

# The Expansion of Industry

## BEFORE YOU READ

In this section, you will read how Americans used their natural resources and technological breakthroughs to begin building an industrialized society.

### TERMS AND NAMES

**Edwin L. Drake** First person to use steam engine to drill for oil

**Bessemer process** Technique used to make steel from iron

**Thomas Alva Edison** Inventor of the light bulb

**Christopher Sholes** Inventor of the typewriter

**Alexander Graham Bell** Inventor of the telephone

## AS YOU READ

Use this diagram to take notes on the technological breakthroughs during the late 1800s and their impact on society.

<b>TECHNOLOGICAL BREAKTHROUGH</b>	<b>IMPACT</b>
<i>electrical power</i>	<i>revolutionized business and daily life</i>

## Natural Resources Fuel Industrialization

*What were America's important natural resources?*

In the years after the Civil War, advances in technology began to change the nation. There were three causes of these advances: a large supply of natural resources, an explosion of inventions, and a growing city population that wanted the new products.

One of the more important natural resources was oil. In 1840 a Canadian *geologist* discovered that *kerosene* could be used to light lamps. Kerosene was produced from oil. This increased Americans' demand for oil.

In 1859, **Edwin L. Drake** used a steam engine to drill for oil. This technological breakthrough

helped start an oil boom. Oil-refining industries started in Cleveland and Pittsburgh. There, workers turned oil into kerosene.

Oil produced yet another product—gasoline. At first, gasoline was thrown away. However, when the automobile became popular, gasoline was in great demand.

In addition to oil, Americans discovered that their nation was rich in coal and iron. In 1887, explorers found large amounts of iron in Minnesota. At the same time, coal production increased from 33 million tons in 1870 to more than 250 million tons in 1900.

Iron is a strong metal. However, it is heavy and tends to break and rust. Researchers eventually removed the element carbon from iron. This produced a lighter, more flexible metal that does not rust. It became known as steel. The **Bessemer**

**process**, named after British manufacturer Henry Bessemer, provided a useful way to turn iron into steel.

Americans quickly found many uses for steel. The railroads, with their thousands of miles of track, bought large amounts of the new metal. Steel was also used to improve farm tools such as the plow and reaper. It also was used to make cans for *preserving* food. Engineers used steel to build bridges. One of the most remarkable bridges was the Brooklyn Bridge. It connected New York City and Brooklyn. Steel also was used to build skyscrapers, such as the Home Insurance Building in Chicago.

**1. Name two ways Americans used steel.**

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## Inventions Promote Change

### *How did the new inventions change Americans' way of life?*

Beginning in the late 1800s, inventors produced items that changed the way people lived and worked. In 1876, **Thomas Alva Edison** established the world's first research laboratory in Menlo Park, New Jersey. He used the lab to develop new inventions. Edison perfected an early light bulb there. He then worked to establish power plants to generate electricity.

Another inventor, George Westinghouse, developed ways to make electricity safer and less expensive.

The use of electricity changed America. By 1890, electricity ran machines such as fans and printing presses. Electricity soon became available in homes. This led to the invention of many appliances. Cities built electric streetcars. They made travel cheaper and easier.

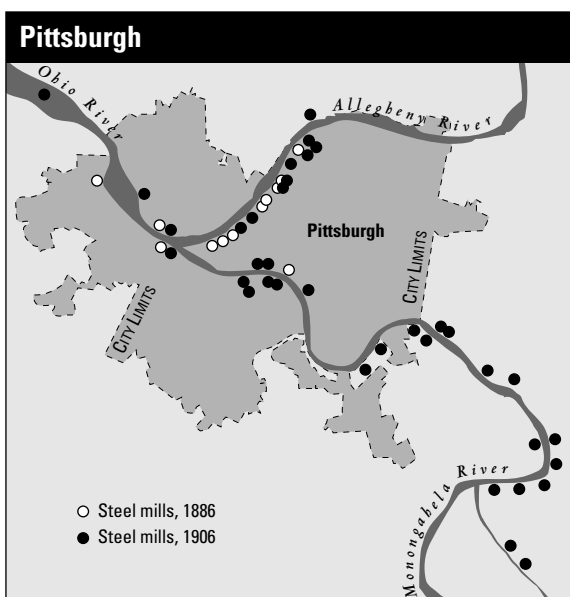
In 1867, **Christopher Sholes** invented the typewriter. This led to dramatic changes in the workplace. Almost ten years later, in 1876, **Alexander Graham Bell** and Thomas Watson invented the telephone.

The wave of inventions during the late 1800s helped change Americans' daily life. More women began to work in offices. By 1910, women made up about 40 percent of the nation's office work force. In addition, work that had been done at home—such as sewing clothes—was now done in factories. Unfortunately, many factory employees worked long hours in unhealthy conditions.

Inventions had several positive effects. Machines allowed employees to work faster. This led to a shorter work week. As a result, people had more *leisure* time. In addition, citizens enjoyed new products such as phonographs, bicycles, and cameras.

**2. Name two ways in which electricity changed people's life.**

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## Geography Skillbuilder

Use the map to answer the questions.

**1. Along what feature are all the mills located?**

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**2. What does this map say about the steel industry during the late 1800s and early 1900s?**

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