Chapter 14 Lesson 1

The Industrial North

ESSENTIAL QUESTION How does technology change the way people live?

Industry and innovation expanded the North's economy and power.

Technology and Industry

How did technology and industry change during the 1800s?

The early years of the 1800s saw much innovation in industry and technology. The ways in which Americans worked, traveled, and communicated underwent great change. The new ways of living affected the whole nation, but their effects were most dramatic in the North.

Three Phases of Industrialization

Before industrialization, workers made most goods one item at a time, from start to finish. To make clothes, a woman might spin the thread, weave the cloth, then cut and sew the fabric. Industrialization changed that way of working.

The North's industrialization took place in three phases. During the first phase, employers divided jobs into smaller steps. For example, one worker would spin thread—and nothing else. Another worker wove cloth. Each worker specialized in one step and became an expert in it. Two specialized workers could produce more cloth than if each worker did both tasks.

During the second phase of industrialization, entrepreneurs built factories to bring specialized workers together. This allowed the product to move quickly from one worker to the next.

In the third phase, workers used machines to complete tasks. For example, machines called looms wove cloth using the power of flowing water. The machines worked much faster than any human could. The worker's job changed from weaving to tending the machine.

Mass production of cloth began in New England in the early 1800s. Then, Elias Howe invented the sewing machine in 1846. Workers could now make clothing in mass quantities by using machine-made fabrics and sewing machines.

Similar changes were transforming other industries and affecting the North's economy. By 1860, the Northeast's factories made at least two-thirds of the country's manufactured goods.

Changing Transportation

Improvements in transportation contributed to the success of the new American industries. Between 1800 and 1850, crews built thousands of miles of roads and canals. By connecting lakes and rivers, canals opened new shipping routes. In 1807 inventor Robert Fulton launched his first steamboat, the Clermont, on the Hudson River. Steamboats made fast upstream travel possible. They carried goods and passengers more cheaply and quickly along inland waterways than flatboats or sail-powered vessels did.

In the 1840s, builders began to widen and deepen canals to make space for steamboats. By 1860, about 3,000 steamboats traveled the country's major rivers and canals, as well as the Great Lakes. This encouraged the growth of cities such as Cincinnati, Buffalo, and Chicago.

Sailing technology also improved in the 1840s. The new clipper ships featured tall sails and sleek hulls. They could sail 300 miles (483 km) per day, as fast as most steamships at that time. Clipper ships got their name because they "clipped" time from long journeys. Before the clippers, the voyage from New York to Great Britain took about 21 to 28 days. A clipper ship could usually cut that time in half.

The Railroads Arrive

The first railroads in the United States ran along short stretches of track that connected mines with nearby rivers. Horses pulled these early trains. The first steam-powered passenger locomotive began running in Britain in 1829.

A year later, Peter Cooper designed and built the first American steam-powered locomotive. The Tom Thumb, as it was called, got off to a slow start. It actually lost a race staged against a horse-drawn train when its engine failed. Before long, however, engineers had improved the technology. By 1840, steam locomotives were pulling trains in the United States. In 1840 the United States had almost 3,000 miles (4,828 km) of railroad track. By 1860, the nation's tracks totaled about 31,000 miles (49,890 km), mostly in the North and Midwest.

The new rail lines connected many cities. One line linked the cities of New York and Buffalo. Another connected Philadelphia and Pittsburgh. Railway builders connected these eastern lines to lines being built farther west in Ohio, Indiana, and Illinois. By 1860, the nation's railroads formed a network that united the Midwest and the East.

Moving Goods and People

The impact of improved transportation was felt deeply in the western areas of the country. Before canals and railroads, farmers sent their crops down the Mississippi River to New Orleans. From there, goods sailed to the East Coast or to other countries. This took a considerable amount of time and often caused goods to be more expensive.

Railways and canals transformed trade in these regions. The opening of the Erie Canal in 1825 and later the railroad networks allowed grain, livestock, and dairy products to move directly from the Midwest to the East. Improvements in transportation provided benefits to both businesses and consumers. Farmers and manufacturers could now move goods faster and more cheaply. As a result, consumers could purchase them at lower prices than in the past.

The railroads also played an important role in the settlement of the Midwest and the growth of its industry. Fast, affordable train travel brought people into Ohio, Indiana, and Illinois. The populations of these states grew. New towns and industries developed as more people moved into the area.

Progress with Problems

As more people moved more quickly along railways and waterways, the possibility of disaster also increased. Some tragic events occurred.

The SS Central America was a 270-foot side-wheel steamer that carried passengers and cargo between New York and the Central American country of Panama. The ship traveled one part of a widely traveled route between the East Coast and California. In September 1857, the Central America was carrying a full load of passengers and a large amount of gold when it steamed into a hurricane. The ship sank off the coast of the Carolinas, and hundreds of people drowned.

The Great Train Wreck of 1856 occurred between Camp Hill and Fort Washington, Pennsylvania, on July 17, 1856. Two trains slammed head-on into each other. An estimated 60 people were killed, and more than 100 were injured. At that point in time, it was considered one of the worst accidents in railroad history. The tragic news horrified the nation. Newspapers demanded that railroad companies improve their methods and equipment and make the safety of passengers their first concern.

Communications Breakthroughs

The growth of industry and the new pace of travel created a need for faster methods of communication. The telegraph (teh • luh • graf)—a device that used electric signals to send messages—filled that need.

Samuel Morse, an American inventor, developed a system for sending coded messages instantly along electrical wires. After Morse showed his system could send messages over a short distance, Congress gave him money to test the device over a wider area. Morse strung wires between Washington, D.C., and Baltimore, Maryland. On May 24, 1844, he was ready to try out his system. A crowd of people watched as Morse tapped out the words "What hath God wrought" on his telegraph system. A few moments later, the operator in Baltimore sent the same message back in reply. Morse's telegraph had worked!

Telegraph operators sent messages quickly by using Morse code. This code uses different arrangements of short and long signals—dots and dashes—to represent letters of the alphabet. Telegraph companies formed, and workers put up telegraph lines across the country. By 1852, there were about 23,000 miles (37,015 km) of telegraph lines in the United States.

The telegraph allowed information to be communicated in minutes rather than days. People could quickly learn about news and events from other areas of the United States. The telegraph also allowed businesses to become more efficient with production and shipping.

Explaining How did canals and railways transform trade in the interior of the United States?

Farming Innovations

What changes made agriculture more profitable in the 1830s?

In the early 1800s, few farmers were willing to settle in the treeless Great Plains west of Missouri, Iowa, and Minnesota. Even areas of mixed forest and prairie west of Ohio and Kentucky seemed too difficult for farming. Settlers worried that their old plows could not break the prairie's matted sod. They also worried that the soil would not be fertile enough to support fields of crops.

Advancements in Agriculture

Three inventions of the 1830s helped farmers overcome difficulties in farming the land. As a result, settlement expanded throughout wider areas of the Midwest.

One of these inventions was the steel-tipped plow developed by John Deere in 1837. This allowed farmers to cut through the hard-packed prairie sod. Knowing that they would be able to farm the land on the prairies helped people make the decision to move west. Equally important to the transformation of farming were the mechanical reaper, which sped up the harvesting of wheat, and the thresher, which quickly separated the grain from the stalk. Each of these innovations reduced the labor required for farming.

McCormick's Reaper

Cyrus McCormick was the genius behind the invention of the mechanical reaper. Before this invention, farmers had harvested grain with handheld cutting tools. McCormick's reaper greatly increased the amount of crop a farmer could harvest. Because farmers could harvest more wheat, they could plant more of it. Growing wheat became profitable. Raising wheat became and would remain the main economic activity on the Midwestern prairies.

New machines and the ease of access to railroads allowed farmers to plant more acres with cash crops. Midwestern farmers grew wheat and shipped it east by train and canal barge. Northeast and Middle Atlantic farmers increased their production of fruits and vegetables.

In spite of improvements in agriculture, the North was steadily becoming more industrial and urban. Agriculture in the region was still growing, but industry was growing faster.

Identifying What innovation sped up the harvesting of wheat?