# Industrial Empires

The end of the 19th century saw the **"Second Industrial Revolution"** emerge in America. The nation began to focus on **heavy industry** (steel, petroleum, electricity, and industrial machinery).

There were seven (7) major reasons for the nation's success:

1. There was an abundant supply of **raw materials**, especially coal, iron ore, copper, lead, timber, and oil
2. There was an abundant supply of **home-labor** as well as hundreds of thousands of **new immigrants**
3. There was plenty of **capital** for expansion, especially from European countries willing to invest in America
4. There was a **growing domestic population** along with a developing railroad network
5. **Labor-saving inventions** between 1860 and 1890 were plentiful, over 440,000 patents for new inventions were given to inventors and manufacturers
6. **The government was "friendly"** toward private property, railroad subsidies, land grants, loans to manufacturers, protective tariffs and refraining in regulating industry and heavy taxes on industry
7. There were many **talented entrepreneurs** in the mark place

## The Railroads

On May 10, 1869, the first transcontinental railroad was completed. The **Union Pacific Railroad** started from the **Great Plains and moved westward**. The labor consisted of war veterans and **Irish immigrants**.

The **Central Pacific Railroad** started from the Sierras and moved eastward. Their labor force consisted of the more efficient 6,000 **Chinese laborers**.

The two lines met at **Promontory Point in Utah** and a **"golden spike"** was driven into the ground to commemorate their linking.

The meeting at Promontory Point, Utah May 10, 1989

Before 1900, four more transcontinental railroads were completed, only one built without federal subsidiaries, that being the Great Northern Railroad.

Unfortunately. the railroads were badly managed. During the **Panic of 1893**, over one-quarter of the railroads were bankrupt. Bankers and financiers, such as J.P. Morgan, bought up these lines and began to consolidate them into a major network.

Seven years later there were only seven railway systems in America and they controlled two-thirds of the lines across the nation. They were highly successful as they stabilized shipping rates because of these mergers, they increased efficiency which reduced the debt and allowed for better financing of projects. Regrettably, these tactics led to the railroads becoming **Regional Monopolies** and powerful businessmen appeared on every board.

**The Vanderbilts**

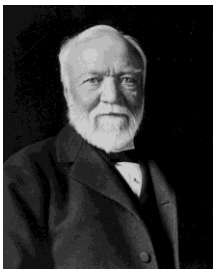
**William Vanderbilt, son of Cornelius Vanderbilt**, inherited his father's vast transportation empire. His attitude and statements made him the enemy of the general population. William Vanderbilt once remarked when questioned about his profit taking and why his service was overpriced said **"the public be damned."**


Cornelius Vanderbilt


William Vanderbilt

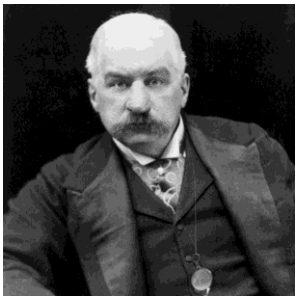
In the **1850's, Henry Bessemer** (English) **and William Kelly** (American) both perfected the process of blasting air through molten pig-iron to produce **steel.** America found a new industry, readily fueled by coal from the Great Lakes region and Iron Ore from the **Mesabi Range**.


**Andrew Carnegie**



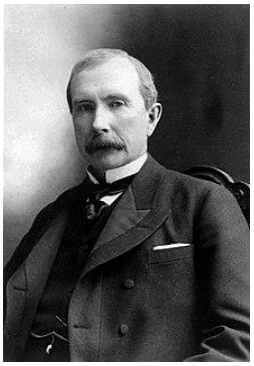
He was a poor Scottish immigrant who became a superintendent of a railroad and then started a small steel mill in Pittsburgh, Pennsylvania. He quickly became a master within the industry by using **Vertical Integration**. This is where **the company controls every stage of the industrial process**, from the mining to the transport of raw materials to the production and the end transport of the finished product. By 1900, his empire had grown to over 20,000 workers.


**J.P. Morgan**
**(John Pierpont Morgan)**



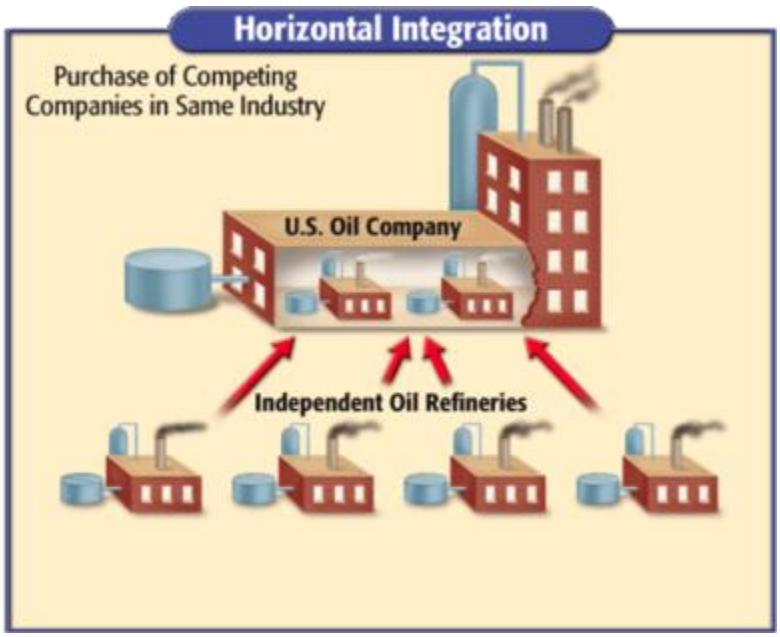
He was the banker and financier that bought Andrew Carnegie's steel company for over $ 400 million. He then expanded this steel network and created **U.S. Steel**, the **world's first billion-dollar corporation**. By 1900, it was the largest commercial enterprise in the world, employing over 168,000 workers and produced three-fifths of the nation's steel.

**John D. Rockefeller**



The first oil well was drilled by Edwin Drake in Pennsylvania in 1859 however, the magnate that rose to power in the industry was John D. Rockefeller. He founded the **Standard Oil Company** and built his empire upon **Horizontal Integration** where he bought out his competitors and brought them under a single corporate umbrella.

Rockefeller's success came from using the latest technology and cost-effective practices, obtaining shipping rates directly from the railroads and by cutting prices to force out his competitors. He eventually owned over ninety-percent of the nation's oil refining industry. When he retired from the oil industry, it was estimated that his net worth was over $ 900 million ($ 418 billion in 2019 prices).

## Other Technology and Inventions during this time period

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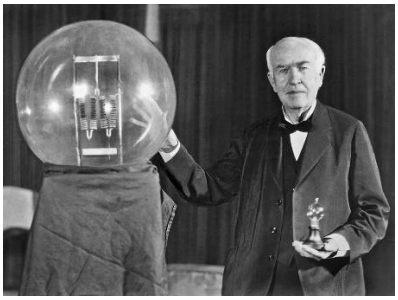
| 1844 | **Morse Code** and the **Telegraph** by Samuel Morse |
| 1866 | The first **Transatlantic Cable** by Cyrus W. Field |
| 1867 | The Typewriter was created |
| 1876 | The **Telephone** was invented by Alexander Graham Bell |
| 1879 | The **Cash Register** appeared in stores |
| 1884 | The **Fountain Pen** was created by Louis E. Waterman |
| 1887 | The first **Calculating Machine** was created |
| 1888 | The **Adding Machine** was invented |
| 1888 | The **Kodak Camera** was invented by George Eastman |
| 1895 | The **Safety Razor** appeared in stores thanks to King Gillette |

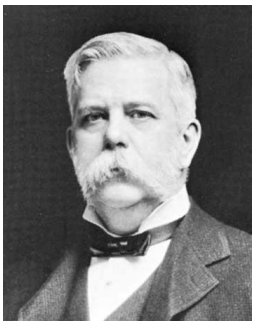
### Thomas Edison



His first major invention was in 1869 when he invented a machine for recording votes. His success led him to set-up in Menlo Park, New Jersey where he had both engineers and mechanics work together as a production team. His laboratory applied for and was granted thousands of patents.

**He is best known for the phonograph, the incandescent lamp (light bulb), a dynamo for generating electric power, a mimeograph machine (duplicating machine), and the motion picture camera.**

### George Westinghouse



During his career as a scientist and inventor, he was granted over 400 patents. In 1869 he invented the **Air Brake** used on the railway trains and in 1885 he created and produced the **Transformer for High Voltage Alternating Current (AC)**. Because of the **AC Transformer**, it was now possible for the nation to use electricity to light the city streets and buildings, streetcars and industrial machines now had a new source of power.

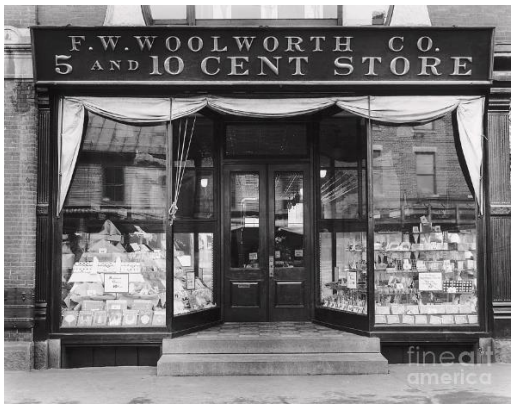
## Consumer Goods and Consumerism

It was during this time period that the first major **department stores** were built, **R.H. Macy** in New York and **Marshall Field** in Chicago. For the smaller towns and cities, the **5 & 10 Cent Store** emerged (The **Five and Dime**). The owner and developer, **Frank Woolworth** made these mini-department stores a fixture in American society.

If you lived in rural areas, there was always the **mail-order catalog** that sold everything from ready made houses to shoes and boots. **Sears Roebuck** and **Montgomery Ward** used the railroads to ship such items to the nearest station, the terms of sale were simple, **cash in advance**.

**Packaged foods** began to corner the market with companies such as **Kellogg** and **Post** appearing on store shelves thanks to better harvesting, packaging, sorting and shipping techniques.

**Gustavos Swift** used the **refrigerated railcar** to sell his mass-produced meat and vegetable products to the major towns and cities across the country. **"Going Shopping"** was now the new favorite pastime.


All of these new inventions raised the standard of living but such gains were offset by sharper economic and class divisions. **In the 1890's, the richest 10% of the population controlled nine-tenths of the nation's wealth.** They lived a life of luxury while the lower classes struggled and lived day-to-day. There was an **expanding middle-class** as large corporations now needed **white-collar workers** who were middle-management, professionals, public servants and storekeepers.

Millions of people were reading novels written by **Horatio Alger** and **Horatio Alger's Myth** did exist. It was the story of a young man of modest means, honest, hardworking, and with some luck, making it in the big time. In reality, to "make it," one had to be a White, Anglo-Saxon Protestant from an upper or middle-class family with a father who had a good job in banking or finance.

**By 1900, two-thirds of the American workforce worked for wages, and usually worked a ten-hour day.** Wages were controlled by supply and demand while the large number of immigrants who had factory jobs were barely paid above minimum wage. Most companies followed the theory of **Daniel Ricardo (the "iron law of wages")**, raising wages arbitrarily would only increase the working population and the availability of more workers would in turn cause wages to fall, causing a cycle of misery and starvation.

**Real wages (income adjusted after inflation)** rose steadily in the 19$^{th}$ century but most earners could not support a family on one salary so the women and children were also sent to work.

In 1890, 11 million families, out of the 12.5 million total, averaged **less than $ 380 per year**.
In 1900, **one out of five women worked for wages**, most were young and single. Only 5% worked outside of the house, the woman's place was still in the home. If they did work in a factory, it was an industry that was an extension of family life such as the textile, garment or food industries.

In the early 1900's, as the demand for clerical workers rose, jobs such as typists and telephone operators were performed by women, at much lower wages than their previous male counterparts.


**Telephone operators**

The idea of government control over industry was practically non-existent. The **Sherman Antitrust Act** of 1890 was a federal law to **stop monopolies**. However, it was too vaguely worded to stop **trusts** from forming. In 1895, the Supreme Court case ***United States v. E.C. Knight Co***., ruled that the Sherman Antitrust Act applied only to commerce and not to manufacturing. As a result of this ruling, only a few federal convictions for violators were handed down.

**Adam Smith's book, the "Wealth of Nations"** stated that business should **not** be regulated by the government but by the **"invisible hand"** or the impersonal economic factors and the laws of Supply and Demand. A **"hands-off"** approach by government would lead to a motivated business environment. Even though monopolistic trusts are the opposite of this theory, there were still many lobbyists who fought for no government intervention.

**Social Darwinism** and the "survival of the fittest" was also seen where wealth should be in the hands of the "fit" and this selection was seen as good for all humanity.

**The Protestant Work Ethic** was another theory, best seen by John D. Rockefeller. Hard work and material success were signs of God's Favor. When asked about this theory, Rockefeller replied **"God gave me my riches."**

**The Aces of Diamonds** was a lecture given by **Reverend Russell Conwell** throughout America. His theory was that **everyone had a duty to become rich**. He often cited Andrew Carnegie as an example, a man who fulfilled his dream and then donated over $ 350 million to support libraries, universities, and other public institutions.

**New York City in 1895**