

- Chapter 13
- The Triumph of Industry
- Section 1
- The Industrial Revolution began in Britain in the 1700s. It soon spread to America.
- The first Industrial Revolution was marked by the introduction of steam power and the factory system. Coal and iron became key resources.
- Around the 1850s, the Industrial Revolution entered a new phase dominated by steel, oil and electricity (the Second Industrial Revolution).
- The Second Industrial Revolution was distinctly American with American inventors and business leaders helping turn the U.S. into an industrial powerhouse.
- The Civil War encouraged industrial growth:
  - 1. It challenged industries to make goods more quickly and efficiently
    - Factories used new tools and methods to step up production of ammunition, guns, medical supplies and uniforms
  - 2. The food industry developed ways to process foods so they could be shipped long distances
  - 3. Railroads expanded
  - 4. More efficient methods of creating power were developed
  - 5. The government encouraged immigration to meet the increasing need for labor in the factories
- One of the main reasons the Industrial Revolution was so successful in America was its vast supply of natural resources.
  - Numerous coal mines along the eastern seaboard provided fuel to power steam locomotives and factories
  - Thick forests across the country were cut into lumber for construction
  - The nation's many navigable rivers transported the resources to cities and factories
- In 1859, Edwin Drake drilled the world's first oil well in Titusville, Pennsylvania.
  - Drake's invention made oil easy to obtain and cheap to produce and ship.
  - The oil industry grew quickly after 1859 and encouraged the growth of related industries (kerosene and gasoline).
- After the Civil War America saw a great wave of immigration (mostly Europeans and some Asians). By 1905 there were 1 million immigrants per year coming to America.

- These immigrants were pushed from their homelands by factors such as political upheaval, religious discrimination, and crop failures. These immigrants were willing to work for low wages.
- Also in the 1890s, droughts and competition from foreign farmers drove American farmers to the cities in large numbers to seek jobs.
- All of these factors meant that industries had a huge, willing workforce to fuel growth.
- The idea of the American Dream was fueled during this time of growth. The key to this idea of American success and capitalism were **entrepreneurs**, or people who invest money in a product or enterprise in order to make a profit. Entrepreneurs fueled industrialization.
- Government policies encouraged the success of businesses in the late 1800s.
- To encourage the buying of American goods, Congress enacted **protective tariffs**, or taxes that would make imported goods cost more than those made locally.
- The government also encouraged **laissez-faire** policies, which allowed businesses to operate under minimal government regulation.
- All of these policies provided the predictability and security that businesses and industries needed to encourage investment and growth.
- This American drive for innovation and efficiency grew rapidly in the 1800s.
- By the late 1800s, the number of patents had drastically increased. A **patent** is a grant by the federal government giving an inventor the exclusive right to develop, use and sell an invention for a set period of time.
- Important inventions of the 1800s:
  - 1844-Samuel Morse invents the telegraph. Before the telegraph, messages were sent by horse and rider.
  - 1846-Elias Howe invents the sewing machine and revolutionizes the way clothing is made.
  - 1852-Elisha Otis develops the safety elevator to prevent elevator cars from suddenly falling. Although he did not invent the elevator, his safety brake made elevators more practical, which led to the growth of high-rise buildings.
  - 1869-George Westinghouse invented air brakes for trains
  - 1876-Alexander Graham Bell invented the telephone (By 1900 there were 1 million telephones in the U.S.)
  - 1880-Thomas Edison invents the light bulb.
  - 1884-Granville Woods invents the steam boiler furnace which was a greatly improved steam-powered furnace for running trains.

- 1890-Henry Bessemer developed a process for purifying iron resulting in strong, but lightweight steel.
- In 1876, inventor **Thomas Edison** established a research lab at Menlo Park, NJ.
- Edison was a creative genius who had only a few months of formal education.
- Edison would receive more than 1,000 patents for new inventions.
- In 1880, Edison and his team created the light bulb with the goal of developing affordable lighting for homes.
- Edison also invented:
  - The phonograph
  - The motion picture camera
  - The electrographic vote recorder
  - Magnetic iron ore separator (this invention was abandoned but Edison used what he learned in it to make his own version of cement, which turned out to be a very good product that was used to build Yankee Stadium!)
- American industries quickly adopted the Bessemer process and by 1890 the U.S. was out producing British steel manufacturers.
- Strong but lightweight steel made a host of new inventions possible, including skyscrapers and improved elevators.
- One of the most dramatic uses of this new steel was the construction of **suspension bridges**, bridges in which the roadway is suspended by steel cables.
- The first suspension bridge was the **Brooklyn Bridge**, spanning the East River in New York City.
- It was completed in 1883 and was the longest bridge in the world at the time of its completion.
- By 1883, there were 3 trans-continental railroad lines in the U.S.
- The expanding transportation network caused a problem:
  - Throughout most of the 1800s, most towns set their clocks independently. When trains started regular passenger service between towns, time differences made it hard to set schedules.
  - In 1884, delegates from 27 countries divided the globe into 24 **time zones**, one for each hour of the day. RRs adopted this system, which is still used today.
- Technology changed how Americans traveled and where they lived. Electric streetcars, commuter trains and subways appeared in major cities. As a result, Americans living in neighborhoods outside the city could commute to work.

- Factory production of gas-powered automobiles began in 1902 and the first successful airplane flight in 1903 by Orville and Wilbur Wright marked the birth of a new industry.
- Railroads played a key role in transforming American industry and business:
  - They could transport large amounts of goods quickly, cheaply and efficiently
  - Because they linked the nation, they allowed businesses to obtain raw materials easily and to sell finished goods to larger numbers of people
  - They soon encouraged new methods for management and administration, which were soon adopted by the business community
  - The expanding railroad network stimulated innovation in many other industries
  - An abundance of natural resources and an efficient transportation system set up a spiral of related growth.
- To meet the growing demand, factory owners developed systems for turning out large numbers of products quickly and inexpensively. Known as **mass production**, these systems depended on machinery to carry out tasks that were once done by human hands.
- The Impact of Industrialization
- **It linked world markets**-With our extensive RR system, Americans could easily transport goods from where they were made or grown to ports where they could be shipped around the world.
- **It changed American society**-massive changes in industry altered how Americans lived and worked. New technology made things readily available to Americans, yet they faced higher costs of living, were dependent on cash wages to buy food and performed repetitive work in factories.
- **Environment**-By the late 1800s, industrial waste had risen drastically and mining had begun to destroy land. Increased agricultural production had led to soil erosion and dust storms. This forced Congress to act to protect the environment.
- Section 2
- Until the mid-nineteenth century, most businesses were run by one person or family. This meant that no business could grow larger than one family's ability to invest in it or run it. Also, businesses were local, buying and selling to customers who lived nearby.
- Industrialization changed this and caused businesses to grow larger and larger.
- To take advantage of expanding markets, investors developed a form of group ownership known as a **corporation**, which is when a number of people share the ownership of a business.
- Corporations worked to maximize profits in several ways:
  - 1. They decreased the cost of producing goods or services by paying workers the lowest possible wages and paying as little as possible for raw materials.
  - 2. They advertised their products widely, thus increasing their potential customer base

- 3. Some supported research labs when inventors could experiment with products and methods that might bring the corporations future profits
- 4. Some corporations tried to gain **monopolies**, complete control of a product or service. To do this, a corporation either bought out competitors or drove them out of business.
  - Once customers had no other choices for a given product or service, the sole remaining company was free to set its own prices.
- 5. Other corporations worked to eliminate competition by forming a **cartel**, an arrangement in which businesses making the same product agree to limit their production and thus keep prices high.
- 6. Some created giant companies with low production costs by combining many firms into the same business in a system called **horizontal integration**.
- John D. Rockefeller, an oil tycoon, was the first businessmen to use the method of horizontal integration. However, Ohio state law prevented one company from owning the stock of another, meaning that Rockefeller couldn't buy out his competitors.
- Rockefeller's lawyer had an idea called a trust to get around this state law. In a **trust**, companies assign their stock to a board of trustees, who combine them into a new organization. The trustees then run organization, paying themselves profits.
- Rockefeller, joined by steel tycoon **Andrew Carnegie** and other businessmen, increased their power by gaining control of the many different businesses that make up all phases of a product's development. This process, called **vertical integration**, allowed companies to reduce costs and charge higher prices to competitors.
- This growth of big business in the 1880s made business leaders very wealthy while many smaller companies and consumers began to question their goals and tactics.
- Gradually, consumers, workers and the federal government came to feel that systems like trusts, cartels and monopolies gave powerful businessmen an unfair advantage.
- Small businesses were either bought up or squeezed out of the market. Consumers were harmed by the unfairly high prices that monopolies and cartels set on their products. Because of their unfair tactics, shrewd capitalists became known as "**robber barons.**"
- At the same time, many felt that business leaders were good for the nation, giving them the nickname "captains of industry." Factories, steel mills, and railroads provided jobs for an ever-growing labor force. The industrial development, technology and innovation stimulated the nation's economy and shaped the U.S. into a strong international leader.
- In 1859, biologist Charles Darwin published *On the Origin of the Species*, arguing that animals evolved by a process of "natural selection" and that only the fittest survived to reproduce.
- Yale professor William Graham Sumner soon applied Darwin's theory to the tough world of capitalism, calling it **Social Darwinism**.

- He declared that wealth was a measure of one's inherent value and those who had it were the most "fit."
- People used Social Darwinism to justify all sorts of beliefs and conditions:
  - In economics, supporters of laissez-faire policies argued that the government should stay out of private business because their interference would disrupt natural selection.
  - Many Social Darwinists believed that the nation would grow stronger by allowing its most vigorous members to rise to the top. Therefore, they felt it was wrong to use public funds to assist the poor.
  - Social Darwinism was also used to justify discrimination, pointing to the poverty-stricken condition of many minorities as evidence of their unfitness.
- In 1887, the U.S. Senate created the **Interstate Commerce Commission (ICC)** to oversee railroad operations to stop unfair practices.
  - This was the first federal body ever set up to monitor American business operations.
  - The ICC could only monitor railroads that crossed state lines and it could not make any laws.
  - The ICC could require the RRs to send their records to Congress.
- In 1890, the Senate passed the **Sherman Anti-Trust Act**, which outlawed any trust that operated in restraint of trade or commerce among the several states.
  - For many years this act was not enforced.
- The ICC and Sherman Antitrust Act are important because they began a trend toward federal limitations on corporations' power.
- Section 3
- The industrial expansion in the U.S. grew the American economy by leaps and bounds. This new booming economy relied heavily on *workers* to fuel its success.
- This new growth had many benefits for American society, but the people who actually performed the work in the factories and industries struggled to survive and often faced ridicule and discrimination.
- Immigrants made up a large percentage of the workforce since they were willing to work for lower wages.
- Factory workers worked 12 hours a day, 6 days a week in small, hot, dark and dirty workhouses called **sweatshops**.
- In these sweatshops, owners clocked work and break hours and fined workers for breaking the rules or working slowly.

- These factories were also often dangerous. Workspaces were poorly lit, overheated and poorly ventilated.
  - Some workers lost their hearing from loud machinery.
  - Accidents were common, both from faulty equipment and lack of proper training.
- Despite these dangers, there were always more people to take jobs.
- As industrialization advanced, more jobs opened up for women. Some worked as laundresses, telegraph operators, and typists.
- Most women and their families worked in the factories. Since low wages meant that both parents needed jobs, bringing children to work kept them off the streets and close to their parents. It also meant that children could earn money, which helped the family survive.
  - By the end of the 1800s, nearly 1 in 5 children between the ages of 10 and 16 worked rather than attending school.
- Conditions were especially harsh for these children. Many suffered stunted physical and mental growth.
- Eventually the efforts of social workers would lead to the passing of legislation to stop child labor.
- Many laborers, especially those who worked in the mines, were forced to live in isolated communities near their workplaces. These communities became known as **company towns** because they were owned by the business and rented out to employees.
- **“Wage slavery”**:
  - The company also controlled the company store where workers were required to buy their goods.
  - The store sold items on credit with high interest rates. As a result, by the time the worker received their wages, most of their income was owed back to the employer.
  - Since the worker could be arrested for leaving their jobs before their loans were paid, employers could hold workers to their jobs through a system that workers’ advocates called “wage slavery.”
- Over time, workers began taking their complaints to their employers.
- Factory workers tried to gain more power against employers by using the technique of **collective bargaining**, or negotiating as a group for higher wages or better working conditions.
  - One form of collective bargaining was to **strike**, where workers agree to cease work until certain demands are met.
- The first national labor union was founded in 1834 as the National Trades Union, which was open to workers from all trades.

- In the 1830s, a movement called **socialism** spread throughout Europe. Socialism is an economic or political philosophy that favors public, instead of private, control of property and income.
- Socialists believe that all of society (not just a few individuals) should take charge of a nation's wealth and that wealth should be distributed equally to everyone.
- In 1848, German philosopher Karl Marx expanded on the ideas of socialism in his *Communist Manifesto*, which denounced capitalism and predicted that workers would overturn the system.
- Most Americans rejected these ideas believing that they threatened the American ideals of free enterprise, private property and individual liberty.
- Many labor activists borrowed ideas from socialism to support their goals for social reform.
- In 1869, Uriah Smith Stephens founded a labor union called the **Knights of Labor**, which included all workers of any skill or trade.
- The Knights also actively recruited African Americans.
- Under Stephens, the union operated like a secret society, devoted to broad social reform.
- In 1881, Terence V. Powderly took over the Knights. He continued to pursue social reform intended to lead workers out of the bondage of wage labor. He encouraged boycotts and negotiations with employers, but he abandoned the secretive nature of the union. By 1885, the Knights had grown to 700,000 men and women but after a series of failed strikes they largely disappeared by the 1890s.
- In 1886, Samuel Gompers founded the **American Federation of Labor (AFL)**, which was a craft union meaning it was a loose organization of skilled workers from some 100 local unions devoted to a specific craft or trade. These local unions retained their individuality but gained strength in bargaining through their affiliation with the AFL.
- Unlike the Knights, the AFL didn't aim for social reform. Instead they focused on very specific workers' issues such as wages, working hours and working conditions.
- The AFL was not as popular among workers as the Knights because of its own policies: it opposed female members and usually excluded Blacks.
- As memberships in unions rose, labor activists became more skilled in organizing large-scale protests.
- The first major strike occurred in the RR industry in 1877. Workers responding to wage cuts caused massive property destruction in several cities. The federal government had to send in troops to restore order.
- On May 1, 1886, thousands of workers mounted a nationwide strike for an 8-hour-workday.
  - Fights broke out between strikers and strikebreakers. When police were brought in, the conflict escalated.



- On May 4, protesters gathered in Haymarket Square in Chicago. Fighting again broke out when a protester killed a police officer with a bomb. Dozens of others were killed. Eight anarchists were tried for murder and 4 were executed.
  - This became known as the **Haymarket Riot**.
- The **Homestead Strike** broke out at a Carnegie Steel plant in PA because of lowered wages caused by an economic depression.
  - The company responded by bringing in the **Pinkertons**, which was a private police force known for their ability to break up strikes.
  - The Pinkertons killed several strikers and wounded many others in a standoff that lasted 2 weeks.
- In 1893, the Pullman Palace Car Company laid off workers and reduced wages by 25%.
  - The owner, George Pullman, also required workers to live in company towns and controlled their rents and prices of goods.
  - Workers tried to negotiate with Pullman but he responded by firing more workers and shutting down the plant. Workers went on strike.
  - The **Pullman Strike** grew so large that it halted RR traffic and mail delivery. Federal troops were sent in to end the strike.
- Major strikes of the Late 1800s: Page 454
- Effects of the Labor Movement:
- Employers began to appeal frequently for court orders against unions, citing legislation like the Sherman Antitrust Act
  - A cycle of fighting broke out between industrialists, workers, and government agencies. Contract negotiations, strikes and legislation would become the way of life for American Industry.
- Split the labor movement into different groups, some increasingly influenced by socialism
  - Eugene V. Debs helped found the American Socialist Party in 1897 and he ran for president in 1900.
  - In 1905 he helped found the Industrial Workers of the World (IWW) or “Wobblies.” They were a radical union of unskilled workers with many Socialist members and leaders. They led a number of violent strikes in the first few decades of the 1900s.