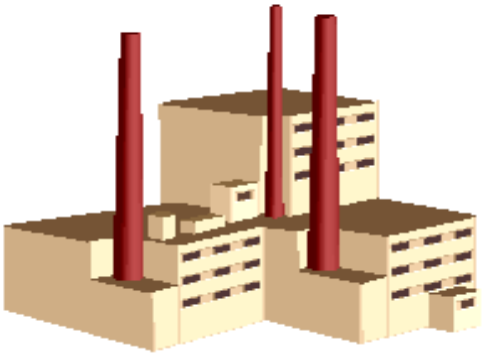


A NEW INDUSTRIAL AGE



**LATE 19TH CENTURY AMERICA
EXPERIENCED AN INDUSTRIAL
BOOM**

THE EXPANSION OF INDUSTRY

- After the Civil War (1865) the U.S. was still largely agriculture
- By 1920, the U.S. was the leading industrial power in the world
- This enormous growth was due to three factors;
 - 1) Natural Resources
 - 2) Governmental support
 - 3) Urbanization



BLACK GOLD



**EDWIN DRAKE PICTURED
WITH BARRELS OF OIL**

- In 1859, **Edwin Drake** used a steam engine to drill for oil
- This breakthrough started an **oil boom** in the Midwest and later Texas
- At first the process was limited to transforming the oil into kerosene and throwing out the gasoline -- a by-product of the process
- Later, the gasoline was used for cars

BESSEMER STEEL PROCESS

- Oil was not the only valuable natural resource
- Coal and iron were plentiful within the U.S.
- When you removed the carbon from iron, the result was a lighter, more flexible and rust resistant compound – Steel
- The **Bessemer process** did just did (Henry Bessemer & William Kelly)



**BESSEMER CONVERTOR
CIRCA 1880**



NEW USES FOR STEEL

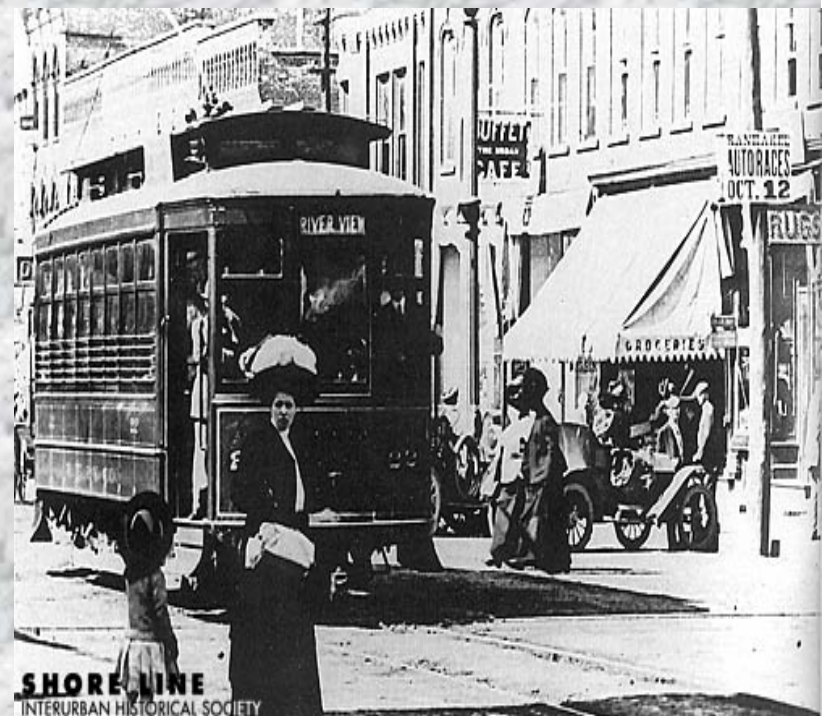


**BROOKLYN BRIDGE
SPANS 1595 FEET IN NYC**

- The railroads, with thousands of miles of track, were the biggest **customers for steel**
- Other uses emerged: barbed wire, farm equipment, bridge construction (Brooklyn Bridge- 1883), and the first **skyscrapers**

ELECTRIC TRANSIT

- Changes in transportation allowed cities to spread outward
- By the turn of the century, intricate networks of electric streetcars – also called trolley cars – ran from outlying neighborhoods to downtown offices & stores
- A few large cities moved their streetcars far above street level, creating elevated or “el” trains
- Other cities built subways by moving their rail lines underground



AIRPLANES

- In the early 20th century, brothers Orville and Wilbur Wright, experimented with engines and aircrafts
- They commissioned a four-cylinder internal combustion engine, chose a propeller, and built a biplane
- On December 17, 1903 they flew their plane for 12 seconds covering 120 feet
- Within two years the brothers were making 30 minute flights
- By 1920, the U.S. was using airmail flights regularly



Actual photo of Wright Brother's first flight 12/17/03

A REVOLUTION IN PRINTING AND PHOTOGRAPHY



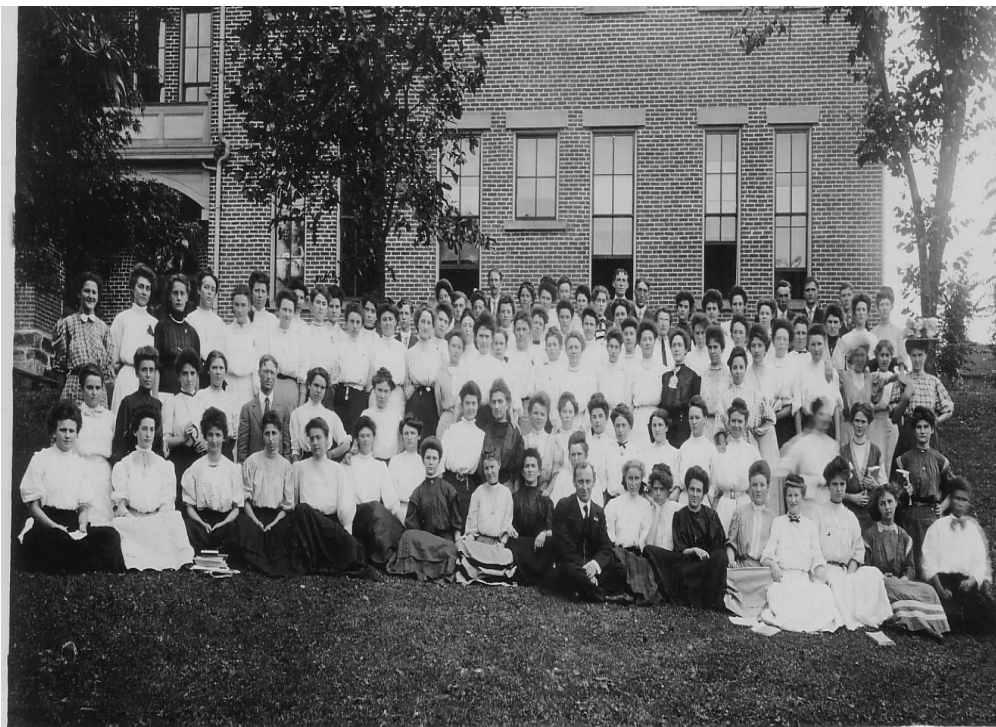
- By 1890, the literacy rate in the U.S. was nearly 90%
- American mills began to produce huge quantities of cheap paper from wood pulp
- Faster production and lower costs made newspapers and magazines more affordable (most papers sold for 1 cent)

- Before 1880, photography was a professional activity
- Subjects could not move and the film had to be developed immediately
- George Eastman invented lighter weight equipment and more versatile film
- In 1888, Eastman introduced his Kodak Camera
- The \$25 camera came with 100-picture roll of film

1888
Kodak



EXPANDING PUBLIC EDUCATION



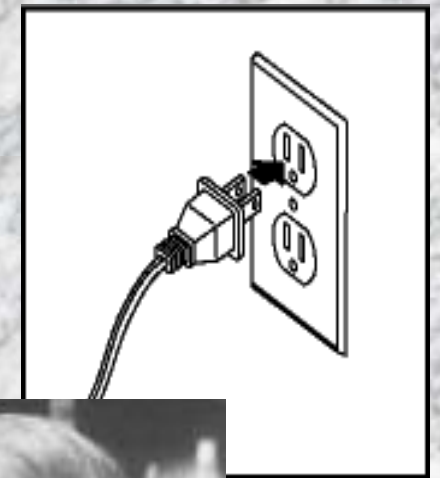
■ 1906
Contributed by Jackie Hufschmid

Elroy High School

- Between 1865 and 1895, states passed laws requiring 12 to 16 weeks of annual education for students ages 8-14.
- However, the number of kindergartens expanded from 200 in 1880 to 3,000 in 1900
- High schools expanded their curriculum to include science, civics and social studies
- By 1900 500,000 teen-agers were enrolled in high schools

ELECTRICITY

- **1876- Thomas Alva Edison** established the world's first research lab in New Jersey
- There Edison **perfected the incandescent light bulb** in 1880
- Later he invented an entire system for producing and distributing electricity
- By 1890, **electricity** powered numerous machines



EDISON

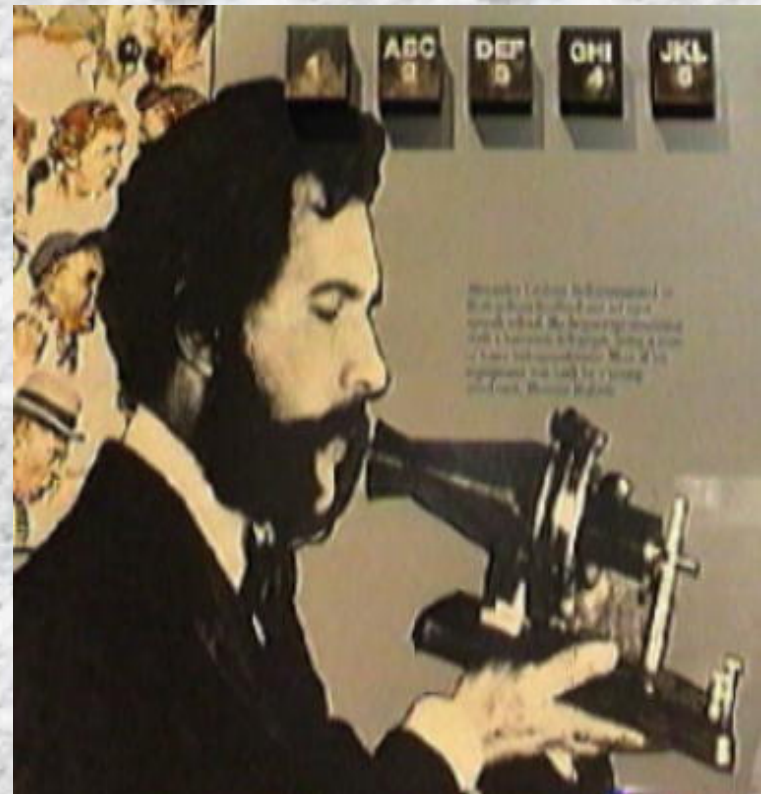
THE TYPEWRITER



- **Christopher Sholes** invented the typewriter in 1867
- His invention forever affected office work and paperwork
- It also opened many new jobs for women
- 1870: Women made up less than 5% of workforce 1910: They made up 40%

THE TELEPHONE

- Another important invention of the late 19th century was the **telephone**
- **Alexander Graham Bell** and Thomas Watson unveiled their invention in **1876**



BELL AND HIS PHONE

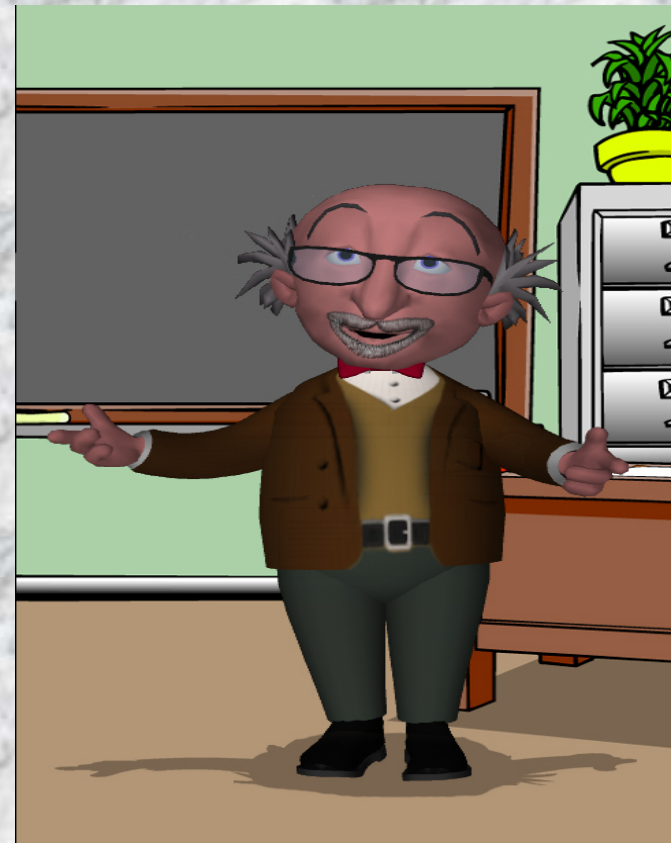
RAILROAD AND TIME



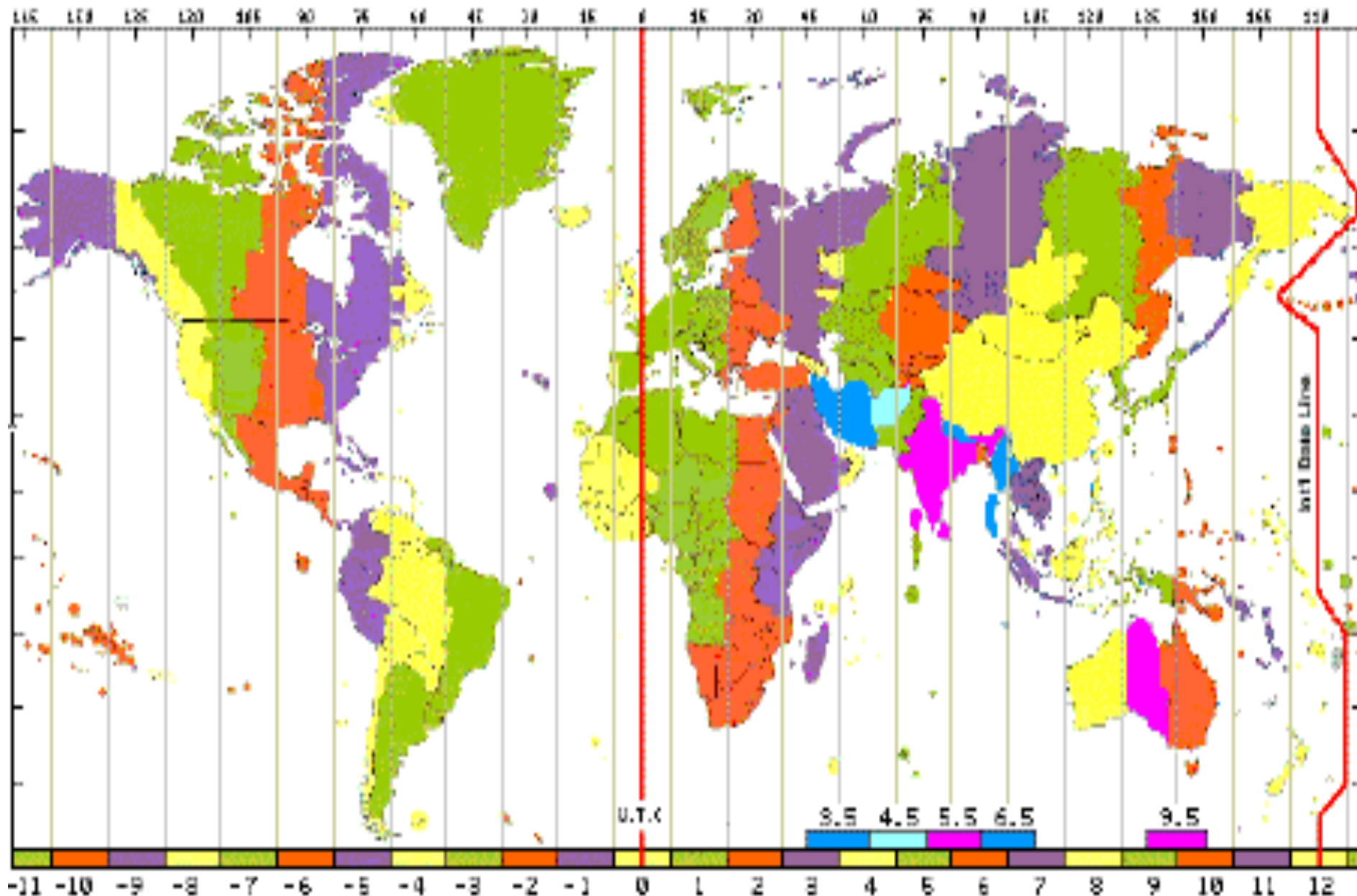
- Before 1883, each community still operated on its own time
- For example: Noon in Boston was 12 minutes later than noon in New York City
- Indiana had dozens of **different times**
- **No standard time reference**

PROFESSOR DOWD CREATES TIME ZONES

- In 1869, to remedy this problem, Professor C.F. Dowd proposed dividing the earth into 24 time zones
- The U.S. would be divided into 4 zones: the eastern, Central, Mountain, and Pacific
- 1883 – Railroads synchronized their watches across U.S.
- 1884 – International Conference adopts zones



PROFESSOR DOWD EXPLAINS
HIS TIME ZONES



THE WORLD IS DIVIDED INTO 24 TIME ZONES

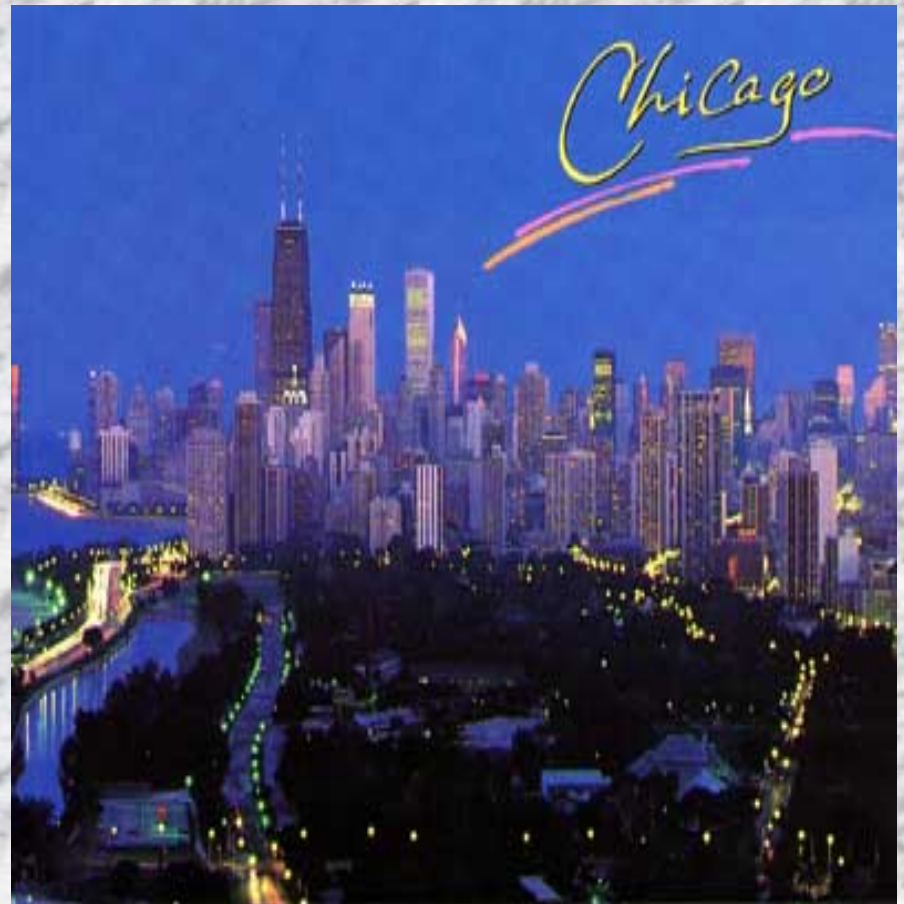
RAILROADS SPUR OTHER INDUSTRIES



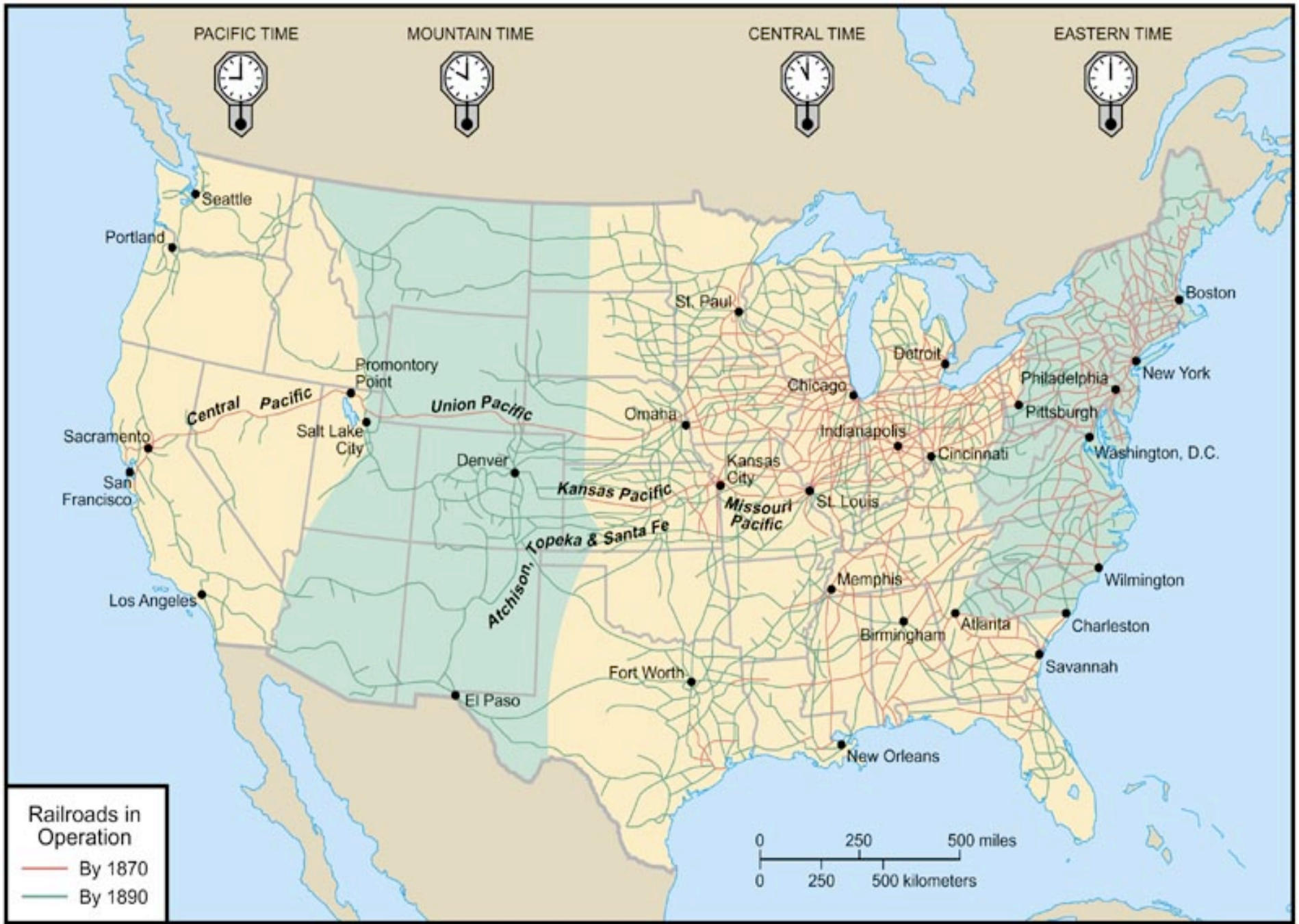
- The rapid growth of the railroad industry influenced the iron, coal, steel, lumber, and glass businesses as they tried to keep up with the railroads demand for materials
- **The spread of the railroads also led to the growth of towns, new markets, and opportunity for profiteers**

RAILROADS LED TO GROWTH OF CITIES

- Many of **today's major cities** owe their legacy to the railroad
- Chicago, Minneapolis, Denver, and Seattle all **grew up thanks to the railroad**



“MY KIND OF TOWN”



RAILROADS, 1870 AND 1890

PULLMAN: A FACTORY & TOWN



THE TOWN

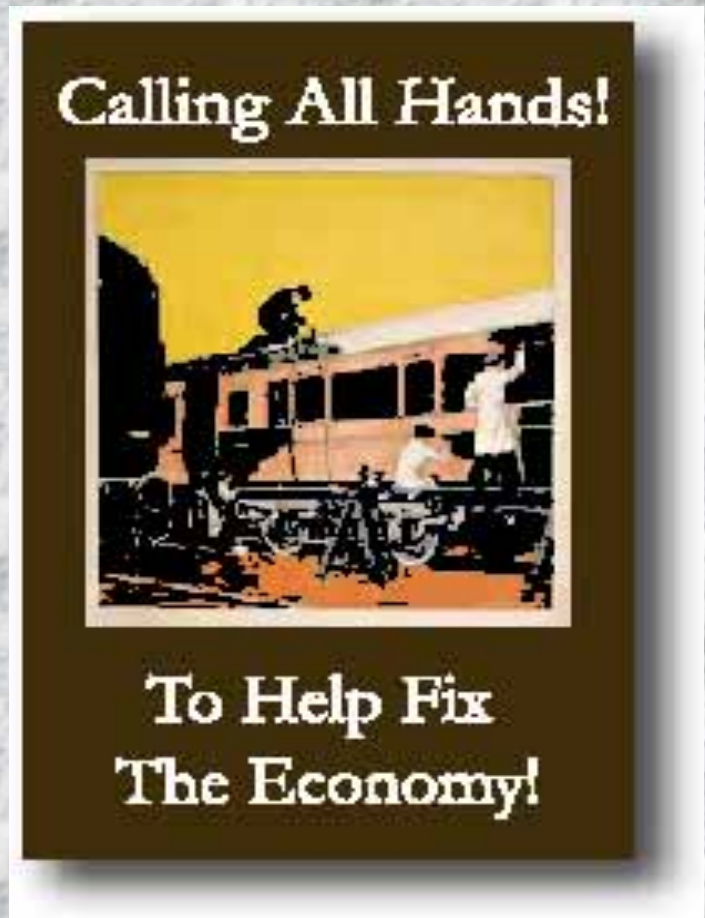


GEORGE
PULLMAN

- In **1880**, **George Pullman** built a factory for manufacturing sleepers and other railroad cars in Illinois
- The nearby **town** Pullman built for his employees was modeled after early industrial European towns
- Pullman workers felt his puritanical town was too strict
- When he lowered wages but not rent – it led to a violent **strike in 1894**

CREDIT MOBILIER SCANDAL

- **Stockholders** of Union Pacific Railroad **formed** a **construction company** in 1864
- Stockholders then gave contracts to the company to lay track at 3 times the actual costs and pocketed the difference
- They donated shares of the stock to 20 Republican members of Congress in 1867



POSTER FOR BOGUS
CONSTRUCTION COMPANY

THE GRANGE AND THE RAILROADS



**GRANGERS PUT A
STOP TO RAILROAD
CORRUPTION**

- Farmers were especially affected by corruption in the railroad industry
- **Grangers** (a farmers organization) protested land deals, price fixing, and charging different rates to different customers
- **Granger Laws** were then passed protecting farmers
- States were given regulation control of railroads by the Courts

INTERSTATE COMMERCE ACT

- In 1887, the Federal government re-established their control over railroad activities
- Congress passed the **Interstate Commerce Act** and established a 5-member Interstate Commerce Commission (ICC)
- The ICC struggled to gain power until 1906



**1887 – CONGRESS
PASSED THE ICA**

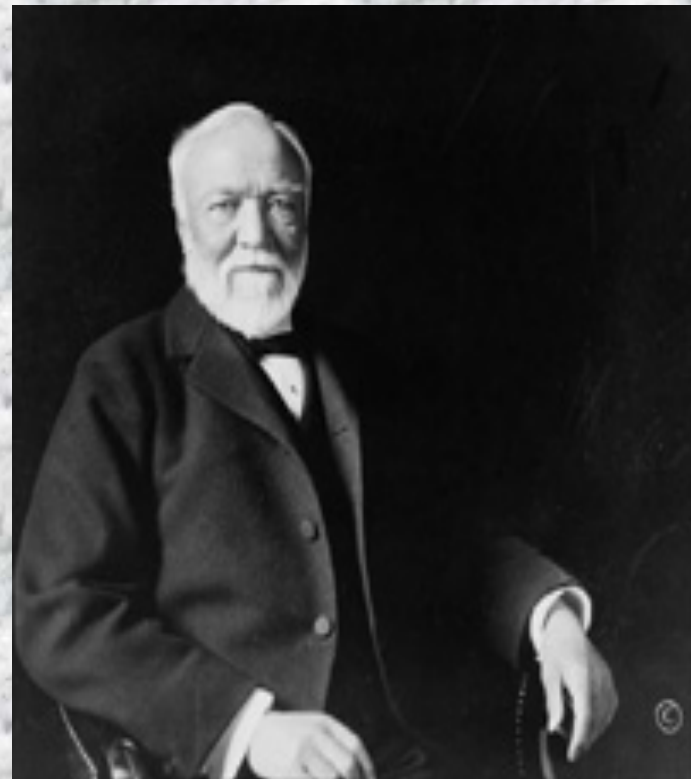
BIG BUSINESS AND LABOR



- **Andrew Carnegie** was one of the first industrial moguls
- He entered the steel industry in 1873
- By 1899, the **Carnegie Steel Company** manufactured more steel than all the factories in Great Britain combined

CARNEGIE BUSINESS PRACTICES

- Carnegie initiated many new business practices such as;
- Searching for ways to make **better products more cheaply**
- Accounting systems to track expenses
- Attracting quality people by offering them stock & benefits



ANDREW CARNEGIE
1835 -1919

CARNEGIE'S VERTICAL INTEGRATION



- **Carnegie** attempted to **control** as much of the steel industry as possible
- **How? Vertical integration;** he bought out his suppliers (coal fields, iron mines, ore freighters, and rail lines) in order to control materials and transportation

Carnegie Steel Co. - Vertical Integration of Steel

Mesabi
Iron
Range

Railroads

Duluth, MN - to Cleveland and Gary, IN

Lake Superior Steamship Lines
Railroad Rolling Stock & Engines

Anthracite
Coal
Mines

Railroads

J. Edgar Thompson Plant
- Bessemer/Kelly Process
- Rolling Mills

Homestead Plant

Henry C. Frick
Tennessee Iron & Coal Co.



HORIZONTAL INTEGRATION

- Additionally, Carnegie **bought up the competition** through friendly and hostile takeovers
- This is known as **Horizontal Integration**; buying companies that produce similar products – in this case other steel companies



MERGERS

BUSINESS GROWTH & CONSOLIDATION

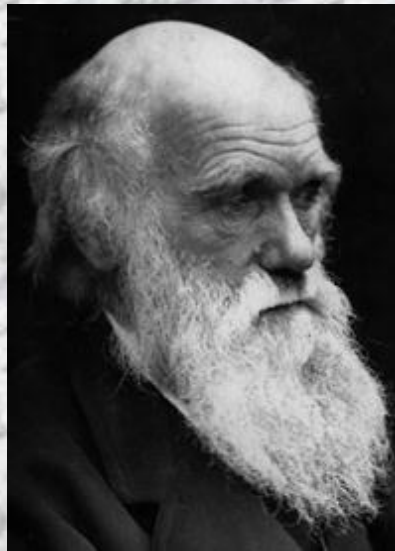
- **Mergers** could result in a monopoly (**Trust**)
- A monopoly is complete control over an industry
- An example of consolidation: In 1870, **Rockefeller** Standard Oil Company owned 2% of the country's crude oil
- By 1880 – it controlled 90% of U.S. crude oil



CHICAGO'S STANDARD OIL BUILDING IS ONE OF THE WORLD'S TALLEST

SOCIAL DARWINISM

DARWIN (RIGHT)
LIMITED HIS
FINDINGS TO
THE ANIMAL
WORLD



SPENCER WAS
THE ONE WHO
COINED THE
PHRASE
“SURVIVAL OF
THE FITTEST

- The philosophy known as **Social Darwinism** has its origins in Darwin's theory of evolution
- Darwin theorized that some individuals in a species flourish and pass their traits on while others do not
- Social Darwinists (like **Herbert Spencer**) believed riches was a sign of God's favor, and being poor was a sign of inferiority and laziness

ROBBER BARONS



J.P
MORGAN
IN PHOTO
AND
CARTOON



- Alarmed at the cut-throat tactics of industrialists, critics began to call them **“Robber Barons”**
- Famous “Robber Barons” included Carnegie, Rockefeller, Vanderbilt, Stanford, and J.P. Morgan

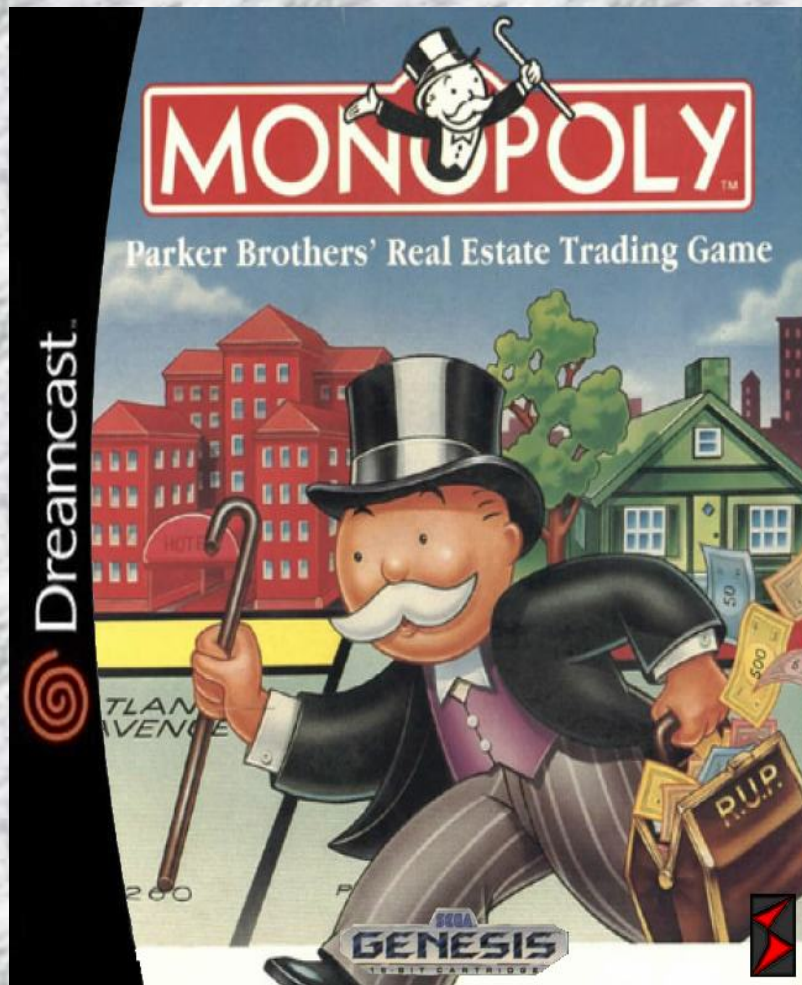
ROBBER BARONS WERE GENEROUS, TOO

- Despite being labeled as greedy barons, rich industrialists did have a generous side
- When very rich people give away lots of money it is called **“Philanthropy”**
- Carnegie built **libraries**, Rockefeller, Leland Stanford, and Cornelius Vanderbilt built **schools**



**ROCKEFELLER CHAPEL –
UNIVERSITY OF CHICAGO**

SHERMAN ANTI-TRUST ACT



- In 1890, the **Sherman Anti-Trust Act** made it illegal to form a monopoly (Trust)
- Prosecuting companies under the Act was not easy – a business would simply reorganize into single companies to avoid prosecution
- Seven of eight cases brought before the Supreme Court were thrown out

WORKERS HAD POOR CONDITIONS

- Workers routinely worked 6 or 7 days a week, had no vacations, no sick leave, and no compensation for injuries
- **Injuries were common**
 - In 1882, an average of 675 workers were killed PER WEEK on the job



LABOR UNIONS EMERGE



- As **conditions** for laborers **worsened**, workers realized they needed to organize
- The first large-scale national organization of workers was the **National Labor Union in 1866**
- The Colored National Labor Union followed

CRAFT UNIONS

- Craft Unions were unions of workers in a skilled trade
- **Samuel Gompers** led the Cigar Makers' International Union to join with other craft unions in 1886
- Gompers became president of the **American Federation of Labor (AFL)**
- He focused on collective bargaining to improve conditions, wages and hours



INDUSTRIAL UNIONISM

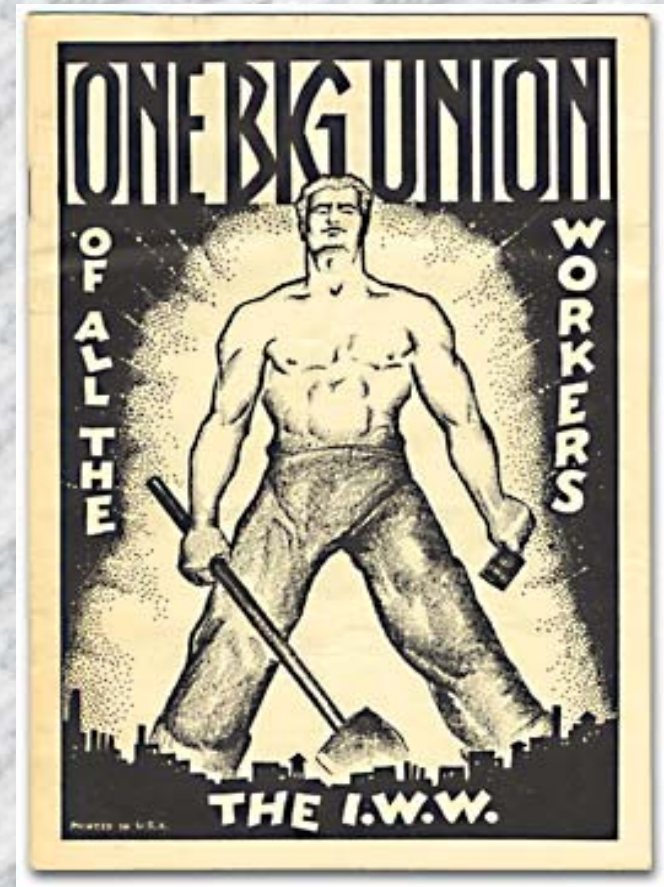


EUGENE DEBS

- Some unions were formed with workers within a specific industry
- **Eugene Debs** attempted this Industrial Union with the railway workers
- In 1894, the new union **won a strike** for higher wages and at its peak had 150,000 members

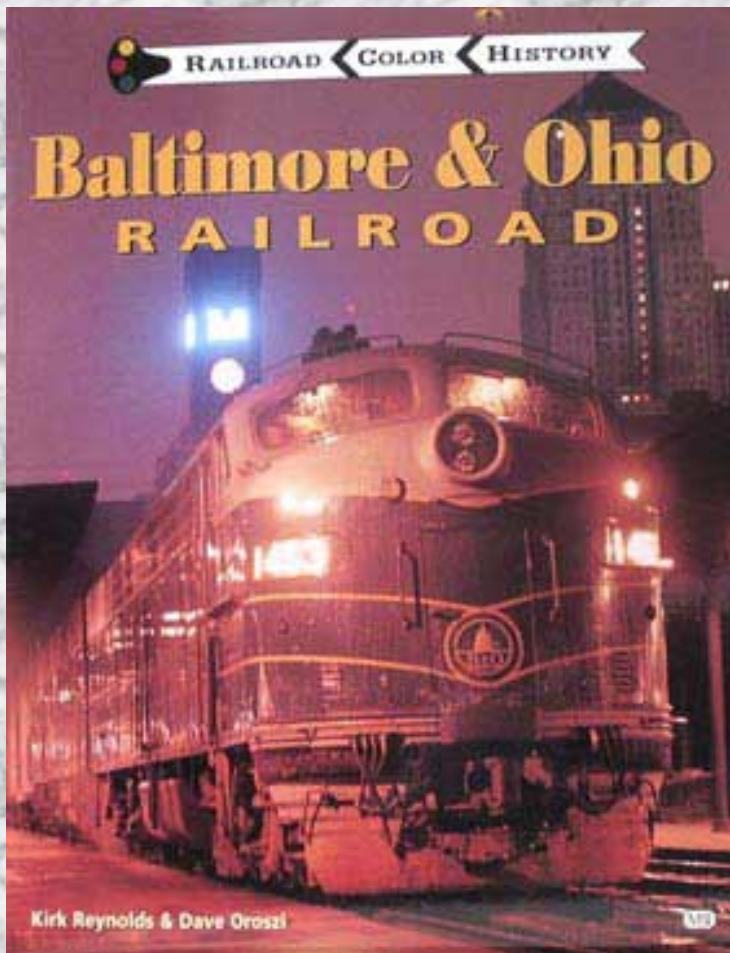
SOCIALISM AND THE IWW

- Some unionists (including Debs) turned to a **socialism** – an economic and political system based on government control of business and property and an equal distribution of wealth among all citizens
- **The International Workers of the World (IWW) or Wobblies**, was one such socialist union



PROMOTIONAL
POSTER FOR THE IWW

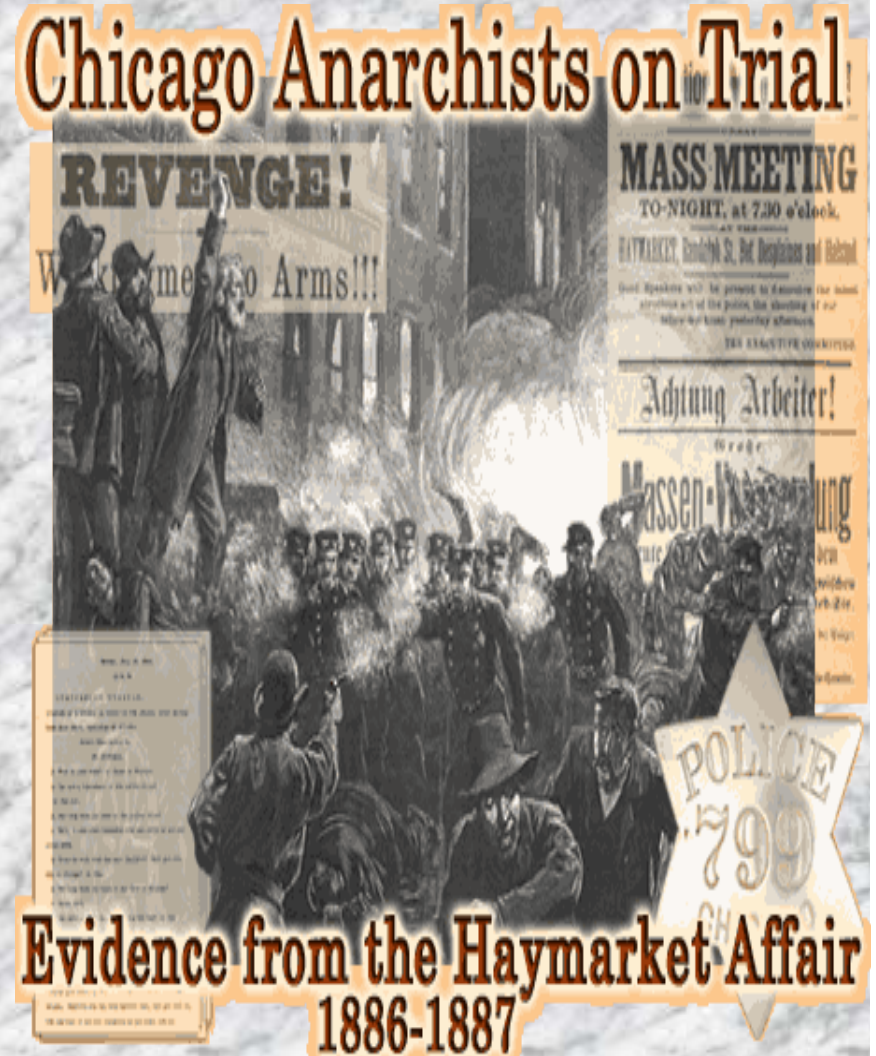
STRIKES TURN VIOLENT



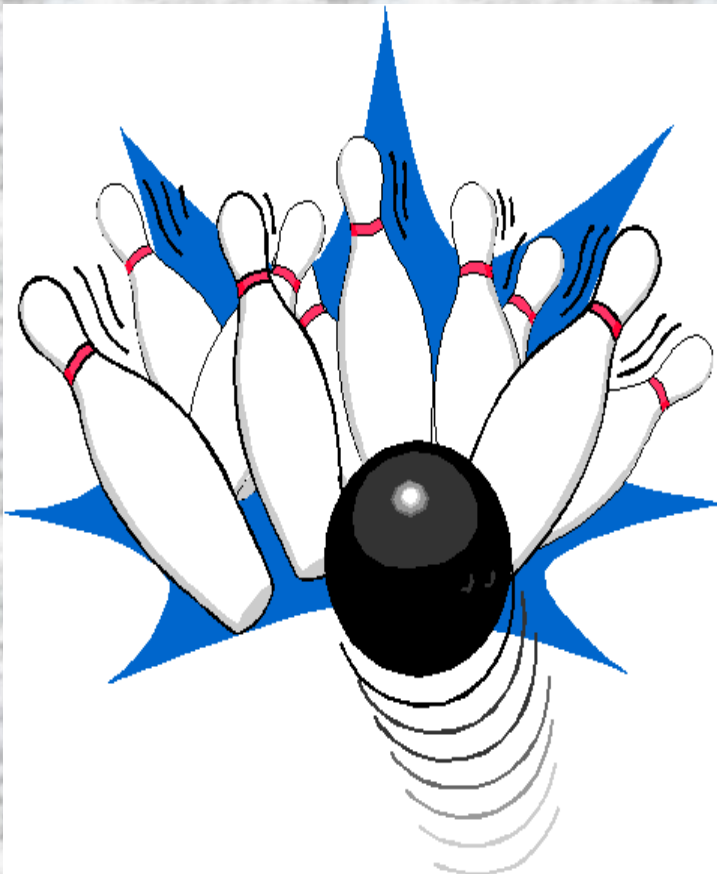
- Several strikes turned deadly in the late 19th century as workers and owners clashed
- ***The Great Strike of 1877:*** Workers for the Baltimore and Ohio Railroad struck to protest wage cuts
- Other rail workers across the country struck in sympathy
- Federal troops were called in to end the strike

THE HAYMARKET AFFAIR

- Labor leaders continued to push for change – and on **May 4, 1886** 3,000 people gathered at Chicago's Haymarket Square to protest police treatment of striking workers
- **A bomb exploded near the police line** – killing 7 cops and several workers
- Radicals were rounded up and executed for the crime



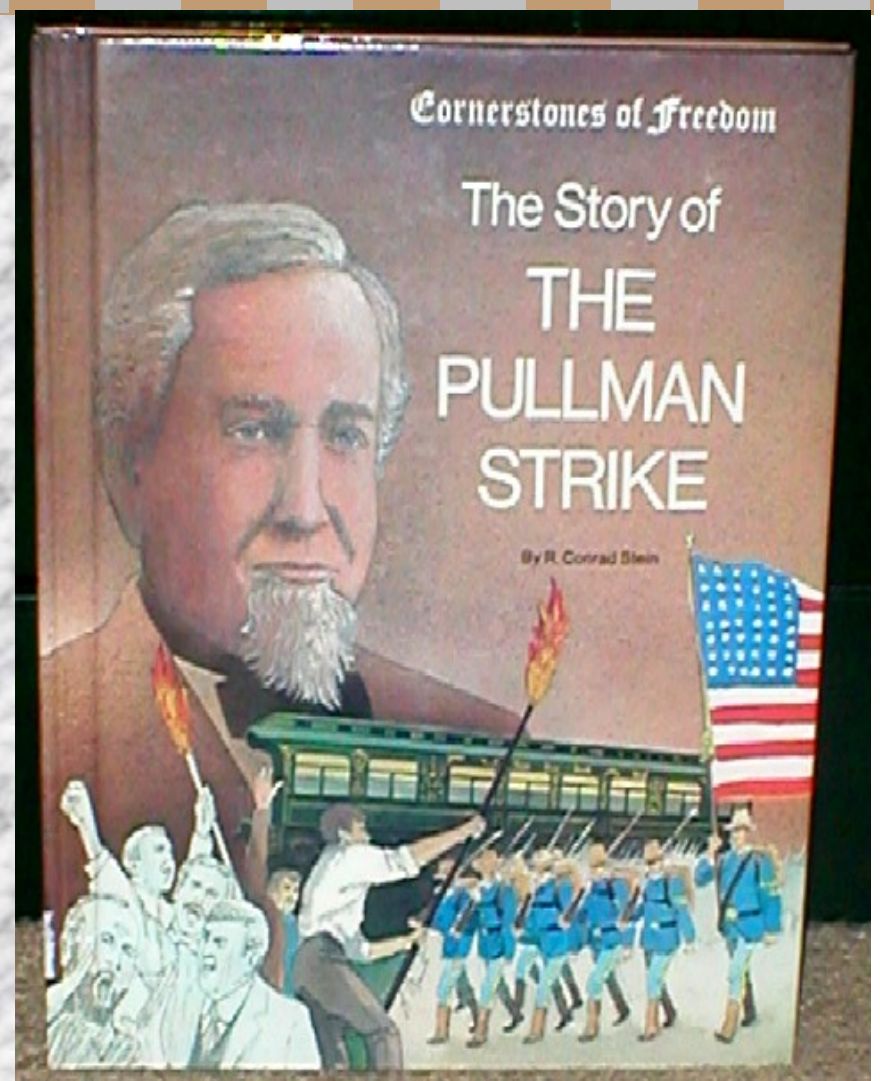
THE HOMESTEAD STRIKE



- Even **Andrew Carnegie** could not escape a workers strike
- Conditions and wages were not satisfactory in his Steel plant in Pennsylvania and workers struck in 1892
- Carnegie hired Pinkerton Detectives to guard the plant and allow scabs to work
- **Detectives and strikers clashed – 3 detectives and 9 strikers died**
- The National guard restored order – workers returned to work

THE PULLMAN STRIKE

- After the **Pullman Company** laid off thousands of workers and cut wages, the workers went on **strike** in the spring of **1894**
- **Eugene Debs** (American Railroad Union) tried to settle dispute which turned violent
- **Pullman hired scabs and fired the strikers** – Federal troops were brought in
- Debs was jailed



WOMEN ORGANIZE



Mother Jones

- Although women were barred from most unions, they did organize behind powerful leaders such as **Mary Harris Jones**
- She organized the United Mine Workers of America
- Mine workers gave her the nickname, “**Mother Jones**”
- **Pauline Newman** organized the International Ladies Garment Workers Union at the age of 16

EMPLOYERS FIGHT UNIONS

- The more powerful the unions became, the more employers came to fear them
- **Employers often forbade union meetings** and refused to recognize unions
- Employers forced new workers to **sign “Yellow Dog Contracts,”** swearing that they would never join a union
- Despite those efforts, **the AFL had over 2 million members by 1914**

