

## I. The Industrial Revolution in Great Britain

**A.** The Industrial Revolution began in Great Britain in the 1780s for several reasons.

**B.** Improved farming methods increased the food supply, which drove food prices down and gave families more money for manufactured goods. The increased food supply also supported a growing population.

**C.** Britain had a ready supply of **capital**—money to invest—for industrial machines and factories. Wealthy **entrepreneurs** were looking for ways to invest and make profits. Finally, Britain had abundant natural resources and a supply of markets, in part because of its colonial empire.

**D.** In the eighteenth century Great Britain had surged ahead in the production of cotton goods. The two-step process of spinning and weaving had been done by individuals in their homes, a production method called **cottage industry**.

**E.** A series of inventions—the flying shuttle, the spinning jenny, and the water-powered loom invented by Edmund Cartwright in 1787—made both weaving and spinning faster. It was now efficient to bring workers to the new machines in factories. Cottage industry no longer was efficient.

**F.** The cotton industry became even more productive after the Scottish engineer **James Watt** improved the steam engine in 1782 so it could drive machinery. Steam power was used to spin and weave cotton. Steam-powered cotton mills proliferated throughout Britain. The steam engines used coal. Mills no longer had to be located near water.

**G.** By 1840 cotton cloth was Britain's most valuable product. Its cotton goods were sold all over the world.

**H.** The steam engine drove Britain's Industrial Revolution, and it ran on coal. This led to the coal industry expanding. The coal supply seemed unlimited. Coal also transformed the iron industry. Iron had been made in England since the Middle Ages. Using the process developed by Henry Cort called **puddling**, industry produced a better quality of iron. The British iron industry boomed. In 1740 Britain produced 17,000 tons of iron. Cort's process quadrupled production, and by 1852 Britain was producing almost 3 million tons of iron annually.

**I.** Since they were an efficient way to move resources and goods, railroads were crucial to the Industrial Revolution. The first railroads were slow, but they developed rapidly. The *Rocket* was used on the first public railway line, which opened in 1825. The 32-mile track went from **Liverpool** to **Manchester**, England. The *Rocket* pulled a 40-ton train at 16 miles per hour.

**J.** Within 20 years trains were going 50 miles per hour, an incredible speed for its time. By 1850 Great Britain had 6,000 miles of track. Building railroads was a new job for farm laborers and peasants. The less expensive transportation lowered the price of goods and made for larger markets. More sales meant more demand, which meant more factories and machines. This regular, ongoing cycle of economic growth was a basic feature of the Industrial Revolution.

**K.** The factory was another important aspect of the Industrial Revolution because it created a new kind of labor system. To keep the machines going constantly, workers had to work in shifts. Factory owners trained the rural laborers to work the same hours each day and to do repetitive work. One early industrialist said his goal was “to make the men into machines that cannot err.”

### Discussion Question

Eighteenth- and nineteenth-century factories used a great deal of child labor. Social reformers changed the practice in part because children were not able to attend school if they worked long hours. At what age is it all right to let people less than 18 years of age work?

## II. The Spread of Industrialization

**A.** Britain became the world's greatest industrial nation. It produced one-half of the world's cotton goods and coal.

**B.** The Industrial Revolution spread to other parts of the world at different speeds. Belgium, France, and Germany were the first to industrialize, principally because their governments built infrastructure such as canals and railroads.

- C.** The Industrial Revolution hit the United States. In 1800 six out of every seven American workers were farmers. By 1860, the number was only 1 out of every 2. Over this period the population grew from 5 to 30 million people, and a number of large cities developed.
- D.** The large United States needed a transportation system, and miles of roads and canals were built. **Robert Fulton** built the first paddle-wheel steamboat, the *Clermont*, in 1807. By 1860 thousands of these boats were on rivers, lakes, and even the ocean.
- E.** The railroad was the most important transportation development. America had fewer than 100 miles of track in 1830. By 1860 it had about 30,000 miles of track. The railroad turned the United States into a massive market.
- F.** Labor for the growing factories came from the farm population. Many of the new factory workers were women, who made up more than 80 percent of the workers in textile factories. Factory owners sometimes had whole families work for them.

### III. Social Impact in Europe

- A.** The Industrial Revolution spurred the growth of cities and created two new social classes: the industrial middle class and the industrial working class.
- B.** Europe's population nearly doubled between 1750 and 1850 to 266 million. The chief reason was a decline in death from disease. The increased food supply fed the people better, and famine largely disappeared from western Europe.
- C.** Cities were the home to many industries. People moved in from the country to find work, taking the new railroads. London's population increased from 1 million in 1800 to 2,363,000 in 1850. Nine British cities had populations over 100,000 in 1850.
- D.** Many inhabitants of these rapidly growing cities lived in miserable conditions. The conditions prompted urban social reformers to call for cleaning up the cities, a call which would be heard in the second half of the nineteenth century.
- E.** The Industrial Revolution replaced the commercial capitalism of the Middle Ages with **industrial capitalism**—an economic system based on industrial production. This capitalism produced the industrial middle class. It was made up of the people who built the factories, bought the machines, and figured out where the markets were. Their characteristics were initiative, vision, ambition, and money making.
- F.** Industrial workers faced horrible working conditions with hours ranging from 12 to 16 hours a day, six days a week. No one had security on the job, and there was no minimum wage. The hot temperatures in the cotton mills were especially harmful.
- G.** In Britain women and children made up two-thirds of the cotton industry's workforce. The Factory Act of 1833 set 9 as the minimum age to work. Children from ages 9 to 13 could work only 8 hours a day; those between ages 13 and 18 could work only 12 hours.
- H.** Women took more and more of the textile industry jobs. They were unskilled and were paid half or less than the men. Excessive working hours for women were outlawed in 1844.
- I.** The employment of women and children was a holdover from the cottage industry system. The laws restricting industrial work for women and children led to a new pattern of work, therefore.
- J.** Married men were now expected to support the family, and married women were to take care of the home and perform low-paying jobs in the home, such as taking in laundry, to help the family survive.
- K.** The pitiful conditions for workers in the Industrial Revolution led to a movement called **socialism**. Under socialism, society, usually government, owns and controls the means of production—natural resources, factories, and the like.
- L.** Early socialism was largely the idea of intellectuals who believed in the equality of all people and who wanted to replace competition with cooperation. Later socialists like Karl Marx thought these ideas were not practical and called those who believed them utopian socialists.
- M.** A famous utopian socialist was Robert Owen, a British cotton manufacturer. He believed people would show their natural goodness if they lived in a cooperative environment. Owen transformed a factory town in Scotland into a flourishing community. A similar attempt at New Harmony, Indiana, failed in the 1820s.