



Industry in America

An Assembly Line
of the
Ford Motor Company

1870 - 1920 in America

Following the conclusion of the Civil War and the end of Reconstruction America was left with opportunities.

With the completion of the transcontinental railroad and settlement in the West ~ America would focused on a period of invention and innovation.

Invention is defined as designing something for the first time - machines, methods and products

Innovation is defined as putting these new ideas and methods into practice

Foundations for Economic Growth

1. Abundant natural resources - fertile soil, streams/water supply, timber, coal, iron ore, oil, and copper
2. Free Enterprise System - (capitalist) based on privately owned businesses, production, and supplies that are sold on an open market
 - a. The market economy is controlled by consumers - more effective businesses would stay in business, others would not
 - b. Social Darwinism - supported the idea of a market economy - survival of the fittest
3. The Role of Government - “laissez-faire” capitalism - government will interfere with business as little as possible
 - a. Patent system - established in the U.S. Constitution - encouraged inventiveness by protecting original ideals and guaranteeing the inventor/innovator rights to use - encouraging the sharing of ideas because it secured the inventor/innovator the ability to profit from their idea
 - b. Tariffs - protected American manufacturing from foreign competition by imposing customs duties on foreign made goods.

Foundations for Economic Growth

1. Impacts of the First Industrial Revolution - the U.S. followed Britain's lead with the use of steam power
 - a. Steamboats and railroads began linking together distant regions of the country
 - b. The South is reestablished as the “Cotton Belt” using steamboats to transport goods down rural rivers to export to Britain
 - c. The Midwest produced livestock and wheat for the Northeast and the South - steamboats and rails were used for shipping
2. Economic stimulus provided by the Civil War
 - a. Wartime needs for uniforms, guns, processed foods, and other goods stimulated production
 - i. Secession of the South temporarily freed Northern Congressmen to enact federal laws favorable to the growth of Northern industry

Civil War Legislation -

Morrill Tariff, National Banking Acts, Homestead Act, Morrill Act, Pacific Railway Act

Civil War Legislation

1. Morrill Tariff - 1861 was enacted to protect American manufacturing from European competition
2. National Bank Acts - 1863 and 1864 created a national banking system; established nationally chartered banks, national currency and regulation of bank notes
3. Homestead Act - 1862 offered free land to settlers occupying farms in the West
4. Morrill Act - 1862 gave land grants to states to support technical and agricultural colleges
5. Pacific Railway Act - 1862 gave federal loans and land grants to railroad companies to complete a transcontinental railroad

Railroads

1. First transcontinental railroad was completed in 1869; four additional lines were built by 1893
2. George Pullman - invented the sleeping car and opened the door for people to use trains for transportation
3. George Westinghouse - invented the air brake; which stopped all the cars of the train at the same time - increasing worker safety and brake efficiency
4. Gustavus Swift developed the first refrigerated railroad cars; increased efficiency for shipping meats and cold goods
5. Railroads created the need for a uniform time zones across the country for accurate shipping
6. Railroads were responsible for connecting raw materials to factories and factories to consumers.

Technological Innovation

Steel -

1. 1855 Henry Bessemer invented the “Bessemer Process” making the production of steel more economical
2. The Bessemer process reduced the cost of making steel by more than 80%
3. Steel would be used to build railroad tracks, steamships, suspension bridges, turbines and engines, and skyscrapers.

Andrew Carnegie would become the major proprietor in the steel industry

Technological Innovation

Communications -

1. Samuel Morse - developed the telegraph using electromagnetism to communicate over long distances; he also developed a code using long and short spaces - Morse Code
2. Cyrus Field - a paper manufacturer aspired to lay a transatlantic cable to carry telegraphic messages between America and Europe - this would be extremely important for trade and war
3. Alexander Graham Bell - patented the telephone in 1875; enabled communicate by voice not code

Technological Innovation

Electricity -

1. Thomas Edison - invented a new “stock ticker” that would track stock prices, improved the telegraph machine, 1877 he patents the phonograph and begins working on improving the light bulb; 1879 he invents a practical electric light bulb revolutionizing home life and work; electric motor was used to power factories, street cars and subway trains
2. Nicola Tesla - challenged Edison’s reliance on direct current and developed a motor for producing alternating current (AC); 1893 funded by G. Westinghouse - Tesla’s invention would power the World’s Fair in Chicago

Technological Innovation

Oil -

1. Edwin Drake - responsible for the first oil well in PA in 1859
 - a. His discovery would make it possible for petroleum and gasoline that would power the country into the 20th Century
2. The internal combustion engine would come to change the way people traveled and worked in the 20th century

Technological Innovation

1. Henry Ford - would use the internal combustion engine to power his automobile and revolutionize the manufacturing industry with the development of the assembly line
2. Wilbur and Orville Wright - 1903 used the internal combustion engine to power the first airplane; their invention would make it possible to transport both materials, products and eventually people; they would kick off a new era of aviation exploration
3. Other inventions from the late 19th Century include: the typewriter - Sholes; the vacuum cleaner - Booth; cash register - Ritty; fountain pen - Peonaru; linotype - Mergenthaler

Women and African American Inventors

1. Josephine Cochran - invented the first automatic dishwasher
2. John Albert Burr - patented an improved rotary blade lawnmower in 1899
3. Granville T. Woods - invented a multiplex telegraph that could send signals between stations and moving trains
4. Elijah McCoy - former fugitive slave who returned to the U.S. as a trained mechanical engineer and patented several lubricators for steam engines
5. Sarah Goode - former slave; first African American woman to receive a U.S. patent; 1885 developed the fold away bed
6. Madam C.J. Walker - made a fortune developing hair and cosmetic lines for African American women; believed to be the first African American millionaire
7. Lewis Howard Latimer - patented an improvement to the light bulb filament
8. Jan Ernst Matzeliger - patent for a machine that attached the upper part of a leather shoe to the sole
9. Garrett Morgan - developed a safety hood and smoke protector for firefighters; patented a traffic signal in 1923

Results of Industry

1. Population growth

- a. Created conditions favorable for business growth; steady demand for goods and a large supply of cheap labor
- b. The population tripled between 1860-1920; large influx of immigrants

2. Emergence of national market

- a. Because of the improvements to communication and transportation the markets were no longer segregated by region

3. The rise of the corporation

- a. Owners were liable (personally responsible) for the debts of their company
- b. Corporations were chartered by a state and were recognized as a separate “person”
- c. Corporations would issue stocks (shares of ownership) to their investors
 - i. Each stockholder is a partial owner of the corporation and receives a share of the profits
 - ii. Stockholders would elect a board of directors who would appoint a CEO to run the company
 - iii. Corporations were highly profitable and held an advantage over smaller businesses
 - iv. They benefitted from their ability to economically produce goods, buy supplies at a cheaper price due to large bulk orders, and strong management teams

Captain of Industry and Robber Baron and the Gilded Age

Captains of Industry - adopted new technologies and took advantage of new forms of corporate organization to make cheaper and better products.

Robber Barons - exploited workers, used dishonest tactics, and exercised their monopoly control over individual industries to overcharge the public.

Gilded Age - historians nickname for the Second Industrial Revolution due to the unethical and dishonest business tactics used

Vertical and Horizontal

Vertical integration - complete control over all stages of the production and distribution

Carnegie owned the mines, the processing plants, railroads & transport boats in the Great Lakes

Horizontal integration - one owner controls all companies and facilities at one stage of production

Rockefeller bought 90% of all oil refining companies in the United States

Andrew Carnegie -

- Immigrated from Scotland
- Worked in railroad industry
- After the war, opened Keystone Bridge Company
 - Responsible for the first bridge to carry trains over the Mississippi River
- Used the Bessemer Process for producing steel
- Hired experts to make business more efficient - Henry Clay Frick, chemist
- Hired immigrants at low wages, 12 hour work day; had two shifts day and night
- Opposed worker organization and let Frick abuse workers - actions that lead to the Homestead Strike 1892
- Used vertical integration
- Sold his company to J.P. Morgan for \$225 million
- Would spend the end of his life giving away money - wrote *The Gospel of Wealth* - believed rich men should not die with wealth but give it all away to institutions that promoted self-improvement

J.D. Rockefeller -

- Profited during the Civil War by investing in oil refineries
- 1870 starts Standard Oil Company (corporation)
- Starts to buy local rivals and expand in the Northeast
- Made deals with railroads to ship at a cheaper cost; railroads would charge competition a higher price
- Built pipelines to eliminate transportation costs
- 1882 forms Standard Oil Trust
 - Brought 90% of all oil refining in the United States (horizontal integration)
- Lowered the cost of kerosene by 80% making it affordable for ordinary consumers
- Would profit from the invention of the automobile and the internal combustion engine
- Would eventually turn to philanthropy and give away money to both education and science

J.P. Morgan -

- Spent much of his early career reorganizing and consolidating failed railroad businesses
- 1892 helped Edison form the Edison Electric Company
 - Because of Edison's dispute with Tesla over AC; Morgan pushed Edison out of the company
- Edison Electric becomes General Electric
- 1895 J.P. Morgan and Company is formed - a commercial and investment banking
- 1901 - after purchasing Carnegie's Steel and other steel companies - combines them to form U.S. Steel
- U.S. Steel will become the first billion dollar company in the U.S.A

Henry Flagler -

- Partner of Rockefeller in Standard Oil Company
- Respected businessman
- Spent much of his time and money developing Florida
- 1887 - built the Ponce de Leon Hotel (would later become Flagler College) and a luxury resort in St. Augustine
- Would develop in Miami and Palm Beach
- Responsible for building railroads across Florida
 - Constructed railroad junction at Key West to help Floridians ship goods (in anticipation of the Panama Canal)
 - Would be destroyed in 1935 due to a hurricane
 - Foundation for the Overseas Highway that exists today

Monopolies -

Complete control over the production of a good or service

- Had less incentive to improve their products since they faced no competition
- Could raise their prices at any time to earn excessive profits; consumers had not choice because their was a lack of alternative products

Government Regulation -

U.S. Supreme Court Cases

Munn v Illinois: state governments can regulate grain elevators

Wabash v Illinois: state governments cannot regulate interstate railroads

U.S. v E.C. Knight Company: ruled that the Sherman Antitrust Act could not be used to break up a monopoly controlling over 90% of all U.S. Sugar refining

Federal Laws Regulating Business

Interstate Commerce Act: Congress regulates interstate railroads; sets up enforcement agency

Sherman Antitrust Act: Combinations “in restraint of trade” are prohibited