CHAPTER SUMMARY

Section 1: The Industrial Revolution in America

THE INDUSTRIAL REVOLUTION

In the early 1700s, most people in the United States and Europe made a living by farming. Female family members often used hand tools to make cloth for families. The sale of extra cloth earned money. Skilled workers such as blacksmiths set up shops to earn money by manufacturing goods by hand. The **Industrial Revolution** would completely change that way of life. By the mid-1700s, cities and populations had grown. Demand increased for ways to make items faster and more efficiently.

Textiles provided the first breakthrough. **Richard Arkwright** invented a machine that lowered the cost of cotton cloth and raised production speed. The machine was large and needed a power source. Most textile mills were built near streams to use running water for power.

SLATER AND HIS SECRETS

Samuel Slater knew how to build machines that were used in Britain to make cloth more efficiently. He emigrated to the United States, and with Moses Brown opened a mill in Pawtucket, Rhode Island. The mill made cotton thread by machine. It was a success. Most mills were in the northeast, the region with many rivers and streams for power.

A MANUFACURING BREAKTHROUGH

In the 1790s, U.S. gun makers could not produce muskets quickly enough if there was a war. Better **technology** was needed. Eli Whitney had the idea of manufacturing using **interchangeable parts**. Whitney assembled muskets for President Adams. His idea worked. **Mass production** was soon used in factories making interchangeable parts.

MANUFACTURING'S SLOW START

U.S. manufacturing spread slowly. People who could buy good farmland would not work for low factory wages. British goods were cheaper than American goods. However, during the War of 1812 many Americans learned that they had relied on foreign goods too much. In 1815 the war ended and free trade returned. Businesspeople wanted to lead the nation into a time of industrial growth.

Section 2: Changes in Working Life

FACTORY FAMILIES

Samuel Slater had difficulty in hiring enough people to work in his mills. Young male apprentices often left because their work was boring. Slater began hiring families who moved to Pawtucket. Children usually earned in one week what an adult was paid for one day's work. Slater constructed housing for the workers. He paid workers in credit at the company store rather than paying them money so that he could reinvest money in his business. Slater's method was known as the **Rhode Island system**. Many northeastern mill owners imitated Slater's system.

THE LOWELL SYSTEM

Francis Cabot Lowell developed a different approach called the **Lowell system**. It transformed the Northeast's textile industry. With the aid of a company, Lowell built mills in Waltham and Lowell, both in Massachusetts. The factories were clean and the workers' boardinghouses were neat. Many young women, called Lowell girls, journeyed from across New England to earn money instead of earning nothing on the family farm. The Lowell girls were encouraged to take classes and join clubs. However, they worked 12- to 14-hour days, and cotton dust caused health problems for them.

WORKERS ORGANIZE
Factory workers' wages went down as people competed for jobs. Immigrants also competed for jobs. The Panic of 1837 led to unemployment for many. Skilled workers started **trade unions** for protection. Sometimes union members held **strikes**. But most strikes were not very successful.

LABOR REFORM EFFORTS
Sarah G. Bagley battled for the workers. She was the first highly ranked woman in America's labor movement. In 1840 President Martin Van Buren had given a 10-hour workday to many federal employees. Bagley supported the 10-hour workday for all workers. The Unions won some legal victories. Some states passed 10-hour workday laws. But companies often found ways to get around them. Other states did not pass the 10-hour workday laws. Union supporters kept fighting for improved working conditions during the 1800s.

Section 3: The Transportation Revolution

NEW WAYS TO TRAVEL
The **Transportation Revolution** changed life in the 1800s, along with the Industrial Revolution, by speeding travel and decreasing time and cost of shipping goods between the East and the West. People and information began traveling at much higher speeds. New towns and businesses sprang up with improved communication, travel, and trade. The steamboat and the railroad, new kinds of transportation, quickened the pace of American life.

THE STEAMBOAT
In the late 1700s American and European inventors advanced steam-powered boats. **Robert Fulton** tested the ***Clermont*** in the United States. The successful test helped launch the steamboat era. Steamboats cut months off the time to travel from one place to another. They made trips up rivers cheaper and easier. Shipping goods from East to West, West to East, or overseas also was easier.

Sometimes the changes in transportation led to legal conflicts. In a landmark case, ***Gibbons* v. *Ogden***, the court ruled that federal shipping laws overruled state shipping laws.

AMERICAN RAILROADS
About 1830 **Peter Cooper** built the *Tom Thumb,* a small but fast train. Excitement over rail travel grew in the mid-1800s. By 1860 about 30,000 miles of railroad tracks joined nearly every major eastern U.S. city. Trains took goods to faraway markets. Train travel averaged about 20 miles per hour and could be dangerous because of fires and derailment. But the dangers did not put off travelers who wanted to go places faster.

POWERING THE TRANSPORTATION REVOLUTION
Construction crews put down track through rock and over mountains and rivers. Trains brought new residents and raw materials for industry to cities, spurring growth. As faster locomotives were built, coal replaced wood as a source of fuel because of its greater efficiency. That led to growth in the mining industry. Steel was used for railroad tracks, so the demand for steel increased. Railroad transportation also helped logging expand because wood was needed to build new houses in the growing cities. Chicago, on Lake Michigan, became a hub for national transportation.

Section 4: More Technological Advances

MESSAGES BY WIRE
Samuel F. B. Morse invented the **telegraph** in 1832. Morse used the work of two other

scientists in making this practical machine. In a telegraph, pulses, or surges, of electric current were carried over wire. The operator touched a bar, called a telegraph key, that set the length of each pulse. At the wire's other end, the pulses were changed into clicks. A short click was a dot. A dash was a long click. Morse's assistant, Alfred Lewis Vail, developed the **Morse code**. Some people did not think Morse could actually read messages sent across long distances. But during the 1844 Democratic Convention in Baltimore, Maryland, a telegraph wired news of a nomination to politicians in Washington. Soon telegraphs were relaying messages for businesses, the government, newspapers, and private citizens. Telegraph lines were strung on poles next to railroad tracks across the country.

NEW FACTORIES

Most factories, operating on water power at first, had to be built near water. With the use of steam engines, factories could be built almost anywhere. Still, most were in the Northeast. By 1860 New England had as many factories as all of the South had. Many new factories were near cities and transportation centers, giving them better access to workers. In addition, by the 1840s new machinery could produce interchangeable parts.

BETTER FARM EQUIPMENT

John Deere was selling 1,000 steel plows a year by 1846. **Cyrus McCormick** mass-produced his reapers in a large Chicago factory. His company advertised, provided service, and let customers buy on credit. The plow and the reaper allowed Midwestern farmers to harvest huge wheat fields.

CHANGING LIFE AT HOME

The sewing machine was among the American inventions that made home life easier. **Isaac Singer** modified the sewing machine, and worked hard to sell his product. Prices of many household items had decreased, giving many more people the ability to afford them. Many more cities built public water systems, although very few homes installed plumbing above the first floor.