

The Industrial Age

Lesson 2 Inventions Change Society

ESSENTIAL QUESTION

How does technology change the way people live and work?

GUIDING QUESTIONS

1. *How did innovations in communications change society?*
2. *How did new inventions improve people's lives?*
3. *How did the inventions of the late 1800s change society?*

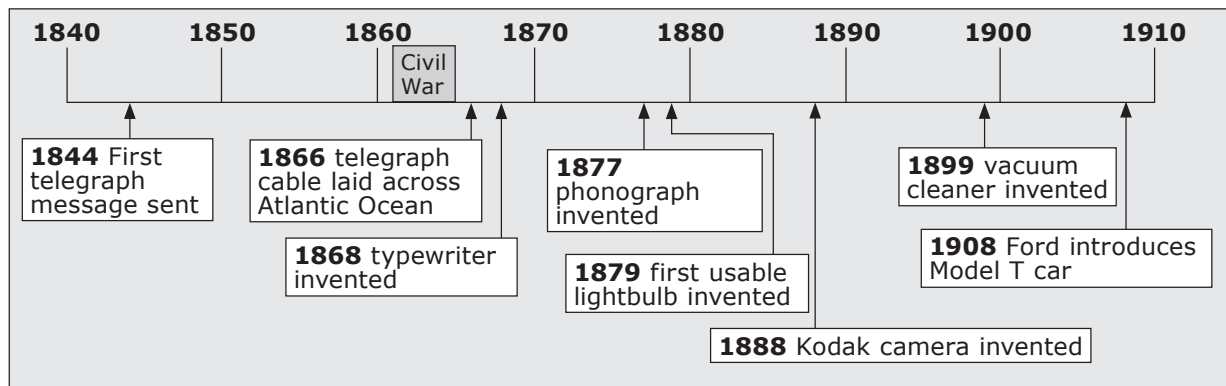
Terms to Know

Model T affordable car made by Ford

assembly line factory method in which work moved past workers who performed a single task

mass production factory production of goods in large quantities

When did it happen?



What do you know?

In the first column, answer the questions based on what you know before you study. After this lesson, complete the last column.

Now ...		Later ...
	Who was the Wizard of Menlo Park?	
	How were telephones and telegraphs similar? How were they different?	

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Lesson 2 Inventions Change Society, *Continued*

Technology Changes Communications

Samuel Morse developed the telegraph and built the first telegraph line. He sent the first telegraph message in 1844, from Baltimore to Washington, D.C. Within a few short years, there were thousands of miles of telegraph lines in the United States. The Western Union Telegraph Company had operators who were trained to transmit messages in Morse code.

Messages sent by telegraph are called telegrams. Telegrams could be sent almost instantly over long distances.

People used telegrams in many ways. Shopkeepers used them to order goods. News reporters used them to send their news stories to a newspaper office. People used them for sending messages to friends and family.

By 1866, the United States and Europe could send telegraph messages to each other. Up until that time, news or letters were carried across the Atlantic Ocean on ships. It could take weeks for a letter to arrive. In 1866, Cyrus Field laid a telegraph cable across the Atlantic Ocean. This allowed people in Europe and the United States to communicate almost instantly.

Alexander Graham Bell invented another way to communicate quickly. Bell was looking for ways to teach people with hearing loss how to speak. He did experiments with sending voice sounds over electric wires.

By 1876, Bell had invented a telephone. In 1877 Bell formed the Bell Telephone Company. By the 1890s, Bell had sold thousands of phones.

Telephones became part of everyday life. Businesses used phones. Then, people started using phones at home. By the early 1900s, even more people had this new technology. Like the telegraph, the telephone made communicating easier.

The Genius of Invention

Many important inventions came into being in the late 1800s. Between 1860 and 1890 the government processed patents for thousands of new inventions. A patent is a license that says only the inventor has permission to make or sell his or her invention, unless he gives permission to someone else.



Identifying

1. Who developed the telegraph?

2. Who invented the telephone?



Reading Check

3. What is the difference between a telegraph and a telephone?



Drawing Conclusions

4. Why do you think patents are needed?

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Lesson 2 Inventions Change Society, *Continued*

Reading Check

5. Which of Edison's inventions do you think is most important? Why?

Reading Check

6. Why did Henry Ford build the Model T?



Describing

7. Place a one-tab Foldable along the dotted line. Draw a large circle on the front of the tab and label it *Mass Production*. Draw a smaller circle within the large circle and label it *Assembly Line*. On the front and back of the tab, describe each. Explain their relationship.

Important Inventions of the Late 1800s

Invention	Inventor
typewriter	Christopher Sholes
adding machine	William Burroughs
Kodak camera	George Eastman
vacuum cleaner	John Thurman

The greatest inventor of the time was Thomas Edison. Edison loved science and doing experiments. His mother let him set up a laboratory in the basement.

Edison soon set up a workshop in Menlo Park, New Jersey, in 1876. He invented so many amazing things that people called him "The Wizard of Menlo Park." Some of the things we use every day were invented by Edison. The phonograph (a way of playing recorded sound); the movie projector; and the light bulb were all his inventions.

All these things ran on electricity. In 1882, he built a power station. It made enough electricity to light 85 buildings. Soon, George Westinghouse invented a way to send electricity great distances. Electricity became the power source for homes and businesses.

Some inventors were African American. Lewis Howard Latimer made the light bulb better. Granville Woods invented an electric warmer and improved the braking system for trains. Elijah McCoy found a way to automatically oil machinery. Jan E. Matzeliger invented a machine that made shoes.

A Changing Society

In the early 1900s, most people did not have automobiles. The car was a new invention. Few people could afford to buy one. Henry Ford wanted to change that. He wanted to make a car that was cheap and easy to own. Ford and Charles Sorenson worked to create this car. They named it the **Model T**.

//////////,Glue Foldable here//////////

Ford made the Model T on an **assembly line**. On Ford's assembly line, each worker did one job over and over again. As the Model T moved down the line, it was built a little at a time. The assembly line let Ford make a lot of cars quickly. The cars cost less to make because the assembly line was so efficient.

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Because it cost less to make cars, Ford was able to lower the price of his cars. This allowed more people to afford them. Between 1908 and 1926, Ford sold 15 million Model Ts.

Other industries also began using assembly lines to make goods. They made large quantities of goods more quickly than ever before. Making large quantities of goods on an assembly line is called **mass production**.

In the early 1890s, inventors began to experiment with machines that could fly. Samuel Langley built a model airplane that was powered by a steam engine. It flew almost a mile before it ran out of fuel and crashed.

Wilbur and Orville Wright owned a bicycle shop. Between 1900 and 1902 they used their skills as mechanics to design a plane with a gas engine. In September 1903, they began to test their plane. Their test flights were at Kitty Hawk, North Carolina. On December 17, 1903, they made four flights. Their plane flew for just under one minute.

It would take some years for airplanes to be a common part of life, but the first steps had been taken.

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Check for Understanding

What effect did the telegraph have on American society?

Name two other inventions that made people's lives easier and explain how each did so.



Identifying

8. Who built a steam-powered airplane?

9. Who built a gas-powered airplane?



- 10.** Glue two one-tab Foldables together at the anchor tabs. Place the two Foldables over Check for Understanding. Label the top anchor tab *Inventions Bring Change*. Label the top Foldable *Changes in Communication* and the bottom Foldable *Changes in Daily Life*. Make memory maps by drawing three arrows below each title. On the top tab, write three words and phrases about inventions that changed how we communicate. On the bottom tab write three things about inventions that changed daily life. Use your memory maps to help answer Check for Understanding.