kept in hand.¹ In this matter Bombay City was the worst, for even in Ahmedabad payment was weekly.

There were during this period no inquiries into the condition of Bengal labour like the two Bombay Commissions. It is, therefore, not easy to know what were the exact conditions obtaining in the jute pressing and the other up-country industries. They must have been a little worse than in the big industry but it cannot be said whether they were as bad as in the Khandesh gins. This, however, does not seem likely, as the local supply of easily exploitable labour in Bengal was much less than in the extremely poor province of the Bombay Deccan. Of the other stray factories and small industries much need not be said. The working conditions here depended very greatly on the individual manager or proprietor and the general condition of agricultural labourers in the surrounding district. Generally speaking, the hours and the conditions were more or less the same as in the Bombay cotton industry, in places perhaps a little worse.

Lastly, in the coal mines there were no regulations whatever. Women and children were employed exclusively underground in Bengal. In the Central Provinces, where the labour was mostly immigrant labour from the North-West Provinces, very few women were so employed, and the opinion here was in favour of entirely prohibiting such employment of women. But in Bengal any suggestion of such interference was hotly contested. Here the ‘family’ system of working prevailed. The workers were mostly drawn from the local tribes of Southals and Bauris; they worked with their women folk, the man cutting the coal and the woman carrying it. As yet very few attempts had been made to get the immigrant labour from the North-West Provinces, but the rapid expansion of the industry was now making the want of a steady supply of extra labour severely felt.⁴

¹ This system persists today and has been largely held responsible for the indebtedness among the Bombay factory hands. See Indian Cooperative Studies, Essay No. 19, ‘Co-operation among Factory-workers’, by Memon Davbar and Jutla (1920).
³ W. Holderness, Narrative of the Famine of 1876-7 (Parliamentary Papers).
⁴ The same was the case with Gujarat in the famine of 1899-1900. This trade had been free from famines since 1812.

CHAPTER VII

The Agriculturist, 1895-1914

The long period of fifteen years of comparative immunity from famines came suddenly to an end in 1895, and the periodical visitations of famines fell with extraordinary force on India during the years that followed. Two severe famines followed each other swiftly and made the closing years of the nineteenth century one of the worst periods in the history of Indian agriculture.

The famine of 1896-7 spread almost all over India. The only parts that were not affected by the drought were Lower Burma and the extreme south of the peninsula. The Famine Commissioners had remarked in 1880 that the famine of 1876-8 was the severest in the country, but the famine of 1896-7 was spread over a wider tract and was quite as severe. The remarkable feature about this famine was that it visited parts which had hitherto been thought to be immune from famines. Thus it found Behar, which had been free from famines for sixty-four years and thus lulled into security, without any preparations to combat the evil. The number supported on relief works was again very considerable; but the actual conduct of the works was better and much more efficient this time than it had been in the previous large famine (1876-8). This time the officers in charge had the benefit of the guidance of the findings of the 1880 Commission. These were found to work, on the whole, very well in this famine, and the Commission of 1888 recommended only some minor alterations—chiefly in the direction of a more liberal treatment of those on relief—in them. Naturally the relief administered was not on the same basis everywhere and the Commission found the conduct of certain Provincial
CHAPTER VII

Industrial Progress, 1895-1914

The industries which had been progressing in 1895 suffered a considerable check during the years 1895-1900. Industries in India, especially those which depend for their market on the demand in the country itself, are bound to suffer with a collapse of agriculture. Such a sympathetic collapse of industries was a prominent feature of the old Indian economic structure, and even in modern India the artisan industries are in the same condition as they were in the old days. Of the bigger industries coal was the least affected by agricultural distress in India and jute also not very greatly. The cotton industry on the other hand was in a different position. Its market for woven goods was chiefly Indian and also a large portion of the yarn produced in the mills went to satisfy the demand of the Indian handloom weaver. The Indian handloom weaver in his turn supplied the coarse cloth, chiefly to the peasant. Now, it is a well-known fact that in times of depression the first economy that the Indian peasant effected was in the matter of his clothing and thus the country weaver, with the agricultural labourer, was the first to arrive on the relief works. Hence the market for mill-made yarn shrank rapidly in any period of agricultural depression. We need not, therefore, be surprised to find that during the period of the two terrible famines (1895-1900), the cotton industry also suffered a very severe trade depression. The famines, with the attendant depression of the handloom weaver, contributed largely towards this depression of the cotton industry, but there were also other causes at work during the period which were quite as important in bringing about this result.

In 1896 appeared in India, for the first time in a virulent form, that epidemic which has been working havoc ever since with the population. This scourge, the bubonic plague, appeared first in that year in Bombay. It may have been known in India before, but never in such a terrible form. The result was that the population of Bombay, frightened at this strange and terrible visitation, left the city in large numbers. There was a wholesale exodus; and with the rest the labour force of the cotton industry left the city. This was the first blow. After a year or two the people became accustomed to the epidemic, and though it did not abate in its intensity, the labour force was not so sensitive to its visitations as to its first appearance. After the first famine came the plague and after the plague the second famine. But this was not all. Two other factors appeared just afterwards. In 1902 there was the great American speculation in cotton; this sent up the price of cotton to extraordinary heights. The mill and the handloom industry both suffered. The high price of cotton made the production of manufactured goods, especially the coarser goods, on which chiefly the Indian industry depended, highly unprofitable. The other factor was a disturbance in India's chief foreign market, viz., China. The bulk of India's foreign exports of yarn went to China and a depression in that market meant a great blow to the spinning industry. Thus this period of depression lasted from 1896—with slight periods of recovery—up to nearly 1905. But in spite of this prevailing depression the rate of growth in the industry was more or less uninterrupted.

<table>
<thead>
<tr>
<th>Cotton Industry, 1893-1914</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>No. of cotton mills</td>
</tr>
<tr>
<td>Persons employed</td>
</tr>
<tr>
<td>No. of looms</td>
</tr>
<tr>
<td>No. of spindles</td>
</tr>
</tbody>
</table>

This table shows that there was a pretty rapid growth in the industry during these years of depression. It will be
observed from the figures that during the same period the number of spindles had begun again to rise in a greater proportion than the number of looms; and that most of the rise in the number of spindles came about during the years 1895-6 to 1900-1. Indeed, this feverish growth in the number of spindles largely contributed to the over-stocking in subsequent years of the China market and the falling off in the demand from that quarter.

About 1905 the depression lifted. Agricultural prosperity in a small measure had returned, the plague had ceased to frighten people away from industrial centres, the price of raw cotton had resumed its normal level and China was bare of stocks. Therefore in the next two or three years the Bombay industry enjoyed unprecedented prosperity. The boom was especially pronounced in the yarn industry and the spinning mills paid fabulous dividends. The demand for the yarn was so great and the price so remunerative that the mills were kept working for as long a day as was in the circumstances, possible, and the newly introduced electric light made possible a very long day. There was feverish production and the China market was soon over-stocked again. With this, in 1907, came also the general world trade depression. Short time had to be run everywhere, especially in the yarn mills. The progress was continued well after this depression and in 1914 the cotton industry was a growing and a fairly prosperous industry.

Apart from the ordinary progress two tendencies may be noticed in the recent history of the industry. There were (i) the continuance—very marked since the beginning of the century—of the more rapid growth in the number of looms as compared with the number of spindles and (ii) the tendency of the cotton manufacturers to turn out a finer class of goods. The first of these tendencies will be easily seen from the table. The reason for this growth of the weaving industry is not far to seek. It is to be found in the violent fluctuations of the last twenty years. The yarn market for the Bombay industry was mainly the China and the home market. For its exports depended almost entirely on the China market. Here it had to face the competition of Japan and Lancashire. Depending thus for its export almost entirely on one market, which again was not particularly stable, the fluctuations in the fortunes of the yarn industry were naturally violent. As regards the home demand, this also varied with the fortunes of the agriculturist. The Bombay industry was, therefore, always trying to find new markets for its yarn products, but in this it had not been particularly successful. My Graham Clarke gives another reason for this tendency of the mills to add looms in a large proportion. He says that the cloth market, being farther removed from the raw material, is a more stable market than the yarn market. At times the yarn mills make much larger profits than ever fall to the lot of the weave mills, but when the reaction comes the yarn mills usually feel it first. Thus in 1905 and part of 1906 yarn mills simply coined money, while the weave mills only made moderate profit. At this time (April 1907) the yarn mills are running short time while the weave mills are making the same profits as before. Considering this it was natural that the industry should now turn to the stabler weaving markets. The market for woven goods was very largely the home market, only about one-sixth to one-seventh of the total production being exported. (In the case of yarn the proportion of exports came up to more than a third, but this proportion was a slightly diminishing one.) These exports went chiefly to Arabia, Persia, East Africa and the Straits. Now the home market for mill-woven goods, not being dependent on the poorest classes, was much more stable than the market for the products of the handloom. Thus there were no phenomenal profits to be reaped in this branch of the business but the prosperity of the industry was more stable. The other tendency, that of the production of finer counts of yarn, was due to the same causes. In the initial stages of the growth of the cotton industry, when the market was very large and the extent of the industry very small, the flow was naturally in the direction in which dividends were most easily earned. In the early days, the well-nigh universal system of paying the agent on the output of the mill, without any relation to profit and loss accounts, told also in favour of the very general production of coarse yarns and only the
inferior kinds of piece-goods; and once the machinery was installed for the production of these coarse goods it was difficult and uneconomical to produce the finer qualities on it. But since 1890 the expansion of the foreign market for coarse yarns had been very slow; the home market had also been completely captured by about 1900, and the competition in the industry had become keen. The industrialist had, therefore, to turn his attention to newer and more profitable fields. In spinning, the best new market available was the home market for finer yarns, which as yet was completely dominated by Lancashire. The larger growth of looms was also prompted by this desire to find new markets for the industry. In this connexion it should be noticed that the quantities of twist and yarn exported from India were almost stationary from the nineties onwards while the quantity of piece-goods had slightly diminished. Thus with stationary or contracting foreign markets the growing industry had to turn its attention more and more to the home market and here the production of finer yarns and piece-goods was the most promising field.

The growth of the jute industry in India at this time was unmarked by any special feature except its rapidity.

Jute Industry, 1895-1914

<table>
<thead>
<tr>
<th>Year</th>
<th>1895-6</th>
<th>1901-2</th>
<th>1907-8</th>
<th>1913-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of mills</td>
<td>28</td>
<td>36</td>
<td>54</td>
<td>64</td>
</tr>
<tr>
<td>Persons employed</td>
<td>78,114</td>
<td>144,795</td>
<td>187,711</td>
<td>236,288</td>
</tr>
<tr>
<td>Looms</td>
<td>10,149</td>
<td>16,119</td>
<td>27,244</td>
<td>36,000</td>
</tr>
<tr>
<td>Spindles</td>
<td>214,679</td>
<td>301,282</td>
<td>502,274</td>
<td>744,289</td>
</tr>
</tbody>
</table>

The old tendency for the number of mills to increase in a much smaller proportion than the number of hands, looms and spindles is still marked, but not to so great an extent.

4 See article by Mr. (later Sir) D. E. Wacha, pleading for a movement of the industry towards the production of finer goods, in *Industrial Quarterly Review of Western India*, vol. 1, no. 3 (1892).

Industrial Progress, 1895-1914

Here another interesting feature is that the number of looms and spindles has increased in a much greater ratio than the number of hands employed. This very possibly shows economy of labour, by the introduction of better machinery or on account of the management being on a larger scale than before. The growth of the industry was not so rapid during 1895-1900 on account of the prevailing famines; though these did not directly affect the industry, they did so indirectly by stopping the export of the food-grains and other raw agricultural produce out of India and thus diminishing the Indian demand for gunny bags. The industry also suffered a few periods of depression, such as the one in 1905-6. The growth of the jute mills took place mostly round Calcutta, and the extent of the industry outside this area was insignificant. The Bengal industry possessed a great advantage in being near the source of the supply of raw jute; for Bengal had a monopoly of jute. During this decade, however, competition was growing abroad, especially in Germany and the United States. The Continental and American industries were generally encouraged by their national Governments by a tariff on foreign jute products, while raw jute was allowed in free. But this did not interfere with the growth of the Indian industry, and side by side with a large increase in the exports of raw jute the exports of jute manufactures were also increasing rapidly.

The production of minerals in India made rapid strides during the period 1895-1914. The old industry of colliery mining made very rapid progress and two practically new industries—petroleum and manganese—attained great importance during this period. Some idea of this great general increase can be had from the following table:

Total Annual Value of Rupees (quinquennial average) of Mineral Production in India

<table>
<thead>
<tr>
<th>Year</th>
<th>1891-93</th>
<th>1901-03</th>
<th>1908-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rs.</td>
<td>6,49,48,005</td>
<td>10,07,44,875</td>
<td>12,58,98,330</td>
</tr>
</tbody>
</table>

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*See article by Mr. (later Sir) D. E. Wacha, pleading for a movement of the industry towards the production of finer goods, in *Industrial Quarterly Review of Western India*, vol. 1, no. 3 (1892).*
The Industrial Evolution of India

The record of the coal-mining industry is one of almost uninterrupted progress. It progressed by leaps and bounds and outran the hopes of the most confirmed optimist. The average production of coal for the years 1891-5 had been 2,460,000 tons, while the average production during 1896-1900 was 4,298,000 tons. Enormous progress was achieved in these five years and, what is more, the rate of progress was well kept up in the years which followed. That the coal industry did not suffer on account of famines is due to the fact that its chief customers were the railways and the jute and other Bengal industries. Railways, far from suffering from famines, were then busier than ever.

<table>
<thead>
<tr>
<th>Coal Industry, 1900-14</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>1901</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>Total output, tons</td>
</tr>
<tr>
<td>Persons employed</td>
</tr>
</tbody>
</table>

The progress was not due at all to the discovery of any new coal-fields but to the increased exploitation of the well-known Bengal coal-fields. These coal-fields together in 1906 produced 85 per cent of the total Indian production of coal.

The history of the industry during this period was not continuous. Its rate of growth was, indeed, rapid throughout, and, generally speaking, uniform, but if we consider it in relation to the growth of the railways and the coal-mining industry in India, then the history seems to fall into two distinct periods: the first from 1895 to about 1908 and the second from 1908 to 1914. The first period was marked by two distinct tendencies: (i) the growing excess of the exports of Indian coal over the imports and (ii) the diminishing share taken by the railways of the total produce. At the same time the imports of coal into India were also steadily diminishing. In this period Indian coal more or less cap-

*These, after the reorganization of provinces in 1911, formed a part of the newly created province of Bihar and Orissa.

Sir T. Holland, A Sketch of the Mineral Resources of India (1898).
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handicapped by two facts in its competition with foreign coal. In the first place, it was not of the high quality required for certain industrial purposes and, secondly, the high railway freight made competition very difficult in parts of India distant from the coal-fields. Thus there was very little difference in price—especially when the difference in quality was also considered—between Bengal and Welsh coal, in a western port like Karachi.

The causes helping the growth of the coal industry were the growth of communications and the growth of the factory industry. The large growth of output was due largely to the fact that improved machinery was widely coming into use throughout the industry; still in many of the smaller mines very little machinery was used. The growth was also helped considerably by the change made in the conditions of the grant of mining leases and licences. The old rules regarding these were undoubtedly irksome and imposed unnecessary restrictions on the capitalists. The figures for the concessions granted before and after the change of rules are instructive. These were in 1899 only 60, but rose in 1904 to 189, in 1906 to 552 and in 1907 to 400.

The growth in the exploitation of the petroleum deposits of Burma was almost as rapid as in that of coal. The extraction of crude oil by rather primitive methods had been going on in these fields of Upper Burma for a very long time. Very little machinery was used and the fields were controlled by a very closely formed guild-like organization. Up to 1867 exploitation by modern methods had not been tried in this industry at all. In that year two companies were started to exploit the oil, equipped with modern drilling machinery. The beginnings were modest and in 1890 their production amounted only to 1,516,975 gallons. The Upper Burma deposits were the only important ones and produced over 95 per cent of the total Indian supply. The production did not increase greatly for nearly a decade and it was not until 1890 that the hopes of finding an important supply began to be entertained. The growth in production.

The next important mineral industry of India is the manganese industry. This may be said to be the creation almost entirely of the twentieth century. For though manganese mining had begun in the Madras Presidency as far back as 1892, the production was still very small at the end of the nineteenth century; and the important deposits in the Central Provinces were not worked till 1900. At the very beginning, a strong impetus was given to the industry by the outbreak of the Russo-Japanese War, for this reduced considerably the supplies from Russia which were hitherto the most considerable of the world supplies; the rapid growth was also due to the great activity at this time in the steel trade in Europe and the United States. The rise was rapid and the production reached its highest point in 1907, when it exceeded 900,000 tons, and for a short time, from 1908–11, India held the position of the largest manganese producing country in the world. Following the depression in the steel trade in 1908 there was a depression in the industry. It recovered for a short time when there was another interruption in the Russian supplies. Manganese was raised in India entirely for export in the absence of a local steel industry. The industry employed in 1913 about 20,500 persons.

The gold industry of India was considerably older than the two above mentioned. The only important gold-field in

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**Petroleum Industry**

<table>
<thead>
<tr>
<th></th>
<th>1896</th>
<th>1900</th>
<th>1905</th>
<th>1910</th>
<th>1914</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gallons oil</td>
<td>36,049,289</td>
<td>37,729,211</td>
<td>344,798,644</td>
<td>244,829,647</td>
<td>259,342,740</td>
</tr>
</tbody>
</table>

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2. Dr F. Neatling, Petroleum Industry in Upper Burma (1897).
India is the Kolar field in Mysore. Attention was directed towards this field by the old Indian workings and about 1880 many companies were floated for the exploitation of gold in India. The expectations were very great in the beginning but they were doomed to be disappointed. All the companies floated with such extravagant hopes were moribund in 1885, and it was only a dying effort of the Mysore Company in that year that disclosed the richness of the field.

By 1887 the adjacent companies had resumed operations and from that time till 1905 the history of the field was one of uninterrupted progress and success. Since the latter date there has been a fall in the output owing to zones of lower grade having been reached. Till 1902 gold was the most important in value of the Indian mineral products; after 1902 its place was taken by coal.

The other important mineral industries of India are the production of salt, mica and saltpetre. The first is a very important industry. The supplies are drawn from different sources such as sea, rock and lake. The Indian production is, however, not able to meet entirely the home demand. As regards mica India is the chief producer in the world. The industry, though not very important, employed nearly 18,000 people in 1913. Saltpetre, of which India had a practical monopoly, was at one time an essential ingredient of all high explosives but since the discovery of substitutes for it (about 1860) the industry has been in a stationary condition.

As regards the iron deposits of India, which exist in abundance, the only successful attempt to manufacture iron had been at the Barakar works on the Ranigunj Field. Other attempts had been numerous but all had failed. During the first decade of this century Tata & Sons floated their company to produce iron and steel in India. They began working in 1911 but naturally their production by 1914 was not large.

There had been, on the whole, a remarkable growth in the mineral production of India during this period. But

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1 Quinquennial Review of the Mineral Production of India (1896-190), p. 88.
2 E. B. Warren, Monograph, Iron and Steel, Bengal (1907).
4 Louis Fraser, Iron and Steel in India (1919).
5 Holland and Ferrier, op. cit., p. 10. See also Sir T. Holland, paper on the 'Mineral Development of India' read before the First Indian Industrial Conference (1909).

compared with the needs of India it was yet insignificant. This is shown by the fact that the total value of minerals and mineral products imported into India far exceeded the total value of those produced in the country. Not only was the development insufficient, but it was also one-sided. The six important mineral products of India were coal, petroleum, gold, salt, manganese ore and mica. Of these the first four are consumed by what have been called by Sir T. Holland the 'direct processes', and the last two were mined purely for export. There was an almost entire lack in India of the mining of metalliciferous minerals. The principal reason for the neglect of metalliciferous minerals is the fact that in modern metallurgical or chemical developments the by-product has come to be a serious and an indispensable item in the source of profit, and the failure to utilize by-products necessarily involves neglect of the minerals that will not pay to work for the metals alone. A country like India must be content, therefore, to pay the tax of imports until industries arise demanding a sufficient number of chemical products to complete an economic cycle, for chemical and metallurgical industries are essentially gregarious in their habits. It was by a skilful utilization of all the products, then, that European industry had been able completely to vanquish the very old established metal and chemical industries of India; and as pointed out in the above extract the revival of these industries depended on the general movement towards development of industries in India.

After the large industries and the general production of minerals we may now consider another group of industries, i.e. the plantations. The history of all these, with the exception of the tea industry, is very chequered. The oldest of these industries, viz. indigo, had been almost stationary from 1860 to 1895. The efforts of German scientists had been directed for a very long time towards the preparation of synthetic indigo; some of these attempts had been successful, but it was not until 1897 that the first commercially
manufactured indigo was placed on the market. The scare was enough to discourage planting over large tracts, the two seasons just after 1897 happened also to be very unfavourable. Thus from 1897 dates the progressive decline of the indigo industry of India. The area under indigo began rapidly to diminish and the exports began to fall off. For though at first the amount of synthetically produced indigo was not large, it began rapidly to increase and was able to cut prices very low in its competition with natural indigo. The planters tried to strengthen their position partly by cultivating other crops and partly by attempting improvements in the methods of the cultivation and manufacture of indigo. But the decline in the industry could not be checked. The figures for the exports of indigo show how rapid this decline was. (These are a good index because almost all the indigo manufactured in India was exported; only a small quantity and that of very inferior quality was retained in the country.) The exports were in 1895-6, 166,308 cwt, and in 1913-14, 10,930 cwt.

The coffee industry had a brief period of prosperity from 1889 to 1896. But in 1896 Brazil, by then comparatively free from its political troubles, again began its production in full and prices resumed their decline. Since that year the area under coffee has been steadily diminishing. At the same time the exports do not show the decline in any marked degree. The annual note on coffee (1909-10) has the following: "While the area under coffee has been steadily diminishing since the season 1896-7, production as judged from exports, which account for the greater part of the crop, has fluctuated from year to year, a small crop alternating with a large one." The exports were on the whole steady, showing only a slight downward trend. The area under the crop had on the other hand definitely decreased from 256,887 acres in 1900-1 to 203,677 in 1913-14. 4

5 C. Romon, 'Cultivation, etc. of Indigo', Journal of the Royal Society of Arts (1909).

The tea industry, on the other hand, had been making steady progress throughout. In the world market for indigo, synthetic indigo had become the dominant factor in the twentieth century, in the coffee market Brazilian coffee had been controlling the market from an even earlier period, but in the tea market Indian tea had been improving its position and was now by far the most important factor. The growth of this industry had been made possible by the India tea steadily driving China tea out of the United Kingdom market. The change, indeed, was very complete. In 1866, of the total imports of tea into the United Kingdom only 4 per cent were Indian and the rest Chinese; while in 1903 of the total imports, 59 per cent were Indian, 51 per cent from Ceylon and only 10 per cent from China. The increase in the tea area, which had been remarkable till 1895, continued. The greatest increases took place in 1892 and 1898. In the next two years the rate of increase was sharply checked and almost stopped in 1902. The production had also been increasing rapidly and the result of this huge increase in production had been a rapid reduction in the prices of tea after 1895. For a time also, the United Kingdom demand of 'Large Industries' for a number of years. But they are unreliable and for purposes of comparison over a series of years entirely inaccurate. The following extract from the 11th issue of The Financial and Commercial Statistics of India will illustrate the difficulties. "The statistics are incomplete even as regards large industries which ought to find a place in the tables and the figures given are at times of doubtful accuracy ... From 1901 no return has been made for any factory or establishment which employs an average of less than 25 persons throughout the year, and from 1902 the returns from Bombay Presidency exclude all establishments with an average of less than 50 persons. The tabulated returns from 1901 are, therefore, not comparable with the figures for previous years, published in an earlier edition of this volume, when each reporting officer exercised his own discretion as to what constituted a large industry." (Ibid. page 3.) Later on the basis for the collection of the statistics was made 50 persons or over, all over India. But even so we read a special remark against the statistics of the indigo industry. "The table must be taken more as an indication of the extent of the industry than as a complete record." As regards coffee, the Director-General of Statistics, J. O'Connar says, "It is difficult, however, to arrive with any accuracy the area, yield or condition of the coffee estates of southern India, the planters being aware, for some unknown and unguessable reason, to communicate statistical information relating to the industry" (Report of the Trade in India, 1901-2, p. 27). The foreign trade statistics of India, on the other hand, are the most reliable and the agricultural statistics are somewhat better than those for large industries.
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was stationary. The result was a decrease in area between 1902 and 1906, and a depression in the industry. After 1906 progress was again resumed. The United Kingdom market began steadily to expand and an important and growing market had been found in Russia.

The plantations, as a whole, were now taking a smaller proportionate share in Indian industry. They were in a somewhat different position from the other industries. They were almost wholly European-owned. They were exempted from the ordinary labour laws of the country and the planter had greater control over his labour force than the ordinary industrialist. These industries were partly agricultural and partly industrial, and all of them exported the greater proportion of their product. The tea and coffee industries opened up hitherto waste tracts, and their chief importance in the industrial progress of India lay in providing an occupation for a great number of labourers from the congested parts of the country.

The sugar industry of India was another of those industries which had a bad time in the nineties. One of the remarkable features of the foreign trade during the decade 1890-1900 was the enormous rise in sugar imports. The imports had been rising steadily for some time before this. They came, then, chiefly from Mauritius and Java. The Indian industry did not suffer at this time. It was only when the beet-sugar imports began to come in, especially after a protective tariff had been placed on them in America, that the real blow was struck at the Indian industry. Beet-sugar forced prices down extremely low and sugar refining in Indian factories became unprofitable. The chief seat of this industry was the United Provinces and some districts of Bengal. Between 1895 and 1900 over 180 of these small refineries in the United Provinces had to close down and there were many closures in the Bengal districts, e.g. in Jessore. A countervailing duty on these bounty-fed beet-sugars was imposed but this did not help the industry greatly.

1 S. M. Hodd, The Sugar Industry of the North-West Provinces and Oudh (1899).
2 East India (Sugar) Counteracting Duties Act, Correspondence, etc. (1901) [Parliamentary Paper].
3 Memorandum by Mr. Matthew, ibid.
4 F. Noel Paton, Sugar in India (1911).
an already vegetable or bark-tanned hide by the chrome processes; this meant a serious diminution in the market for Indian tanned hides and skins. Another adverse influence was the finding of the Committee appointed by the Royal Society of Arts that Indian tanned leather was unsuitable for the purposes of book-binding. Attempts had been made at this time to introduce the chrome processes in Indian tanning but they were mostly unsuccessful. There was during this decade, however, a small growth of the large-scale tanning industry in the Bombay and Madras Presidencies—especially in the former. The two big centres were Bombay and Ahmedabad. The industry was on a much larger scale than the now decaying Madras industry and the unit might more properly be called a factory than a workshop. At the same time the methods used in the industry, except in a very few tanneries, were still crude. The extent of this industry was, on the whole, small.

During these twenty years a considerable increase had taken place in that section of the industry which comprises the cotton gins and presses, the rice and timber mills, etc. Rice mills, which had been hitherto more or less confined to Burma, spread into India proper, notably in the Madras and the Bengal Presidencies. Engineering and railway workshops, iron and brass foundries also grew. The growth in this class was due very largely to the extension of railways in India and to the introduction and extended use of cycles, motor-cars, tramways, etc. They also indicate a somewhat larger use than before of small machinery in ordinary operations, such as small pumps for lifting water, the introduction of small motors in workshop industries, where mechanical power had not been used before, and also the establishment of small flour or oil mills, etc., in many parts of India.

It is indeed in this direction of a slow spread of the use of improved machinery in various operations, the introduction of small motors where no power was used before, and the establishment of small local and isolated factories in

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*Chatterjee, Leather (Madras), and other provincial monographs.
* A. Guchair, Monograph, The Leather Industry (Bombay, 1919).

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1 The population of India in 1911 was about 315 millions.
electric light into the factories. Its first introduction into the Bombay industry coincided with a big boom in the yarn market. This made the working of the mill for excessively long hours profitable, and it had been made possible by the introduction of electric light. The Committee of 1891 had considered the sunrise to sunset hours as normal in India and thought them to be not excessive. But these calculations were now upset. The hours worked in the Bombay industry during the 1905 boom were extremely long, sometimes lasting from 5 a.m. to 9 p.m.; and on an average a 14-hour day was worked in the industry during this period. Attention was attracted towards these excessive hours by articles in the press, and Government appointed a Committee to inquire into the condition of textile factories labour; the report of this Committee pointed to the necessity of a more detailed and a wider inquiry. Another Commission was accordingly appointed to consider the whole question of factory labour, and presented its report in 1908. One of the most interesting facts brought to light in this report was that in many cases the provisions of the Act of 1892 were openly disregarded. In the cotton mills of the United Provinces, south Mahratta, Bengal and the Punjab, children worked the same number of hours as adults; also a number of children under 9 years of age were employed in the factories as half-timers. In this connexion, one manager of a mill (Calcutta jute mill) stated that he did not send the children to the doctor to be certified prior to employment as he had a shrewd suspicion that most of them would probably be rejected; while he frankly admitted that the mills made no change whatever in their system consequent on the amendment of the factory law in 1891. The Khedvii gins, which had been brought under the law in 1891, were a good deal better now; but in the smaller gins and rice mills in other places the hours were still very excessive. Thus in the Guzerat gins, not under the Act, 15 to 18 hours a day were sometimes worked. These factories, as they depended entirely on the supplies of rice and cotton, worked systematically; the pressure during the rush season being very

<table>
<thead>
<tr>
<th>Industry</th>
<th>Persons employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tea plantations</td>
<td>707,385</td>
</tr>
<tr>
<td>Cotton</td>
<td>53,219</td>
</tr>
<tr>
<td>Jute, hemp, etc.</td>
<td>25,819</td>
</tr>
<tr>
<td>Collieries</td>
<td>18,819</td>
</tr>
<tr>
<td>Railway workshops</td>
<td>96,723</td>
</tr>
<tr>
<td>Coffee plantations</td>
<td>57,623</td>
</tr>
</tbody>
</table>

After these come the saw mills, stone and marble quarries, timber yards, iron foundries and petroleum refineries. These made up the whole class of industries employing more than 10,000 persons. It is easy to see that the first four were the only industries at all important. On the plantations, a large proportion of the persons employed were engaged in purely agricultural work. The one-sided nature of the development of mineral industries has already been explained. Thus of the factory industry proper—i.e. apart from mineral industry—there remain, after cotton and jute, only the accessory industries, i.e. workshops, foundries, etc., and the class of gins, presses and rice and timber mills. Indeed these latter two classes, if we also added to them the class of flour, oil mills, etc., were, after the large textile industry, the only considerable modern industries in India. The extent of industries in India at this time was extremely limited and it should be noticed that industries in which complicated processes were required were markedly absent.

Turning now to the condition of labour in Indian factories, we find that the Factory Act of 1892 remained in operation till 1912. When the Act was passed in 1892, general satisfaction had been expressed as regards its provisions. Nearly a decade after the passing of the Act a factor was introduced into the hours of labour which could not then have been taken into account. This was the introduction of
great and consequently the hours excessive. The hours of adult male labour were the worst in the smaller up-country centres. These hours were mostly to be found in the cotton industry. The north India centres, namely, Agra, Delhi and Cawnpore, were specially bad. The average hours worked were over 13". In the Calcutta jute industry the hours were not excessive, except for the weavers who sometimes worked a 15-hour day; the hours of children were excessive everywhere and the physique of the factory children compared unfavourably with those outside. But the point most keenly discussed at this time was the regulation of the hours of adult males. The majority of the Commissioners, though they did not recommend a legal regulation on this point, found that the labourers suffered from these excessive hours; and they provided for a regulation of the hours of women and children which, in their opinion, would automatically reduce the hours of men. Dr Nair differed from them on this point. A large portion of the evidence showed the advisability of short hours. The excessive hours were defended, chiefly, on the score of the 'instinctive habit' of the Indian worker to labour during working hours. The evidence showed, however, that the habit was itself a necessary corollary of excessive hours. In this connexion a most interesting experiment was carried out by the Cawnpore Elgin Mills. These men, at the time, worked a 15-hour day, but they found it uneconomical and wasteful. So they brought the hours gradually down to 12 and found that the gross outcome was not diminished, that the men still earned the same pay and that the work was better done. A similar experiment was carried out in the Buckingham Mills in Madras, where the experience of the manager was that 'while they had reduced the working day by three-quarters of an hour (i.e. from 12" to 11") there had been no decrease in the total production'. He attributed this to better machinery, better supervision, and increased application of the operatives. Evidence to the same effect was given by Mr [later

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3 ibid. Evidence of Mr Alexander. The factor of better machinery somewhat vitiated the value of this experiment.
and also a very great portion of the labour force for the Calcutta industries. The chronic shortage was due, in most of these centres, to the conjunction of two factors—very bad working conditions; and very bad housing conditions. The chronic shortage was, then, due to the conditions obtaining in the industry and not to any other factor.

But there was another phase of the question of the ‘scarcity of labour’. This was the periodical scarcity. The only industries which did not feel this periodical scarcity were (i) those in which particular care was taken of the labour supply; or (ii) those which provided kinds of work specially liked by the Indian labourer; or (iii) seasonal industries which did not clash with the busy season of agriculture. The Giridih coal-fields afforded a good example of the first kind. Here special care was taken of labour and there was never any shortage. The same was the case with the Calcutta jute mills which provided good lines for their coolies. Then again, there was never any shortage of labour for railway construction, which was particularly liked by the Indian labourer. The jute pressings industry provides a good example of the third kind; and here also no scarcity at all was felt.

But a periodical scarcity was felt in all the other industries. The period, however, at which the scarcity was felt differed from one place to another. This depended chiefly on the localization of the industry. It is difficult to make a generalization, but it may be said that in an industrial centre surrounded by rural districts from which it drew its labour supply this shortage was felt at the harvest season, while in an industrial centre whose labour supply was drawn from distant districts the scarcity was in the hot weather or the marriage season (both these coincided). Thus shortage in Cawnpore was particularly acute at the time of the movement of the crops; in Sholapur the scarcity was only felt at the harvest season and so also the labour of the coal-cutters, who were generally aboriginal Santhals, was specially scarce during the harvesting and cultivation of their rice crop.\footnote{E. A. Husen, ‘Industrial Development and the Labour Question’, Bengal Economic Journal (April 1919).}

On the other hand, the periodical shortage was felt in both Bombay and Calcutta in the hot weather and marriage season. The first kind of scarcity explains itself. It is obvious here that the labour has not yet severed its connexion with the land. The labourer is still partly an agriculturist; most probably he owns a plot of land or has a share in one, and goes home to assist his family in harvesting the crop. This is a definite and marked stage in the industrial development of every country. This sort of periodical shortage could not be removed until, with the growth of a large industry, a definite factory population was created. Labour in Calcutta and Bombay marks an advance on this stage. The labourer here, at least in Calcutta, is a member of an agricultural family, but he has severed his connexion with the land, in so far as he no longer regularly works on it. Here we have to differentiate between Calcutta and Bombay labour. The Calcutta labourer, who generally came from the United Provinces, did not bring his family with him to Calcutta. Therefore he periodically went home. The severance from the land both of Bombay and Calcutta labour was first induced by the distance from home. In the case of Bombay labour, however, the severance was almost complete; for the Bombay labourer came to the city with his wife and often the whole family would come up to Bombay to work in the factories. But even the Bombay factory worker was not completely an urban worker. He kept up his connexion with his native village, periodically visited his home, and generally retired there in his old age. He also sent his wife for child-birth to his native village. There is no obvious explanation for this. For the labourers do not seem to have any direct connexion with the land. The following are a few extracts from the evidence before the Factory Commission on this point. One witness stated: ‘The elderly men retired to their village and could not return to mill work because their constitution was generally shattered; generally they had not saved anything and had to live by cultivating the soil.’ Another stated: ‘The elderly people retired to their homes when they reached 40 or 45. If they had saved money they followed a small trade, and if not they remained...\footnote{Factory Labour Commission, Evidence of Mr Keluskar.}
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in Bombay and their children kept them." The most reliable evidence, because it is of one of the operatives themselves, gives this: "Very few of the Bombay operatives are settled in Bombay; almost all of us have our homes in本土 and go there once every year or two for a short visit. When a man is too old to work he does not return to Bombay, but passes his old age at home, being helped by remittances sent from Bombay by working members of his family." The reliance on savings or remittances in old age shows that the operative did not own a share in land; he did not go to the country for agricultural work but for a holiday. The severance of this worker, economically, from the land is certainly complete. There must have been, therefore, some strong reasons which prevented the labourer from settling definitely in Bombay; and it seems probable that but for the very bad housing and sanitary conditions in that city a definite, permanently settled factory population would now have been developed there.

The periodical "scarcity of labour" was, then, a natural result of the phase of industrial development through which India was passing, a result which was, however, greatly intensified by the conditions obtaining in Indian industry.3

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CHAPTER IX

Railways and Irrigation

The correlation of the railway systems and the canal systems in India is not the same as in most other parts of the world. Almost everywhere else, they are merely the two branches of a transport system. The commercial revolution in England, finally brought about by the extensive railway construction, was begun by an English system of canals. This was also the case in many Continental countries. In India, however, canals are rarely built for the purposes of transport. Inland water transport in India is carried only on the big rivers, and even on these the parts navigable throughout the year are of a comparatively short length. On the canals, the only systems on which navigation was possible to any large extent were some of those in Bengal and Madras.1 The obvious connexion, then, between the canals and railways did not hold in India.

But they were inter-connected in other ways. Firstly, the Indian Government soon discovered that private enterprise could not be relied on to carry on the work of railway and canal extension in India; so a very important department of the Government—the Public Works Department—took charge of both these works of public utility. This was the work of Lord Dalhousie. Irrigation and railways were again connected in another way. For the original reason given for a rapid extension of both these was the same, i.e. protection against famines; and the respective merits of these two for this purpose was the subject of a very keen controversy, carried on during the last three decades of the nineteenth century.

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The original policy of Government in the construction of railways was the policy of guaranteed companies. The con-

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1 Ibid. Evidence of Mr Nase.
2 Ibid. Evidence of Bhura Bawali (Itali mine).
3 See R. Foley, op. cit., chap, xii. Mr Foley finds that the present state of affairs in Bengal cannot be said to be inconsistent with the conditions of life of the factory operatives and the agricultural classes. This was generally pointed out by the manufacturers as a highly anomalous state of affairs.

1 Except in the deltas of the Krishna and Godavari there is no system of navigation in India, which is of any great advantage to the people. Report of the Indian Irrigation Commission, 1901-3, chap. xvi.