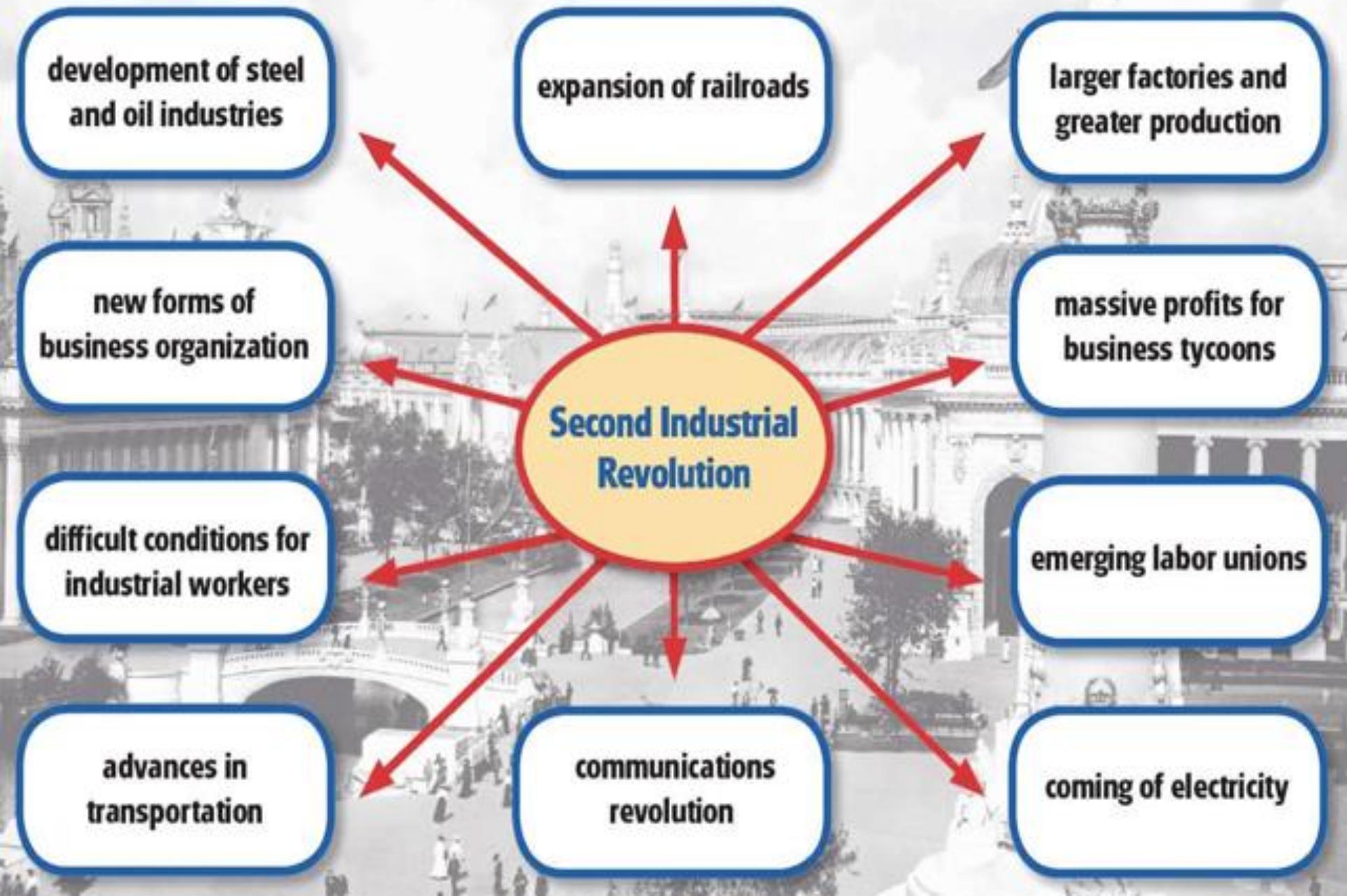


American Industrialization

Impacts of the 2nd Industrial Revolution



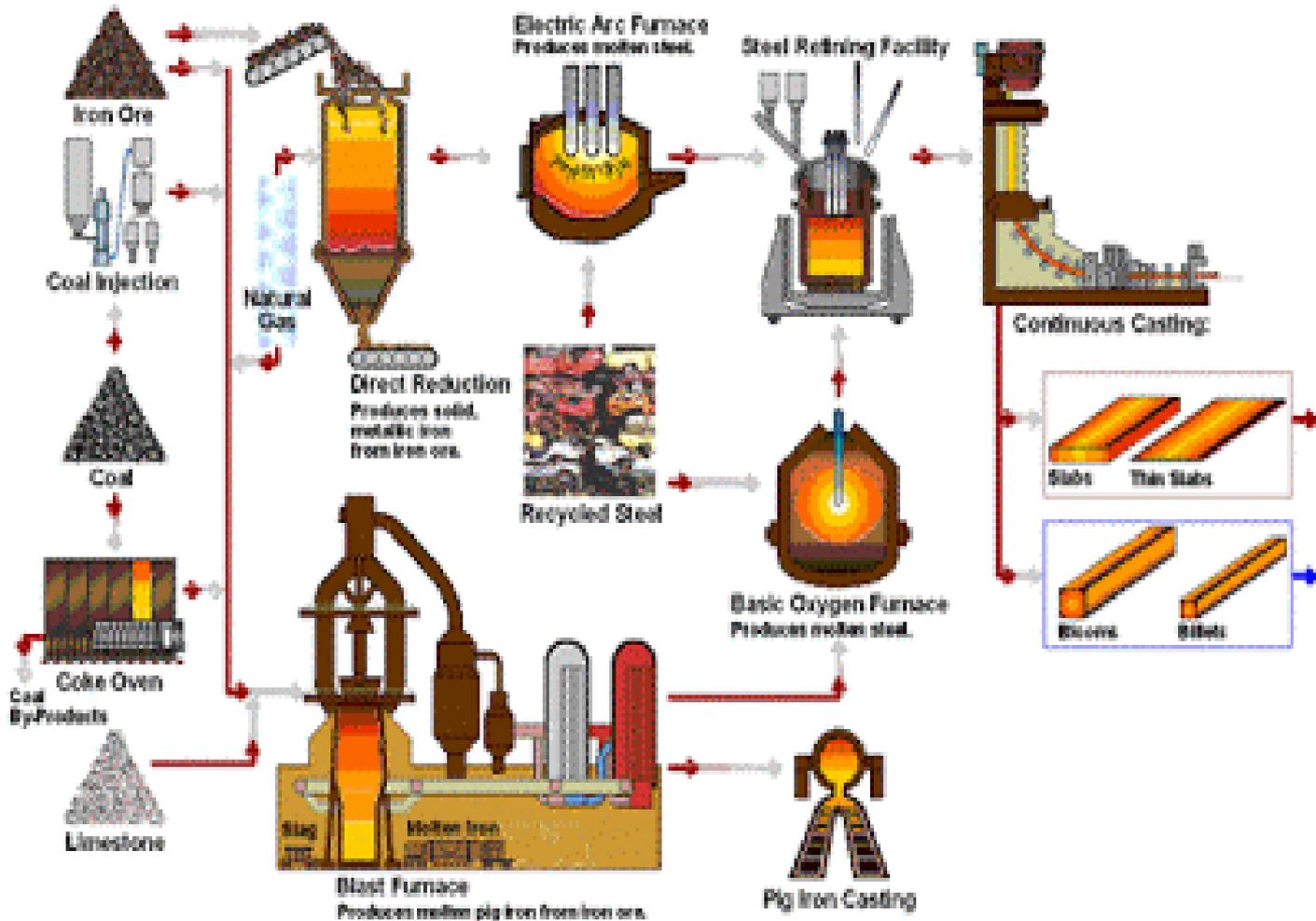
Steel Processing

Bessemer

Process:

invented mid-1850s, allowed steel to be produced quickly and cheaply

- As steel dropped in price → so did the cost of building RRs → boom in construction



Kerosene

- Chemists invented a way to convert crude oil into fuel called **kerosene** in the 1850s
- A huge oil industry developed after a way to pump oil from the ground was developed in 1859
 - Used in the machines of the steel industry
- Replaced coal as “THE” new energy source
- Could be used for cooking, heating, and lighting
- Improved communication, transportation, and industry



Development of Electricity

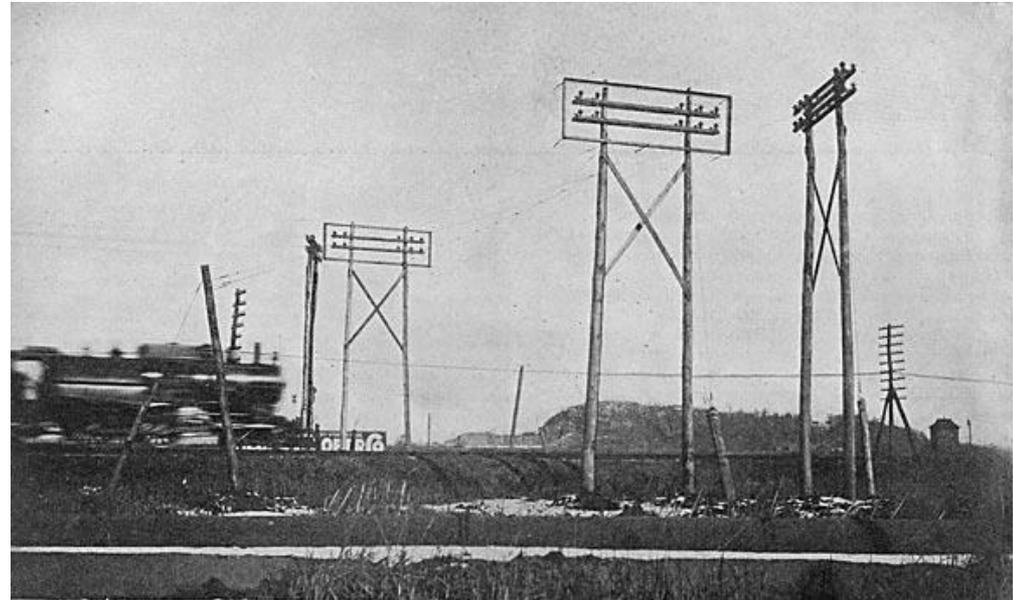
Invention

- Inventor **Thomas Edison**, who held more than 1,000 **patents**, worked to invent an electric light
- Edison and his team introduced the first practical electric lightbulb in 1879



Spreading the Use of Electricity

- Edison created a power company to distribute electricity, but could not send it over long distances (DC)
- George Westinghouse built a power system that could send electricity many miles across the country (AC)



Why was this invention SUCH a huge deal?

New telegraph technology connected the U.S. with Great Britain in 1866

Alexander Graham Bell patented the telephone in 1876

- Rapidly adopted, the number rising from 55,000 in 1880 to almost 1.5 million in 1900



The Automobile

The automobile industry grew in steps:

- 1876: German engineer invented the gasoline-powered engine
- 1893: U.S. built its first practical motorcar
- 1908: **Henry Ford** introduced the Model T

Ford was first to implement the moving assembly line in manufacturing, making cars more affordable



Wilbur and Orville Wright: gas engine plane

1903 Orville Wright makes the first flight in a motorized airplane.



Date	Inventor	Process or Machine
1830s	Samuel F. B. Morse	Telegraph (1835) Morse code (1838)
1850s	Henry Bessemer William Kelly	Bessemer process
1853	Elisha Otis	Mechanized passenger elevator
1867	Christopher Sholes	Typewriter
1876	Alexander Graham Bell	Telephone
1877	Thomas Alva Edison	Phonograph
1879	Edison and Lewis Latimer	Lightbulb
1869	George Westinghouse	Compressed-air brake
1886	Westinghouse and Nikola Tesla	High-voltage alternating electric current (AC)
1893	Charles and Frank Duryea	First practical motorcar in the United States
1903	Wilbur and Orville Wright	First powered piloted plane flight

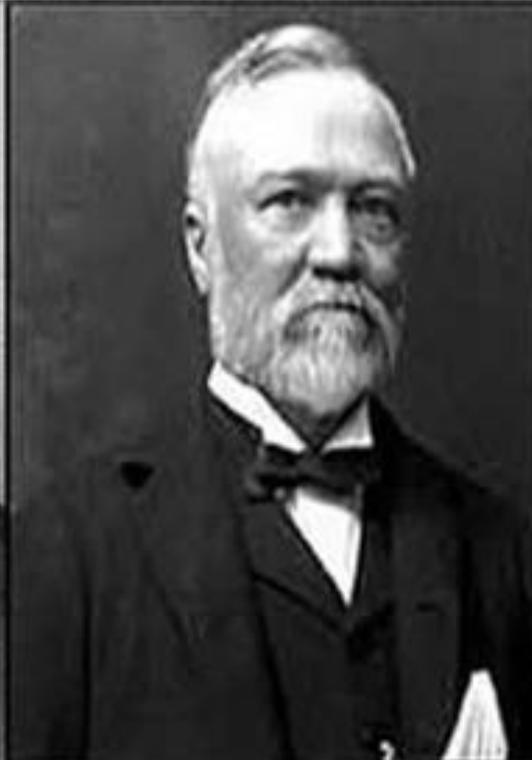
“Big Business”



John D. Rockefeller



Cornelius Vanderbilt



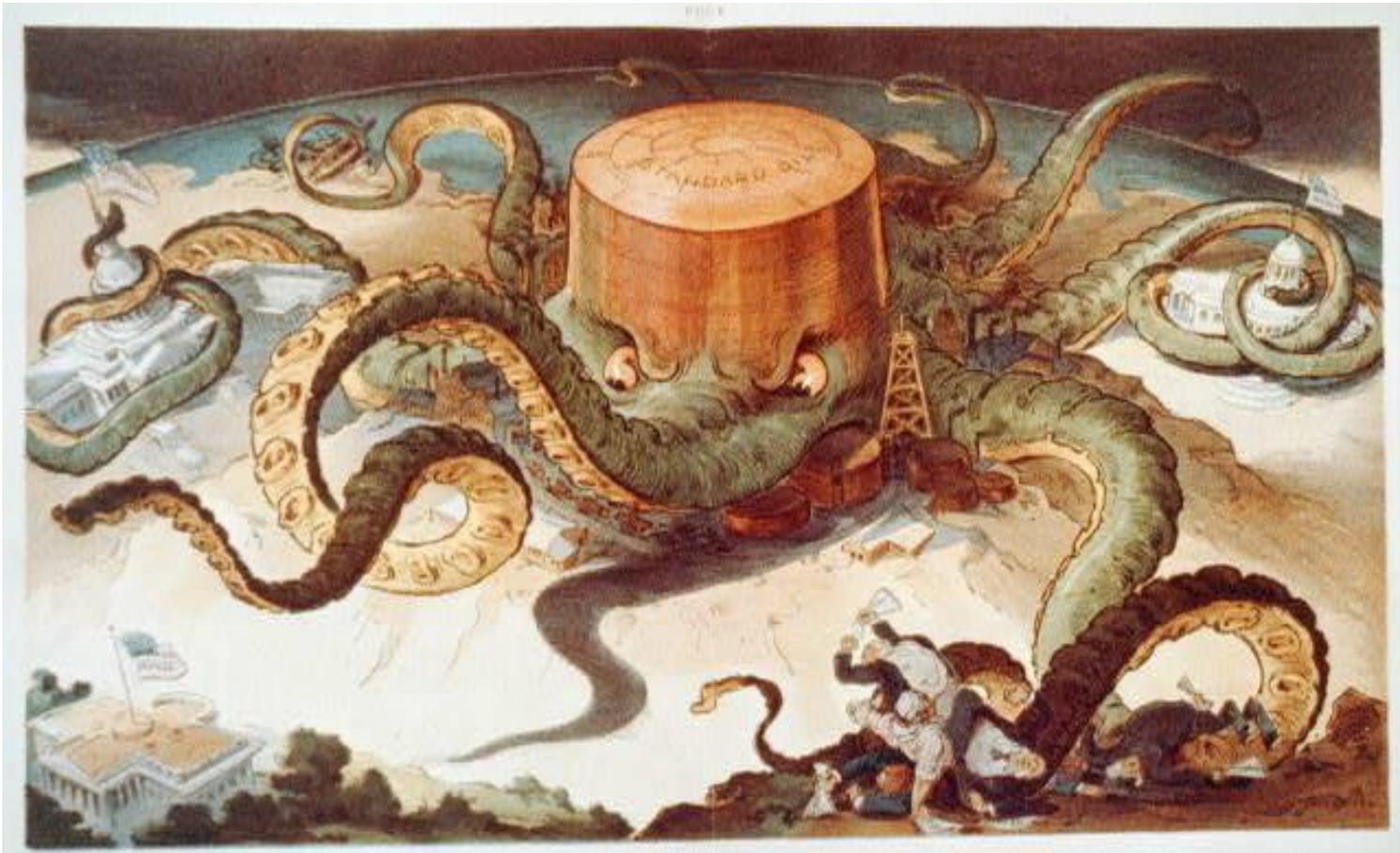
Andrew Carnegie



J.P. Morgan

Corporations

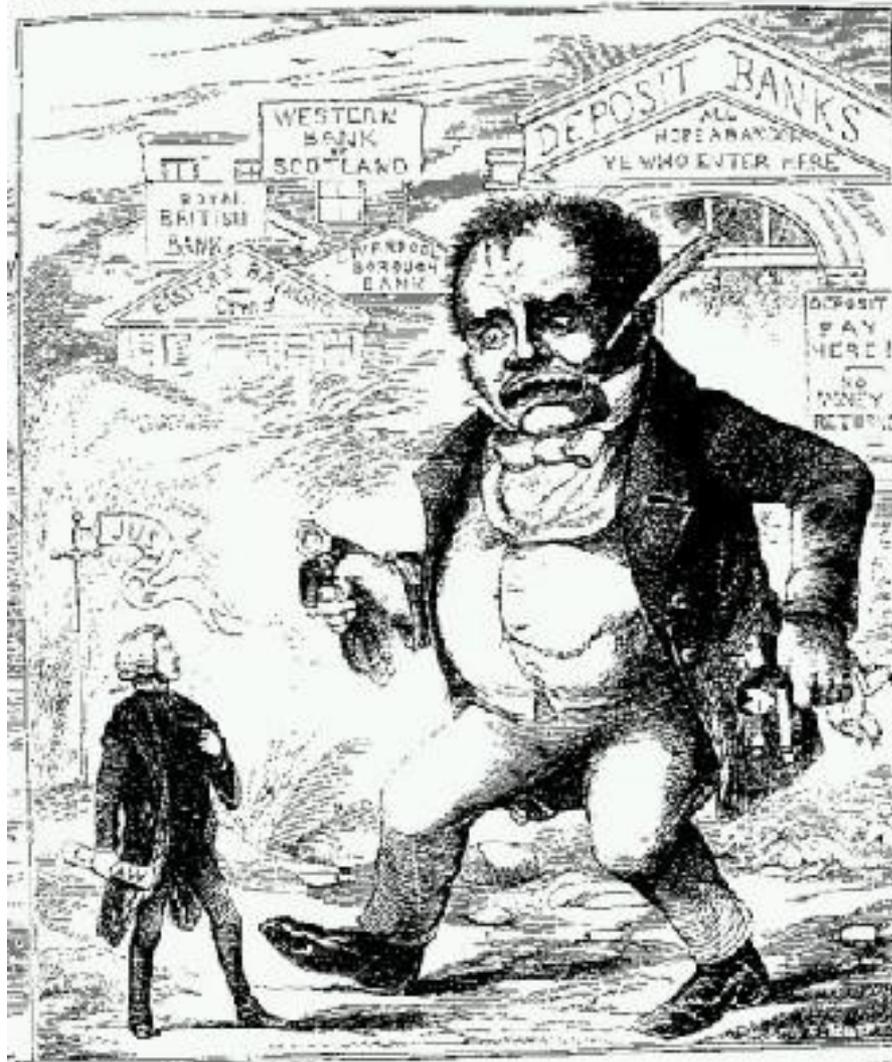
- Organized business recognized by law that has many owners
- Shared ownership between investors
- Stockholder: part owners that have made an investment in the company
- Pay **dividends** (profits) as returns back to shareholders



Advantages:

- Stockholders have “limited liability”
- Corps can sell stocks to raise \$
- Can borrow \$ by selling bonds (IOUs)
- Can continue after the deaths of founders and owners

JACK AND THE GIANT JOINT-STOCK.



Disadvantages:

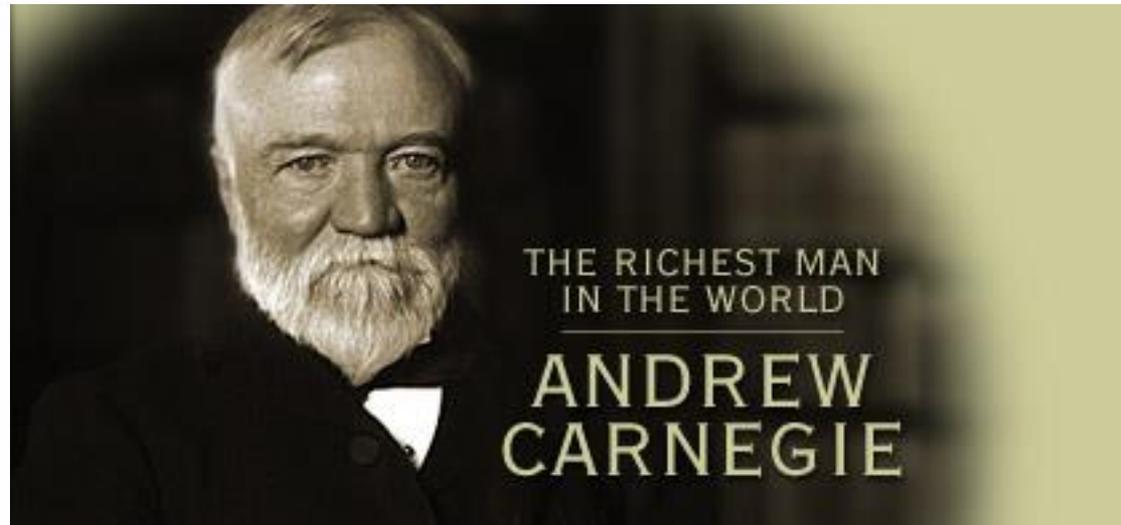
- Corporations pay income taxes and stockholders pay personal income taxes on dividends
- Difficult and expensive to start
- Founders can lose control
- Subject to more govt regulations (later in U.S. History)

Many of the leading industries soon realized that merging their companies together (sometimes related, sometimes not) would help achieve greater control over the market by forming **trusts**



Andrew Carnegie

- Industry: steelmaking
- Business method: **Vertical Integration**, owning the businesses involved in each step of manufacturing → lower costs (“cut out the middleman”)

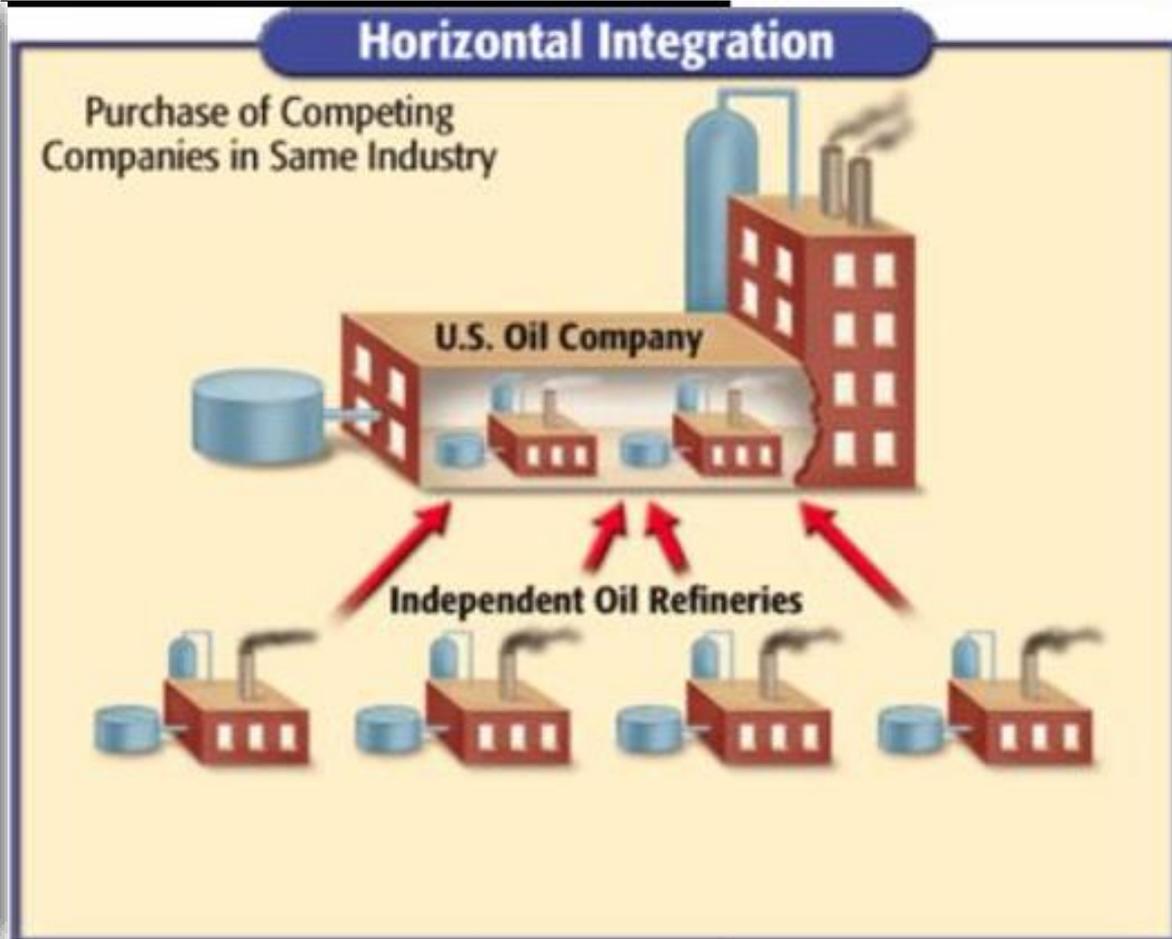


John D. Rockefeller

- Standard Oil Company was the country's largest refinery
- Developed **Horizontal Integration**: owning all businesses in a field
- Formed through a **trust** (method of grouping many companies under a single board)



John D. Rockefeller



Labor and Productivity

Frederick W. Taylor, an efficiency expert, published *The Principles of Scientific Management* in 1909:

- Encouraged managers to view workers as interchangeable parts
- Injuries increased, conditions worsened



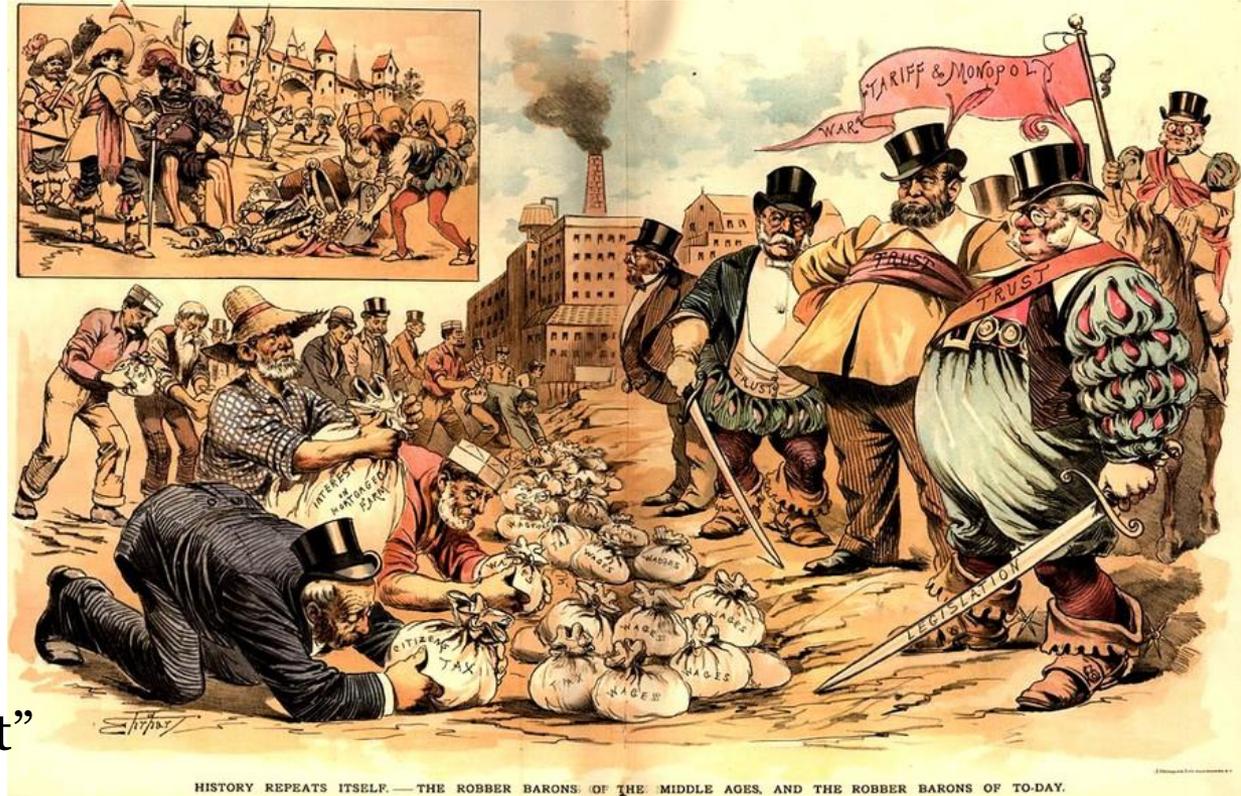
Public Opinion of “Big Business”

People and the govt began to view “Big Business” as a problem in the late 1800s:

- Concerns about child labor, low wages, and poor working conditions

Business leaders responded with the concept of “**Social Darwinism**”

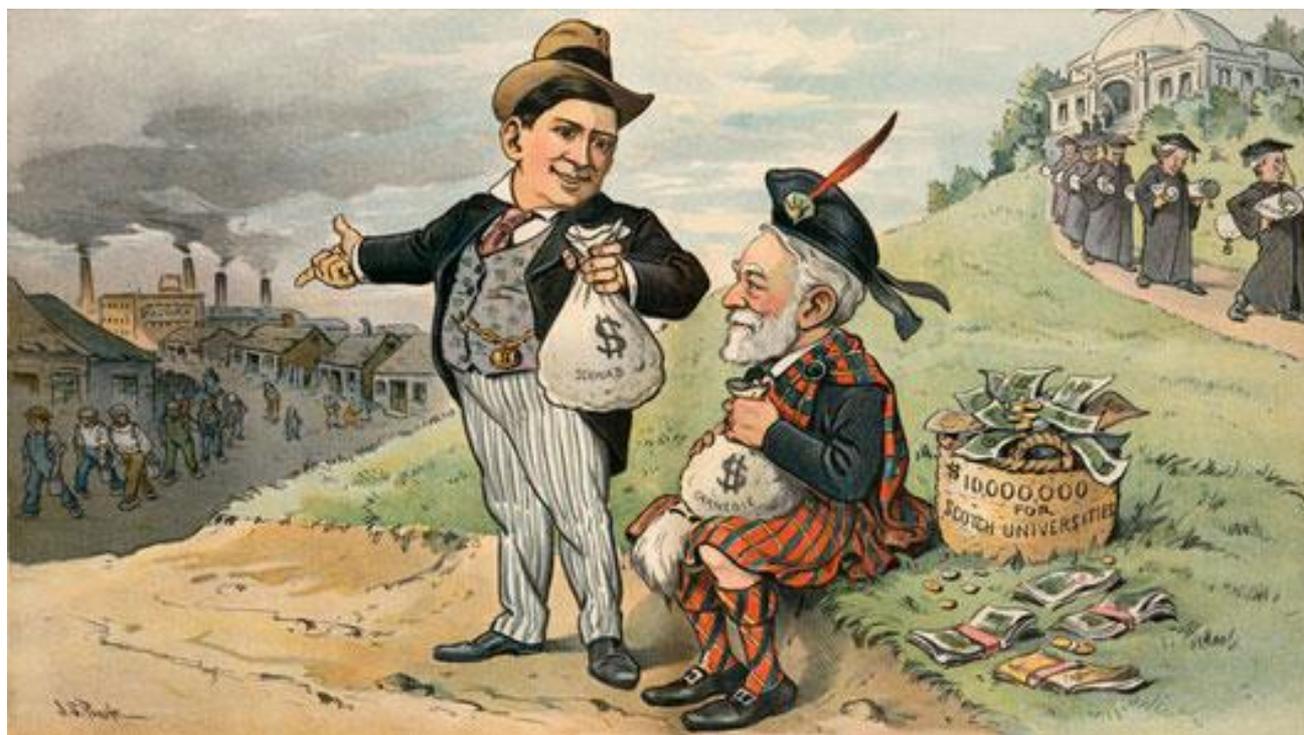
- “Survival of the Fittest” applied to which human beings would succeed in business and in life in general



“Robber Barons or Captains of Industry?”

“*Gospel of Wealth*” – written by Carnegie; business leaders believed that the rich should “help the poor” by wisely distributing their wealth in ways they believed would help society

-Carnegie, Rockefeller, and other business leaders gave away large sums of money to their choice of philanthropy (e.g. Carnegie’s \$125 mil. for “Higher Education”)



“I resolved to stop accumulating and begin the infinitely more serious and difficult task of wise distribution.”

Andrew Carnegie

The Antitrust Movement

Critics said many businesses earned their fortunes through unfair business practices:

- Used size and strength to drive smaller competitors out of business
- Sold goods and services below market value until smaller competitors went out of business, then raised prices

Argued govt intervention was necessary when practices became **monopolistic** or threatened competition/consumer wellbeing



Laissez-Faire govt regulation – “Hands off” approach to “Big Business” concept that the govt should NOT regulate/control businesses; “let them be” and they will do what’s best for the economy

-Prices and wages will be determined by supply and demand, not by the govt

(Govt regulation examples: health and safety regulations, environmental controls, minimum wage, benefits, equal opportunity employment, worker’s compensation, etc.)



The **Sherman Antitrust Act** (1890) made it illegal to create monopolies or trusts that restrained trade

-Did not clearly define a trust in legal terms, making it hard to enforce

-Initially used to stop union activity



U.S. vs. EC Knight Co.

- American Sugar bought out 4 other sugar refineries; increasing its control over national sugar production to 98%
- SC ruled that the govt lacked power under the Constitution to enforce the Sherman Act against the company's manufacturing operations
- Manufacturing operations are not "interstate commerce," the SC asserted, because such operations occur entirely in one state; Congress has the power to regulate trade but not manufacturing

