SECTION 1

Industry and Railroads

Before You Read

Main Idea

During the late 1800s, new technology led to rapid industrial growth and the expansion of railroads.

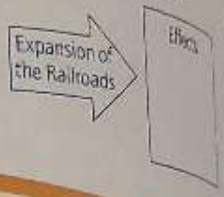
Reading Focus

1. What new industries emerged in the late 1800s, and why were they important?
2. Why did railroads expand, and what changes resulted?

Key Terms and People

Bessemer process
Edwin L. Drake
wildcatter
transcontinental railroad

TAKING NOTES As you read, take notes on the effects of the expansion of the railroads. Record your notes in a graphic organizer like the one shown here.



"TENTACLES OF STEEL"

THE INSIDE STORY

Can you fight a big corporation?

In May 1869 officials from the Union Pacific and Central Pacific railroads met at Promontory Summit, Utah. They pounded a symbolic golden spike into a railroad tie. The first transcontinental railroad was complete! Railroads quickly expanded.

The railroad—the Iron Horse—linked California with the rest of the country. It gave many people jobs. It let farmers ship fresh produce and meat to eastern cities. Railroad companies thus had tremendous political and financial power. All too often, though, they used their power unfairly.

One issue was rates for shipping freight. Railroads charged different rates to different shippers. They raised rates at harvest time, charging more than the crop would sell for. Nevertheless, farmers had to depend on them.

Many California farmers resented the situation. The Southern Pacific Railroad was the biggest corporation and the largest employer in the state. To farmers, the railroad was an octopus whose tentacles were reaching in all directions to strangle them.

In 1901 novelist Frank Norris published *The Octopus*. The book describes the uneven struggle between California wheat farmers and the railroads. One character in the book sees the railroad as "the terror of steel and steam . . . with tentacles of steel clutching into the soil, the soulless Force, the iron-hearted Power, the monster, the Colossus, the Octopus." Eventually, the railroads' abuses of power would lead to government regulation of their business practices.

▲ **Anti-railroad poster from 1843**

New Industries Emerge

As you read earlier, the United States began its Industrial Revolution in the early 1800s. Water or steam power replaced animal and human sources of power. Workers made goods in factories instead of in small workshops or private homes.

In the late 1800s, new technologies helped industry grow to new heights. Electrical power replaced steam and water power. Factories became larger and produced more and more goods. Faster transportation helped move people and goods more cheaply. Industrial growth was so dramatic in the late 1800s that the period is sometimes called the Second Industrial Revolution.

Making steel In the 1850s two inventors an ocean apart were working on a new way to make steel. In the United States, William Kelly used a blast of hot air to purify molten iron and convert it to steel. Working independently in England, Henry Bessemer developed a similar method, which he quickly patented.

Using the so-called **Bessemer process,** American steel mills began working faster and more cheaply than ever before. In 1873 the United States turned out about 115,000 tons of steel. By 1910 output had soared to 24 million tons, making America the world's top producer.

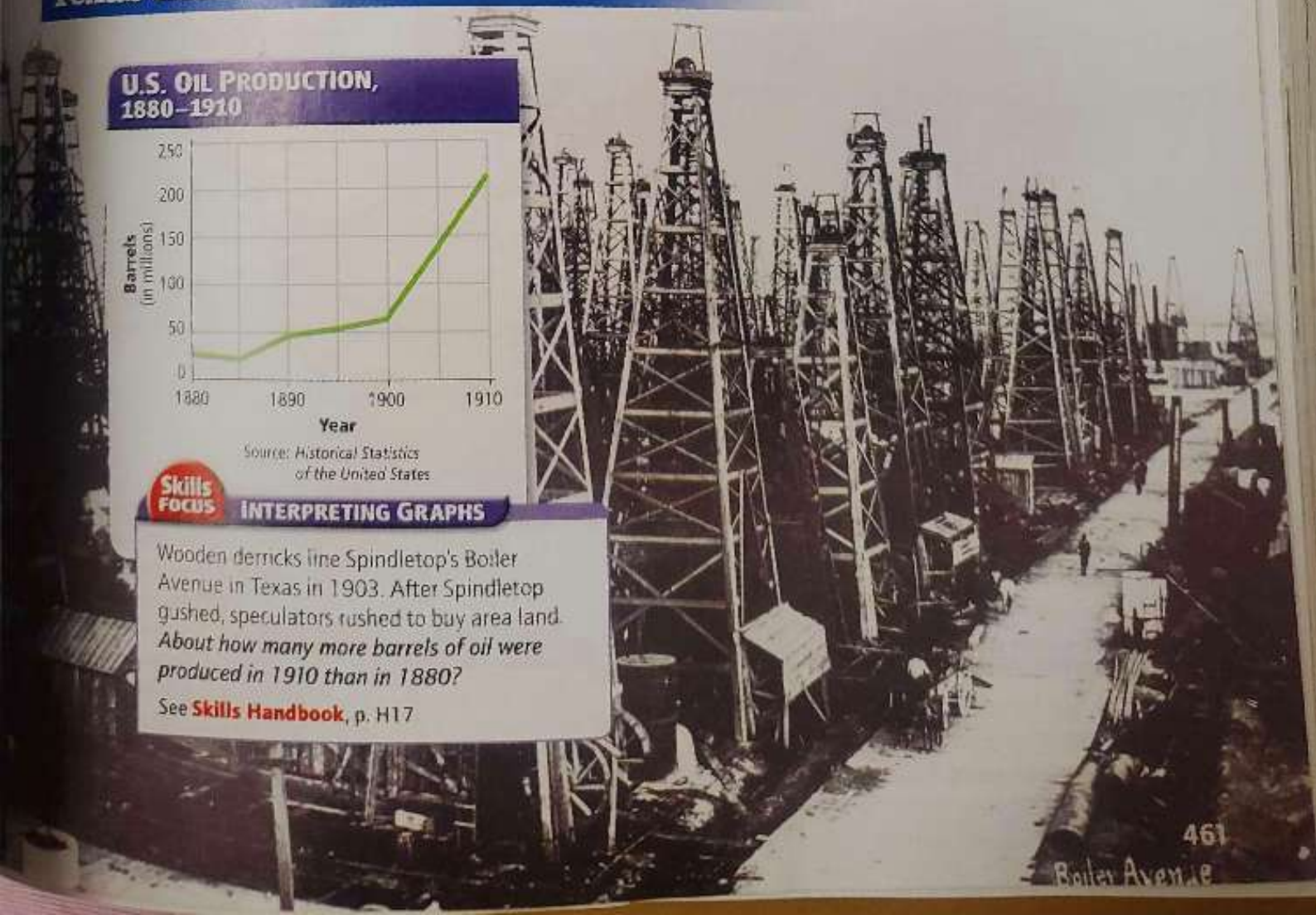
Why did this matter? Steel helped transform the United States into a modern industrial economy. Steel was stronger, less brittle, and more easily shaped than iron. Thus railroads found steel to be a superior material for locomotives and rails. With steel, construction companies could build bigger bridges and taller buildings. The low cost of steel also made it desirable for ordinary items such as nails and wire.

The start of the oil industry Oil became another key commodity in the late 1800s, valued both as a fuel source and as a lubricant for factory machinery. For generations, people had been finding oil on the surface of coastal waters and lakes. It was not until the mid-1800s, though, that people put it to good use, refining it into kerosene to light lamps.

As demand for kerosene skyrocketed, companies sought to profit. One of them hired **Edwin L. Drake** to extract oil from the ground in Pennsylvania. At first people mocked Drake's drilling efforts as "Drake's Folly." Then in August 1859, his crew hit a crevice deep in the rock. As oil seeped up, the men scrambled to collect it in a bathtub. Edwin Drake had drilled the first commercial oil well. He was soon steadily pumping "black gold" to the surface.

The output from Drake's oil well was modest, but it drew plenty of **wildcatters,** or oil prospectors, to the area. Wildcatters looked for oil in other regions, too. In January 1901, a group led by Anthony F. Lucas struck a rich oil pocket

Texas Leads the Oil Boom



U.S. OIL PRODUCTION, 1880–1910

Source: *Historical Statistics of the United States*

Skills Focus INTERPRETING GRAPHS

Wooden derricks line Spindletop's Boiler Avenue in Texas in 1903. After Spindletop gushed, speculators rushed to buy area land. *About how many more barrels of oil were produced in 1910 than in 1880?*

See **Skills Handbook**, p. H17

at Spindletop Hill near Beaumont, Texas. The oil gushed nearly 100 feet in the air for nine days before it could be capped.

The discovery at Spindletop kicked off an oil boom in Texas. Spindletop Hill bristled with oil derricks, jammed in so closely they nearly touched each other. Spindletop produced more than 17 million barrels of oil in 1902. With so many wells, though, production began to decline rapidly. By 1904 Spindletop produced only about 20 percent of what it had in 1902.

This first oil boom in Texas lasted less than 20 years, but it had long-term consequences. Many of the world's leading oil companies, such as Exxon Mobil, Gulf Oil, and Texaco, got their start at Spindletop. They would refine crude oil not only into kerosene, but also into gasoline and other fuels. These new petroleum products would become major sources of energy, fueling a revolution in transportation and industry.

READING CHECK **Drawing Conclusions** Why did steel and oil become important industries?

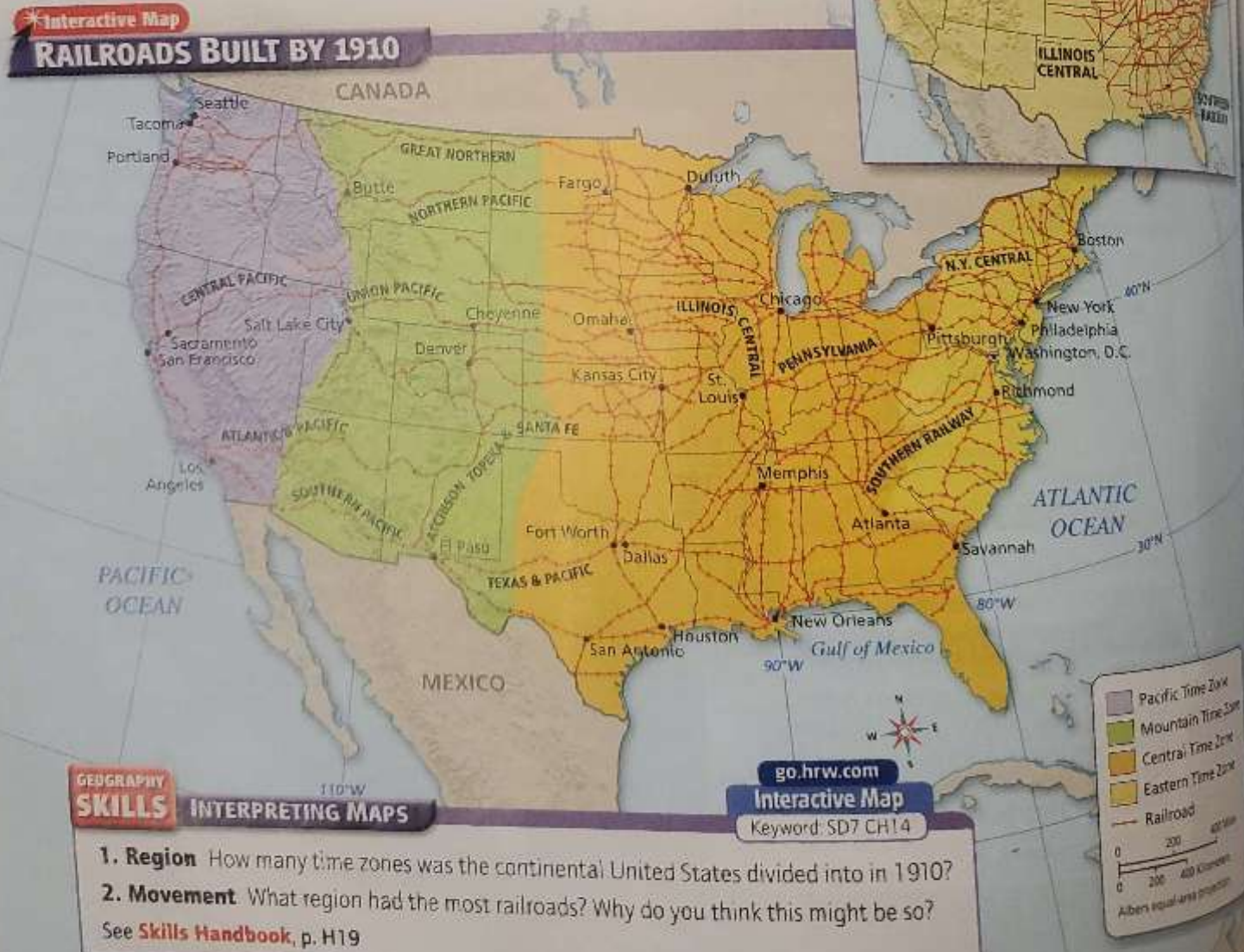
Railroads Expand

In the 1850s train tracks already criss-crossed the Northeast and reached into the South-east and the Great Lakes area. In the following decades, rail service spread even farther. Between 1865 and 1890, the number of miles of railroad track jumped nearly fivefold.

The federal government aided this growth by giving thousands of acres of land to railroad companies. They used some of it for new routes and sold some to finance construction. Cheap steel also helped the railroads expand. Steel rails cost only about $12 a ton in the late 1860s, down from $50 a ton in 1877.

A transcontinental railroad In 1862 Congress authorized two companies to build rail lines to the West Coast. For the next six

Interactive Map



GEOGRAPHY SKILLS INTERPRETING MAPS

1. **Region** How many time zones was the continental United States divided into in 1910?
2. **Movement** What region had the most railroads? Why do you think this might be so?

See Skills Handbook, p. H19

go.hrw.com
Interactive Map
Keyword: SD7 CH14

and a half years, workers raced to complete the first **transcontinental railroad**—one that would cross the whole country.

The Union Pacific laid tracks westward from Omaha, Nebraska. It hired thousands of Irish, German, English, African American, and Native American workers to build its part of the line. These workers could make progress fairly quickly because much of the land was prairie or gently rolling hills.

Workers for the Central Pacific laid track toward the east, starting in Sacramento, California. These workers—primarily Chinese—labored on tougher terrain. They had to cross deserts and blast through the granite mountains on the California-Nevada border. They also faced attacks by Native Americans.

On May 10, 1869, the two rail lines met at Promontory Summit in Utah Territory. At the ceremony celebrating the completion of the railroad, an official praised the achievement:

HISTORY'S VOICES

"The east and west have come together. Never, since history commenced her record of human events, has she been called upon to note the completion of a work so magnificent."

—Dr. H. W. Harkness

The first transcontinental railroad was soon followed by others. Regional railroads expanded, too, uniting the country both physically and economically.

The effects of expansion The creation of a vast railroad network had several important effects. On the economic front, the railroads promoted trade and provided many jobs. In addition, the demand for rails and railcars gave a boost to steel and train manufacturers.

The railroads also sped up settlement of the West. A journey to the West Coast once took months. Now travelers could go from the Atlantic to the Pacific in just a few days. As a result, parts of the country that had been sparsely populated began to fill with residents. Wherever railroads were built, new towns sprang up and existing towns grew into bigger cities.

Railroads also led to the adoption of what we call standard time. Earlier, people kept time according to the position of the sun. When it was noon in Chicago, it was 12:07 p.m. in Indianapolis and 12:31 p.m. in Pittsburgh. The state of Michigan had at least 27 different local times. Wisconsin had even more—38!

Running a railroad, however, required accurate timekeeping. A New York school principal, C. F. Dowd, was the first to propose dividing the earth into time zones. All communities within a single time zone would set their clocks alike. Railroad officials enthusiastically embraced this idea in 1883. In 1918 Congress adopted standard time for the nation as a whole.

READING CHECK **Identifying Problems and Solutions** Why did railroads adopt standard time?

THE IMPACT TODAY

Economics

Rail travel has declined since the advent of cars and planes. Most U.S. trains now carry freight instead of passengers.

SECTION 1 ASSESSMENT

go.hrw.com
Online Quiz
Keyword: SD7 HP14

Reviewing Ideas, Terms, and People

1. a. **Describe** How did the **Bessemer process** change steel making in the United States?
   b. **Explain** Why is **Edwin L. Drake** an important figure in the history of the oil industry? Why was the discovery at Spindletop important?
   c. **Elaborate** How did the growth of the steel industry affect other industries?
2. a. **Recall** What role did the U.S. government play in the expansion of railroads during the late 1800s?
   b. **Analyze** How did the **transcontinental railroad** affect the settlement of the West?
   c. **Evaluate** How did the expansion of the railroads change life for all Americans?

Critical Thinking

3. **Sequence** Copy the time line below and use it to record key events in the oil and railroad industries.

FOCUS ON WRITING

4. **Descriptive** You live in a small town in the late 1800s. You know that a railroad company is planning to build tracks in your general area. Write a letter to a distant friend describing how people feel about the coming of the railroad and what benefits or drawbacks it will have for the town.

SECTION 2

The Rise of Big Business

Before You Read

Main Idea

Corporations run by powerful business leaders became a dominant force in the American economy.

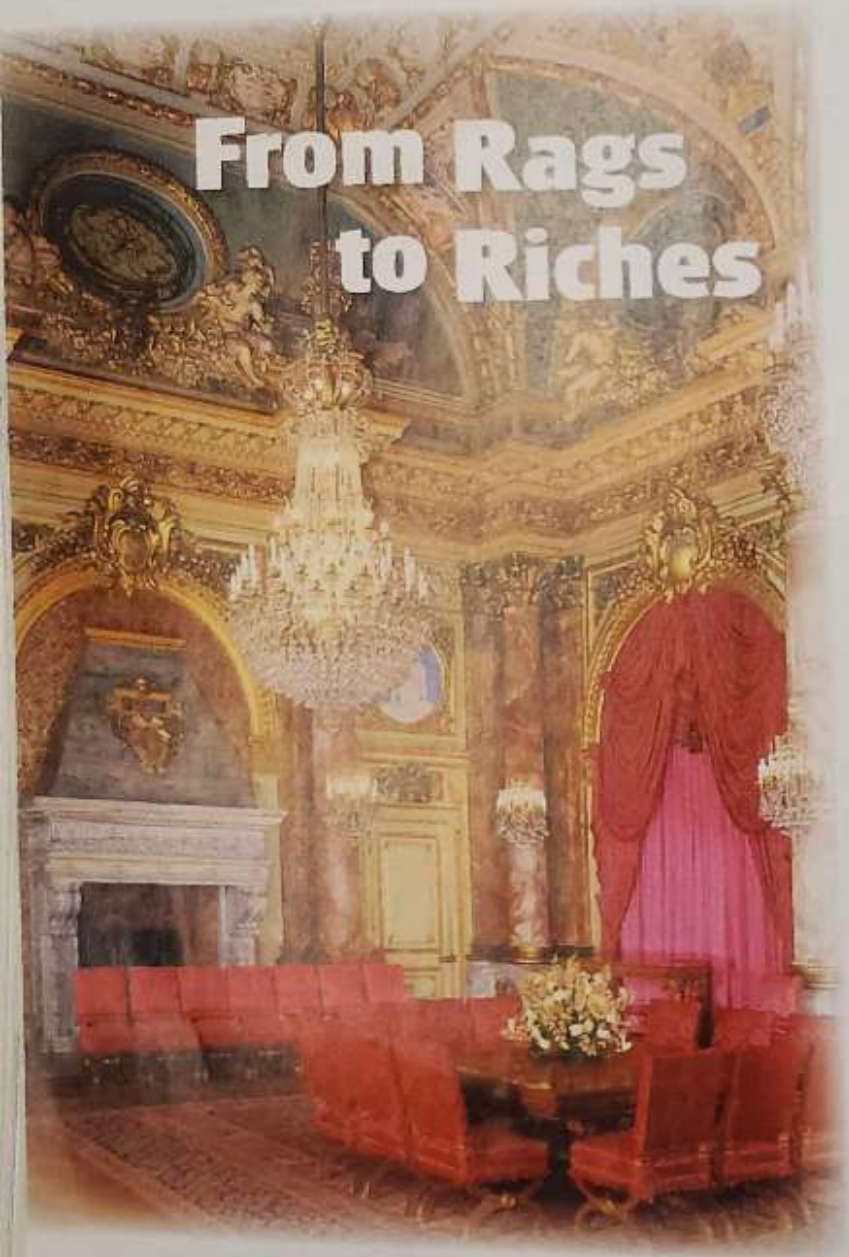
Reading Focus

1. What conditions created a favorable climate for business during the late 1800s?
2. How did business structures change?
3. Who were the leading industrial tycoons, and what did they achieve?
4. How did mass marketing change the way goods were sold?

Key Terms and People

entrepreneur
capitalism
laissez-faire
social Darwinism
monopoly
John D. Rockefeller
vertical integration
horizontal integration
Andrew Carnegie
Cornelius Vanderbilt

TAKING NOTES As you read, take notes on different kinds of business organizations in the late 1800s. Record your notes in a graphic organizer like the one shown here. You may need to add more circles.



THE INSIDE STORY

Can a book make you successful? "Strive and succeed!" That was the lesson that thousands of American boys learned from the popular novels of Horatio Alger Jr. It was also the title of one of his 100 or so books. Alger was one of the most popular American writers of the late 1800s. His stories inspired hundreds of young men to strive for success.

The Horatio Alger hero was poor but honest, brave, and trustworthy. He faced hardships but eventually found a good job, and sometimes fame and fortune. He was cheerful even when faced with difficulties. He worked hard, too, but it was usually sudden good luck (which he of course deserved) that brought the final happy ending.

Alger had his own success story. Born in 1832, he was the son of a Unitarian minister. His family expected him to become a clergyman, but he really wanted to be a writer. In 1867, he found his own formula for success. He released *Ragged Dick, or Street Life in New York*, first as a magazine serial and then as a book. This story of a streetwise shoeshine boy was an immediate hit. Many other tales followed. Their plots were all very similar; only the hero's name was different. Here are a few Alger titles: *Bound to Rise, or Up and Learn; The Train Boy, or Up the Ladder; Struggling Upward, or Luke Larkin's Luck.*

◀ This is one of 70 rooms in business tycoon Cornelius Vanderbilt II's summer cottage, built in 1895.

A Favorable Climate for Business

Horatio Alger's novels showcased an American ideal—self-reliant individualism. His characters went from rags to riches through their own hard work. Similarly, many people in the late 1800s believed that a strong work ethic made one successful. The business world welcomed **entrepreneurs**—risk takers who use their money and talents to launch new ventures.

Belief in free markets American entrepreneurs were working within the capitalist system. **Capitalism** is an economic system in which private businesses run most industries. Competition determines prices and wages.

By the late 1800s most business leaders believed in **laissez-faire** (le-say-FER) capitalism. The term *laissez-faire* is French for "to let do." Laissez-faire capitalism allows companies to conduct business without intervention by the government. Business leaders believed that government regulation would destroy individual self-reliance, reduce profits, and harm the economy.

Social Darwinism Americans understood that there were inequalities under capitalism. But many thinkers believed that inequalities were part of a natural order. To explain why some people prospered while others did not, economists and business leaders embraced the philosophy of **social Darwinism.** This philosophy adapted the ideas of the British scientist Charles Darwin and applied them to human society.

Darwin had studied plants and animals and concluded that members of a species compete for survival. Those best adapted to their environment thrive. Less well adapted members gradually die out. Darwin called this process natural selection.

Social Darwinists believed that natural selection also applied to society. Stronger people, businesses, and nations would prosper. Weaker ones would fail. Social Darwinists believed that what they called "survival of the fittest" strengthened society as a whole. They opposed any interference with the process.

READING CHECK **Summarizing** What beliefs did social Darwinists hold?

ACADEMIC VOCABULARY
regulation rules or legal oversight

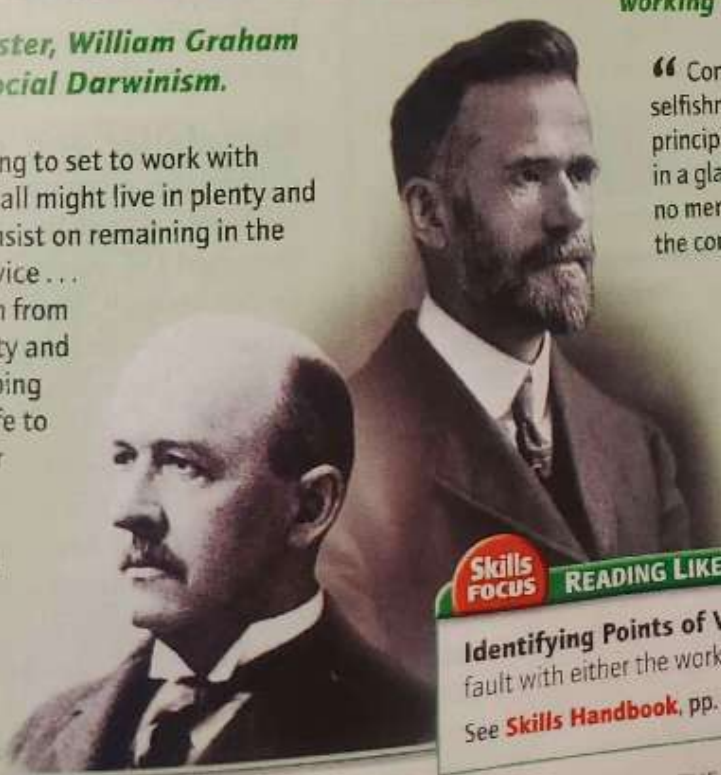
COUNTERPOINTS

Social Darwinism

A professor and minister, William Graham Sumner advocated Social Darwinism.

"If . . . men were willing to set to work with energy and courage . . . all might live in plenty and prosperity. But if they insist on remaining in the slums . . . there is no device . . . which can prevent them from falling victims to poverty and misery or from succumbing in the competition of life to those who have greater command of capital."

William Graham Sumner, c. 1885



Walter Rauschenbusch, also a minister, lived among the poor in New York City. He found fault with the attitude of the rich toward the working class.

"Competitive commerce exalts selfishness to the dignity of a moral principle. It pits men against one another in a gladiatorial game in which there is no mercy and in which ninety percent of the combatants finally strew the arena. . . . If the rich had only what they earned, and the poor had all that they earned, . . . life would be more sane."

Walter Rauschenbush, 1908

Skills Focus READING LIKE A HISTORIAN

Identifying Points of View How does each man find fault with either the working class or the wealthy?

See **Skills Handbook**, pp. H28–H29

Business Structures Change

ACADEMIC VOCABULARY
complex complicated; made up of many parts

In the late 1800s industrialization continued on a massive scale. Businesses became larger and more complex. This led to changes in the way businesses were organized.

Proprietorships and partnerships At the end of the Civil War, most businesses were small. Some were run by individual owners—an arrangement called a proprietorship. Other companies were owned by two or more people in a partnership. In both proprietorships and partnerships, the owners of the company were personally responsible for all debts and obligations of the business.

Corporations The massive industries of the late 1800s needed more expert management. These industries began organizing as corporations. A corporation is a business with the legal status of an individual. It is owned by stockholders—people who buy shares of the company, or stock. The major business decisions of a corporation are made by a board of directors. The board in turn hires corporate officers to run the day-to-day operations.

A corporation has several advantages. It can raise large sums of money by selling stock. That money can be used to expand the business. Also, stockholders have limited responsibility for the corporation's debts. They can lose only the amount of money they have invested in the business. Finally, a corporation is not dependent on a single owner for its existence. It can continue to function long after its original founders leave.

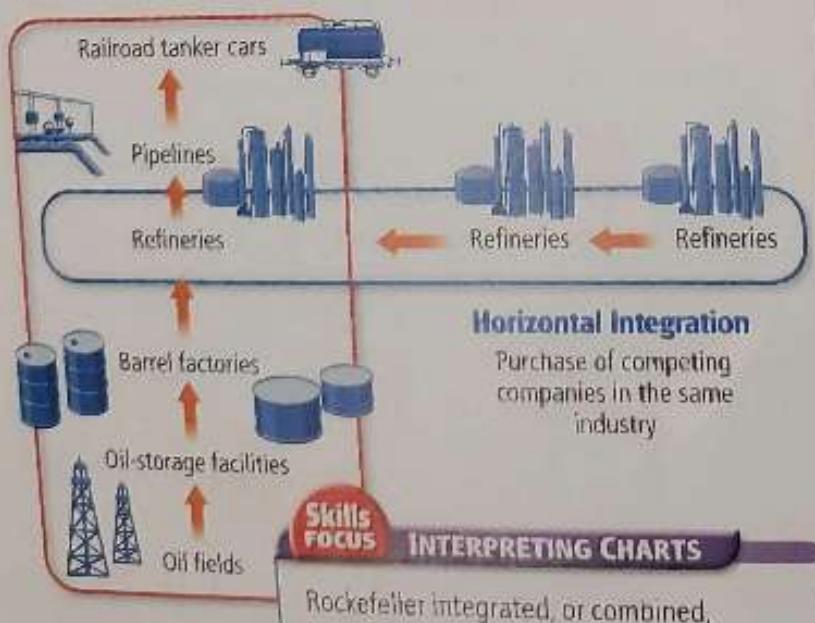
Trusts and monopolies In the late 1800s competition in the marketplace was fierce. To gain dominance, some competing companies formed trusts. The companies agreed to merge and turn over their separate stocks to a board of trustees. The trustees then ran the group of companies as if it were a single corporation, and all the participants split the profits.

When a trust gained complete control over an industry, it held a **monopoly**. That meant it had no competition from other firms. It could raise prices on its products or lower quality much more freely than it otherwise might.

READING CHECK **Contrasting** How were proprietorships and corporations different?

VERTICAL AND HORIZONTAL INTEGRATION

Vertical Integration
Purchase of companies producing the supplies and the services upon which the main business depends



Horizontal Integration
Purchase of competing companies in the same industry

Skills Focus: INTERPRETING CHARTS
Rockefeller integrated, or combined, businesses both vertically and horizontally to increase profits. *How do vertical and horizontal integration differ?*
See **Skills Handbook**, p. H15

Industrial Tycoons

As businesses grew ever larger in the late 1800s, many corporate leaders amassed staggering fortunes. Three of them—John D. Rockefeller, Andrew Carnegie, and Cornelius Vanderbilt—were wealthier than any Americans before them.

Rockefeller and oil John D. Rockefeller entered the oil business in 1863 and proved himself to be a superb business leader. His company, Standard Oil, started as a refinery. To increase profits, though, Rockefeller engaged in **vertical integration**—acquiring companies that supplied his business. Rockefeller bought barrel factories, oil fields, oil-storage facilities, pipelines, and railroad cars. This allowed him to keep his costs low and profits high.

To expand his business, Rockefeller also practiced **horizontal integration**. This meant taking over other companies producing the same product. Rockefeller bought as many refineries as he could. By 1879 Standard Oil refined 90 percent of all U.S. oil.

PRIMARY SOURCES

Political Cartoon

This 1901 drawing portrays John D. Rockefeller as ruling the oil industry.

Skills Focus READING LIKE A HISTORIAN

1. **Interpreting Political Cartoons** What images suggest Rockefeller's wealth and power?
2. **Contrasting** How does this depiction of Rockefeller contrast with his position as a generous philanthropist?

See Skills Handbook, pp. H10, H31

Rockefeller tried to limit competition in other ways as well. He made special deals with railroads and shipping companies to get the lowest possible price for transporting his oil. Rockefeller could now sell his oil much more cheaply than his competitors could. In this way, he drove rival firms out of business.

At one point, Rockefeller's fortune approached $900 million. He gave away over half of it to worthy causes, though. Rockefeller donated more than $80 million to the University of Chicago. He channeled millions more into education and other good works through his Rockefeller Foundation.

Carnegie and steel **Andrew Carnegie** lived a true rags-to-riches story. Born in Scotland to parents that hit hard economic times when he was about 9, Carnegie immigrated to the United States when he was 12. He advanced quickly in his early jobs and began investing in the iron, oil, railroad, and telegraph industries. He soon founded his own company and rose to the top of the steel business.

Carnegie held down costs by using vertical integration, buying supplies in bulk, and producing items in large quantities. By the end of the century the Carnegie Steel Company dominated the U.S. steel industry. In 1901 Carnegie sold the company to banker J. P. Morgan for $480 million. After retiring, Carnegie began to devote his time to philanthropy, or charity.

Carnegie gave away some $350 million over his lifetime, mostly to support education. He built public libraries, financed scientific work, and established what is now Carnegie Mellon University in Pittsburgh. He also built Carnegie Hall, the famous concert site in New York City, and funded international peace efforts.

THE IMPACT TODAY

Culture

The Rockefeller Foundation is now active across the globe, supporting cultural activities and projects in health, agriculture, and urban development.

Carnegie believed that wealthy people had a duty toward the rest of society. He explained his philosophy, known as the Gospel of Wealth, in 1889:

HISTORY'S VOICES

> **"This, then, is held to be the duty of the man of Wealth: . . . to consider all surplus revenues which come to him simply as trust funds . . . to produce the most beneficial result for the community."**
>
> —Andrew Carnegie

Railroad tycoons Other industrial leaders rode the railways to success. **Cornelius Vanderbilt** began investing in railroads during the Civil War. By 1872 he owned the New York Central Railroad. Soon his holdings stretched west to Michigan and north to Canada. At the height of his career, he controlled more than 4,500 miles of railroad track. He also invested heavily in steamship lines and dominated shipping along the Atlantic Coast.

Unlike Rockefeller and Carnegie, Vanderbilt supported few charities. His greatest donation was a $1 million gift to Central University in Nashville, Tennessee, which was later renamed Vanderbilt University. When Vanderbilt died in 1877, he left an estate of $100 million.

ACADEMIC VOCABULARY
maximize make as large as possible

Another railroad man, George Pullman, made his fortune by designing and building railroad cars. His Pullman Palace Car Company, founded in Chicago in 1867, was known for creating sleeper cars that made long-distance travel more comfortable.

In 1881 Pullman built an entire town south of Chicago for his employees. He believed that happy workers would be productive workers. The town of Pullman had comfortable homes with indoor plumbing—a luxury for working-class families. Residents also enjoyed shops, a church, and a library.

At the same time, the Pullman Company controlled many aspects of life in the town. There were no local newspapers and no self-government. Those who spoke out against company policies might find themselves evicted from their homes.

A mixed legacy Some Americans came to view the business tycoons of the late 1800s as "robber barons." Critics have argued that these entrepreneurs profited unfairly by squeezing out competitors and using other tough tactics. Their huge mansions and luxurious lifestyles seemed like ill-gotten rewards.

Other people, though, saw men like Rockefeller, Carnegie, and Vanderbilt as "captains of industry." Admirers credited these tycoons with using their business skills to make the American economy more productive. That in turn made the American economy stronger. In addition, Rockefeller and Carnegie won praise for their generous contributions to charity.

READING CHECK **Identifying Supporting Details** How did Rockefeller and Carnegie gain a competitive edge?

FACES OF HISTORY

Andrew CARNEGIE
1835–1919

Andrew Carnegie began his working career in the United States in a textile factory, but he soon found a job as a telegraph operator. From there he became the assistant to a Pennsylvania Railroad official. With his savings and a small loan, Carnegie made his first investment in iron manufacturing. Carnegie also advanced his career at the railroad. He soon earned enough to invest in a variety of industries. In 1865 he resigned his job to devote himself to his business ventures. Carnegie's business boomed when he turned to steel manufacturing. His eye for efficiency and close partnerships with railroad companies made Carnegie the king of steel. In 1901 he sold his company and turned to philanthropy. His charities established over 2,500 libraries in the United States and in other English-speaking countries.

Make Inferences How do you think Carnegie's background influenced his drive for success and his charitable activities?

Mass Marketing

The industrial tycoons of the day were not the only people bringing changes to American business. Retailers, too, looked for new ways to maximize their profits.

Many companies that advertised in popular magazines began targeting their messages to women. They realized that women made most purchasing decisions about household goods.

Advertisers also tried new approaches to win customers. Food companies often used wholesome farm images to convey a sense of purity. Some companies came up with clever brand names, such as Uneeda Biscuit crackers, to help customers remember their products.

In the cities a new kind of store emerged that made shopping easier. This was the department store, where retailers sold many different products under one roof, grouping them into separate departments for clothing, shoes, cookware, and so on. No longer did customers have to trudge from shop to shop to purchase a variety of goods. They loved the convenience of one-stop shopping—and they loved department store prices. Because these stores bought in bulk, they could pass on the savings to their customers.

Rural dwellers, meanwhile, could purchase a huge variety of goods from mail-order companies. In 1895 Sears, Roebuck and Company produced a 507-page catalog offering everything from slippers to stoves to saddles. The 1904 Montgomery Ward catalog weighed a hefty four pounds and was mailed to roughly 3 million homes.

Mail-order customers simply made their selections, sent in their payments, and waited for the merchandise they ordered to arrive by rail or post. Now even Americans living in the countryside could buy a wide range of manufactured goods—wider than ever before—without having to travel to cities.

READING CHECK **Identifying the Main Idea**
How did companies make their products available to more people in the late 1800s?

House in the Mail

Mass marketers sold affordable, ready-to-assemble houses through their catalogs (below). Right, a modern couple enjoys living in one of these now historic homes.

SECTION 2 ASSESSMENT

go.hrw.com
Online Quiz
Keyword: SD7 HP14

Reviewing Ideas, Terms, and People

1. a. **Define** What was **laissez-faire** capitalism?
   b. **Analyze** Why did business leaders oppose government regulation of business?
2. a. **Recall** Why did corporations arise?
   b. **Draw Conclusions** Do you think the public generally welcomed or feared **monopolies**? Explain.
3. a. **Describe** What does **vertical integration** involve? What does **horizontal integration** involve?
   b. **Evaluate** How would you assess the contributions—both positive and negative—made by tycoons such as **John D. Rockefeller** and **Andrew Carnegie**?
4. a. **Recall** How did companies market their products in the late 1800s?
   b. **Explain** What was innovative about the department store?
   c. **Predict** How might the rise of department stores and mail-order catalogs have affected Americans' spending habits?

Critical Thinking

5. **Comparing and Contrasting** Copy the chart below and record the main characteristics of the following types of businesses: proprietorships, partnerships, and corporations.

Proprietorship	Partnership	Corporation

FOCUS ON WRITING

6. **Expository** You are a small business owner or a consumer living in the late 1800s. You believe that trusts and big corporations have accumulated too much power. You think there should be more competition in the marketplace. Write an article for your local newspaper explaining how large corporations dominate the business world and how this affects ordinary people like you.

SECTION 3

Workers Organize

Before You Read

Main Idea

Grim working conditions in many industries led workers to form unions and stage labor strikes.

Reading Focus

1. What was the relationship between government and business in the late 1800s?
2. What were working conditions like for industrial workers?
3. How did workers seek changes?

Key Terms and People

Sherman Antitrust Act
sweatshop
Knights of Labor
Terence V. Powderly
xenophobia
blacklist
Samuel Gompers
American Federation of Labor
Eugene V. Debs
Grover Cleveland

TAKING NOTES As you read, take notes on major events in the development of the labor movement in the late 1800s. Record your notes in a graphic organizer like the one shown here. You may need to add more rows to your organizer.

Event	Date

THE INSIDE STORY

"NOT A CENT IN THE HOUSE"

Could you live on $133 a year? When the Industrial Revolution began, businesses did pretty much as they pleased. Few officials worried about the workers, and by the late 1800s there were more workers than jobs.

In October 1883 Thomas O'Donnell, a part-time textile worker, appeared before a Senate committee looking into labor conditions. He was one of many who could not find full-time work. O'Donnell's worn clothes contrasted with the formal dress of the senators. He painted a devastating picture of life for the working poor. New machines required smaller workers, encouraging the use of child labor. Factories fired adults and hired men who had sons who could work. "Whoever has a boy has work," O'Donnell said, "and whoever has no boy stands no chance."

"How much money have you got?" a senator asked. "I have not got a cent in the house," O'Donnell answered, "didn't have when I came out this morning." In fact, he, his wife, and two children had lived on only $16 for the past three months. Over the entire year, the family income had amounted to about $133 from a few weeks' work in the textile mill. O'Donnell dug clams for food and picked up wood for heating. His children were often sickly because they lacked food or clothes or shoes. For workers like O'Donnell, there seemed to be no way to escape from these conditions.

▼ **Too small for the job, these child workers climb onto the machinery at a Georgia textile mill in 1909.**

Government and Business

In the late 1800s the government maintained a hands-off attitude toward business. Most politicians, like business leaders, insisted that regulating business would harm the economy.

Nonetheless, as corporations expanded, the government grew uneasy about the power of these giants. In 1890 Congress passed the **Sherman Antitrust Act**. This act made it illegal to form trusts that interfered with free trade. It also prohibited monopolies and activities that hindered competition in the marketplace.

At first the government did not prosecute many companies under this act. Between 1890 and 1901 just 18 suits were brought, and four of those were against labor unions. The law was vague, and for a time the government stopped trying to enforce the Sherman Act.

The government paid even less attention to workers. After all, industrialization was raising the standard of living for all Americans. Yet income inequality was increasing too. By 1890 just 10 percent of the population controlled 75 percent of the nation's wealth. This meant that the rich were exceedingly rich. At the same time, many industrial workers were barely scraping by, earning less than $500 per year.

READING CHECK **Drawing Conclusions**
How did government policies affect business?

Industrial Workers

The growth of industry in the late 1800s required huge numbers of workers to keep the factories running. Who were these people whose labor fueled American industry?

ACADEMIC VOCABULARY
labor work performed for wages

The workforce Many factory workers were immigrants. Many others were rural Americans who came to the cities to earn a living. The best factory jobs went to native-born whites or European immigrants. African Americans found more opportunities as laborers or household help, but those jobs usually paid less than factory work.

Many industrial workers were children. By 1900 about one in six children between the ages of 10 and 15 held a job outside the home. Even children as young as five sometimes worked to help make ends meet.

THE IMPACT TODAY
Government
The federal government and all 50 states now have child labor laws to protect minors. These laws set minimum ages for different kinds of work and limit the hours that children may work.

Working conditions Most unskilled laborers typically worked 10 hours per day, six days a week. They had no paid vacation, no sick leave, and no compensation for injuries suffered on the job. Employers pressured these tired, low-paid laborers to work as fast as possible to speed up production. This often led to terrible accidents. Most employers felt no responsibility to help those who were injured. They simply hired new workers to replace them.

Some of the worst exploitation occurred in cramped workshops set up in shabby tenement buildings. These so-called **sweatshops** were especially common in the garment industry.

HISTORY'S VOICES

> "In [the tenements] the child works unchallenged from the day he is old enough to pull a thread. There is no such thing as a dinner hour; men and women eat while they work, and the 'day' is lengthened at both ends far into the night. Factory hands take their work with them at the close of the lawful day to eke out their scanty earnings by working overtime at home."
>
> —Jacob Riis

Some garment workers toiled in their own apartments instead of in sweatshops. But this meant that the workers—not the employers—were paying for the rent, heat, and light needed to make the clothing.

READING CHECK **Making Inferences** Why would workers agree to work in difficult conditions?

TRACING HISTORY

The Labor Movement

Union membership has declined since the late 1940s as traditionally unionized industries lost jobs and as employment in non-unionized high-tech and service industries grew. Study the time line to learn about key events in the American labor movement.

◀ Early 1800s New England factory

1700 — 1800

1794 Shoemakers in Philadelphia establish the first trade union in the United States.

1834 Young mill girls in Lowell, Massachusetts, form a union, the Factory Girl's Association, to protest wage cuts.

▶ American Federation of Labor emblem

1886 Violence breaks out between police and union supporters in Chicago's Haymarket Square. Samuel Gompers founds the American Federation of Labor (AFL).

Workers Seek Changes

By the late 1800s working conditions were so dismal that workers began organizing in ever-increasing numbers. By banding together, they hoped to pressure employers into making the workplace safer and paying reasonable wages.

Early organizing The labor movement had gotten its start in the late 1700s. In 1794 a group of Philadelphia shoemakers formed a trade union to protect their interests. Over the next few decades, skilled workers in other trades—carpenters, printers, blacksmiths, and so forth—also organized. These early unions remained mostly small and local, however.

National unions After the Civil War, the labor movement began to grow. The National Labor Union (NLU) organized in 1866 as a federation of small, local unions. The NLU pushed to shorten the workday to eight hours. Unsuccessful in this effort, the NLU folded in 1872.

The **Knights of Labor**, founded in Philadelphia in 1869, was a more effective group. Under the leadership of **Terence V. Powderly** in the 1880s, the Knights of Labor began to accept unskilled workers, women, African Americans, and even employers as members. It excluded only bankers, gamblers, lawyers, liquor sellers, physicians, and stockholders. By 1886 the group had more than 700,000 members.

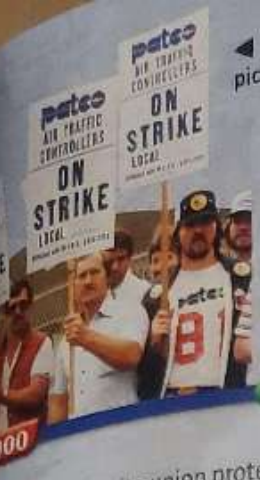
With the motto "An injury to one is a concern of all," the Knights of Labor campaigned for many reforms. The group's constitution outlined its general goals:

HISTORY'S VOICES

> **"To secure to the toilers [workers] a proper share of the wealth that they create; more of the leisure that rightfully belongs to them; more society advantages; . . . in a word, all those rights and privileges necessary to make them capable of enjoying, appreciating, defending and perpetuating the blessings of good government."**
>
> —Preamble to the Constitution of the Knights of Labor

The Knights of Labor also worked for the eight-hour workday, the end of child labor, and equal pay for equal work. In its early years, the organization discouraged the use of strikes, preferring boycotts and negotiations with employers. Yet soon enough, strikes would become commonplace.

The Great Railroad Strike The first major rail strike happened in 1877. Times were tough, and several northern railroads cut wages that year. Workers for the Baltimore and Ohio Railroad protested by walking off the job and blocking several freight trains. Pennsylvania Railroad employees blocked the movement of all trains on their rail lines. The strikes quickly spread to other railroads, stopping most freight traffic for more than a week.



◀ Air traffic controllers on the picket line

1981 President Ronald Reagan fires most of the nation's striking air-traffic controllers.

1900

1994 Despite union protests that jobs will relocate to lower-wage Mexican factories, the North American Free Trade Agreement (NAFTA) takes effect between the United States, Canada, and Mexico.

2000

◀ Service Employees International president Andy Stern (right) announces the union's split from the AFL-CIO.

2005 The Teamster and Service Employees International Union splits from the AFL–CIO. Shortly after, the United Food and Commercial Workers also leaves.

Several governors called out their state militias to put down the strikes. In Baltimore, the militia fired into crowds, killing 10 people. Troops in Pittsburgh killed 20 civilians, including 3 children. Protestors reacted angrily to this bloodshed. Mobs in Pittsburgh set train engines, buildings, and equipment on fire, causing more than $4 million in damage.

The arrival of U.S. Army troops put an end to the Great Railroad Strike of 1877. But the violence on the part of both strikers and the government had led to the deaths of more than 100 people.

The Haymarket Riot The United States experienced a year of more intense strikes and turmoil in 1886. Wage cuts in many industries caused workers across the nation to go on strike. Labor demonstrations were common that year, some involving violent clashes with police. One of the worst confrontations was the Haymarket Riot.

In Haymarket Square in Chicago, crowds gathered to protest violent police action at a strike the day before. Suddenly, someone threw a bomb into the crowd. People panicked, and gunfire rang out. Before the situation calmed down, 11 people had lost their lives and more than 100 suffered injuries.

People immediately blamed foreign-born unionists for the violence. The press fanned the flames of this **xenophobia** (zeh-nuh-FO-bee-uh), or fear of foreigners. Police arrested numerous suspects and eventually charged eight men with conspiracy and murder. All had foreign-sounding names.

No evidence existed to connect these men to a crime. In fact, five of them were not even in Haymarket Square when the bomb went off. But all eight were convicted and sentenced to death. Four were hanged, and one killed himself in prison. In 1893 the new governor of Illinois pardoned the last three, believing that their guilt had not been proven.

The American Federation of Labor Following the Haymarket Riot, employers struck back at organized labor. Increasingly, they forced employees to sign documents saying they would not join unions. Employers made and shared **blacklists**—lists of people perceived as troublemakers, whom they refused to hire. When workers protested by striking, employers replaced them with "scabs," or strikebreakers. These scabs were often African Americans or others who had been excluded by the unions.

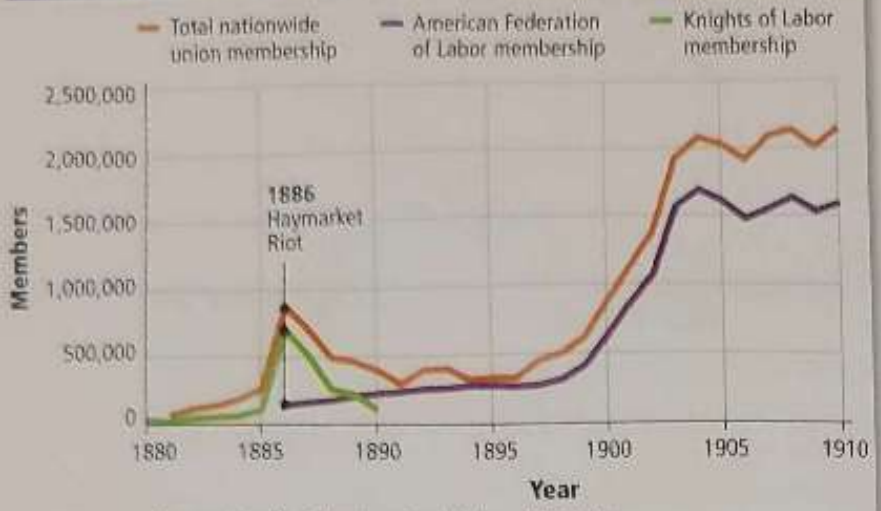
Union members did not stop organizing, despite the risks. In 1886 a group of skilled workers led by **Samuel Gompers** formed the **American Federation of Labor** (AFL). Using strikes and other tactics, the AFL won wage increases and shorter work weeks.

THE IMPACT TODAY

Economics

In 1955 the AFL merged with another powerful union, the Congress of Industrial Organizations. Today the AFL-CIO represents more than 9 million American workers.

THE GROWTH OF UNIONS, 1880–1910



Sources: *Growth of American Trade Unions, 1880–1923; Ebb and Flow of Trade Unionism*

Skills Focus INTERPRETING GRAPHS

What effect did the Haymarket Riot seem to have on labor union membership?

See **Skills Handbook**, p. H17

The Homestead strike Although unions made some gains, conflicts with employers continued. In 1892 workers at the Carnegie Steel Company in Homestead, Pennsylvania, protested when the manager wanted to step up production. They refused to work faster, and the manager tried to lock them out. The workers then seized the plant.

Days later, gunfire erupted when private guards hired by the company tried to take control. A fierce battle raged for 14 hours, leaving 16 people dead. The governor called out the state militia to restore order, and within months, the steelworkers' union withered.

The Pullman strike Other unions suffered setbacks, too. In 1893 the Pullman Company laid off a third of its employees. It cut the wages of the remaining employees an average of 25 percent, but it did not lower their rents.

The workers went on strike with the support of **Eugene V. Debs**, the leader of the American Railway Union (ARU). He urged the members of the ARU not to work on any train that included Pullman cars.

The government soon stepped in. It ordered the union to call off the strike because it was interfering with delivery of the U.S. mail. When ARU officials refused, many of them were jailed. Meanwhile, President **Grover Cleveland** called in federal troops, and the strike collapsed. Workers who would not quit the ARU wound up fired or blacklisted.

For the next several decades, unions struggled for progress. They would eventually gain considerable power, but the late 1800s remained the era of big business.

READING CHECK **Making Generalizations** How did employers and political leaders generally respond to the labor strikes of the late 1800s?

SECTION 3 ASSESSMENT

go.hrw.com Online Quiz Keyword: SD7 HP14

Reviewing Ideas, Terms, and People

1. **a. Identify** What was the Sherman Antitrust Act?
   b. Analyze Did the Sherman Antitrust Act curb the power of big business? Explain.
2. **a. Describe** What groups of people went to work in factories during the Second Industrial Revolution?
   b. Make Inferences Why might some employers have preferred child workers to adult workers?
3. **a. Recall** Why did more and more workers begin organizing in the late 1800s?
   b. Contrast How did the Knights of Labor and the AFL differ from earlier unions?
   c. Evaluate You read that violence often accompanied labor union strikes. Do you think this helped or hurt the cause of workers? Explain.

Critical Thinking

4. **Identifying Cause and Effect** Copy the chart below and record the causes and effects of key labor incidents.

Incident	Cause	Effect

FOCUS ON SPEAKING

5. **Persuasive** You are a factory owner and that your workers want higher wages and shorter hours. You believe that meeting these demands will drive you out of business. Give a speech to your workers to try to persuade them to accept your decision and refrain from striking.

SECTION 4

The Age of Invention

Before You Read

Main Idea

Important innovations in transportation and communication occurred during the Second Industrial Revolution.

Reading Focus

1. What advances in transportation were made in the late 1800s?
2. What inventions led to a communications revolution?
3. How did Thomas Edison help shape the modern world?

Key Terms and People

mass transit
Orville and Wilbur Wright
telegraph
Alexander Graham Bell
Thomas Alva Edison

TAKING NOTES As you read, take notes on new developments in transportation and how they changed life in American cities. Record your notes in a graphic organizer like the one shown here.

Development	How It Changed Life

THE INSIDE STORY ***How did two bicycle mechanics change the world?*** On a windy December day in 1903, a one-man airplane flew over the dunes near Kitty Hawk, North Carolina. The pilot was Orville Wright. Orville and his older brother Wilbur had always been clever with machines. Bicycling was a new craze in the 1890s, and the Wrights started a successful business designing and making bicycles. Wilbur began to read about experiments with gliders—light airplanes that have no motors but are carried by the wind. In 1899 the Wright brothers began to build and test gliders. Soon they turned to powered flight.

On the morning of December 17, the brothers took turns piloting their tiny 745-pound plane. On Orville's first flight, the plane lurched up and down, stayed in the air for 12 seconds, and then nosed into the ground. It was the first true flight in an airplane. The brothers made three more flights that day. Orville's diary described the fourth trip: "The machine started off with its ups and downs as it had before, but by the time he [Wilbur] had gone over three or four hundred feet he had it under much better control and was traveling on a fairly even course." The plane traveled 852 feet in 59 seconds. The Wrights had flown into history.

A Flight Into History

▼ **Orville Wright makes the first flight as his brother Wilbur watches.**

Linking to Today

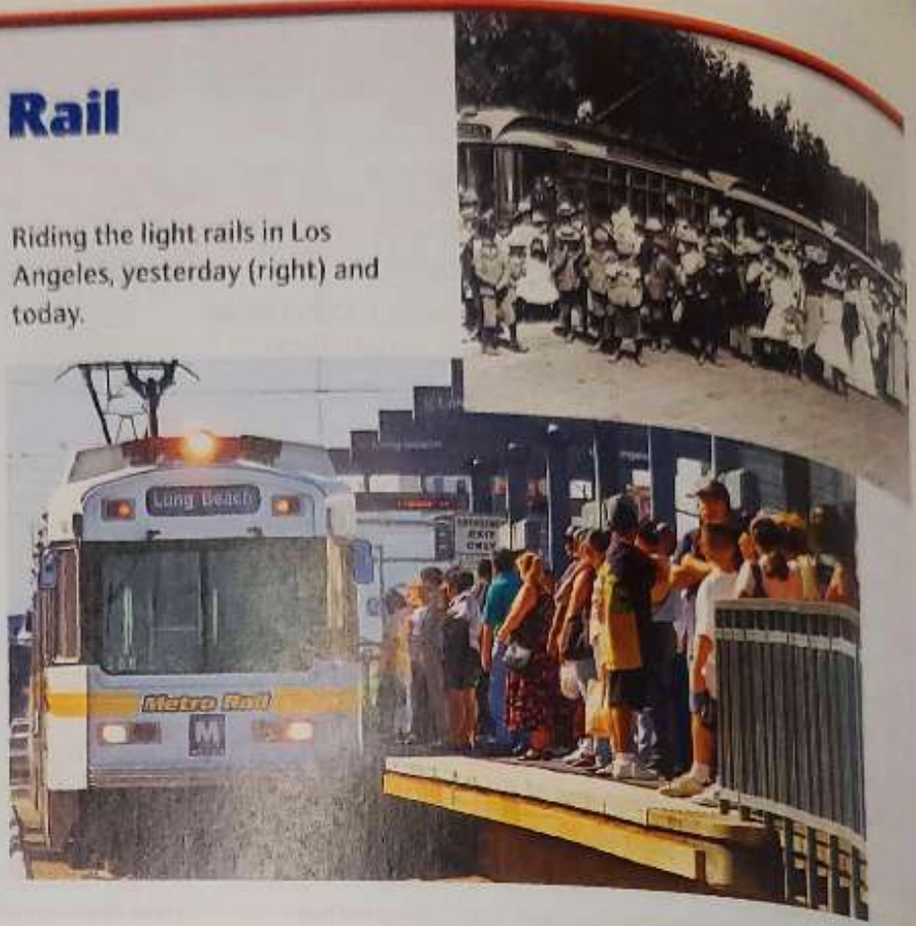
Cable Cars to Light Rail

The late 1800s were the heyday of cable cars and electric streetcars in urban America. But with the rise of the automobile, many systems declined or were dismantled by the 1950s.

Today more cities are turning to light rail trains. These are electrically powered by overhead trolley wires or an electrified third rail. Los Angeles, for example, has a light-rail network linking its downtown with outlying areas.

Supporters of light rail emphasize its benefits in reducing traffic and pollution. Opponents argue that too few people use these systems.

Comparing How are some light-rail systems like old-fashioned trolleys?



Riding the light rails in Los Angeles, yesterday (right) and today.

Advances in Transportation

Railroads allowed people to travel long distances quite easily. But Americans also needed local forms of transportation. As cities grew larger in the 1800s, walking everywhere became impractical. Workers wanted faster ways of getting to and from their jobs. People wanted easier access to stores and attractions. Residents in distant neighborhoods felt isolated from the city center.

Cities responded by devising means of **mass transit**. These are public transportation systems that carry large numbers of people and make regular stops along established routes.

Streetcars The first forms of mass transit were horse-drawn passenger vehicles. By the 1830s these horsecars were rolling along rails in the street, and they became known as streetcars. Rails made the ride smoother and allowed horses to pull larger and heavier loads.

In cities with steep hills, though, streetcars needed more power than horses could provide. Andrew Smith Hallidie solved the problem in San Francisco by building the first cable car line in 1873. The cars could climb up the hills by latching onto a moving cable underground. The cable was kept in motion by a steam engine in a central station.

Soon the cable cars became a symbol of San Francisco. One visitor wrote about them admiringly in 1888:

HISTORY'S VOICES

> "If any one should ask me what I consider the most distinctive, progressive feature of California, I should answer promptly, its cable-car system . . . A point of perfection [is] the amazing length of the ride that is given you for . . . a nickel. I have circled this city of San Francisco . . . for this smallest of . . . coins."

—Harriet Harper, 1888

Other cities began to build cable car lines, but they quickly became outdated. By 1910 most had been replaced by streetcars powered by overhead electrical wires. Electric streetcars, or trolleys, were cheaper to build and faster to run than cable cars.

Subways As American cities continued to expand rapidly, traffic became a serious problem. In urban centers such as Boston and New York, traffic sometimes came to a complete

standstill, with horses and electric streetcars competing for space on narrow roads. Then Boston found a solution. The city unveiled the nation's first subway line in 1897, attracting more than 100,000 riders on opening day. The local newspaper reported the event proudly:

HISTORY'S VOICES

"It was a great success. . . . The regularity with which the cars were run, the haste with which they were occupied and emptied at the . . . terminal and the machine-like precision with which they arrived and departed were undoubtedly wonderful."

—*Boston Daily Globe*, 1897

New York opened its subway in 1904 to even bigger crowds. On its first day, some 350,000 New Yorkers eagerly rode the new underground trains.

Automobiles While mass transit was taking off, inventors were also experimenting with vehicles for personal use. A breakthrough came when Nikolaus A. Otto, a German engineer, invented the internal combustion engine in 1867. Soon inventors in Europe and the United States were trying to adapt that engine to power a "horseless carriage." In 1893 Charles and J. Frank Duryea built the first practical motorcar in the United States.

The early automobiles were for the wealthy few who could afford expensive playthings. A new car cost about $2,500—at a time when the average worker made roughly $500 a year.

Airplanes Human beings had tried for hundreds of years to discover a way to fly. During the Renaissance, the Italian artist Leonardo da Vinci designed—but did not build—a flying machine. It was not until 1903 that two American brothers crafted a successful airplane.

Orville and Wilbur Wright were Ohio bicycle makers who tackled the challenge systematically. They made kites to test their wing designs. They built a wind tunnel to study the forces of wind on the wings. They figured out how to power their plane with an engine and how to control it.

On December 17, 1903, the Wright brothers tried out their airplane at Kitty Hawk, North Carolina. In freezing temperatures and a strong wind, Orville climbed into the pilot's seat. The plane took off across the beach, flying just inches above the ground and landing 120 feet from where it had started. This short trip—12 seconds in all—was the first true flight in an airplane. The Wright brothers quickly followed this success with even longer flights.

READING CHECK **Summarizing** What innovations in the late 1800s changed the way people moved from place to place?

Communications Revolution

Inventors also changed the way Americans communicated in the 1800s. In earlier times, people had face-to-face contact or relied on handwritten letters or printed materials. Communicating over long distances meant physically carrying a document from one place to another. Technology changed all this.

THE IMPACT TODAY

Daily Life

New York's subway system is one of the world's busiest, carrying an average of 4.5 million people every weekday. The system includes more than 840 miles of track—enough to reach to Chicago if it were laid end to end.

The telegraph In 1837 Samuel F. B. Morse patented his method of communicating by sending messages over wires with electricity. He called his invention the **telegraph.** Telegraph operators tapped out patterns of long and short signals that stood for letters of the alphabet. Using this system, known as Morse code, an operator could send a message to distant locations in mere minutes.

After the Civil War, the telegraph grew with the railroads. Telegraph wires were strung on poles along the railroad tracks. Train stations had telegraph offices inside them. Telegraphs became the fastest way to send messages.

The telephone Elisha Gray and **Alexander Graham Bell** both developed devices that could transmit voices using electricity. In 1876 the two men brought their designs to the patent office within hours of each other. Bell, however, got his design patented first. Today he is known as the inventor of the telephone.

Companies quickly found telephones to be an essential business tool. People wanted them in their homes, too. By 1900 more than a million telephones had been installed in offices and households across the nation.

The typewriter Inventors in many nations made attempts to create a writing machine. Christopher Latham Sholes, a Milwaukee printer, developed the first practical typewriter in 1867, with the help of Carlos Glidden and Samuel Soulé. Sholes later improved upon his

machine by designing the QWERTY keyboard, which is still the standard in computers today. The name QWERTY comes from the first few letters found at the top left. Sholes purposely placed the most frequently used letters far apart so the keys wouldn't jam when struck.

The typewriter could produce legible documents very quickly. Businesses began to hire women as typists to manage company correspondence. This opened up new job opportunities for many American women.

READING CHECK **Identifying the Main Idea**
How did technology improve communication during the Second Industrial Revolution?

Thomas Edison

Inventors and innovators in the late 1800s were obsessed with the idea of progress. They made things work better, faster, and more cheaply. They turned seemingly impossible dreams into profit-making ventures.

One of the most amazing inventors of the era was **Thomas Alva Edison**. As a child, he had an unstoppable curiosity about how everything worked. Although he lost almost all his hearing when he was about 12, Edison did not let this discourage him. In fact, he sometimes looked upon it as a blessing because it helped him concentrate on his work.

At the age of 22, Edison declared himself an inventor. His early successes included an improved telegraph. In 1876, in a pioneering move, Edison opened his own research laboratory in Menlo Park, New Jersey. He hired several assistants to work with him, choosing them with scientific and technical expertise. He provided them with materials and equipment and he encouraged them to think creatively.

Edison also encouraged hard work. As he said, "Genius is 1 percent inspiration, 99 percent perspiration." Laboring right alongside his assistants, Edison spent long hours testing out ideas and tinkering with designs. Even failures didn't phase him:

HISTORY'S VOICES

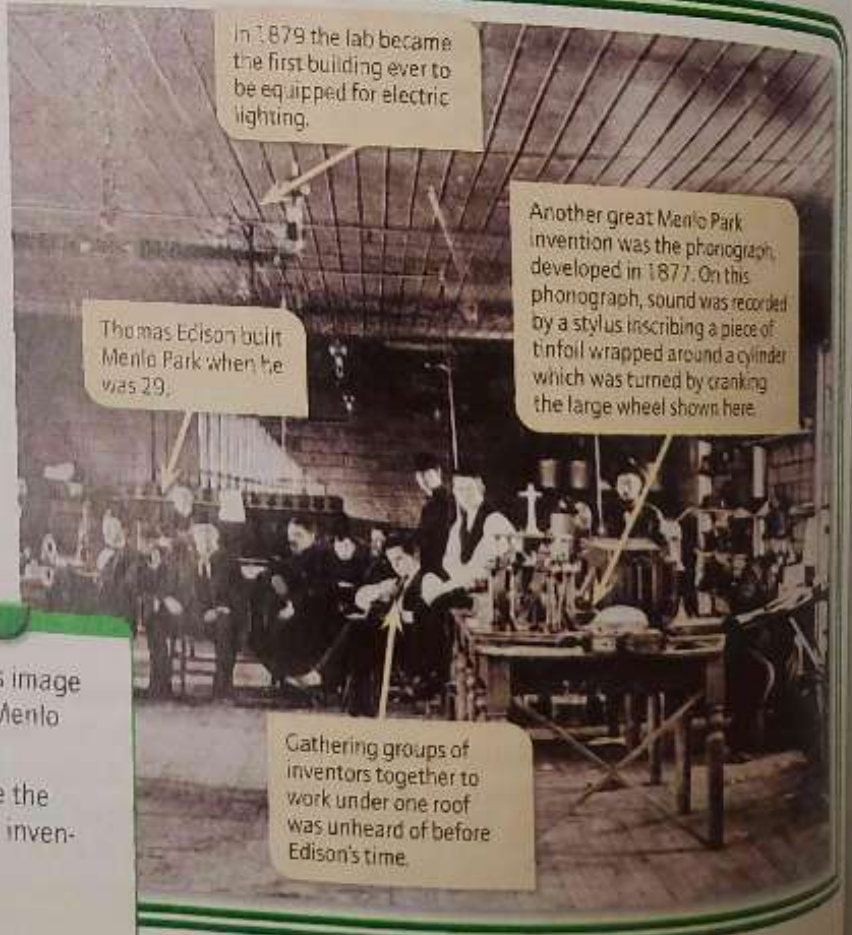
"I never quit until I get what I'm after. Negative results are just what I'm after. They are just as valuable to me as positive results."

—Thomas Alva Edison

PRIMARY SOURCES

Menlo Park Lab

Thomas Alva Edison's greatest invention may have been the modern industrial research laboratory. In Menlo Park, New Jersey, Edison brought together inventors who shared ideas and helped design hundreds of inventions. Following the Menlo Park model, young companies like Bell Telephone and Eastman Kodak quickly set up their own research labs. Such facilities are now common in most industries.



Skills Focus **READING LIKE A HISTORIAN**

1. **Interpreting Visuals** How does this image reflect the type of work carried on at Menlo Park?
2. **Making Inferences** What would be the advantage of bringing together many inventors under one roof?

See **Skills Handbook**, pp. H7, H30

Within four years of setting up shop, Edison and his team had invented the first phonograph, or record player, and a telephone transmitter. Other inventions poured out of the lab so quickly that Edison became known as the Wizard of Menlo Park.

Edison's greatest bit of "wizardry" was probably his development of practical electric lighting. He first came up with an incandescent bulb that could safely illuminate homes and streetlamps. Edison realized, though, that his lightbulb wouldn't be widely used until electricity became widely available. So in 1880 he undertook a new challenge—bringing electricity to New York City.

Edison first had to design and produce by hand all the parts necessary for an electricity network—sockets, fuses, switches, power meters, and generators. In 1882 he was ready. Near Wall Street, he installed a lighting system powered by his own electric power plant. The plant could deliver electricity only to homes and offices within a square mile. Luckily, within that square mile lay some very influential customers, including the New York Stock Exchange and the major New York newspapers. Electric power plants soon arose all over the country, and new investors flocked to Edison.

In 1887 Edison built an even larger laboratory in West Orange, New Jersey. He hired hundreds of brilliant technicians for his "invention factory." There, Edison and his team improved the phonograph, invented the motion picture camera and projector, and developed stronger and more powerful batteries. Over his lifetime, Edison earned more than 1,000 U.S. patents.

READING CHECK **Making Inferences** Why was Edison's lightbulb so important?

FACES OF HISTORY

Thomas EDISON
1847-1931

Thomas Alva Edison prefered self instruction to formal schooling. He read widely in history, literature, and the sciences. In his spare time he built complicated models, including a working sawmill and a steam-powered railroad engine.

At the age of 14, he was earning $10 a day producing and selling his own newspaper. At the age of 20, Edison created his first invention, an electric vote-counting machine. Disappointed because few politicians were interested, Edison vowed that from then on, he would invent only things that people would buy.

Edison's next invention, a new stock ticker for reporting sales and purchases of stocks, earned him $40,000. He used the money to set up his Menlo Park laboratory. Edison also established businesses to manufacture his gadgets.

Elaborate How was the commercial failure of Edison's vote-counting machine a blessing in disguise?

SECTION 4 ASSESSMENT

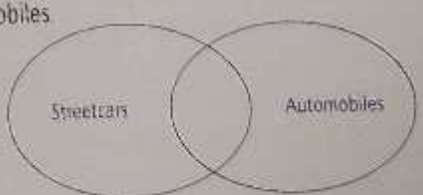
go.hrw.com
Online Quiz
Keyword: SD7 HP14

Reviewing Ideas, Terms, and People

1. **a. Recall** Name three different kinds of mass transit vehicles used in the 1800s.
   b. Explain Why were cable cars replaced in many cities by 1900?
   c. Elaborate Why would cars and airplanes be useful forms of transportation?
2. **a. Describe** How did the **telegraph** improve communication between people?
   b. Rank Which invention do you think was more significant, the telegraph or the telephone? Explain.
3. **a. Identify** What were some of the major inventions created by Thomas Alva Edison?
   b. Draw Conclusions How did Edison's inventions change the way Americans lived?

Critical Thinking

4. **Comparing and Contrasting** Copy the chart below and record the similarities and differences between streetcars and automobiles.



FOCUS ON WRITING

5. **Expository** You are a city official working to develop the first subway system in Boston. Write an announcement explaining how this new mode of transportation works and how it will benefit residents and visitors.