1. Growth of Industrialization—— 1865 to 1900
   ♦ Why? Factors in place
   ♦ Railroad industry
   ♦ Distribution System
   ♦ Symbol of growth
   ♦ Government assists industry—— 1860 to 1880
     ♦ laissez faire economy
     ♦ Laws to promote industry:
       • Morrill Tariff of 1861
       • National Banking Act of 1863
       • Morrill Act of 1862
       • Land grants to railroads
     ♦ Rise of Industrialists or Entrepreneur
       • Andrew Carnegie
       • John Rockefeller

Notes:
♦ Industrialists
   ♦ Captains of Industry or Robber Barons
   ♦ Inventions and inventors
     • Thomas Edison—— Alexander Graham Bell
   ♦ New stores
 2. Response to Industrial Growth
   ♦ Rise of Labor Unions—— Why?
     ♦ 3 main labor unions
     ♦ Strikes and labor disputes
       • Eugene Debs
       • Great Railroad Strike—— 1877
       • Haymarket Riot—— 1886
       • Homestead Strike—— 1892
       • Pullman Strike—— 1894

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Changes in Daily Life

Life in the 1860s
   • No indoor electric lights
   • No refrigeration
   • No indoor plumbing
   • Kerosene or wood to heat
   • Wood stoves to cook with
   • Horse and buggy
   • In 1860, most mail from the East Coast took ten days to reach the Midwest and three weeks to get to the West Coast.
   • A letter from Europe to a person on the frontier could take several months to reach its destination.

Life in the 1900s
   • US Govt issued 500,000 patents—electricity
   • Refrigerated railroad cars
   • Sewer systems and sanitation
   • Increased productivity made live easier and comfortable.
   • Power stations, electricity for lamps, fans, printing presses, appliances, typewriters, etc.
   • New York to San Francisco to 10 days using railroad.
   • 1.5 million telephones in use all over the country.
   • Western Union Telegraph was sending thousands of messages daily throughout the country.

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Factors for Industrial Growth
   • Natural Resources
   • Capital (gold, silver and banking)
   • US Government support
   • Desire: Creative inventors and industrialists
   • Transportation System
   • Labor force (immigrants)

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New Industries
   • Oil
   • Mining
   • Sugar
   • Steel
   • Meatpacking
   • Beef/Cattle
   • Construction
   • Telegraph
   • Telephone
   • Railroad
   • Marketing
   • Sewing Machine
   • Vacuums
   • Typewriters
   • Automobile
   • Salt
   • Coal
   • Agricultural
Immigrants from Europe

• Immigrants provided the labor force for industrial expansion of the US.
• They also became the customers who in return bought the items produced.

Old = England and Germany
New = Southern Europe: Italy, Russia, Poland

Chart: Rise of Immigrants

<table>
<thead>
<tr>
<th>Year</th>
<th>Old Value</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1871-80</td>
<td>1,593,000</td>
<td>181,188</td>
</tr>
<tr>
<td>1881-90</td>
<td>2,753,000</td>
<td>926,000</td>
</tr>
<tr>
<td>1891-1900</td>
<td>1,110,000</td>
<td>1,847,000</td>
</tr>
<tr>
<td>1901-1910</td>
<td>1,069,000</td>
<td>5,780,000</td>
</tr>
<tr>
<td>1911-1920</td>
<td>540,000</td>
<td>2,928,000</td>
</tr>
</tbody>
</table>

In 1856 Henry Bessemer devised a way of converting iron into steel on a large scale.
His invention involved blowing air through molten iron in a converter, or furnace, in order to burn off the excess carbon.
His invention revolutionized the Industrial Age.

New Uses for Steel
• Steel used in railroads, barbed wire, farm machines
• Changes construction: Brooklyn Bridge; steel-framed skyscrapers

1st Transcontinental Railroad

• May 10, 1869 at Promontory, Utah
• “The Wedding of the Rails”
• Central Pacific and Union Pacific

Expansion of Railroads
• 1869, 30,000 miles of track
• 1900, 200,000 miles of track
• Distribution System to the marketplace
• Symbol of growth
**RAILROAD INDUSTRY**

- What helped the railroad industry prosper?
  - Bessemer Process
  - Westinghouse Air Brakes
  - Steel Rails
  - Standard Gauge

**KEY INVENTIONS BETWEEN 1860 TO 1900**

- Elevator—1852
- Bessemer Process—1852
- Sewing Machine—1853
- Dynamite—1867
- Typewriter—1868
- Levi Blue Jeans/Basketball—1873
- Telephone—1876
- Phonograph—1878
- Light bulb and cash register—1879
- Zipper—1883
- Gasoline automobile and skyscraper—1885
- New York City—first city to have electricity—1890
- Radio—1895
- Subway—1897
- X-ray—1900

**With the Bessemer Process and Carnegie steel, skyscrapers revolutionized the building industry.**

- Major city skylines would be dotted with this new type of building as the 1900's begin.

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**Thomas Alva Edison**

"Wizard of Menlo Park"

**Edison Inventions helped to shape modern society**

- More than 1,000 inventions patented
- Light bulb
- Phonograph
- Incandescent electric lamp
- Starter for automobiles that eliminated hand crank
- Batteries
- Perfected stock ticker
- New York City first city to be powered by electricity
- The motion picture camera and projector
- First used “hello” as phone greeting
- Helped Alexander G. Bell with the telephone
The Light Bulb

The Phonograph (1877)

The Ediphone or Dictaphone

The Motion Picture Camera
**Edison the Innovator**

- Industries Started:
  - Electric Light and Power
  - Sound Recording
  - Motion Pictures

- Industries to which he made major contributions:
  - Telecommunications
  - Battery
  - Chemical
  - Cement
  - Mining

- Corporate Research and Development Labs

**Alexander Graham Bell**

- Telephone (1876)

**Telephone Long-Distance Lines 1896**

- Countries connected to the Bell long-distance network

**The Airplane**

- Wilbur Wright
- Orville Wright

Wilbur Wright and Orville Wright

- Airplane
  - Image of Wright brothers' aircraft
Model T Automobile

Henry Ford

Ford Model T prototype, 1908

Ford Highland Park Plant. Building A under construction, 1909

Plan of Ford Highland Park Plant, 1914

• A, M, and H are four story factory buildings
• B and E are one story machine shops
• C and F are glass-roofed craneways
• K, 1, and 2 are foundry buildings
• Dotted line is the monorail conveyor system

Machining the bottom of Model T cylinder blocks, 1913
Drilling 45 holes in a Model T engine block, from four directions, 1913

Assembling Model T radiator cores, 1913

Painting Model T wheels, 1911

Station assembly of Model T dashboards, 1913

Station assembly of Model T chassis, 1913
Disassembly line for hogs, 1915

Model T flywheel magneto

Assembly line for putting magnets on Model T flywheels, 1913

Assembly line for Model T dashboards, 1914

Model T chassis assembly line, installing gas tanks, 1914

Model T chassis assembly line
Installing engines, 1913
Model T chassis assembly line, installing dashboards, 1914

Model T chassis assembly line, installing wheels and radiators, 1914

Model T chassis assembly line, starting the engine, 1914

Assembly line installation of tops on Model T bodies, 1915

Job seekers outside Highland Park Plant Building M, after the announcement of the $5 Day.

**NEW STORES**

**BETWEEN 1860 TO 1900**

- Specialty stores—sold single line of goods
- Department stores—combined specialty stores
- Chain stores—stores with branches in cities
  - Mail catalog stores
  - New ways to advertise

*Montgomery Wards, J.C. Penney, Macy’s, Sears and Roebuck and Woolworths*
An economic belief supported by the U.S. that opposes the government regulating business.

- In the late 1800’s businesses operated without much government regulation. This is known as laissez-faire economics.
- Laissez-faire means ‘allow to be’ or the government stays out of a person’s business in French.
- Laissez faire supports our economic system of capitalism

New Business Culture

1. **Laissez Faire** — the ideology of the Industrial Age.
   - Individuals should compete freely in the marketplace.
   - Own their own business and use their skills to better our culture and make profit for themselves.
   - The market was not man-made or invented and no room for government in the market.
   - Government should allow for natural competition for the betterment of our society.

CETEGASZ FAIRE

Economic system characterized by private property ownership

- Individuals and companies compete for their own economic gain (Profit)
- Capitalists determine the prices of goods and services.
- Production and distribution are privately or corporately owned.
- Reinvestment of profits
- Supports laissez faire and the “free enterprise” system

SOCIALISM

Economic system based on cooperation rather than competition

- Many Americans opposed capitalism and believed a socialistic economy would better suit the US because some capitalists were corrupt.
- Believes in government ownership of business and capital (money, natural resources)
- Government controls production, sets wages, prices and distributes the goods. No profit or competition.
- Opposite of laissez faire and capitalism

**U.S. Patents Issued, 1860–1909**

- 1790s → 276 patents issued.
- 1990s → 1,119,220 patents issued.
- Gave an inventor the right to make and sell an invention.

Source: Historical Statistics of the United States
**US Government Assists Industry**

**Morrill Tariff Act, 1862**
To protect and encourage American industry, Congress passed this tariff after the South seceded from the Union.

**National Banking System, 1863**
To stimulate the economy and set up a banking system, Congress passed this act which was a significant step towards a unified, national banking system until replaced by the Federal Reserve in 1913.

**Morrill Act, 1862**
To promote education, Congress provided grants of public lands to the states for support of education. "Land-grant colleges"

**Land Grants to Railroads**
US Govt. donated land to railroad companies to encourage growth of this mode of transportation. US Govt. donated approx. 160 million acres of land.

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**Business Organizations**

**Corporation:** a form of business consisting of a group of people authorized by law to act as a single person and with the ability to sell shares of stock to raise "capital"

- **Shareholders or stockholders:** investors who invest their money into a corporation who each receive a share of ownership in proportion to the amount they invested
  - if the corporation makes a profit, the investor gets a "dividend" or a share of the profit.

- **Limited liability:** Important aspect of a corporation is limited liability. Shareholders have the right to participate in the profits, through dividends and/or the appreciation of stock, but are not held liable for the company's debts.
  - "Risk is spread over the shareholders, so if the company goes bankrupt, the lose is not so devastating"

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**Proprietorship**

<table>
<thead>
<tr>
<th>Formation</th>
<th>Ownership</th>
<th>Control and Management</th>
<th>Net Profits and Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual or person decides to operate a business</td>
<td>Individual</td>
<td>By owner or persons delegated by the proprietor</td>
<td>Profits to owner, Losses absorbed by owner</td>
</tr>
</tbody>
</table>

**Partnership**

<table>
<thead>
<tr>
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<th>Ownership</th>
<th>Control and Management</th>
<th>Net Profits and Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>By agreement between associates (partners)</td>
<td>Jointly by two or more individuals; or by terms of partnership agreement</td>
<td>By partners or persons they delegate</td>
<td>Shared according to partnership agreement</td>
</tr>
</tbody>
</table>

**Corporation**

<table>
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<th>Control and Management</th>
<th>Net Profits and Losses</th>
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</thead>
<tbody>
<tr>
<td>Organized by associates and legalized through state charter</td>
<td>Stockholders, according to number of shares</td>
<td>Through Board of Directors, elected by the stockholders (usually one vote per share of stock held)</td>
<td>Dividends: to stockholders = profits, Lose: only the amount invested by stockholders according to number of shares</td>
</tr>
</tbody>
</table>

**Trusts or Monopoly**

- Companies in related fields combine under the direction of a single board of trustees.
- Shareholders had no say.
  - Outlawed today.
TRUSTS AND MONOPOLIES

BIGGER IS BETTER

A trust or monopoly controls an entire industry

• make product cheaper
• lower prices to customer

MONOPOLIES AND TRUSTS

Vertical Integration

You control all phases of production from the raw material to the finished product

Horizontal Integration

Buy out your competition until you have control of a single area of industry

Modern Day Example of Vertical Integration

• Ford Motor company
  – What goes in an automobile?
  – Why is it an advantage for a company to own/control all production?

Other Vertical Integrations

• Boeing
• Anheiser-Busch: all grown by own producers
• McDonald's: own cattle ranches
• Oil companies
• AOL Time Warner

Advantages Vertical Integration

• You are always in control of supply of the products you need
• In control of labor cost, land/resources
• Always in control of the cost
• Schedule your production of autos because you are in control of all factors
• Can you give another example of this?
Horizontal Integration

- Examples
  - Standard Oil
  - Carnegie Steel
  - Swift & Company: meat producers
  - United Fruit Company: bananas
  - Dole Pineapple

Modern Day Examples of Horizontal Integration

- Microsoft
- PG & E
- Comcast
- Starbucks
- De Beers

Horizontal Integration
Buy out your competition until you have control of a single area of industry