Lesson 2

Student Handout 2.1—Beginnings in Britain: What Were the Main Characteristics?

It was the cotton industry in Britain that led the way towards the revolutionary changes in the technology and organization of industrial production from which ripples of change spread far beyond industry.

The use of machines in British cotton production began as early as the 1730s, though it was not until fifty years later that the machines in the cotton industry became steam-powered. By the early nineteenth century, most spinning was done by machines and in factories. This production method was expensive, but profitable. Robert Owen, a shop assistant, started his first cotton factory in 1789 with a borrowed 100 pounds, which at the time equaled half a year's income or more for 95 percent of Britain's population. Twenty years later, he bought out his partners in another of his factories for 84,000 pounds.

During those years, mechanization produced major changes. The use of steam-driven machines, which could do in three hours the work it took a hand spinner to do fifty hours, had become widespread. Invention of the cotton gin in 1792 increased the amount of cotton a slave could clean in a day from one to fifty pounds, thereby increasing the profits on cotton. Steam power fueled the demand for more slaves to work in the American South's plantation economy, and it benefited the British cotton industry by increasing the availability and reducing the price of its raw material.

Because weaving took longer to become mechanized, handloom weavers enjoyed for a while more work and higher wages. There were about a quarter of a million weavers in Britain in 1800. Around 1815, power-weaving using steam-driven machinery became common. By the 1830s, handloom weavers' wages had dropped by 60 percent. The cost of a piece of cotton cloth fell from forty shillings to five shillings, and cotton textiles made up 22 percent of Britain's entire industrial production. Foreign sales became essential: four pieces of cotton cloth were exported for every three sold at home. Cotton goods rose from 2 percent of British exports in 1774 to over 60 percent by 1820.

Demand for cotton cloth in Britain was high, based on early acquaintance with imports from India. In the 1730s, the government filled the demand with expanded home production by banning the import of cotton textiles from India and then charging an import tax of up to 71 percent of its value on imported Indian cotton cloth. The tax on cotton goods Britain exported to India was negligible or non-existent. What had been one of the world's leading cotton industries in India was virtually ruined by the mid-nineteenth century. In 1816, India exported 1.5 million pounds worth of cotton goods. By 1850, instead of exporting, it imported 4 million pounds worth of cotton goods from Britain. The Indian cotton industry partially recovered in the late nineteenth century after the British government abandoned protectionist policies, and by 1914 India was the world's fourth largest cotton manufacturer.

The following gives some idea of the changes in the country that was the first to experience industrialization:

1750. Britain's population was some seven million. An estimated 80 percent of them lived in settlements of under 5,000 inhabitants. Sixty to seventy percent of the population worked in agriculture, forestry, and fishing. The country was exporting surplus grain, and all the raw materials needed by its industries were supplied from within the country. Britain accounted for less than 2 percent of global production.

1800. The population was some 9 million, of which about three-quarters lived in the countryside rather than towns or cities. About 25 percent of the population worked in agricultural occupations, and, except in years of exceptionally poor harvests, enough food was produced at home to feed all the country's people. The bulk of British exports had shifted from the traditional wool to cotton. Halfway between 1800 and 1850, wages for unskilled labor in industry were 65 percent higher than for unskilled labor in agriculture. And the population of industrial towns increased by as much as 40 percent during only one decade. The normal workday in well-regulated textile factories with high employment of women and children was twelve to thirteen hours a day.

1850. The population had doubled in a century, with about half living in cities. About a third of the labor force worked in partly or wholly machine- and steam-driven industries (textiles, mining, metals, machinery, railways, shipping), though some hand- and water-powered textile machinery was still in use. Also, more people still worked in agriculture than in any other occupation. A ten-hour maximum workday was legislated for women in factories. But seventy hour-plus workweeks continued in unregulated sweatshops when business was good, and workers were let go in most occupations when business was bad. Textile factories were not alone in demanding long hours. Engineers and iron-founders, for instance, worked sixty-three hour weeks year round. The national standard of living had doubled overall during the century. But significant segments of the population were much worse off, higher incomes came at the cost of longer and harder work, and the insecurity of lay-offs stalked working people even when employed.

1900. About 75 percent of the population lived in cities. Only 9 percent worked in agriculture, forestry, and fishing. Britain had to import almost half its food supply, and all or part of every raw material needed by its industries except coal. Only about a third of the labor force worked in occupations that were not fossil fuel-based. The largest numbers were employed in domestic service (virtually all women), in administration, government, and the professions (exclusively men). Britain, with 3 percent of the world's population, both produced and consumed about 25 percent of the entire fuel energy output of the world. It was the world's largest trader, and it accounted for over 25 percent of global production.

Sources: David Christian, *Maps of Time* (Berkeley: University of California Press, 2004), 405, 409; Phyllis Deane, *The First Industrial Revolution* (Cambridge: Cambridge UP, 1979), 14, 90-1, 97, 206, 222; Donald Hughes, *An Environmental History of the World* (New York: Routledge, 2001), 123; Jack A. Goldstone, "Efflorescences and Economic Growth in World History" (*Journal of World History*, 13, no. 2, 2002), 364; Angus Maddison, *The World Economy* (Paris: Organization for Economic Cooperation and Development, 2001), 96, 116; Peter Mathias, *The*

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Student Handout 2.4—People Who Lived It Speak

An American visitor's description of the industrial town of Manchester, England in 1835:

> Thirty or forty factories rise on the tops of the hills I have just described. Their six stories tower up; their huge enclosures give notice from afar of the centralization of industry. The wretched dwellings of the poor are scattered haphazard around them. ... The fetid, muddy waters [of the stream are] stained with a thousand colors by the factories they pass. ... These vast structures keep air and light out of the human habitations which they dominate. ...

A skilled worker in France writing in a workingmen's journal, 1842:

> Who has not heard ... of the women ... in the spinning and weaving factories of eastern and northern France, working fourteen to sixteen hours (except one hour for both meals); always standing, without a single minute for [rest]. ... Nor should we neglect to mention the danger that exists merely from working in these large factories, surrounded by wheels, gears, enormous leather belts that always threaten to seize you and pound you to pieces. ...
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> [Women] are obliged to abandon their households and the care of their children to indifferent neighbors. ... If the salary of the male worker were generally sufficient for the keep of his family—as it should be—his wife [could stay at home and look after the household and children.] ... We are convinced that this cannot be achieved without [trade unions].

A Scottish merchant's daughter and abolitionist writing in her book, *A Plea for Woman*, 1843:

> Woman's sphere is a phrase which has been generally used to mean the various household duties usually done by her; but this is using the phrase in a very limited sense. ... Taking the phrase in its proper sense, we believe that the best and noblest of women will always find their greatest delight in the cultivation of the domestic virtues. ... Yet we are quite unable to see either the right or the reason which limits her to those occupations and pleasures. ...
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> If all woman's duties are to be considered as so strictly domestic ... what are we to think of the ... thousands upon thousands of unprotected females, who actually prefer leaving their only proper sphere, and working for their own subsistence—to starvation?
>
> It may be said that this is ... a pity, but cannot be entirely avoided. ... [However,] is it fair to perpetuate those absurd prejudices which make it next to a certain loss of caste for any woman to attempt earning an honest and independent livelihood for herself?

A German industrialist writing about England in his book *On the Obstacles in the Civilization ... of the Lower Classes*, 1844:

> Crises of oversupply [occur] at ever shorter intervals [and] wages fall below subsistence level. ... Workers have often tried ... to defy the capitalist, by agreeing not to work below a certain rate of pay.
>
> Usually wasted effort! Capital finds it easier to turn elsewhere and can hold out longer, while the worker is forced to yield at any price in order to live. His limited training and habits do not permit him to transfer to a new trade with new conditions. Large cities are usually the home of such industries as make the State richer and the populace poorer. They cause a race to grow up which ... dissipates the earnings of yesterday in the tavern to-day with no thought of the future; [marries on impulse] or lives in sin, and ... rapidly sinks into misery. ... We demand of the State that it shall not only govern but shall intervene with help. ...

Sources: I. G. Simmons, *Changing the Face of the Earth* (New York: Basil Blackwell, 1989), 205; Susan Groag Bell and Karen M. Offen, eds., *Women, The Family, and Freedom*, Vol. I (Stanford: California UP, 1983), 205-7, 195, 198; Friedrich Klemm, *A History of Western Technology*, trans. Dorothea Waley Singer (Cambridge, Mass.: The MIT Press, 1964), 305.

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Student Handout 2.5—By-Products of the Industrial Revolution

A British Member of Parliament writing to the Viceroy of India, 1849:

> If we could draw a larger supply of cotton from India it would be a great national object. ... It is not a comfortable thing to be so dependent [for cotton] on the United States. ... If we had the Bombay railway carried into the cotton country, it would be a [big help, since bullock carts travel at only 16 kilometers a day and the cotton bales get ruined by rain and dust.]

Report of an English administrator to the Colonial Office, 1869:

> Railways are opening the eyes of people who are within reach of them in a variety of ways. They teach them that time is worth money ... that speed attained is time, and therefore money, saved or made. They show them that others can produce better crops or finer works of art than themselves, and set them thinking why they should not have sugarcane or brocade equal to those of their neighbours. They introduce them to men of other ideas, and prove to them that much is to be learnt beyond the narrow limits of the little town or village which has hitherto been the world to them.

Summary of laws relating to public health passed in British Parliament by 1875:

> Vaccination of babies was made compulsory. Local authorities were ordered to cover and keep sewers and drains repaired; to ensure that people had enough pure water available; to clean streets and collect garbage; to provide street lighting; to buy and demolish slum housing if owners did not keep it in good repair; and to appoint sanitary inspectors.

After the formation of the German Social Democratic Party in 1875, German Chancellor Bismarck introduced legislation whereby the state insured workers against sickness and accident, and provided old age and disability benefits. He stated:

> Give the working-man the right to work as long as he is healthy ... assure him care when he is sick; assure him maintenance when he is old. ... I believe that [our democratic friends] will [pipe] in vain [trying to attract voters to their program] as soon as working-men see that the Government and legislative bodies are earnestly concerned for their welfare.

Report by a British Member of Parliament to the Colonial Office, 1887:

> In the postal and telegraphic services the empire of our Queen possesses a cohesive force which was utterly lacking in [earlier empires]. Stronger than death-dealing war-ships, stronger than the might of devoted legions, stronger even than the unswerving justice of Queen Victoria's rule, are the scraps of paper that are borne in myriads over the seas, and the two or three slender wires that connect the scattered parts of her realm.

Statement of goals adopted at a Party Congress of the German Social Democratic Party, 1891:

> With the extension of the world's commerce and of production for the world market, the position of the worker in every country grows ever more dependent on the position of workers in other countries. ... The Social Democratic Party of Germany ... combats, within existing society, not only the exploitation and oppression of wage earners, but every kind of exploitation and oppression, whether directed against a class, a party, a sex, or a race.

Sources: Daniel R. Headrick, *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850-1914* (New York: Oxford UP, 1988), 60, 97-8; Michael Adas, *Machines as the Measure of Men* (Ithaca: Cornell UP, 1989), 226; William M. Frazer, *A History of English Public Health: 1834-1939* (London: Baillière, Tindall, and Cox, 1950), *passim*; William H. Dawson, *Bismarck and State Socialism: An Exposition of the Social and Economic Legislation of Germany Since 1870* (London: Swan Sonnenschein, 1890), 34-5; Bertrand Russell, *German Social Democracy* (New York: Simon and Schuster, 1965), 139.