

CHAPTER
25

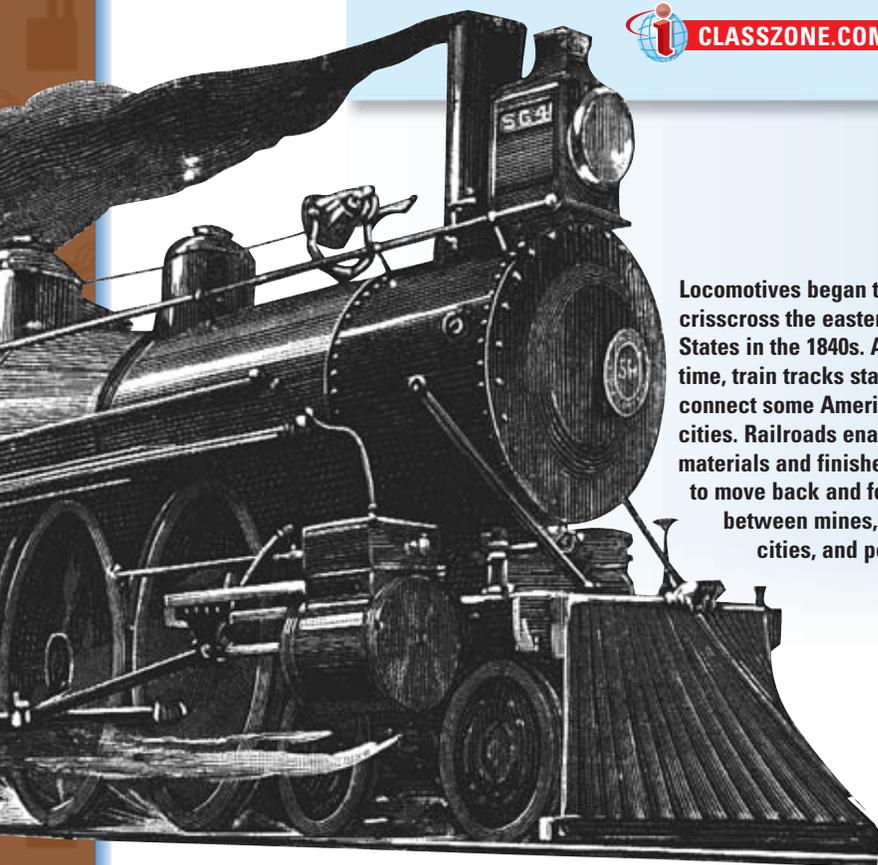
The Industrial Revolution, 1700–1900

Connect History *and* Geography

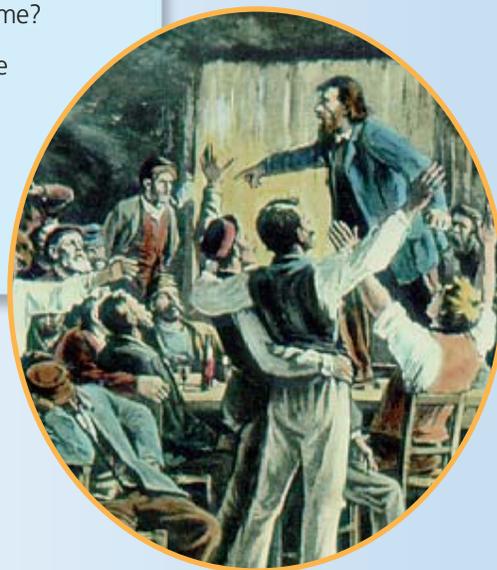
During the 1800s, machines rapidly replaced hand labor as the principal means of producing goods. This era of factory growth is known as the Industrial Revolution. The map at the right shows industrialized areas in Europe as of 1870. Use the map to answer the questions below.

1. What is the most industrialized country?
2. What other European countries were industrializing in the 1800s?
3. What were the key British industrial centers at the time?
4. What geographic factors might have encouraged the development of industry in certain places?

For more information about the Industrial Revolution . . .



Locomotives began to crisscross the eastern United States in the 1840s. At that time, train tracks started to connect some American cities. Railroads enabled raw materials and finished goods to move back and forth between mines, factories, cities, and ports.



As industrialization swept across the countries of Western Europe in the 19th century, workers began to organize. Here workers in Germany meet before a strike in order to plan their strategy.

1701
Jethro Tull
invents seed drill.

1765 James
Watt builds
steam engine.

1700



Industry in Europe, 1870

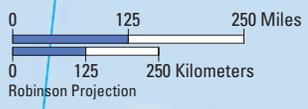


Industrialization 1870

- Major industrial city
- Major railroads constructed by 1870

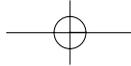
Industry

- Coal mining
- Iron working
- Textile industry



- 1793**
Eli Whitney
invents cotton gin.
- 1807** Robert
Fulton launches
first steamboat.
- 1825** First
railroad line
built in England.
- 1848** Marx and
Engels publish
Communist Manifesto.
- 1875** British
unions win
right to strike.

1900



Interact *with* History

You are a 15-year-old living in England where the Industrial Revolution has spurred the growth of thousands of factories. Cheap labor is in great demand. Like millions of other teenagers, you do not go to school. Instead you work in a factory six days a week, 14 hours a day. The small

pay you receive is needed to help support your family. You trudge to work before dawn every day and work until after sundown. The dangerous machines injure your fellow workers. Minding the machines is exhausting, dirty, and dangerous. Inside the factory the air is foul, and it is so dark it is hard to see.

What would you do to change your situation?

Children had to work around dangerous machinery in which a small hand could easily be caught and injured.

Adult overseers sometimes whipped exhausted children in order to keep them awake during their long, 14-hour days.

EXAMINING *the* ISSUES

- What factory conditions concern you the most?
- Would you attempt to change conditions in the factory?
- Would you join a union, go to school, or run away?

In small groups, discuss these questions; then share your conclusions with your class. In your discussions, think about how children live in pre-industrial and industrial societies all over the world.

As you read about the changes caused by industrialization, note how reform movements eventually improve conditions for all laborers, including children.

Children were expected to carry heavy loads as part of their job in the factory.



1

The Beginnings of Industrialization

TERMS & NAMES

- Industrial Revolution
- enclosure
- crop rotation
- industrialization
- factors of production
- factory
- entrepreneur

MAIN IDEA

The Industrial Revolution started in England and soon spread elsewhere.

WHY IT MATTERS NOW

The changes that began in Britain paved the way for modern industrial societies.

SETTING THE STAGE In the United States, France, and Latin America, political revolutions brought in new governments. A different type of revolution now transformed the way people did work. The **Industrial Revolution** refers to the greatly increased output of machine-made goods that began in England during the 18th century. Before the Industrial Revolution, people wove textiles by hand. Beginning in the middle 1700s, machines did this and other jobs as well. The Industrial Revolution started in England and soon spread to Continental Europe and North America.

The Industrial Revolution Begins

By 1700, small farms covered England's landscape. Wealthy landowners, however, bought up much of the land that village farmers had once worked. Beginning in the early 1700s, large landowners dramatically improved farming methods. These agricultural changes amounted to an agricultural revolution. They eventually paved the way for the Industrial Revolution.

The Agricultural Revolution After buying up the land of village farmers, wealthy landowners enclosed their land with fences or hedges. The increase in their landholdings enabled them to cultivate larger fields, using new seeding and harvesting methods. Within these larger fields, called **enclosures**, landowners experimented to discover more productive farming methods to boost crop yields. The enclosure movement had two important results. First, landowners experimented with new agricultural methods. Second, large landowners forced small farmers to become tenant farmers or to give up farming and move to the cities.

Jethro Tull was one of the first of these scientific farmers. He saw that the usual way of sowing seed by scattering it across the ground was wasteful. Many of the seeds failed to take root. He solved this problem with an invention called the seed drill in about 1701. The seed drill allowed farmers to sow seeds in well-spaced rows at specific depths. A larger share of the seed germinated, boosting crop yields.

Crop Rotation The process of **crop rotation** proved to be one of the best developments of the scientific farmers. The process improved upon older methods of crop rotation, such as the medieval three-field system. One year, for example, a farmer might plant a field with wheat, which exhausted soil nutrients. The next year he planted a root crop, such as turnips, to restore nutrients. This might be followed in turn by barley, then clover.

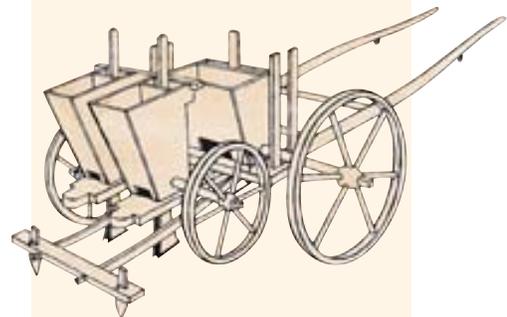
Livestock breeders improved their methods, too. In the 1700s, for example, Robert Bakewell increased his mutton output by allowing only his best sheep to breed. Other farmers followed Bakewell's lead. Between 1700 and 1786 the average weight for lambs climbed from 18 to 50 pounds.

THINK THROUGH HISTORY

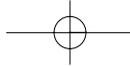
A. Recognizing Effects What were some of the effects of enclosure and crop rotation?

Agricultural Revolution

Jethro Tull's Seed Drill



The seed drill enabled farmers to plant methodically. They abandoned the wasteful broadcast method of scattering handfuls of seed across the fields.



These improvements in farming that began in the early 1700s made up an agricultural revolution. As food supplies increased and living conditions improved, England's population mushroomed. An increasing population boosted the demand for food and goods. As farmers lost their land to large enclosed farms, many became factory workers.

Britain's Advantages Why did the Industrial Revolution begin in England? In addition to a large population of workers, the small island country had extensive natural resources. And **industrialization**—the process of developing machine production of goods—required such resources. These natural resources included 1) water power and coal to fuel the new machines; 2) iron ore to construct machines, tools, and buildings; 3) rivers for inland transportation; 4) harbors from which its merchant ships set sail.

Economic Strength and Political Stability In addition to its natural resources, Britain had an expanding economy to support industrialization. Businesspeople invested in the manufacture of new inventions. Britain's highly developed banking system also contributed to the country's industrialization. People were encouraged by the availability of bank loans to invest in new machinery and expand their operations. Growing overseas trade, economic prosperity, and a climate of progress contributed to the increased demand for goods.

Britain's political stability gave the country a tremendous advantage over its neighbors. Though Britain took part in many wars during the 1700s, none of these struggles occurred on British soil. Furthermore, their military and political successes gave the British a positive attitude. Parliament also passed laws that protected business and helped expansion. Other countries had some of these advantages. However, Britain had all the **factors of production**. These were the resources needed to produce goods and services that the Industrial Revolution required. They included land, labor, and capital (or wealth).

THINK THROUGH HISTORY

B. Recognizing Effects How did population growth spur the Industrial Revolution?

THINK THROUGH HISTORY

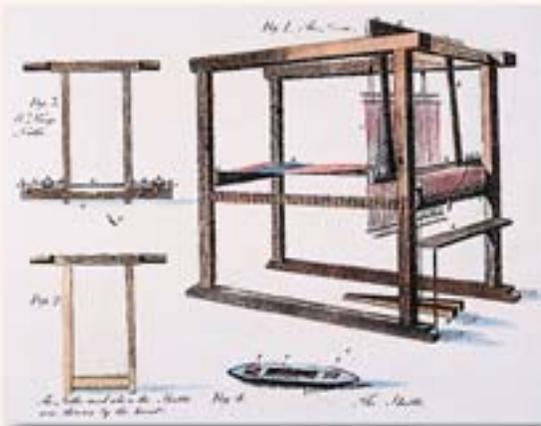
C. Making Inferences How might Britain's advantages and early industrialization have affected its prosperity in the 19th century?

GlobalImpact: Revolutions in Technology

Technology in the Textile Industry

The Industrial Revolution that began in Britain was spurred by a revolution in technology. This is most obvious in the textile industry where inventions in the late 1700s transformed the manufacture of cloth. These developments, in turn, had an impact on the rest of the world. For example, England's cotton came from plantations in the American South, where cotton production skyrocketed from 1790 to 1810 in response to demand from the textile mills of England.

John Kay's flying shuttle speedily carried threads back and forth when the weaver pulled a handle. The flying shuttle greatly increased the productivity of weavers.



James Hargreaves's spinning jenny dramatically increased the output of spinners. It helped them to keep pace with the weavers.





Inventions Spur Technological Advances

In an explosion of creativity, inventions now revolutionized industry. Britain's textile industry clothed the world in wool, linen, and cotton. This industry was the first to be transformed. Cloth merchants boosted their profits by speeding up the process by which spinners and weavers made cloth.

Major Inventions in the Textile Industry By 1800, several major inventions had modernized the cotton industry. One invention led to another. In 1733, a machinist named John Kay made a shuttle that sped back and forth on wheels. This flying shuttle, a boat-shaped piece of wood to which yarn was attached, doubled the work a weaver could do in a day.

Because spinners could not keep up with these speedy weavers, a cash prize attracted contestants to produce a better spinning machine. Around 1764, a textile worker named James Hargreaves invented a spinning wheel he named after his daughter. Hargreaves's spinning jenny allowed one spinner to work eight threads at a time.

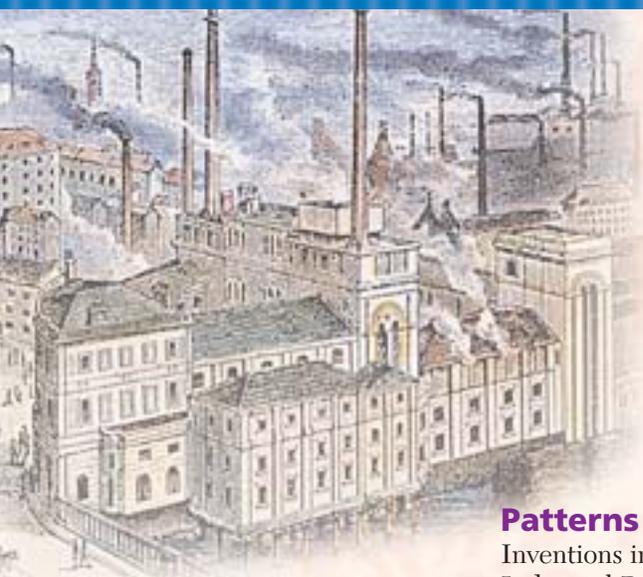
At first, textile workers operated the flying shuttle and the spinning jenny by hand. Richard Arkwright invented the water frame in 1769. The machine used the water-power from rapid streams to drive spinning wheels.

In 1779, Samuel Crompton combined features of the spinning jenny and the water frame to produce the spinning mule. The spinning mule made thread that was stronger, finer, and more consistent than earlier spinning machines. Run by water-power, Edmund Cartwright's power loom sped up weaving after its invention in 1787.

The water frame, the spinning mule, and the power loom were bulky and expensive machines. They took the work of spinning and weaving out of the house. Wealthy textile merchants set up the machines in large buildings called **factories**. At first,

Background

The spinning mule was so named because, just as a mule is the offspring of a horse and donkey, this machine was the offspring of two inventions.



All work, even cotton spinning, is noble; work is alone noble.

—Scottish writer Thomas Carlyle in 1843

Patterns of Interaction

Inventions in the textile industry started in Britain and brought about the Industrial Revolution. This revolution soon spread to other countries in Europe and the United States. The process of industrialization is still spreading around the world, especially in Third World countries. A similar technological revolution is occurring in today's world of electronics. The telephone, television, and (more recently) the computer and the Internet are transforming the spread of information around the world.

The first factories were built to house spinning and weaving machines in the textile industry and to keep the processes secret. Such factories were built close to rivers and streams, which provided a source of energy.

 **VIDEO** *Technology Transforms An Age: The Industrial and Electronic Revolutions*

Connect to History

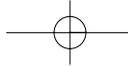
Synthesizing Technological innovation and industrialization took place in the textile industry during the Industrial Revolution. How might these forces have provided a model for other industries?



SEE SKILLBUILDER HANDBOOK, PAGE R18

Connect to Today

Hypothesizing How might the textile industry be affected by new technology, including the computer?



the new factories needed waterpower, so they were built near sources of water such as rivers and streams:

A VOICE FROM THE PAST

. . . A great number of streams . . . furnish water-power adequate to turn many hundred mills: they afford the element of water, indispensable for scouring, bleaching, printing, dyeing, and other processes of manufacture: and when collected in their larger channels, or employed to feed canals, they supply a superior inland navigation, so important for the transit of raw materials and merchandise.

EDWARD BAINS, *The History of Cotton Manufacture in Great Britain* (1835)

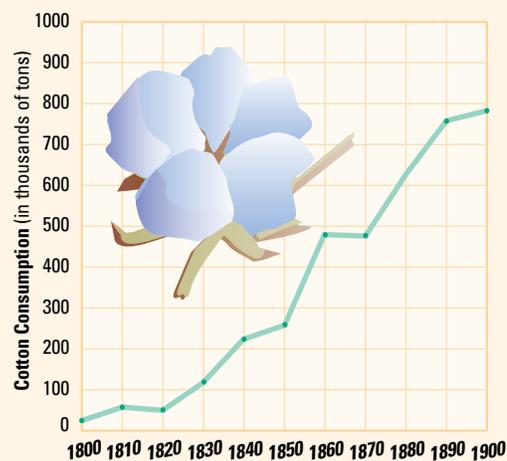
THINK THROUGH HISTORY

D. Summarizing

What were the major inventions in the textile industry?

British Cotton Consumption

New inventions led to a big increase in the production and consumption of textiles, including cotton. The consumption of cotton rose dramatically in Britain during the 1800s. The following chart shows the increase in cotton consumption as measured in thousands of metric tons for each decade of the century.



Source: *Historical Statistics of the United States*

SKILLBUILDER: Interpreting Graphs

1. In what decade did the steepest increase in cotton consumption in Britain take place?
2. In what two decades did the consumption of cotton level off or slightly decrease?

England's cotton came from plantations in the American South in the 1790s. Removing seeds from the raw cotton by hand was hard work. In 1793, an American inventor named Eli Whitney invented a machine to speed the chore. His cotton gin multiplied the amount of cotton that could be cleaned. American cotton production skyrocketed from 1.5 million pounds in 1790 to 85 million pounds in 1810.

Improvements in Transportation Progress in the textile industry spurred other industrial improvements. The first such development, the steam engine, stemmed from the search for a cheap, convenient source of power. The earliest steam engine was used in mining as early as 1705. But this early model gobbled great quantities of fuel, making it expensive to run.

James Watt, a mathematical instrument maker at the University of Glasgow in Scotland, thought about the problem for two years. In 1765, Watt figured out a way to make the steam engine work faster and more efficiently while burning less fuel. In 1774, Watt joined with a businessman named Matthew Boulton. This **entrepreneur** (AHN·truh·pruh·NUR)—a person who organizes, manages, and takes on the risks of a business—paid Watt a salary and encouraged him to build better engines.

Water Transportation Steam could also be used to propel boats. An American inventor named Robert Fulton ordered a steam engine from Boulton and Watt. After its first successful trip in 1807, Fulton's steamboat,

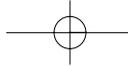
the *Clermont*, ferried passengers up and down New York's Hudson River.

In England, water transportation improved with the creation of a network of canals, or human-made waterways. By the mid-1800s, 4,250 miles of inland channels slashed the cost of transporting raw materials.

Road Transportation British roads improved, too, thanks largely to the efforts of John McAdam, a Scottish engineer. Working in the early 1800s, McAdam equipped roadbeds with a layer of large stones for drainage. On top, he placed a carefully smoothed layer of crushed rock. Even in rainy weather heavy wagons could travel over the new "macadam" roads without sinking in mud.

Private investors formed companies that built roads and then operated them for profit. People called the new roads turnpikes because travelers had to stop at tollgates (turnstiles or turnpikes) to pay a toll before traveling farther.

The Railway Age Begins Steam-driven machinery propelled English factories in the late 1700s. A steam engine on wheels—the railroad locomotive—drove English industry after 1820.

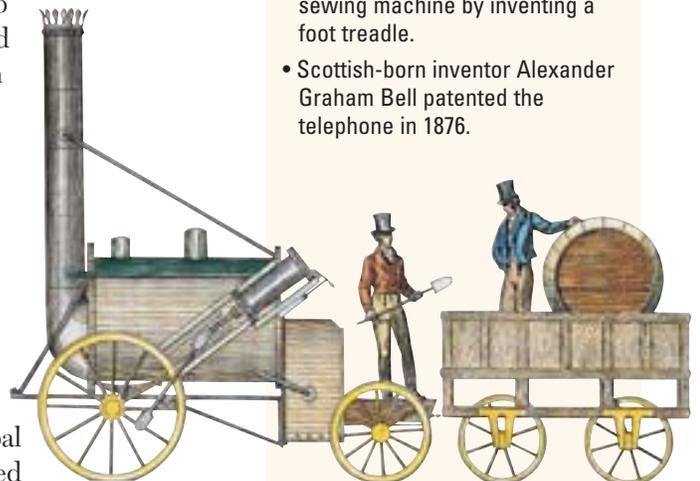


In 1804, an English engineer named Richard Trevithick won a bet of several thousand dollars. He did this by hauling ten tons of iron over nearly ten miles of track in a steam-driven locomotive. Other British engineers soon built improved versions of Trevithick's locomotive. One of these early railroad engineers was George Stephenson. He had gained a solid reputation by building some 20 engines for mine operators in northern England. In 1821, Stephenson began work on the world's first railroad line. It was to run 27 miles from the Yorkshire coalfields to the port of Stockton on the North Sea. In 1825, the railroad opened. It used four locomotives that Stephenson had designed and built.

The Liverpool-Manchester Railroad News of this success quickly spread throughout Britain. The entrepreneurs of northern England wanted a railroad line to connect the port of Liverpool with the inland city of Manchester. The track was laid. In 1829 trials were held to choose the best locomotive for use on the new line. Five engines entered the competition. None could compare with the *Rocket*, designed by Stephenson and his son. Smoke poured from its tall smokestack and its two pistons pumped to and fro as they drove the front wheels. The *Rocket* hauled a 13-ton load at an unheard-of speed—more than 24 miles per hour. The Liverpool-Manchester Railway opened officially in 1830. It was an immediate success.

Railroads Revolutionize Life in Britain

First, railroads spurred industrial growth by giving manufacturers a cheap way to transport materials and finished products. Second, the railroad boom created hundreds of thousands of new jobs for both railroad workers and miners. These miners provided iron for the tracks and coal for the steam engines. Third, the railroads boosted England's agricultural and fishing industries, which could transport their products to distant cities. Finally, by making travel easier, railroads encouraged country people to take distant city jobs. Also, railroads lured city dwellers to resorts in the countryside. Like a locomotive racing across the country, the Industrial Revolution brought rapid and unsettling changes to people's lives.



SPOTLIGHT ON

Inventions in America

Across the Atlantic in the United States, American inventors worked at making railroad travel more comfortable. They invented, for example, adjustable upholstered seats that converted into couches so that everyone could travel first class.

American inventors also revolutionized agriculture, manufacturing, and communications:

- Cyrus McCormick's reaper, invented in 1831, boosted American wheat production.
- In 1837, a New England painter named Samuel F. B. Morse first sent electrical signals over a telegraph.
- In 1851, I. M. Singer improved the sewing machine by inventing a foot treadle.
- Scottish-born inventor Alexander Graham Bell patented the telephone in 1876.

THINK THROUGH HISTORY

E. Synthesizing

How did improvements in transportation promote industrialization in Britain?

Section 1 Assessment

1. TERMS & NAMES

Identify

- Industrial Revolution
- enclosure
- crop rotation
- industrialization
- factors of production
- factory
- entrepreneur

2. TAKING NOTES

Create a two-column chart like the one below that lists four natural resources needed for industrialization and how each is used.

Natural Resource	Use
1. coal	
2.	
3.	
4.	

3. MAKING INFERENCES

What effect did entrepreneurs have upon the Industrial Revolution?

THINK ABOUT

- new technological developments
- business opportunities
- increase in prosperity

4. THEME ACTIVITY

Science and Technology

Write a letter as a British government official during the Industrial Revolution. Write to a government official in a non-industrial nation about how the railroad has changed Britain.



2 Industrialization

TERMS & NAMES

- urbanization
- middle class

PATTERNS OF CHANGE

CASE STUDY: Manchester

MAIN IDEA

The factory system changed the way people lived and worked, introducing a variety of problems.

WHY IT MATTERS NOW

The difficult process of industrialization is being repeated in many less-developed countries today.

SETTING THE STAGE The Industrial Revolution eventually led to a better quality of life for most people. Yet the change to machine production also caused immense human suffering. In Britain, the Industrial Revolution proved to be a mixed blessing.

Industrialization Changes Ways of Life

The pace of industrialization quickened in Britain. By the 1800s more people could afford to heat their homes with coal from Wales and to dine on Scottish beef. They wore better clothing, too, woven on power looms in England's industrial cities. These cities soon swelled with workers. However, other people suffered from industrialization.

Growth of Industrial Cities For centuries, most Europeans had lived in rural areas. After 1800, the balance shifted toward cities. The growth of the factory system—manufacturing goods in a central location—brought waves of jobseekers to cities and towns. Between 1800 and 1850, the number of European cities boasting more than 100,000 inhabitants rose from 22 to 47. Most of Europe's urban areas at least doubled in population. This period was one of **urbanization**—city building and the movement of people to cities. Some cities, such as Glasgow and Berlin, tripled or even quadrupled in size.

Factories developed in clusters because entrepreneurs built them near sources of energy. Major new industrial centers sprang up between the coal-rich area of southern Wales and the Clyde River valley in Scotland. The biggest of these centers developed in England.

Britain's capital, London, was the country's most important city. Containing twice as many people as its closest rival (Paris), London became Europe's largest city. It had a population of about 1 million people by 1800. During the 1800s London's population exploded, providing a vast labor pool and market for new industry.

Newer cities challenged London's industrial leadership. Birmingham and Sheffield became iron-smelting centers. Leeds and Manchester dominated textile manufacturing. Along with the

port of Liverpool, Manchester formed the center of Britain's bustling cotton industry. During the 1800s, Manchester experienced rapid growth. In 1760, the population of this market town was around 45,000. By 1850, it had swelled to 300,000 people.

Living Conditions No plans, no sanitary codes, and no building codes controlled the growth of England's cities. They lacked adequate housing, education, and police protection for the people who poured in from the countryside seeking jobs. Most of the unpaved streets had no drains and collected heaps of garbage. Workers lived in dark, dirty shelters, whole families crowding into one bedroom.



As cities grew all over Europe, people crowded into tenements and row houses such as these in London.



Vocabulary

cholera: a deadly disease caused by bacteria that usually occur in contaminated drinking water.

Not surprisingly, sickness was widespread. Cholera epidemics regularly swept through the slums of Great Britain's industrial cities. In 1842, a British government study showed an average life span to be 17 years for working-class people in one large city, compared with 38 years in a nearby rural area.

Elizabeth Gaskell's *Mary Barton* (1848) is a work of fiction. Nonetheless, its realistic description of the dank cellar dwelling place of one family in a Manchester slum presents a startlingly accurate portrayal of urban life at the time:

A VOICE FROM THE PAST

You went down one step even from the foul area into the cellar in which a family of human beings lived. It was very dark inside. The window-panes many of them were broken and stuffed with rags . . . the smell was so fetid [foul] as almost to knock the two men down . . . they began to penetrate the thick darkness of the place, and to see three or four little children rolling on the damp, nay wet brick floor, through which the stagnant, filthy moisture of the street oozed up. . . .

ELIZABETH GASKELL, *Mary Barton*

Working Conditions Factory owners wanted to keep their machines running for as many hours a day as possible. As a result, the average worker spent 14 hours a day at the job, 6 days a week. Instead of changing with the seasons, the work was the same week after week, year after year. Workers had to keep up with the machines.

Industry also posed new dangers in work. Factories were seldom well-lit or clean. Machines injured workers in countless ways. A boiler might explode or a drive belt might catch the worker's arm. And there was no government program to provide aid in case of injury. The most dangerous conditions of all were found in the coal mines. Frequent accidents, damp conditions, and the constant breathing of coal dust made the average miner's life span ten years shorter than that of other workers.

Class Tensions Not everyone in the new cities lived miserably. Well-to-do merchants and factory owners built fancy homes in the suburbs. In addition, a new class began to emerge.

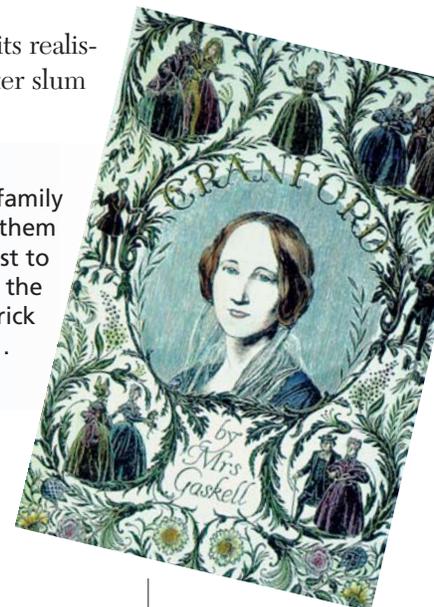
Though poverty gripped Britain's working classes, the Industrial Revolution created enormous amounts of money in the country. Most of this wealth lined the pockets of factory owners, shippers, and merchants. These wealthy people made up a growing **middle class**—a social class of skilled workers, professionals, businesspeople, and wealthy farmers.

The new middle class transformed the social structure of Great Britain. In the past, landowners and aristocrats occupied the top position in British society. With most of the wealth, they wielded the power. Now some factory owners, merchants, and investment bankers grew wealthier than the landowners and aristocrats.

Yet important social distinctions divided the two wealthy classes. Landowners looked down on those who had made their fortunes in the "vulgar" business world. Not until late in the 1800s were rich entrepreneurs considered the social equals of the lords of the countryside.

Gradually, a larger middle class—neither rich nor poor—emerged. This group included an upper middle class of government employees, doctors, lawyers, and managers of factories, mines, and shops. A lower middle class consisted of factory overseers and such skilled workers as toolmakers, mechanical drafters, and printers. These people enjoyed a comfortable standard of living.

During the years 1800 to 1850, however, poor workers saw little improvement in their own living and working conditions. Frustrated workers watched their livelihoods disappear as machines replaced them. In response, they smashed the machines they thought were putting them out of work. One group of such workers was called the Luddites. They were named after Ned Ludd, probably a mythical English



Elizabeth Gaskell (1810–1865) was a British writer whose novels such as *Mary Barton* (1848) and *North and South* (1855) show a sympathy for the working class. *Cranford* (1853) deals with the life of a peaceful English village.

THINK THROUGH HISTORY

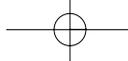
A. Drawing

Conclusions What was the impact of living and working conditions on workers?

THINK THROUGH HISTORY

B. Summarizing

Describe the social classes in Britain.



laborer, was said to have destroyed weaving machinery around 1779. The Luddites attacked whole factories in northern England beginning in 1811, destroying labor-saving machinery. Outside the factories, mob disorder took the form of riots, mainly because of the poor living and working conditions of the workers.

Positive Effects of the Industrial Revolution Despite the problems that followed industrialization, the Industrial Revolution eventually had a number of positive effects. It created jobs for workers. It contributed to the wealth of the nation. It fostered technological progress and invention. It greatly increased the production of goods and raised the standard of living. Perhaps most important, it provided the hope of improvement in people's lives.

The Industrial Revolution produced a number of other benefits as well. These included healthier diets; better housing; and cheaper, mass-produced clothing. Because the Industrial Revolution created a demand for engineers as well as clerical and professional workers, it expanded educational opportunities.

The middle and upper classes prospered immediately from the Industrial Revolution. For the workers it took longer, but their lives gradually improved during the 1800s. Labor eventually won higher wages, shorter hours, and better working conditions.

PATTERNS OF CHANGE: Industrialization

Effects of Industrialization

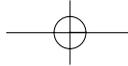
Size of Cities	<ul style="list-style-type: none"> • Growth of factories, bringing job seekers to cities • Urban areas doubling, tripling, or quadrupling in size • Factories developing near sources of energy • Many new industrial cities specializing in certain industries
Living Conditions	<ul style="list-style-type: none"> • No sanitary codes or building controls • Lack of adequate housing, education, and police protection • Lack of running water and indoor plumbing • Frequent epidemics sweeping through slums • Eventually, better housing, healthier diets, and cheaper clothing
Working Conditions	<ul style="list-style-type: none"> • Industrialization creating new jobs for workers • Workers trying to keep pace with machines • Factories dirty and unsanitary • Workers running dangerous machines for long hours in unsafe conditions • Harsh and severe factory discipline • Eventually, higher wages, shorter hours, and better working conditions
Emerging Social Classes	<ul style="list-style-type: none"> • Growing middle class of factory owners, shippers, and merchants • Upper class of landowners and aristocrats resentful of rich middle class • Lower middle class of factory overseers and skilled workers • Workers overworked and underpaid • In general, a rising standard of living, with some groups excluded

SKILLBUILDER: Interpreting Charts

1. Which social class benefited most and which suffered most from industrialization?
2. What were some of the advantages and disadvantages of industrialization?

The long-term effects of the Industrial Revolution are still evident. Most people today in the industrialized countries can afford consumer goods that would have been considered luxuries fifty or a hundred years ago. Further, their living and working conditions are much improved over those of workers in the 19th century.

As the Industrial Revolution in Manchester demonstrated, economic success can unleash a variety of problems. Even today, the economic pressures of industrialization frequently lead to the overuse of natural resources and the abuse of the environment. The profits derived from industrialization, however, permit thoughtful governments to invest in urban improvements.



CASE STUDY: Manchester

The Mills of Manchester

Manchester's unique advantages made it a leading example of the new industrial city. This northern English town had ready access to water power. It also had available labor from the nearby countryside and an outlet to the sea at Liverpool.

"From this filthy sewer pure gold flows," wrote Alexis de Tocqueville (ah-lehk-SEE duh TOHK-vihl), the French writer, after he visited Manchester in 1835. Indeed, the industrial giant showed the best and worst of the Industrial Revolution. Manchester's rapid, unplanned growth made it a filthy sewer for the poor people who worked there. But gold certainly flowed toward the mill owners and the new middle class. Eventually, although not immediately, the working class saw their standard of living rise as well.

Manchester's businesspeople took pride in mastering each detail of the manufacturing process, working many hours and risking their own money. For their efforts, they pocketed high profits and erected gracious homes on the outskirts of town.

To provide the mill owners with their high profits, workers labored under terrible conditions. Children as young as six joined their parents in the factories. There, for six days a week, they toiled from 6 A.M. to 7 or 8 P.M., with only a half an hour for lunch and an hour for dinner. To keep the children awake, mill supervisors beat them. Tiny hands repaired broken threads in Manchester's spinning machines, replaced thread in the bobbins, or swept up cotton fluff. The dangerous machinery injured many children. The fluff filled their lungs and made them cough.

Until the first Factory Act passed in 1819, the British government exerted little control over child labor in Manchester and other factory cities. The act restricted working age and hours. For years after the act passed, young children still did heavy, dangerous work in Manchester's factories.

Putting so much industry into one place polluted the natural environment. The coal that powered factories and warmed houses blackened the air. Textile dyes and

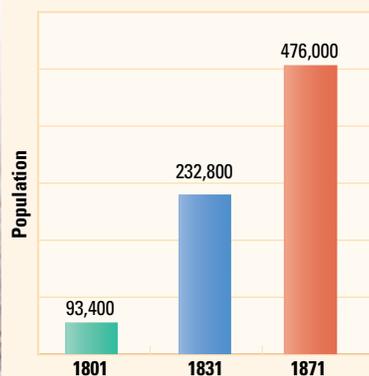
THINK THROUGH HISTORY

C. Drawing Conclusions

Whose interests did child labor serve?

An English engraving of 1876 shows a bird's-eye view of the city of Manchester during the Industrial Revolution.

Manchester's Growth



SKILLBUILDER: Interpreting Graphs

- How many people did the city of Manchester gain between 1801 and 1831? How many did it gain between 1831 and 1871?
- What does the engraving show were the effects of such rapid growth?





The Day of a Child Laborer, William Cooper

William Cooper began working in a textile factory at the age of ten. He had a sister who worked upstairs in the same factory. In 1832, Cooper was called to testify before a parliamentary committee about the conditions among child laborers in the textile industry. The following sketch of his day is based upon his testimony.



11 P.M.—Cooper's sister worked another two hours even though she had to be back at work at 5:00 the next morning.

5 A.M.—The workday began. Cooper and his sister rose as early as 4:00 or 4:30 in the morning in order to get to the factory for the start of their workday at 5:00. Children usually grabbed their breakfast on the run.



12 noon—The children were given a 40-minute break for lunch. This was the only break they received during the whole course of the day.



3 P.M.—The children often became drowsy during the afternoon or evening hours. In order to keep them awake, adult overseers sometimes whipped the children.

CONNECT to TODAY

Child Labor

To save on labor costs in the 1990s, many corporations have moved their manufacturing operations overseas to poor countries. In sweatshops in these developing countries, young children work long hours under wretched conditions. They are unprotected by child labor laws. For mere pennies per hour, children sort vegetables, stitch soccer balls, or assemble expensive basketball shoes.

In the United States each year \$178 billion worth of clothing is sold. Some studies estimate more than half of that clothing is manufactured in sweatshops where children work. Like the children who toiled in Manchester's factories in the 1800s, children labor to help support their families.



9 P.M.—William Cooper's day ended after an exhausting 16-hour shift at work.



6 P.M.—There was no break allowed for an evening meal. Children ate on the run. From 12:40 until 9:00 at night, the children worked without a break.

other wastes poisoned Manchester's Irwell River. The following description of the river was written by an eyewitness observer in 1862:

A VOICE FROM THE PAST

Steam boilers discharge into it their seething contents, and drains and sewers their fetid impurities; till at length it rolls on—here between tall dingy walls, there under precipices of red sandstone—considerably less a river than a flood of liquid manure.

HUGH MILLER, "Old Red Sandstone"

Manchester produced consumer goods and created wealth on a grand scale. Yet this unplanned industrial city also stood as a reminder of industrialization's dark side. In the 1800s, the industrialization that began in Great Britain spread to the United States and to continental Europe, as you will learn in Section 3.

Section 2 Assessment

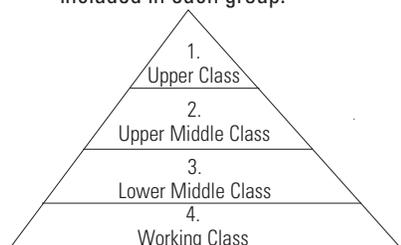
1. TERMS & NAMES

Identify

- urbanization
- middle class

2. TAKING NOTES

Create a pyramid like the one below listing the social classes in industrial England. List the types of laborers and professionals included in each group.



3. ANALYZING ISSUES

How did industrialization contribute to city growth?

THINK ABOUT

- growth of industry
- creation of jobs
- the economic advantages of centralization

4. ANALYZING THEMES

Economics How might a factory owner have justified the harsh conditions in his factory?

THINK ABOUT

- class distinctions
- the spread of factories
- financial gains



3

Industrialization Spreads

TERMS & NAMES

• corporation

MAIN IDEA

The industrialization that began in Great Britain spread to other parts of the world.

WHY IT MATTERS NOW

The Industrial Revolution set the stage for the growth of modern cities.

SETTING THE STAGE Britain's favorable location, geography, financial systems, political stability, and natural resources sparked its industrialization. British power-driven machinery began to mass-produce textiles and other goods at the end of the 1700s. Paying low wages to many workers, British merchants built the world's first factories. When these factories prospered, wealthy business leaders invented more labor-saving machines. They also built more factories, and eventually industrialized the country. The Industrial Revolution that began in Britain soon spread to other countries. They had similar conditions that made them ripe for industrialization.

Industrial Development in the United States

The United States possessed the same resources that allowed Britain to mechanize its industries and develop large-scale factories. America also had rushing rivers, rich deposits of coal and iron ore, and a supply of immigrant laborers. During the War of 1812, Britain blockaded the United States in an attempt to keep it from engaging in international trade. This blockade forced the young country to use its own resources to develop independent industries. Those industries would manufacture the goods the United States could no longer import.

Industrialization in the United States As in Britain, industrialization in the United States began in the textile industry. Eager to keep the secrets of industrialization to itself, Britain had forbidden engineers, mechanics, and toolmakers to leave the country. In 1789, however, a young British mill worker named Samuel Slater emigrated to the United States. There Slater built a spinning machine from memory and a partial design. The following year, Moses Brown opened the first factory in the United States to house Slater's machines in Pawtucket, Rhode Island. But the Pawtucket factory mass-produced only one part of finished cloth, the thread.

In 1813, Francis Cabot Lowell and four other investors revolutionized the American textile industry. They mechanized every stage in the manufacture of cloth. Their weaving factory in Waltham, Massachusetts, earned the partners enough money to fund a larger operation in another Massachusetts town. When Francis Lowell died, the remaining partners named the town after him. By the late 1820s, Lowell, Massachusetts, had become a booming manufacturing center and a model for other such towns.

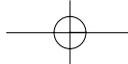
Thousands of workers, mostly young single women, flocked from their rural homes to work as mill girls in factory towns like Lowell. To ensure proper behavior, the young women were watched closely inside and outside the factory. The mill girls toiled over 12 hours a day, six days a week, for

Background

The War of 1812 began over British interference with America's merchant ships. It ended in a draw between Britain and the United States.

These Massachusetts women of the mid-19th century are shown holding shuttles that were used during weaving.





decent wages. For some young women, the mill job meant a welcome alternative to becoming a servant, often the only other job open to them:

A VOICE FROM THE PAST

Country girls were naturally independent, and the feeling that at this new work the few hours they had of everyday leisure were entirely their own was a satisfaction to them. They preferred it to going out as “hired help.” It was like a young man’s pleasure in entering upon business for himself. Girls had never tried that experiment before, and they liked it.

LUCY LARCOM, *A New England Girlhood*

THINK THROUGH HISTORY

A. Forming and Supporting Opinions

Why did Lucy Larcom think mill work benefited young women?

Textiles led the way, but clothing manufacture and shoemaking also underwent mechanization. Especially in the Northeast, skilled workers and farmers had formerly worked at home. Now they labored in factories in towns and cities such as Waltham, Lowell, and Lawrence, Massachusetts.

Later Expansion of U.S. Industry There was a great deal of industrial growth in the Northeast in the early 1800s. Nonetheless, the United States remained primarily an agricultural nation until the Civil War ended in 1865. During the last third of the 1800s, however, the country experienced a technological boom. As in Britain, a number of causes contributed to this boom. These included a wealth of natural resources, among them oil, coal, and iron; a burst of inventions, such as the electric light bulb and the telephone; and a swelling urban population that consumed the new manufactured goods.

Also as in Britain, railroads played a major role in America’s industrialization. Cities like Chicago and Minneapolis expanded rapidly during the late 1800s. This was due to their location along the nation’s expanding railroad lines. Chicago’s stockyards and Minneapolis’s grain industries prospered by selling their products to the rest of the country.

Indeed, the railroads themselves proved to be a profitable business. By the end of the 1800s, a limited number of large, powerful companies controlled over two-thirds of the nation’s railroad tracks. Businesses of all kinds began to merge as the railroads had. Smaller companies joined together to form a larger one.

Building large businesses like railroads required a great deal of money. To raise the money, entrepreneurs sold shares of stock. People who bought stock became

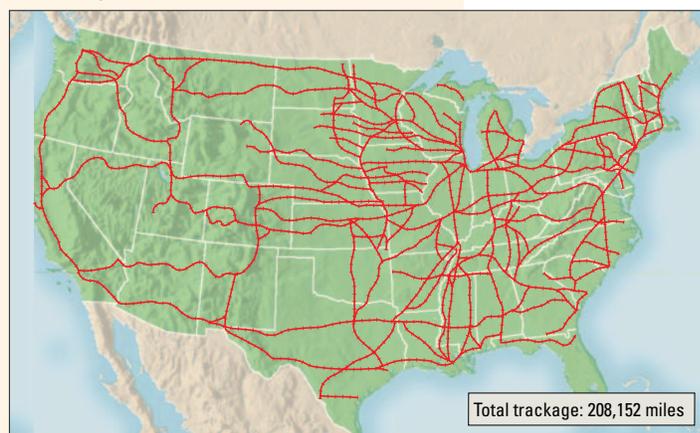
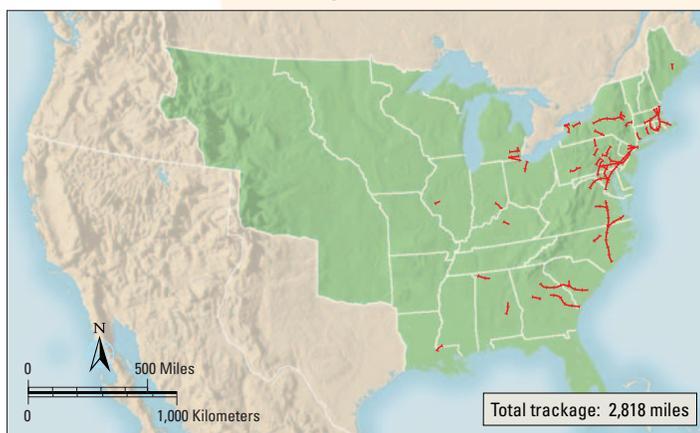
Vocabulary

stock: a share in certain rights of ownership of a business.

The Growth of the United States

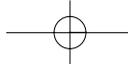
Railroad System, 1840

Railroad System, 1890



SKILLBUILDER: Interpreting Maps

- Region** In what part of the country were the first railroads built?
By 1890, what other part of the country was densely covered by railroad tracks?
- Movement** In what direction did the railroads help people move across the country?



part-owners of these businesses called corporations. A **corporation** is a business owned by stockholders who share in its profits but are not personally responsible for its debts. In the late 1800s large corporations such as Standard Oil (founded by John D. Rockefeller) and the Carnegie Steel Company (founded by Andrew Carnegie) sprang up. They sought to control every aspect of their own industries in order to make big profits.

Big business—the giants that controlled entire industries—also made big profits by cutting the cost of producing goods. While workers earned small wages for long hours at hard labor, stockholders earned high profits and corporate leaders made fortunes.

Industrialization Reaches Continental Europe

European businesses yearned to adopt the “British miracle,” the result of Britain’s profitable new methods of manufacturing goods. Yet the troubles sparked by the French Revolution and the Napoleonic wars had halted trade, interrupted communication, and caused inflation in some parts of the continent. European countries were absorbed in the French Revolution and the Napoleonic wars between 1789 and 1815. They watched the gap widen between themselves and Britain. Nonetheless, industrialization eventually reached continental Europe.

Beginnings in Belgium Belgium led Europe in adopting Britain’s new technology. Belgium had rich deposits of iron and coal as well as fine waterways for transportation.

Samuel Slater had smuggled to the United States the design of a spinning machine. Like him, British skilled workers played a key role in carrying industrialization to Belgium. A Lancashire carpenter named William Cockerill made his way to Belgium in 1799. He carried secret plans for building spinning machinery. Cockerill’s son John eventually built an enormous industrial enterprise in eastern Belgium. It produced machinery, steam engines, and railway locomotives. Carrying the latest British advances, more British workers came to work with Cockerill. Several then founded their own companies in Europe.

Germany Industrializes Germany was a politically divided empire. Economic isolation and scattered resources hampered countrywide industrialization in the early 1800s. Instead, pockets of industrialization appeared, as in the coal-rich Ruhr Valley of west-central Germany. Beginning around 1835, Germany began to copy the British model. Germany imported British equipment and engineers. German manufacturers also sent their children to England to learn industrial management.

Most important, Germany built railroads that linked its growing manufacturing cities, such as Frankfurt, with the Ruhr Valley’s coal and iron deposits. In 1858, a German economist wrote, “Railroads and machine shops, coal mines and iron foundries, spinneries and rolling mills seem to spring up out of the ground, and smokestacks sprout from the earth like mushrooms.”

Germany’s economic strength spurred its ability to develop as a military power. By the late 19th century, Germany had become both an industrial and a military giant.

Expansion Throughout Europe In the rest of Europe, as in Germany, industrialization during the early 1800s proceeded by region rather than by country. Even in countries where agriculture dominated, pockets of industrialization arose. For example, Bohemia developed its spinning industry. Spain’s Catalonia processed more cotton than Belgium. Northern Italy mechanized its textile production, specializing in silk spinning. Serf labor ran factories in regions around Moscow and St. Petersburg.

In France, continual industrial growth occurred only after 1850, when the central government constructed railroads. These railroads created a thriving national market for new French products.



German workers labor in a steel mill in this 1875 painting by Adolph von Menzel.

THINK THROUGH HISTORY

B. Analyzing

Causes What factors slowed industrialization in Germany?

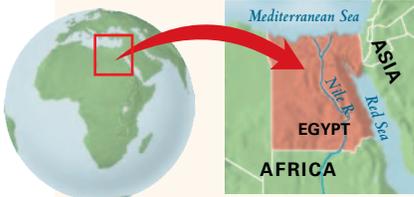


For a variety of reasons, many European countries did not industrialize. In some nations, the social structure delayed the adoption of new methods of production. The accidents of geography held back others. In Austria-Hungary and Spain, transportation posed great obstacles. Austria-Hungary's mountains defeated railroad builders. Spain lacked both good roads and waterways for canals.

Worldwide Impact of Industrialization

The Industrial Revolution shifted the world balance of power. It promoted competition between industrialized nations and increased poverty in less developed nations.

Global Impact



Industrialism Spreads to Egypt

When an Ottoman officer named Muhammad Ali (1769–1849) took power in Egypt, the new ruler sought to propel his country into the industrialized world. Muhammad Ali reformed Egypt's government and improved communications. He also established cotton mills, a glass factory, and a sugar refinery.

To earn the money required to purchase European goods and services, Muhammad Ali also advanced the development of commercial agriculture. During his rule, landlords forced peasants to become tenant farmers and grow cash crops for European markets. The modernizing and industrializing of Egypt were often done at the expense of the peasants.

Rise of Global Inequality Industrialization widened the gap between industrialized and non-industrialized countries, even while it strengthened their economic ties. To keep factories running and workers fed, industrialized countries required a steady supply of raw materials from less developed lands. In turn, industrialized countries viewed poor countries as markets for their manufactured products. A large inequality developed between the industrialized West and the rest of the world.

Britain led in exploiting its overseas colonies for resources and markets. Soon other European countries, the United States, Russia, and Japan followed Britain's lead, seizing colonies for their economic resources. Imperialism, the policy of extending one country's rule over many other lands, gave even more power and wealth to these already wealthy nations. Imperialism was born out of the cycle of industrialization, the development of new markets around the world, and the need for resources to supply the factories of Europe. (See Chapter 27.)

Transformation of Society Between 1700 and 1900, revolutions in agriculture, production, transportation, and communication changed the lives of people in Western Europe and the United States. Industrialization gave Europe tremendous economic power. Much of Europe was gaining the capability to produce many goods faster and more cheaply. In contrast, the economies of Asia and Africa were still based on agriculture and small workshops.

The industrialization that took place in the 1700s and 1800s revolutionized every aspect of society, from daily life to life expectancy. Despite the hardships early urban workers suffered, population, health, and wealth eventually rose dramatically in all industrialized countries. The development of a middle class created great opportunities for education and democratic participation. Greater democratic participation, in turn, fueled a powerful movement for social reform.

THINK THROUGH HISTORY
C. Clarifying Why did imperialism grow out of industrialization?

Section 3 Assessment

1. TERMS & NAMES

Identify

- corporation

2. TAKING NOTES

Using a web diagram like the one below, show the effects of industrialization on the world.



3. RECOGNIZING BIAS

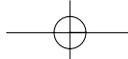
Go back to the quote from Lucy Larcom on page 644. Do you think her feelings about working in the mill are typical? Why or why not?

THINK ABOUT

- her experiences in a mill
- her possible bias

4. THEME ACTIVITY

Empire Building Draw a political cartoon that could have been used by the British government. It should show their sense of their own superiority over non-industrialized nations that they planned to colonize.



4

An Age of Reforms

TERMS & NAMES

- laissez faire
- Adam Smith
- capitalism
- utilitarianism
- socialism
- Karl Marx
- communism
- union
- collective bargaining
- strike

MAIN IDEA

The Industrial Revolution led to economic, social, and political reforms.

WHY IT MATTERS NOW

Many modern social welfare programs developed during this period.

SETTING THE STAGE In industrialized countries in the 1800s, many business leaders believed that progress opened a gap between rich and poor. These leaders cautioned governments to stay out of business and economic affairs. Reformers, however, felt that governments should play an active role in bettering conditions for the poor.

The Philosophers of Industrialization

The term **laissez faire** (LEHS-ay-FAIR) refers to the economic policy of letting owners of industry and business set working conditions without interference. That policy favors a free market unregulated by the government. The term comes from a French phrase that means “let do,” and by extension, “let people do as they please.”

Laissez-faire Economics Laissez faire stemmed from French economic philosophers of the 18th-century Enlightenment. They criticized the idea that nations grow wealthy by placing heavy tariffs on foreign goods. In fact, they argued, government regulations only interfered with the production of wealth. These philosophers believed that if the government allowed free trade—the flow of commerce in the world market without government regulation—the economy would prosper.

Adam Smith, a professor at the University of Glasgow, Scotland, defended the idea of a free economy, or free markets, in his 1776 book *The Wealth of Nations*. According to Smith, economic liberty guaranteed economic progress. Smith claimed that government need not interfere in the economy.

The Ideas of Malthus and Ricardo Economists Thomas Malthus and David Ricardo supported Smith’s basic ideas. Like Smith, they believed that natural laws governed economic life. Their important ideas were the foundation of laissez-faire capitalism. **Capitalism** is an economic system in which money is invested in business ventures with the goal of making a profit. These ideas helped bring about the Industrial Revolution.

In *An Essay on the Principle of Population*, written in 1798, Thomas Malthus argued that population tended to increase more rapidly than the food supply. Without wars and epidemics to kill off the extra people, most were destined to be poor and miserable. The predictions of Malthus seemed to be coming true in the 1840s.

David Ricardo, a wealthy stockbroker, took Malthus’s theory one step further in his book, *Principles of Political Economy and Taxation* (1817). Like Malthus, Ricardo believed that a permanent underclass would always be poor. In a market system, if there are many workers and abundant resources, then labor and resources are cheap. If there

Background

Ricardo stated the “iron law of wages.” He argued that because of population growth wages would be just high enough to keep workers from starving.

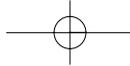
HISTORY MAKERS



Adam Smith
1723–1790

In his book *The Wealth of Nations*, Smith argued that if individuals freely followed their own self-interest, the world would be an orderly and progressive place. After all, sellers made money by producing things that other people wanted to buy. Buyers spent money for the things they wanted most. In such a marketplace, Smith thought, social harmony would result without any government direction, “as if by an invisible hand.” Smith’s ideas were central to the development of capitalism.

Smith applied an invisible hand of his own. When the economist died, people discovered that he had secretly donated large chunks of his income to charities.



are few workers and scarce resources, then they are expensive. Ricardo believed that wages would be forced down as population increased.

Laissez-faire thinkers such as Smith, Malthus, and Ricardo opposed government efforts to help poor workers. They thought that creating minimum wage laws and better working conditions would upset the free market system, lower profits, and undermine the production of wealth in society.

Rise of Socialism

In contrast to laissez-faire philosophy, which advised governments to leave business alone, other theorists believed that governments should intervene. These thinkers believed that wealthy people or the government must take action to improve people's lives. The French writer Alexis de Tocqueville gave a warning:

A VOICE FROM THE PAST

Consider what is happening among the working classes. . . . Do you not see spreading among them, little by little, opinions and ideas that aim not to overturn such and such a ministry, or such laws, or such a government, but society itself, to shake it to the foundations upon which it now rests?

ALEXIS DE TOCQUEVILLE, 1848 speech



Jeremy Bentham's skeleton, dressed in Bentham's clothes and topped off by a wax head, is preserved in a wooden cabinet at University College, London.

Utilitarianism Modifying the ideas of Adam Smith, an English philosopher named Jeremy Bentham introduced the philosophy of **utilitarianism**. Bentham wrote his most influential works in the late 1700s. He argued that people should judge ideas, institutions, and actions on the basis of their utility, or usefulness. He argued that the government should try to promote the greatest good for the greatest number of people. A government policy was only useful if it promoted this goal. Bentham argued that in general the individual should be free to pursue his or her own advantage without interference from the state.

John Stuart Mill, a philosopher and economist, led the utilitarian movement in the 1800s. Mill came to question unregulated capitalism. He believed it was wrong that workers should lead deprived lives that sometimes bordered on starvation. Mill wished to help ordinary working people with policies that would lead to a more equal division of profits. He also favored a cooperative system of agriculture and women's rights, including the right to vote. Mill called for the government to do away with great differences in wealth. Utilitarians also pushed for reforms in the legal and prison systems and in education.

Utopian Ideas Other reformers took an even more active approach. Shocked by the misery and poverty of the working class, a British factory owner named Robert Owen improved working conditions for his employees. Near his cotton mill in New Lanark, Scotland, Owen built houses, which he rented at low rates. He prohibited children under ten from working in the mills and provided free schooling.

Then, in 1824, he traveled to the United States. He founded a cooperative community in New Harmony, Indiana, in 1825. He intended this community to be a utopia, or perfect living place. New Harmony only lasted three years. However, it inspired the founding of other communities.

Socialism and Marxism French reformers such as Charles Fourier (FUR-ee-AY), Saint-Simon (san see-MOHN), and others sought to offset the effects of industrialization with a new kind of economic system called socialism. In **socialism**, the factors of production are owned by the public and operate for the welfare of all. Socialism grew out of an optimistic view of human nature, a belief in progress, and a concern for social justice.

THINK THROUGH HISTORY

A. Making Inferences

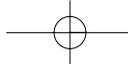
Economics came to be called the "dismal [gloomy] science," in part because of the ideas of Malthus and Ricardo. Why might their ideas have earned this phrase?

THINK THROUGH HISTORY

B. Clarifying How did Mill want to change the economic system?

Background

The word *utopia* comes from the name for an imaginary island in a book of the same name written by Sir Thomas More. It means "no place" in Greek. More's *Utopia* (1516) is a political essay that discusses life under an ideal government.



Socialists argued that the government should actively plan the economy rather than depending on free-market capitalism to do the job. They argued that government control of factories, mines, railroads, and other key industries would abolish poverty and promote equality. Public ownership, they believed, would help the workers, who were at the mercy of greedy employers.

The Communist Manifesto The writings of a German journalist named **Karl Marx** introduced the world to a radical type of socialism called Marxism. Marx and Friedrich Engels, a German whose father owned a textile mill in Manchester, outlined their ideas in a 23-page pamphlet called *The Communist Manifesto*. In their manifesto, Marx and Engels argued that human societies have always been divided into warring classes. In their own time, these were the middle-class “haves” or employers, called the bourgeoisie (BUR-zhwah-ZEE), and the “have-nots” or workers, called the proletariat (PROH-lih-TAIR-ee-ih). While the wealthy controlled the means of producing goods, the poor performed backbreaking labor under terrible conditions. This situation resulted in conflict:

A VOICE FROM THE PAST

Freeman and slave, patrician and plebeian, lord and serf, guild-master and journeyman, in a word, oppressor and oppressed, stood in constant opposition to one another, carried on an uninterrupted, now hidden, now open fight, a fight that each time ended, either in a revolutionary reconstitution of society at large, or in the common ruin of the contending classes.

KARL MARX AND FRIEDRICH ENGELS, *The Communist Manifesto* (1848)

According to Marx and Engels, the Industrial Revolution had enriched the wealthy and impoverished the poor. The two writers predicted that the workers would overthrow the owners: “The proletarians have nothing to lose but their chains. They have a world to win. Workingmen of all countries, unite.”

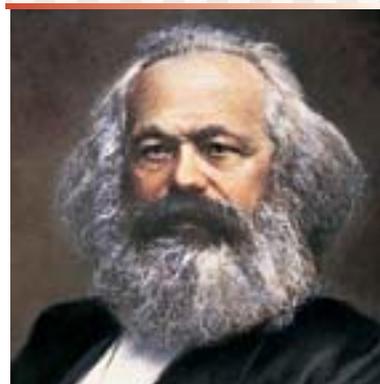
The Future According to Marx Marx believed that the capitalist system, which produced the Industrial Revolution, would eventually destroy itself in the following way. Factories would drive small artisans out of business, leaving a small number of manufacturers to control all the wealth. The large proletariat would revolt, seize the factories and mills from the capitalists, and produce what society needed. Workers, sharing in the profits, would bring about economic equality for all people. The workers would control the government in a “dictatorship of the proletariat.” After a period of cooperative living and education, the state or government would wither away as a classless society developed.

Marx called this final phase pure communism. Marx described **communism** as a form of complete socialism in which the means of production—all land, mines, factories, railroads, and businesses—would be owned by the people. Private property would in effect cease to exist. All goods and services would be shared equally.

Published in 1848, *The Communist Manifesto* produced few short-term results. Though widespread revolts shook Europe during 1848 and 1849, Europe’s leaders eventually put down the uprisings. Only after the turn of the century did the fiery Marxist pamphlet produce explosive results. In the 1900s, Marxism inspired revolutionaries such as Russia’s Lenin, China’s Mao Zedong, Vietnam’s Ho Chi Minh, and Cuba’s Fidel Castro. These revolutionary leaders adapted Marx’s beliefs and arguments to their own specific situations and needs.

In their pamphlet, Marx and Engels condemned the inequalities of early industrial economies. Yet several of Marx’s and Engels’s predictions have since proved wrong.

HISTORY MAKERS



Karl Marx
1818–1883

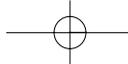
Karl Marx studied philosophy at the University of Berlin before he turned to journalism and economics. In 1849, Marx joined the flood of radicals who fled continental Europe for England. He had declared in *The Communist Manifesto* that “the working men have no country.”

Marx’s theories of socialism and the inevitable revolt of the working class made him very little money. He earned a meager living as a journalist. His wealthy coauthor and fellow German, Friedrich Engels, gave Marx financial aid.

THINK THROUGH HISTORY

C. Summarizing

What were the ideas of Marx and Engels concerning relations between the owners and the working class?



Capitalism vs. Marxism

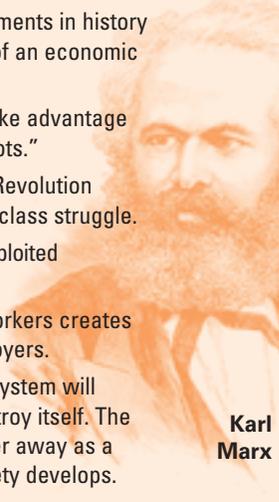
Capitalist Ideas



Adam
Smith

- Progress results when individuals follow their own self-interest.
- Businesses follow their own self-interest when they compete with one another for the consumer's money.
- Each producer tries to provide goods and services that are better and less expensive than those of competitors.
- Consumers compete with one another to purchase the best goods at the lowest prices.
- Market economy aims to produce the best products and the lowest prices.
- Government should not interfere in the economy.

Marxist Ideas



Karl
Marx

- All great movements in history are the result of an economic class struggle.
- The "haves" take advantage of the "have-nots."
- The Industrial Revolution intensified the class struggle.
- Workers are exploited by employers.
- The labor of workers creates profit for employers.
- The capitalist system will eventually destroy itself. The state will wither away as a classless society develops.

SKILLBUILDER: Interpreting Charts

1. Which ideas of Marxism seem to be a direct reaction to the Industrial Revolution?
2. Which system of ideas seems dominant in the world today? Support your opinion.

They believed that economic forces alone dominated society. Time has shown, however, that religion, nationalism, ethnic loyalties, and a desire for democratic reforms may be as strong influences on history as economic forces. In addition, the gap between the rich and poor within the industrialized countries failed to widen in the way that Marx and Engels predicted, mostly because of the following types of reform.

Unionization and Legislative Reform

Factory workers faced long hours, dirty and dangerous working conditions, and the threat of being laid off. By the 1800s, working people became more active in politics. To press for reforms, workers joined together in voluntary associations called **unions**.

The Union Movement A union spoke for all the workers in a particular trade. Unions engaged in **collective bargaining**—negotiations between workers and their employers. They bargained for better working conditions and higher pay. If factory owners refused these demands, union members could **strike**, or refuse to work.

Skilled workers led the way in forming unions because their special skills gave them extra bargaining power. Management would have trouble replacing such skilled workers as carpenters, printers, and spinners. Thus the earliest unions helped the lower middle class more than they helped the poorest workers.

The union movement underwent slow, painful growth in both Great Britain and the United States. For years, the British government denied workers the right to form unions. The government saw unions as a threat to social order and stability. Indeed, the Combination Acts of 1799 and 1800 outlawed unions and strikes. Bravely ignoring the threat of jail or job loss, factory workers joined unions anyway. Parliament finally repealed the Combination Acts in 1824. After 1825, the British government unhappily tolerated unions.

British unions had shared goals of raising wages and improving working conditions. By 1875, British trade unions had won the right to strike and picket peacefully. They had also built up a membership of about 1 million people.

In the United States, skilled workers had belonged to unions since the early 1800s. In 1886, several unions joined together to form the organization that would become the



This print shows an attack on the workhouse, a prison in which limited sentences at manual labor are served. The attack took place in Stockport, England, during demonstrations by workers in the 1830s. The workers are shown distributing bread from the workhouse.

American Federation of Labor (AFL). A series of successful strikes won AFL members higher wages and shorter hours.

Reform Laws In both Great Britain and the United States, new laws reformed some of the worst abuses of industrialization. In 1832, for example, Parliament set up a committee to investigate child labor. As a result of this committee's findings, Parliament passed the Factory Act of 1833. The new law made it illegal to hire children under 9 years old. Children from the ages of 9 to 12 could not work more than 8 hours a day. Young people from 13 to 17 could not work more than 12 hours. In 1842 the Mines Act prevented women and children from working underground.

In 1847, the Parliament passed a bill that helped working women as well as their children. The Ten Hours Act of 1847 limited the workday to ten hours for women and children who worked in factories.

Reformers in the United States also passed legislation to protect child workers. In 1904, a group of progressive reformers organized the National Child Labor Committee to end child labor. Arguing that child labor lowered wages for all workers, labor union members joined the reformers. Together these groups pressured national and state politicians to ban child labor and set maximum working hours. The Supreme Court in 1919 had objected to a federal child labor law. However, it did allow individual states to legally limit the working hours of women and, later, of men.

THINK THROUGH HISTORY

D. Summarizing

What were some of the important reform bills passed in Britain during this period?

Other Reform Movements

Almost from the beginning, reform movements sprang up in response to the negative impact of industrialization. These reforms included improving the workplace and extending the right to vote to working-class men. The same impulse toward reform, along with the ideals of the French Revolution, also helped to end slavery and promote new rights for women and children.

Abolition of Slavery William Wilberforce, a highly religious man, was a member of Parliament who led the fight for abolition—the end of the slave trade and slavery in the British Empire. Parliament passed a bill to end the slave trade in the British West Indies in 1807. After he retired from Parliament in 1825, Wilberforce continued his fight to free the slaves. Britain finally abolished slavery in its empire in 1833.

British antislavery activists had mixed motives. Some were morally against slavery, such as the abolitionist William Wilberforce. Others viewed slave labor as an economic threat. Furthermore, a new class of industrialists developed who supported cheap labor rather than slave labor. They soon gained power in Parliament.

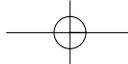
In the United States the movement to fulfill the promise of the Declaration of Independence by ending slavery grew in the early 1800s. The enslavement of African people finally ended in the United States when the Union won the Civil War in 1865.

With the end of the U.S. Civil War, enslavement persisted in the Americas only in Puerto Rico, Cuba, and Brazil. In Puerto Rico, slavery was ended in 1873. Spain finally abolished slavery in its Cuban colony in 1886. Not until 1888 did Brazil's huge enslaved population win freedom.

THINK THROUGH HISTORY

E. Summarizing

What were some of the motives of British abolitionists?



HISTORY MAKERS



Jane Addams
1860–1935

After graduating from college, Jane Addams wondered what to do with her life.

I gradually became convinced that it would be a good thing to rent a house in a part of the city where many primitive and actual needs are found, in which young women who had been given over too exclusively to study, might . . . learn of life from life itself.

Addams and her friend Ellen Starr set up Hull House in a working-class district in Chicago. Eventually the facilities included a nursery, a gym, a kitchen, and a boarding house for working women. Hull House not only served the immigrant population of the neighborhood, it also trained social workers.

Women Fight for Change The Industrial Revolution proved a mixed blessing for women. On the one hand, factory work offered higher wages than work done at home. Women spinners in Manchester, for example, earned much more money than women who stayed home to spin cotton thread. On the other hand, women factory workers usually made only one-third as much money as men.

Women led reform movements to address this and other pressing social issues. During the mid-1800s, for example, women formed unions in the trades where they dominated. In Britain, some women served as safety inspectors in factories where other women worked. In the United States, college-educated women like Jane Addams ran settlement houses. These community centers served the poor residents of slum neighborhoods.

In both the United States and Britain, women who had rallied for the abolition of slavery began to wonder why their own rights should be denied on the basis of gender. The movement for women's rights began in the United States as early as 1848. Women activists around the world joined to found the International Council for Women in 1888. Delegates and observers from 27 countries attended the council's 1899 meeting.

Reforms Spread to Many Areas of Life In the United States and Western Europe, reformers tried to correct the problems troubling the newly industrialized nations. Public education and prison reform ranked high on the reformers' lists.

One of the most prominent U.S. reformers, Horace Mann of Massachusetts, favored free public education for all children. Mann, who spent his own childhood working at hard labor, warned, "If we do not prepare children to become good citizens . . . if we do not enrich their minds with knowledge, then our republic must go down to destruction." By the 1850s many states were starting to establish a system of public schools. In Western Europe, free public schooling became available in the late 1800s.

In 1831, French writer Alexis de Tocqueville had contrasted the brutal conditions in American prisons to the "extended liberty" of American society. Reformers took on the challenge of prison reform, emphasizing the goal of restoring prisoners to useful lives.

During the 1800s, democracy grew in the industrialized countries even as foreign expansion increased. The industrialized western democracies faced new challenges both at home and abroad. You will learn about these challenges in Chapter 26.

THINK THROUGH HISTORY

F. Making

Inferences Why might women abolitionists have headed the movement for women's rights?

Section 4 Assessment

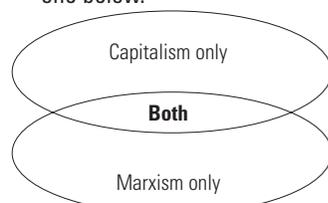
1. TERMS & NAMES

Identify

- laissez faire
- Adam Smith
- capitalism
- utilitarianism
- socialism
- Karl Marx
- communism
- union
- collective bargaining
- strike

2. TAKING NOTES

Compare capitalism with Marxism using a Venn diagram such as the one below.



Write a paragraph comparing and contrasting capitalism and Marxism.

3. IDENTIFYING PROBLEMS

What were the main problems faced by the unions during the 1800s? How did the unions overcome these problems?

THINK ABOUT

- government restrictions
- labor reforms
- skilled workers vs. unskilled workers

4. ANALYZING THEMES

Economics According to Marx and Engels, economic forces alone dominate society. How important do you think such forces are? Support your opinion using evidence from this and previous chapters.

THINK ABOUT

- other forces, like ethnic loyalties, desire for democracy
- causes of the Industrial Revolution
- the class structure



different PERSPECTIVES

Industrialization

Industrialization eventually lifted the standard of living for many people in Europe and North America in the 1800s. Yet the process also brought suffering to countless workers who crowded into filthy cities to toil for starvation wages. The following excerpts reveal a variety of perspectives on this major historical event.

TESTIMONY

Ellison Jack

An 11-year-old girl who worked in the mines testified before a Parliamentary commission on child labor in 1842.

I have been working below three years on my father's account; he takes me down at two in the morning, and I come up at one and two next afternoon. I go to bed at six at night to be ready for work next morning. . . . I have to bear my burthen [burden] up four traps, or ladders, before I get to the main road which leads to the pit bottom. My task is four or five tubs. . . . I fill five tubs in twenty journeys.

I have had the strap [beating] when I did not do my bidding. Am very glad when my task is wrought, as it sore fatigues.

LETTER

Mary Paul

Mary Paul worked in a textile factory in Lowell, Massachusetts. In an 1846 letter to her father in New Hampshire, the 16-year-old expressed her satisfaction with her situation at Lowell.

I am at work in a spinning room tending four sides of warp which is one girl's work. The overseer tells me that he never had a girl get along better than I do. . . . I have a very good boarding place, have enough to eat. . . . The girls are all kind and obliging. . . . I think that the factory is the best place for me and if any girl wants employment, I advise them to come to Lowell.

BOOK

Andrew Carnegie



In his autobiography, published in 1920, the multimillionaire industrialist views with optimism the growth of American industry.

America is soon to change from being the dearest steel

manufacturing country to the cheapest. Already the shipyards of Belfast are our customers. This is but the beginning. Under present conditions America can produce steel as cheaply as any other land, notwithstanding its higher-priced labor. There is no other labor so cheap as the dearest in the mechanical field, provided it is free, contented, zealous, and reaping reward as it renders service. And here America leads.

One great advantage which America will have in competing in the markets of the world is that her manufacturers will have the best home market. Upon this they can depend for a return upon capital, and the surplus product can be exported with advantage, even when the prices received for it do no more than cover actual cost, provided the exports be charged with their proportion of all expenses. The nation that has the best home market, especially if products are standardized, as ours are, can soon outsell the foreign producer.

BOOK

Friedrich Engels



Friedrich Engels, who managed a textile factory in Manchester, England, spent his nights wandering the city's slums.

Nobody troubles about the poor as they struggle helplessly in the whirlpool of modern industrial life. The

working man may be lucky enough to find employment, if by his labor he can enrich some member of the middle classes. But his wages are so low that they hardly keep body and soul together. If he cannot find work, he can steal, unless he is afraid of the police; or he can go hungry and then the police will see to it that he will die of hunger in such a way as not to disturb the equanimity of the middle classes.

Connect to History

Contrasting Contrast two different points of view on the Industrial Revolution. Why do you think the viewpoints differ?

 SEE SKILLBUILDER HANDBOOK, PAGE R7

Connect to Today

Researching Find a modern view of industrialization in an editorial cartoon, a poem, an excerpt from a novel, or a photograph. Bring it to class and explain its point of view.



CD-ROM For another perspective on the Industrial Revolution, see World History: Electronic Library of Primary Sources.



Chapter 25 Assessment

TERMS & NAMES

Briefly explain the importance of each of the following to industrialization.

1. Industrial Revolution
2. enclosure
3. factory
4. urbanization
5. middle class
6. corporation
7. laissez faire
8. socialism
9. Karl Marx
10. collective bargaining

Interact *with* History



On page 632, you looked at working conditions in an English factory in the 19th century before reading about the Industrial Revolution. Now that you've read the chapter, rethink your decision about what you would do to change your situation. What factory working conditions would you like to see change? What benefits might a union bring? What disadvantages might result if workers organize? Discuss your opinions with a small group.

REVIEW QUESTIONS

SECTION 1 (pages 633–637)

The Beginnings of Industrialization

11. What were the four natural resources needed for British industrialization?
12. How did the enclosure movement change agriculture in England?
13. Name two inventions that were created during the Industrial Revolution. Describe their impact.

SECTION 2 (pages 638–642)

Patterns of Change: Industrialization

14. Describe the living conditions in Britain during industrialization.
15. How did the new middle class transform the social structure of Great Britain during industrialization?
16. How did industrialization affect Manchester's natural environment?

SECTION 3 (pages 643–646)

Industrialization Spreads

17. Why were other European countries slower to industrialize than Britain?
18. What helps to explain the rise of global inequality during the Industrial Revolution?

SECTION 4 (pages 647–652)

An Age of Reforms

19. What were the two warring classes that Marx and Engels outlined in *The Communist Manifesto*?
20. Name two ways women fought for change during the Industrial Revolution.

Visual Summary

The Industrial Revolution

Economic Effects

- New inventions and development of factories
- Rapidly growing industry in the 1800s
- Increased production and higher demand for raw materials
- Growth of worldwide trade
- Population explosion and a large labor force
- Exploitation of mineral resources
- Highly developed banking and investment system
- Advances in transportation, agriculture, and communication

Social Effects

- Long hours worked by children in factories
- Increase in population of cities
- Poor city planning
- Loss of family stability
- Expansion of middle class
- Harsh conditions for laborers
- Workers' progress vs. laissez-faire economic attitudes
- Improved standard of living
- Creation of new jobs
- Encouragement of technological progress

Political Effects

- Child labor laws to end abuses
- Reformers urging equal distribution of wealth
- Trade unions
- Social reform movements, such as utilitarianism, utopianism, socialism, and Marxism
- Reform bills in Parliament



CRITICAL THINKING

1. INDUSTRIAL REVOLUTION BRINGS CHANGE

How significant were the changes the Industrial Revolution brought to the world? How enduring were they? Explain your conclusion. Think about economic, social, and political changes.

2. TECHNOLOGICAL ADVANCES

THEME SCIENCE & TECHNOLOGY Create a chart like the one below that lists some of the major technological advances and their effects on industrial society.

Technological Advance	Effect(s)

3. MILITARY POWER

How did the Industrial Revolution help to increase Germany's military power?

4. ANALYZING PRIMARY SOURCES

The following quotation comes from Charles Dickens's *Hard Times*, first published in book form in 1854. In *Hard Times*, as well as in several of his other novels, Dickens exposes such evils of industrialization as child labor, polluted cities, and corrupt factory owners. The following excerpt begins the chapter "No Way Out." Read the paragraph and answer the questions that follow.

A VOICE FROM THE PAST

The Fairy Palaces burst into illumination before pale morning showed the monstrous serpents of smoke trailing themselves over Coketown. A clattering of clogs upon the pavement, a rapid ringing of bells, and all the melancholy mad elephants, polished and oiled up for the day's monotony, were at their heavy exercise again.

- What is Dickens's opinion of the factory town? What words give you that impression?
- Why do you think Dickens called the chapter "No Way Out"?

Additional Test Practice,
pp. S1–S33



CHAPTER ACTIVITIES

1. LIVING HISTORY: Unit Portfolio Project

THEME EMPIRE BUILDING Your unit portfolio project focuses on how different nations built empires (see page 629). For Chapter 25, you might use one of the following ideas.

- Would a nonindustrialized or an industrialized nation more likely be an empire builder in the 19th and 20th centuries? Stage a debate to discuss this question. Videotape the session.
- You are an artisan in a nonindustrialized nation threatened by a flood of cheap European goods into your marketplace. Write a letter to the editor of a local paper describing your situation and what might be done.
- Work with a partner to create British posters advertising their manufactured goods in overseas, less-developed markets.

2. CONNECT TO TODAY: Cooperative Learning

THEME ECONOMICS Today, child labor still exists in many developing nations, with many of the same grueling conditions. Work with a team to find out what the various child labor situations are in different places.



Using the Internet or your library, research organizations that are fighting child labor.

- Write a letter, or in some other manner voice your concern and support to these organizations.

3. INTERPRETING A TIME LINE

Revisit the unit time line on pages 628–629. Look at events for Chapter 25. Write two more entries that could be added to the time line from Chapter 25. Support your answer with evidence from the text.

FOCUS ON GRAPHS

The graph to the right shows population growth in four European cities from 1700 to 1900, that is, before and after the Industrial Revolution.

- Which city had the smallest population in 1700? How many people had it gained by 1900?
- Which city gained the most people in this period? How many people did it gain between 1700 and 1900?

Connect to History

Why did cities grow so rapidly in this period? What lured people to the cities?

