

AP United States History

Unit 6: The Nation Expands

Topics- Technological Innovation and the Rise of Industrial Capitalism

Technological Innovation

Explain the effects of technological advances in the development of the United States over time.

Businesses made use of technological innovations and greater access to natural resources to dramatically increase the production of goods.

The discovery of rich resources— metals, wood, stone, grasslands, and later, petroleum, or oil in the American West, would turbocharge a Second Industrial Revolution which began during the Civil War and continued into the twentieth century. These materials were used to create steel, build buildings, feed an ever-increasing population, and run faster and more efficient machinery in growing industrial factories. American industries grew to become the world's largest by the dawn of the twentieth century and showcased the development of a modern nation. While the growth of large-scale industries was certainly a product of the new resources that came from the American West, new technological innovations also spurred this tremendous growth. The new innovations which came from this period were extensions of earlier innovations or products that would in some cases, be powered by a brand new medium— electricity. In fact, by the end of the period, at the dawn of the twentieth century, homes in American cities were beginning to become electrified, water and sewage systems were being developed, refrigeration helped to preserve food for longer periods of time, a revolution in communication would interconnect people on a scale that had never been seen before, the light bulb would change the nature of both work and leisure, and a new method of working in the factory system would make American industries some of the most efficient and productive in the world. America was a nation on the rise.

By the conclusion of the Civil War, new technological innovations were rapidly changing how Americans were able to both live and work. It was the use of electricity that made these new innovations possible. By 1880, American innovators such as Thomas Edison and later, Nikola Tesla, were beginning to be able to harness the power of electricity and use it to power motors and even homes. In 1893, at the Chicago World's Fair, those who were able to make the trip to see the spectacle were treated to the world's first electrified city. In 1871, refrigerated railroad cars appeared for the first time which made it possible to preserve food over long distances for much longer periods of time. It would also pave the way for the development of air conditioning by Willis Carrier which first appeared in 1912, and would enable people to be able to live and work more comfortably in places where it had not been possible before. The invention of the telephone by Alexander Graham Bell— an extension of the telegraph, would interconnect people as never before over long distances. By the end of the Second World War, just about every American household was connected via telephone lines— a revolution in communications. The invention of the telephone also led to other innovations— using a microphone and a speaker, it was the first device that put together the essential elements of recording sound, which later led to the invention of the phonograph (record player) and eventually to the development of radio by 1920. In 1879, Edison patented the first incandescent light bulb. The light bulb would change the nature of the way people both lived and worked. For the first time, it was possible to enjoy spectacles such as sporting events, the theater, and even a new phenomenon, the amusement park by the dawn of the twentieth century. But, it also meant that workers could toil longer in America's growing factories— as the light bulb now made it possible to work into the wee hours of the night. These new factories featured another innovation— the assembly line, which was started not by Henry Ford for the automobile industry, but copied by him after watching butchers

who worked in America's meat packing plants in places like Chicago, Illinois. The assembly line was a part of a philosophy of the period known as Taylorism, which sought to use scientific methods to make work more efficient and productive. In 1856, Henry Bessemer introduced a method for mass producing steel. Borrowed by Andrew Carnegie, and harnessed for use in his Pittsburgh, Pennsylvania, steel mills, the process would produce enough steel to create sturdier buildings— including the first skyscrapers in major American cities, the first major bridges which allowed the growing network of trains to function across the nation— not to mention the tracks that were created using steel. And by the dawn of the twentieth century, water and sewage systems began to appear in major American cities. Though we may not consider it to be a major breakthrough today on par with either the telephone or the light bulb, it began the process of cutting the rates of epidemic disease and allowing people to live longer and healthier lives. But, this period of tremendous innovation, also led to the rise of large-scale businesses in America and the use of innovators to create new companies— some of which, such as General Electric (GE), that we would still recognize today.

Explain the socioeconomic continuities and changes associated with the growth of industrial capitalism from 1865 to 1898.

Large-scale industrial production— accompanied by massive technological change, expanding international communication networks, pro-growth government policies—generated rapid economic development and business consolidation.

Businesses made use of redesigned financial and management structures, advances in marketing, and a growing labor force to dramatically increase the production of goods.

Many business leaders sought increased profits by consolidating corporations into large trusts and holding companies, which further concentrated wealth.

The Rise of Industrial Capitalism

When most of us think of the Gilded Age, it is the rise of industrial capitalism, or Big Business that we are thinking about. It was the famed author, Samuel Langhorne Clemens, better known as Mark Twain who coined the term— “The Gilded Age.” For something to be gilded, it means that it looks wonderful, even spectacular on the outside, but underneath this magnificent exterior, on the inside, there is rot or even decay. During this period, wealthy industrialists created a modern American economy and many of these people— a very small number of persons compared to the overall population— became some of the wealthiest individuals in human history. But, for the majority of the Americans who worked in their gigantic factories— many of them immigrants who had just arrived in America after escaping persecution, war, or extreme poverty in Southern or Central Europe, they toiled often extremely long hours in very dangerous working conditions for very little pay. A tremendous gap in wealth developed in America during the Gilded Age. While on the one hand, it led to the development of tremendously successful large-scale industries in railroads, steel, oil, and finance, it also led to the development of a movement that would protect the rights of workers which led to the creation of the first labor unions. The large-scale industries of the Gilded Age were born out of the experience of the Civil War and benefitted from the creation of policies by the federal government which encouraged its growth and the rise of the new technologies mentioned earlier which became a major component of its development.

The first large-scale industry to grow out of the experience of the Civil War was the railroad industry. Beginning with the Pacific Railways Act of 1862, the federal government granted land and helped funnel investment into the development of the Transcontinental Railroad system. The creation of the Transcontinental Railroad system led to the development of railroad networks across the country. These networks facilitated the growth of the American economy during the period, but, in turn, they became the first large-scale industry. In practice, the railroads did not make a great deal of money by carrying passengers. In large part, this is because passengers

may only travel a few times in the course of a year. The real money in the railroad industry was made by hauling goods, or freight consistently from one part of the country to the other. It was Cornelius Vanderbilt who realized that by acquiring new railroad networks for hauling freight an entrepreneur could make transportation into a large-scale industry. But, building reliable railroads required the creation of rails of steel and bridges made of steel that could support the weight of a locomotive. In 1856, in England, Henry Bessemer invented a process that could be used to create a small amount of steel within a few minutes, something which once took hours just to develop small objects, such as forks or spoons. Leave it to Andrew Carnegie, with the help of chemists and engineers to take the Bessemer Process and create large-scale furnaces which could create larger amounts of steel, that could easily be made into a variety of shapes, in a small amount of time. With both private (some of it foreign) and federal investment in the development of the ever-growing network of railroads, Carnegie Steel provided the tracks, rails, and bridges that would allow the nation to become interconnected America's businesses with their customers. With economic growth, came the development of large-scale cities or urban centers. Featured in the heart of each of these new urban centers were the very first skyscrapers, which had steel frames at the core of their construction. As America grew during this period, so did Carnegie Steel and the railroad networks, helping to build the foundation of the modern American economy. But, steel and railroads were not the only major industries that emerged during the Gilded Age. Until the invention of the light bulb, kerosene lamps were used to light most homes. The chief producer of kerosene which required drilling for petroleum was John D. Rockefeller's Standard Oil. While Rockefeller did not drill for petroleum, which was a risky business in itself, he created the first refineries to make oil into other products, such as kerosene. Refining oil meant that he could almost completely control the process of creating this resource into other products. As cities became more and more electrified, and as light bulbs began to replace kerosene lamps in most homes, Rockefeller's Standard Oil benefitted from another innovation in transportation, the development of the combustion engine and the modern automobile. This allowed his company, for the very first time, to take the byproduct of creating kerosene— which we now refer to as gasoline and to use as the chief fuel for the new automobile industry which was born in the twilight of the Gilded Age. But, it wasn't just investment from the federal government that spurred new industrial growth, it was also the creation of new corporate structures.

During this period, new corporate structures emerged. The stock exchange as we think of it today became a factor in showcasing business and economic growth, as investors poured money into companies in the hopes of those companies becoming profitable. However, it was J.P. (John Pierpoint) Morgan, who was one the creators of a new form of corporate enterprise. Morgan used his banking empire to invest in multiple businesses and also, in inventors such as Thomas Edison. Investing in inventors meant owning or investing in their patents, which they received for their innovations. Having a patent on an invention means that when it is produced by someone else, you receive the royalties for your innovation. In music, film, or media, copyright law works the same way. If you author a song, when it is performed, you receive money for the performance. Morgan created one of today's most recognizable companies when he invested in the inventions of Thomas Edison— the light bulb, the phonograph, the motion picture camera, and the alkaline family of storage batteries. This company, General Electric (GE) is one of the most iconic companies in the world. Later, Morgan would even purchase Carnegie Steel (which became the present-day U.S. Steel) and even invested in railroads, too. In 1895, it was his banking system that bailed out the entire U.S. government during the critical moments of a financial crisis which started in 1893. He would bail out the U.S. government again in 1907. It was his financial system that became the blueprint for today's federal reserve system— much like the earlier Bank of the United States— that would lead to the creation of today's Federal Reserve System. However, his investment in inventors is now also a hallmark of most modern large-scale companies. In this sense, too, Morgan created the modern conglomerate— a company which owns many other lucrative companies or brands, like in today's business world, Procter and Gamble (which owns multiple brands such as Luvs, Pampers, Downy, Bounce, Tide, Gain, Bounty, Charmin, Braun, Gillette, Head & Shoulders, Pantene, Old Spice, Cascade, Dawn, Febreze, Crest, and Scope). However, Morgan was not the only great business leader from the period who would engineer the creation of large-scale companies.

The two dominant forms of large-scale corporate development— both of which became illegal by the dawn of the twentieth century, were the monopoly and the trust. A monopoly is a company which has no competition, either because it has forced its competition out of business or purchased them. A trust is a company which owns multiple companies which produce the same products (like a parent company, for example). Carnegie Steel was a monopoly because no one in America produced steel as a competitor to this giant company. Standard Oil was a trust because John D. Rockefeller owned all of the facets of oil refining and production, plus, later the distribution of his products. Ironically, when Standard Oil was broken-up as a trust in 1911, it made John D. Rockefeller even wealthier than he had ever been before. When Standard Oil was broken-up into smaller companies, Rockefeller was still the largest shareholder in each of them. These companies became the following oil firms that you would still recognize to this day, including: BP, Exxon, Mobil, Marathon and Chevron, among them. This type of business consolidation that happened at the time with Rockefeller's Standard Oil is referred to as horizontal integration, in which a company grows more powerful because it buys out all of its competitors. Pioneered by Carnegie, his steel company became more powerful because it was vertically integrated, in other words, his company owned each of the facets for the production of a product. For Carnegie Steel, it worked like this: his company owned the mines from which the iron ore was extracted, it owned the rail lines which took to the mills, it owned the mills which shaped it into usable components, and then it also handled all of the distribution for its steel products. In both cases, these two types of business consolidations made these two entrepreneurs extraordinarily wealthy, even by today's standards. It also meant that they controlled entire markets for products, which for the economy kept the wealth of our society in the hands of very few people. And for those people who did work in those companies, it was often difficult and dangerous work and with little pay for doing it, hard to make a decent living. But, it also led these profitable giant corporations and their entrepreneurial owners to turn their eyes toward new markets, as these companies began to turn their attention to operating on a global scale for the very first time.

Businesses increasingly looked outside U.S. borders in an effort to gain greater influence and control over markets and natural resources in the Pacific Rim, Asia, and Latin America.

By 1890, large-scale American businesses had shaped our modern national economy and had initiated the process of making America a global presence for business. American steel, oil, food and innovative electrical products were sought-after around the world. In turn, American businesses— ever-expanding throughout this period, began to seek out raw materials and products from Asia, the Pacific Islands, and Latin America. A prime example of a product that was highly sought-after by American consumers, but not readily grown in the United States, was sugar. Sugar was grown in the Caribbean Islands (such as Cuba, Puerto Rico, and the Virgin Islands) and in places such as the Hawaiian Islands in the Pacific Rim. Each of these places would come under the control of the United States or have heavy investment from American companies because of the insatiable appetite that Americans would have (and still continue to have) for sugar. Much like oil in the twentieth and twenty-first centuries, it would be the desire for products such as sugar and the interests of large-scale American businesses (such as Carnegie Steel and Standard Oil) that would drag the United States into world affairs for the very first time and lead the nation to expand its interests— both political and economic, onto the global stage. It was American business that propelled our nation into becoming a global power.