1 The Industrial Revolution

Prepare to Read

Objectives

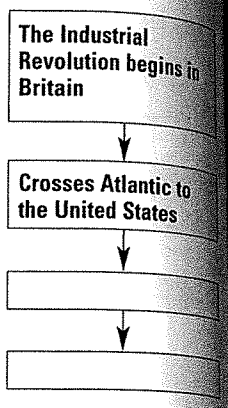
In this section, you will
- Identify the Industrial Revolution and explain its effects on the United States.
- Explain why Lowell, Massachusetts, was called a model factory town.
- Describe life in early factories.
- Summarize the impact the Industrial Revolution had on American cities.

Key Terms

Industrial Revolution
spinning jenny
capital
capitalist
factory system
interchangeable parts
Lowell girl
urbanization

Target Reading Skill

Sequence Copy this flowchart. As you read the section, fill in the boxes with some of the major events described in it that led to the Industrial Revolution in the United States. Add as many boxes as you need to finish the flowchart.



Main Idea During the early 1800s, the Industrial Revolution dramatically changed the American way of life.

Lucy Larcom

Setting the Scene At dawn, the factory bell woke 11-year-old Lucy Larcom. Rising quickly, she ate her breakfast and hurried to her job at a spinning mill in Lowell, Massachusetts. Years later, Larcom described her workplace:

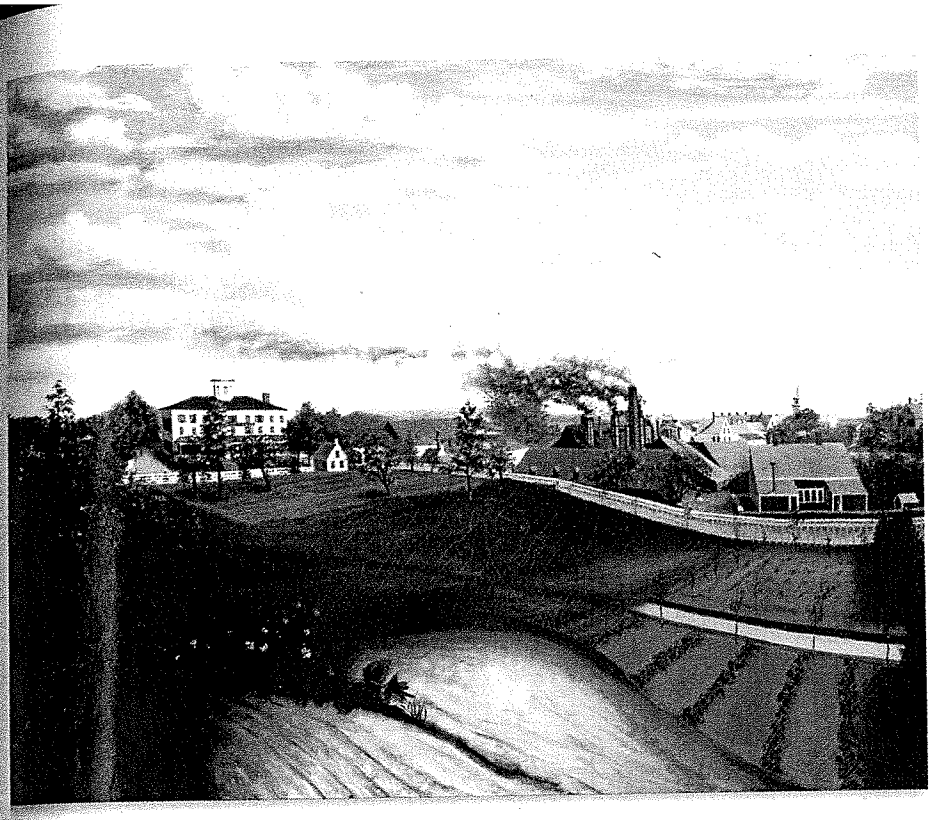
> "The buzzing and hissing and whizzing of pulleys and rollers and spindles and flyers around me often grew tiresome. . . . I could look across the room and see girls moving backward and forward among the spinning frames, sometimes stooping, sometimes reaching up their arms, as their work required."
>
> —Lucy Larcom, *Among Lowell Mill-Girls: A Reminiscence*, 1881

In the early 1800s, busy factories and whirring machinery had become part of a revolution that was reaching the United States. Unlike the American Revolution, this one had no battles or fixed dates. The new revolution—the **Industrial Revolution**—was a long, slow process that completely changed the way in which goods were produced.

The Industrial Revolution Begins

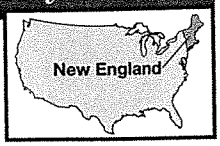
Before the 1800s, most Americans were farmers and most goods were produced by hand. As a result of the Industrial Revolution, this situation slowly changed. Machines replaced hand tools. New sources of power, such as steam, replaced human and animal power. While most Americans continued to farm for a living, the economy began a gradual shift toward manufacturing.

New Technology The Industrial Revolution started in Britain in the mid-1700s. British inventors developed new machines that transformed the textile industry.



Viewing History

Changing Landscape The Industrial Revolution changed the face of the nation. In this painting, the artist shows an early factory among the church spires and green fields of a New England town. **Identifying Points of View** ***What do you think is the point of view of the artist toward the changing face of the village? Explain.***



Since the Middle Ages, workers had used spinning wheels to make thread. A spinning wheel, however, could spin only one thread at a time. In 1764, James Hargreaves developed the **spinning jenny**, a machine that could spin several threads at once. Other inventions speeded up the process of weaving thread into cloth. In the 1780s, Edmund Cartwright built a loom powered by water. It allowed a worker to produce a great deal more cloth in a day than was possible before.

The Factory System New inventions led to a new system of producing goods. Before the Industrial Revolution, most spinning and weaving took place in the home. Large machines however, had to be housed in large mills near rivers. Water flowing downstream or over a waterfall turned a wheel that produced the power to run the machines.

To set up and operate a spinning mill required large amounts of **capital**, or money. Capitalists supplied this money. A **capitalist** is a person who invests in a business in order to make a profit. Capitalists built factories and hired workers to run the machines.

The new **factory system** brought workers and machinery together in one place to produce goods. Factory workers earned daily or weekly wages. They had to work a set number of hours each day.

A Revolution Crosses the Atlantic

Britain wanted to keep its new technology secret. It did not want rival nations to copy the new machines. Therefore, the British Parliament passed a law forbidding anyone to take plans of the new machinery out of the country.

Slater Breaks the Law Samuel Slater soon proved that this law could not be enforced. Slater was a skilled mechanic in a British textile mill. When he heard that Americans were offering large rewards for plans of British factories, he decided to leave Britain. In 1789,

Identify Sequence What events noted on this page contributed to the rise of the Industrial Revolution in the United States? Add these events to your flowchart.

Slater boarded a ship bound for New York City. He knew that British officials searched the baggage of passengers sailing to the United States. To avoid getting caught, he memorized the design of the machines in the mill.

The First American Mill Slater soon visited Moses Brown, a Quaker capitalist who had a mill in Pawtucket, Rhode Island. The mill was not doing well because its machinery constantly broke down. Slater set to work on improving the machinery. By 1793, in Pawtucket, he built what became the first successful textile mill in the United States that was powered by water. Slater's wife, Hannah Slater, contributed to the success of the mill. She discovered how to make thread stronger so that it would not snap on the spindles.

Slater's factory was a huge success. Before long, other American manufacturers began using his ideas.

Interchangeable Parts American manufacturers benefited from the pioneering work of American inventor Eli Whitney. Earlier, skilled workers made goods by hand. For example, gunsmiths spent days making the barrel, stock, and trigger for a single musket. Because the parts were handmade, each musket differed a bit from every other musket. If a part broke, a gunsmith had to make a new part to fit that particular gun.

Whitney wanted to speed up the making of guns by having machines manufacture each part. All machine-made parts would be alike—for example, one trigger would be identical to another. Interchangeable parts would save time and money.

Because the government bought many guns, Whitney went to Washington, D.C., to try to sell his idea. At first, officials laughed at his plan. Carefully, Whitney sorted parts for 10 muskets into separate piles. He then asked an official to choose one part from each pile. In minutes, the first musket was assembled. Whitney repeated the process until 10 muskets were complete.

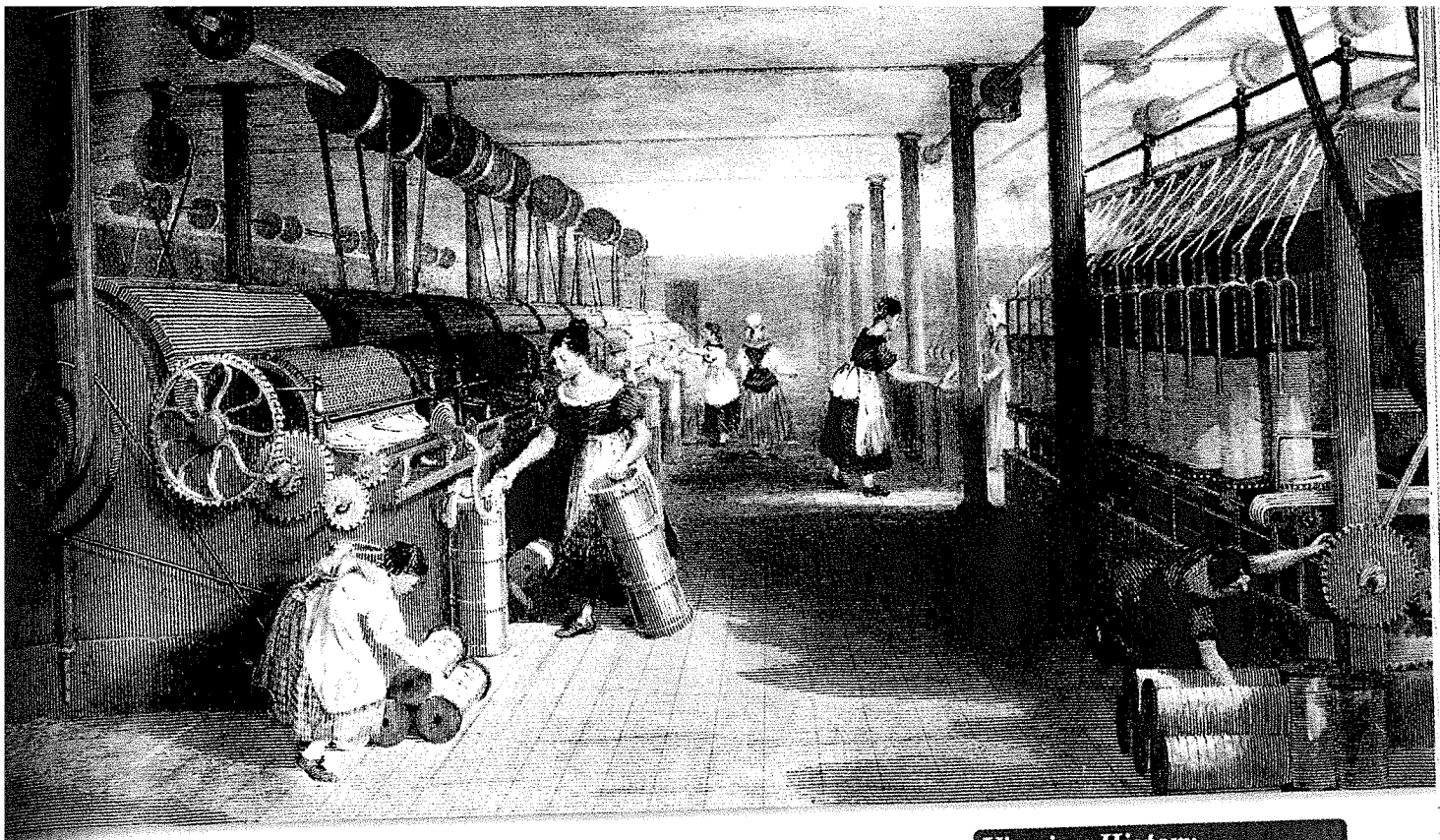
The idea of interchangeable parts spread rapidly. Inventors designed machines to produce interchangeable parts for clocks, locks, and many other goods. With such machines, small workshops grew into factories.

Lowell, Massachusetts: A Model Factory Town

The War of 1812 provided a boost to American industries. The British blockade cut Americans off from their supply of foreign goods. As a result, they had to produce more goods themselves.

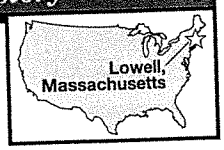
The Lowell Mills During the war, Francis Cabot Lowell, a Boston merchant, found a way to improve on British textile mills. In Britain, one factory spun thread and a second factory wove it into cloth. Why not, Lowell wondered, combine spinning and weaving under one roof? The new mill that he built in Waltham, Massachusetts, had all the machines needed to turn raw cotton into finished cloth.

After Lowell's death, his partners took on a more ambitious project. They built an entire factory town and named it after him. In



Viewing History

Inside a Textile Mill



Work in the textile mills in the early 1800s was hard. Workers faced long hours on their feet amid the noisy machines. Yet, the mills were generally clean and orderly.

Analyzing Primary Sources

What clues does the picture give to conditions in this mill?

1821, Lowell, Massachusetts, was a village of five farm families. By 1836, it boasted more than 10,000 people. Visitors to Lowell described it as a model community composed of "small wooden houses, painted white, with green blinds, very neat, very snug, very nicely carpeted."

"Lowell Girls" To work in their new mills, the company hired young women from nearby farms. The Lowell girls, as they came to be called, usually worked for a few years in the mills before returning home to marry. Most sent their wages home to their families.

At first, parents hesitated to let their daughters work in the mills. To reassure parents, the company built boardinghouses. The company also made rules to protect the young women.

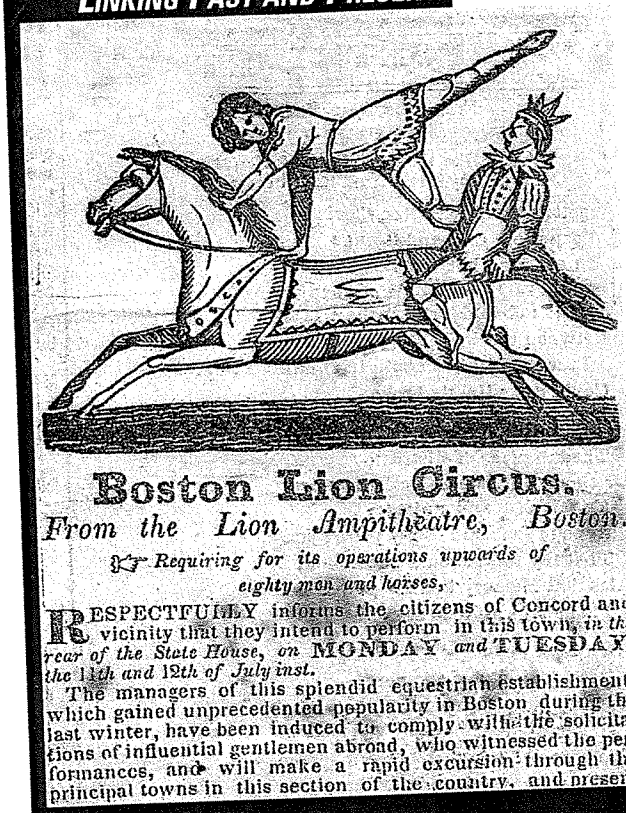
Although factory work was often tedious and hard, many women valued the economic freedom they got from working in the mills. One worker wrote her sister Sarah back on a farm in New Hampshire:

> "Since I have wrote you, another pay day has come around. I earned 14 dollars and a half . . . I like it well as ever and Sarah don't I feel independent of everyone!"
>
> —from *Lowell Offering: Writings by New England Mill Women*

Daily Life During the Industrial Revolution

In Lowell and elsewhere, mill owners hired mostly women and children. They did this because they could pay women and children half of what they would have had to pay men.

Linking Past and Present



Boston Lion Circus.

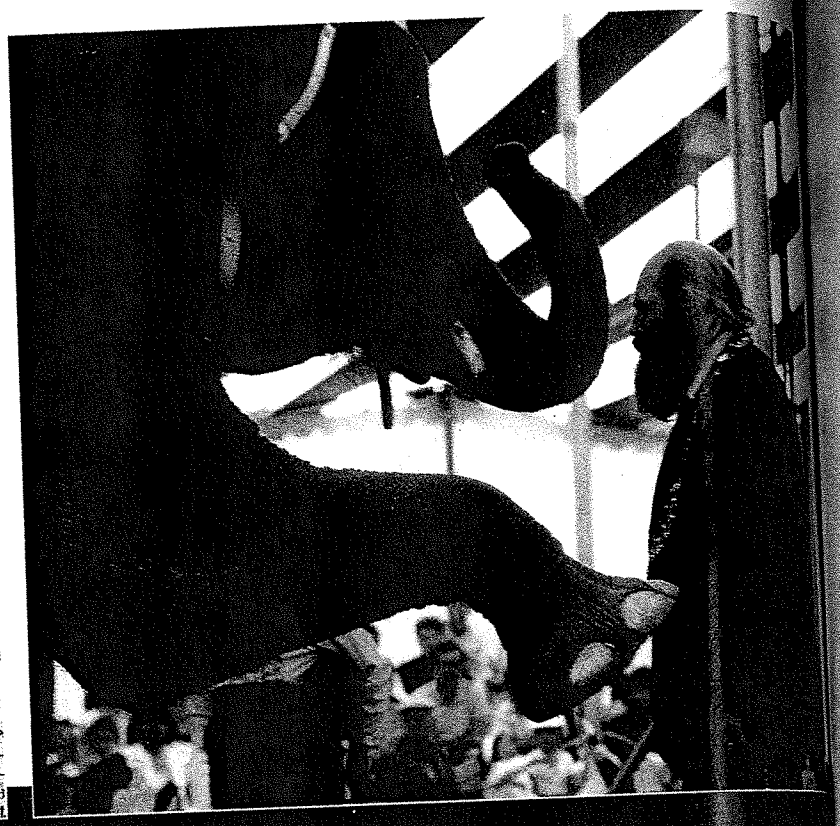
From the Lion Amphitheatre, Boston.

Requiring for its operations upwards of eighty men and horses,

RESPECTFULLY informs the citizens of Concord and vicinity that they intend to perform in this town, *in the rear of the State House, on* MONDAY *and* TUESDAY *the 11th and 12th of July inst.*

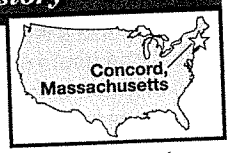
The managers of this splendid equestrian establishment, which gained unprecedented popularity in Boston during the last winter, have been induced to comply with the solicitations of influential gentlemen abroad, who witnessed the performances, and will make a rapid excursion through the principal towns in this section of the country, and present

▲ Past



▲ Present

Viewing History



Circuses Then and Now

From Roman times to the present, circuses have been one of the world's most popular forms of family entertainment. The world has changed dramatically, but trained animals continue to delight and enthrall us. At left, a poster from the early 1800s promises trick riders and a "wonderful variety of feats, many of which have never before been attempted on this side of the Atlantic."

Linking Past and Present

Why have circuses maintained their popularity for so many years?

Child Labor Boys and girls as young as seven worked in factories. Small children were especially useful in textile mills because they could squeeze around the large machines to change spindles.

Today, most Americans look upon child labor as cruel. Yet in the 1800s, farm children also worked hard. Most people did not see much difference between children working in a factory or on a farm. Often, a child's wages were needed to help support the family.

Long Hours Working hours in the mills were long—12 hours a day, 6 days a week. True, farmers also put in long hours. However, farmers worked shorter hours in winter. Mill workers, in contrast, worked nearly the same hours all year round.

In the early 1800s, conditions in American mills were generally much better than in most factories in Europe. As industries grew, however, competition increased and employers took less interest in the welfare of their workers. In later chapters, you will read how working conditions grew worse.

Changes in Home Life The Industrial Revolution had a great impact on home life. As the factory system spread, more family members left the home to earn a living.

These changes affected ideas about the role of women. In poorer families, women often had to go out to work. In wealthier families, husbands supported the family while wives stayed at home. For many husbands, having a wife who stayed at home became a sign of success.

Growing Cities

In 1800, the vast majority of Americans lived in rural areas. During the Industrial Revolution, many people left farms to work in factories. Older cities expanded rapidly, while new cities sprang up around factories. This movement of the population from farms to cities is called **urbanization.**

Urbanization was a steady but gradual process. In 1800, only 6 percent of the nation's population lived in urban areas. By 1850, the number had risen to 15 percent. Not until 1920 did more Americans live in cities than on farms.

By today's standards, these early cities were small. A person could walk from one end of any American city to the other in as little as 30 minutes. Buildings were only a few stories tall. As the factory system spread, the nation's cities grew.

Hazards Growing cities had many problems. Dirt and gravel streets turned into mudholes when it rained. Cities had no sewers, and people threw garbage into the streets. A visitor to New York reported that "The streets are filthy, and the stranger is not a little surprised to meet the hogs walking about in them, for the purpose of devouring the vegetables and trash thrown into the gutter."

Under these conditions, disease spread easily. Epidemics of influenza and cholera (KAHL er uh) raged through cities, killing hundreds.

Attractions Cities had attractions, too. Theaters, museums, and circuses created an air of excitement. In cities, people could shop in fine stores that sold the latest fashions from Europe. Some offered modern "ready-to-wear" clothing. While most women continued to sew their own clothes, many enjoyed visiting hat shops, china shops, shoe stores, and "fancy-goods" stores.

★ ★ ★ Section 1 Assessment ★ ★ ★

Recall

1. **Identify** Explain the significance of **(a)** Industrial Revolution, **(b)** Samuel Slater, **(c)** Eli Whitney, **(d)** Lowell girl.
2. **Define** **(a)** spinning jenny, **(b)** capital, **(c)** capitalist, **(d)** factory system, **(e)** interchangeable parts, **(f)** urbanization.

Comprehension

3. How did the Industrial Revolution begin in the United States?
4. What was unusual about the factory town of Lowell, Massachusetts?
5. What were conditions like for workers during the early Industrial Revolution?
6. Describe three ways in which American cities were changed by the early Industrial Revolution.

Critical Thinking and Writing

7. **Exploring the Main Idea** Review the Main Idea statement at the beginning of the section. Then, list three examples of changes in the way Americans lived and worked that were a result of the Industrial Revolution.
8. **Drawing Conclusions** Make a list of the reasons why both inventors and capitalists were needed to bring about the Industrial Revolution.

ACTIVITY

Go Online PHSchool.com

Use the Internet to learn more about life for the "Lowell girls" of the early 1800s. Then, suppose that you are a worker at the mill, and compose a diary entry describing a typical day. For help in completing the activity, visit PHSchool.com, **Web Code mfd-1101.**