

Even with these economic highs and lows, industries in the United States grew tremendously between 1860 and 1900. Overall, the amount of manufactured goods increased six times during these years.

Steel: The Backbone of Industry

The steel industry contributed to America's industrial growth. Before the mid-1800s, steel was very expensive to manufacture because the steel-making process used huge amounts of coal. In the 1850s, William Kelly in the United States and Henry Bessemer in England independently developed a new process for making steel. It used less than one-seventh of the coal that the older process used. This new manufacturing technique was called the **Bessemer steel process**.

Because the Bessemer process cut the cost of steel, the nation's steel output increased 500 times between 1867 and 1900. Industry began to make many products out of steel instead of iron. These products included plows, barbed wire, nails, and beams for buildings. But the main use of steel throughout the late 1800s was for rails for the expanding railroads. (See Section 2.)

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B. Drawing Conclusions

Which industries benefited from the steel products mentioned here?

Edison and Electricity

Another industry that grew during the late 1800s was the electric-power industry. By the 1870s, inventors had designed efficient generators. A **generator** is a machine that produces electric current. As a result, people grew eager to tap the power of electricity.

The inventor who found the most ways to use electricity was **Thomas Edison**. In 1876, he opened a laboratory in Menlo Park, New Jersey. He employed many assistants, whom he organized into teams to do research. Edison's laboratory invented so many things that Edison received more than 1,000 U.S. patents, more than any other individual inventor.

Edison would start with an idea for a possible invention. Then he would work hard to make that idea a reality—even if problems arose.

A VOICE FROM THE PAST

It has been just so in all my inventions. The first step is an intuition—and comes with a burst, then difficulties arise. . . . "Bugs"—as such little faults and difficulties are called—show themselves and months of anxious watching, study and labor are requisite [needed] before commercial success—or failure—is certainly reached.

Thomas Edison, quoted in *Edison* by Matthew Josephson

Edison's most famous invention was practical electric lighting. Other inventors had already created electric lights, but they were too bright and

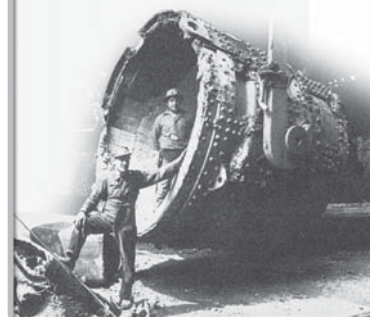
Connections TO SCIENCE

IRON VS. STEEL

Why is the comic book hero Superman also called the man of steel? People often use the word *steel* as a synonym for strength.

Steel is an iron alloy—a blend of iron and other materials such as carbon. But steel is stronger and more durable than iron. That is why steel replaced iron in many industries in the late 1800s. A giant ladle (bucket) used to pour melted steel is pictured below.

Stainless steel, invented in the early 1900s, has an additional benefit: it doesn't rust. Stainless steel is used in tools, machines, and many household items, such as pots, pans, and utensils.



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C. Finding Main Ideas

According to Edison, is inventing easy?