Chapter 17

INDUSTRIAL SUPREMACY

CELEBRATING A TUNNEL The new industrial economy made possible many great feats that only decades before would have been unthinkable. In this striking photograph, the engineers and financiers who planned and paid for this underwater tunnel between Manhattan and New Jersey attend a banquet to celebrate its successful completion in 1907. *(Culver Pictures)*

WRITING SEVERAL DECADES LATER of the remarkable expansion of America's industrial economy in the late nineteenth and early twentieth centuries, the historians Charles and Mary Beard commented: "With a stride that astonished statisticians, the conquering hosts of business enterprise swept over the continent; twenty-five years after the death of Lincoln, America had become, in the quantity and value of her products, the first manufacturing nation of the world. What England had accomplished in a hundred years, the United States had achieved in half the time." Many Americans at the time experienced a similar amazement as they watched the changes around them.

In fact, America's rise to industrial supremacy was not as sudden as such observers suggested. The nation had been building a manufacturing economy since early in the nineteenth century, and industry was well established before the Civil War. But Americans were clearly correct in observing that the developments of the last three decades of the nineteenth century overshadowed all that had come earlier. Those years witnessed nothing less than the transformation of the national economy.

Transformation of the National Economy

Many factors contributed to this transformation. In these years, the economy of the United States (and of much of the rest of the industrial world) benefited enormously from important new technologies that were being developed in both America and Europe. Industrial growth also profited from new forms of corporate organization capable of amassing much larger amounts of capital than in the past and, eventually, of managing much vaster enterprises than earlier industrial leaders could have done. Great waves of immigration—from the countrysides of the Americas, Europe, and Asia into the great industrial centers of the United States—provided a large, cheap labor force for the ever-larger factory complexes the nation was creating.

Industrialization changed the physical landscape of the nation. It contributed to the rapid growth of cities. It helped stimulate the spread of railroads across the United States. It sent capitalists and workers into remote areas of the nation in search of natural resources that could be exploited for industrial production. Industrialization also changed America's relationship to the rest of the world, drawing the United States more and more into global trade and finance and into a search for overseas markets and foreign suppliers of needed materials.

And industrialization altered the nation's social landscape as well. The remarkable growth of the economy did much to increase the wealth and improve the lives of many Americans. But the benefits were far from universal. While industrial titans and a growing middle class were enjoying a prosperity without precedent in the nation's history, workers, farmers, and others were experiencing a disorienting and often painful transition that slowly edged the United States toward a great economic and political crisis.

SIGNIFICANT EVENTS

- 1851 I. M. Singer and Company, one of the first modern corporations, founded
- 1859 First oil well drilled in Pennsylvania
- 1866 William H. Sylvis founds National Labor Union
- First transatlantic cable laid
- 1868 Open-hearth steelmaking begins in America
- 1869 Knights of Labor founded
- 1870 John D. Rockefeller founds Standard Oil
- 1873 Carnegie Steel founded
- Commercial and financial panic disrupts economy
- 1876 Alexander Graham Bell invents telephone
- 1877 Railroad workers strike nationwide
- 1879 Thomas A. Edison invents electric lightbulb
- Henry George publishes *Progress and Poverty*
- 1881 American Federation of Labor founded
- 1882 Rockefeller creates first trust
- 1886 Haymarket bombing blamed on anarchists
- 1888 Edward Bellamy publishes *Looking Backward*
- 1892 Workers strike Homestead plant
- 1893 Depression begins
- 1894 Workers strike Pullman Company
- 1901 J. P. Morgan creates United States Steel Corporation
- American Socialist Party founded
- Spindletop oil field discovered in Texas
- 1903 Women's Trade Union League founded
- Wright brothers make first successful flight at Kitty Hawk, North Carolina
- 1906 Henry Ford produces his first automobiles
- William Graham Sumner publishes *Folkways*

SOURCES OF INDUSTRIAL GROWTH

Many factors contributed to the growth of American industry: abundant raw materials; a large and growing labor supply; a surge in technological innovation; the emergence of a talented, ambitious, and often ruthless group of entrepreneurs; a federal government eager to assist the growth of business; and a great and expanding domestic market for the products of manufacturing.

Industrial Technologies

Perhaps the most important technological development in a nation whose economy rested so heavily on railroads and urban construction was the revolutionizing of iron and steel production in the late nineteenth century. Iron production had developed slowly in the United States through most of the nineteenth century; steel production had developed hardly at all by the end of the Civil War. In the 1870s and 1880s, however, iron production soared as railroads added 40,000 new miles of track, and steel production made great strides toward what would soon be its dominance in the metals industry.

The story of the rise of steel is, like so many other stories of economic development, a story of technological discovery. An Englishman, Henry Bessemer, and an American, William Kelly, had developed, almost simultaneously, a process for converting iron into the much more durable and versatile steel. (The process, which took Bessemer's name, consisted of blowing air through molten iron to burn out the impurities.) The Bessemer process also relied on the discovery by the British metallurgist Robert Mushet that ingredients could be added to the iron during conversion to transform it into steel. In 1868, the New Jersey ironmaster Abram S. Hewitt introduced from Europe another method of making steel—the open-hearth process, which ultimately largely supplanted the Bessemer process. These techniques made possible the production of steel in great quantities and large dimensions, for use in the manufacture of locomotives, steel rails, and girders for the construction of tall buildings.

New Steel Production Techniques

The steel industry emerged first in western Pennsylvania and eastern Ohio. That was partly because iron ore could be found there in abundance and because there was already a flourishing iron industry in the region. It was also because the new forms of steel production created a demand for new kinds of fuel—and particularly for the anthracite (or hard) coal that was plentiful in Pennsylvania. Later, new techniques made it possible to use soft bituminous coal (easily mined in western Pennsylvania), which could then be converted to coke to fuel steel furnaces. As a result, Pittsburgh quickly became the center of the steel world. But the industry was growing so fast that new sources of ore were soon necessary. The upper peninsula of Michigan, the Mesabi Range in Minnesota, and the area around Birmingham, Alabama, became important ore-producing centers by the end of the century, and new centers of steel production grew up near them: Cleveland, Detroit, Chicago, and Birmingham, among others.

Pittsburgh

Until the Civil War, iron and steel furnaces were mostly made of stone and usually built against the side of a hill to reduce construction demands. In the 1870s and after, however, furnaces were redesigned as cylindrical iron shells lined with brick. These massive new furnaces were 75 feet tall and higher and could produce over 500 tons a week.

As the steel industry spread, new transportation systems emerged to serve it. The steel production in the Great Lakes region was possible only because of the availability of steam freighters that could carry ore on the lakes. The demand for vessels capable of transporting oil and the development of new and more powerful steam engines encouraged, in turn, the design of larger and heavier freighters—such as the *R. J. Hackett,* launched in 1869, which could carry 1,200 tons of ore. Shippers also used new steam engines to speed the unloading of ore, a task that previously had been performed, slowly and laboriously, by men and horses.

There was even a closer relationship between the emerging steel companies and the railroads. Steel manufacturers provided rails and parts for cars to the railroads; railroads were both markets for and transporters of manufactured steel. The Pennsylvania Railroad, for example, literally created the Pennsylvania Steel Company, provided it with substantial initial capital, and ensured it a market for its products with an immediate contract for steel rails. That was only one of many cases in which railroad and steel companies effectively merged or formed intimate connections.

The steel industry's need for lubrication for its machines helped create another important new industry in the late nineteenth century—oil. (Not until later did oil become important primarily for its potential as a fuel.) The existence of petroleum reserves in western Pennsylvania had been common knowledge for some time. Not until the 1850s, however, after Pennsylvania businessman George Bissell showed that the substance could be burned in lamps and that it could also yield such products as paraffin, naphtha, and lubricating oil, was there any sense of its commercial value. Bissell raised money to begin drilling; and in 1859, Edwin L. Drake, one of Bissell's employees, established the first oil well, near Titusville, Pennsylvania, which was soon producing 500 barrels of oil a month. Demand for petroleum grew quickly, and promoters soon developed other fields in Pennsylvania, Ohio, and West Virginia. By the 1870s, oil had advanced to fourth place among the nation's exports.

Rise of the Petroleum Industry

PIONEER OIL RUN, 1865 The American oil industry emerged first in western Pennsylvania, where speculators built makeshift facilities almost overnight. An oil field on the other side of the hill depicted here had been producing 600 barrels a day, and the wells quickly spilled over the hill and down the slope shown in this photograph. *(Library of Congress)*

The Airplane and the Automobile

Among the technological innovations that were to have the farthest-reaching impact on the United States was the invention of the automobile. Two technologies were critical to its development. One was the creation of gasoline (or petrol). It was the result of an extraction process developed in the late nineteenth century in the United States by which lubricating oil and fuel oil were removed separately from crude oil. As early as the 1870s, designers in France, Germany, and Austria—inspired by the success of railroad engines—had begun to develop an "internal combustion engine," which used the expanding power of burning gas to drive pistons. A German, Nicolaus August Otto, created a gas-powered "four-stroke" engine in the mid-1860s, which was a precursor to automobile engines. But he did not develop a way to untether it from gas lines to be used portably in machines. One of Otto's former employees, Gottfried Daimler, later perfected an engine that could be used in automobiles (including the famous early car that took Daimler's name).

The American automobile industry developed rapidly in the aftermath of these breakthroughs. Charles and Frank Duryea built the first gasoline-driven motor vehicle in America in 1893. Three years later, Henry Ford produced the first of the famous cars that would eventually bear his name. By 1910, the industry had become a major force in the economy, and the automobile was beginning to reshape American social and cultural life, as well as the nation's landscape. In 1895, there were only four automobiles on the American highways. By 1917, there were nearly 5 million.

Henry Ford

The search for a means of human flight was as old as civilization, and had been almost entirely futile until the late nineteenth century, when engineers, scientists, and tinkerers in both the United States and Europe began to experiment with a wide range of aeronautic devices. Balloonists began to consider ways to make dirigibles useful vehicles of transportation. Others experimented with kites and gliders to see if they could somehow be used to propel humans through the air.

Among those testing gliders were two brothers in Ohio, Wilbur and Orville Wright, who owned a bicycle shop in which they began to construct a glider that could be propelled through the air by an internal combustion engine (the same kind of engine that was propelling automobiles). Four years after they began their experiments, Orville made a celebrated test flight near Kitty Hawk,

THE WRIGHT BROTHERS Orville and Wilbur Wright became closely watched celebrities after their famous flight at Kitty Hawk, North Carolina, in 1903. Although they made few additional contributions to the development of aviation technology, they were much in demand to demonstrate their "flying machine." Here they pose before a demonstration flight—Wilbur taking a reading of flight conditions and Orville watching, the struts of their plane visible in the background. *(Library of Congress)*

North Carolina, in which an airplane took off by itself and traveled 120 feet in 12 seconds under its own power before settling back to earth. By the fall of 1904, they had improved the plane to the point where they were able to fly over 23 miles, and in the following year they began to take a few passengers with them on their flights.

Although the first working airplane was built in the United States, aviation technology was slow to gain a foothold in America. Most of the early progress in airplane design occurred in France, where there was substantial government funding for research and development. The U.S. government created the National Advisory Committee on Aeronautics in 1915, twelve years after the Wright brothers' flight, and American airplanes became a significant presence in Europe during World War I. But the prospects for commercial flight seemed dim until the 1920s, when Charles Lindbergh's famous solo flight from New York to Paris electrified the nation and the world and helped make aviation a national obsession.

Research and Development

The rapid development of new industrial technologies, and the emergence of large integrated corporations taking advantage of those technologies, persuaded business leaders of the need to sponsor their own research to allow them to keep up with the rapid changes in industry. General Electric, fearful of technological competition, created one of the first corporate laboratories in 1900. By 1913, Bell Telephone, Du Pont, General Electric, Eastman Kodak, and about fifty other companies were budgeting hundreds of thousands of dollars each year for research by their own engineers and scientists. The emergence of corporate research and development laboratories

Corporate Research and Development

coincided with a decline in government support for research. That helped corporations to attract skilled researchers who had once worked for government agencies and were looking for new employment. It also decentralized the sources of research funding and ensured that inquiry would move in many different directions, and not just along paths determined by the government.

A rift began to emerge between scientists and engineers. Engineers—both inside and out of universities—became increasingly tied up with the research and development agendas of corporations and worked hard to be of practical use to the new economy. Many scientists scorned this "commercialization" of knowledge and preferred to stick to basic research that had no immediate practical applications. Even so, American scientists were more closely connected to practical challenges than were their European counterparts, and some joined engineers in corporate research and development laboratories, which over time began to sponsor not just practical but also basic research.

American universities transformed themselves in growing numbers in the late nineteenth and early twentieth centuries. And while there were many reasons for, and many results of, these transformations, one product of the change was a growing connection between university-based research and the needs of the industrial economy.

Transformation of Higher Education

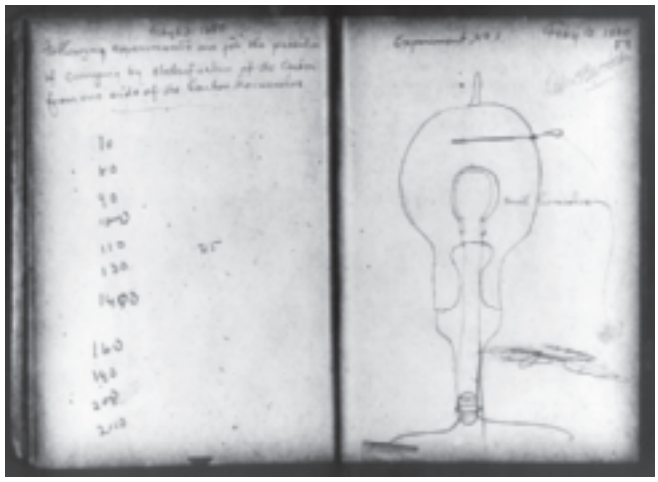
University faculty and laboratories began to receive funding from corporations for research of interest to them, and a partnership began to develop between the academic world and the commercial world that has continued into the twenty-first century. No comparable partnership emerged in European universities in these years, and some scholars have argued that America's more rapid development in the twentieth century is in part a product of the market's success in harnessing knowledge—from the academic world and elsewhere—more effectively than the nation's competitors abroad.

The Science of Production

Central to the growth of the automobile and other industries were changes in the techniques of production. By the beginning of the twentieth century, many industrialists were turning to the new principles of "scientific management." Those principles were often known as "Taylorism," after their leading theoretician, Frederick Winslow Taylor. Taylor's ideas were controversial during his lifetime and have remained controversial since.

Taylor urged employers to reorganize the production process by subdividing tasks. This would speed up production; it would also make workers more interchangeable and thus diminish a manager's dependence on any particular employee. And it would reduce the need for highly trained skilled workers. If properly managed by trained experts, Taylor claimed, workers using modern machines could perform simple tasks at much greater speed, significantly increasing productive efficiency. Taylor himself, and his many admirers, argued that scientific management was a way to manage human labor to make it compatible with the demands of the machine age. But scientific management was also a way to increase the employer's control of the workplace and to make working people less independent.

"Taylorism"



EDISON'S NOTEBOOK This page from one of Thomas Edison's notebooks shows sketches of and notes on some of his early experiments on an incandescent lamp—what we know as an electric lightbulb. Edison was not only the most celebrated inventor of his day, but by the early twentieth century one of the greatest popular heroes in American life in a time when scientific and technological progress was considered the defining feature of the age. *(U.S. Department of the Interior, National Park Service, Edison National Historic Site)*

The most important change in production technology in the industrial era was the emergence of mass production and, above all, the moving assembly line, which Henry Ford introduced in his automobile plants in 1914. This revolutionary technique cut the time for assembling a chassis from 12½ hours to 1½ hours. It enabled Ford to raise the wages and reduce the hours of his workers while cutting the base price of his Model T from $950 in 1914 to $290 in 1929. Ford's assembly line became a standard for many other industries.

Moving Assembly Line

Railroad Expansion

Despite important advances in many other forms of technology and communication, the principal agent of industrial progress in the late nineteenth century remained the railroad. Railroads were the nation's principal form of transportation and gave industrialists access to distant markets and sources of raw materials. Railroads helped determine the path by which agricultural and industrial economies developed. When a railroad line ran through a sparsely populated region, new farms and other economic activity quickly sprang up along the route. When it reached

AUTOMOBILE PRODUCTION Workers labor to finish and paint automobile bodies in a Fisher Body plant in 1918, just after the end of World War I. By then, General Motors had emerged as the giant of the industry, and Fisher Body was one of many companies it had bought to consolidate its control over the entire production process. *(2002 General Motors Corporation. Used with permission of GM Media Archives.)*

forests, lumberers came quickly in its wake and began felling timber to send back to towns and cities for sale. When it moved through the great plains of the West, it brought buffalo hunters who nearly exterminated the great herds of bison and, later, helped transport cattle into the region and carry western meat back into the cities. Because Chicago was the principal railroad hub of the central United States, it also became the place where railroads brought livestock, making the city the slaughterhouse of the nation. Everywhere the railroad went, the economic, social, and physical landscape of the country changed as a result.

Railroads even altered concepts of time. Until the 1880s, there was no standard method of keeping time from one community to another. In most places, the position of the sun determined the time, which meant that clocks were set differently even between nearby towns. This created great difficulties for railroads, which were trying to set schedules for the entire nation. On November 18, 1883, the railroad companies, working together, agreed to create four time zones across the continent, each an hour apart from its closest neighbor. Although not until 1918 did the federal government make these time zones standard for all purposes, the action by the railroads very quickly solidified the idea of "standard time" through most of the United States.

Rapid Expansion of the Railroad

Every decade in the late nineteenth century, total railroad trackage increased dramatically: from 30,000 miles in 1860 to 52,000 miles in 1870, to 93,000 in 1880, to 163,000 in 1890, and to 193,000 by 1900. Subsidies from federal, state, and local governments—as well as investments from abroad—were vital to these vast undertakings, which required far more capital than private entrepreneurs in America could raise by themselves. Equally important was the emergence of great railroad combinations that brought most of the nation's rails under the control of a very few men. Many railroad combinations continued to be dominated by individuals. The achievements (and excesses) of these tycoons—Cornelius Vanderbilt, James J. Hill, Collis P. Huntington, and others—became symbols to much of the nation of great economic power concentrated in individual hands. But railroad development was less significant for the individual barons it created than for its contribution to the growth of a new institution: the modern corporation.

The Corporation

There had been various forms of corporations in America since colonial times, but the modern corporation emerged as a major force only after the Civil War, when railroad magnates and other industrialists realized that no single person or group of limited partners, no matter how wealthy, could finance their great ventures.

Under the laws of incorporation passed in many states in the 1830s and 1840s, business organizations could raise money by selling stock to members of the public; after the Civil War, one industry after another began doing so. At the same time, affluent Americans began to consider the purchase of stock a good investment even if they were not themselves involved in the

RAILROADS, 1870–1890 This map illustrates the rapid expansion of railroads in the late nineteenth century. In 1870, there was already a dense network of rail lines in the Northeast and Midwest, illustrated here by the green lines. The red lines show the further expansion of rail coverage between 1870 and 1890, much of it in the South and the areas west of the Mississippi River. ◆ *Why were railroads so essential to the nation's economic growth in these years?*

For an interactive version of this map, go to www.mhhe.com/brinkley13ch17maps

business whose stock they were purchasing. What made the practice appealing was that investors had only "limited liability"—that is, they risked only the amount of their investments; they were not liable for any debts the corporation might accumulate beyond that. The ability to sell stock to a broad public made it possible for entrepreneurs to gather vast sums of capital and undertake great projects.

Limited Liability

The Pennsylvania Railroad and others were among the first to adopt the new corporate form of organization. But it quickly spread beyond the railroad industry. In steel, the central figure was Andrew Carnegie, a Scottish immigrant who had worked his way up from modest beginnings and in 1873 opened his own steelworks in Pittsburgh. Soon he dominated the industry. His methods were much like those of other industrial titans. He cut costs and prices by striking deals with the railroads and then bought out rivals who could not compete with him. With his associate Henry Clay Frick, he bought up coal mines and leased part of the Mesabi iron range in Minnesota, operated a fleet of ore ships on the Great Lakes, and acquired railroads. Ultimately, Carnegie controlled the processing of his steel from mine to market. He financed his undertakings not only out of his own profits but out of the sale of stock. Then, in 1901, he sold out for $450 million to the banker J. Pierpont Morgan, who merged the Carnegie interests with others to create the giant United States Steel Corporation—a $1.4 billion enterprise that controlled almost two-thirds of the nation's steel production.

Andrew Carnegie

There were similar developments in other industries. Gustavus Swift developed a relatively small Chicago meatpacking company into a great national corporation, in part because of profits he earned selling to the military in the Civil War. Isaac Singer patented a sewing machine in 1851 and created I. M. Singer and Company, one of the first modern manufacturing corporations.

Many of the corporate organizations developed a new approach to management. Large, national business enterprises needed more systematic administrative structures than the limited, local ventures of the past. As a result, corporate leaders introduced a set of managerial

ANDREW CARNEGIE Carnegie was one of a relatively small number of great industrialists of the late nineteenth century who genuinely rose "from rags to riches." Born in Scotland, he came to the United States in 1848, at the age of thirteen, and soon found work as a messenger in a Pittsburgh telegraph office. His skill in learning to transcribe telegraphic messages (he became one of the first telegraphers in the country able to take messages by sound) brought him to the attention of a Pennsylvania Railroad official, and before he was twenty, he had begun his ascent to the highest ranks of industry. After the Civil War, he shifted his attention to the growing iron industry; in 1873 he invested all his assets in the development of the first American steel mills. Two decades later he was one of the wealthiest men in the world. In 1901 he abruptly resigned from his businesses and spent the remaining years of his life as a philanthropist. By the time of his death in 1919, he had given away more than $350 million. *(Culver Pictures, Inc.)*

JOHN D. ROCKEFELLER Rockefeller's Standard Oil Company became perhaps the largest and most powerful monopoly in America in the late nineteenth century, and Rockefeller himself became one of the nation's wealthiest and most controversial men. *(Culver Pictures, Inc.)*

New Managerial Techniques

techniques—the genesis of modern business administration—that relied on the division of responsibilities, a carefully designed hierarchy of control, modern cost-accounting procedures, and perhaps above all a new breed of business executive: the "middle manager," who formed a layer of command between workers and owners. Beginning in the railroad corporations, these new management techniques moved quickly into virtually every area of large-scale industry. Efficient administrative capabilities helped make possible another major feature of the modern corporation: consolidation.

Consolidating Corporate America

Businessmen created large, consolidated organizations primarily through two methods. One was "horizontal integration"—the combining of a number of firms engaged in the same enterprise into a single corporation. The consolidation of many different railroad lines into one company was an example. Another method, which became popular in the 1890s, was "vertical integration"—the taking over of all the different businesses on which a company relied for its primary function (as in the case of Carnegie Steel).

Horizontal and Vertical Integration

The most celebrated corporate empire of the late nineteenth century was John D. Rockefeller's Standard Oil, a great combination created through both horizontal and vertical integration. Shortly after the Civil War, Rockefeller launched a refining company in Cleveland and immediately began trying to eliminate his competition. Allying himself with other wealthy capitalists, he proceeded methodically to buy out competing refineries. In 1870, he formed the Standard Oil Company of Ohio; within a few years it had acquired twenty of the twenty-five refineries in Cleveland, as well as plants in Pittsburgh, Philadelphia, New York, and Baltimore. So far, Rockefeller had expanded only horizontally. But soon he began expanding vertically as well. He built his own barrel factories, terminal warehouses, and pipelines. Standard Oil owned its own freight cars and developed its own marketing organization. By the 1880s, Rockefeller had established such dominance within the petroleum industry that to much of the nation he served as the leading symbol of monopoly. He controlled access to 90 percent of the refined oil in the United States.

Rockefeller's Standard Oil

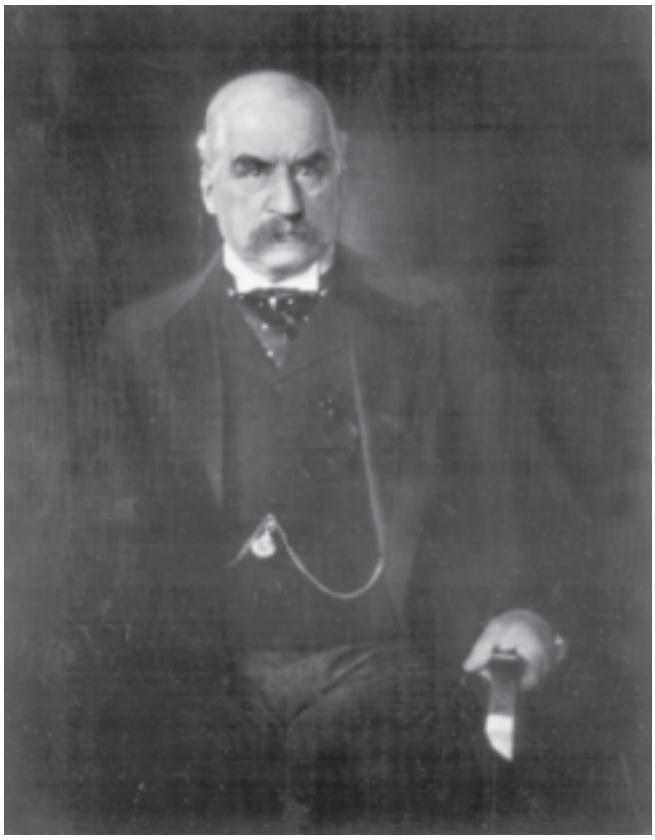
Rockefeller and other industrialists saw consolidation as a way to cope with what they believed was the greatest curse of the modern economy: "cutthroat competition." Most businessmen claimed to believe in free enterprise and a competitive marketplace, but in fact they feared the existence of too many competing firms, convinced that substantial competition could spell instability and ruin for all. A successful enterprise, many capitalists believed (but did not say publicly), was one that could eliminate or absorb its competitors.

As the movement toward combination accelerated, new vehicles emerged to facilitate it. The railroads began making so-called pool arrangements—informal agreements among various companies to stabilize rates and divide markets (arrangements that would in later years be known as cartels). But the pools did not work very well. If even a few firms in an industry were unwilling to cooperate (as was almost always the case), the pool arrangements collapsed.

The Trust and the Holding Company

The failure of the pools led to new techniques of consolidation, resting less on cooperation than on centralized control. At first, the most successful such technique was the creation of the "trust"—pioneered by Standard Oil in the early 1880s and perfected by the banker J. P. Morgan. Over time, "trust" became a term for any great economic combination. But the trust was in fact a particular kind of organization. Under a trust agreement, stockholders in individual corporations transferred their stocks to a small group of trustees in exchange for shares in the trust itself. Owners of trust certificates often had no direct control over the decisions of the trustees; they simply received a share of the profits of the combination. The trustees themselves, on the other hand, might literally own only a few companies but could exercise effective control over many.

The Trust Agreement



J. PIERPONT MORGAN This arresting 1903 portrait by the great photographer Alfred Steichen captures something of the intimidating power of J. Pierpont Morgan, the most powerful financier in America. This photograph is sometimes known as the "dagger portrait," because Morgan appears to be holding a knife in his left hand. In fact, the shiny object is the arm of his chair. *(The Museum of Modern Art/Licensed by SCALA/Art Resource, NY)*

In 1889, the State of New Jersey helped produce a third form of consolidation by changing its laws of incorporation to permit companies actually to buy up other companies. Other states soon followed. That made the trust unnecessary and permitted actual corporate mergers. Rockefeller, for example, quickly relocated Standard Oil to New Jersey and created there what became known as a "holding company"—a central corporate body that would buy up the stock of various members of the Standard Oil trust and establish direct, formal ownership of the corporations in the trust.

By the end of the nineteenth century, as a result of corporate consolidation, 1 percent of the corporations in America were able to control more than 33 percent of the manufacturing. A system of economic organization was emerging that lodged enormous power in the hands of

Rapid Corporate Consolidation

a very few men: the great bankers of New York such as J. P. Morgan, industrial titans such as Rockefeller (who himself gained control of a major bank), and others.

Whether or not this relentless concentration of economic power was the only way or the best way to promote industrial expansion became a major source of debate in America. But it is clear that, whatever else they may have done, the industrial giants of the era were responsible for substantial economic growth. They were integrating operations, cutting costs, creating a great industrial infrastructure, stimulating new markets, creating jobs for a vast new pool of unskilled workers, and opening the way to large-scale mass production. They were also creating the basis for some of the greatest public controversies of their era.

CAPITALISM AND ITS CRITICS

The rise of big business produced many critics. Farmers and workers saw in the growth of the new corporate power centers a threat to notions of a republican society in which wealth and authority were widely distributed. Middle-class critics pointed to the corruption that the new industrial titans seemed to produce in their own enterprises and in local, state, and national politics. The growing criticisms challenged the captains of industry to defend the new corporate economy, to convince the public (and themselves) that it was compatible with the ideology of individualism and equal opportunity that had long been central to the American self-image.

The "Self-Made Man"

The most common rationale for modern capitalism rested squarely on the older ideology of individualism. The new industrial economy, its defenders argued, was not reducing opportunities for individual advancement, but expanding them. It was providing every individual with a chance to succeed and attain great wealth.

There was an element of truth in such claims, but only a small one. Before the Civil War there had been few millionaires in America; by 1892 there were more than 4,000. Some were in fact what almost all millionaires claimed to be: "self-made men." Andrew Carnegie had worked as a bobbin boy in a Pittsburgh cotton mill; John D. Rockefeller had begun as a clerk in a Cleveland commission house; E. H. Harriman, a great railroad tycoon, had begun as a broker's office boy. But most of the new business tycoons had begun their careers from positions of wealth and privilege.

Myth of the Self-Made Man

Nor was their rise to power and prominence always a result simply of hard work and ingenuity, as they liked to claim. It was also a result of ruthlessness, arrogance, and, at times, rampant corruption. The railroad magnate Cornelius Vanderbilt expressed the attitude of many corporate tycoons with his belligerent question: "What do I care about the law? H'aint I got the power?" So did his son William, with his oft-quoted statement: "The public be damned." Industrialists made large financial contributions to politicians, political parties, and government officials in exchange

"MODERN COLOSSUS OF (RAIL) ROADS" Cornelius Vanderbilt, known as the "Commodore," accumulated one of America's great fortunes by consolidating several large railroad companies under his control in the 1860s. His name became a synonym not only for enormous wealth, but also (in the eyes of many Americans) for excessive corporate power—as suggested in this cartoon, showing him standing astride his empire and manipulating its parts. *(Culver Pictures, Inc.)*

for assistance and support. And more often than not, politicians responded as they hoped. Cynics said that Standard Oil did everything to the Ohio legislature except refine it. A member of the Pennsylvania legislature once reportedly said: "Mr. Speaker, I move we adjourn unless the Pennsylvania Railroad has more business for us to transact." During the notorious "Erie War" of 1868, in which Cornelius Vanderbilt battled Jay Gould and Jim Fisk for control of the Erie Railroad, both sides in the dispute offered lavish bribes to members of the New York State legislature. The market price of legislators during the fight was $15,000 a head. One enterprising politician collected $75,000 from Vanderbilt and $100,000 from Gould. Hardly innocent victims of this corruption, many politicians openly demanded bribes and in effect blackmailed businessmen.

The average industrialist of the late nineteenth century was not, however, a Rockefeller or a Vanderbilt. For every successful millionaire, there were dozens of aspiring businessmen whose efforts failed. Some industries fell under the monopolistic control of a single firm or a small group of large firms. But most industries remained fragmented, with many small companies struggling to carve out a stable position for themselves in an uncertain, highly competitive environment. The annals of business did indeed include real stories of individuals rising from rags to riches. They also included stories of people moving from riches back to rags.

Survival of the Fittest

Most tycoons liked to claim that they had attained their wealth and power through hard work, acquisitiveness, and thrift—the traditional virtues of Protestant America. Those who succeeded, they argued, deserved their success. "God gave me my money," explained John D. Rockefeller, expressing the assumption that riches were a reward for worthiness. Those who failed had earned their failure—through their own laziness, stupidity, or carelessness. "Let us remember," said a prominent Protestant minister, "that there is not a poor person in the United States who was not made poor by his own shortcomings."

Such assumptions helped strengthen a popular social theory of the late nineteenth century: Social Darwinism, the application of Charles Darwin's laws of evolution and natural selection among species to human society. Just as only the fittest survived in the process of evolution, so in human society only the fittest individuals survived and flourished in the marketplace.

Social Darwinism

The English philosopher Herbert Spencer was the first and most important proponent of this theory. Society, he argued, benefited from the elimination of the unfit and the survival of the strong and talented. Spencer's books were popular in America in the 1870s and 1880s. And his teachings found prominent supporters among American intellectuals, most notably William Graham Sumner of Yale, who promoted similar ideas in lectures, articles, and a famous 1906 book, *Folkways.* Sumner did not agree with everything Spencer wrote, but he did share Spencer's belief that individuals must have absolute freedom to struggle, to compete, to succeed, or to fail. Many industrialists seized on the theories of Spencer and Sumner to justify their own power. "The growth of a large business is merely the survival of the fittest," Rockefeller proclaimed. "This is not an evil tendency in business. It is merely the working out of the law of nature and a law of God."

Social Darwinism appealed to businessmen because it seemed to legitimize their success and confirm their virtues. It also appealed to them because it placed their activities within the context of traditional American ideas of freedom and individualism. Above all, it appealed to them because it justified their tactics. Social Darwinists insisted that all attempts by labor to raise wages by forming unions and all endeavors by government to regulate economic activities would fail, because economic life was controlled by a natural law, the law of competition. And Social Darwinism coincided with another "law" that seemed to justify business practices and business dominance: the law of supply and demand as defined by Adam Smith and the classical economists. The economic system, they argued, was like a great and delicate machine functioning by natural and automatic rules, by the "invisible hand" of market forces. The greatest among these rules, the law of supply and demand, determined all economic values—prices, wages, rents, interest rates at a level that was just to all concerned. Supply and demand worked because human beings were essentially economic creatures who understood and pursued their own interests, and because they operated in a free market regulated only by competition.

Justifying the Status Quo

But Social Darwinism and the ideas of classical economics did not have very much to do with the realities of the corporate economy. At the same time that businessmen were celebrating the virtues of competition and the free market, they were actively seeking to protect themselves from competition and to replace the natural workings of the marketplace with control by great combinations. Rockefeller's great Standard Oil monopoly was the clearest example of the effort to free an enterprise from competition. Many other businessmen made similar attempts on a smaller scale. Vicious competitive battle—something Spencer and Sumner celebrated and called a source of healthy progress—was in fact the very thing that American businessmen most feared and tried to eliminate.

The Gospel of Wealth

Some businessmen attempted to temper the harsh philosophy of Social Darwinism with a more gentle, if in some ways equally self-serving, idea: the "gospel of wealth." People of great wealth, advocates of this idea argued, had not

THE NOVELS OF HORATIO ALGER

A young boy, perhaps an orphan, makes his perilous way through life on the rough streets of the city by selling newspapers or peddling matches. One day, his energy and determination catch the eye of a wealthy man, who gives him a chance to improve himself. Through honesty, charm, hard work, and aggressiveness, the boy rises in the world to become a successful man.

That, in a nutshell, is the story that Horatio Alger presented to his vast public in novel after novel—over 100 of them in all—for over forty years. During his lifetime, Americans bought many million copies of his novels. After his death in 1899, his books (and others written in his name) continued to sell at an astonishing rate. Even today, when the books themselves are largely forgotten, the name Horatio Alger has come to represent the idea of individual advancement through (in a phrase Alger coined) "pluck and luck."

Alger was born in 1832 into a middle-class New England family, attended Harvard, and spent a short time as a Unitarian minister. He himself never experienced the hardships he later chronicled. In the mid-1850s, he turned to writing stories and books, and he continued to do so for the rest of his life. His most famous novel, *Ragged Dick,* was published in 1868; but there were many others that were almost identical to it: *Tom, the Bootblack; Sink or Swim; Jed, the Poorhouse Boy; Phil, the Fiddler; Andy Grant's Pluck.* Most of his books were aimed at young people, and almost all of them were fables of a young man's rise "from rags to riches." The purpose of his writing, he claimed, was twofold. He wanted to "exert a salutary influence upon the class of whom [I] was writing, by setting before them inspiring examples of what energy, ambition, and an honest purpose may achieve." He also wanted to show his largely middle-class readers "the life and experiences of the friendless and vagrant children to be found in all our cities."

A NEWSBOY'S STORY Alger's novels were even more popular after his death in 1899 than they had been in his lifetime. This reprint of one of his many "rags-to-riches" stories—about the rise of a New York newsboy to wealth and success—includes in the background a rendering of the "Met Life Building," an early skyscraper built in 1909.

But Alger's intentions probably had little to do with the success of his books. Most Americans of the late nineteenth and early twentieth centuries were attracted to Alger because his stories helped them to believe in one of the most cherished of all their national myths: that it is possible for individuals to rise in the world with willpower and hard work, that anyone can become a "self-made man." That belief was all the more important in the late nineteenth century, when the rise of large-scale corporate industrialization was making it increasingly difficult for individuals to control their own fates.

Alger placed great emphasis on the moral qualities of his heroes; their success was a reward for their virtue. But many of his readers ignored the moral message and clung simply to the image of sudden and dramatic success. After the author's death, his publishers responded to that yearning by abridging many of Alger's works to eliminate the parts of his stories where the heroes do good deeds. Instead, they focused solely on the success of Alger's heroes in rising in the world.

Alger himself had very mixed feelings about the new industrial order he described. His books were meant to reveal not just the opportunities for advancement it sometimes created, but also its cruelty. That was one reason that in almost all his books, his heroes triumphed not just because of their own virtues or efforts, but because of some amazing stroke of luck. To Alger, at least, the modern age did not guarantee success through hard work alone; there had to be some providential assistance as well. Over time, however, Alger's admirers came to ignore his own misgivings about industrialism and to portray his books purely as celebrations of (and justifications for) laissez-faire capitalism and the accumulation of wealth.

An example of the transformation of Alger into a symbol of individual achievement is the Horatio Alger Award, established in 1947 by the American Schools and Colleges Association to honor "living individuals who by their own efforts had pulled themselves up by their bootstraps in the American tradition." Among its recipients have been Presidents Dwight D. Eisenhower and Ronald Reagan, evangelist Billy Graham, and Supreme Court justice Clarence Thomas.

only great power but great responsibilities as well. It was their duty to use their riches to advance social progress. Andrew Carnegie elaborated on the creed in his 1901 book, *The Gospel of Wealth,* in which he wrote that the wealthy should consider all revenues in excess of their own needs as "trust funds" to be used for the good of the community; the person of wealth, he said, was "the mere trustee and agent for his poorer brethren." Carnegie was only one of many great industrialists who devoted large parts of their fortunes to philanthropic works—much of

THE NOVELS OF LOUISA MAY ALCOTT

If Horatio Alger's rags-to-riches tales captured the aspirations of many men of the late nineteenth century, Louisa May Alcott's enormously popular novels helped give voice to the often unstated ambitions of many young women.

Alcott was born in 1832, the daughter of a prominent if generally impoverished reformer and educator, Bronson Alcott—a New England transcendentalist committed to abolishing slavery and advancing women's rights. Louisa May Alcott grew up wanting to write, one of the few serious vocations available to women. As a young adult, she wrote a series of popular adventure novels under the pen-name A. M. Barnard, populated by conventional male heroes. But after serving as a nurse in the Civil War (during which she contracted typhoid, from which she recovered, and mercury poisoning through her treatment, from which she suffered until her death in 1888), she chose a different path—writing realistic fiction and basing it on the lives and experiences of women. The publication of *Little Women* (1868, 1869) established Alcott as a major literary figure and as an enduring, if sometimes puzzling, inspiration for girls and, indeed, women of all ages.

Little Women—and its successors *Little Men* (1871) and *Jo's Boys* (1886)—were in many ways wholly unlike the formulaic Horatio Alger stories, in which young men inevitably rose from humble circumstances to great success. And yet they both echoed and altered the message of those books. The fictional March family in the novels was in fact modeled on Alcott's own impoverished if intellectually lively childhood, and much

(Bettmann/Corbis)

of *Little Women* is a chronicle of poverty, suffering, and even death. But it is also the story of a young girl—Jo March, modeled to some degree on Alcott herself—who struggles to build a life for herself that is not defined by conventional women's roles and ambitions. Jo March, like Louisa May Alcott herself, becomes a writer. She spurns a conventional marriage (to her attractive and wealthy neighbor Laurie). Unlike Alcott, who never married, Jo does find a husband—an older man, a German professor who does not support Jo's literary ambitions.

Many readers have found this marriage troubling—and false to the message of the rest of the book. It seems to contradict Alcott's belief that women can have intellectual independence and achievement. But to Alcott, this unconventional marriage was a symbol of her own repudiation of an ordinary domestic life. "Girls write to ask who the little women marry, as if that was the only end and aim of a woman's life," Alcott wrote a friend after the publication of the first volume of the novel. "I won't marry Jo to Laurie to please any one." Jo's marriage to Professor Bhaer is in many ways a concession. "Jo should have remained a literary spinster [like Alcott herself]," she once wrote, "but so many enthusiastic ladies wrote to me clamorously demanding that she should marry Laurie, or somebody, that I didn't dare to refuse and out of perversity went and made a funny match for her."

It is tempting to see Louisa May Alcott's life—as an independent woman, a writer, and an active suffragist—as a better model to her readers than the characters in her fiction. But it was through *Little Women* and her other novels that Alcott mostly affected her time; and whatever their limitations, they present a group of young women who do challenge, even if indirectly, the expectations of their era. Jo March is willful, rebellious, stubborn, ambitious, and often selfish, not the poised, romantic, submissive woman of most sentimental novels of her time. She hates housekeeping and drudgery. She yearns at times to be a boy. She resists society's expectations—through her literary aspirations, her sharp temper, and ultimately her unconventional marriage. Through those qualities, she captured the imaginations of late-nineteenth-century female readers and continues to capture the imaginations of readers today. *Little Women* has survived far longer than the Horatio Alger stories did precisely because it presents a story of growing up that, unlike Alger's, is not predictable but complicated, conflicted, and surprising.

it to libraries and schools, institutions he believed would help the poor to help themselves.

The notion of private wealth as a public blessing existed alongside another popular concept: the notion of great wealth as something available to all. Russell H. Conwell, a Baptist minister, became the most prominent spokesman for the idea by delivering one lecture, "Acres of Diamonds," more than 6,000 times between 1880 and 1900. Conwell told a series of stories, which he claimed were true, of individuals who had found opportunities for extraordinary wealth in their own backyards. (One such story involved a modest farmer who discovered a vast diamond mine in his own fields in the course of working his land.) "I say to you," he told his rapt audiences, "that you have 'acres of diamonds' beneath you right here . . . that the men and women sitting here have within their reach opportunities to get largely wealthy. . . . I say that you ought to get rich, and that it is your duty to get rich." Most of the millionaires in the country, Conwell claimed

Russell Conwell

(inaccurately), had begun on the lowest rung of the economic ladder and had worked their way to success. Every industrious individual had the chance to do likewise.

Horatio Alger was the most famous promoter of the success story. (See "Patterns of Popular Culture," p. 482.) Alger was originally a minister in a small town in Massachusetts but was driven from his pulpit as a result of a sexual scandal. He moved to New York, where he wrote his celebrated novels about poor boys who rise "from rags to riches"—more than 100 in all, which together sold more than 20 million copies. Alger's name became synonymous—both in his own time and in later years—with the powerful myth that anyone could advance to great wealth through hard work. Alger himself grew very wealthy from his writings, which were among the most popular of his time, and became something of a folk hero in American culture. Few of his many fans were aware of his homosexuality. Like most other gay men of his era, he kept his private life carefully hidden, fearful that publicity would destroy his reputation and his career.

Horatio Alger

Alternative Visions

Alongside the celebrations of competition, the justifications for great wealth, and the legitimization of the existing order stood a group of alternative philosophies, challenging the corporate ethos and at times capitalism itself.

One such philosophy emerged in the work of the sociologist Lester Frank Ward. Ward was a Darwinist, but he rejected the application of Darwinian laws to human society. In *Dynamic Sociology* (1883) and other books, he argued that civilization was governed not by natural selection but by human intelligence, which was capable of shaping society as it wished. Unlike Sumner, who believed that state intervention to remodel the environment was futile, Ward thought that an active government engaged in positive planning was society's best hope. The people, through their government, could intervene in the economy and adjust it to serve their needs.

Lester Frank Ward

Other Americans skeptical of the laissez-faire ideas of the Social Darwinists adopted drastic approaches to reform. Some dissenters found a home in the Socialist Labor Party, founded in the 1870s and led for many years by Daniel De Leon, an immigrant from the West Indies. De Leon attracted a modest following in the industrial cities, but the party failed to become a major political force. It never polled more than 82,000 votes. De Leon's theoretical and dogmatic approach appealed to intellectuals more than to workers. A dissident faction of his party, eager to forge ties with organized labor, broke away and in 1901 formed the more enduring American Socialist Party.

Other radicals gained a wider following. One of the most influential was Henry George of California. His angrily eloquent *Progress and Poverty,* published in 1879, became one of the best-selling nonfiction works in American publishing history. George tried to explain why poverty existed amidst the wealth created by modern industry. "This association of poverty with progress is the great enigma of our times," he wrote. "So long as all the increased wealth which modern progress brings goes but to build up great fortunes, to increase luxury and make sharper the contrast between the House of Have and the House of Want, progress is not real and cannot be permanent."

Henry George

George blamed social problems on the ability of a few monopolists to grow wealthy as a result of rising land values. An increase in the value of land, he claimed, was a result not of any effort by the owner, but of the growth of society around the land. It was an "unearned increment," and it was rightfully the property of the community. And so George proposed a "single tax," to replace all other taxes, which would return the increment to the people. The tax, he argued, would destroy monopolies, distribute wealth more equally, and eliminate poverty. Single-tax societies sprang up in many cities. George himself moved east to New York; and in 1886, with the support of labor and the socialists, he narrowly missed being elected mayor.

Rivaling George in popularity was Edward Bellamy, whose utopian novel *Looking Backward,* published in 1888, sold more than 1 million copies. It described the experiences of a young Bostonian who went into a hypnotic sleep in 1887 and awoke in the year 2000 to find a new social order where want, politics, and vice were unknown. The new society had emerged from a peaceful, evolutionary process. The large trusts of the late nineteenth century had continued to grow in size and to combine with one another until ultimately they formed a single great trust, controlled by the government, which absorbed all the businesses of all the citizens and distributed the abundance of the industrial economy equally among all the people. Society had become a great machine, "so logical in its principles and direct and simple in its workings" that it almost ran itself. "Fraternal cooperation" had replaced competition. Class divisions had disappeared. Bellamy labeled the philosophy behind this vision "nationalism," and his work inspired the formation of more than 160 Nationalist Clubs to propagate his ideas.

Looking Backward

The Problems of Monopoly

Relatively few Americans shared the views of those who questioned capitalism itself. But by the end of the century a growing number of people were becoming deeply concerned about a particular, glaring aspect of capitalism: the growth of monopoly (control of the market by large corporate combinations). Laborers, farmers, consumers, small manufacturers, conservative bankers and financiers, advocates of radical change—all began to assail monopoly and economic concentration.

CHILDREN OF WEALTH The children of the wealthy railroad executive George Jay Gould (son of the notorious financier Jay Gould) ride through a Paris park in *voiturettes,* miniature automobiles manufactured in France. *(Culver Pictures, Inc.)*

They blamed monopoly for creating artificially high prices and for producing a highly unstable economy. In the absence of competition, they argued, monopolistic industries could charge whatever prices they wished; railroads, in particular, charged very high rates along some routes because, in the absence of competition, they knew their customers had no choice but to pay them. Artificially high prices, moreover, contributed to the economy's instability, as production consistently outpaced demand. Beginning in 1873, the economy fluctuated erratically, with severe recessions creating havoc every five or six years, each recession worse than the previous one, until finally, in 1893, the system seemed on the verge of total collapse.

Hostility to monopoly was based on more than a concern about prices. Many Americans considered monopoly dangerous because the rise of large combinations seemed to threaten the ability of individuals to advance in the world. If a single person, or a small group, could control all economic activity in an industry, what opportunities would be left for others? To men, in particular, monopoly threatened the ideal of the wage-earning husband capable of supporting a family and prospering, because combinations seemed to reduce opportunities to succeed—to make less likely the idea of the "self-made man" memorialized in the novels of Horatio Alger. Monopoly, therefore, threatened not just competition, but certain notions of manhood as well.

Adding to the resentment of monopoly was the emergence of a new class of enormously and conspicuously wealthy people, whose lifestyles became an affront to those struggling to stay afloat. According to one estimate early in the century, 1 percent of the families in America controlled nearly 88 percent of the nation's assets. Some of the wealthy—Andrew Carnegie, for example—lived relatively unostentatiously and donated large sums to charities. Others, however, lived in almost grotesque luxury. Like a clan of feudal barons, the Vanderbilts maintained, in addition to many country estates, seven opulent mansions on seven blocks of New York City's Fifth Avenue. Other wealthy New Yorkers lavished vast sums on parties. The most notorious, a ball on which Mrs. Bradley Martin spent $368,000, created such a furor that she and her husband fled to England to escape public abuse.

Observing their flagrant displays of wealth were the four-fifths of the American people who lived modestly, and at least 10 million people who lived below the commonly accepted poverty line. The standard of living was rising for everyone, but the gap between rich and poor was increasing. To those in difficult economic circumstances, the sense of relative deprivation could be almost as frustrating and embittering as poverty itself.

Increasing Inequality

INDUSTRIAL WORKERS IN THE NEW ECONOMY

The American working class was both a beneficiary and a victim of the growth of industrial capitalism. Many workers in the late nineteenth century experienced a real rise in their standard of living. But they did so at the cost of arduous and often dangerous working conditions, diminishing control over their own work, and a growing sense of powerlessness.

The Immigrant Work Force

The industrial work force expanded dramatically in the late nineteenth century as demand for factory labor grew. The source of that expansion was a massive migration into industrial cities—migrations of two sorts. The first was the continuing flow of rural Americans into factory towns and cities—people disillusioned with or bankrupted by life on the farm and eager for new economic and social opportunities.

The second was the great wave of immigration from Mexico, Asia, Canada, and above all Europe in the decades following the Civil War—an influx greater than that of any previous era. The 25 million immigrants who arrived in the United States between 1865 and 1915 were more than four times the number who had arrived in the fifty years before.

In the 1870s and 1880s, most of the immigrants to eastern industrial cities came from the nation's traditional sources: England, Ireland, and northern Europe. By the end of the century, however, the major sources of immigration had shifted, with large numbers of southern and eastern Europeans (Italians, Poles, Russians, Greeks, Slavs, and others) moving to America and into the industrial work force. In the West, the major sources of immigration were Mexico and, until the Chinese Exclusion Act of 1882, Asia. No reliable figures are available for either group, but an estimated 1 million Mexicans entered the United States in the first three decades of the twentieth century, many of them swelling the industrial work force of western cities.

New Sources of Immigration

The new immigrants were coming to America in part to escape poverty and oppression in their homelands. But they were also lured to the United States by expectations of new opportunities. Sometimes such expectations were realistic, but often they were the result of false promises. Railroads tried to lure immigrants into their western landholdings by distributing misleading advertisements overseas. Industrial employers actively recruited immigrant workers under the Labor Contract Law, which—until its

APPROACHING SHORE This image of European immigrants aboard a ship approaching the American shore captures both the excitement and the tension of these newcomers to the United States. *(Library of Congress)*

repeal in 1885—permitted them to pay for the passage of workers in advance and deduct the amount later from their wages. Even after the repeal of the law, employers continued to encourage the immigration of unskilled laborers, often with the assistance of foreign-born labor brokers, such as the Greek and Italian padrones, who recruited work gangs of their fellow nationals.

The arrival of these new groups introduced heightened ethnic tensions into the dynamic of the working class. Low-paid Poles, Greeks, and French Canadians began to displace higher-paid British and Irish workers in the textile factories of New England. Italians, Slavs, and Poles emerged as a major source of labor for the mining industry in the East, traditionally dominated by native workers or northern European immigrants. Chinese and Mexicans competed with Anglo-Americans and African Americans in mining, farmwork, and factory labor in California, Colorado, and Texas. Even within industries, moreover, workers tended to cluster in particular occupations (and thus, often, at particular income levels) by ethnic group.

Heightened Ethnic Tensions

Wages and Working Conditions

The average standard of living for workers rose in the years after the Civil War, but for many laborers, the return for their labor remained very small. At the turn of the century, the average income of the American worker was $400 to $500 a year—below the $600 figure widely considered the minimum for a reasonable level of comfort. Nor did workers have much job security. All workers were vulnerable to the boom-and-bust cycle of the industrial economy, and some lost their jobs because of technological advances or because of the cyclical or seasonal nature of their work. Even those who kept their jobs could find their wages suddenly and substantially cut in hard times. Few workers, in other words, were ever far from poverty.

American laborers faced other hardships as well. For first-generation workers accustomed to the patterns of agrarian life, there was a difficult adjustment to the nature of modern industrial labor: the performance of routine, repetitive tasks, often requiring little skill, on a strict and monotonous schedule. To skilled artisans whose once valued tasks were now performed by machines, the new system was impersonal and demeaning. Factory laborers worked ten- to twelve-hour days, six days a week; in the steel industry they worked twelve hours a day. Many worked in appallingly unsafe or unhealthy factories. Industrial accidents were frequent and severe. Compensation to the victims, either from their employers or from the government, was often limited, until many states began passing workmen's compensation laws in the early twentieth century.

For many workers, the most disturbing aspect of factory labor in the new industrial system was their loss of control over the conditions of their labor. Even semiskilled workers and common laborers had managed to maintain some control over their labor in the relatively informal working conditions of the early and mid-nineteenth century. As the corporate form of organization spread, employers set out to make the factory more efficient (often in response to the principles of scientific management). That meant, they believed, centralizing control of the workplace in the hands of managers, ensuring that workers had no authority or control that might disrupt the flow of

Loss of Control

WEST LYNN MACHINE SHOP This machine tool shop in West Lynn, Massachusetts, photographed in the mid-1890s, suggests something of the growing scale of factory enterprise in the late nineteenth century—and also of the extraordinary dangers workers in these early manufacturing shops faced. *(Brown Brothers)*

production. This loss of control, as much as the low wages and long hours, lay behind the substantial working-class militancy in the late nineteenth century.

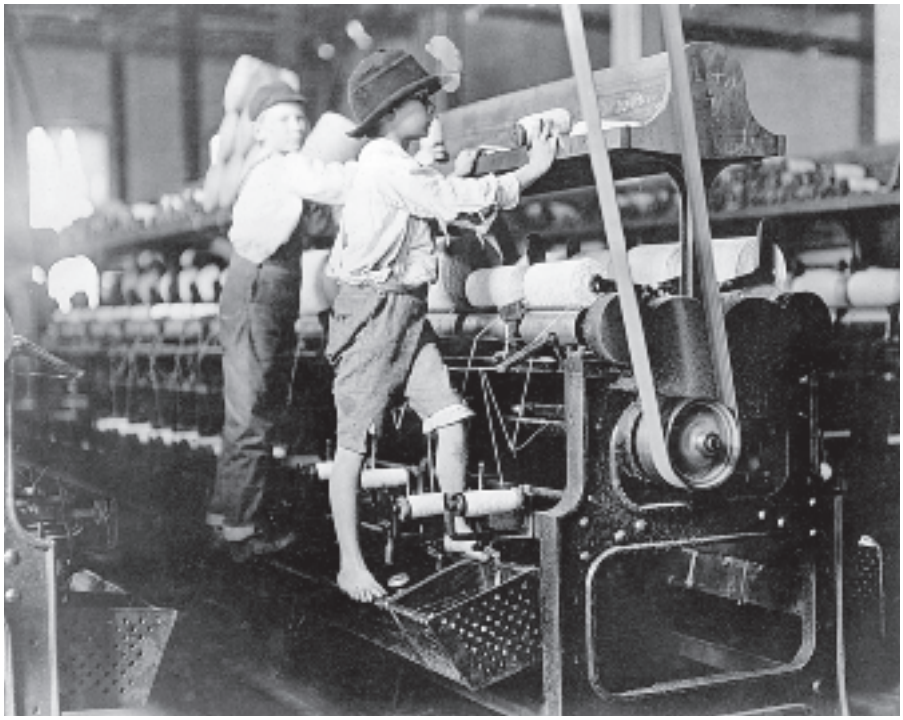
Women and Children at Work

The decreasing need for skilled work in factories induced many employers to increase the use of unskilled women and children, whom they could hire for lower wages than adult males. By 1900, women made up 17 percent of the industrial work force, a fourfold increase since 1870; and 20 percent of all women (well over 5 million) were wage earners. Some of these working women were single and took jobs to support themselves or their parents or siblings. Many others were married and had to work to supplement the inadequate earnings of their husbands; for many working-class families, two incomes were required to support even a minimal standard of living. In earlier periods of American history, women had regularly worked within the household economies that characterized most American families. But when women began working in factories in the mid-nineteenth century—outside the household, independently of husbands or fathers—many people began to consider their presence in the paid work force a social problem. Partly this was because many reformers, including many females, saw women as particularly vulnerable to exploitation and injury in the rough environment of the factory. It was also because many people considered it inappropriate for women to work independently. And so the "problem" of women in the work force became a significant public issue. In some communities the aversion to seeing married women work was so strong—among both men and women—that families struggled on inadequate wages rather than see a wife and mother take a job.

Women industrial workers were overwhelmingly white and mostly young, 75 percent of them under twenty-five. The vast majority were immigrants or the daughters of immigrants. There were some women in all areas of industry, even in some of the most arduous jobs. Most women, however, worked in a few industries where unskilled and semi-skilled machine labor (as opposed to heavy manual labor) prevailed. The textile industry remained the largest single industrial employer of women. (Domestic service remained the most common female occupation overall.) Women worked for wages as low as $6 to $8 a week, well below the minimum necessary for survival (and well below the wages paid to men working the same jobs). At the turn of the century, the average annual wage for a male industrial worker was $597; for a woman, it was $314. Even highly skilled women workers made about half what men doing the same job earned. Advocates of a minimum wage law for women created a sensation when they brought several women to a hearing in Chicago to testify that low wages and desperate poverty had driven them to prostitution. (The testimony was not, however, sensational enough for the Illinois legislature, which promptly defeated the bill.)

Poorly Paid Women

At least 1.7 million children under sixteen years of age were employed in factories and fields in 1900, more than twice the number of thirty years before. Ten percent of all girls aged ten to fifteen, and 20 percent of all boys, held jobs. This was partly because some families so desperately



SPINDLE BOYS Young boys, some of them barefoot, clamber among the great textile machines in a Georgia cotton mill adjusting spindles. Many of them were the children of women who worked in the plants. The photograph is by Lewis Hine. *(Bettmann/Corbis)*

needed additional wages that parents and children alike were pressed into service. It was also because in some families the reluctance to permit wives to work led parents to send their children into the work force to avoid forcing mothers to go. This did not, however, prevent reformers from seeing children working in factories as a significant social problem. Under the pressure of outraged public opinion, thirty-eight state legislatures passed child-labor laws in the late nineteenth century; but these laws were of limited impact. Sixty percent of child workers were employed in agriculture, which was typically exempt from the laws; such children often worked twelve-hour days picking or hoeing in the fields. And even for children employed in factories, the laws merely set a minimum age of twelve years and a maximum workday of ten hours, standards that employers often ignored in any case. In the cotton mills of the South, children working at the looms all night were kept awake by having cold water thrown in their faces. In canneries, little girls cut fruits and vegetables sixteen hours a day. Exhausted children were particularly susceptible to injury while working at dangerous machines, and they were maimed and even killed in industrial accidents at an alarming rate.

Ineffective Child-Labor Laws

As much as the appalling conditions of women and child workers troubled the national conscience, conditions for many men were at least equally dangerous. In mills and mines, and on the railroads, the American accident rate was higher than that of any industrial nation in the world. As late as 1907, an average of twelve railroad men a week died on the job. In factories, thousands of workers faced such occupational diseases as lead or phosphorus poisoning, against which few employers took precautions.

The Struggle to Unionize

Labor attempted to fight back against the poor conditions in the workplace by adopting some of the same tactics their employers had used so effectively: creating large combinations, or unions. But by the end of the century their efforts had met with little success.

There had been craft unions in America, representing small groups of skilled workers, since well before the Civil War. Alone, however, individual unions could not hope to exert significant power in the new corporate economy, and in the 1860s some labor leaders began to search for ways to combine the energies of the various labor organizations. The first attempt to federate separate unions into a single national organization came in 1866, when William H. Sylvis founded the National Labor Union—a polyglot association, claiming 640,000 members, that included a variety of reform groups having little direct relationship with labor. After the Panic of 1873, the National Labor Union disintegrated and disappeared.

National Labor Union

The National Labor Union, like most of the individual unions that joined it, excluded women workers. Male workers argued (not entirely incorrectly) that women were used to drive down their wages; and they justified their hostility by invoking the ideal of domesticity. "Woman was created to be man's companion," a National Labor Union official said, "to be the presiding deity of the home circle." Most women workers agreed that "man should be the breadwinner," as one female union organizer said. But many argued that as long as conditions made it impossible for men to support their families, women should have full and equal opportunities in the workplace.

Unions faced special difficulties during the recession years of the 1870s. Not only was there widespread unemployment, which depression conditions created; there was also widespread middle-class hostility toward the unions. When labor disputes with employers turned bitter and violent, as they occasionally did, much of the public instinctively blamed the workers (or the "radicals" and "anarchists" they believed were influencing the workers) for the trouble, rarely the employers. Particularly alarming to middle-class Americans was the emergence of the "Molly Maguires," a militant labor organization in the anthracite coal region of Pennsylvania. The Mollies operated within the Ancient Order of Hibernians, an Irish fraternal society, and sometimes used terrorist tactics. They attempted to intimidate the coal operators through violence and occasionally murder, and they added to the growing perception that labor

Molly Maguires

A WARNING FROM THE MOLLY MAGUIRES The Molly Maguires were known for their harsh, intimidating, and at times violent tactics against the owners and managers of anthracite coal mines. In this "coffin notice" sent to a mine foreman in the early 1870s, they inform him: "You are hereby notified that if you don't leave this place right away, you will be a dead man." *(The Historical Society of Schuylkill County)*

activism was motivated by dangerous radicals. Much of the violence attributed to the Molly Maguires, however, was instigated or performed by informers and agents employed by the mine owners, who wanted a pretext for ruthless measures to suppress unionization.

The Great Railroad Strike

Excitement over the Molly Maguires paled beside the near hysteria that gripped the country during the railroad strike of 1877, which began when the eastern railroads announced a 10 percent wage cut and which soon expanded into something approaching a class war. Strikers disrupted rail service from Baltimore to St. Louis, destroyed equipment, and rioted in the streets of Pittsburgh and other cities. State militias were called out, and in July President Hayes ordered federal troops to suppress the disorders in West Virginia. In Baltimore, eleven demonstrators died and forty were wounded in a conflict between workers and militiamen. In Philadelphia, state militia opened fire on thousands of workers and their families who were attempting to block the railroad crossings and killed twenty people. In all, over 100 people died before the strike finally collapsed several weeks after it had begun.

National Strike

The great railroad strike was America's first major, national labor conflict, and it illustrated how disputes between workers and employers could no longer be localized in the increasingly national economy. It illustrated as well the depth of resentment among many American workers toward their employers (and toward the governments allied with them) and the lengths to which they were prepared to go to express that resentment. And finally, it was an indication of the frailty of the labor movement. The failure of the strike seriously weakened the railroad unions and damaged the reputation of labor organizations in other industries as well.

The Knights of Labor

The first major effort to create a genuinely national labor organization was the founding in 1869 of the Noble Order of the Knights of Labor, under the leadership of Uriah S. Stephens. Membership was open to all who "toiled," a definition that included all workers and most business and professional people. The only excluded groups were lawyers, bankers, liquor dealers, and professional gamblers. Unlike most labor organizations of the time, the Knights welcomed women members—not just female factory workers, but domestic servants and women who worked in their own homes. Leonora Barry, an Irish immigrant who had worked in a New York hosiery factory, ran the Woman's Bureau of the Knights. Under her effective leadership, the Knights enlisted 50,000 women members (both black and white) and created over a hundred all-female locals.

The Knights were loosely organized, without much central direction. Members met in local "assemblies," which took many different forms. They were loosely affiliated with a national "general assembly." Their program was similarly vague. Although they championed an eight-hour day and the abolition of child labor, the leaders were more interested in long-range reform of the economy. Leaders of the Knights hoped to replace the "wage system" with a new "cooperative system," in which workers would themselves control a large part of the economy.

KNIGHTS OF LABOR DELEGATES, 1886
The Knights of Labor aspired to represent everyone in America who could be considered a producer, and it was the first, and for many years the only, labor organization to welcome women unreservedly, as this portrait of delegates to the Knights 1886 convention indicates. *(Brown Brothers)*

For several years, the Knights remained a secret fraternal organization. But in the late 1870s, under the leadership of Terence V. Powderly, the order moved into the open and entered a spectacular period of expansion. By 1886, it claimed a total membership of over 700,000, including some militant elements that the moderate leadership could not always control. Local unions or assemblies associated with the Knights launched a series of strikes in the 1880s in defiance of Powderly's wishes. In 1885, striking railway workers forced the Missouri Pacific, a link in the Gould system, to restore wage cuts and recognize their union. But the victory was temporary. In the following year, a strike on another Gould railroad, the Texas and Pacific, was crushed, and the power of the unions in the Gould system was broken. Their failure helped discredit the organization. By 1890, the membership of the Knights had shrunk to 100,000. A few years later, the organization disappeared.

Dissolution of the Knights of Labor

The AFL

Even before the Knights began to decline, a rival organization based on a very different organizational concept appeared. In 1881, representatives of a number of existing craft unions formed the Federation of Organized Trade and Labor Unions of the United States and Canada. Five years later, it changed its name to the American Federation of Labor (AFL), and it soon became the most important and enduring labor group in the country. Rejecting the Knights' idea of one big union for everybody, the Federation was an association of autonomous craft unions and represented mainly skilled workers. It was generally hostile to organizing unskilled workers, who did not fit comfortably within the craft-based structure of existing organizations.

Toward women, the AFL adopted an apparently contradictory policy. On the one hand, the male leaders of the AFL were hostile to the idea of women entering the paid work force. Because women were weak, they believed, employers could easily take advantage of them by paying them less than men. As a result, women workers drove down wages for everyone. "It is the so-called competition of the unorganized, defenseless woman worker, the girl and the wife, that often tends to reduce the wages of the father and husband," Samuel Gompers, the powerful leader of the AFL, once said. He talked often about the importance of women remaining in the home and argued (incorrectly) that "there is no necessity of the wife contributing to the support of the family by working." More than that, female labor was, the AFL newspaper wrote, "the knife of the assassin, aimed at the family circle." Gompers himself believed strongly that a test of a man's worth was his ability to support a family, and that women in the work force would undermine men's positions as heads of their families.

Opposition to Female Employment

Although hostile to the idea of women workers, the AFL nevertheless sought equal pay for those women who did work and even hired some female organizers to encourage unionization in industries dominated by women. These positions were, in fact, less contradictory than they seem. By raising the pay of women, the AFL could make them less attractive to employers and, in effect, drive them out of the work force.

Gompers accepted the basic premises of capitalism; his goal was simply to secure for the workers he represented a greater share of capitalism's material rewards. Gompers rejected the idea of fundamental economic reform; he opposed the creation of a worker's party; he was generally hostile to any government efforts to protect labor or improve working conditions, convinced that what government could give it could also take away. The AFL concentrated instead on the relationship between labor and management. It supported the immediate objectives of most workers: better wages and working conditions. And while the AFL hoped to attain its goals by collective bargaining, it was ready to use strikes if necessary.

The AFL's Agenda

As one of its first objectives, the AFL demanded a national eight-hour day and called for a general strike if workers did not achieve the goal by May 1, 1886. On that day, strikes and demonstrations calling for a shorter workday took place all over the country, most of them staged by AFL unions but a few by more radical groups.

In Chicago, a center of labor and radical strength, a strike was already in progress at the McCormick Harvester Company when the general strike began. City police had been harassing the strikers, and labor and radical leaders called a protest meeting at Haymarket Square. When the police ordered the crowd to disperse, someone threw a bomb that killed seven officers and injured sixty-seven other people. The police, who had killed four strikers the day before, fired into the crowd and killed four more people. Conservative, property-conscious Americans, frightened and outraged, demanded retribution, even though no one knew who had thrown the bomb. Chicago officials finally rounded up eight anarchists and charged them with murder, on the grounds that their statements had incited whoever had hurled the bomb. All eight scapegoats were found guilty after a remarkably injudicious trial. Seven were sentenced to death. One of the condemned committed suicide, four were executed, and two had their sentences commuted to life imprisonment.

Haymarket Square

To most middle-class Americans, the Haymarket bombing was an alarming symbol of social chaos and radicalism. "Anarchism" now became a code word in the public mind for terrorism and violence, even though most anarchists were relatively peaceful visionaries dreaming of a new social order. For the next thirty years, the specter of anarchism remained one of the most frightening concepts in the American middle-class imagination. It also became a

constant obstacle to the goals of the AFL and other labor organizations, and it was particularly devastating to the Knights of Labor, which, as the most radical of the major labor organizations, never recovered from the post-Haymarket hysteria. However much they tried to distance themselves from radicals, unions were always vulnerable to accusations of anarchism, as the violent strikes of the 1890s occasionally illustrated.

The Homestead Strike

The Amalgamated Association of Iron and Steel Workers, which was affiliated with the American Federation of Labor, was the most powerful trade union in the country. Its members were skilled workers, in great demand by employers and thus able to exercise significant power in the workplace. Employers sometimes called such workers "little shopfloor autocrats," and they resented the substantial control over working conditions these skilled laborers often had. The union had a rulebook with fifty-six pages of what workers called "legislation" limiting the power of employers. In the emerging corporate world of the late nineteenth century, such challenges to management control were beginning to seem intolerable to many employers.

By the mid-1880s, the steel industry had introduced new production methods and new patterns of organization that were streamlining the steelmaking process and, at the same time, reducing the companies' dependence on skilled labor. In the Carnegie system, which was coming to dominate the steel industry, the union had a foothold in only one of the corporation's three major factories—the Homestead plant near Pittsburgh. By 1890, Carnegie and his chief lieutenant, Henry Clay Frick, had decided that the Amalgamated "had to go," even at Homestead. Over the next two years, they repeatedly cut wages at Homestead. At first, the union acquiesced, aware that it was not strong enough to wage a successful strike.

Henry Clay Frick

In 1892, the company stopped even discussing its decisions with the Amalgamated, in effect denying the union's right to negotiate at all. Finally, when Frick announced another wage cut at Homestead and gave the union two days to accept it, the Amalgamated called for a strike. Frick abruptly shut down the plant and called in 300 guards from the Pinkerton Detective Agency to enable the company to hire nonunion workers. The hated Pinkertons were well-known strikebreakers, and their mere presence was often enough to incite workers to violence.

The Pinkertons approached the plant by river on barges on July 6, 1892. The strikers prepared for them by pouring oil on the water and setting it on fire, and they met the guards at the docks with guns and dynamite. After several hours of pitched battle, during which three guards and ten strikers were killed and many others injured, the Pinkertons surrendered and were escorted roughly out of town.

But the workers' victory was temporary. The governor of Pennsylvania, at the company's request, sent the state's entire National Guard contingent, some 8,000 troops, to Homestead. Production resumed, with strikebreakers now protected by troops. And public opinion turned against the strikers when a radical made an attempt to assassinate Frick. Slowly workers drifted back to their jobs; and finally—four months after the strike began—the Amalgamated surrendered. By 1900, every major steel plant in the Northeast had broken with the Amalgamated, which now had no power to resist. Its membership shrank from a high of 24,000 in 1891 (two-thirds of all eligible steelworkers) to fewer than 7,000 a decade later. Its decline was symbolic of the general erosion of union strength in the late nineteenth century, as factory labor became increasingly unskilled and workers thus became easier to replace. The AFL unions were often powerless in the face of these changes.

The Union Defeated

The Pullman Strike

A dispute of greater magnitude and equal bitterness, if less violence, was the Pullman strike in 1894. The Pullman Palace Car Company manufactured sleeping and parlor cars for railroads, which it built and repaired at a plant near Chicago. There the company built the 600-acre town of Pullman and rented its trim, orderly houses to the employees. George M. Pullman, owner of the company, considered the town a model solution to the industrial problem; he referred to the workers as his "children." But many residents chafed at the regimentation and the high rents.

In the winter of 1893–1894, the Pullman Company slashed wages by about 25 percent, citing the declining revenues the depression was causing. At the same time, Pullman refused to reduce rents in its model town, which were 20 to 25 percent higher than rents for comparable accommodations in surrounding areas. Workers went on strike and persuaded the militant American Railway Union, led by Eugene V. Debs, to support them by refusing to handle Pullman cars and equipment. Opposing the strikers was the General Managers' Association, a consortium of twenty-four Chicago railroads. It persuaded its member companies to discharge switchmen who refused to handle Pullman cars. Every time this happened, Debs's union instructed its members who worked for the offending companies to walk off their jobs. Within a few days thousands of railroad workers in twenty-seven states and territories were on strike, and transportation from Chicago to the Pacific coast was paralyzed.

Eugene Debs

Most state governors responded readily to appeals from strike-threatened businesses; but the governor of Illinois, John Peter Altgeld, was a man with demonstrated

THE PULLMAN STRIKE These two images portray two aspects of the great Pullman strike of 1894. The photograph above shows U.S. troops, ordered to Chicago to quell the strike, camping on the lakefront. The drawing below shows freight cars and an engine destroyed by striking workers. These images were published together in *Harper's Weekly* to illustrate the ferocity of the Pullman battle. *(Library of Congress)*

sympathies for workers and their grievances. Altgeld had criticized the trials of the Haymarket anarchists and had pardoned the convicted men who were still in prison when he took office. He refused to call out the militia to protect employers now. Bypassing Altgeld, railroad operators asked the federal government to send regular army troops to Illinois, on the pretext that the strike was preventing the movement of mail on the trains. President Grover Cleveland and Attorney General Richard Olney, a former railroad lawyer and a bitter foe of unions, complied. In July 1894, over Altgeld's objections, the president ordered 2,000 troops to the Chicago area. A federal court issued an injunction forbidding the union to continue the strike. When Debs and his associates defied it, they were arrested and imprisoned. With federal troops protecting the hiring of new workers and with the union leaders in a federal jail, the strike quickly collapsed.

Sources of Labor Weakness

The last decades of the nineteenth century were years in which labor, despite its organizing efforts, made few real gains and suffered many important losses. In a rapidly expanding industrial economy, wages for workers rose hardly at all, and not nearly enough to keep up with the rising cost of living. Labor leaders won a few legislative victories: the abolition by Congress in 1885 of the Contract Labor Law; the establishment by Congress in 1868 of an eight-hour day on public works projects and in 1892 of an eight-hour day for government employees; state laws governing hours of labor and safety standards; and gradually some guaranteed compensation for workers injured on the job. But many of these laws were not enforced, and neither strikes nor protests seemed to have much effect. The end of the century found most workers with less political power and considerably less control of the workplace than they had had forty years before.

Workers failed to make greater gains for many reasons. The principal labor organizations represented only a small percentage of the industrial work force. Four percent of all workers (fewer than 1 million people) belonged to unions in 1900. The AFL, the most important, excluded unskilled workers, who were emerging as the core of the industrial work force, and along with them most women, blacks, and recent immigrants. Women responded to this exclusion in 1903 by forming their own organization, the Women's Trade Union League. But after several frustrating years of attempting to unionize women, the WTUL turned the bulk of its attention to securing protective legislation for women workers, not general organization and mobilization of labor. Other divisions within the work force contributed further to union weakness. Tensions between different ethnic and racial groups kept laborers divided.

Another source of labor weakness was the shifting nature of the work force. Many immigrant workers came to America intending to remain only briefly, to earn some money and return home. The assumption that they had no long-range future in the country (even though it was often a mistaken one) eroded their willingness to organize. Other workers—natives and immigrants alike—were in constant motion, moving from one job to another, one town to another, seldom in one place long enough to establish any institutional ties or exert any real power. A study of Newburyport, Massachusetts, over a thirty-year period shows that 90 percent of the workers

Shifting Nature of the Work Force

there vanished from the town records in those years, many of them because they moved elsewhere. Even workers who stayed put often did not remain in the same job for long.

Some real social mobility did exist. Workers might move from unskilled to semiskilled or skilled jobs during their lifetimes; their children might become foremen or managers. The gains were small, but they were enough to inspire considerable (and often unrealistic) hopes and to persuade some workers that they were not part of a permanent working class.

Above all, workers made few gains in the late nineteenth century because of the strength of the forces arrayed against them. They faced corporate organizations of vast wealth and power, which were generally determined to crush any efforts by workers to challenge their prerogatives—not just through brute force, but also through infiltration of unions, espionage within working-class communities, and sabotage of organizational efforts. And as the Homestead and Pullman strikes suggest, the corporations had the support of local, state, and federal authorities, who were willing to send in troops to "preserve order" and crush labor uprisings on demand.

Corporate Strength

Despite the creation of new labor unions, despite a wave of strikes and protests that in the 1880s and 1890s reached startling proportions, workers in the late nineteenth century failed to create successful organizations or to protect their interests in the way the large corporations managed to do. In the battle for power within the emerging industrial economy, almost all the advantages seemed to lie with capital.

CONCLUSION

In the four decades following the end of the Civil War, the United States propelled itself into the forefront of the industrializing nations of the world. Large areas of the nation remained overwhelmingly rural, to be sure, and the majority of the population was still engaged in activities closely tied to farming. Even so, America's economy, and along with it the nation's society and culture, were being profoundly transformed.

New technologies, new forms of corporate management, and new supplies of labor helped make possible the rapid growth of the nation's industries and the construction of its railroads. The factory system contributed to the growth of the nation's cities and at times created entirely new ones. Immigration provided a steady supply of new workers for the growing industrial economy. The result was a steady and substantial increase in national wealth, rising living standards for much of the population, and the creation of great new fortunes.

But industrialization did not spread its fruits evenly. Large areas of the country, most notably the South, and large groups in the population, most notably minorities, women, and recent immigrants, profited relatively little from economic growth. Industrial workers experienced arduous conditions of labor and wages that rose much more slowly than the profits of the corporations for which they worked. Small merchants and manufacturers found themselves overmatched by great new combinations.

Industrialists strove to create a rationale for their power and to persuade the public that everyone had something to gain from it. But many Americans remained skeptical of modern capitalism, and some—workers struggling to form unions, reformers denouncing trusts, women fighting to win protections for female laborers, socialists envisioning a new world, and many others—created broad and powerful critiques of the new economic order. Industrialization brought both progress and pain to late-nineteenth-century America. Controversies over its effects defined the era and would continue to define the first decades of the twentieth century.

INTERACTIVE LEARNING

The *Primary Source Investigator CD-ROM* offers the following materials related to this chapter:

- Interactive map: **Transportation Revolution** (M12).
- Documents, images, and maps related to industrialization, economic growth, and labor strife in the late nineteenth century, including Thomas Edison's patent for the lightbulb, original railroad maps showing the expansion of transportation networks, and panoramic photographs of the era's giant industrial plants.

Online Learning Center (www.mhhe.com/brinkley13e)

For quizzes, Internet resources, references to additional books and films, and more, consult this book's Online Learning Center.

FOR FURTHER REFERENCE

Robert Wiebe's *The Search for Order, 1877–1920* (1968) is a classic analysis of America's evolution from a society of what he calls island communities to a national urban society. David Nasaw, *Andrew Carnegie* (2006) is a biography of one of the first and most famous industrial tycoons, who also became a noted philanthropist. Alfred D. Chandler Jr. describes the new business practices that made industrialization possible in *The Visible Hand: The Managerial Revolution in American Business* (1977) and *Scale and Scope: The Dynamics of Industrial Capitalism* (1990). Olivier Zunz offers a provocative analysis of the social underpinnings of the new corporate order in *Making America Corporate, 1870–1920* (1990) and *Why the American Century?* (1998). David F. Noble, *America by Design: Science, Technology, and the Rise of Corporate Capitalism* (1977) and David Hounshell, *From the American System to Mass Production, 1800–1932* (1984) discuss the explosion of science and technology in the era of rapid industrialization. Douglas Brinkley, *Wheels for the World* (2003) is a lively history of the Ford Motor Company. Daniel Rodgers, *The Work Ethic in Industrial America, 1850–1920* (1978) is an important intellectual history of the way Americans viewed industrial workers. David Montgomery, *The Fall of the House of Labor: The Workplace, the State, and American Labor Activism, 1865–1925* (1987) analyzes the way industrialization shaped (and was shaped by) the workers, their expertise, and the strong cultural traditions of the shop floor. Alice Kessler-Harris documents the tremendous movement of women into the work force in the period in *Out to Work:A History of Wage-Earning Women in the United States* (1982). John L. Thomas, *Alternative America: Henry George, Edward Bellamy, Henry Demarest Lloyd, and the Adversary Tradition* (1983) examines some important critics of corporate capitalism.