AN INTERNATIONAL SURVEY OF THE COTTON INDUSTRY.

Among the larger industrial changes of the last thirty years few exceed, in importance and interest, the marvellous growth of the manufacture of cotton by machinery. Not only in its original seats, but also in regions where its introduction came much later, the industry has expanded wonderfully. The progress in the several countries has, however, been far from uniform in regard either to its magnitude or to the description and quality of the fabrics produced. Nor are the circumstances under which it has been realized at all alike, nor of similar significance when they are brought to bear upon the problem of the present and future international position. Each case must be separately examined; and we must determine the precise causes of the progress, and whether these have exhausted their force, or are likely to continue, or to be aided or checked by new influences.

But a preliminary question arises. The establishment on a large scale, in recent years, of cotton mills near to the source of the principal raw material, in the American Southern States and in India, and its commencement in China and Egypt have encouraged the assumption that the industry must tend to gravitate more and more to the cotton field. Thus, in his address delivered on 22d October last, as Rector of the University of St. Andrew's, Mr. Carnegie said: "Capital, management, and skilled labor have become mobile in the extreme. The seat of manufacturing is now, and will continue to be more and more, simply a question where the requisite raw materials are found under suitable conditions. Capital and skilled labor have lost the power they once had to attract raw materials: these now attract labor and capital. The conditions are reversed. The cotton industry, for instance, was attracted from Old to New England, and is now attracted from it to the Southern States alongside the raw material."

There is much, no doubt, in a merely extrinsic view of Southern and Indian progress to give a certain strong appearance of probability to the theory laid down by Mr. Carnegie. The facts are before our eyes. Capital and skilled labor *have* been applied on a vast scale to manufacture at the sources of the raw material. But many other things have to be considered before we can conclude that this new phenomenon is to be attributed to the greater mobility, in recent years, of capital and labor. Raw material, too, has become much more mobile. If the cost of transporting raw cotton to the older seats of manufacture were alone to be taken into account, it would appear that there is to-day far more reason for the supremacy of the industry in districts remote from the cotton fields than there was half a century ago. The cost of transport and marketing has been reduced to less than one-eighth of what it was then. To this extent, at least, the raw material has become very much more mobile; but this is not the only consideration, and other factors entering into the problem will receive attention presently.

It is commonly supposed that, in the earlier years of the mechanical spinning and weaving of cotton, Great Britain had for a long time the start before other nations. This belief is not strictly accurate. Machinery was used in both branches almost, if not quite as soon, in the United States as in England. From priority of establishment, therefore, the English industry gained little. Indeed, during the Napoleonic wars, at the end of the eighteenth and in the earlier part of the nineteenth century, when cotton spinning by steam and water power began to be important, the advantage was with the Americans, since they were then, and for a long time afterwards, free from the heavy customs duties on raw cotton and most of the other materials of production — coal, of course, excepted — besides the excise duty on printed cotton goods, which oppressed the spinners and manufacturers of the United Kingdom. Moreover, the brief war of 1812–15 between the States and the old country gave a strong impetus to the American industry. The prices of cotton goods, on the western side of the Atlantic, rose to four times their previous amount; and cotton-spinning mills there were multiplied so excessively that, after the restoration of peace in 1815, many of them were closed, and became for a time almost worthless. In the following year protective duties were imposed, mainly by the influence of the Southern representatives in Congress, for the purpose of reviving and encouraging home manufactures, the cotton industry of the North being mostly opposed to them. Before 1813 steam and water power had been applied only to the spinning branch in both countries, but in that year the first mechanical looms were erected in the United States. Comparatively few were then in existence in Europe, and in 1816 there were but 2,000 power looms in Lancashire.

In Switzerland, France, Germany, and even in Austria, Italy, and Belgium also, the factory system of spinning was developed almost as early as in Great Britain; but weaving by power looms was hardly established in the Continental countries on an important scale by 1830, except in a few particular districts, such as Alsace, the Vosges, Rouen, Elberfeldt, and two or three Swiss cantons. This tardier development of mechanical weaving on the Continent continued long after 1830; and it has had important consequences, as we shall presently see.

Bearing in mind the fact that, regarded as a completely mechanical industry, cotton spinning and weaving had not become thoroughly rooted in Great Britain until towards the close of the first quarter of the last century, one is drawn to the conclusion that at that period it had not gained an appreciable priority in time of its American rival. Its position in 1831–35, in relation to the cotton industries of the Continent and the United States is approximately indicated by a few figures. In those five years the average annual consumption of cotton was:—

	Millions of Lbs	*Per Cent*
United Kingdom	295.2	100
Continent of Europe	142.7	48.3
United States	78.5	26 6

So important had been the progress of the industry in Europe and America between 1820 and 1835 as to prompt the following significant remarks, written in 1836, in the Introduction of Dr. Ure's *Cotton Manufacture of Great Britain:*—

"The encroachment of foreign competition upon the cotton trade of the United Kingdom has become so rapid of late as to excite alarm for its supremacy, under our heavy taxation, in any mind not besotted by national pride. The continent of Europe and the United States of America, for some time after the peace of 1815, possessed factories upon so small a scale that they could not be regarded as our rivals in the business of the world. But now they work up nearly 750,000 bales of cotton wool, which is about three-fourths of our consumption, and have become formidable competitors to us in many markets exclusively our own."

This was written in 1836. Another instance of alarm at the supposed relative decline of the English cotton industry occurred in that year when the Board of Trade (the official Department of Commerce) forwarded to the Manchester Chamber of Commerce a number of samples of various descriptions of cotton piece goods, including prints produced in Germany and Switzerland. These were examined by a committee, of which Richard Cobden, then a director of the Chamber, was a leading member. The report shows that he and his colleagues were deeply impressed by the excellence and cheapness of these productions; and there is conclusive evidence, in a memorial to Parliament which he drafted two years later upon British Customs and Excise Policy at that time, that he had begun almost to despair of the English cotton industry as a competitor with the corresponding industries of the Continent, unless the oppressive fiscal burdens then laid upon it were removed. But even since the advent of Free Trade fears of approaching decline have on a few occasions been expressed more or less loudly.

What is the relative position of the industry in the United Kingdom, the Continent, and the United States to-day, measured by the quantity of raw cotton consumed in each? In the last cotton season — the year ended on September 30, 1902 — the consumption in these three great divisions was: —

	Millions of Lbs	*Per Cent.*
United Kingdom	1,626.5	100
Continent of Europe	2,392.0	147
United States	2,018.5	124

Judged, therefore, by the test of the amount of raw material consumed, Great Britain has fallen from the highest to the lowest position within the last seventy years.

We have unfortunately no trustworthy statistics of the number of spindles at work in each of these divisions during the period 1831–35. The number now at work, however, it is possible to state; and the result of a comparison presents a striking contrast with that just arrived at from the statistics of cotton consumption. Here they are: —

	Cotton-spinning Spindles.	*Per Cent.*
United Kingdom	47,000,000	100
Continent of Europe	33,900,000	72.1
United States	21,559,000	45.8

From this point of view Great Britain again takes the first place, the Continent following second, and the United States third as before, though much more closely in both cases.

The apparent paradox that, whilst still possessing very much more spinning machinery than the Continent or the United States, Great Britain spins very much less cotton than either of them is easily explained. The yarn produced in English mills is by many degrees finer and of higher value than that spun in the mills of the other two regions. English cotton yarn has long been growing finer and finer. This change has been brought about by two or three causes, but mainly it is a consequence of the increase of machinery in countries to which the coarser British yarns and piece goods were formerly sent. Another cause is that the progress of mankind in wealth and refinement has encouraged the demand for superior, more varied, and more tasteful cotton fabrics, requiring for their production finer yarns. For the spinning of these, and in a great degree for the weaving of the superior fabrics, the climate and the training and skill of the managers and work-people, as well as the industrial and commercial organization of the English cotton trade, have proved themselves admirably adapted.

The rapid progress of cotton spinning on the Continent during the last fifty years is to be accounted for, in part, by the great industrial and commercial awakening which followed the settlement of the Franco-German conflict. The new spirit was, of course, most powerful and most effective in Germany. But it pervaded the rest of the nations; and one of its fruits was a larger demand for labor, a rise of wages, and a great uplifting of the material condition of the people. To this were added increase of population and vast improvements in the means of transport, aided by the important easing of the customs tariff restrictions which, before 1860, had impeded international commercial intercourse between the European countries. It is true that after the Franco-German War a powerful Protectionist reaction set in, which became still stronger in 1878, when Prince Bismarck gave it the countenance of his powerful authority. Thirteen years later, however, a more liberal commercial policy supervened, which, under the impulse of German initiation and guidance, resulted in the series of European treaties of 1891. On the whole, notwithstanding some serious backsliding, the customs arrangements of the European States during the last forty years have not entirely lost the impress of the Anglo-French treaty of 1860, negotiated by Richard Cobden. When contrasted with the highly restrictive and, in some respects, prohibitory system previously existing, the régime which has since prevailed has, reactions notwithstanding, been exceedingly favorable to international commerce in Europe.

All these considerations bear with special force upon the question of the great progress of the Continental cotton industry, because its productions are almost entirely consumed within the boundaries of Europe. Of a very few special kinds of cotton goods moderate quantities are sent to other parts of the world, but in relation to the whole they are of trifling account. Regarded in its entirety, the Continental cotton industry must be considered a home-trade industry; and its great expansion within the last half-century must be attributed mainly to the enlargement of the home market.

But there is another contributory cause which is of great significance in estimating the present position and the prospects of the Continental cotton industry. Before 1870 the process of substituting power-loom weaving for the hand-loom method had made relatively very moderate progress in Europe outside the United Kingdom. In the latter the cotton handloom had quite disappeared; and in the United States it survived, as a remnant only, in the mountains of Kentucky and Tennessee and in isolated spots in the Southern States. But among the Continental nations the handicraft weaving of cot ton was widely prevalent, not only as a domestic, but also as a semi-factory system. Within the last thirty years it has been steadily giving way to the power loom, yet it is even now very far from being extinguished. In Russia the number of hand looms weaving cotton goods is still enormous; in Austria there are 40,000 of them; and in Germany, France, Italy, Spain, and the Balkan countries many thousands are at work. Now the effect of the substitution of the mechanical for the hand loom since 1870 on the Continent has been the same as that of the like change in Great Britain which was completed before that year. It reduced greatly the prices of woven goods; and their cheapness, together with the other economic developments already referred to, stimulated the demand for them enormously; and the satisfaction of this enlarged requirement involved the necessity of a much greater supply of yarn. Hence the very rapid addition to the number of spindles and the consumption of raw cotton. Before the Franco-German War of 1870–72 the quantity used by the Continental mills had never reached 800,000,000 pounds. Since then the progress has been almost continuous,— at all events until the season 1898–99, when it was suddenly arrested. The successive upward steps and the movement since 1898–99 are sufficiently indicated by the annexed table: —

CONTINENTAL CONSUMPTION OF COTTON.

Seasons.	*Lbs.*
1872–73	821,600,000
1882–83	1,374,800,000
1892–93	1,846,000,000
1897–98	2,288,000,000
1898–99	2,392,000,000
1899–1900	2,288,000,000
1900–01	2,288,000,000
1901–02	2,392,000,000

Between 1872–73 and 1882–83 the increase was at the rate of 55,320,000 per annum; between 1882–83 and 1892–93, at the rate of 47,120,000 per annum; between 1892–93 and 1897–98, at the rate of 88,400,000 pounds per annum; and last season the increase was 104,000,000 pounds. Thus the highest level was reached three years ago. In considering these figures, it is interesting to note that English textile engineers, who have supplied the bulk of the spinning machinery for the Continental mills, have received exceedingly few orders since 1899, and those chiefly from France, for the equipment of new spinning establishments in foreign Europe. It is further to be observed that at the end of last season the stocks of yarn held in nearly every spinning district of the Continent were very heavy,— a fact which proves that the enlarged consumption of 1901–02 was excessive.

Even the foregoing remarkable figures do not tell the whole story of the extraordinary growth in the consumption of cotton fabrics in Continental Europe during the last thirty years. So great was the pressure of the demand for yarn to supply the steadily increasing number of power looms that much larger quantities of it were imported from England. For the following figures I am indebted to Mr. Thomas Ellison, of Liverpool: —

EXPORTS OF BRITISH COTTON YARN TO EUROPE.

(EUROPEAN TURKEY EXCLUDED.)

Years.	*Lbs.*
1830	56,000,000
1840	91,900,000
1850	90,700,000
1860	116,000,000
1870	93,700,000
1880	96,100,000
1890	123,700,000
1895	127,400,000
1897	121,100,000
1899	104,000,000
1900	79,500,000
1901	78,500,000

These statistics of the Continental takings of cotton and of English yarn are highly instructive in so far as they illustrate the economic progress of the European populations since 1872. They afford, of course, no means of discovering how much of the increase is to be attributed to each of the several stimulating influences previously mentioned. The halt which occurred after 1898–99 excites inquiry as to its causes. In part, no doubt, it is explained by the German and Russian financial troubles and the consequent depression of trade throughout the greater portion of the Continent during the last two years. I am inclined to think, however, that the arrest of the progress three years ago is largely due to the diminished force of the special stimulus springing from the substitution of power for hand looms. If this be a correct opinion, it warrants the expectation that, in the absence of any new impulse, the increase of cotton spinning on the European Continent will be very much slower in future than it has been during the last thirty years.

But a further question confronts us. May not the check to the increase in the *weight* of cotton and yarn consumed be due very much to the same cause as that to which the same feature in the British consumption is to be ascribed,— namely, the spinning and weaving of finer counts of yarn? Undoubtedly, more fine yarn is being spun, in Germany and France at least, than in 1880; but in spite of the customs tariffs of these countries, in respect of cotton yarn, being especially designed to encourage the production of the finer numbers, climatic and other difficulties have so far prevented any extension of this branch of the industry at all comparable to that which has been accomplished in the spinning of the lower and medium counts. It is certainly true that the average fineness of the yarn shipped from England to the Continent is very much higher than it was twenty-five years ago. Indeed, it is a common expression amongst Manchester merchants engaged in this trade, "The Continental demand for low counts is gone."

Within the last two years the erection of new cotton spinning machinery on the Continent has greatly diminished. During 1902 the total number of spindles remained unaltered or was but slightly augmented in every country, except France; and even there the increase was only about 200,000. In part, no doubt, and perhaps greatly, the arrest of progress thus indicated must be traced to the German financial crisis of 1900, and the consequent depression of trade there and in surrounding States, as well as to the contemporaneous financial and industrial troubles in Russia. But, since the rapid expansion of spinning capacity between the years 1880 and 1900 was undoubtedly due very much to the substitution of power looms for hand looms, it is a reasonable inference that, even after the effects of the financial disturbances have passed away, the rate of progress will diminish.

Assuming that the force of this special and incidental impetus to the Continental cotton-spinning industry is now becoming spent, a further question arises. Is it not probable that the production of the spindles and looms of some at least, if not all, of the Continental nations will begin to compete seriously in the extra-European markets? All that can be said on this subject at present is that there is no obvious reason why it should do so, apart from some kind of State aid or the pressure of temporarily overstocked home markets. To one or other of these adventitious forms of assistance the export of an appreciable proportion of the Continental cotton goods now finding their way into neutral markets must be ascribed. This fact is of itself highly significant; for it shows that, although there are a few special descriptions which can be exported in open competition and under natural conditions to such markets, the prevailing circumstances are not at all extensively favorable to the creation of an important export of cotton manufactures from the European countries, in competition with England, not to speak of the United States, to which attention must now be directed.

Writing upon the United States cotton industry mainly for American readers, I am conscious of approaching the subject with some diffidence. Yet, having gathered much information about this and other American economic questions by long observation, by strong sympathy with the American people, and by conversation and correspondence with well-informed citizens, I hope I may be found reasonably free from important error.

The chief interest of the progress of the American cotton-mill industry in recent years lies in its amazingly rapid growth in the Southern States. Before the Civil War of 1861–64 there were very few mills in that section of the country. For well-known social and economic reasons organized manufacture could not flourish in the midst of slavery. Yet in the year 1847–48 their consumption of cotton was 75,000 bales against 532,000 bales in the North, and in 1860–61 it was 193,000 bales against 650,000 bales. Now comes a remarkable fact. In the latter year, just before the war broke out, one-half of the population of the Southern States — that is to say, about 5,000,000 people — were clothed in hand-woven cotton goods. In 1870, five years after the war, not less than 3,500,000 were thus clothed. These are the estimates of my friend Mr. Edward Atkinson, of Boston,— than whom, I believe, there is no higher authority,— founded upon extensive correspondence and conversation with many old planters, merchants, and other well-informed persons in the South, and confirmed by his own abundant knowledge. In 1880 there was still a considerable remnant of this domestic manufacture in the mountains of Kentucky and North Carolina, where it had long been extensively carried on. It was the last survival of a handicraft industry once prevailing throughout the States, and from that region the labor force of the Southern cotton-mills was drawn for many years after the war. The people, all whites, having acquired the deftness necessary in the handling of threads, supplied a suitable class of operatives for the mills. These, however, did not increase very rapidly until 1879. Since then their progress presents one of the most remarkable incidents in the history of the world's cotton trade during the last twenty years.

This marvellous development may be traced to a concurrence of forces. Until 1875 the spinning mills were largely engaged in producing yarn, partly for the hand looms of the South, then gradually disappearing, and partly for the power looms which were superseding them, and were requiring more and more liberal supplies. According to the census of 1879–80 there were 12,360 power looms in the Southern mills. But in 1900–01 the number was 122,902, and it is considerably greater now. Within the same interval of twenty-two years the number of spindles in the South increased from 561,360 to 5,819,-835. The rate of expansion was thus almost equal in the two departments. But the substitution of machine for hand-loom goods was probably all but completed between 1885 and 1890. This operation brought with it as a consequence, just as it did in Europe, reduced prices of cloth and an enlarged consumption, which was further promoted by the great growth of population, owing partly to natural increase and partly to immigration from the North. But within the last fifteen or twenty years another and a very important new field of distribution for Southern cotton goods has been opened out in Eastern Asia and elsewhere abroad. Still further, the cloths made in the South, which are of coarse texture, have competed increasingly in recent years with the production of the New England manufacturers, compelling them to devote their attention more and more to the finer and more highly finished descriptions, which are not yet made in the South.

The deliberate opinion of Lancashire manufacturers who within the last twelve months have visited the United States for the purpose of investigating the cotton industry is that they have nothing to fear from the competition of the North. In the South, however, one item in the cost of production — that of labor — threatens, they think, rather seriously not only their own — the Lancashire — position, but also that of the manufacturers of the Northern States. The rates of wages in relation to the quantity produced are not more — comparing the same classes of goods — than from one-third to one-fourth of those prevailing in Lancashire and in New England, which are approximately the same, although often the North American *piece-rates* of wages are slightly lower than the English. How is it that in one part of the same country a sufficient supply of labor can be obtained at piece-work rates so greatly below those paid in another part? The answer is highly interesting. Some of the workers have come, as already stated, from the mountain districts of Kentucky and North Carolina, where they formerly made a scanty living by hand-loom weaving, eked out perhaps by the cultivation of the soil on a small scale. Others are drawn from the families of poor farmers who have settled in the South since the war. In both cases the remuneration offered in the mills was so much better than their previous scanty earnings as to induce them to adopt the more remunerative calling. There is good reason to believe, however, that this disparity of labor cost cannot be very long maintained. The scarcity of adult work-people has become so urgent that the working force of many mills consists, to an astonishing extent, of little children of eight to ten years old.

Immature labor of this kind cannot be very long continued. Nor is it likely that rates of wages so greatly below those prevailing in the North can remain unaltered for any considerable time. I am told, moreover, by visitors to the States who have returned to England within the last month that the cotton manufacturers of the Northern States entertain no serious apprehensions with regard to the permanence, or at any rate the increase, of Southern competition.

But there is apparently another contributory cause of the extraordinary spread of cotton-mills in the South. Far more extensively than in the North the employment of the new "automatic" loom prevails there. Calling for less labor, attention, and skill on the part of the operative, the American type is very well suited to the kind of weaving characteristic of the South. These machines, employed upon such work, go far towards justifying their descriptive name; and a single weaver is able to look after three times as many of them as of the ordinary loom. Hence the labor cost of each piece of cloth is enormously reduced.

Upon one important difference between American and English methods of weaving some discussion is just now going on in Lancashire. In this country cotton looms are run at a speed averaging from 15 to 20 per cent. higher than in the United States, yielding therefore a larger production, at the expense, however, of greater strain upon the yarn, more frequent breakages of threads, and stoppages of the machine. The question is whether or not it would be better to reduce the speed so as to enable the weaver to take care of more looms. The lessened product per loom would of course involve increased cost of production for fixed charges; but this might be more than compensated by lowering the piece-rate of wages without any loss of earnings to the weaver, who would increase his individual output by being able to tend a larger number of looms without additional exertion.

The main interest of the subject of American competition with British cotton manufactures centres in foreign and colonial markets. There can be no doubt that to some of them certain descriptions of American goods are going in increased quantity. We know, moreover, that in one market, that of

China, sheetings, drills, and jeans from the United States have, within the last ten years, taken a larger place than British makes of these classes.*

One cause of this change has recently been practically removed,— the very much higher freights charged for the carriage of goods to Shanghai from British ports than from New

* *Editor's Note* The following figures are instructive in this connection:—

COTTON IMPORTS INTO SHANGHAI FROM FOREIGN COUNTRIES AND HONG KONG.

DRILLS.

	English.	Indian.	Dutch	American	Japanese	
1891, pieces . .	270,847	155	28,450	856,485	n.m.	p. 215
1892 " . .	151,154	420	34,680	621,882	n.m	p. 213
1893 " . .	426,768	10,261	63,120	422,190	n.m.	p. 224
1894 " . .	256,262	2,670	101,185	720,084	11,606	p. 231
1895 " . .	268,811	16,855	84,657	586,983	11,205	p. 267
1896 " . .	201,618	39,849	83,850	1,214,577	8,941	p. 243
1897 " . .	76,202	11,243	25,862	1,531,647	1,250	†
1898 " . .	146,343	2,258	10,710	1,298,986	916	p. 249
1899 " . .	143,812	4,568	29,490	1,607,560	1,180	p. 299
1900 " . .	132,420	7,430	37,394	825,521	n.m.	p. 285
1901 " . .	91,710	1,049	30,450	1,639,113	.40	p. 300

SHEETINGS.

	English	Indian.	Dutch.	American	Japanese	
1891, pieces	845,144	20,510	13,620	2,008,686	n m.	p. 215
1892 " .	648,825	45,905	16,770	1,302,695	n.m.	p. 213
1893 " .	728,825	93,690	23,520	903,335	n.m.	p. 224
1894 " .	470,123	93,982	8,240	1,287,397	10,871	p. 231
1895 "	640,765	80,100	5,036	888,773	2,591	p. 207
1896 " .	1,123,802	157,111	1,040	2,246,032	21,625	p. 243
1897 " .	389,569	23,700	—	2,418,971	24,744	†
1898 " .	617,292	16,520	—	2,472,035	7,281	p. 249
1899 " .	866,332	42,192	n.m.	3,960,037	24,640	p. 299
1900 " .	701,068	43,323	1,500	2,292,606	17,829	p. 285
1901 " .	434,401	2,620	1,262	2,827,804	1,205	p. 300

—*From the Imperial Maritime Customs, China. Returns of Trade and Trade Reports*, year and page as above.

† From M. von Brandt, *China und seine Handelsbeziehungen*, *u s w*, Berlin, 1899, s 183.

York. Another cause is the excessively low labor cost of production in the American Southern States. It is the production of these very classes of manufactures, so extensively produced there, which has gone to swell greatly in recent years the exports from America to China. The cure for this particular inequality is simply a matter of time; for it can only come about by the play of economic forces which, though slow, are sure.

Before attempting to summarize salient points in the British position, it is desirable to refer to the machine cotton industry of the East, of India, Japan, and China, where the conditions are widely different from those of the European and American industries. The manufacture of cotton began in Asia, whence it was brought to Europe in its handicraft state. Within the last half-century Europe has given it back to Asia as a machine industry. The first Asiatic cotton-mill was established in the island of Bombay in 1851. It contained 26,000 spindles, and no looms. In 1871 the number of spindles in all India was about 430,000, and there were 5,575 power looms. Twenty years later (in 1891) the number of spindles had reached 3,250,000, and of looms 23,000; and now there are about 5,000,000 spindles and 41,000 looms. In the United Kingdom the number of cotton spindles is approximately 47,000,000, and of looms 750,000; that is to say, one loom for every 62.6 spindles. In India the proportion is one loom to 122 spindles. The difference is significant, because it shows that machine spinning has made much more rapid progress in India than machine weaving. The old spinning-wheel has not quite disappeared, but it is very nearly extinguished; and yet there are countless numbers of wooden hand looms still at work in nearly all parts of the country, resisting alike the competition of the coarse productions of the native mills and of the finer goods imported from England. The records of the Indian government may be searched in vain for definite statistics of the handicraft weaving industry, but the census returns of the occupations of the people and the famine reports supply information enough to show that hand-loom weaving is still carried on to a vast extent in every province. In a statement issued by the India Office in 1885 it was estimated that not less than

84 per cent. of the 1,011,815 pounds of raw cotton grown in the Punjab was spun and woven there in the homes of the people. But, undoubtedly, the Indian mills were for many years after their inception engaged mainly in displacing the old indigenous handicraft industry; and the process is still going on, though now very slowly.

But within the last twenty-five years the product of the Indian spinning mills has found a very large outlet in other parts of Asia, especially in China. In the year ended March 31, 1880, the total export of Indian yarn was 25,862,474 lbs., of which 22,567,297 lbs. went to China. In 1899–1900 the total amount was 240,693,027 lbs., of which the proportion taken by China was 231,570,757 lbs. Within twenty years the outside demand for Indian cotton yarn was multiplied more than 9½ times, and the China demand more than 11 times. The political disturbances in the Far Eastern Empire have so greatly interrupted its foreign trade during the last two years that the statistics of this trade since 1890 are not instructive for the present purpose. It is quite clear, however, that the Indian cotton-spinning industry owes its remarkable progress quite as much, to say the least, and probably more, to the great opening for its product in China than to the enlargement of the market in India. The yarn was wanted there, of course, because it was very much cheaper and better than the old hand-spun yarn made from Chinese cotton, which is weak and short in staple, and can be spun by hand only at great cost.

India has never sent to Japan any considerable quantity of yarn. In 1879–80 the amount was 1,814,090 lbs., and in 1899–1900 only 180,000 lbs. But in Japan a very extensive cotton-spinning industry has arisen, which is also largely engaged in supplying the China market. The number of spindles in the Japanese mills is now about 1,250,000, one-fourth of the capacity of the Indian establishments; and Japanese competition has arisen in spite of the fact that the greater part of the raw material which they use is imported from India itself. To a large extent Japanese yarn is used to supply the native hand looms of Japan, for there are few power looms yet in Japan; but much of it is sent to China, where it is welcomed as a rival to the Indian product. But in China itself an attempt has been made, within the last eight years, to establish a cotton-spinning mill industry, mainly by Europeans, who argued that, if India and Japan could find so large a market for their yarn in China, there must be room for a spinning industry there. The result of this new departure has not been at all encouraging. Chinese cotton is of poor quality; and it is by no means certain that, even if it could be improved, native labor would be found anything like so efficient as is that of India or Japan. The total capacity of the cotton-mills of China is probably not more than 700,000 spindles; and the capital invested in them has, on the whole, proved so unprofitably employed that no extension is now going on, and none is contemplated.

Reverting to the Indian cotton industry, it must be observed that the consequences of its creation have been very important from an international point of view. One of its earliest results was to substitute machine-made yarn and cloth for the handicraft product within the country itself. In this respect it followed precisely the course observable in all countries where cotton-mills have taken root. But it would be a great mistake to suppose that the ancient domestic cotton weaving of India, or even the employment of the hand spinning-wheel, has disappeared. On the contrary, there is abundant evidence, as already stated, that hand-loom weaving is still carried on very extensively indeed in certain provinces. The next result was the supply, on a very extensive scale, to other parts of Asia, and particularly to China, of cheap and good Indian yarn for the consumption of the native hand looms. The current in this last-named direction has been seriously disturbed within the last two years by political events in China, and the proprietors of the Indian mills have had to pass through very trying times. Their ill-fortune has been greatly aggravated by deficient rainfall in India and a serious reduction in the supply of cotton. For these reasons many of the Indian spinning companies have had to face serious losses; and a few of them have been forced into liquidation, prominently some of the Bombay companies, whose production has hitherto gone chiefly to China.

Briefly stated, the conclusions to which I have been brought by a careful study of the machine cotton industry in Asia are: (1) that, although wonderfully rapid during the last thirty or forty years, it has not only been extensively engaged in substituting machine for handicraft production, but also in displacing English imports of coarse yarn; (2) that the progress has not gone very far at the expense of the hand-loom weaving branch, which is still able to hold its ground very successfully, notwithstanding the establishment of about 43,000 power looms in India and China, whilst Spain, one of the most backward countries in Europe industrially, possesses nearly 70,000; (3) that there is no present prospect of either India, Japan, or China being able to compete successfully with the European and American cotton industry in the production of the finer yarns and the higher qualities of piece goods; and (4) that the main hope of India and China in this field lies in the gradual disappearance of handicraft manufacture, in which, however, there are great possibilities of expansion, but always within the limits of the coarser and cheaper qualities. Perhaps some exception to this last statement should be made in the case of Japan, whence some excellent specimens of woven goods have already made their way into the markets of the Far East. In Japan, however, the power loom has as yet made very little progress, most of the piece goods produced there being made in hand looms.

There remains the question how far the extraordinarily rapid development of the machine cotton industry has affected, and is likely to affect, the demand for European and American — particularly English — cotton goods and yarns in Asia. It is quite certain that the imports into India, and also into China and Japan, of the coarser counts of English yarn, have greatly fallen off within the last twenty years. The supply of the finer English spinnings to all these countries is, however, fairly well maintained; and the following figures show that the imports into India of all kinds of cotton yarn are still on the whole considerable, and that the decrease within the last ten years, though great, has not been alarming, in view of the persistence of plague and famine since 1899: —

IMPORTS INTO INDIA OF COTTON YARN.

Year ending March 31.	Lbs	Year ending March 31	Lbs
1890	46,382,525	1900	42,621,854
1891	50,970,950	1901	34,803,334
1892	50,404,318	1902	38,299,409
Annual average	49,252,598	Annual average	38,574,856

The imports of piece goods into India have actually increased within the decade, notwithstanding the depression occasioned by the plague and the successive famines. The extent of the increase is shown in the following table:—

IMPORTS INTO INDIA OF COTTON PIECE GOODS.

	Yards.		Yards
Gray			
1890	1,257,001,362	1900	1,274,912,153
1891	1,280,539,631	1901	1,192,173,060
1892	1,173,176,482	1902	1,186,764,255
Annual average	1,236,905,825	Annual average	1,217,949,822
Bleached			
1890	339,098,094	1900	444,546,485
1891	373,148,661	1901	467,482,379
1892	361,394,837	1902	580,088,497
Annual average	357,880,530	Annual average	497,371,120
Colored			
1890	400,949,291	1900	471,884,268
1891	360,335,370	1901	343,164,775
1892	348,116,680	1902	422,860,841
Annual average	369,800,447	Annual average	412,636,628
All Kinds			
Annual Average.		*Annual Average*	
1890–92	1,964,586,802	1900–02	2,127,957,570

Increase in 1900–02, 163,370,768.

It is evident that, in spite of the disastrous experience of India during the last three years, and of the efforts of the Indian mills to find outlets in the Dependency itself for the surplus production, enforced by the partial loss of the China market, English cotton goods have not ceased to make their way in greater quantity to India, where also certain kinds of American goods are used, though not in large quantity.

Occasional reference to the progress and condition of the British cotton industry has already been made, at some length, in the preceding portion of this survey. It remains to state the writer's view of it more fully in a general summary of the international position. The spinning and weaving of cotton in Great Britain by modern machinery began under very adverse circumstances. Prolonged and devastating war, profuse national expenditure and all its consequences, heavy taxation and other exhausting sacrifices, prohibitions and fiscal barriers to international trade in other countries, poverty amongst the English people, and scanty capital in the hands of manufacturers were the attendants of its birth and its years of youth. All these obstacles it survived, although the raw material of the industry was entirely brought from distant lands. In spite of all these seeming obstacles the industry rapidly rose to the foremost position. The later progress of the industry in other countries has practically extinguished most of the branches of business upon which its earlier success was founded. Nevertheless, it has continued to increase, and is still increasing. Foreign competition, resulting from natural development or from artificial protection, has impeded, but it has not stopped, its progress; and there is no evidence of its decay or decadence. It has the advantage of a highly favorable climate in Lancashire, a well-trained and industrious body of work-people, directed by experienced management, and supported by an admirable commercial organization which embraces every market in the world. Added to these favorable factors, it has a fiscal system which enables it to obtain all the materials and accessories required in the industry at the lowest possible prices,—lower, indeed, on the whole, than its competitors in other countries can command. Its principal raw material has to be brought from sources thousands of miles away, and yet this important disadvantage has been enormously lessened since it was established. Free competition is its accustomed atmosphere; and, in spite of hostile foreign customs duties upon its productions, it still survives and grows. Whatever future changes may occur, therefore, to help or hinder its course, there is no reason to doubt, still less to despair, of its future, so long as it is allowed to enjoy the benefits of Free Trade.

The obstacles to the prompt adoption of improvements in machinery and methods which arise in a few British industries from labor organizations are not likely to seriously impede their introduction into the British cotton manufacture. For the most part, wages are paid on a piece-work basis; and there is no restriction upon output other than that imposed by the Factory Acts. There are, of course, always questions of adjustment of the piece-work rates whenever new machines are brought in which increase the amount of production whilst lessening the call upon the labor or attention of the work-people. These are settled, usually, on the principle of dividing the pecuniary advantage of the improvement between employer and employee. At the present moment a question of this kind has arisen in connection with "automatic looms," the use of which is only now becoming a practical consideration in Lancashire cotton-mills. The weavers' trade-unions have fully recognized the necessity of adopting one or more of the various inventions connoted by the term "automatic loom," and they are aware that the economy resulting from their employment must be shared by the proprietors of the mills. The proper apportionment of the advantage will no doubt give rise to serious discussion and, it may be, to some conflict; but there is nothing in the disposition of the two sides to justify the least fear that this will impede the introduction of this or any other improvement in the processes of the industry.

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