SECTION 2

Industrialization

Guide to Reading

Connection

In the previous section, you learned about the settlement of the West and the Great Plains. In this section, you will discover how the Industrial Revolution changed the United States and created a new focus on business and industry.

Main Idea

- American industry grew rapidly after the Civil War, bringing revolutionary changes to American society. (p. 244)
- After the Civil War, the rapid construction of railroads accelerated the nation's industrialization and linked the country together. (p. 246)
- Big business assumed a more prominent role in American life following the Civil War. (p. 248)
- In an attempt to improve their working conditions, industrial workers came together to form unions in the late 1800s. (p. 249)

Content Vocabulary

gross national product, entrepreneur, laissez-faire, corporation, vertical integration, horizontal integration, monopoly, Marxism, industrial union, closed shop

Academic Vocabulary

practice, distribution, concept

People and Terms to Identify

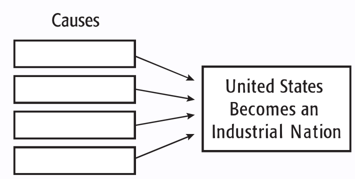
Alexander Graham Bell, Thomas Alva Edison, Pacific Railway Act, Andrew Carnegie, American Federation of Labor, Samuel Gompers

Reading Objectives

- **Discuss** how the availability of natural resources, new inventions, and the railroads spurred industrial growth.
- **Analyze** how large corporations came to dominate American business and labor.

Reading Strategy

Organizing As you read about the changes brought about by industrialization, complete a graphic organizer similar to the one below listing the causes of industrialization.



Preview of Events

1860 — 1870 — 1880 — 1890

- **1862** John D. Rockefeller buys first oil refinery
- **1869** First transcontinental railroad completed
- **1876** Alexander Graham Bell invents telephone
- **1886** American Federation of Labor founded

The following are the main History–Social Science Standards covered in this section.

11.1.4 Examine the effects of the Civil War and Reconstruction and of the Industrial Revolution, including demographic shifts and the emergence in the late 19th century of the United States as a world power.

11.2.1 Know the effects of industrialization on living and working conditions, including the portrayal of working conditions and food safety in Upton Sinclair's *The Jungle*.

11.2.5 Discuss corporate mergers that produced trusts and cartels and the economic and political policies of industrial leaders.

11.2.6 Trace the economic development of the United States and its emergence as a major industrial power, including its gains from trade and the advantage of its physical geography.

The Big Idea

The Industrial Revolution changed the face of America. Industry in the United States flourished following the Civil War. The natural resources industries needed were readily available through mining operations in the West. A large population increase provided a readily available workforce. The increase in industry spurred the expansion of railroads, which further accelerated industrialization as railroads linked the country together. To manage the burgeoning industries, business leaders founded corporations. At the same time, workers began to organize and form unions in an effort to improve their working conditions.

11.6.5 Trace the advances and retreats of organized labor, from the creation of the American Federation of Labor and the Congress of Industrial Organizations to current issues of a postindustrial, multinational economy, including the United Farm Workers in California.

The United States Industrializes

Main Idea **American industry grew rapidly after the Civil War, bringing revolutionary changes to American society.**

Reading Connection If you had to name the invention most valuable in your daily life, what would it be, and why? Read on to learn about the many new inventions that emerged in the late 1800s, and find out how these innovations fueled the nation's industrial growth.

Although the Industrial Revolution began in the United States in the early 1800s, the nation was still largely a farming country when the Civil War erupted. In 1860, out of a population of more than 30 million, only 1.3 million Americans worked in industry. After the Civil War, industry expanded rapidly, and millions of Americans left their farms to work in mines and factories.

★ An American Story ★

On October 21, 1879, Thomas Alva Edison and his team of workers were too excited to sleep. For weeks they had worked to create an electric incandescent lamp, or lightbulb, that would burn for more than a few minutes. For much of the 1800s, inventors had struggled to develop a form of lighting that would be cheaper, safer, and brighter than traditional methods such as candles, whale oil, kerosene, and gas. If Edison and his team could do it, they would change the world. Finally, after weeks of dedicated effort, they turned night into day. Edison later recalled:

> "We sat and looked and the lamp continued to burn and the longer it burned the more fascinated we were. None of us could go to bed and there was no sleep for over 40 hours; we sat and just watched it with anxiety growing into elation. It lasted about 45 hours and then I said, 'If it will burn 40 hours now I know I can make it burn a hundred.'"
>
> —quoted in *Eyewitness to America*

By the early 1900s, with the help of inventors such as Edison, Americans had transformed the United States into the world's leading industrial nation. By 1914 the nation's **gross national product** (GNP)—the total value of all goods and services produced by a country—was eight times greater than it had been when the Civil War ended.

Thomas Edison

Natural Resources An abundance of raw materials was one reason for the nation's industrial success. The United States contained vast natural resources upon which industry in the 1800s depended, including water, timber, coal, iron, and copper. American companies could obtain these resources cheaply and did not have to import them from other countries. Many of the nation's resources were located in the mountains of the American West. The settlement of this region after the Civil War helped to accelerate industrialization, as did the construction of the transcontinental railroad. Railroads brought settlers and miners to the region and carried the resources back to factories in the East.

At the same time, a new resource, petroleum, began to be exploited. Even before the invention of the automobile, petroleum was in high demand because it could be turned into kerosene. Kerosene was used in lanterns and stoves. The American oil industry was built on the demand for kerosene. As oil production rose, it fueled economic expansion.

A Large Workforce The human resources available to American industry were as important as natural resources in enabling the nation to industrialize rapidly. Between 1860 and 1910, the population of the United States almost tripled. This population provided industry with a large workforce and also created greater demand for the consumer goods that factories produced.

Population growth stemmed from two causes: large families and a flood of immigrants. American industry began to grow at a time when social and economic conditions in China and eastern Europe convinced many people to leave their nations and move to the United States in search of a better life. Between 1870 and 1910, roughly 20 million immigrants arrived in the United States. These multitudes added to the growing industrial workforce, helping factories to increase their production and furthering the demand for industrial products.

Free Enterprise Another important factor that enabled the United States to industrialize rapidly was the free enterprise system. At the heart of this system was the profit motive, which attracted **entrepreneurs**—people who risk their capital in organizing and running a business—to manufacturing and transportation.

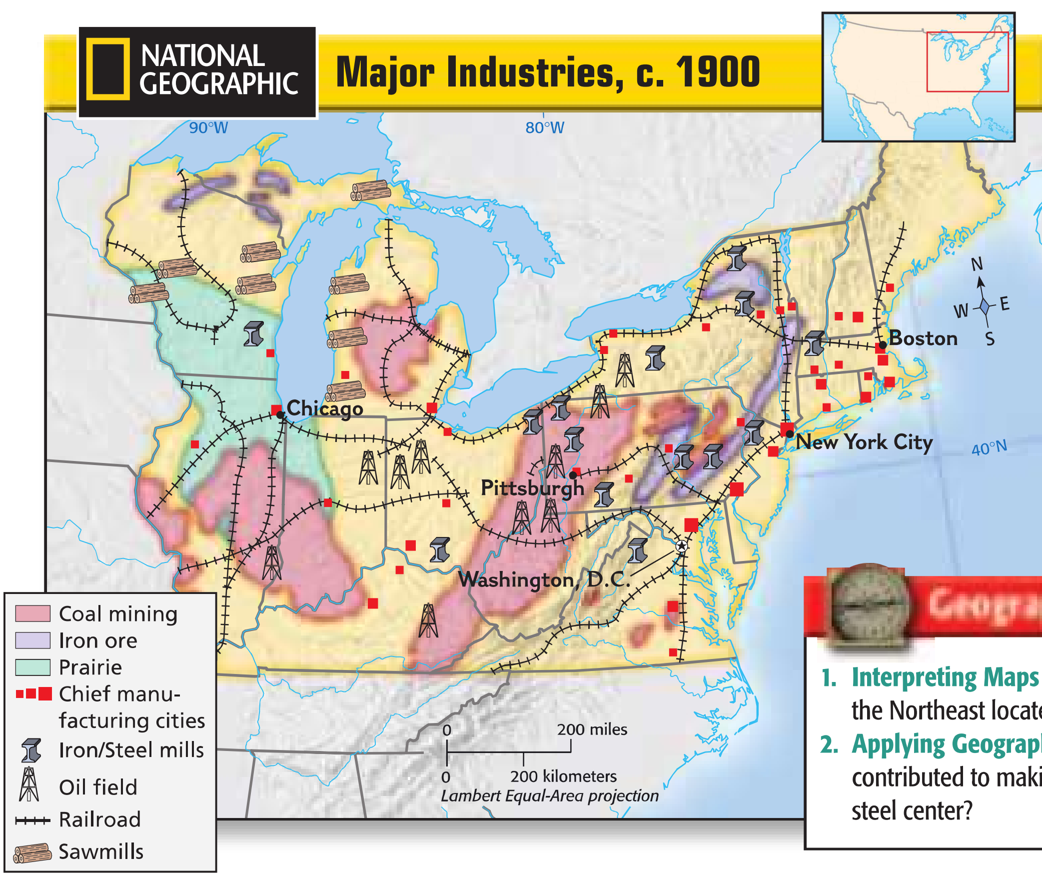
Another central tenet of free enterprise is the ability of businesses to operate without government control. In the late 1800s, many Americans embraced the idea of **laissez-faire** (leh·say·FAR), literally "let do," a French phrase meaning "let people do as they choose." Supporters of laissez-faire believe the government should not interfere in the economy other than to protect private property rights and maintain peace. These supporters argue that if the government regulates the economy, it increases costs and eventually hurts society more than it helps.

In many respects, the United States **practiced** laissez-faire economics in the late 1800s. State and federal governments kept taxes and spending low and did not impose costly regulations on industry. Nor did they try to control wages and prices. In other ways, the government went beyond laissez-faire and adopted policies intended to help industry, although these policies often had negative results.

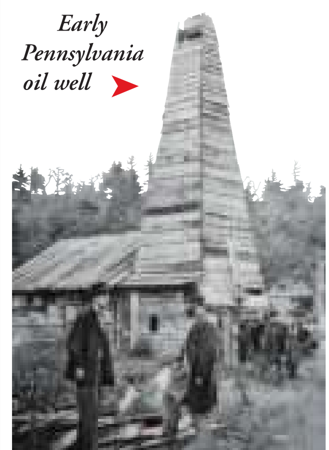
By the end of the Civil War, for example, Congress had imposed new tariffs, or duties on imported goods, to protect American industry from foreign competition. While this helped American companies in the United States, it hurt those trying to sell goods overseas, because other countries raised their tariffs against American goods. In particular, it hurt farmers who sold their products to Europe. Ironically, the problems farmers faced may have helped speed up industrialization, as many rural Americans decided to leave their farms and take jobs in the new factories. In addition, by the early 1900s, many American companies were large and highly competitive. Business leaders increasingly began to push for free trade.

New Inventions A flood of inventions helped increase the nation's productive capacity and improved th

that was vital to the nation's industrial growth.



Early Pennsylvania oil well



Geography Skills

1. **Interpreting Maps** Where were most industrial cities in the Northeast located?
2. **Applying Geography Skills** What natural resources contributed to making Pittsburgh, Pennsylvania, a major steel center?

New inventions led to the founding of new corporations, which produced new wealth and new jobs.

One of the most dramatic inventions in the late 1800s came in the field of communications. In 1874 a young Scottish-American inventor named **Alexander Graham Bell** suggested the idea of a telephone to his assistant, Thomas Watson. Watson recalled, "He had an idea by which he believed it would be possible to talk by telegraph." Bell worked until 1876 before he succeeded in transmitting his voice. The telephone revolutionized both business and personal communication. In 1877 Bell and others organized the Bell Telephone Company, which eventually became the American Telephone and Telegraph Company (AT&T).

Perhaps the most famous inventor of the late 1800s was **Thomas Alva Edison.** A great innovator, Edison worked tirelessly to invent new products and to improve devices created by others. He first achieved international fame in 1877 with the invention of the phonograph. Two years later, Edison perfected the lightbulb and the electric generator. His laboratory then went on to invent or improve several other major devices, including the battery and the motion picture.

In 1882 the Edison Electric Illuminating Company launched a new industry—and the transformation of American society—when it began to supply electric power to customers in New York City. In 1889 several of Edison's companies merged to form the Edison General Electric Company, which today is known as GE.

As knowledge about technology grew, almost everyone in the United States felt its effects. Shortly after the Civil War, Thaddeus Lowe invented the ice machine, the basis of the refrigerator. In the early 1870s, Gustavus Swift hired an engineer to develop a refrigerated railroad car. New inventions and standardization also improved the clothing and shoe industries. Prices for food, clothes, shoes, and other products dropped as the United States industrialized.

Reading Check **Analyzing** How much did the availability of resources aid in industrialization? Why?

The Railroads: Linking the Nation

Main Idea **After the Civil War, the rapid construction of railroads accelerated the nation's industrialization and linked the country together.**

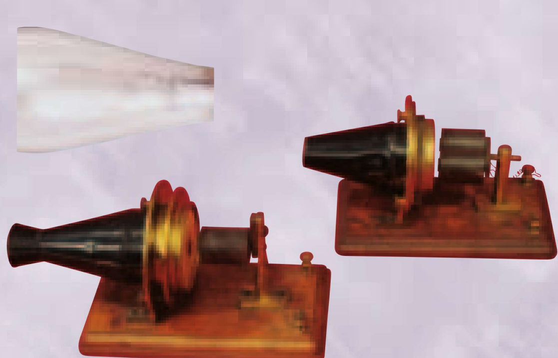
Reading Connection In what ways has technology helped unify the United States in recent years? Read on to learn how railroads helped connect Americans who lived in different sections of the nation.

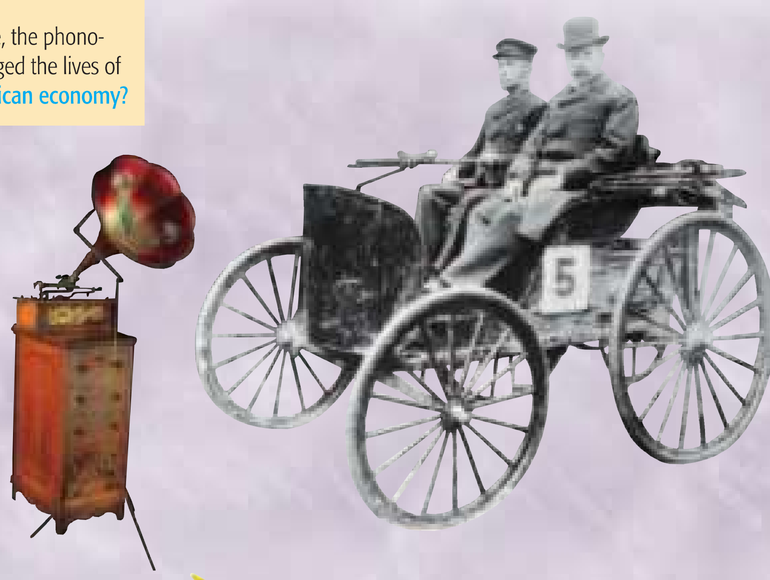
In 1865 the United States had about 35,000 miles of railroad track, almost all of it east of the Mississippi River. After the Civil War, railroad construction expanded dramatically, linking the distant regions of the nation in a transportation network. By 1900 the United States, now a booming industrial power, boasted more than 200,000 miles of track.

The railroad boom began in 1862 when President Abraham Lincoln signed the **Pacific Railway Act.** This act provided for the construction of a transcontinental railroad by two corporations, the Union Pacific and the Central Pacific railroad companies. To encourage rapid construction, the government offered each company land along its right-of-way. Feverish competition between the two companies developed as each sought to obtain as much public land and money as possible. On May 10, 1869, seven years after the act was signed, hundreds of spectators

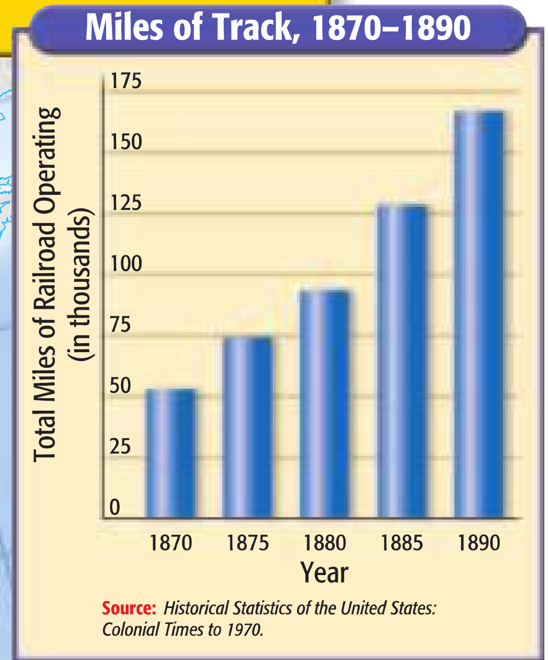
Picturing History

Inventions of the Late 1800s The incandescent lightbulb, the telephone, the phonograph, and the gasoline-powered car were some of the inventions that changed the lives of Americans. What effect did these and other inventions have on the American economy?





CONTENTS



Source: *Historical Statistics of the United States: Colonial Times to 1970.*

Geography Skills

1. **Interpreting Maps** What part of the United States saw the greatest expansion in rail lines by 1890?
2. **Applying Geography Skills** In which time zone did the Central Pacific originate?

gathered at Promontory Summit, Utah, as dignitaries hammered gold and silver spikes into the final rails that joined the rails and completed the first transcontinental railroad.

Railroads Spur Growth The transcontinental railroad was the first of many lines that began to crisscross the nation after the Civil War. This expansion spurred American industrial growth. By linking the nation, railroads helped increase the size of markets for many products. Huge consumers themselves, the railroads also stimulated the economy by spending extraordinary amounts of money on steel, coal, timber, and other necessities.

The railroads, which by 1865 consisted of hundreds of small unconnected lines, began consolidating. Large integrated railroad systems were able to shift cars from one section of the country to another according to seasonal needs and in order to speed long-distance transportation. To improve reliability, in 1883 the American Railway Association divided the country into four time zones, in which the same time would be kept. The new rail systems, along with more powerful locomotives, made railroad operation so efficient that the average rate per mile for a ton of freight dropped from two cents in 1860 to three-fourths of a cent in 1900.

The nationwide rail network helped unite Americans in different regions. The *Omaha Daily Republican* observed in 1883 that railroads had "made the people of the country homogeneous, breaking through the peculiarities and provincialisms which marked separate and unmingling sections." This was a vast overstatement, but it recognized a significant contribution that railroads made to the nation.

The Land Grant System Building and operating railroad lines, especially across the vast unsettled regions of the West, often required more money than most private investors could raise on their own. To encourage railroad construction, the federal government gave land grants to many railroad companies. Railroads would then sell the land to settlers, real estate companies, and other businesses to raise the money they needed to build the railroad.

In the 1850s, the federal government granted individual states more than 28 million acres of public lands to give to the railroads. After the Pacific Railway Acts of 1862 and 1864, the government gave the land directly to the railroad companies.

The federal land grant system awarded railroad companies more than 120 million acres of land, an area larger than New England, New York, and Pennsylvania combined. Several railroad companies, including the Union Pacific and the Central Pacific, earned enough money from the government's generous land grants to cover much of the cost of building their lines.

Robber Barons The great wealth many railroad entrepreneurs acquired in the late 1800s led to accusations that they had built their fortunes by swindling investors and taxpayers, bribing government officials, and cheating on their contracts and debts. Bribery occurred frequently in this era, partly because the state and federal governments were so deeply entangled in funding the railroads.

When the existence of corruption in the railroad industry became public, it created the impression that all railroad entrepreneurs were robber barons—people who loot an industry and give nothing back—but the term was not always deserved. One railroad entrepreneur who was clearly not a robber baron was James J. Hill. Hill built and operated the Great Northern Railroad from St. Paul, Minnesota, to Everett, Washington, without any federal land grants or subsidies. The Great Northern became the most successful transcontinental railroad and the only one that was not eventually forced into bankruptcy.

Reading Check **Describing** How did the railways help in the industrialization of the United States?

The Rise of Big Business

Main Idea **Big business assumed a more prominent role in American life following the Civil War.**

Reading Connection In a typical day, what products do you use that have been made by corporations? Read on to learn about the emergence of corporations in the late 1800s.

Before the Civil War, the personal wealth of a few people operating in partnership financed most businesses, including many early factories. Most manufacturing enterprises were very small. By 1900, everything had changed. Big businesses dominated the economy, operating vast complexes of factories, warehouses, offices, and **distribution** facilities.

The Role of Corporations Big business would not have been possible without the corporation. A **corporation** is an organization owned by many people but treated by law as though it were a single person. The people who own the corporation are called stockholders because they own shares of ownership called stock. Issuing stock allows a corporation to raise large amounts of money for big projects while spreading out the financial risk.

Before the 1830s, corporations needed charters by state legislatures. Beginning in the 1830s, states began passing general incorporation laws, allowing companies to become corporations and issue stock without such charters. With the money they raised from the sale of stock, corporations could invest in new technologies, hire a large workforce, and purchase many machines, greatly increasing their efficiency.

Small businesses with high operating costs found it difficult to compete against large corporations. At the time, many people criticized corporations for cutting prices and negotiating rebates, believing that corporations were behaving unethically. Still, many small companies were forced out of business.

The Consolidation of Industry To increase manufacturing efficiency even further, some business owners went one step further in building their business. One example is **Andrew Carnegie**, a Scottish immigrant who rose from bobbin boy in a textile

Analyzing *Political Cartoons*

Big Business Takes Over Large companies, such as Standard Oil, owned by John D. Rockefeller, could negotiate rebates from railroads that wanted his business. How did large business manage to dominate the economy?