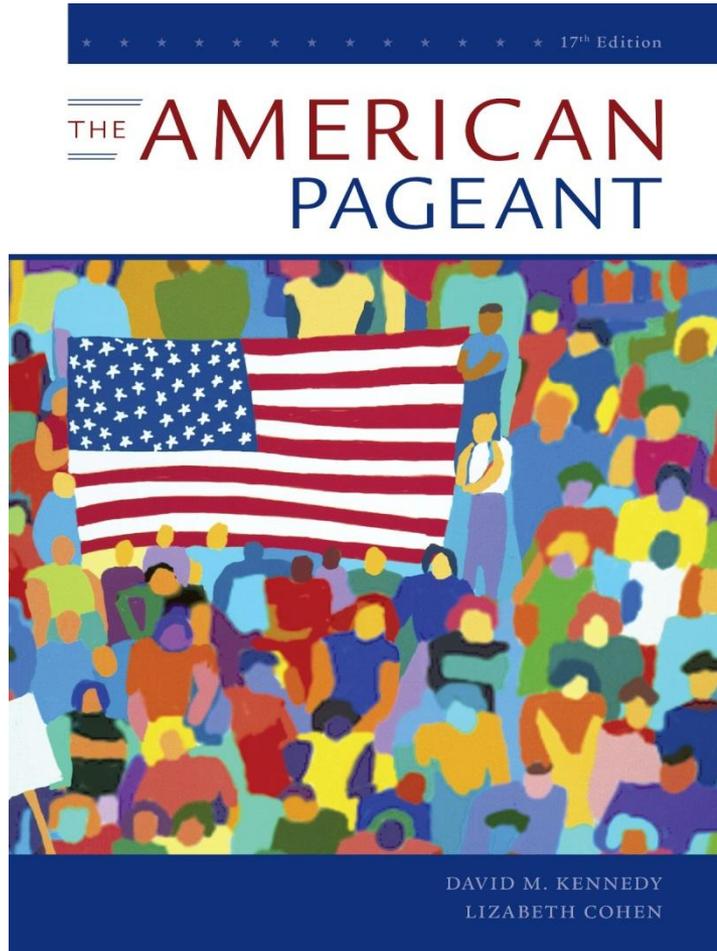


# The American Pageant

Seventeenth edition



## CHAPTER 22

The Industrial Era Dawns, 1865–  
1900

# 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 life 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.



# FACTORS FOR INDUSTRIAL GROWTH

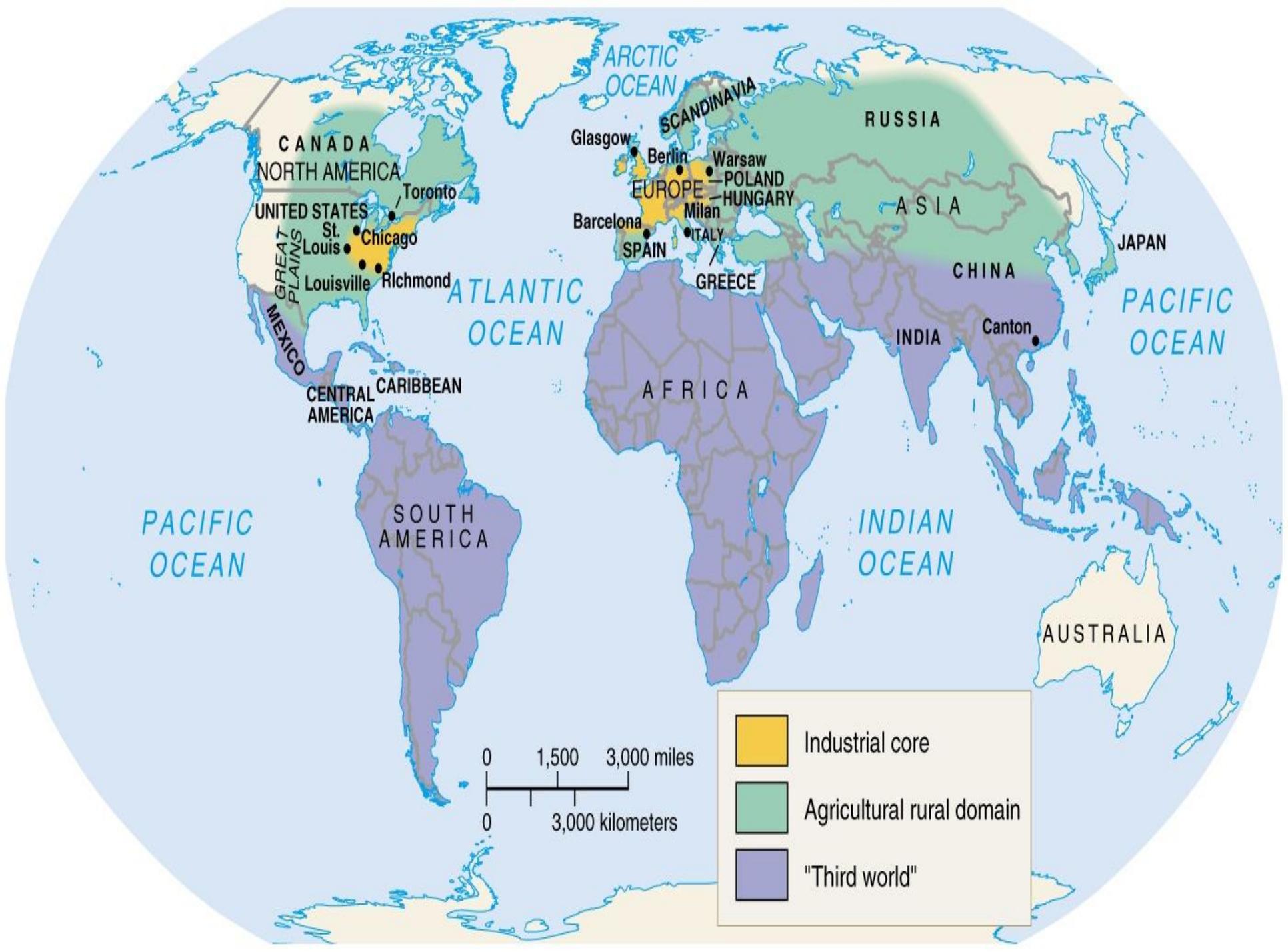
- **Natural Resources**
  - **Capital**  
**(gold, silver and banking)**
- **US Government support**
- **Desire: Creative inventors and industrialists** 
- **Transportation System** 
- **Labor force (immigrants)** 

# **NEW INDUSTRIES**

- **Oil**
- **Mining**
- **Sugar**
- **Steel**
- **Meatpacking**
- **Beef/Cattle**
- **Construction**
- **Telegraph**
- **Telephone**
- **Railroad**
- **Marketing**
- **Sewing Machine**
- **Vacuums**
- **Typewriters**
- **Automobile**
- **Salt**
- **Coal**
- **Agricultural**







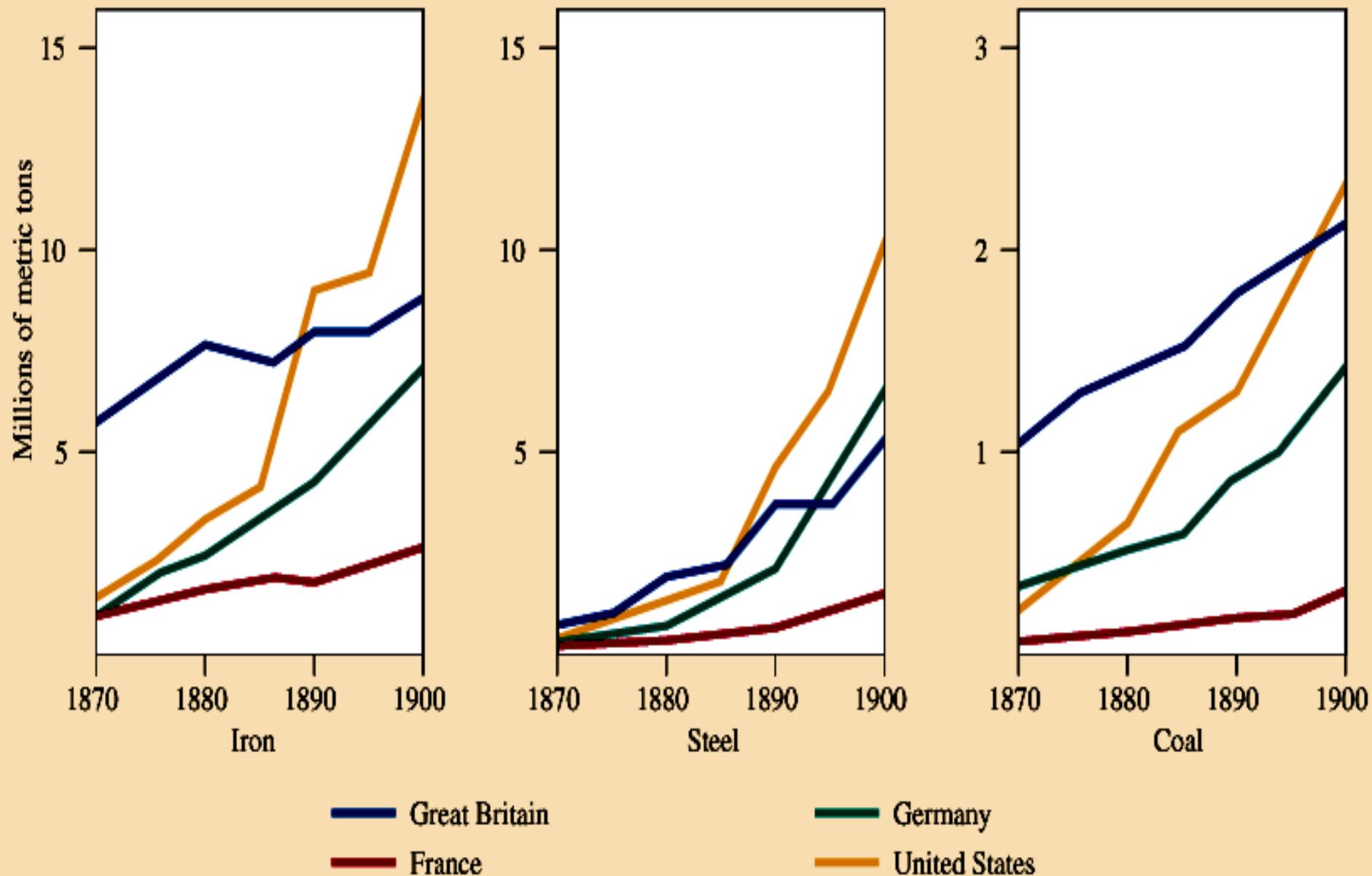


Figure 17.3 Iron, Steel, and Coal Production 1870–1900

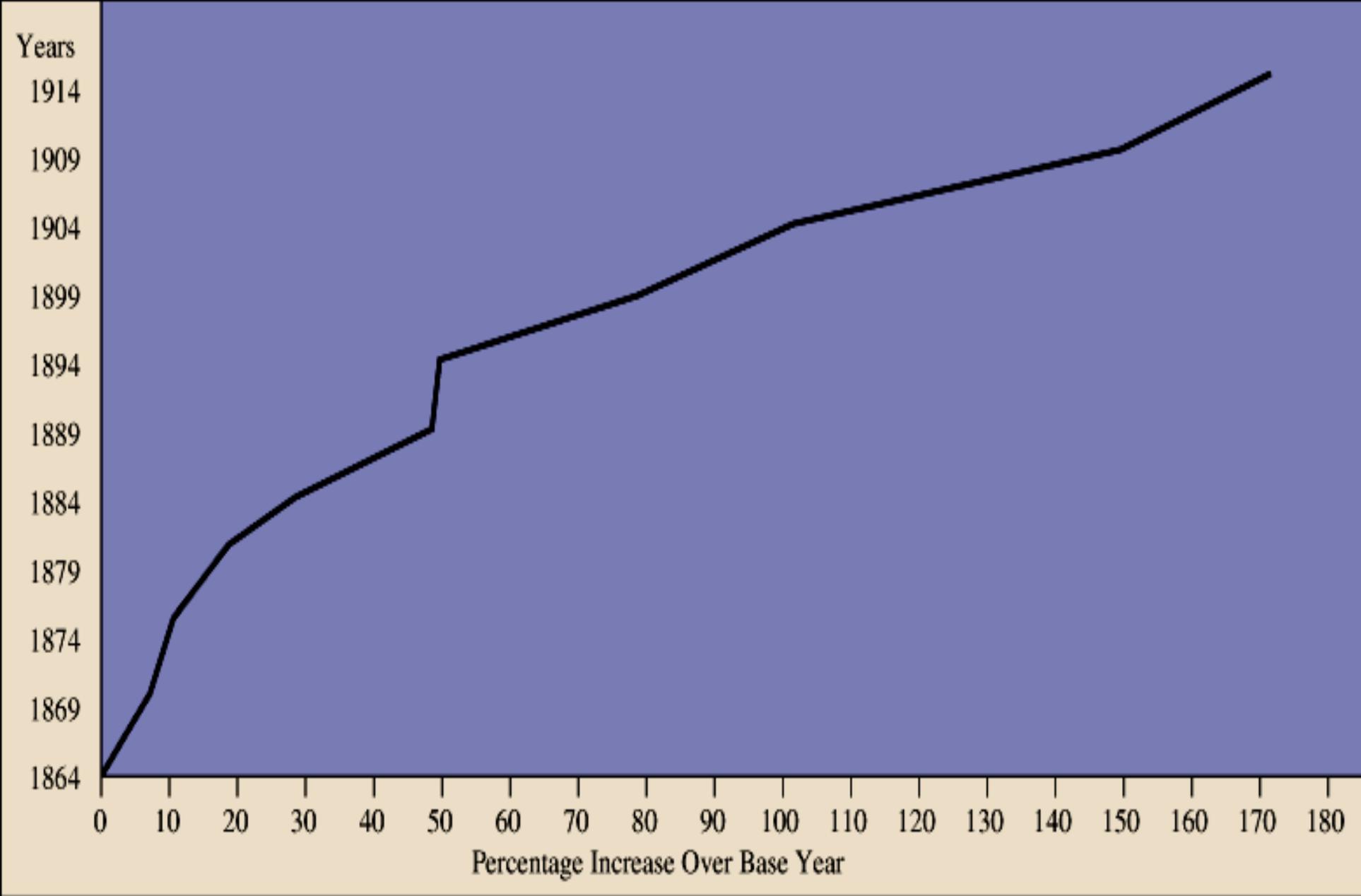
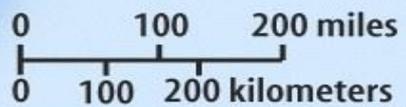


Figure 17.2 Index of U.S. Manufacturing Production, 1864–1914

CANADA



**Iron and Steel Production, c. 1900**

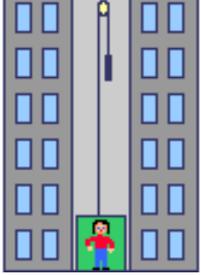
- Iron ore deposits
- Coal deposits
- U.S. major steel plants
- Railroads
- Main industrial belt, 1900
- Water route for ore



# KEY INVENTIONS

## BETWEEN 1860 TO 1900

ZoomSchool.com



- 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



Between 1800 to 1900, US Govt. issued 500,000 patents

# Immigrants from Europe

## European Immigration, 1870–1920

Number of immigrants  
(in thousands)

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

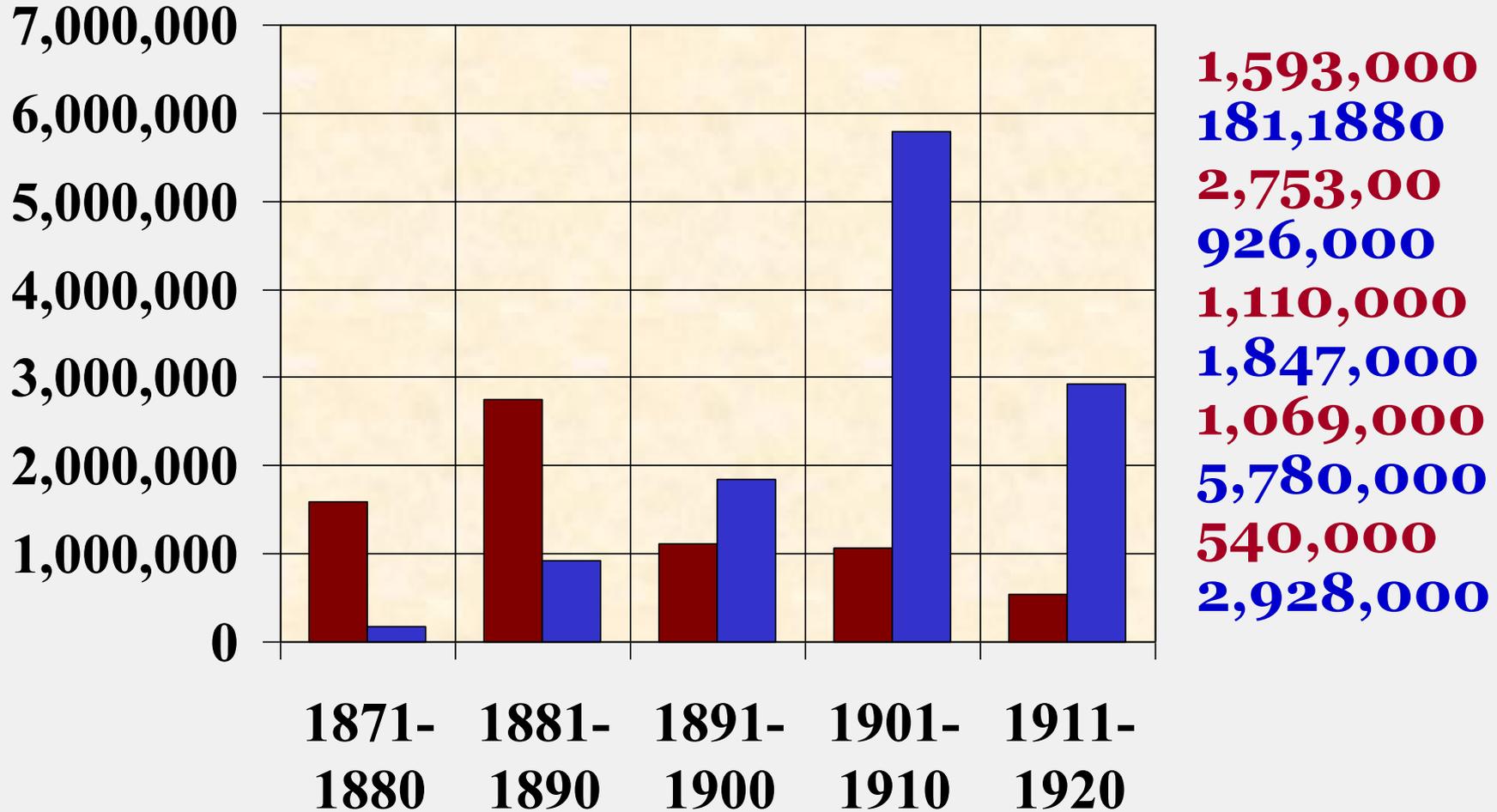
Europe	Europe	Europe	Europe
Great Britain	Germany	Russia	Italy
Ireland	Poland	Baltic States	Spain
Scandinavia	Czechoslovakia	Romania	Portugal
France	Yugoslavia	Bulgaria	Greece
Belgium	Austria-Hungary	European Turkey	

SOURCE: *Historical Statistics of the United States, Colonial Times to 1970*



# IMMIGRATION

Old New



**Old** = England and Germany

**New** = Southern Europe: Italy, Russia, Poland

# 22-1 THE IRON COLT BECOMES AN IRON HORSE (SLIDE 1 OF 4)

- Industrial development of United States:
  - Railroads
    - Outburst of railroad construction crucial
    - 1865: 35,000 miles of railways
    - 1900: 192,556 miles, much of it west of Mississippi (see Figure 22.1)
    - Transcontinental railroad building required government subsidies because so costly and risky
    - Construction of railway systems promised greater national unity and economic growth

CONTINENT AND COUNTRY

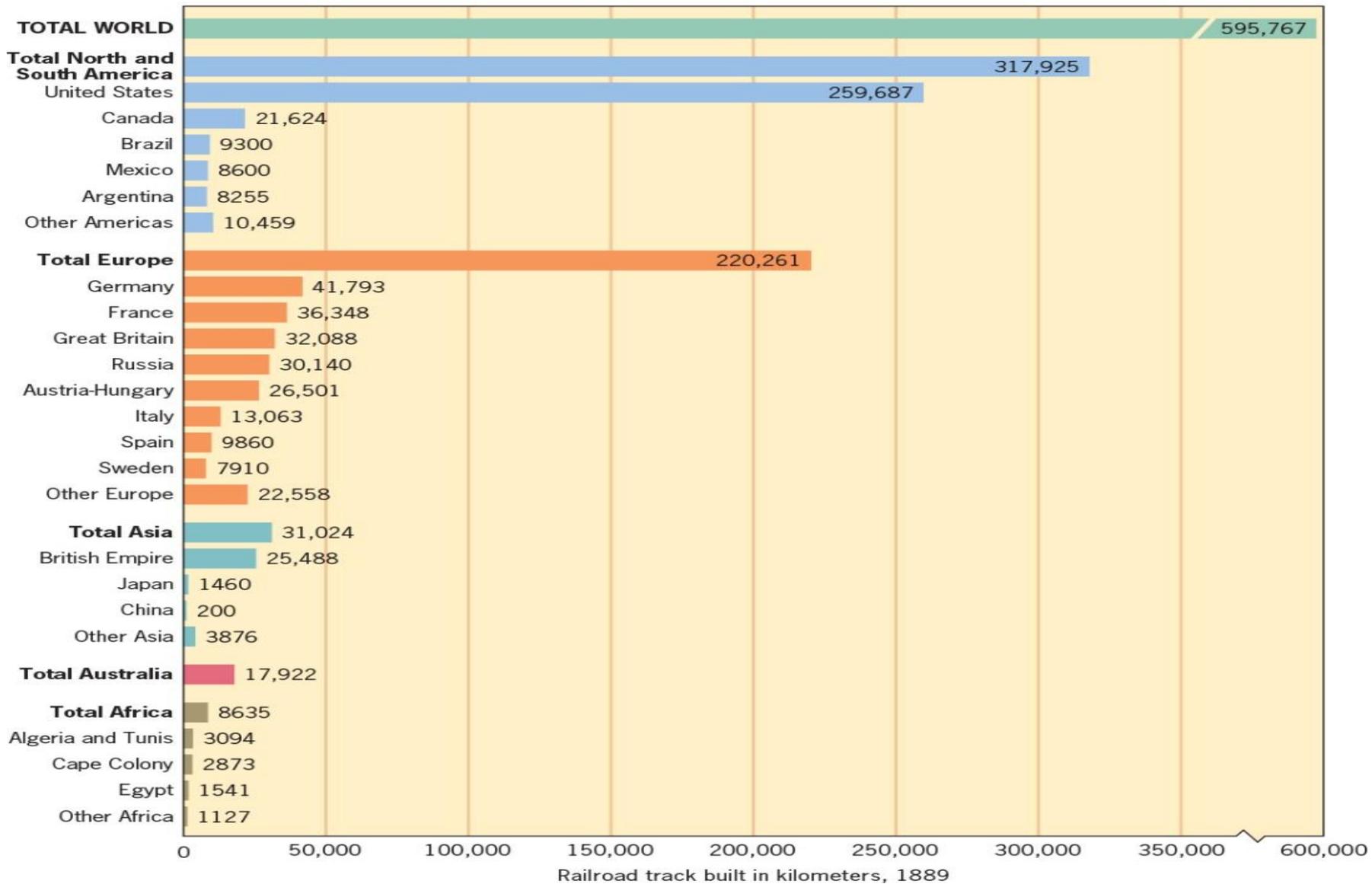
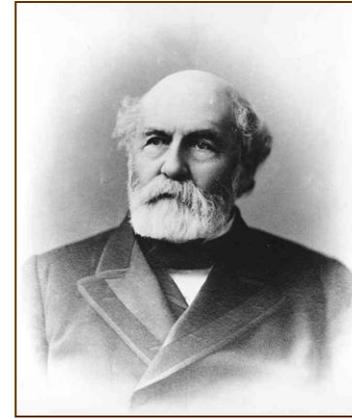


Figure 22-1 p497

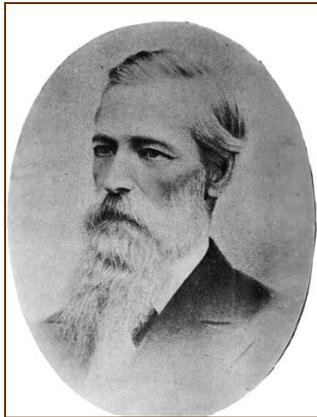
# “The Big Four” Railroad Magnates



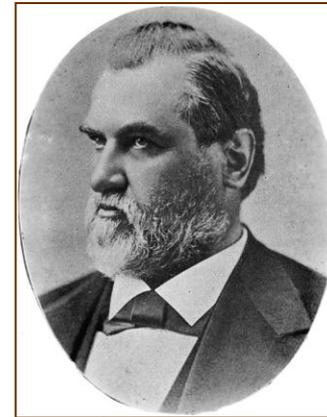
**Charles Crocker**



**Collis Huntington**



**Mark Hopkins**



**Leland Stanford**

# Promontory, Utah

CANADA



- Major railroads in 1870
- Major railroads built between 1870 and 1890

0 200 400 miles  
0 200 400 kilometers



MEXICO

ATLANTIC OCEAN

Gulf of Mexico

PACIFIC OCEAN

# 1st TRANSCONTINENTAL RAILROAD



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

1869. May 10th. 1869.

**GREAT EVENT**

Rail Road from the Atlantic to the Pacific

**GRAND OPENING**

**Union Pacific**

**RAIL ROAD.**

**PLATTE VALLEY ROUTE.**

PASSENGER TRAINS LEAVE

**OMAHA**

ON THE ARRIVAL OF TRAINS FROM THE EAST

**THROUGH TO SAN FRANCISCO**

In less than four days, avoiding the dangers of the sea!

Travelers for Pleasure, Health or Business

LUXURIOUS CARS & EATING HOUSES

**PULLMAN'S PALACE SLEEPING CARS**

GOLD, SILVER AND OTHER MINERS!

CHEYENNE for DENVER, CENTRAL CITY & SANTA FE

THROUGH TICKETS FOR SALE AT ALL PRINCIPAL RAILROAD OFFICES

Be Sure they Read via Platte Valley or Omaha

Company's Office 22 E. 4th St., opposite City Hall and Court House, Omaha, Nebraska.

W. P. GILNEY. JOHN F. HAY. J. B. HICK. P. S. WATSON.





Pacific Time



Mountain Time

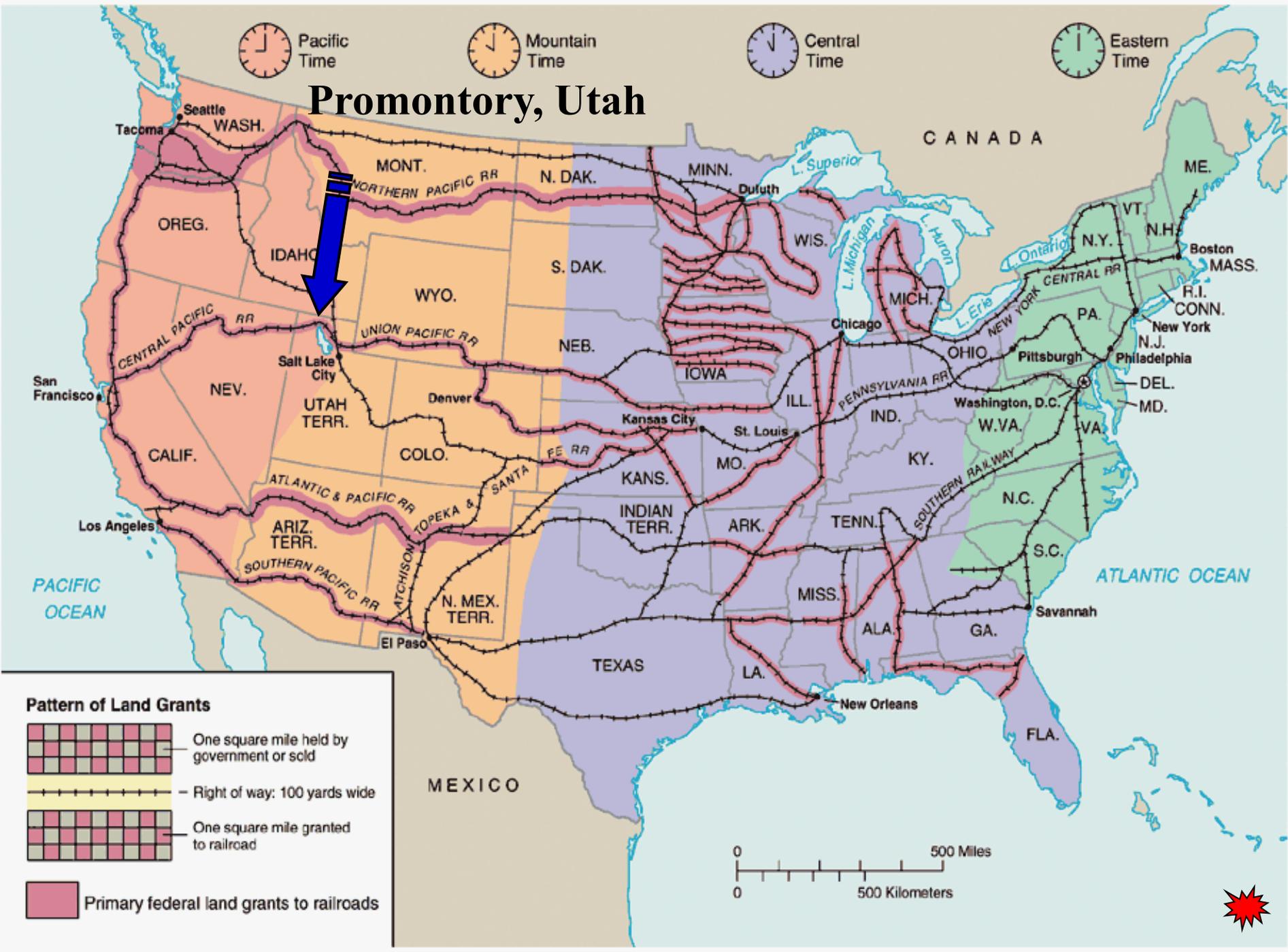


Central Time

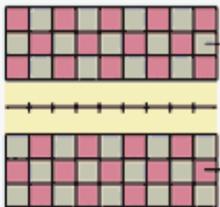


Eastern Time

# Promontory, Utah



## Pattern of Land Grants



One square mile held by government or sold

Right of way: 100 yards wide

One square mile granted to railroad

Primary federal land grants to railroads





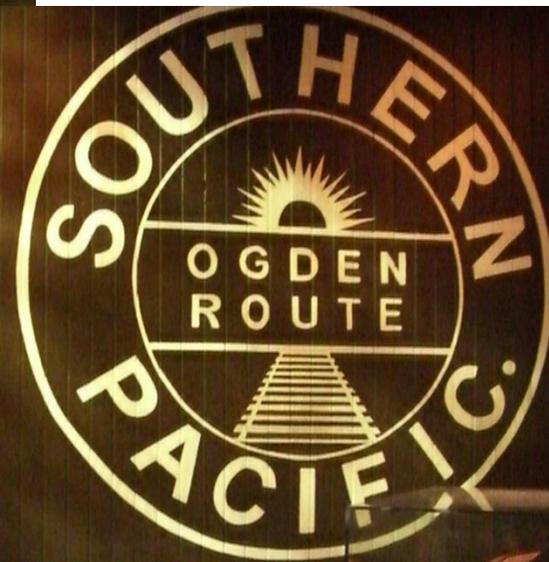
# RAILROAD INDUSTRY



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



WESTINGHOUSE  
BRAKE.



CENTRAL PACIFIC

WESTINGHOUSE  
BRAKE.



## 22-1 THE IRON COLT BECOMES AN IRON HORSE (SLIDE 2 OF 4)

- Arguments for military and postal needs impressed Congress to:
  - Advance liberal loans to two favored cross-continent companies in 1862
  - Add enormous donations of acreage paralleling tracks
  - Washington granted railroads 155,504,994 acres, and western states contributed 49 million—for total area larger than Texas (see Map 22.1)
  - Land grants given in broad belts along proposed railroad route
  - Within these belts, railroads could chose *alternate* mile-square sections in checkerboard fashion (see Map 22.1)

## 22-1 THE IRON COLT BECOMES AN IRON HORSE (SLIDE 3 OF 4)

- Until determination of precise route for tracks, railroads withheld *all* land from other uses
- President Cleveland ended foot-dragging practice in 1887:
  - Threw open to settlement still-unclaimed public portion of land-grant areas
- Government benefits:
  - Preferential rail rates for postal service and military traffic
  - Granting land a “cheap” way to subsidize much-desired transportation system:
    - Avoided new taxes for direct cash grants

## 22-1 THE IRON COLT BECOMES AN IRON HORSE (SLIDE 4 OF 4)

- Railroads could turn land into gold by using it as collateral for loans from private bankers or by selling it
- Average price of \$3 per acre
- Critics overlooked that land had relatively modest value until railroads had ribboned it with steel
- Frontier villages along route flourished into cities:
  - Those bypassed became “ghost towns”
  - Ambitious towns held out monetary incentives to builders:
    - Who sometimes blackmailed them into contributing more generously

## 22-2 SPANNING THE CONTINENT WITH RAILS (SLIDE 1 OF 6)

- In 1862 Congress started long-awaited line:
  - Argument for action was urgency of bolstering Union:
    - By binding Pacific Coast—especially gold-rich California—more security with rest of Republic
- Union Pacific Railroad:
  - Note word *Union*: thrust westward from Omaha
  - For each mile of track constructed:
    - Company granted twenty square miles of land
    - Alternating in 640-acre sections on either side of track
    - For each mile, builders given generous federal loans from \$16,000 on flat land to \$48,000 for mountainous country

## 22-2 SPANNING THE CONTINENT WITH RAILS (SLIDE 2 OF 6)

- Laying of rails began in earnest after Civil War
- Credit Mobilier:
  - Construction company that reaped fabulous profits
  - Pocketed \$73 million for \$50 million worth of breakneck construction
  - Bribed congressmen to look other way

## 22-2 SPANNING THE CONTINENT WITH RAILS (SLIDE 3 OF 6)

- Construction work:
  - Sweaty construction gangs, Irish “Paddies” (Patricks) worked at frantic pace
  - When Indians, whose land was seized, would attack, workers would use their rifles
  - Scores of people died
  - At end of tracks, workers tried to find relaxation in tented towns

## 22-2 SPANNING THE CONTINENT WITH RAILS (SLIDE 4 OF 6)

- Central Pacific Railroad:
  - Pushed east from boomtown Sacramento, through towering snow-clogged Sierra Nevada
  - Four far-seeing men—Big Four—chief financial backers of enterprise:
    - Enterprising ex-governor Leland Stanford of California, used his political connections
    - Collis P. Huntington, an adept lobbyist
    - Big Four operated two construction companies, pocketed tens of millions in profits, kept hands clean from bribes



## 22-2 SPANNING THE CONTINENT WITH RAILS (SLIDE 5 OF 6)

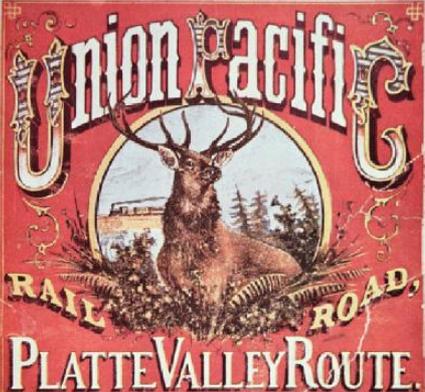
- Granted same princely subsidies as Union Pacific
- Had same incentive to haste
- Used ten thousand Chinese laborers:
  - Sweated from dawn to dusk
  - Proved to be cheap, efficient, and expendable
- Over Sierra Nevada, gained only a few inches each day tunneling through solid rock
- While those sledgehammering westward crossed open plains
- “Wedding of the rails” consummated near Ogden, Utah, 1869 with colorful ceremony
- Union Pacific built 1,086 miles; Central Pacific 689 miles

## 22-2 SPANNING THE CONTINENT WITH RAILS (SLIDE 6 OF 6)

- Results of railroad construction:
  - One of America's most impressive peacetime undertakings
  - Welded West Coast more firmly to Union
  - Facilitated flourishing trade with Asia
  - Penetrated arid barriers of deserts, paving way for phenomenal growth of Great West

1869. May 10th. 1869.

**GREAT EVENT**  
 Rail Road from the Atlantic to the Pacific  
**GRAND OPENING**  
 OF THE



**PLATTE VALLEY ROUTE.**

PASSENGER TRAINS LEAVE

**OMAHA**  
 ON THE ARRIVAL OF TRAINS FROM THE EAST.

**THROUGH TO SAN FRANCISCO**  
 In less than Four Days, avoiding the Dangers of the Sea!

Travelers for Pleasure, Health or Business  
Will find a Trip over the Great Mountain Healthy and Pleasant.

**LUXURIOUS CARS & EATING HOUSES**  
 ON THE UNION PACIFIC RAIL ROAD.

**PULLMAN'S PALACE SLEEPING CARS**  
RUN WITH ALL THROUGH PASSENGER TRAINS.

**GOLD, SILVER AND OTHER MINERS!**  
Now is the time to send your Portmanteau to Berkeley, Wagon City, Arizona, Washington, Dakota, Colorado, Utah, Oregon, Nevada, New Mexico, Idaho, Montana or California.

CONNECTIONS MADE AT  
**CHEYENNE for DENVER, CENTRAL CITY & SANTA FE**  
AT OGDEN AND CHURCH FOR ILLINOIS, MISSOURI, VIRGINIA CITY, SALT LAKE CITY AND ARIZONA.

**THROUGH TICKETS FOR SALE AT ALL PRINCIPAL RAILROAD OFFICES.**  
**Be Sure they Read via Platte Valley or Omaha**

Company's Office 22 La Salle St., opposite City Hall and Court House Square, Chicago.  
 CHARLES E. NICHOLS, Ticket Agent.

G. P. GILMAN      JOHN P. BARTY      J. BUDD      W. SNYDER

Union Pacific Railroad poster advertising the first transcontinental railroad across the USA, 1869 (colour litho), American School, (19th century)/Private Collection/Peter Newark American Pictures/The Bridgeman Art Library

## 22-3 BINDING THE COUNTRY WITH RAILROAD TIES (SLIDE 1 OF 2)

- Four other trans-continental lines completed:
  - None secured monetary loans from government
  - All (except Great Northern) received generous grants of land
- Northern Pacific—from Lake Superior to Puget Sound—finished in 1883
- Atchison, Topeka, and Santa Fe—from southwest deserts to California—finished in 1884
- Southern Pacific—New Orleans to San Francisco — consolidated in 1884

## 22-3 BINDING THE COUNTRY WITH RAILROAD TIES (SLIDE 2 OF 2)

- Great Northern—Duluth to Seattle—finished in 1893:
  - Creation of far-visioned Canadian American James Hill, probably greatest railroad builder
  - His enterprise so soundly organized it rode through later financial storms with flying colors
- Pioneer builders often overoptimistic
- Sometimes laid rails “from nowhere to nothing”
- Endless bankruptcies, mergers, and reorganizations

## 22-4 RAILROAD CONSOLIDATION AND MECHANIZATION

- Western lines facilitated by welding and expanding older eastern networks
  - **Notably New York Central: “Commodore” Cornelius Vanderbilt amassed fortune of \$100 million by offering superior service at lower rate**
  - Also pushed **switch from iron to steel rails**
  - Eastern networks moved to standard gauge track
  - Westinghouse air brake increased safety
  - Pullman Palace Cars

# CONRELIUS VANDERBILT



- **Formed a steamship company in 1829**

- **Dominated shipping along the Atlantic**

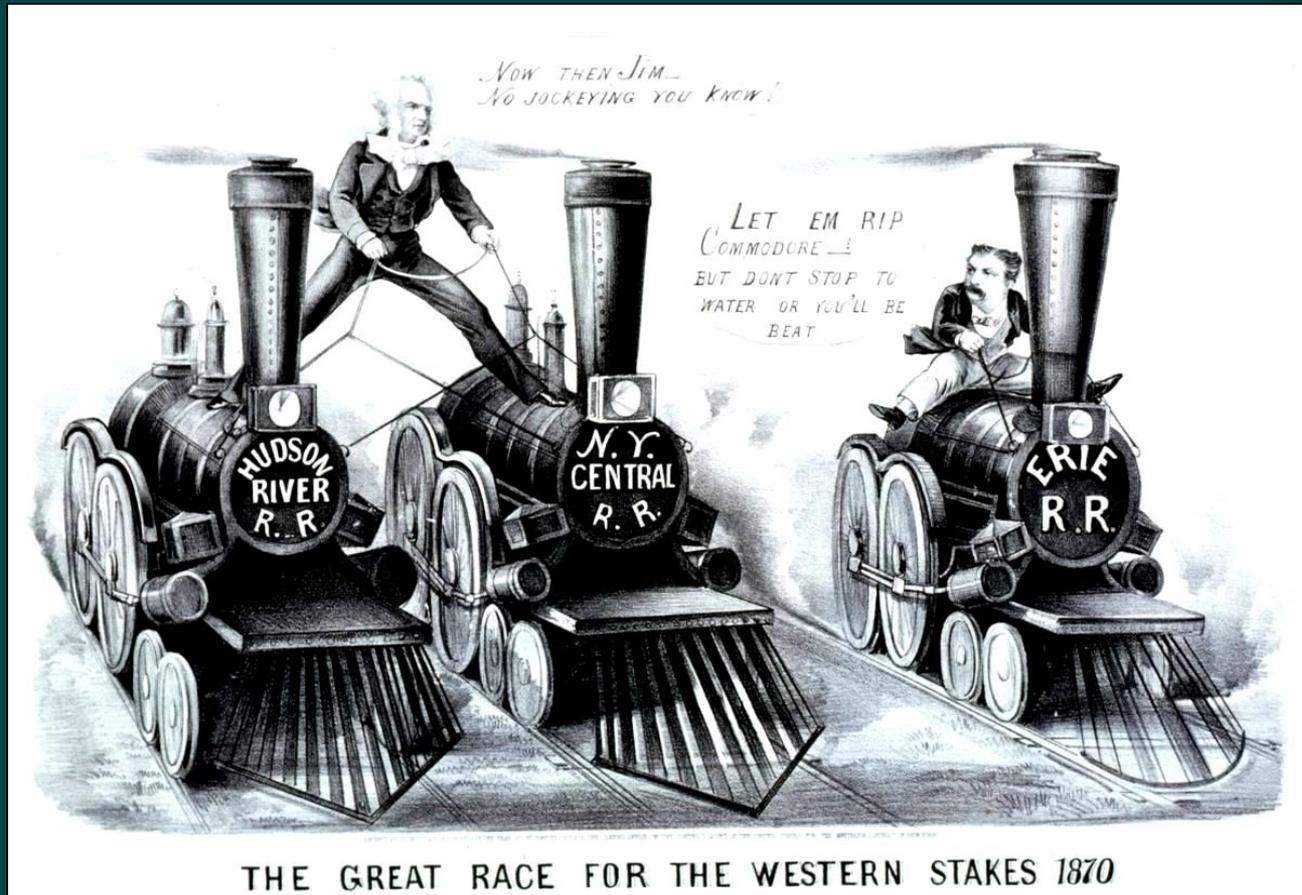
- **1849 established steamship that carried people from New York to San Francisco in Gold Rush days**

- **Leading U.S. steamship owner, nicknamed “The Commodore”**

- **Gained control of the Hudson River Railroad**

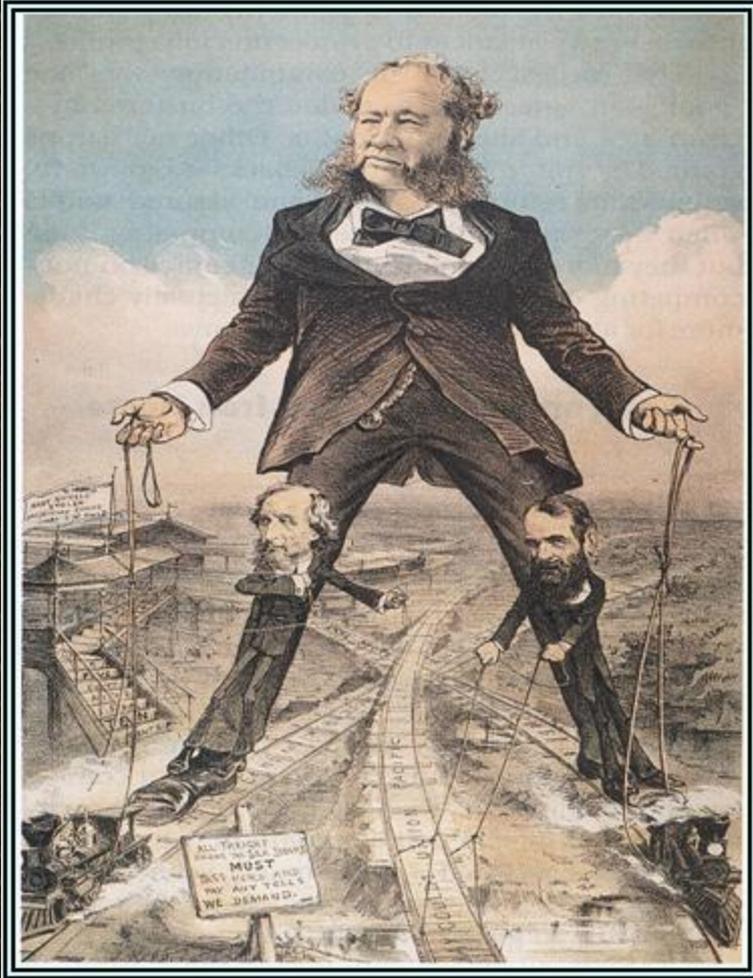


# Cornelius ["Commodore"] Vanderbilt



*Can't I do what I want with my money?*

# CONRELIUS VANDERBILT



- After Civil War Vanderbilt bought most railroad lines from New York to Chicago
- 1877, controlled 4,500 miles of railroads
- Worth over \$100 million
- **Philanthropist**--donated \$1 million to Vanderbilt University



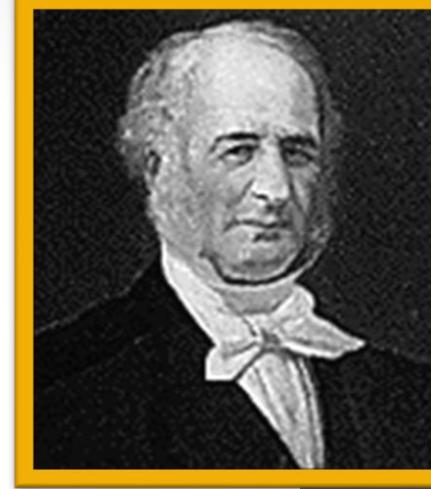
# Cornelius Vanderbilt's House

**"The Breakers" - Newport, R.I.**



# Cornelius Vanderbilt

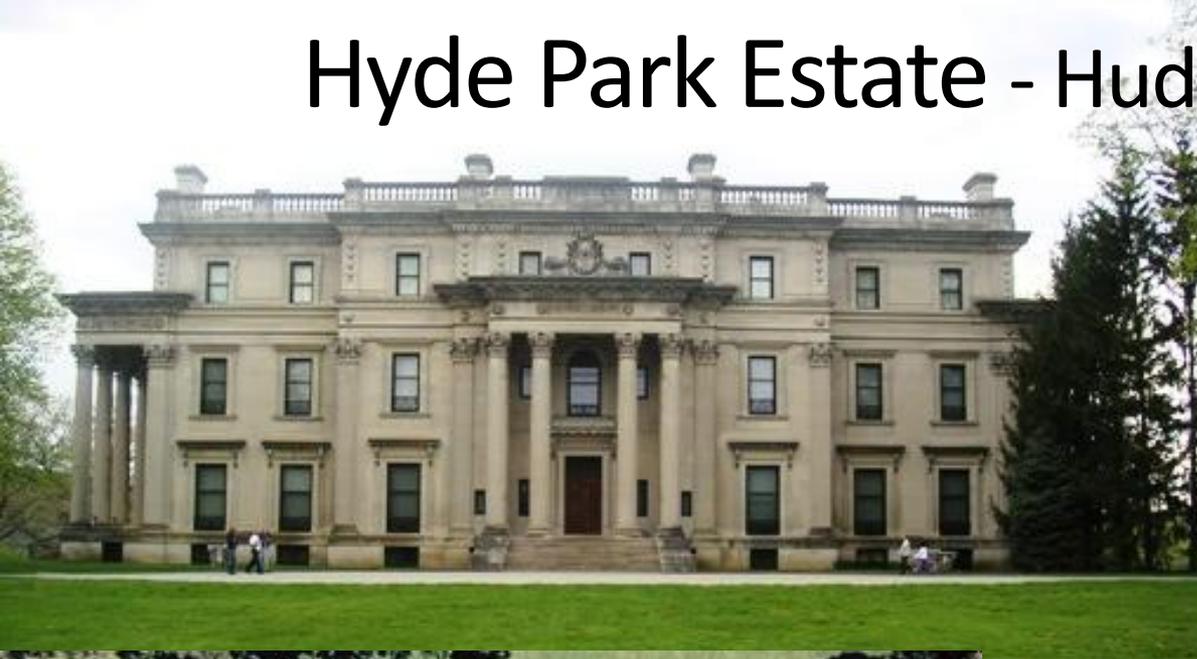
- Son William Henry had 4 sons



- Including Frederick William (Hyde Park Estate on the Hudson) and George Washington (Biltmore Estate in Asheville)



# Hyde Park Estate - Hudson River Valley



# Biltmore Estate – Asheville, NC



## 22-5 REVOLUTION BY RAILWAYS (SLIDE 1 OF 4)

- Railroads intimately touched countless phases of American life:
  - For first time, sprawling nation united in physical sense, bound with ribs of iron and steel
  - **America's biggest industry:**
    - **Employed more people than any other industry**
    - **Gobbled up nearly 20% of investment dollars from foreign and domestic investors**
  - Spurred amazing economic growth post-Civil War



Underwood Archives/Getty Images

## 22-5 REVOLUTION BY RAILWAYS (SLIDE 2 OF 4)

- Opened West with its wealth of resources
- Made America largest integrated national market in world
- Generated largest single source of orders for adolescent steel industry
- **Stimulated mining and agriculture in West**
  - **Clusters of farm settlements paralleled railroads**
- Railways boon to cities—led great cityward movement of late 1800s

## 22-5 REVOLUTION BY RAILWAYS (SLIDE 3 OF 4)

- Stimulated mighty stream of immigration
- Land also felt impact:
  - Especially broad, ecologically fragile midsection
  - Settlers plowed up tallgrass prairies and planted well-drained, rectangular cornfields
  - Range-fed cattle displaced buffalo, hunted to near-extinction
  - White pine forests disappeared into lumber to build houses and fences

- **Time itself bent to railroad's needs:**
  - **Until 1880s, each town had its own "local" time**
  - **On November 18, 1883, major rail lines decreed continent would be divided in four "time zones"**
  - **Most communities adopted "standard" time**
- **Railroads made millionaires:**
  - **Colossal wealth amassed by stock speculators and railroad wreckers**



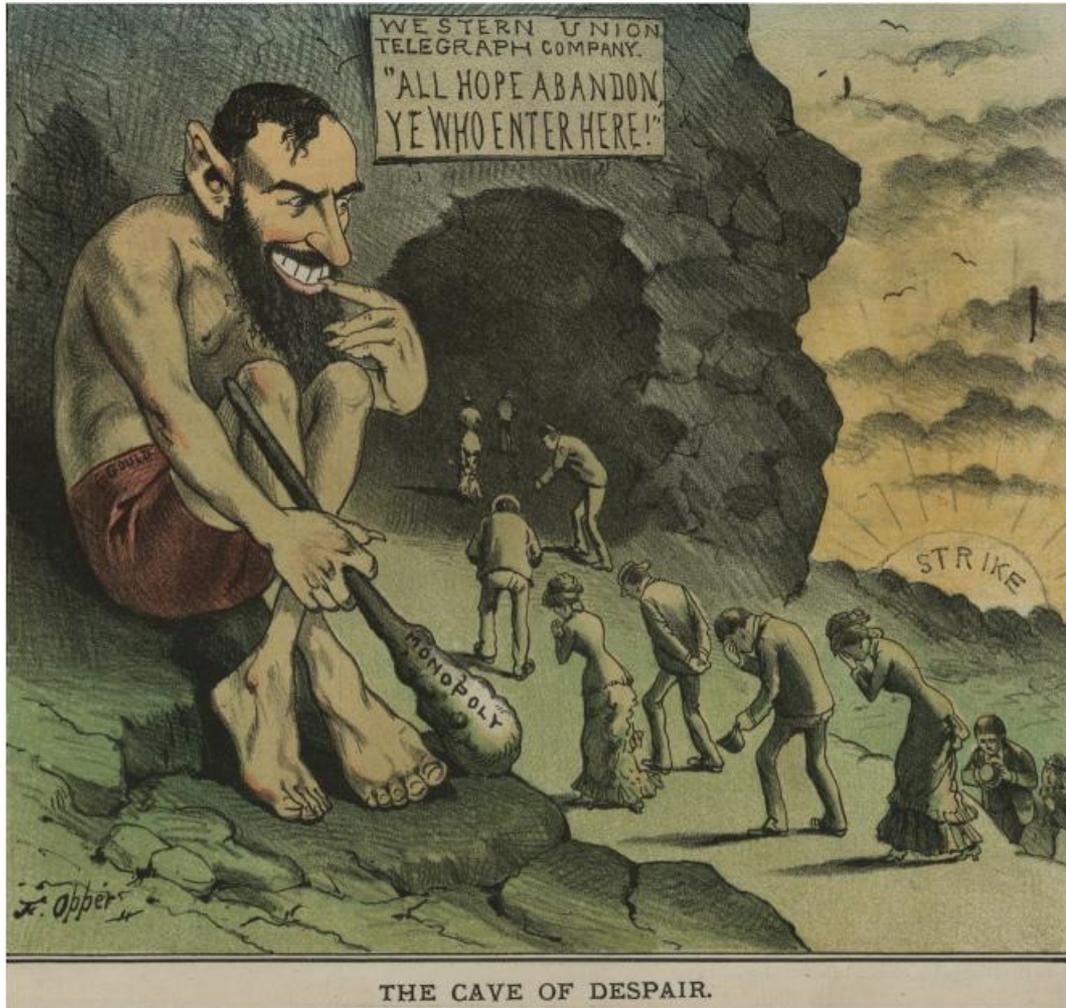
Map 22-1 p498

## 22-6 WRONGDOING IN RAILROADING (SLIDE 1 OF 3)

- Time itself bent to railroad's needs:
  - Until 1880s, each town had its own "local" time
  - On November 18, 1883, major rail lines decreed continent would be divided in four "time zones"
  - Most communities adopted "standard" time
- Railroads made millionaires:
  - Colossal wealth amassed by stock speculators and railroad wreckers

## 22-6 WRONGDOING IN RAILROADING (SLIDE 2 OF 3)

- Railroads forced to charge extortionate rates and wage competitive battles to pay off financial obligations
- Public interest trampled by railroad titans who waged brutal wars
- Railroaders blandly bought and sold people:
  - Bribed judges and legislatures
  - Employed arm-twisting lobbyists
  - Elected their own “creatures” to high offices
  - Showered free passes on journalists and politicians in West
  - For a time, virtual industrial monarchs



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(digital file from original print)

# 22-6 WRONGDOING IN RAILROADING (SLIDE 3 OF 3)

- These industrial monarchs:
  - Manipulated huge national monopoly:
    - Exercised more direct control over people than president—with no limit to four year terms
    - Eventually moved from cutthroat competition to cooperation
    - Entered into defensive alliances to protect profits
  - Early form of combination was the “pool”:
    - Agree to divide business in given area and share profits
  - Granted secret rebates or kickbacks to large shippers:
    - Slashed rates on competing lines—made up difference on noncompeting lines
    - Result = small farmers paid higher rates than large shippers

## 22-7 GOVERNMENT BRIDLES THE IRON HORSE (SLIDE 1 OF 4)

- American people quick to respond to political injustice, but slow to combat economic injustice:
  - Dedicated to free enterprise and principle that competition is soul of trade
  - Cherished pride in progress
  - Remembered Jefferson's hostility to government interference with business
  - Above all, "American dream": hope that in catch-as-catch-can economic system, anyone might become a millionaire

## 22-7 GOVERNMENT BRIDLES THE IRON HORSE (SLIDE 2 OF 4)

- Under pressure from Grange (Patrons of Husbandry)—organized agrarian groups:
  - Many Midwestern legislatures tried to regulate railroads, but:
    - In ***Wabash, St. Louis and Pacific Railroad Company v. Illinois*** (1886):
      - Supreme Court decreed individual states had no power to regulate *interstate* commerce
      - If mechanical monster to be corralled, federal government would have to do it
    - Cleveland did not look kindly on effective regulation

# 22-7 GOVERNMENT BRIDLES THE IRON HORSE (SLIDE 3 OF 4)

- Epochal **Interstate Commerce Act (1887)**:
  - Prohibited rebates and pools
  - Required railroads to publish rates openly
  - Forbade unfair discrimination against shippers
  - Outlawed charging more for short haul than long one over same line
  - Most important—set up Interstate Commerce Commission (ICC) to administer and enforce law
  - Despite acclaim, ICC Act not represent a popular victory over corporate wealth

# 22-7 GOVERNMENT BRIDLES THE IRON HORSE (SLIDE 4 OF 4)

- What ICC legislation did do was:
  - Provide orderly forum where competing business interests could resolve conflicts in peaceable ways
  - ICC Act tended to stabilize, not revolutionize, existing business system
  - Act still ranks as red-letter law:
    - First large-scale attempt by Washington to regulate business in interest of society at large
    - Heralded arrival of independent regulatory commissions:
      - Which commit government to monitoring private economy to protect public interest

# William Le Baron Jenney



 1832 - 1907

 "Father of  
the Modern  
Skyscraper"

**W. Le Baron  
Jenney:**

**Central  
Y.M.C.A.,  
Chicago,  
1891**



# Louis Sullivan

 1856 - 1924

 The Chicago  
School of  
Architecture

 *Form follows  
function!*

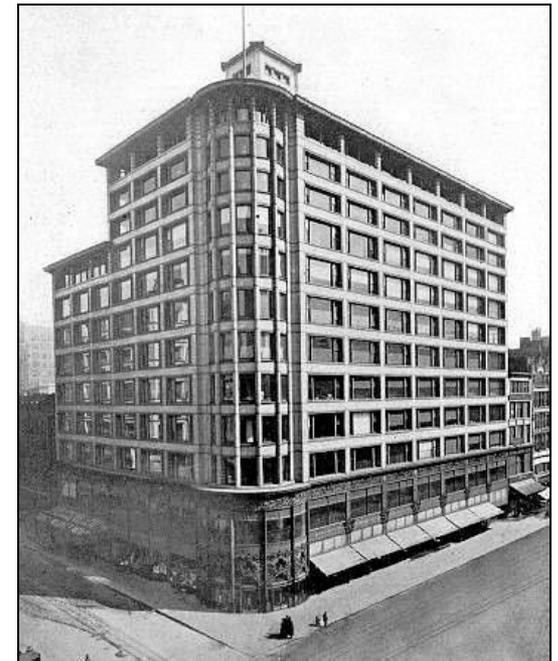


# Louis Sullivan: Bayard Bldg.

NYC, 1897



# Louis Sullivan: Carson, Pirie, Scott Dept. Store, Chicago, 1899



# D. H. Burnham



 1846 - 1912

 Use of steel  
as a super  
structure.



**Flatiron  
Building  
NYC – 1902**

**D. H.  
Burnham**

# DH Burnham: Fisher [Apt.] Bldg, Chicago, 1896



# D. H. Burnham: Marshall Fields Dept. Store, 1902



# DH Burnham: Railway Exchange, Chicago, 1904



NEW YORK

CITY:

"Gotham"

# New York City Architectural Style: 1870s-1910s

1. The style was less innovative than in Chicago.
2. NYC was the source of the capital for Chicago.
3. Most major business firms had their headquarters in NYC → their bldgs. became “logos” for their companies.
4. NYC buildings and skyscrapers were taller than in Chicago.



**Western  
Union Bldg.,  
NYC - 1875**

**Manhattan  
Life  
Insurance  
Bldg.**

**NYC - 1893**



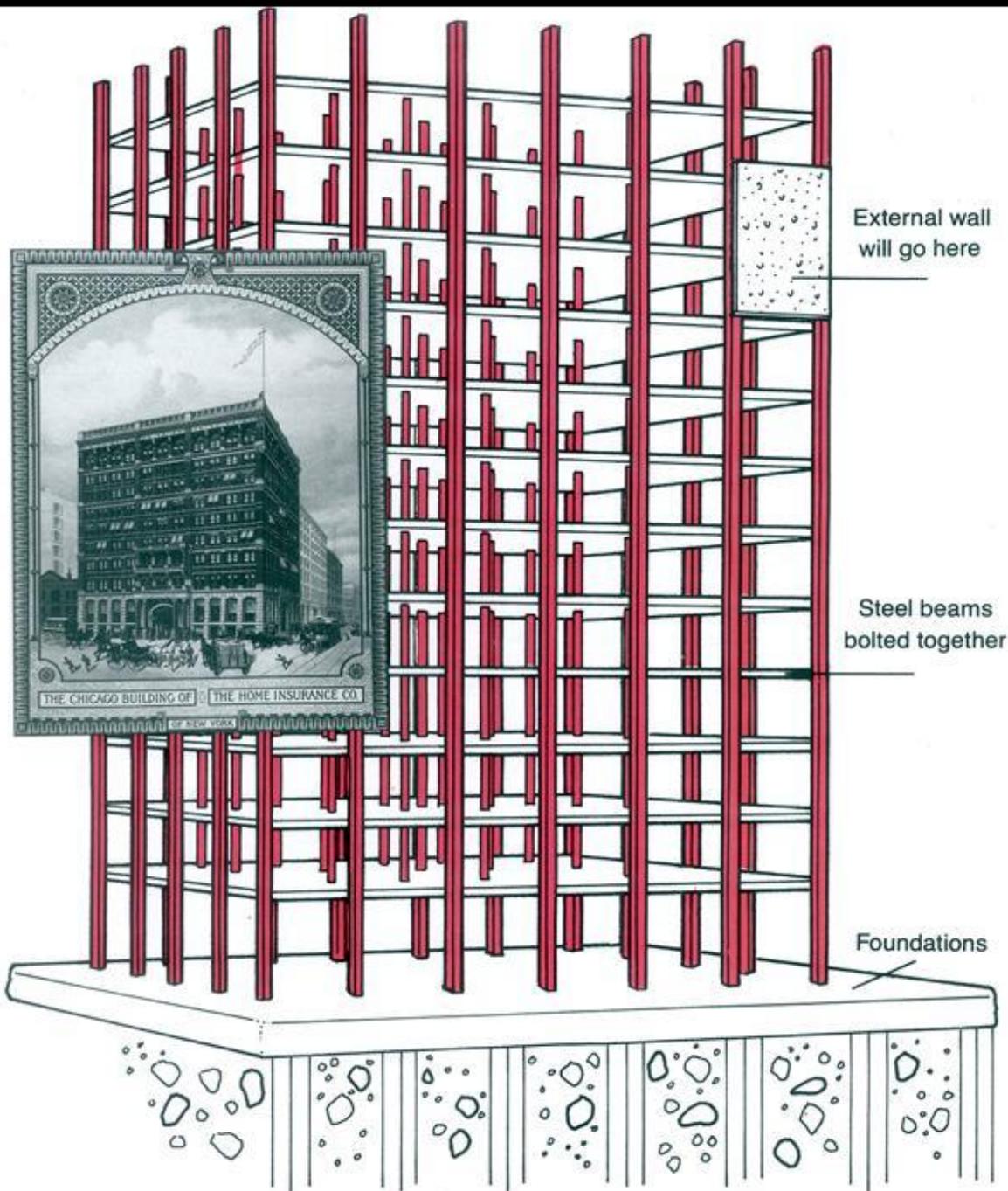


**Singer  
Building  
NYC - 1902**

# Woolworth Bldg.

NYC - 1911





Superstructure of Skyscraper

❖ 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.



## 22-8 MIRACLES OF MECHANIZATION (1 OF 6)

- Postwar industrial expansion:
  - 1860—Republic ranked fourth in world
  - 1894—Republic ranked first
  - Why sudden upsurge:
    - Liquid capital, once scarce, now abundant
    - **Word *millionaire* had not been coined until 1840s**
    - 1861: only a handful of millionaires
    - Civil War profiteering created huge fortunes which combined with investments from foreign capitalists
    - Post-1865, massive foreign investment in U.S.

## 22-8 MIRACLES OF MECHANIZATION (2 OF 6)

- Most foreign investment went to private ventures, not public coffers
- Investors from Britain, followed by France, Germany, the Netherlands and Switzerland:
  - Owned all or part of an American business
  - Or they lent money to European companies that invested in U.S. industries
  - Either way Europeans content to let Americans run business—until hard times hit—then they demanded more say over company operations or government policies

## 22-8 MIRACLES OF MECHANIZATION (3 OF 6)

- Innovations in transportation fueled growth:
  - Brought nation's abundant resources—coal, oil, iron—to factory door
  - Shipping through Great Lakes carried rich iron deposits of Mesabi Range, Minnesota to Chicago and Cleveland for refining
    - Became cornerstone of vast steel empire
  - Copper, bauxite, and zinc made similar journeys from mine to manufacture
- Sheer size of American market encouraged innovators to invent mass-production methods:
  - Anyone, who could make appealing new product in large quantities and figure how to market it, thrived

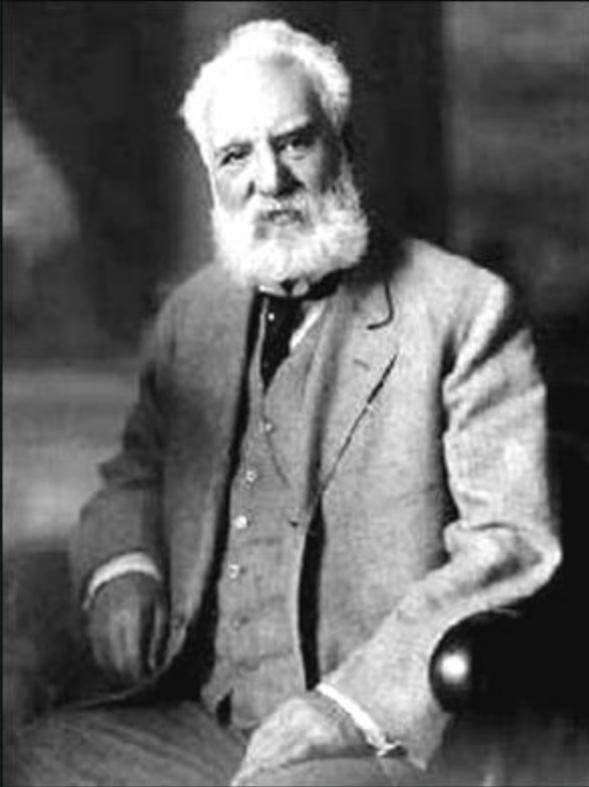
## 22-8 MIRACLES OF MECHANIZATION (4 OF 6)

- Industrials continued to refine pre-Civil War “American System”—use specialized machinery to make interchangeable parts:
  - Culminated in Henry Ford’s fully moving assembly line for Model T
- Captains of industry had major incentive to invent machines:
  - Replaced expensive skilled labor with cheap unskilled workers
  - Unskilled workers plentiful because of massive immigration

## 22-8 MIRACLES OF MECHANIZATION (5 OF 6)

- Brilliant ideas gave rise to whole new businesses:
  - Between 1860–1890, some 440,000 patents issued
  - Business operations facilitated by cash register, stock ticker, typewriter
  - Refrigerator car, electric dynamo, and electric railway speeded urbanization
  - **One of most ingenious inventions was telephone—Alexander Graham Bell, 1876:**
    - Created gigantic communication network
    - Social impact when lure of “number please” took women away from stove to switchboard

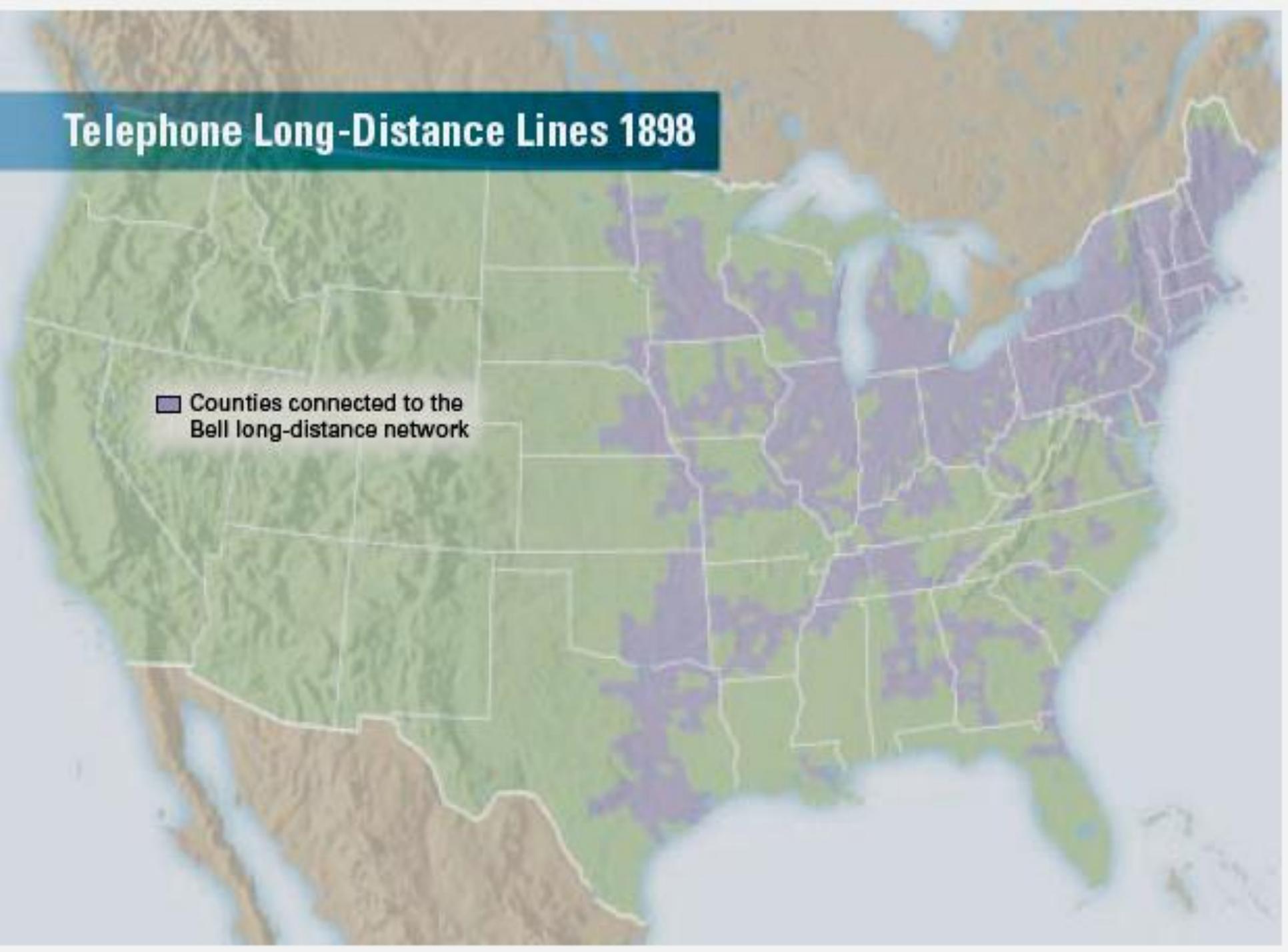
# Alexander Graham Bell



Telephone (1876)

## Telephone Long-Distance Lines 1898

■ Counties connected to the Bell long-distance network





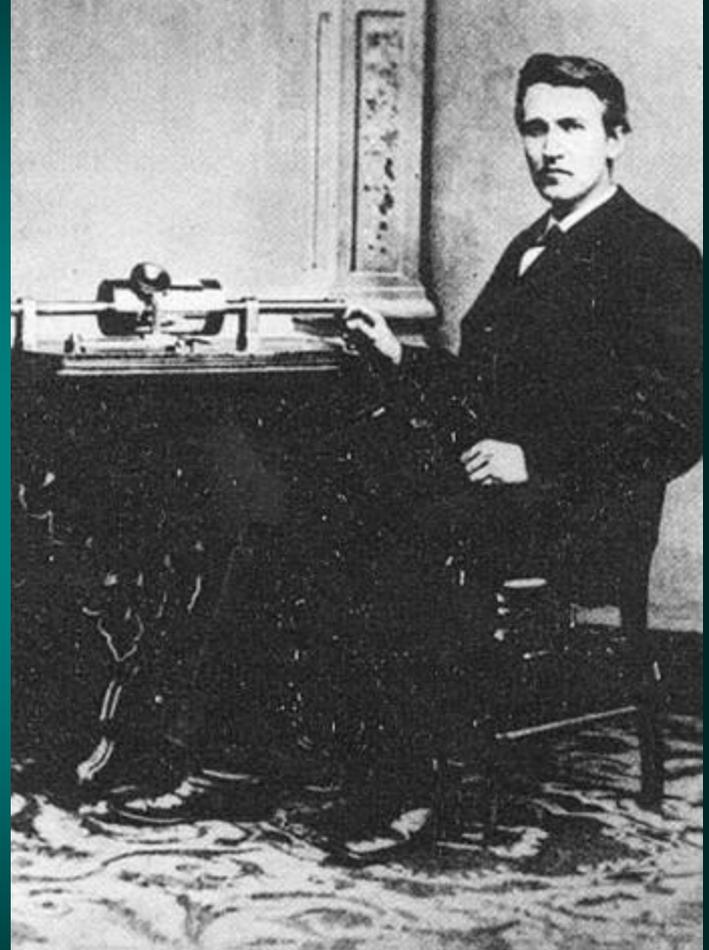
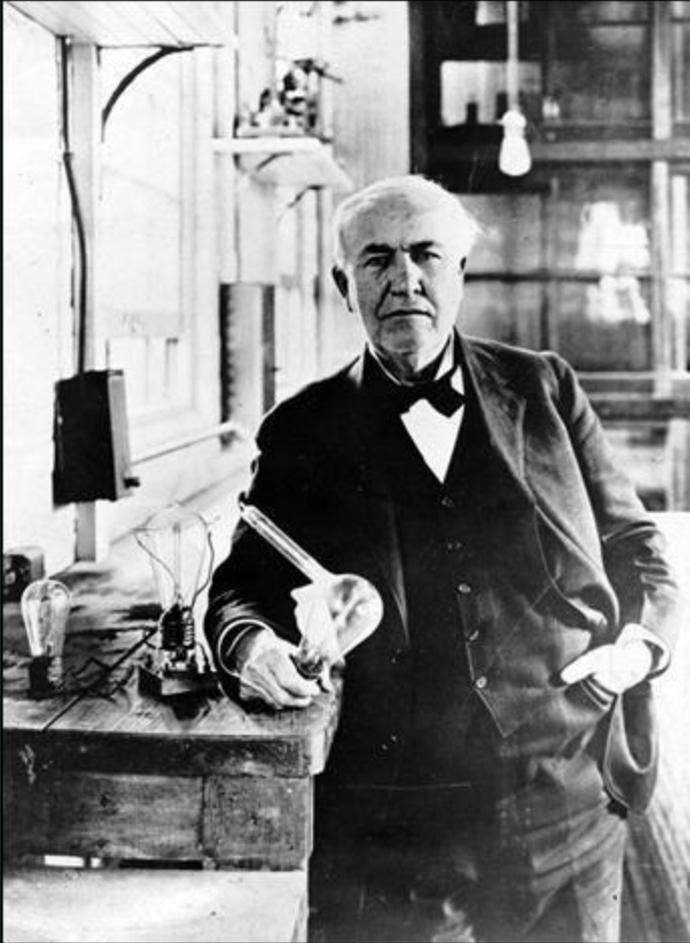
## 22-8 MIRACLES OF MECHANIZATION (6 OF 6)

- Most versatile inventor
- —**Thomas Alva Edison (1847–1931):**
  - Severe deafness enabled him to concentrate without distraction
  - Gifted tinkerer and tireless worker, not a pure scientist
  - Wondrous devices poured out of his “invention factory” in New Jersey—phonograph, mimeograph, dictaphone, and moving picture
  - Best known for his perfection in 1879 of electric lightbulb
    - Turned night into day and transformed human habits
    - People who slept average of 9 hours a night now slept just a bit more than 7



Library of Congress Prints and Photographs Division [LCUSZ62-35005]

# Thomas Alva Edison



**"Wizard of Menlo Park"**

# "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 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

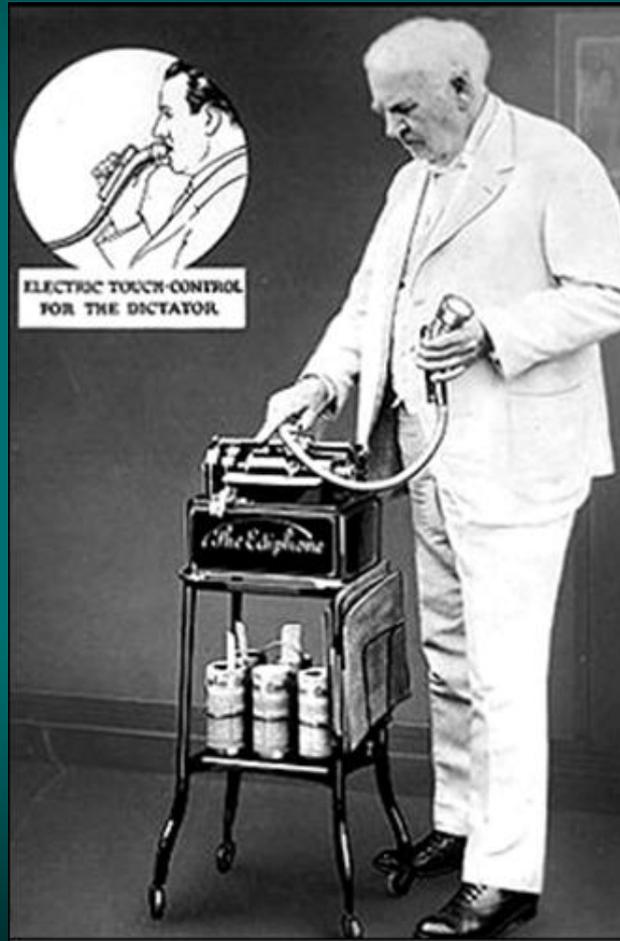




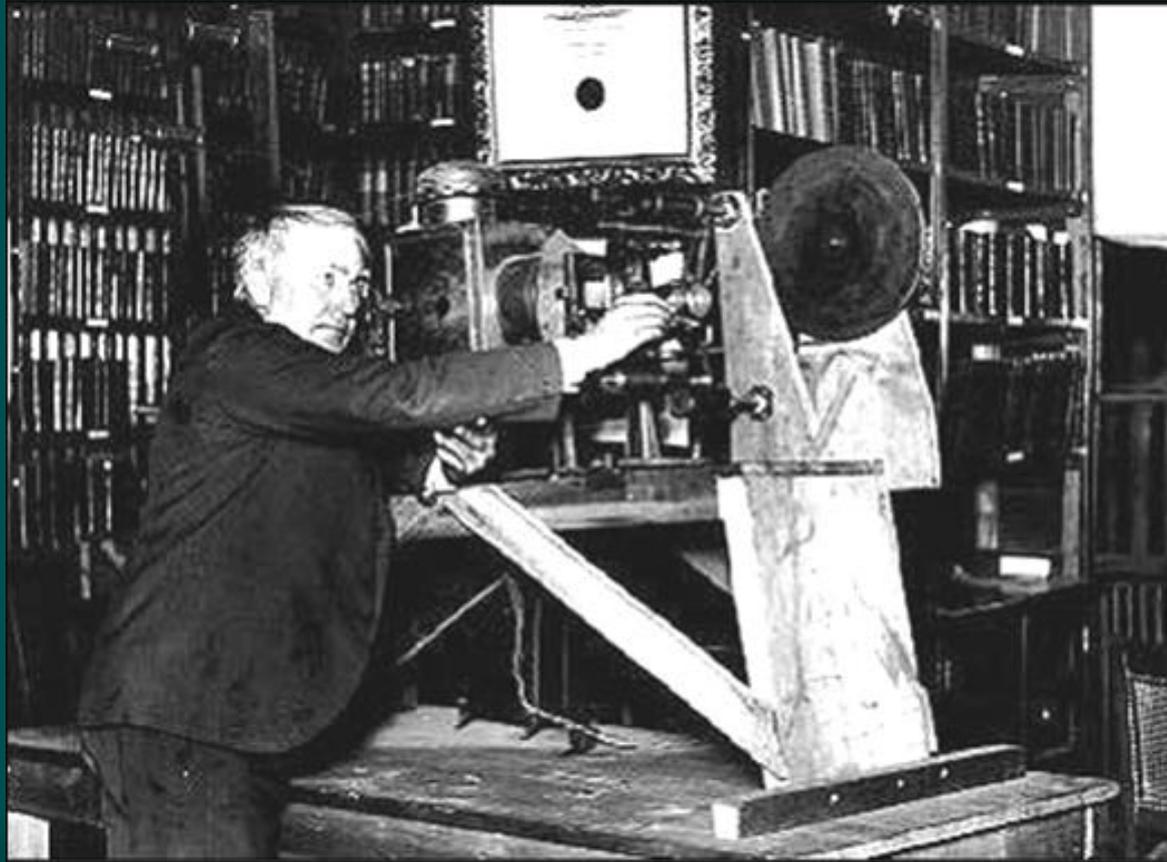
# The Phonograph (1877)



# The Ediphone or Dictaphone



# The Motion Picture Camera





AMERICAN EXPERIENCE



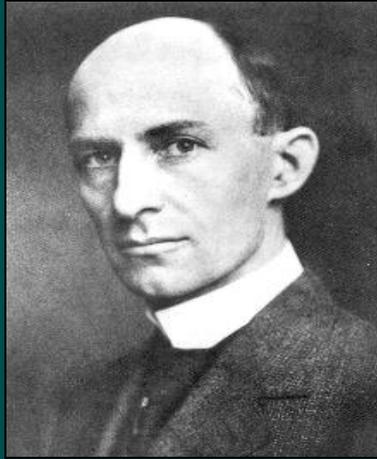
American Experience  
Edison



# 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

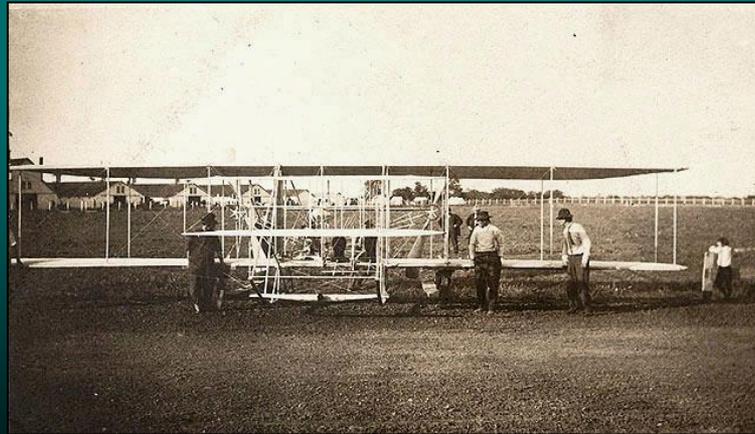
# The Airplane

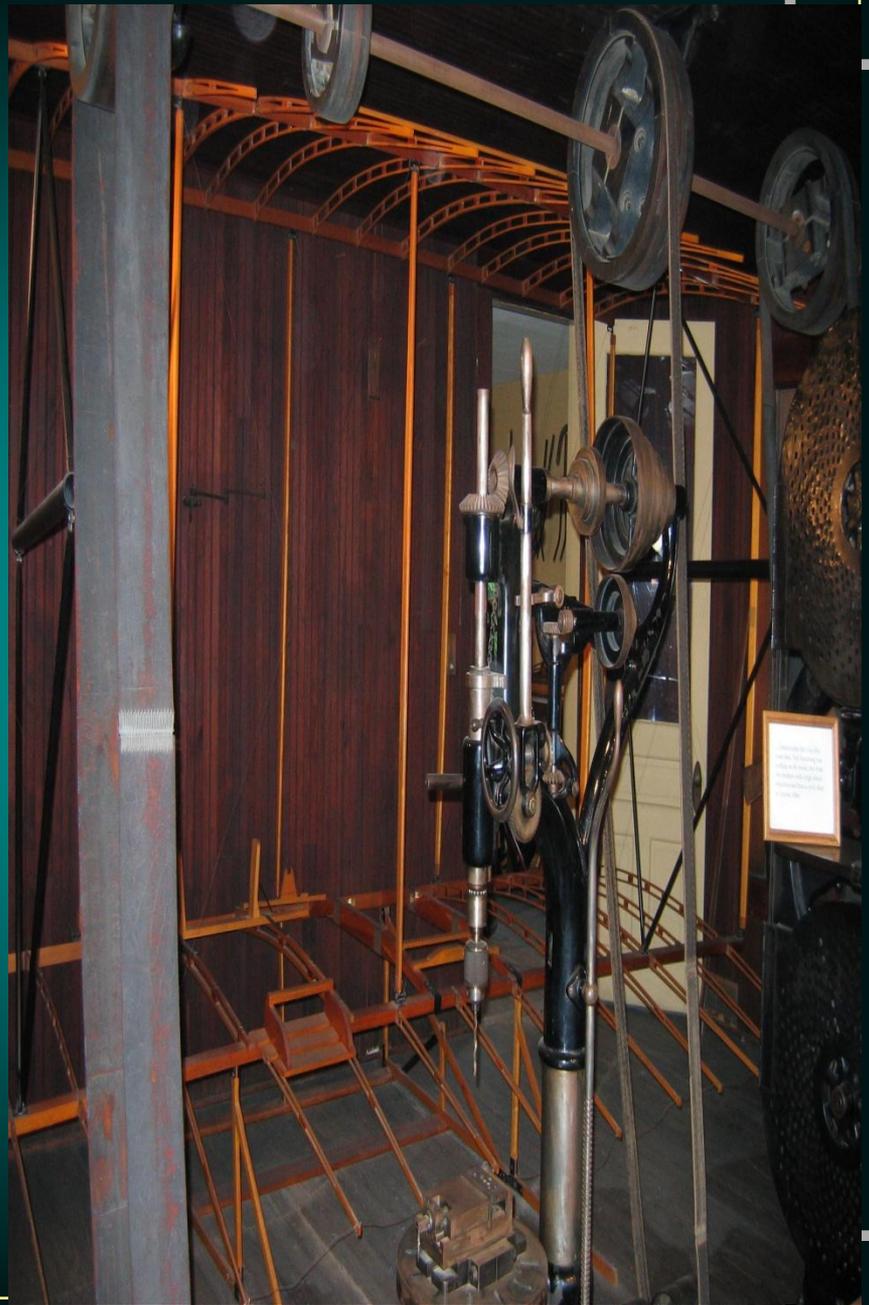


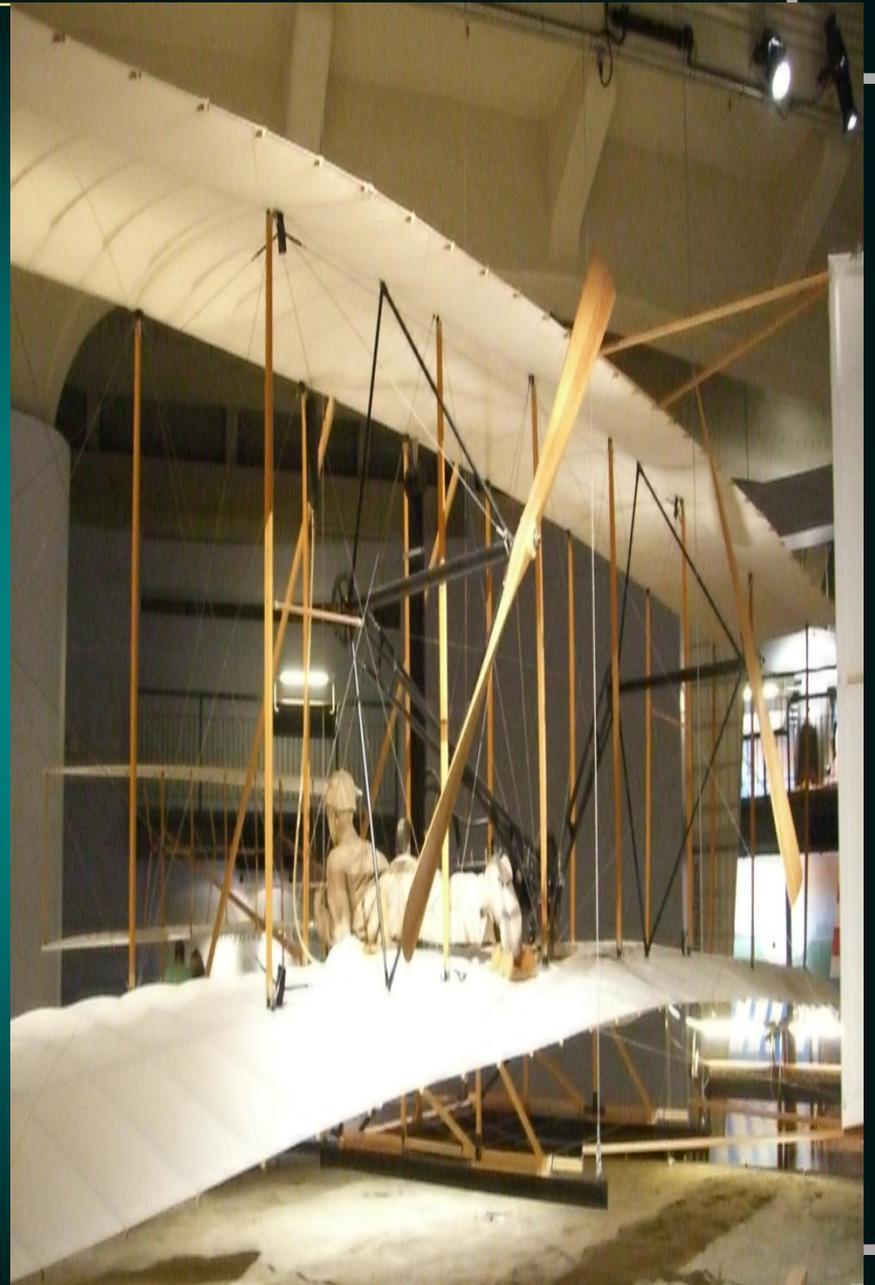
**Wilbur Wright**



**Orville Wright**







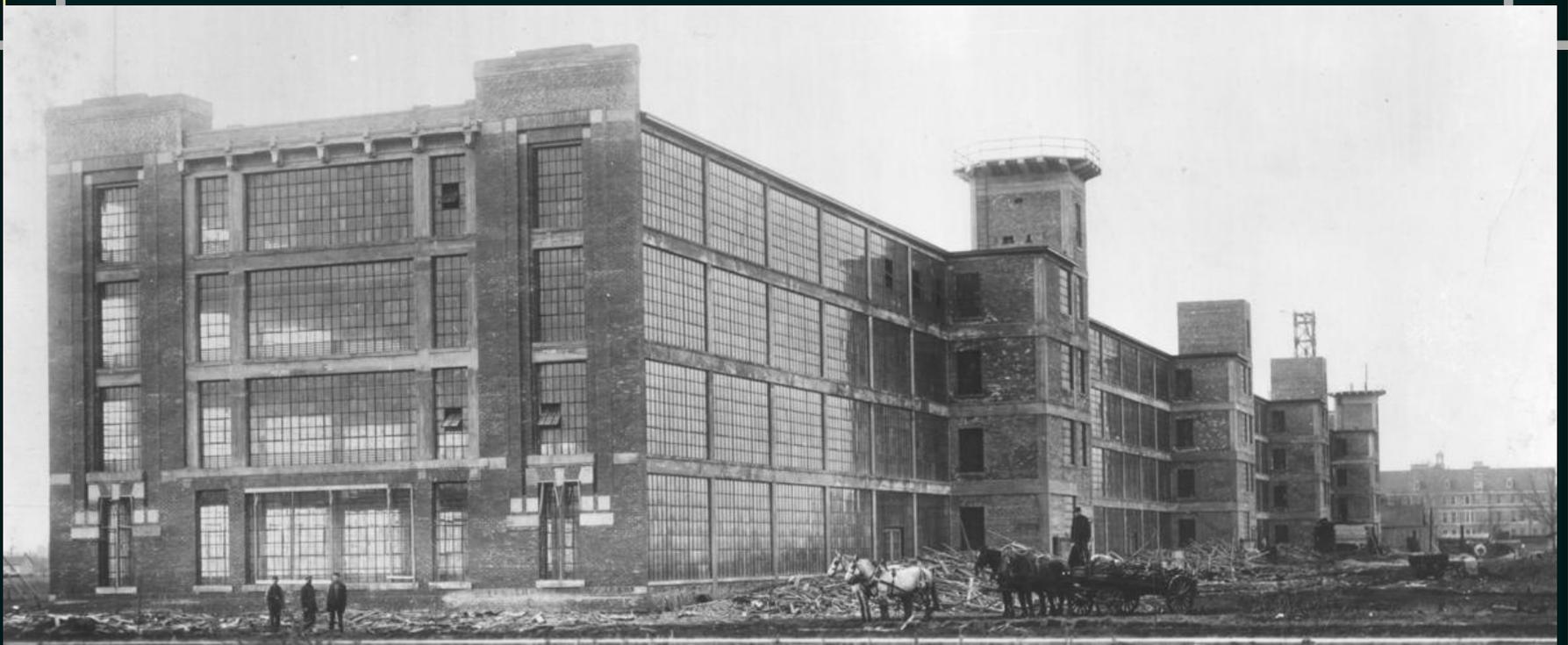
# Model T Automobile



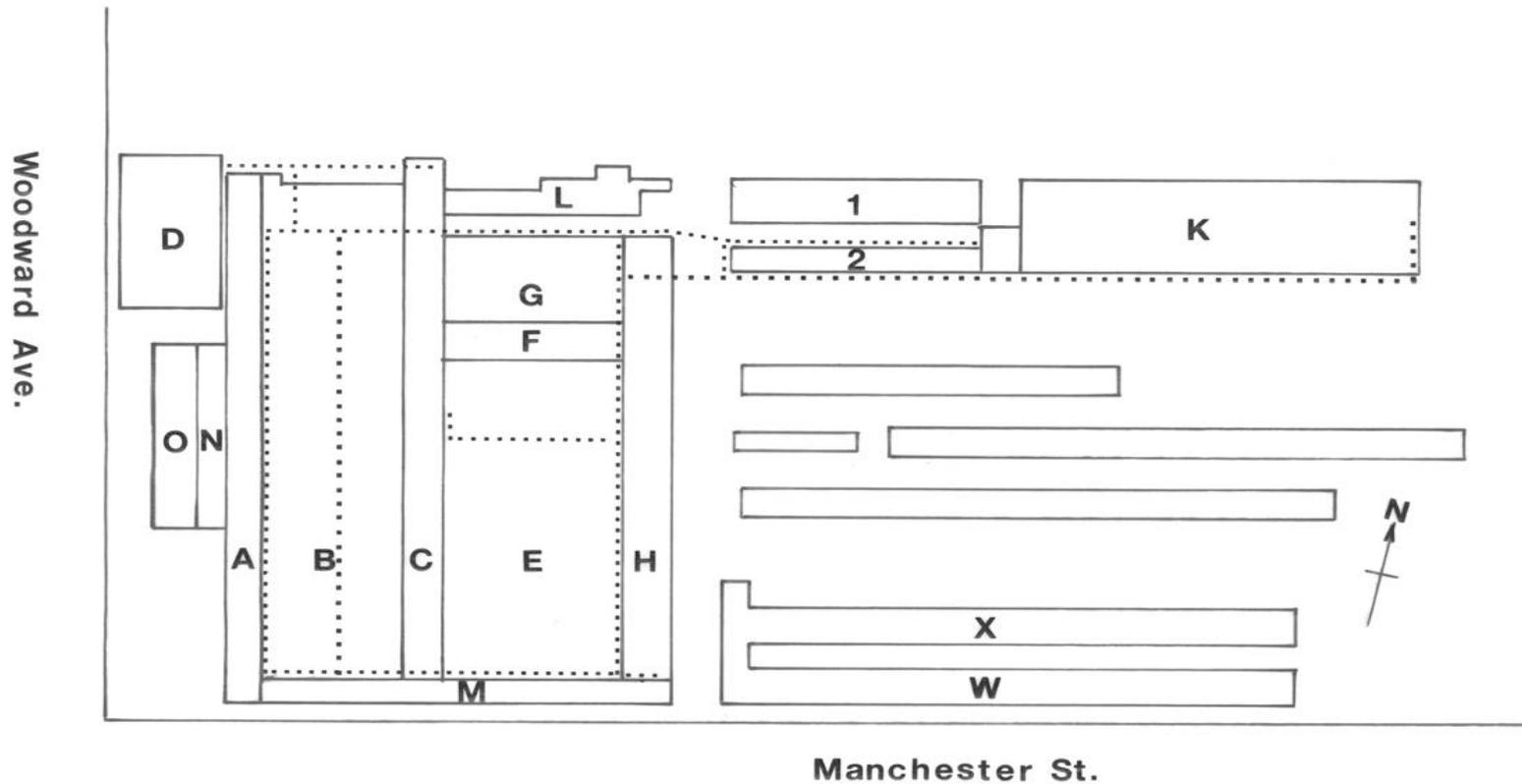
Henry Ford



Ford Model T prototype, 1908

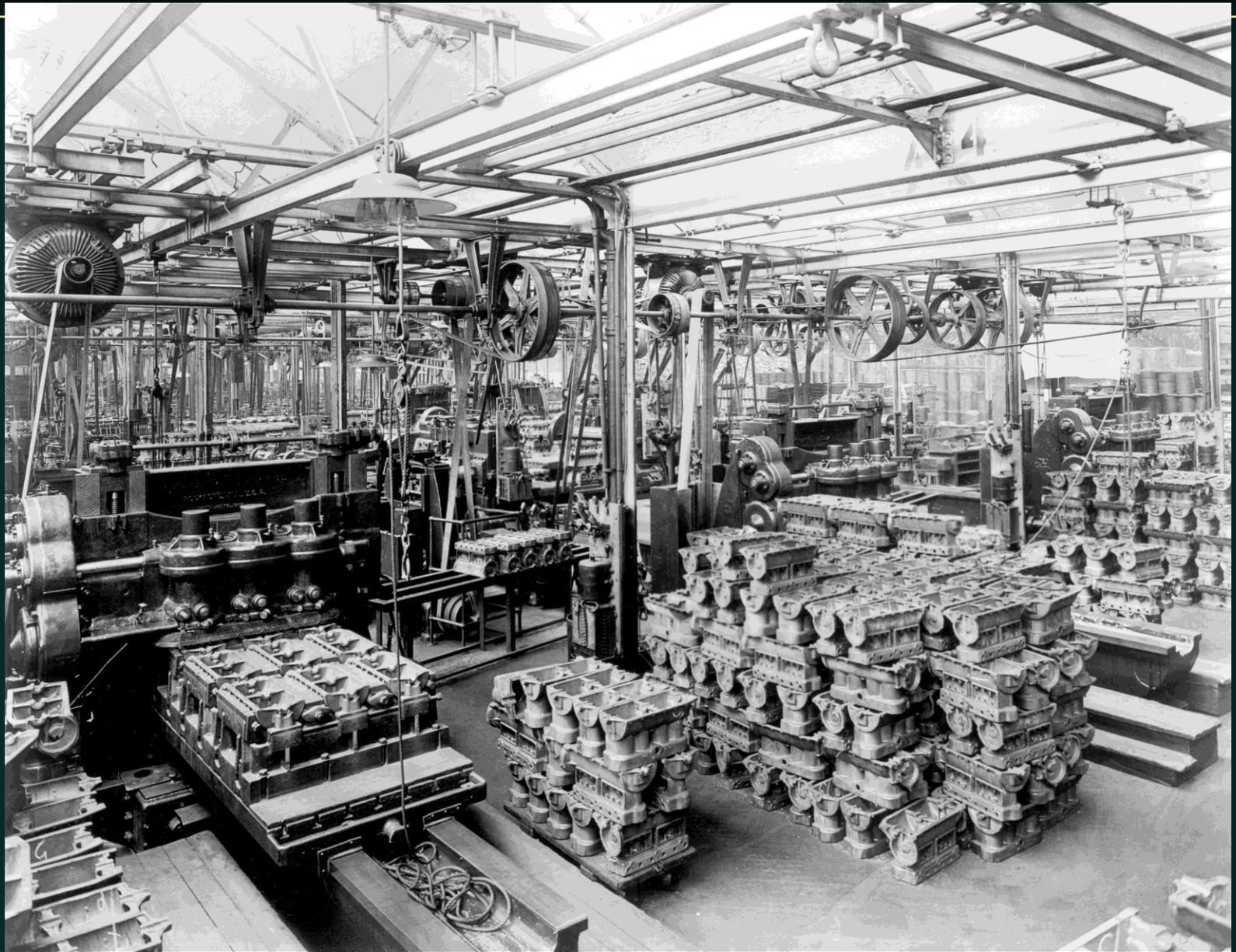


Ford Highland Park Plant, **Building A** under construction, 1909



## 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

By the use of jigs it is possible to "standardize" the car; in other words, all the parts of any one kind are exactly alike, so that a new part can be substituted for an old or broken part without any trimming or shaping.

By the use of jigs a standard tool can be adapted to do special work and it is, of course, much cheaper to buy a standard tool than to have one built to order. A large proportion of the tools in the *Ford* shop have been adapted in this way, having jigs attached to them permanently.

Draughtsmen are employed in the Tool Department, designing jigs and tools, and hundreds of high grade mechanics carry out the designs.

High speed steel, out of which the cutting tools are made, is exceedingly hard. With tools made of this metal, iron and steel can be cut away about twice as fast as with the old-fashioned "low carbon" tools which were in use in practically all machine shops a few years ago.

Men with gauges inspect the work at frequent intervals to insure the accuracy which is necessary, and



Forty-five spindle drill press

Drilling 45 holes in a Model T engine block, from four directions, 1913



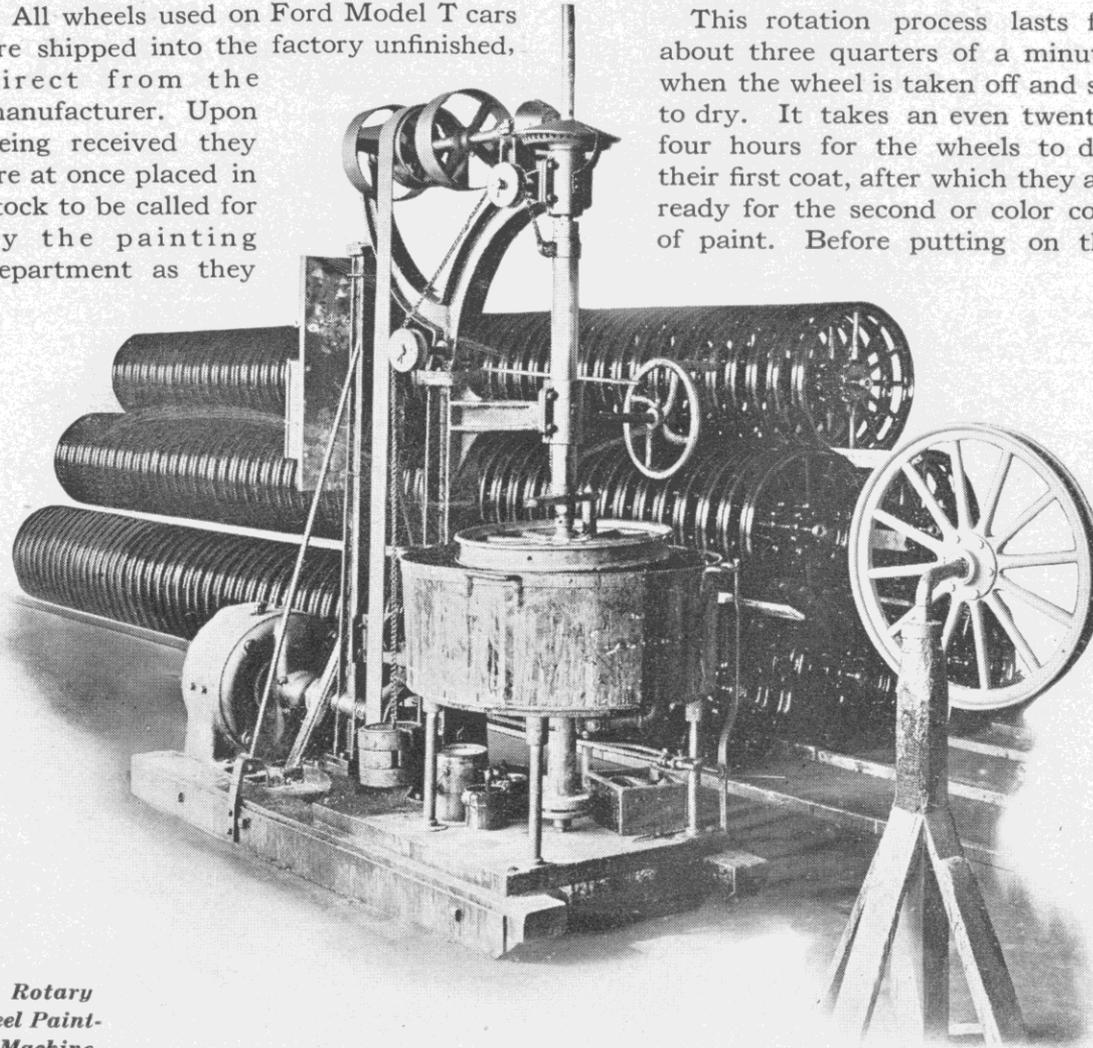
Assembling Model T radiator cores, 1913

that are used in all departments of the Ford factory.

All wheels used on Ford Model T cars are shipped into the factory unfinished, direct from the manufacturer. Upon being received they are at once placed in stock to be called for by the painting department as they

surplus paint and evenly distributing the liquid on all parts of the wheel.

This rotation process lasts for about three quarters of a minute, when the wheel is taken off and set to dry. It takes an even twenty-four hours for the wheels to dry their first coat, after which they are ready for the second or color coat of paint. Before putting on the



*The Rotary  
Wheel Paint-  
ing Machine*

Painting Model T wheels, 1911

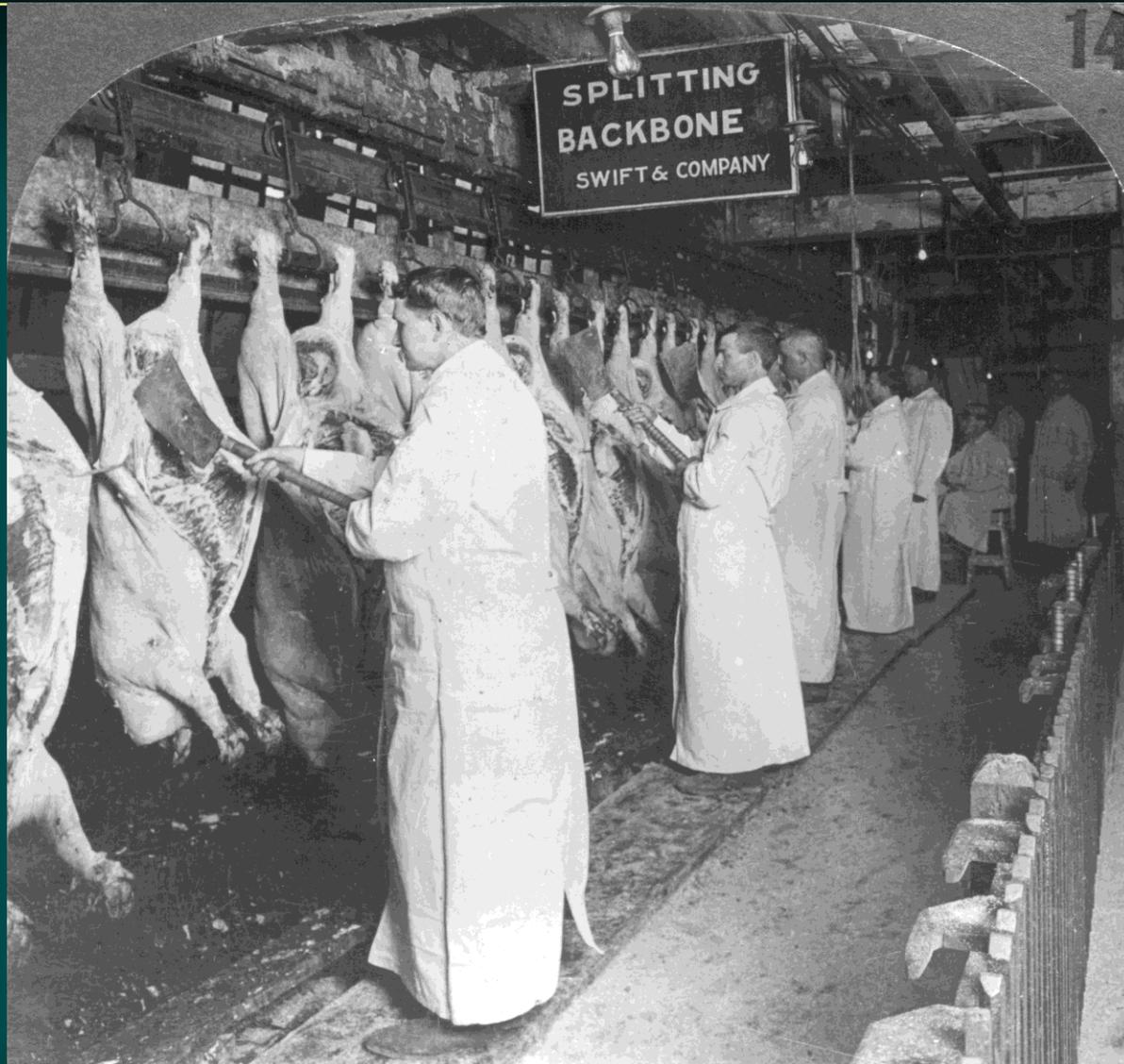


Station assembly of Model T dashboards, 1913



Station assembly of Model T chassis, 1913





Disassembly line for hogs, 1915

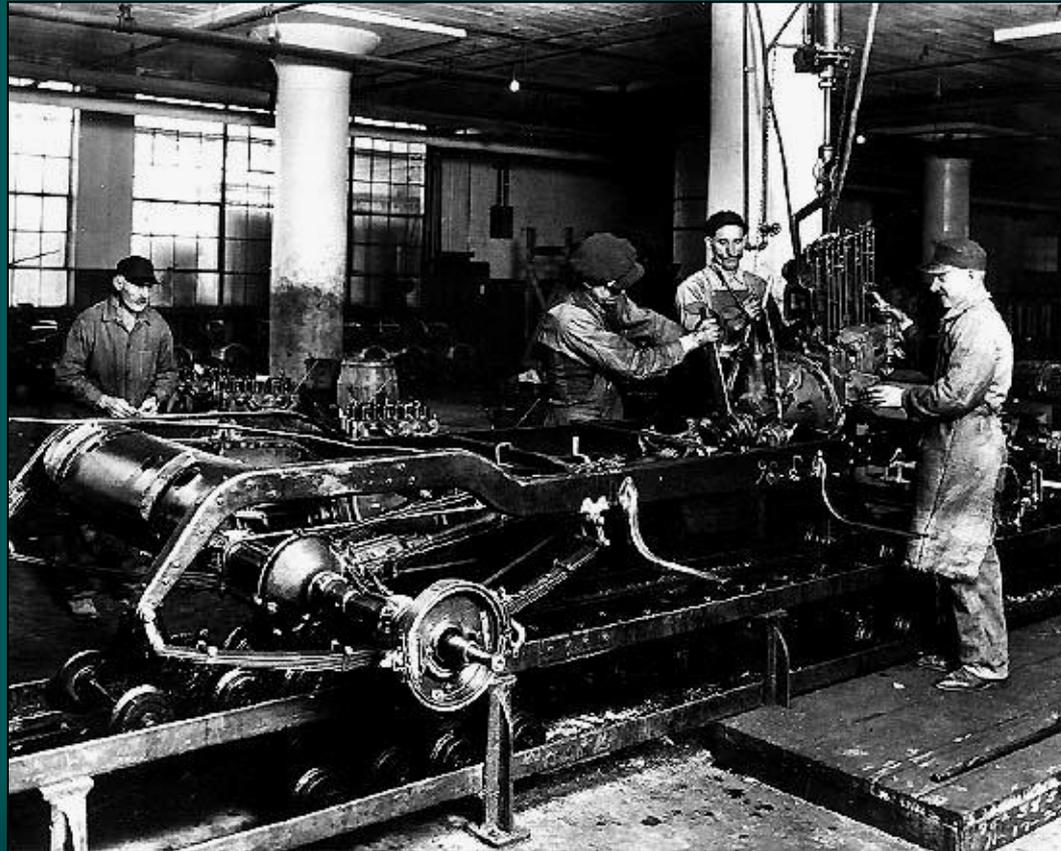
# The Reorganization of Work



**Frederick W. Taylor**

*The Principles of Scientific Management (1911)*

# The Reorganization of Work



The Assembly Line

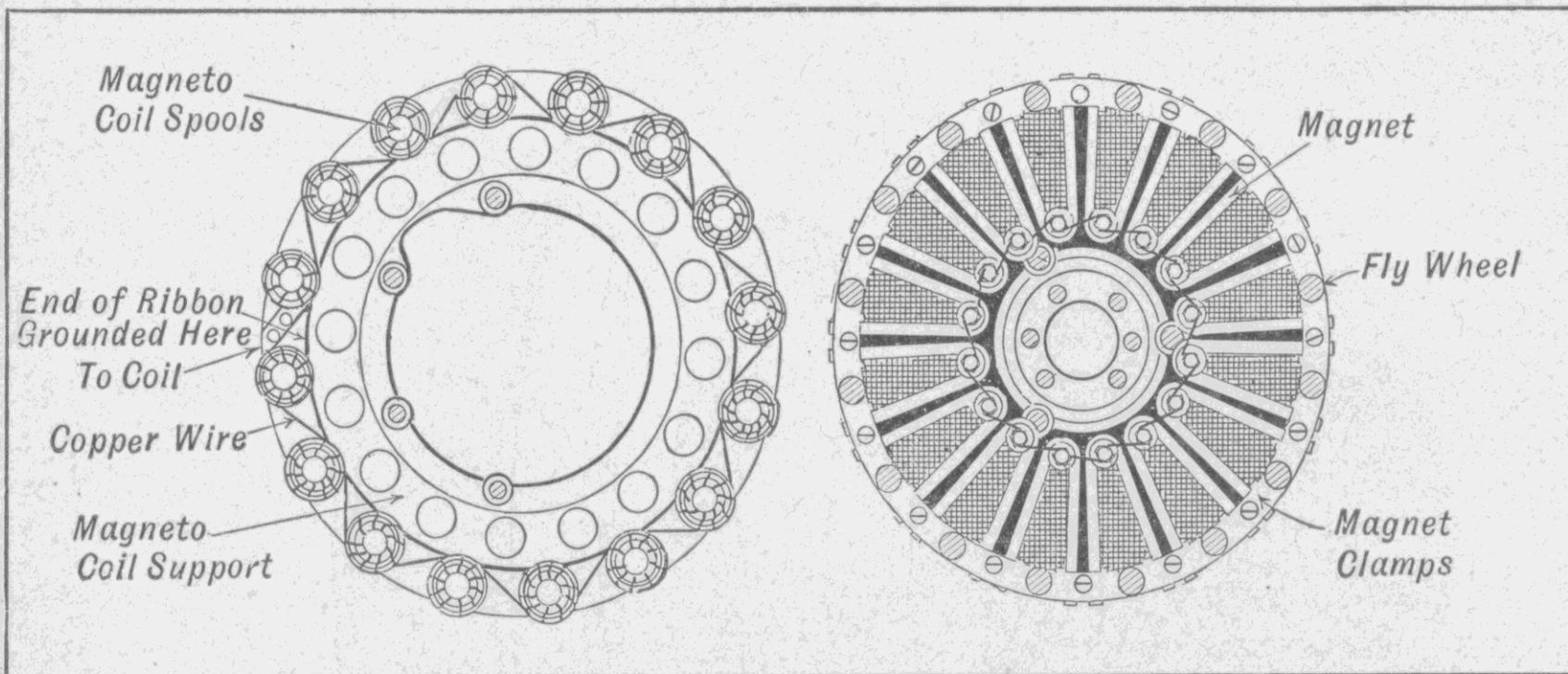


Fig. 21.—Views Showing Construction of Stationary Magneto Coil Carrying Member at Left and Rotary Magnet Carrier that Also Acts as the Motor Flywheel at Right.

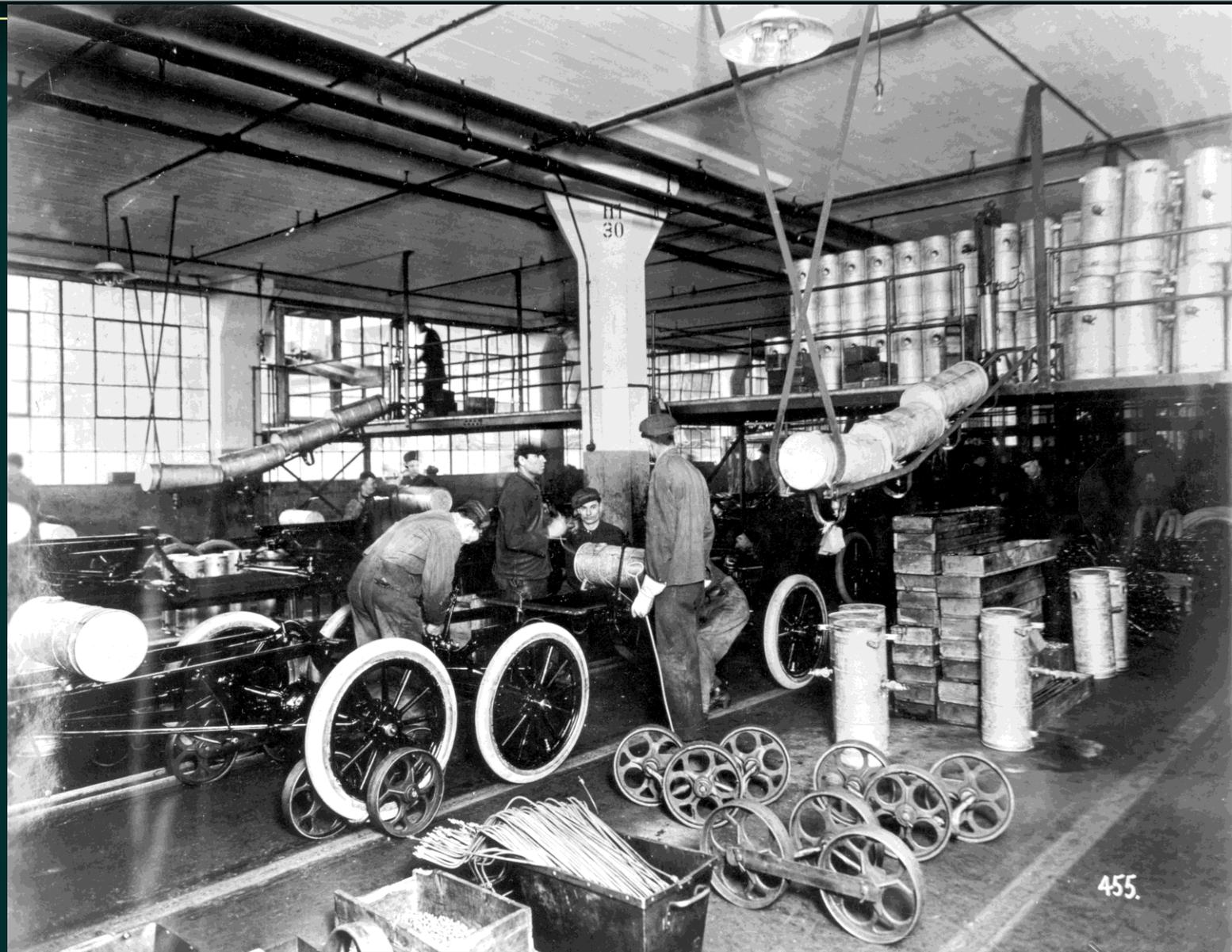
Model T flywheel magneto



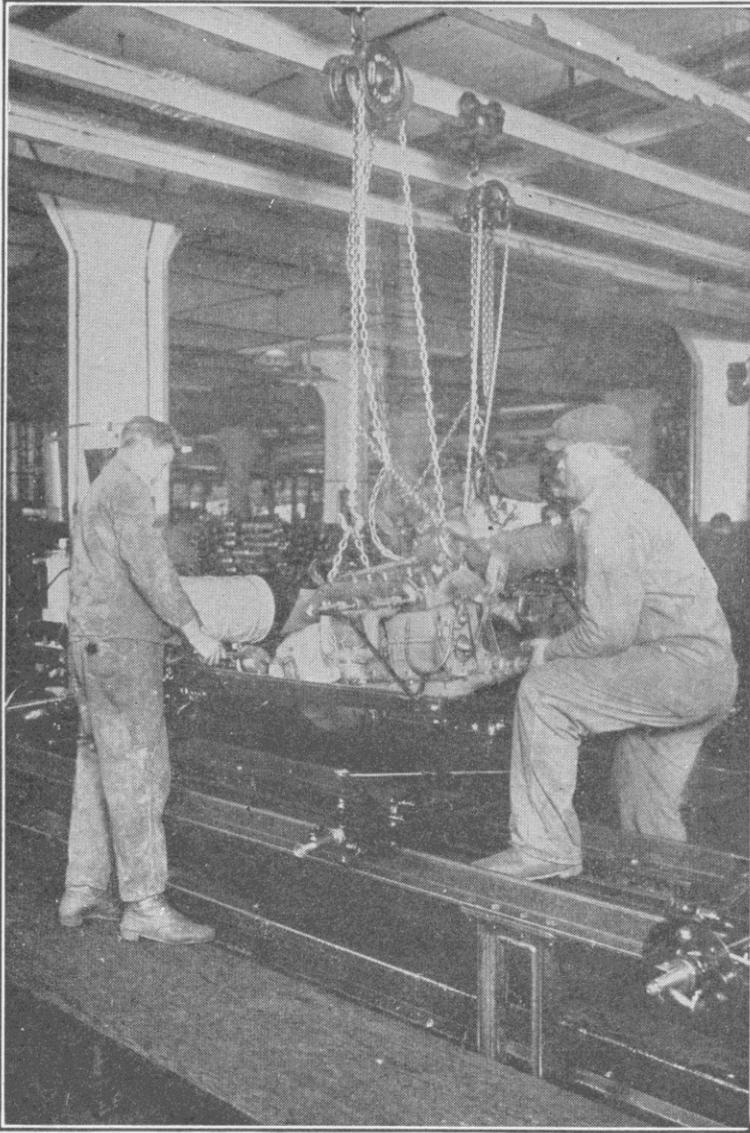
Assembly line for putting magnets on Model T flywheels, 1913



Assembly line for Model T dashboards, 1914



Model T chassis assembly line, installing gas tanks,  
1914



## Model T chassis assembly line Installing engines, 1913

**Lowering Motor to Place on Chassis**  
Looking to southwest; shows overhead chain-hoist rails

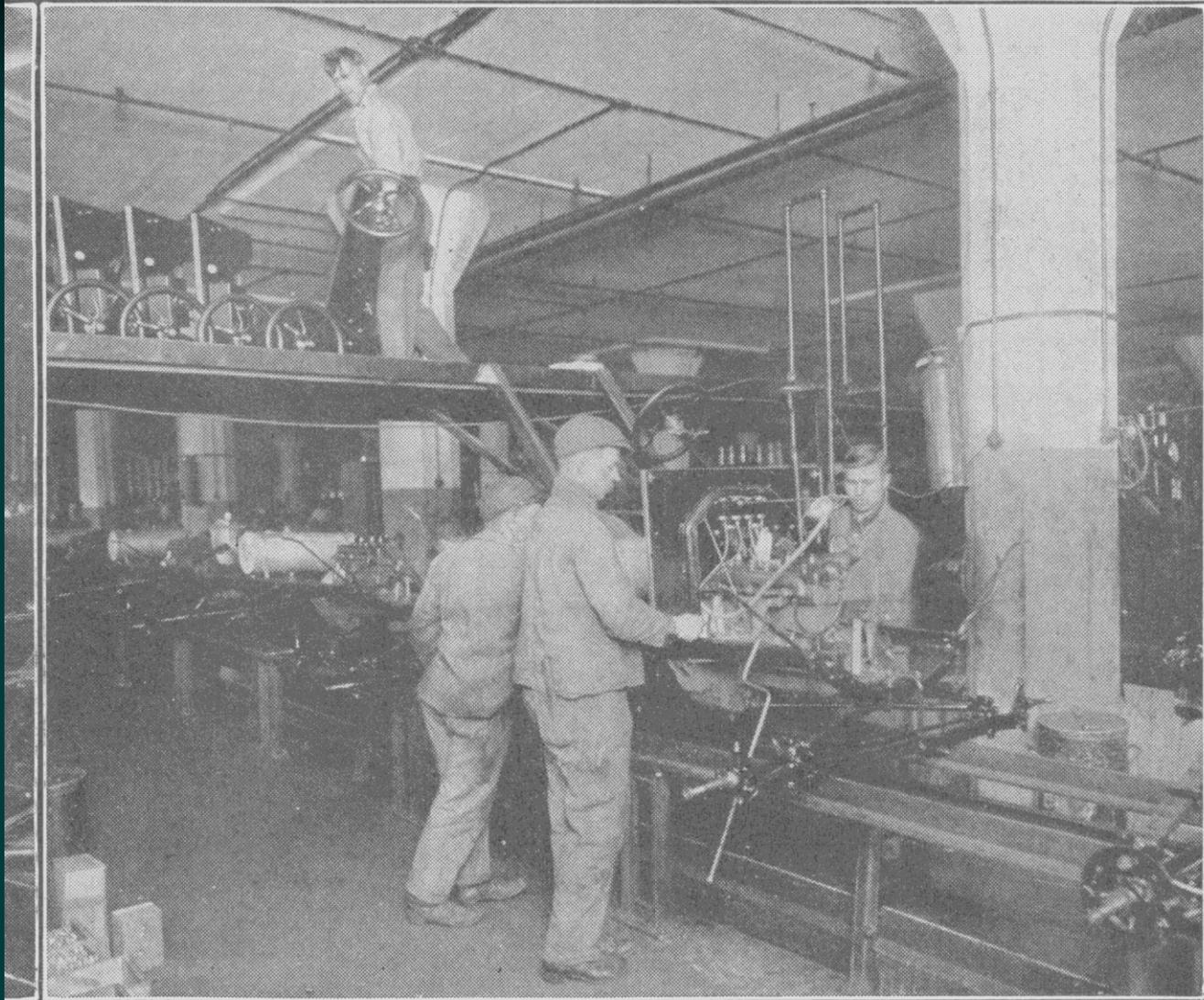
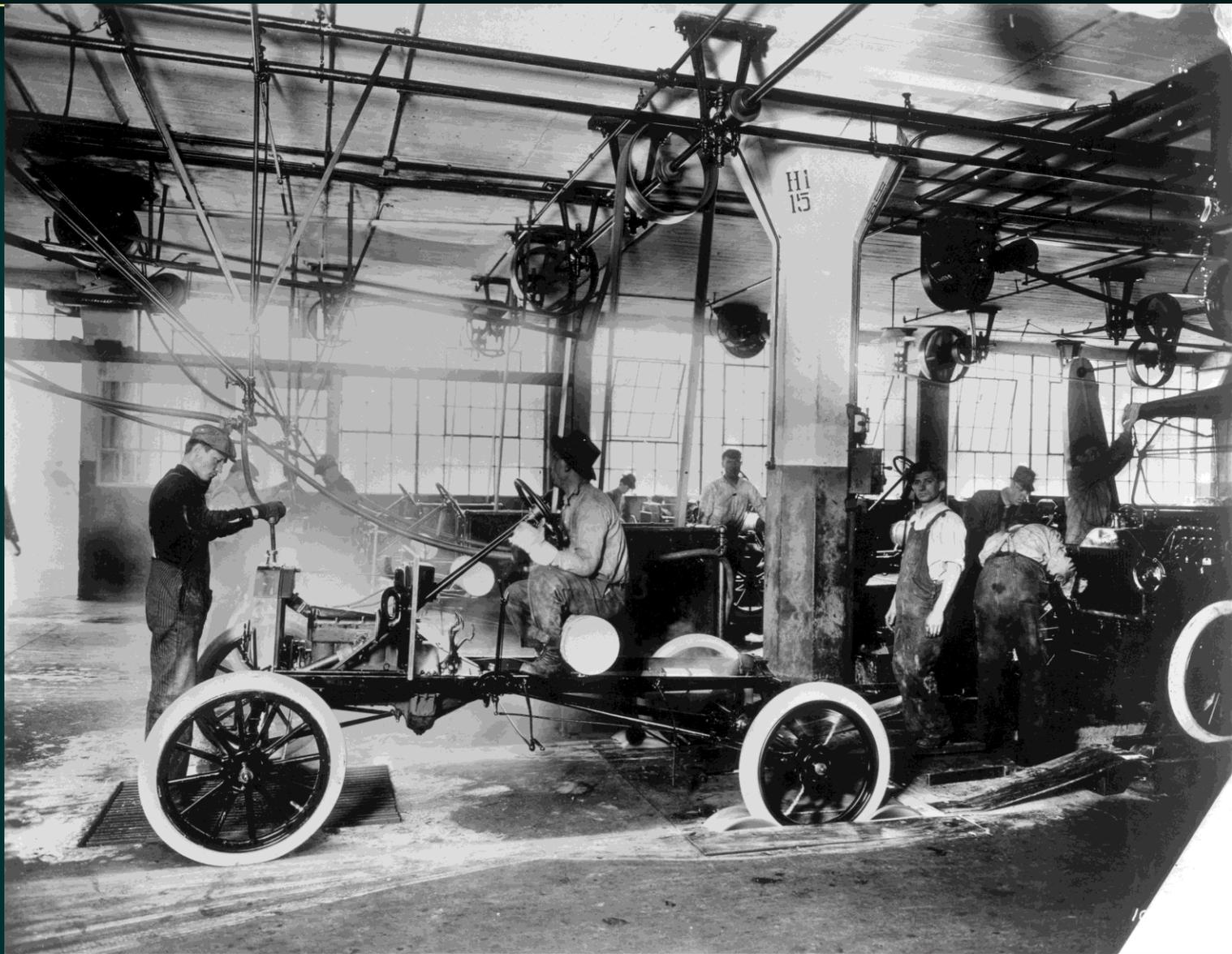


FIG. 10. PUTTING ON THE DASH

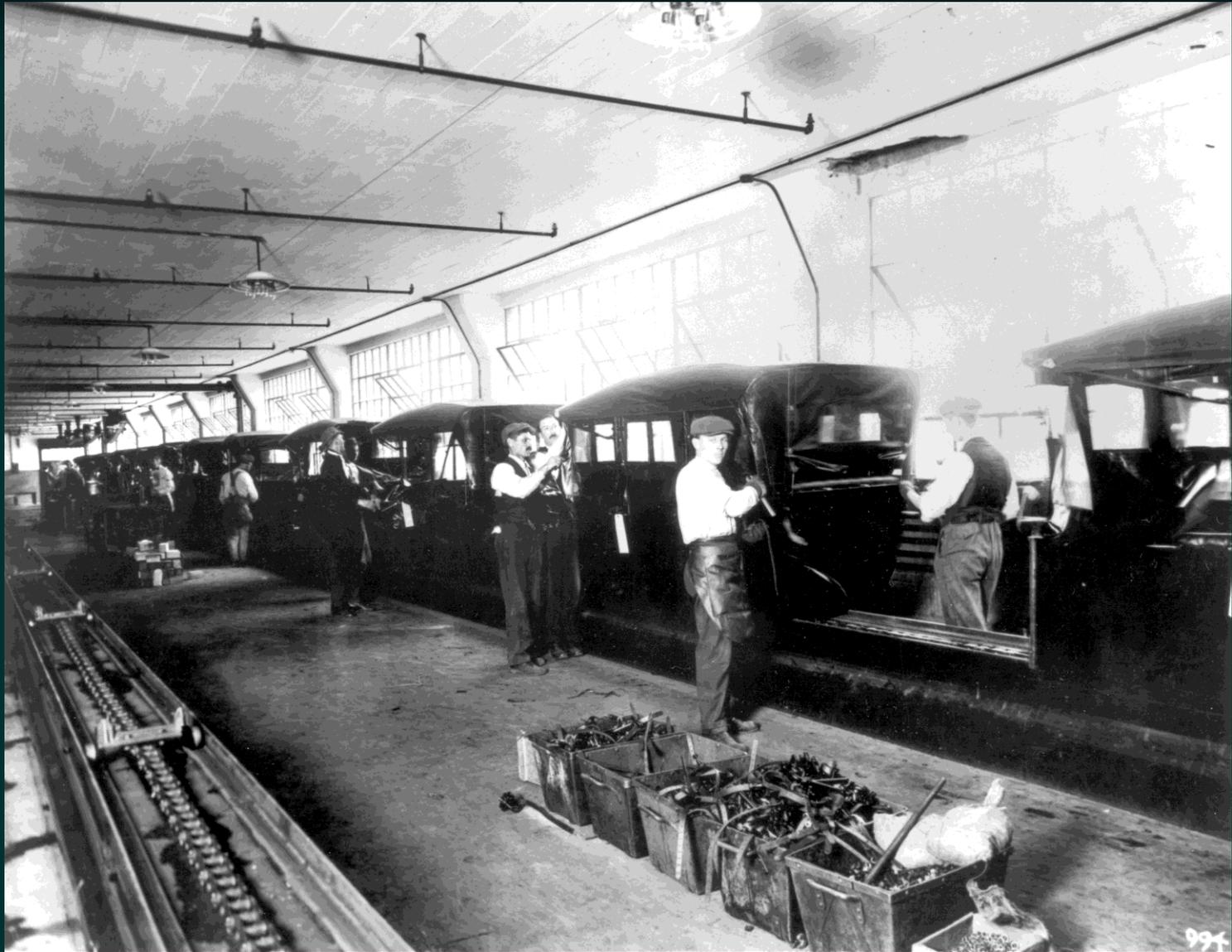
Model T chassis assembly line, installing dashboards, 1914



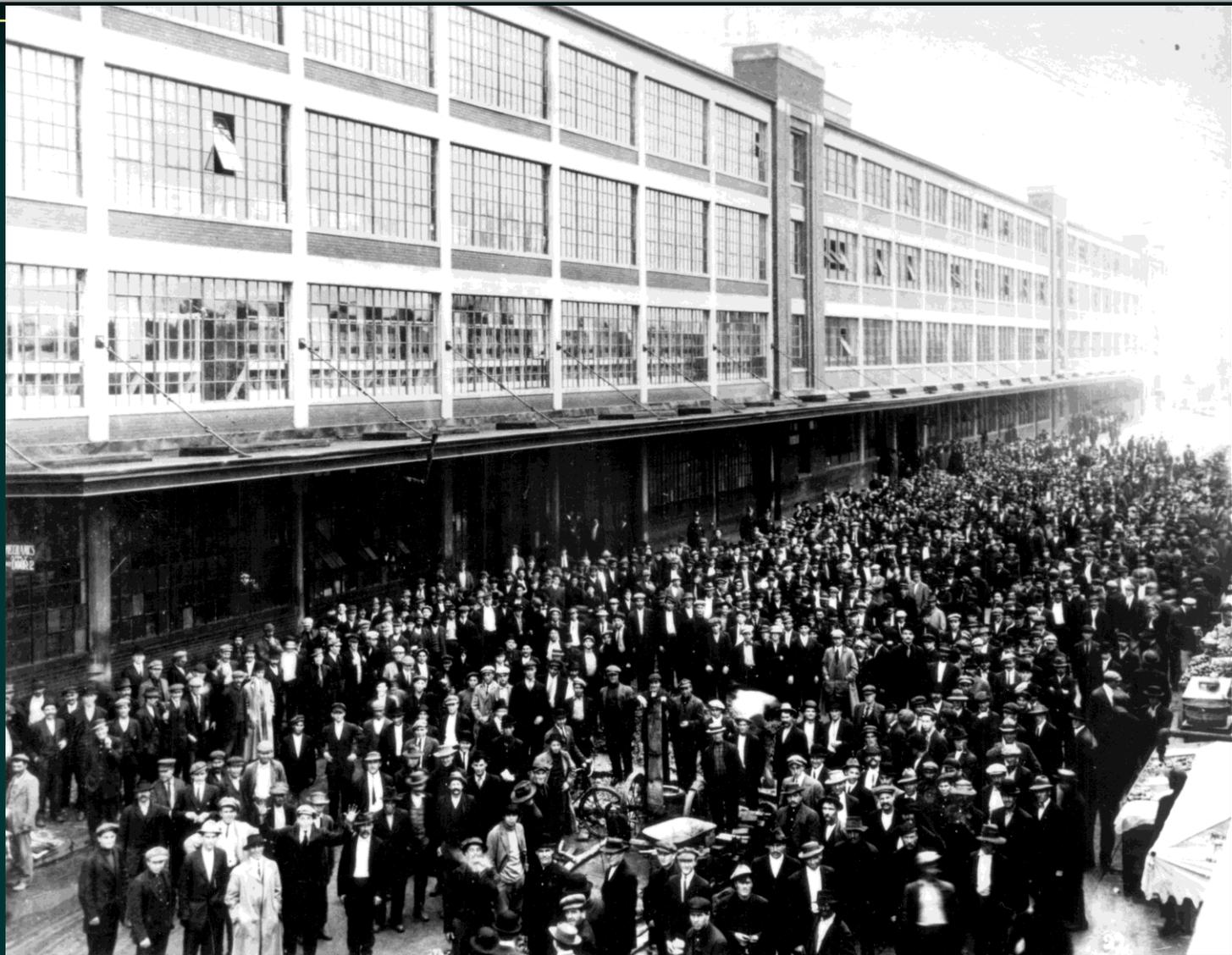
Model T chassis assembly line, installing wheels and radiators, 1914



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***



The cheaper brands pay him more profit on each package, but do not sell so fast.

Nor do they make *satisfied customers*.

When the dealer takes corn flakes home himself he takes home Kellogg's.

That's worth remembering.

"Don't merely say 'Corn Flakes'—say 'Kellogg's, Please.'"

### ALWAYS READY

That's the great thing about Kellogg's. It saves the housewife countless steps. An open package, a few bowls and a pitcher of milk or cream, and breakfast is ready.

And it's a satisfying breakfast, too.

It can be served with fruit in many delicious combinations for variety.

Always heat for a moment in an open oven to restore crispness.



*W. K. Kellogg*



The SWEET HEART  
-- OF THE CORN --



**This.**



**Not this.**

# LAISSSEZ FAIRE

*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.

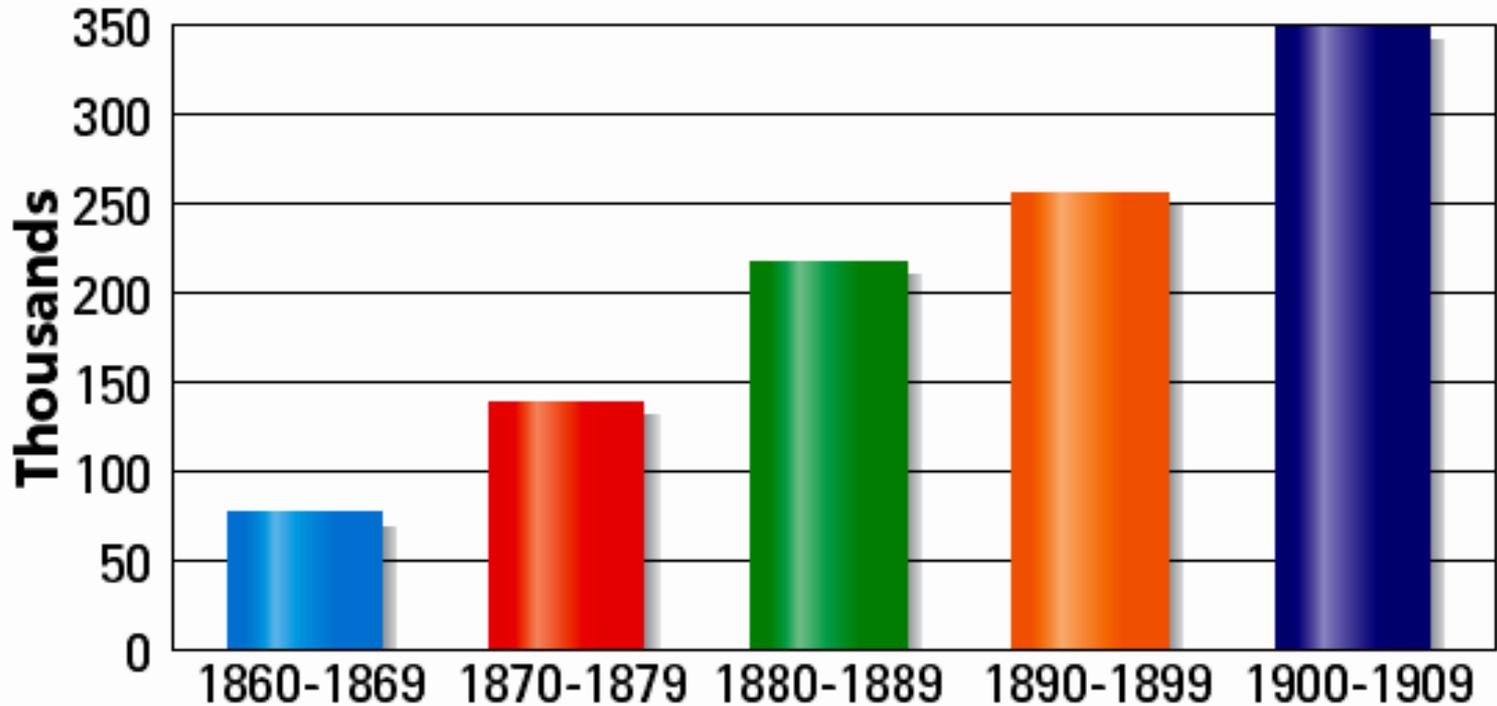
⇒ Government should allow for natural competition for the betterment of our society.

# **CAPITALISM**

*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

## U.S. Patents Issued, 1860–1909



Source: *Historical Statistics of the United States*

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



# **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



# US GOVERNMENT ASSISTS INDUSTRY

Govt. assists

## 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.....



# BUSINESS ORGANIZATIONS

- **Corporation:** 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---than 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”*



# PROPRIETORSHIP

<b><i>FORMATION</i></b>	<b>Individual or person decides to operate a business</b>
<b><i>OWNERSHIP</i></b>	<b>Individual</b>
<b><i>CONTROL AND MANAGEMENT</i></b>	<b>By owner or persons delegated by the proprietor</b>
<b><i>NET PROFITS LOSSES</i></b>	<b>Profits to owner Losses absorbed by owner <b>UNLIMITED LIABILITY</b></b>

# **PARTNERSHIP**

<b><i>FORMATION</i></b>	<b>By agreement between associates (partners)</b>
<b><i>OWNERSHIP</i></b>	<b>Jointly by two or more individuals; or by terms of partnership agreement</b>
<b><i>CONTROL AND MANAGEMENT</i></b>	<b>By partners or persons they delegate</b>
<b><i>NET PROFITS LOSSES</i></b>	<b>Shared according to partnership agreement</b>  <b>UNLIMITED LIABILITY</b>

# **CORPORATION**

<b><i>FORMATION</i></b>	<b>Organized by associates and legalized through state charter</b>
<b><i>OWNERSHIP</i></b>	<b>Stockholders, according to number of shares</b>
<b><i>CONTROL AND MANAGEMENT</i></b>	<b>Through Board of Directors, elected by the stockholders (usually one vote per share of stock held)</b>
<b><i>NET PROFITS AND LOSSES</i></b>	<b>Dividends: to stockholders = profits Lose: only the amount invested by stockholders according to number of shares</b> <b><u>LIMITED LIABILITY</u></b>

# **BUSINESS ORGANIZATIONS**

## **Trusts or Monopoly**

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

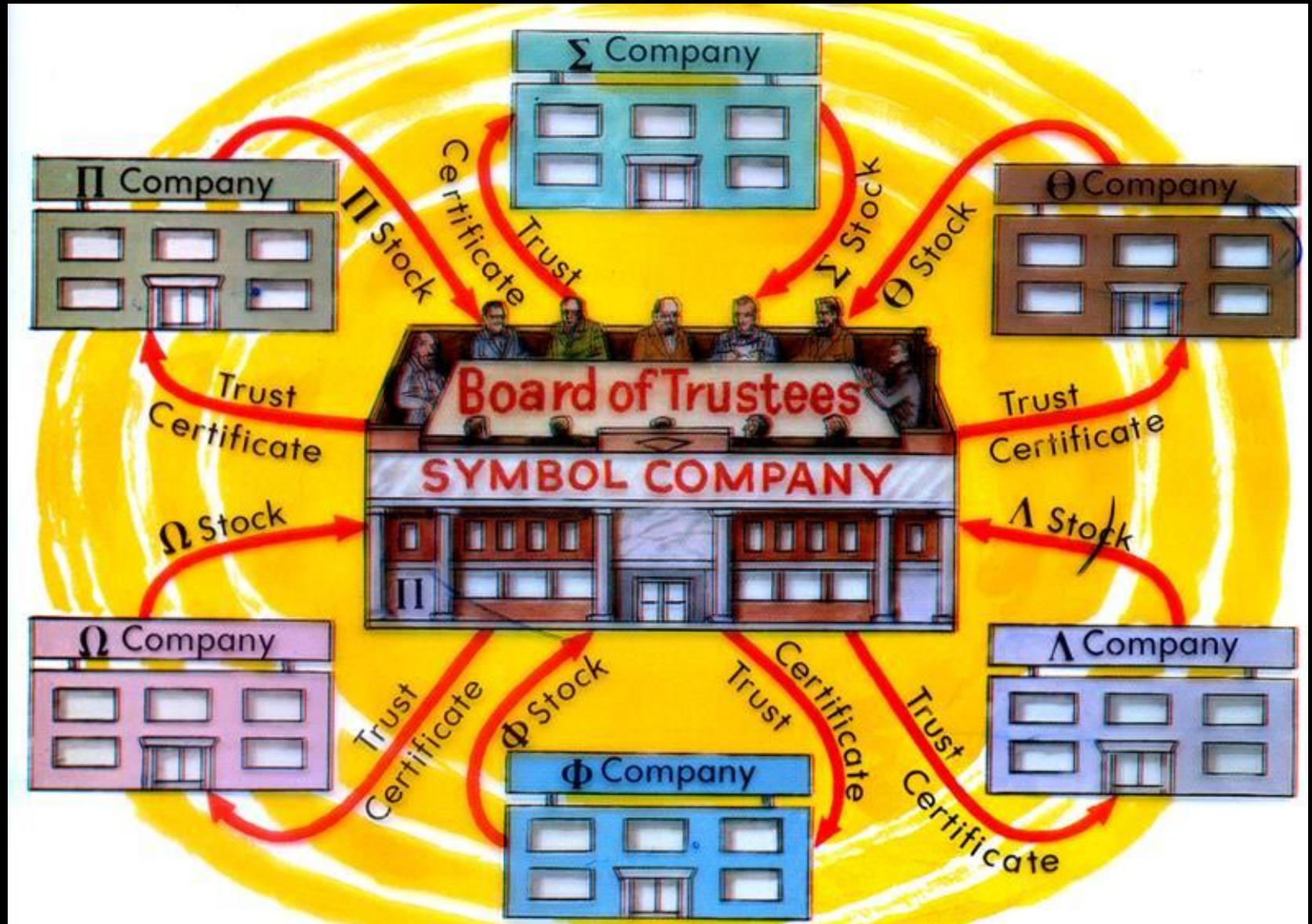
# TRUSTS AND MONOPOLIES

## **BIGGER IS BETTER**

A **trust or monopoly**  
controls an entire  
industry

- make product cheaper
- lower prices to customer

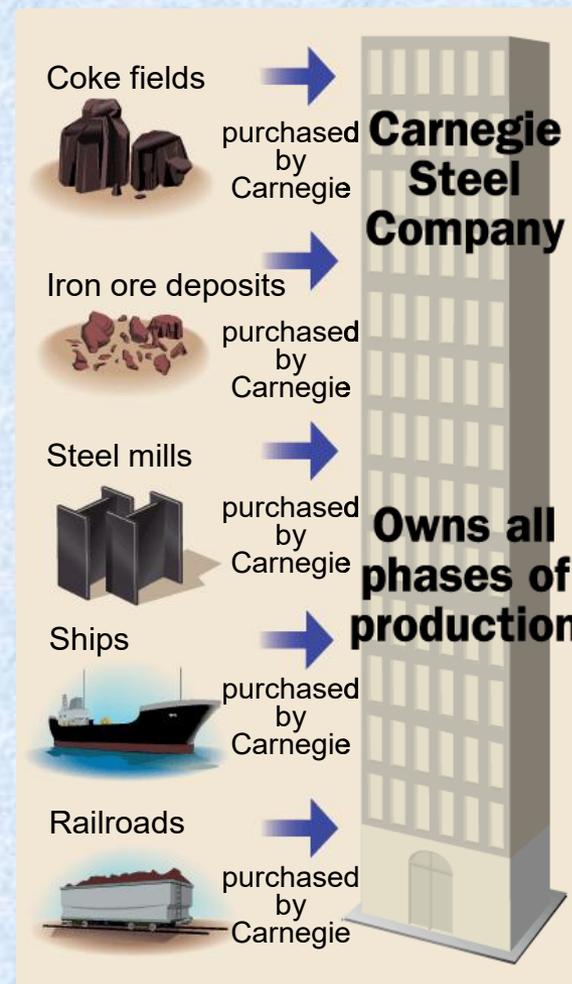
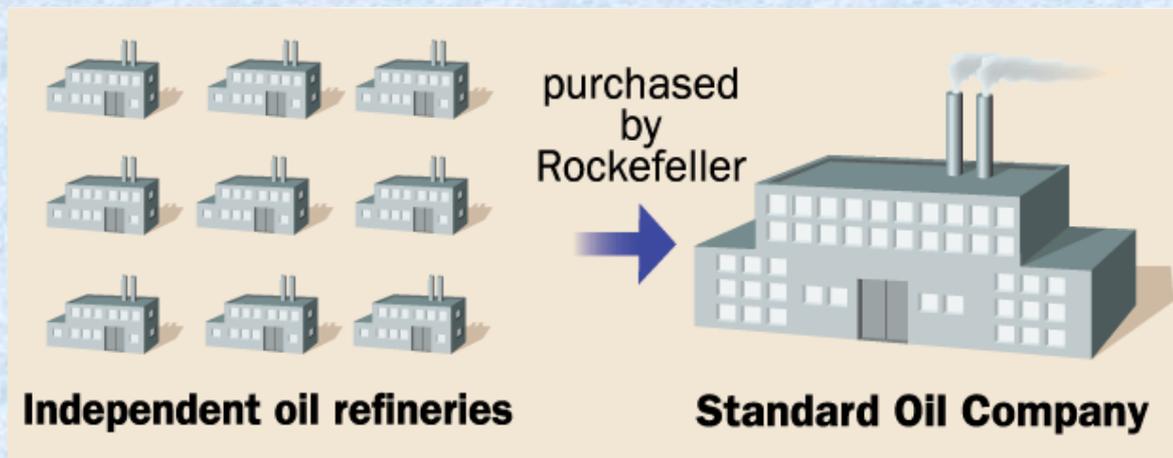
# MONOPOLIES AND TRUSTS



# VERTICAL AND HORIZONTAL INTEGRATION

## 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



# MONOPOLY

# 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?**



## Vertical Integration

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

# 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?

# Other Vertical Integrations

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

# Horizontal Integration

- **Examples**

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

**Horizontal Integration**

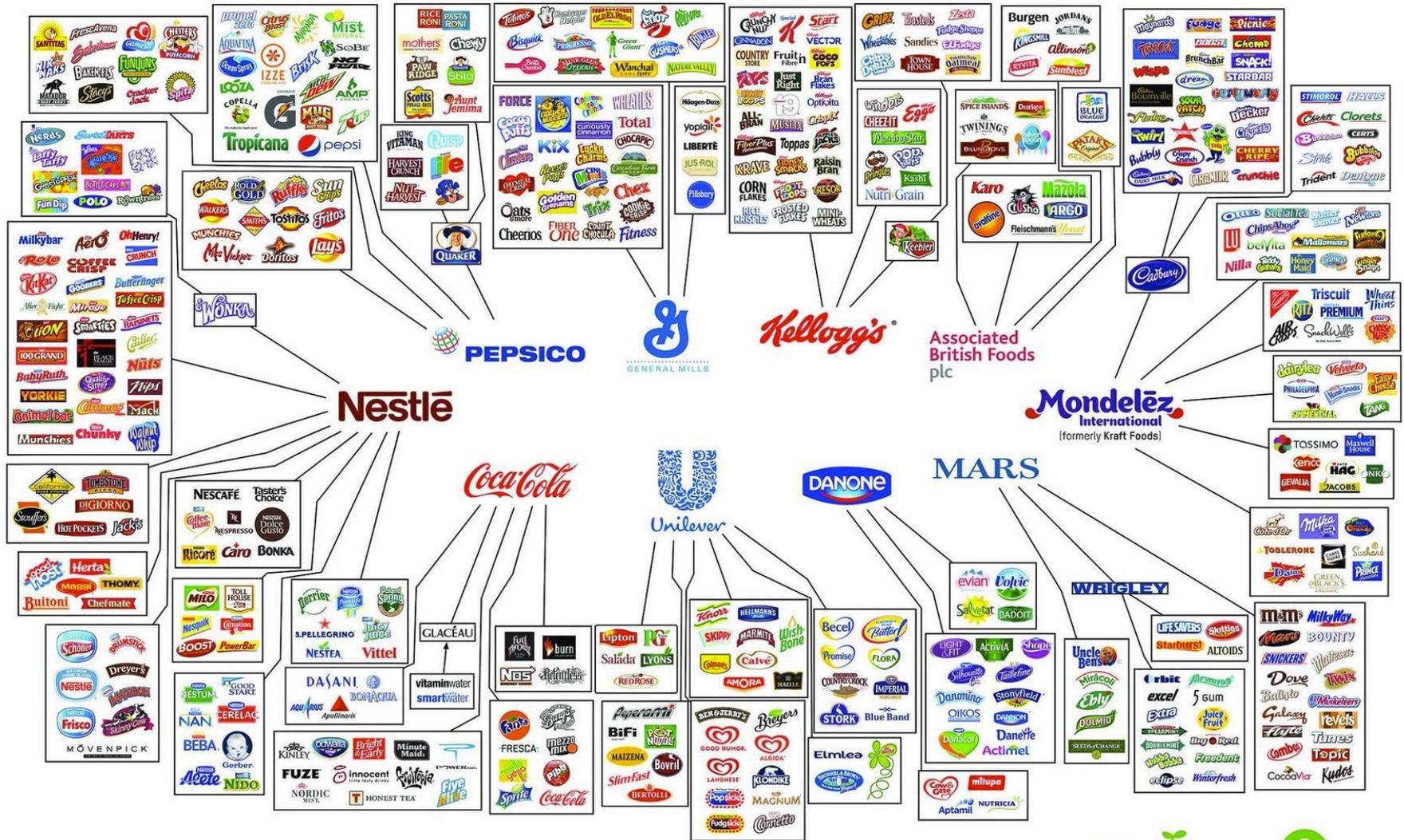
**Buy out your competition  
until you have control of a  
single area of industry**

# Modern Day Examples of Horizontal Integration

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



# Do we have Monopolies in the US?



# **ENTREPRENEUR**

*A person who organizes, operates, and assumes the risk for a business venture*



# CAPTAINS OF INDUSTRY OR ROBBER BARONS

## *“Captains of Industry”*

- ❖ The business leaders served their nation in a positive way.
- ❖ They increased the supply of goods by building factories.
- ❖ They raised productivity and expanded markets.
- ❖ They created jobs that enabled many Americans to buy new goods and raise their standard of living.
- ❖ They also created museums, libraries, and universities, many of which still serve the public today.

## *“Robber Barons”*

- ❖ Business leaders built their fortunes by stealing from the public.
- ❖ They drained the country of its natural resources.
- ❖ They persuaded public officials to interpret laws in their favor.
- ❖ They ruthlessly drove their competitors to ruin.
- ❖ They paid their workers meager wages and forced them to toil under dangerous and unhealthy conditions. 

# ROBBER BARRONS

robber

**Extortion: Forced against your will**

• **Rebates:** discount or refund on “freight charges”

• **Drawbacks / Kickbacks:** Standard Oil gave certain railroads all its shipping business if it agreed to charge Standard Oil 25% to 50% less than its competitors

• **Buyouts:** Larger corporations forced smaller businesses to sell out

• **Congress** was “bought out” by the monopolies

• **Spies:** Stealing your competitor's ideas

***Small businesses  
complained “monopolies”  
eliminated fair competition***

# Industrialization & the Rise of Big Business

## • *Who were the Big Business Tycoons?*

• Andrew Carnegie – steel

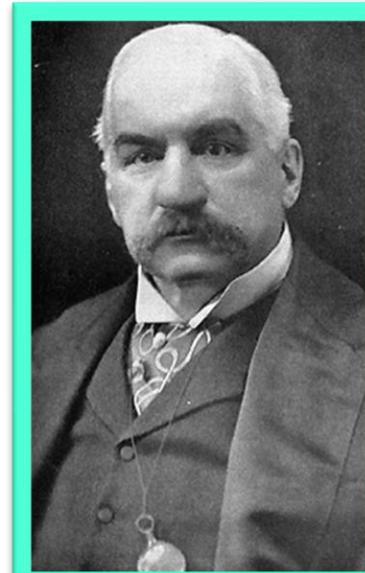
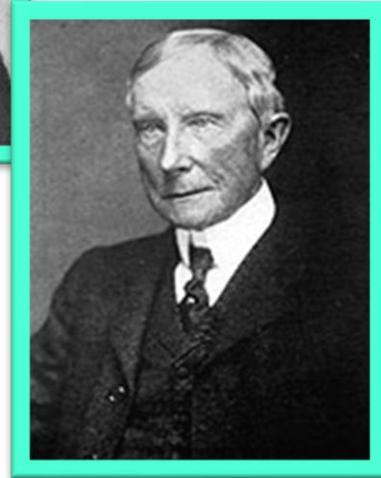
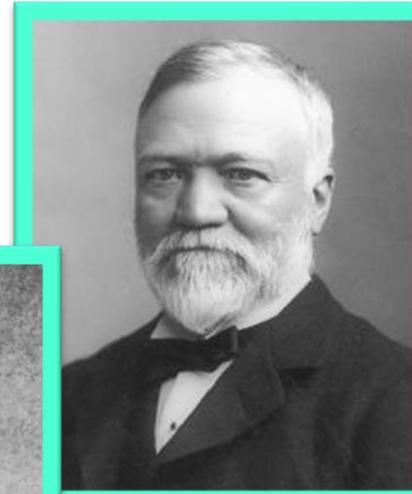
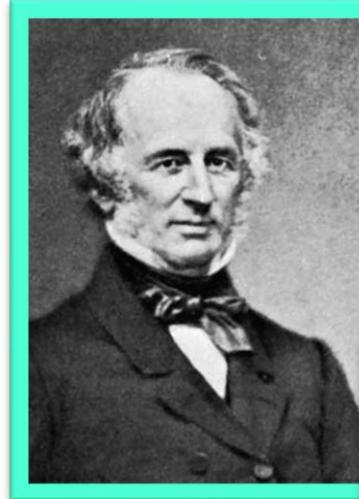
• Cornelius Vanderbilt – railroads

• John D. Rockefeller – oil

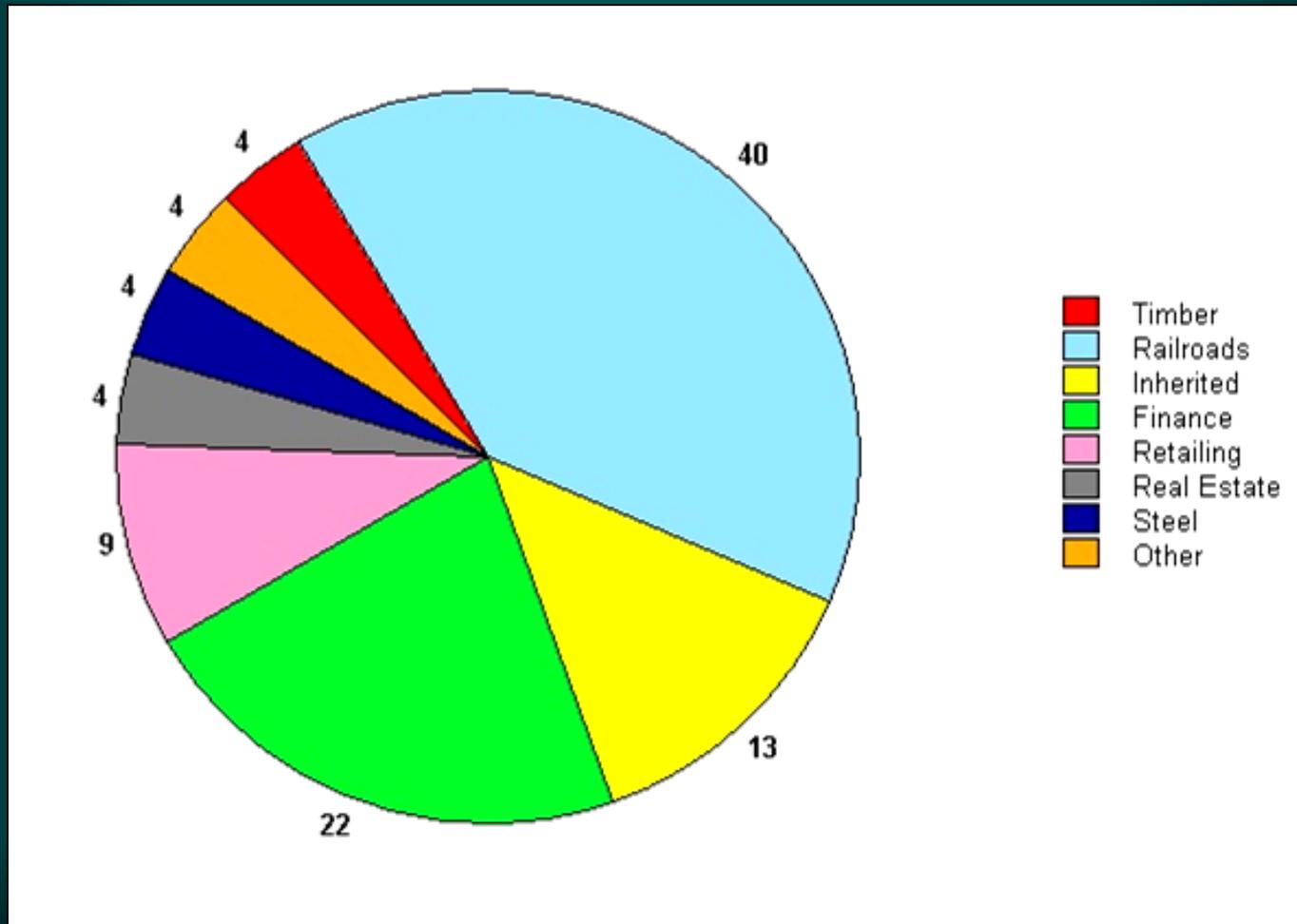
• J.P. Morgan - banking

• “Rags to Riches”

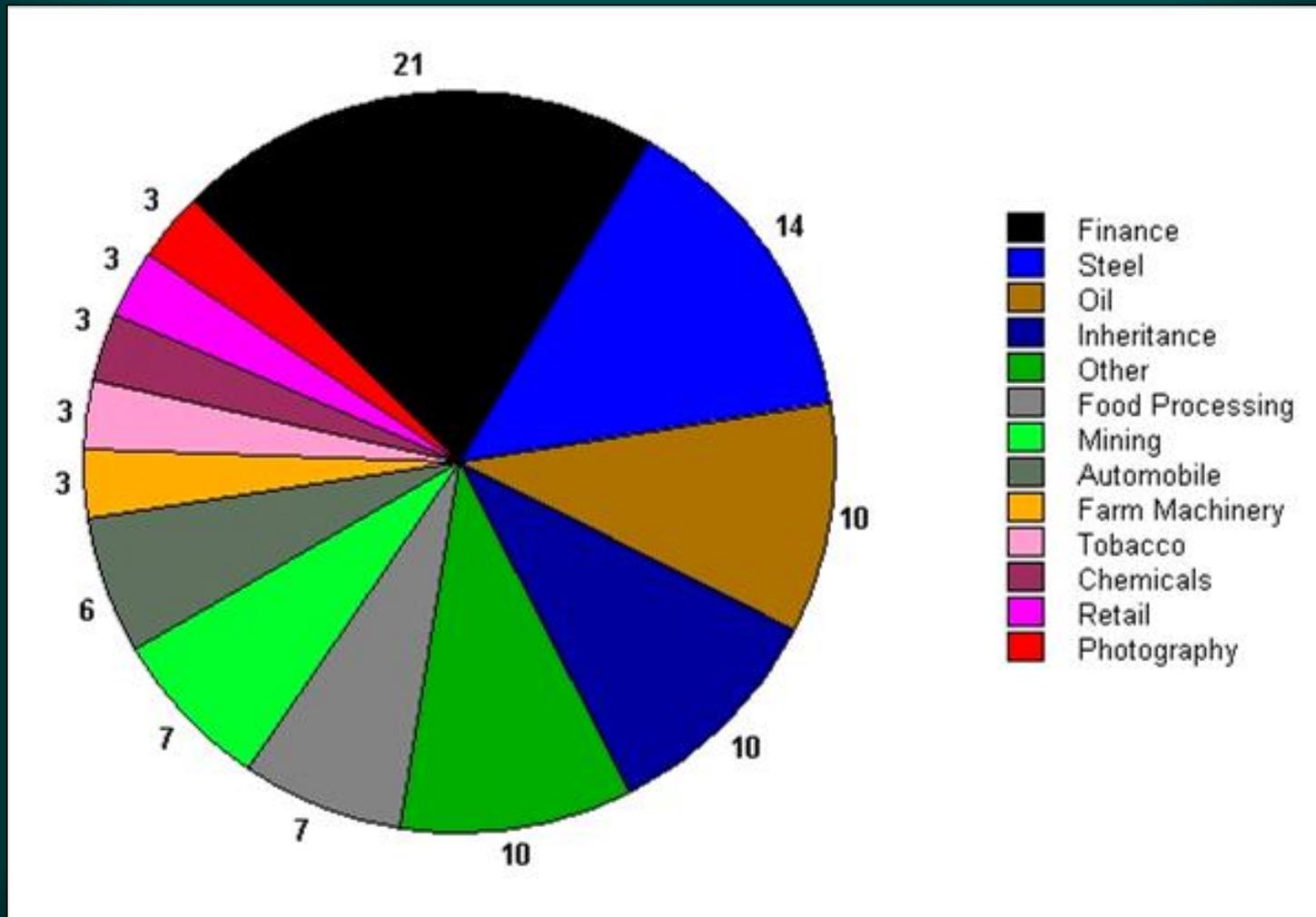
• What does this mean?



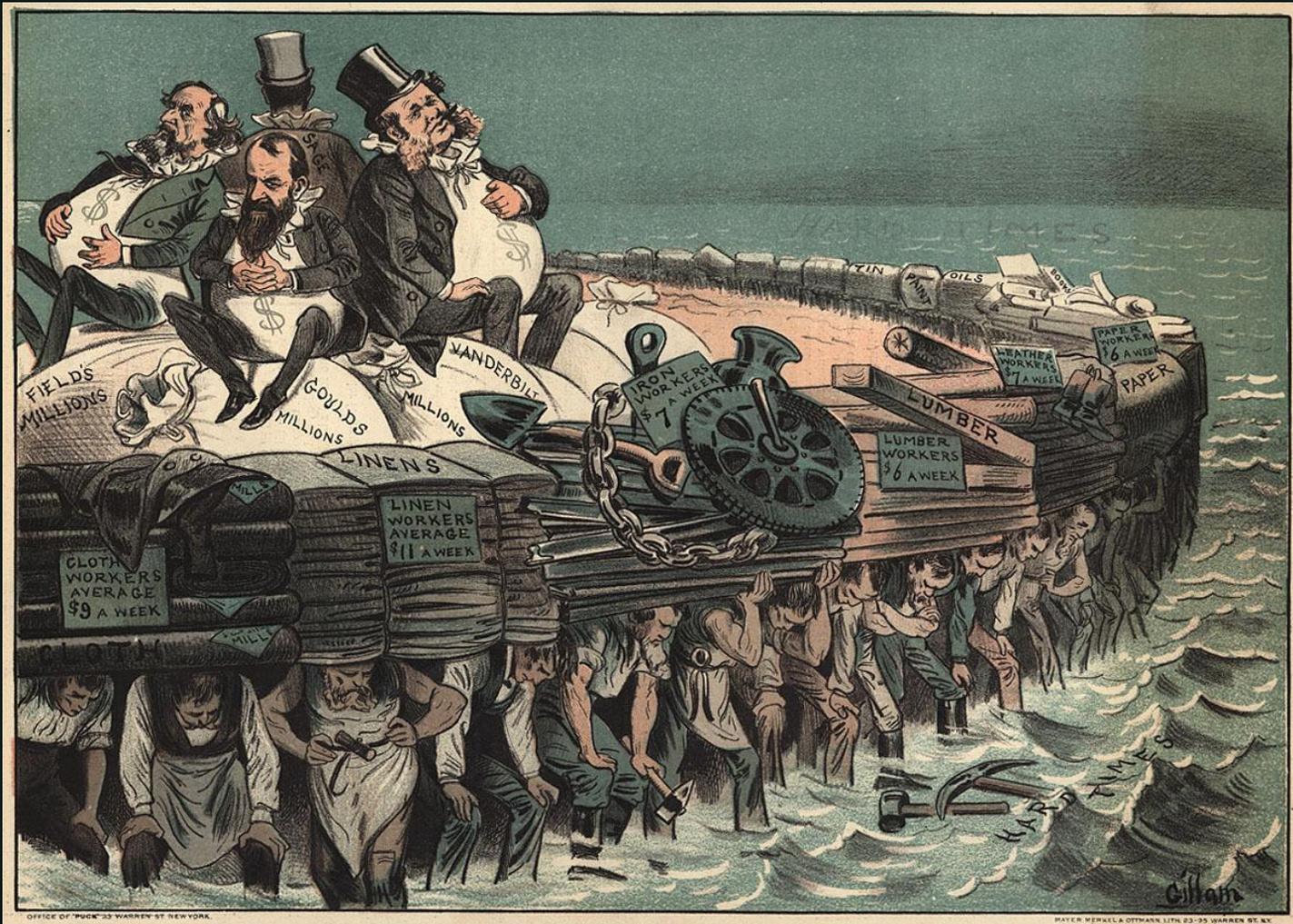
# % of Billionaires in 1900

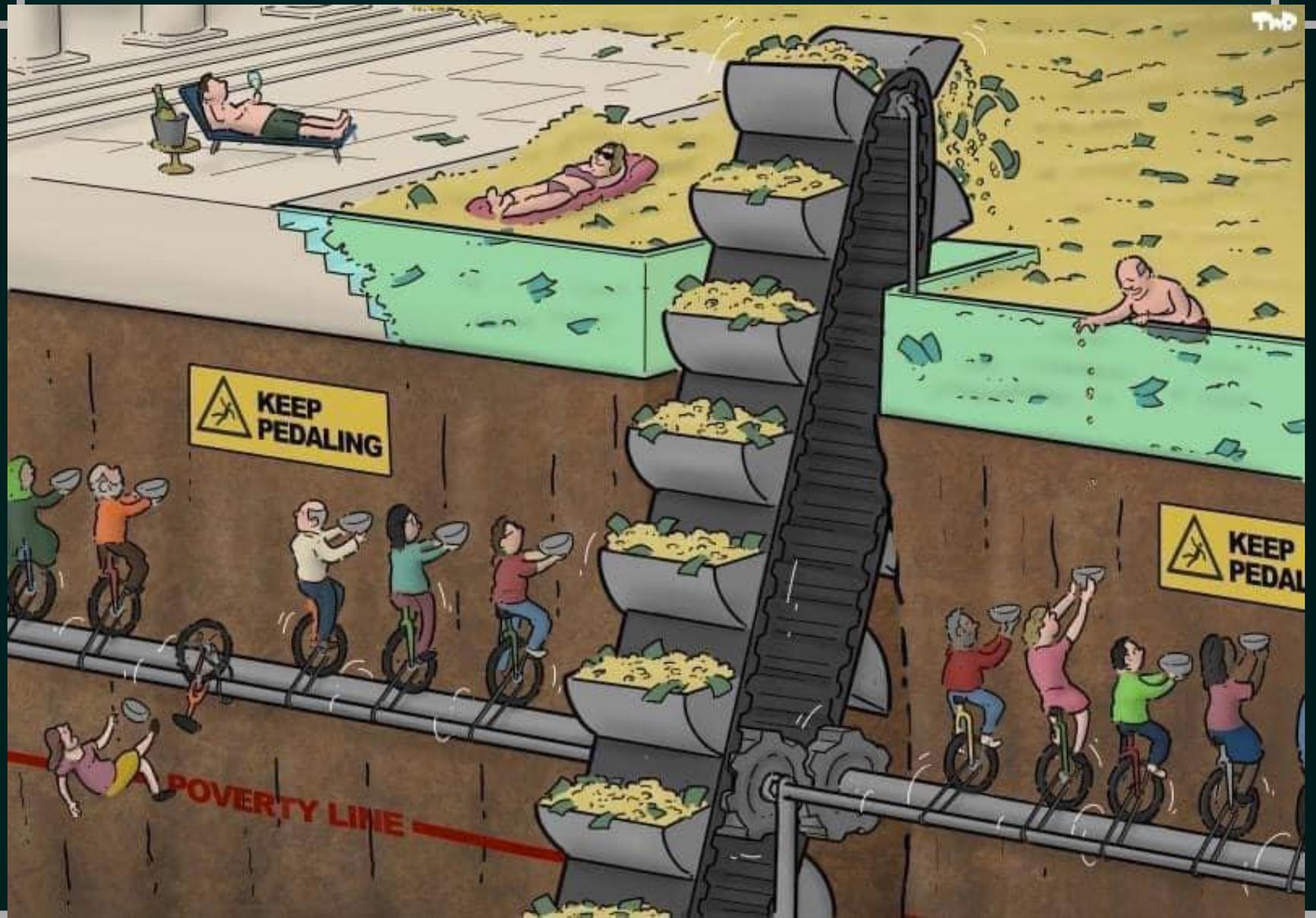


# % of Billionaires in 1918



# "The Protectors of Our Industries"





# The "Robber Barons" of the Past



HISTORY REPEATS ITSELF.—THE ROBBER BARONS OF THE MIDDLE AGES, AND THE ROBBER BARONS OF TO-DAY.

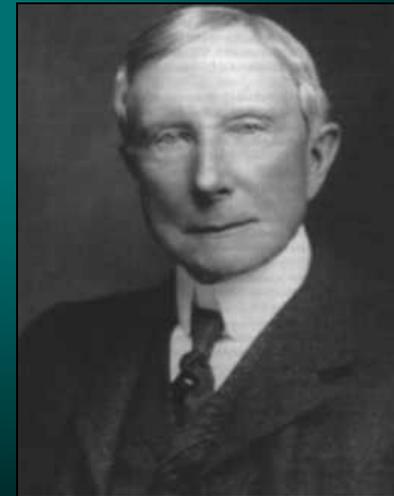
# New Type of Business Entities

## 1. Pool

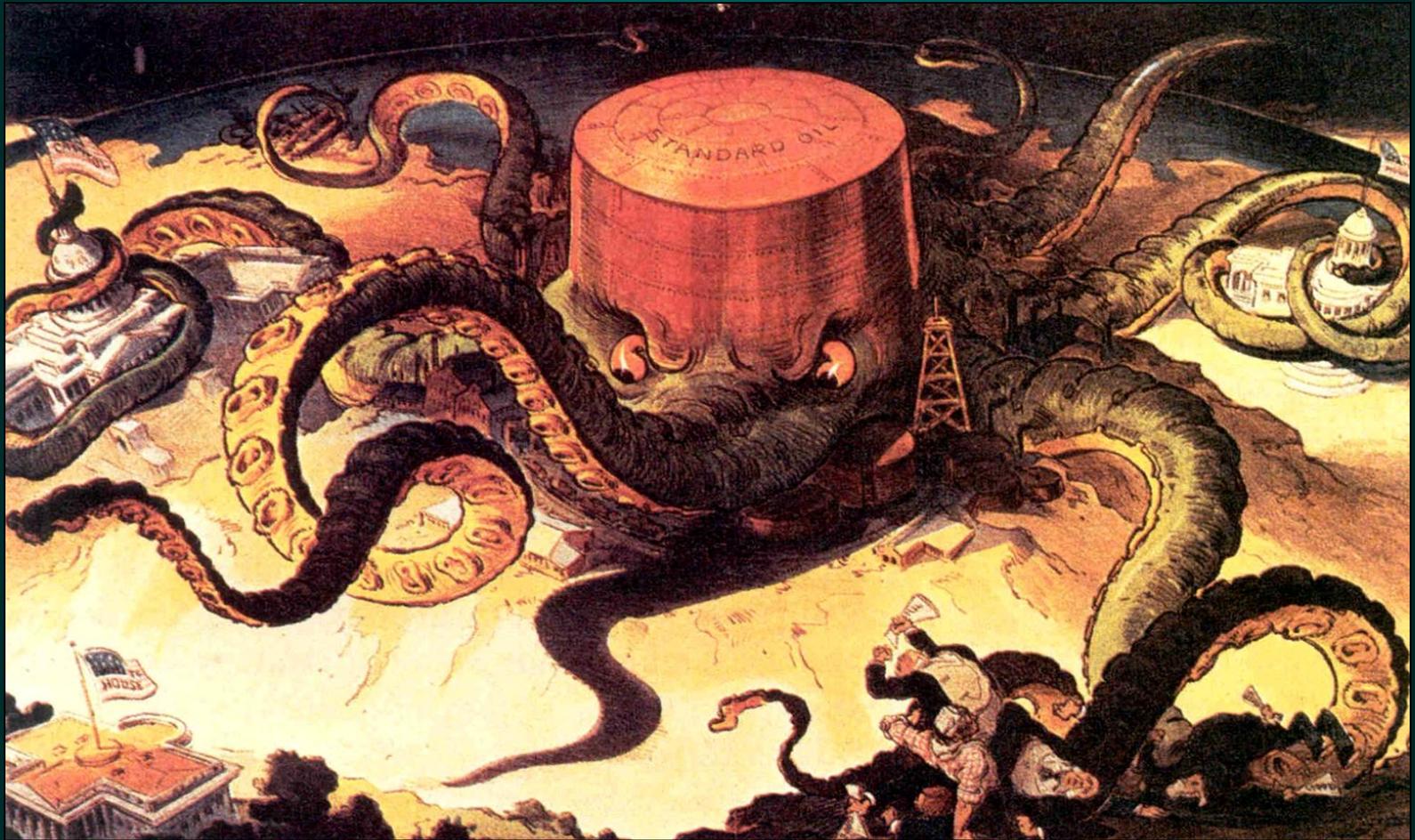
1887 → Interstate Commerce Act  
→ Interstate Commerce  
Commission created.

## 2. Trust → John D. Rockefeller

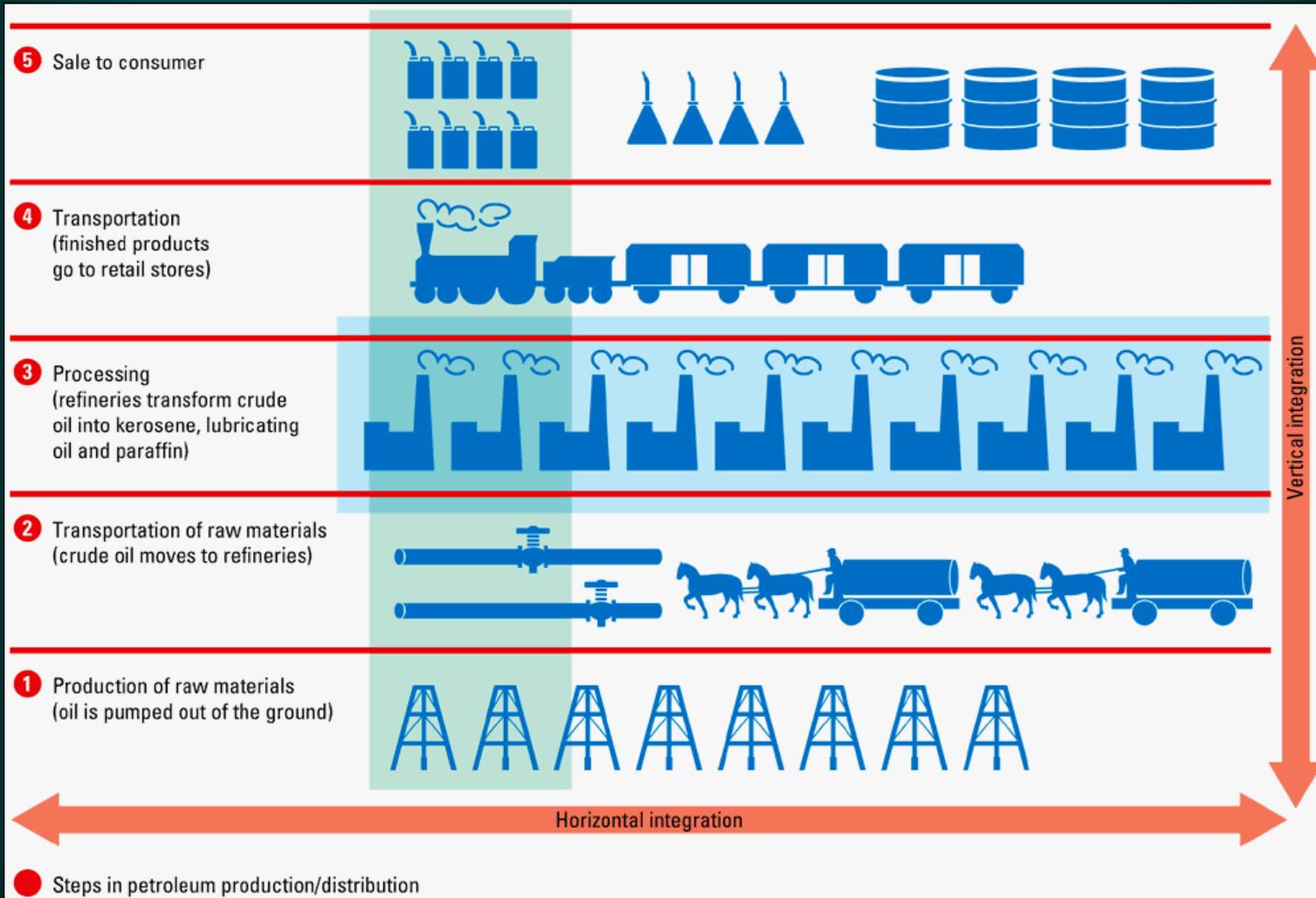
\* Standard Oil Co.



# Standard Oil Co.



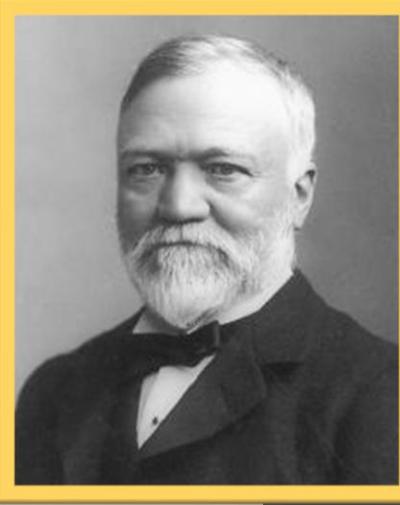
# New Type of Business Entities



## 22-9 THE TRUST TITAN EMERGES (SLIDE 1 OF 4)

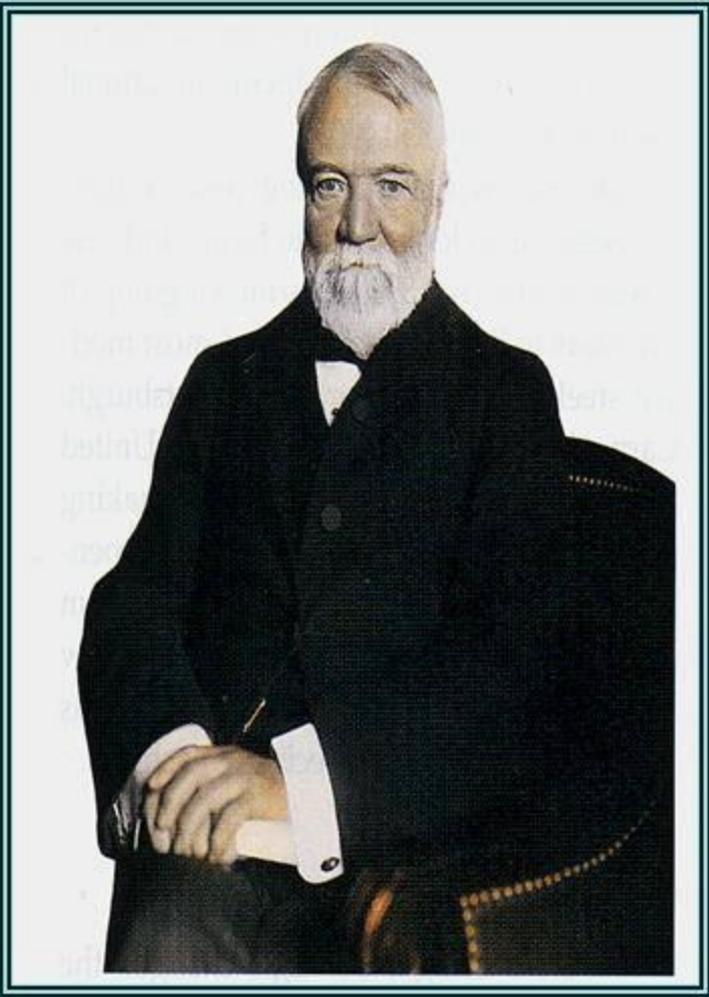
- Most business leaders devised ways to circumvent competition:
  - **Andrew Carnegie**, steel king
    - Integrated every phrase of steel-making operation
    - His miners scratched ore from Mesabi Range
    - His ships floated it across Great Lakes
    - His railroads delivered it to factories at Pittsburgh
    - No other hands had touched it when metal poured into waiting ingot molds

# Carnegie: Before



Birth place - Scotland

# ANDREW CARNEGIE

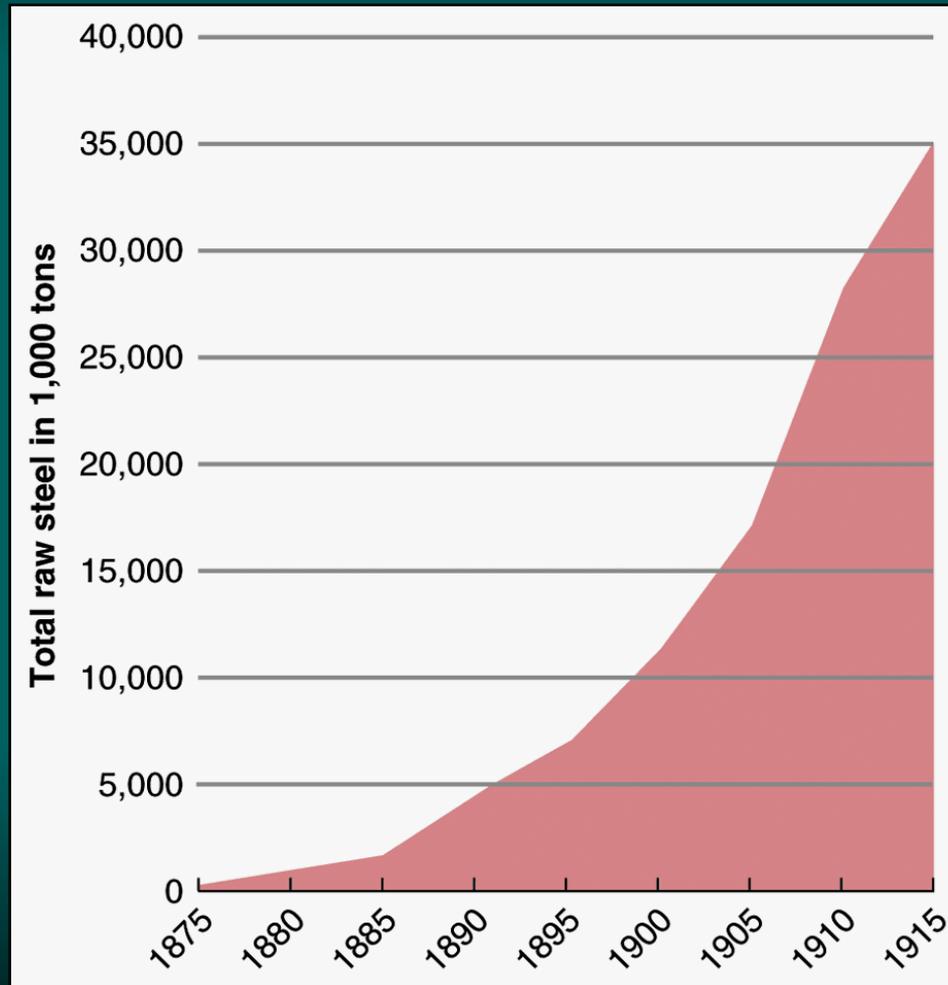


## Captain of Industry

- Monopolized the steel industry
- Rags to riches story---came from Scotland very poor.
- Used scientific ideas (Bessemer Process) to develop a better way to produce steel and sell a quality product for an inexpensive price.
- Used Horizontal integration.



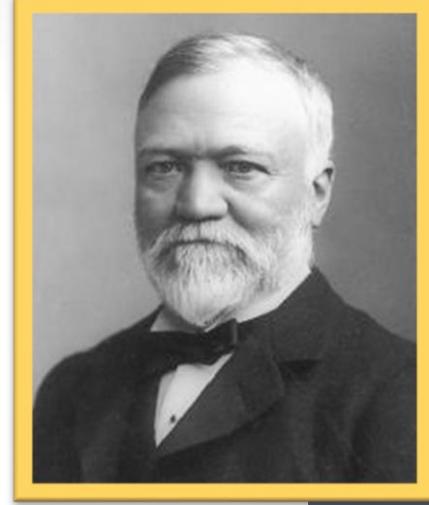
# Iron & Steel Production



# Industrial Consolidation: Iron & Steel Firms

	1870	1900
No. of firms	808	669
No. of employees	78,000	272,000
Output (tons)	3,200,000	29,500,000
Capital invested	\$121,000,000	\$590,000,000

# Carnegie: After



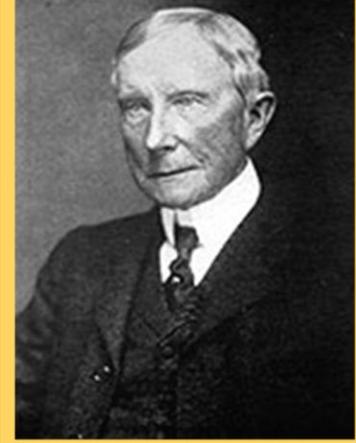
91<sup>st</sup> St NYC Mansion



Skibo Castle - Scotland



# John Rockefeller: Before



Birth Place – Richford, NY

## 22-9 THE TRUST TITAN EMERGES (SLIDE 2 OF 4)

- Carnegie pioneered creative entrepreneurial tactic of **vertical integration**:
  - Combine into one organization all phases of manufacturing from mining to marketing
  - Goal to improve efficiency by:
    - Making supplies more reliable
    - Control product quality at all stages of production
    - Eliminate middlemen's fees
- John D. Rockefeller mastered technique of **horizontal integration**:
  - Allying with competitors to monopolize a market

# New Type of Business Entities

## 2. Trust:

- \* **Horizontal Integration** → John D. Rockefeller
- \* **Vertical Integration**:
  - A. Gustavus Swift → Meat-packing
  - B. Andrew Carnegie → U. S. Steel



## 22-9 THE TRUST TITAN EMERGES (SLIDE 3 OF 4)

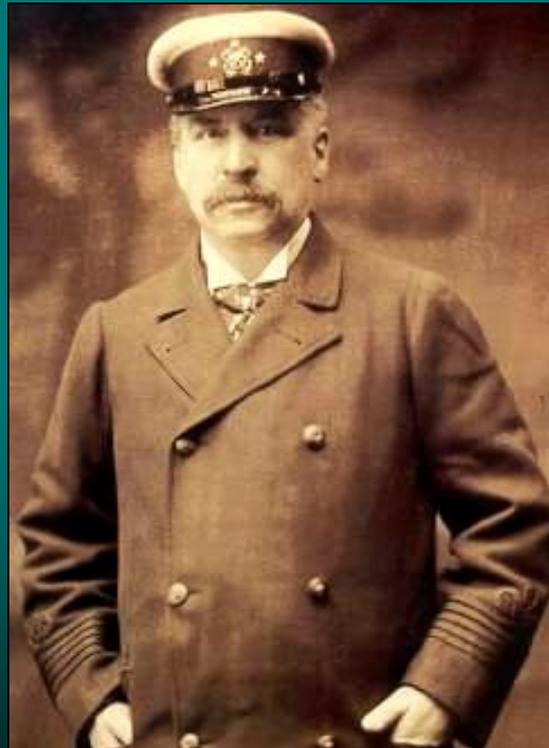
- Perfected device for controlling rivals—the **trust**:
  - Stockholders in small oil companies assigned their stock to board of directors of Standard Oil Company (1870)
  - Standard Oil then consolidated operations of previously competing enterprises
  - Ruthlessly wielding vast power, Standard Oil cornered virtually entire world petroleum market
  - Inspired many imitators, and word *trust* used to describe any large-scale business combination

- **J. Pierpont Morgan:**
  - Devised other schemes to eliminate “wasteful” competition:
    - Depression of 1890s drove many businessmen, bleed by cutthroat competition, to Morgan:
      - His remedy was to consolidate rival enterprises
      - He placed officers of his own banking syndicate on various boards of directors—known as **interlocking directorates**

# New Financial Businessman

The Broker:

\* J. Pierpont Morgan



# Wall Street – 1867 & 1900

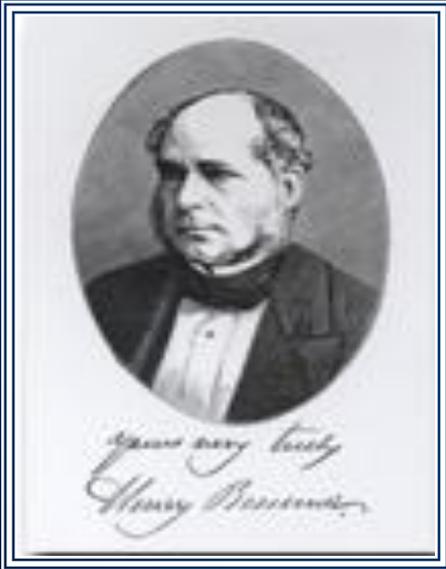




## 22-10 THE SUPREMACY OF STEEL (SLIDE 1 OF 2)

- “Steel is king”: new steel civilization—from skyscrapers to coal shuttles
  - Steel making, esp. rails for railroads, typified dominance of “heavy industry”
    - Capital goods as opposed to consumer goods
  - Steel expensive in 1860s and 1870s:
    - Vanderbilt forced to import steel rails from Britain
    - By 1900, U.S. outdistanced all foreign competitors, making more than 1/3 of world’s steel

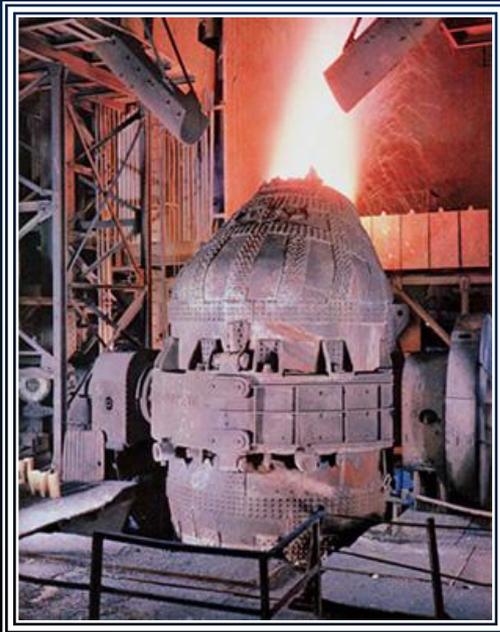
# BESSEMER PROCESS



- ❖ 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



- What wrought transformation?
  - **Bessemer process:**
    - Invented in 1850s; a method of making cheap steel
    - First, William Kelly, a Kentucky manufacturer, developed “air blowing” technique on red-hot iron
    - Gradually Bessemer-Kelly process accepted
    - Two “crazy men” made present steel civilization possible

# 22-11 CARNEGIE AND OTHER SULTANS OF STEEL (SLIDE 1 OF 4)

- Andrew Carnegie—kingpin steelmaster:
  - Gifted organizer and administrator:
    - Succeeded by picking high-class associates
    - Eliminated many middlemen
    - His partnership involved about 40 “Pittsburgh millionaires”
    - By 1900, he produced  $\frac{1}{4}$  of nation’s Bessemer steel:
      - **Partners, pre-income tax days, divided profits of \$40 million a year as take-home pay**
      - **“Napoleon of the Smokestacks” received \$25 million**

# 22-11 CARNEGIE AND OTHER SULTANS OF STEEL (SLIDE 2 OF 4)

- J. Pierpont Morgan: financial giant
  - Financed reorganization of railroads, insurance companies, and banks; he claimed:
    - “Money power” not dangerous, except in dangerous hands—and he did not regard his own hands as dangerous
  - Circumstances brought Morgan and Carnegie into collision:
    - By 1900, Carnegie ready to sell his holdings
    - Morgan meanwhile plunged heavily into manufacture of steel pipe tubing

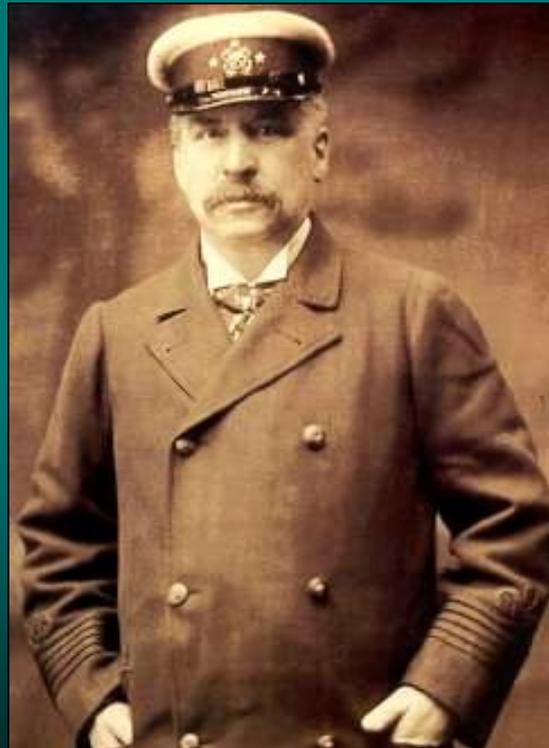
# 22-11 CARNEGIE AND OTHER SULTANS OF STEEL (SLIDE 3 OF 4)

- Carnegie threatened to enter same business if Morgan did not meet his price
- Carnegie's agents haggled with Morgan for eight hours until he agreed to buy Carnegie out for over \$400 million
- Carnegie, fearing he would die "disgraced" with so much wealth, dedicated his remaining years to giving away money:
  - Public libraries, pensions for professors, and other philanthropic purposes
  - Gave away about \$350 million

# New Financial Businessman

The Broker:

\* J. Pierpont Morgan



## 22-11 CARNEGIE AND OTHER SULTANS OF STEEL (SLIDE 4 OF 4)

- **Morgan moved rapidly to expand new industrial empire:**
  - **Took Carnegie holdings, added others, “watered” stock liberally, and in 1901 launched enlarged United States Steel Corporation**
  - **Capitalized at \$1.4 billion—America’s first billion-dollar corporation:**
    - **Larger sum than total wealth of nation in 1800**
    - **Industrial Revolution had come into its own**



Library of Congress Prints and Photographs Division [LC-USZ62-20579]

•**22.7 J. P. Morgan (1837–1913)** As the most influential banker of his day, Morgan symbolized to many people the power and arrogance of “finance capitalism.” The chronic skin disorder on his nose inspired the taunt “Johnny Morgan’s nasal organ has a purple hue.”

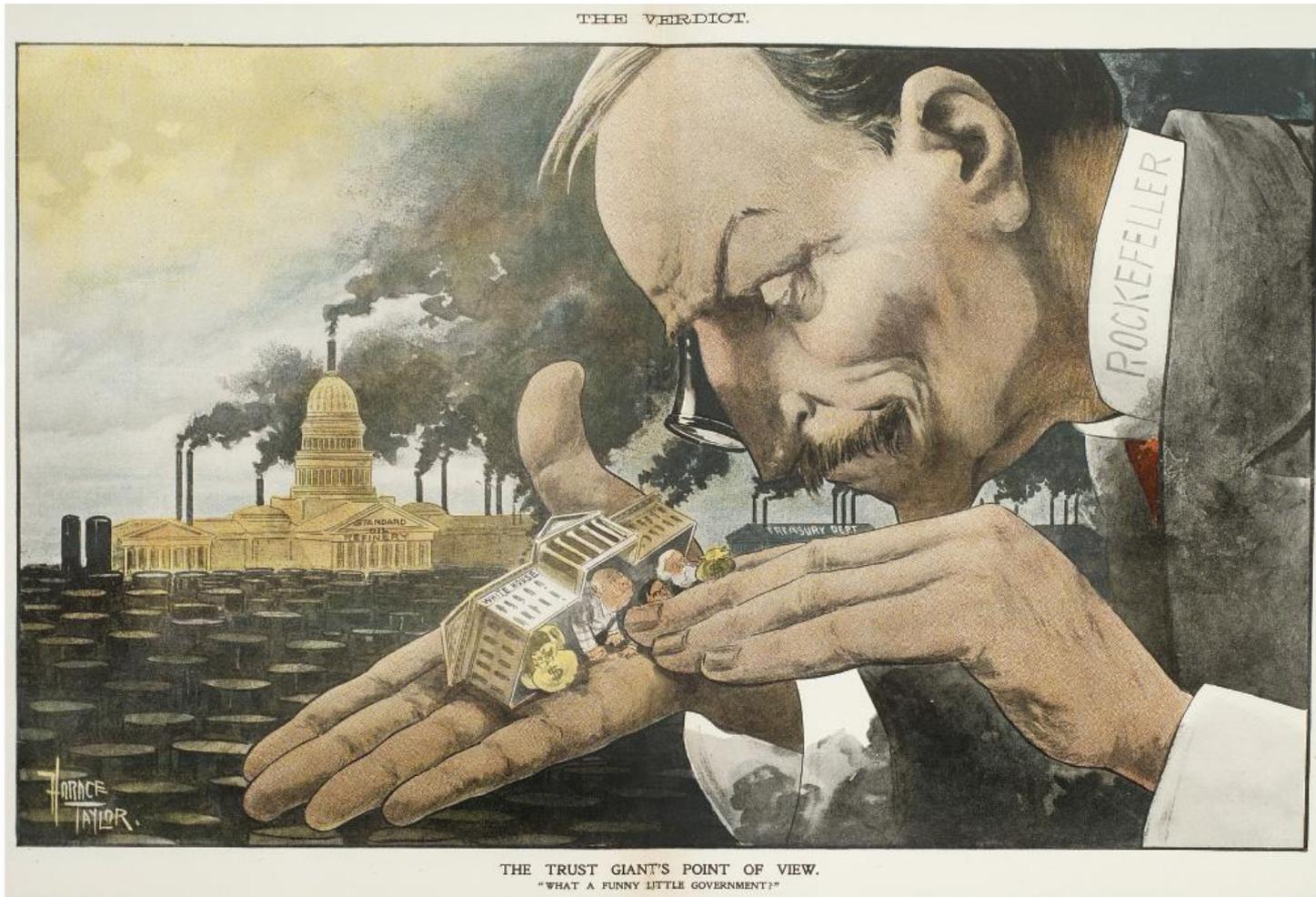
## 22-12 ROCKEFELLER GROWS AN AMERICAN BEAUTY ROSE (SLIDE 1 OF 5)

- Emergence of oil industry—one of most striking developments before/after Civil War:
  - **In 1859 first well in Pennsylvania—“Drake’s Folly” poured out liquid “black gold”**
    - Kerosene, derived from petroleum, first major product of infant oil industry
    - Oil industry soon boomed
    - By 1870s kerosene was America’s fourth most valuable export

# 22-12 ROCKEFELLER GROWS AN AMERICAN BEAUTY ROSE (SLIDE 2 OF 5)

- What technology gives, technology takes away:
  - 1885: 250,000 Edison's electric light bulbs in use
  - 1900: 15 million
  - New light bulbs rendered kerosene obsolete just as kerosene had rendered whale oil obsolete
  - Oil might have remained shrinking industry but for invention of automobile:
    - By 1900 gasoline-burning internal combustion engine surpassed rivals, steam and electricity, as superior means of automobile propulsion
    - Automobile age gave oil business new, long-lasting, and hugely profitable lease on life

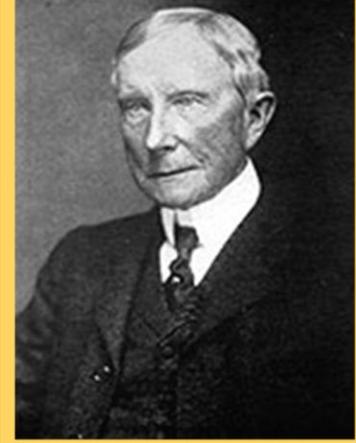
"The Trust Giant's Point of View: What a Funny Little Government?"; illustration from "The Verdict", January 22nd, 1900 (our litho)/Taylor, Horace (1881-1934)/NEW YORK HISTORICAL SOCIETY/Collection of the New-York Historical Society, USA/Bridgeman Images



# 22-12 ROCKEFELLER GROWS AN AMERICAN BEAUTY ROSE (SLIDE 3 OF 5)

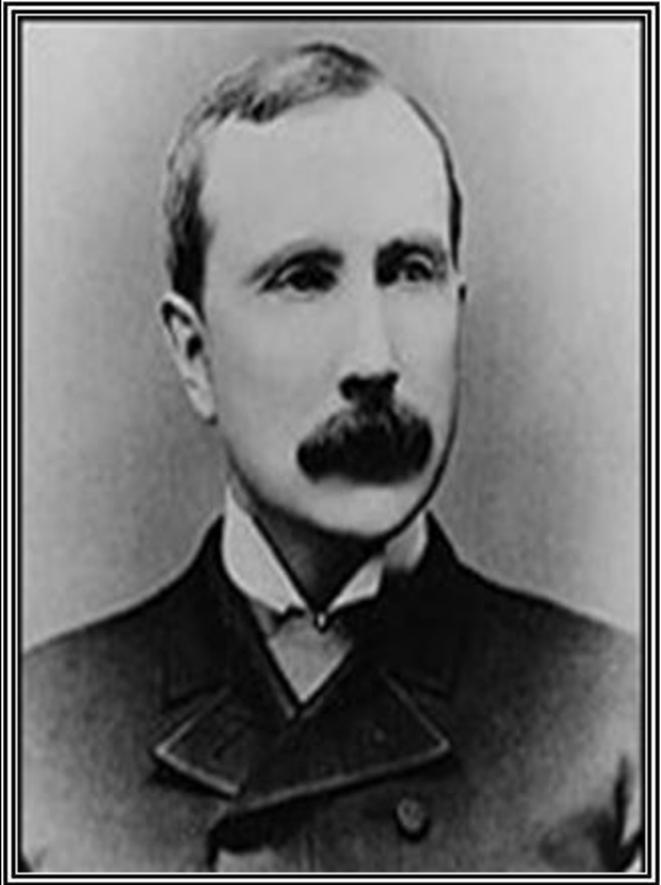
- **Rockefeller came to dominate oil industry**
  - In 1870, organized **Standard Oil Company** of Ohio:
    - Nucleus of great trust formed in 1882
    - Locating his refineries in Cleveland, he eliminated middlemen and squeezed out competitors
    - Rockefeller flourished in age of completely free enterprise
    - Operated “just to the windward of the law”
    - Pursued policy of rule or ruin
    - By 1877, controlled 95% of all oil refineries in U.S.A.

# John Rockefeller: Before



Birth Place – Richford, NY

# JOHN ROCKEFELLER



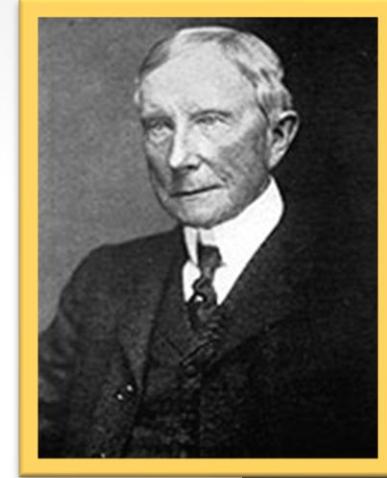
## Captain of Industry

- Came from a wealthy family
- Bought a substitute during the Civil War.
- Formed the first modern corporations in the oil industry Standard Oil
- Was the first billionaire in the U.S. by 1900.
- Used Vertical Integration and Horizontal Integration to gain a monopoly in the oil business.



# John Rockefeller: After

“The Casements” - Ormond Beach, FL

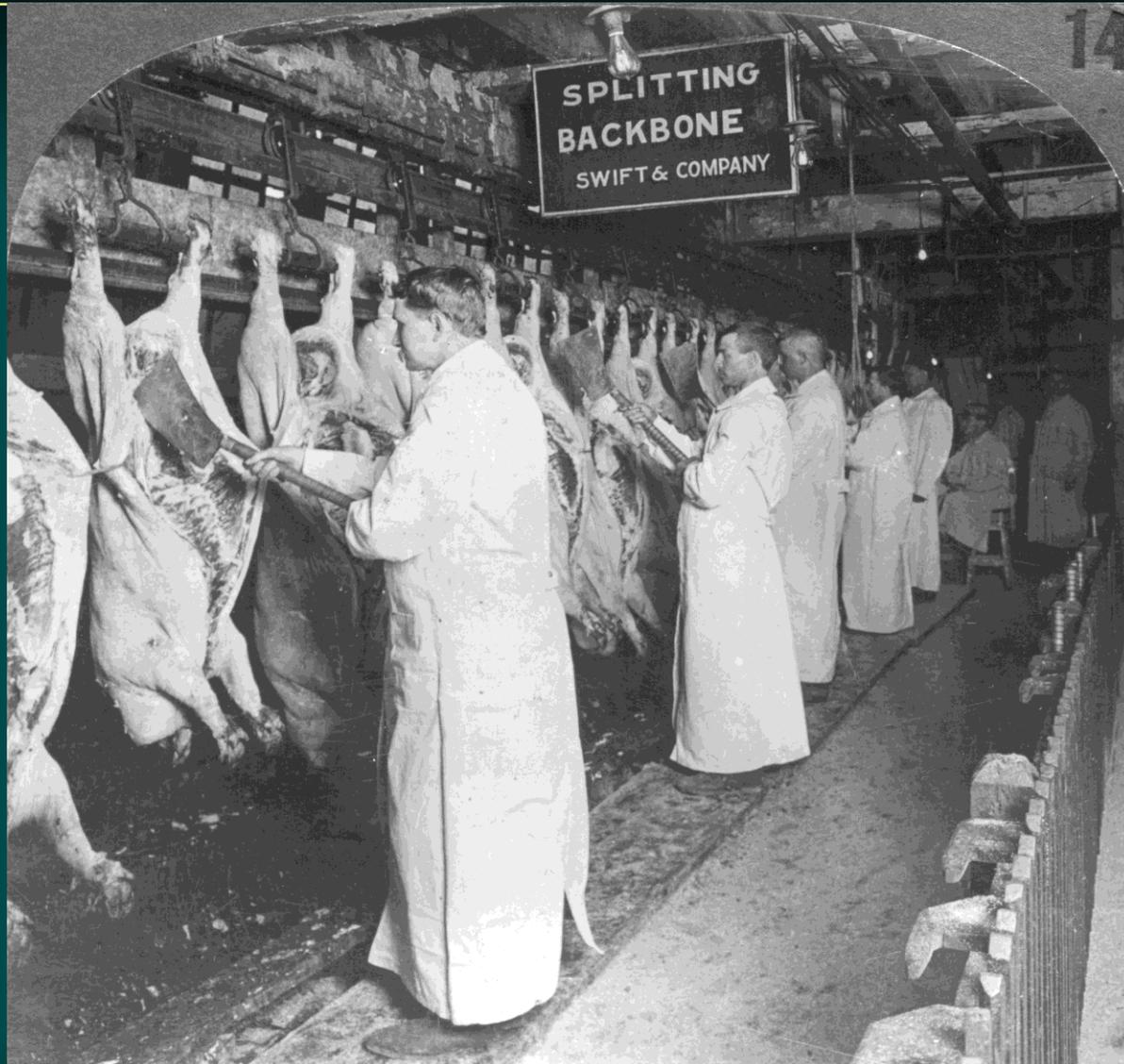


## 22-12 ROCKEFELLER GROWS AN AMERICAN BEAUTY ROSE (SLIDE 4 OF 5)

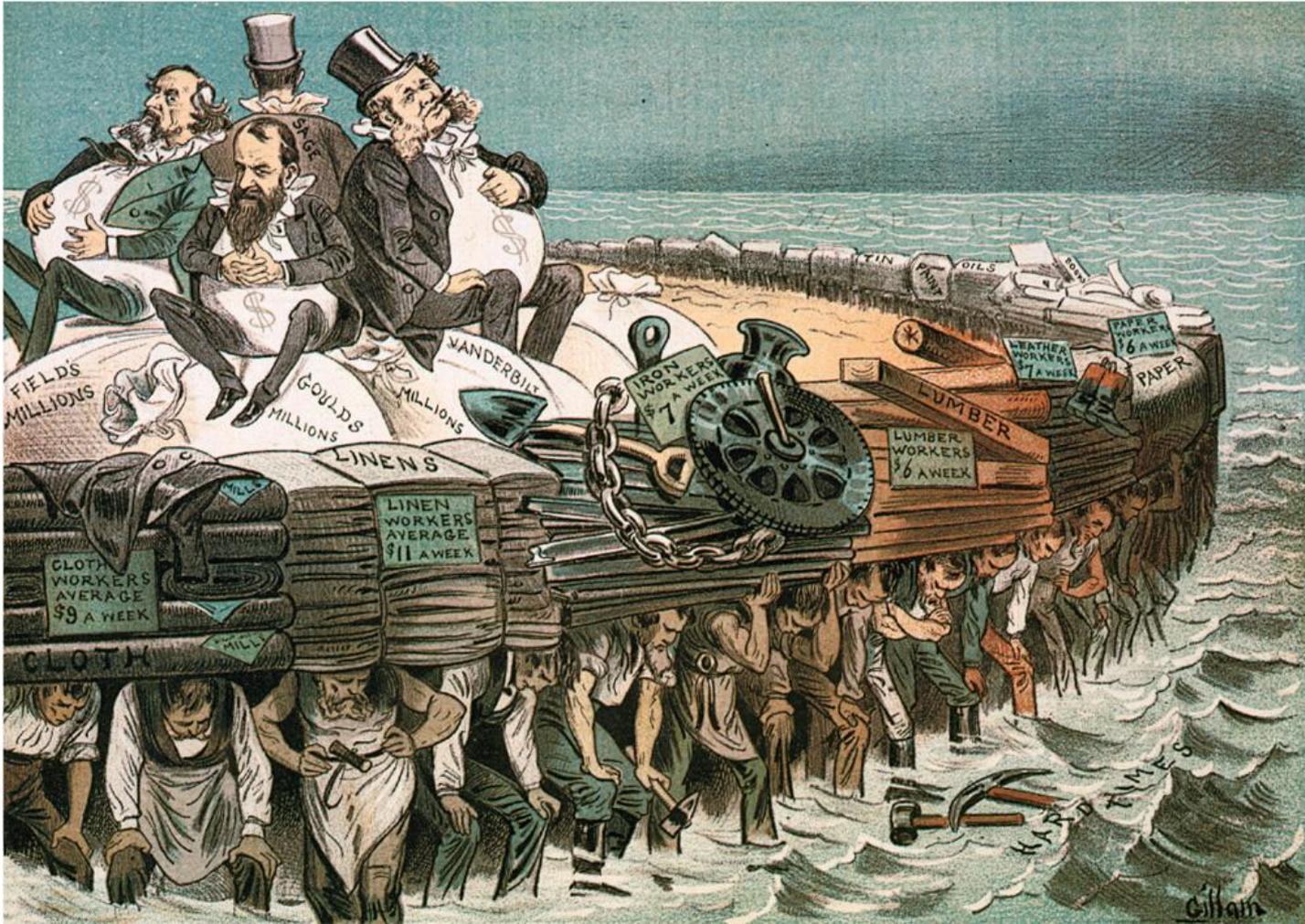
- Rockefeller—“Reckafellow,” as Carnegie once called him—showed little mercy
- Rockefeller’s oil monopoly did turn out superior product at relatively cheap price
- Achieved important economies by its large-scale methods of production and distribution
- Efficient use of expensive machinery and consolidation proved more profitable than ruinous price wars

## 22-12 ROCKEFELLER GROWS AN AMERICAN BEAUTY ROSE (SLIDE 5 OF 5)

- Other trusts blossomed in sugar, tobacco, leather
  - Harvester trust amalgamated 200 competitors
  - Meat industry arose on western herds and kings—**Gustavus Swift and Philip Armour**
  - Untrustworthy trusts and “pirates” who captained them disturbingly new
  - Arrogant class of “new rich” elbowed aside traditional patrician families



Disassembly line for hogs, 1915



Library of Congress Prints and Photographs Division [LC-USZC4-3108]

## 22-13 THE GOSPEL OF WEALTH (SLIDE 1 OF 4)

- Credited heavenly help:
  - **“The good Lord gave me my money”—Rockefeller**
  - Wealthy, entrusted with society’s riches, had to prove themselves morally responsible according to “Gospel of Wealth”—Carnegie
  - Most defenders of capitalism relied on survival-of-the fittest theories of Herbert Spencer and William Graham
    - **Social Darwinists** argued individuals won their stations in life by competing on basis of natural talents

# **PHILANTHROPY**

*The effort of an individual or organization to increase the well-being of humankind, as by charitable aid or donations.*

# JOHN ROCKEFELLER



## Philanthropist

- Gave millions of his money to hospitals and colleges.
- **University of Chicago**
- **Spellman College**
- **National Parks**
- **United Nations**
- **Williamsburg**
- **Cancer Research**



# CONRELIUS VANDERBILT



- **Worth over \$100 million**
- **Philanthropist donated \$1 million to Vanderbilt University**



# ANDREW CARNEGIE

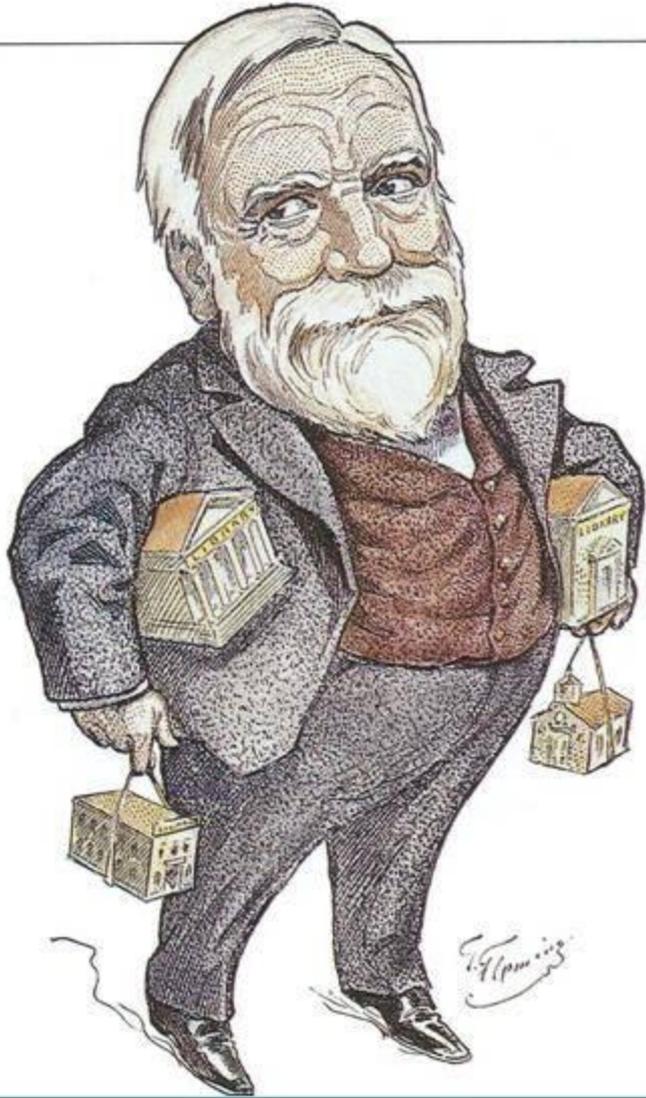
## Philanthropist

- Gave millions to colleges and libraries.

- It was the sacred duty of the wealthy to give back to society who has given to him.

- Stressed education as a means to better one's self.

- Carnegie Hall



# GOSPEL OF WEALTH

*Andrew Carnegie (1835–1919) wrote in 1889,*

“The man who dies leaving behind him millions of available wealth, which was his to administer during life, will pass away ‘unwept, unhonored, and unsung,’ no matter to what uses he leaves the dross which he cannot take with him. Of such as these the public verdict will then be: ‘The man who dies thus rich dies disgraced.’ ”

# "On Wealth"



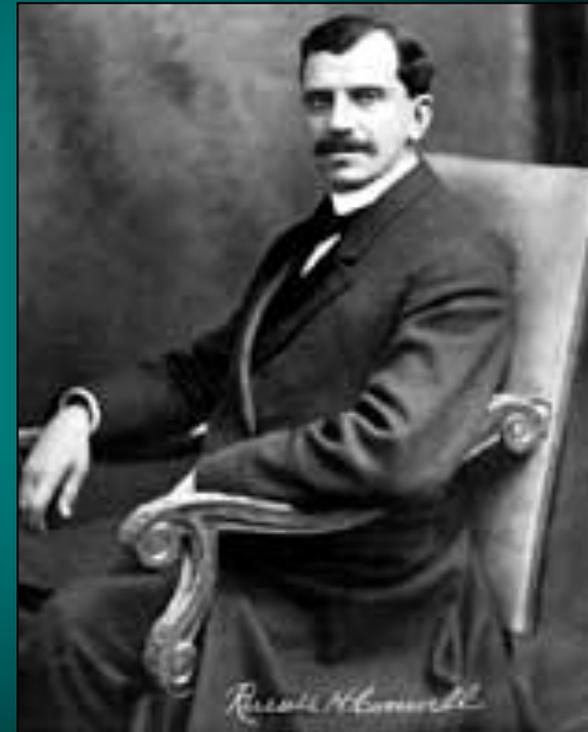
Andrew Carnegie

- The Anglo-Saxon race is superior.
- "Gospel of Wealth" (1889).
- Inequality is inevitable and good.
- Wealthy should act as "trustees" for their "poorer brethren."

# The Gospel of Wealth:

## Religion in the Era of Industrialization

- \$ Wealth no longer looked upon as bad.
- \$ Viewed as a sign of God's approval.
- \$ Christian duty to accumulate wealth.
- \$ Should not help the poor.



Russell H. Conwell

# ROBBER BARRONS

robber

**Extortion: Forced against your will**

• **Rebates:** discount or refund on “freight charges”

• **Drawbacks / Kickbacks:** Standard Oil gave certain railroads all its shipping business if it agreed to charge Standard Oil 25% to 50% less than its competitors

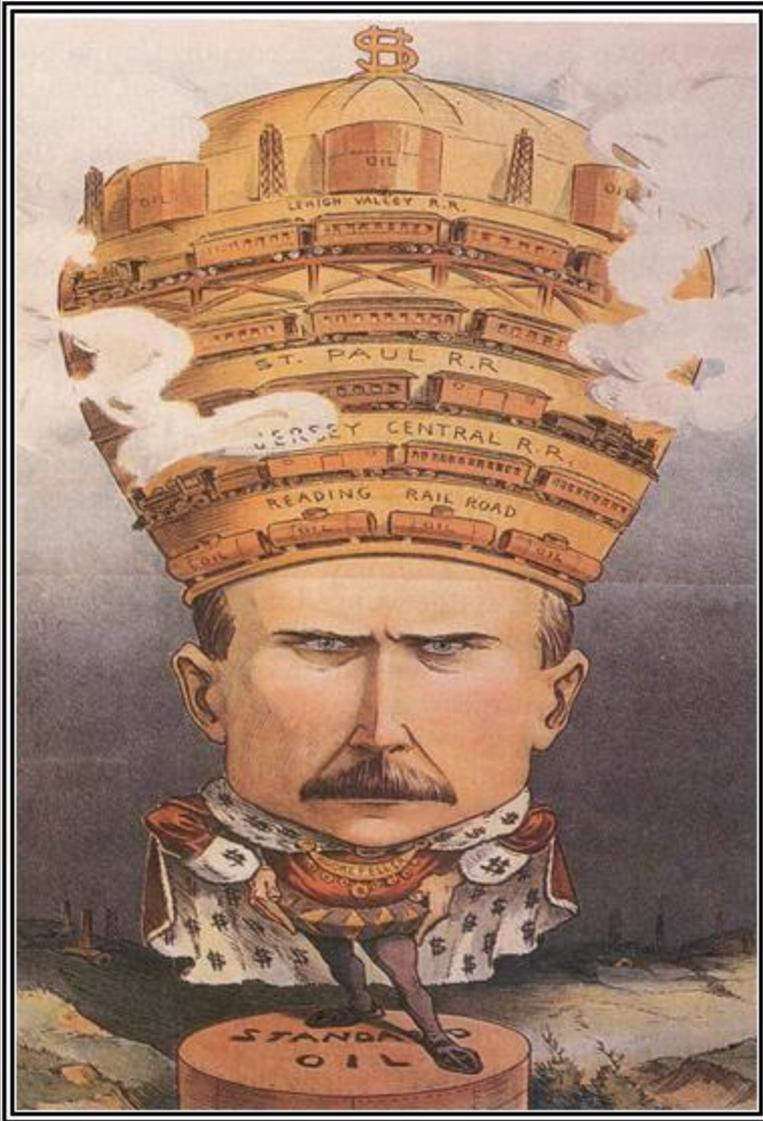
• **Buyouts:** Larger corporations forced smaller businesses to sell out

• **Congress** was “bought out” by the monopolies

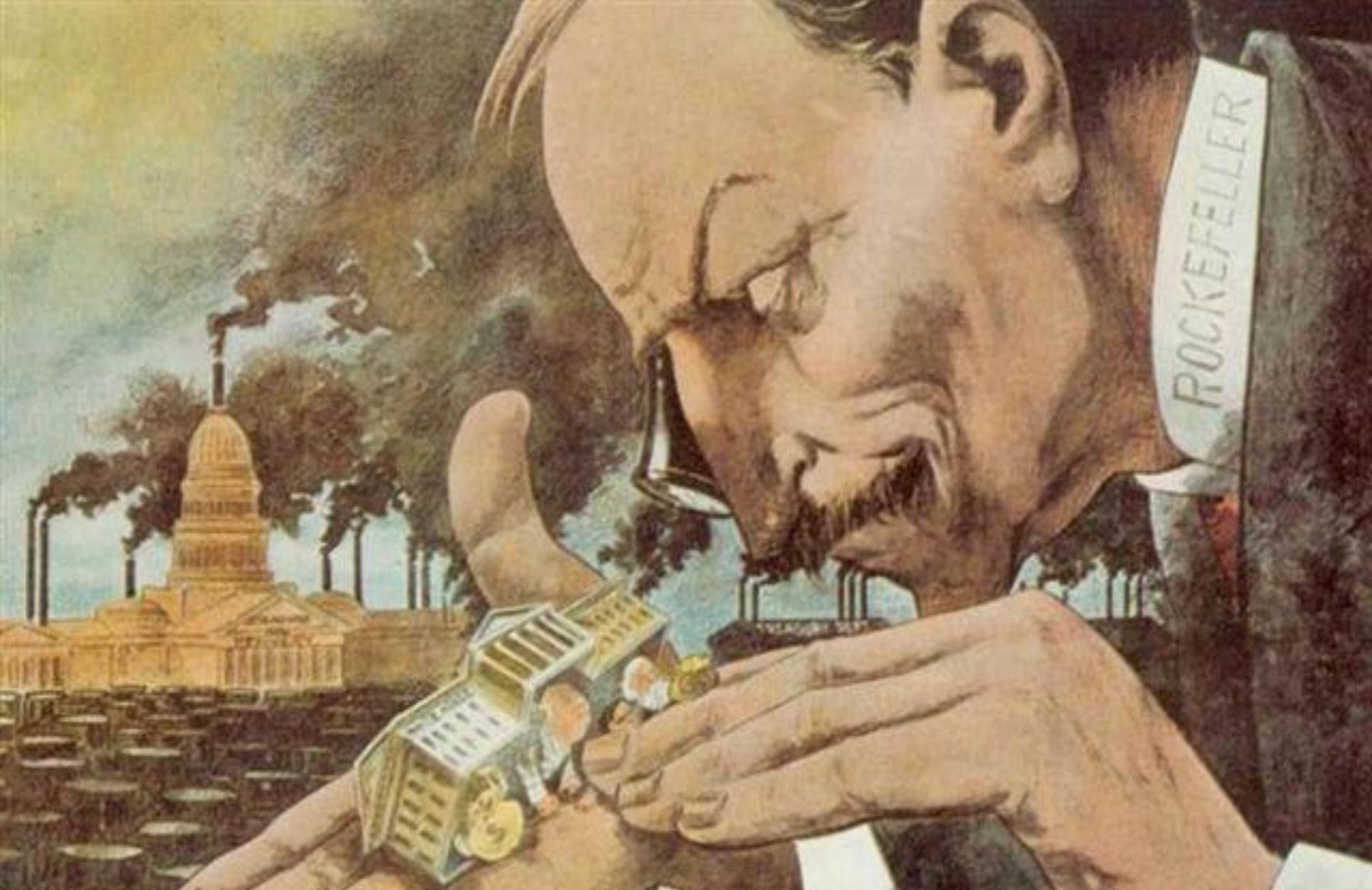
• **Spies:** Stealing your competitor's ideas

***Small businesses  
complained “monopolies”  
eliminated fair competition***

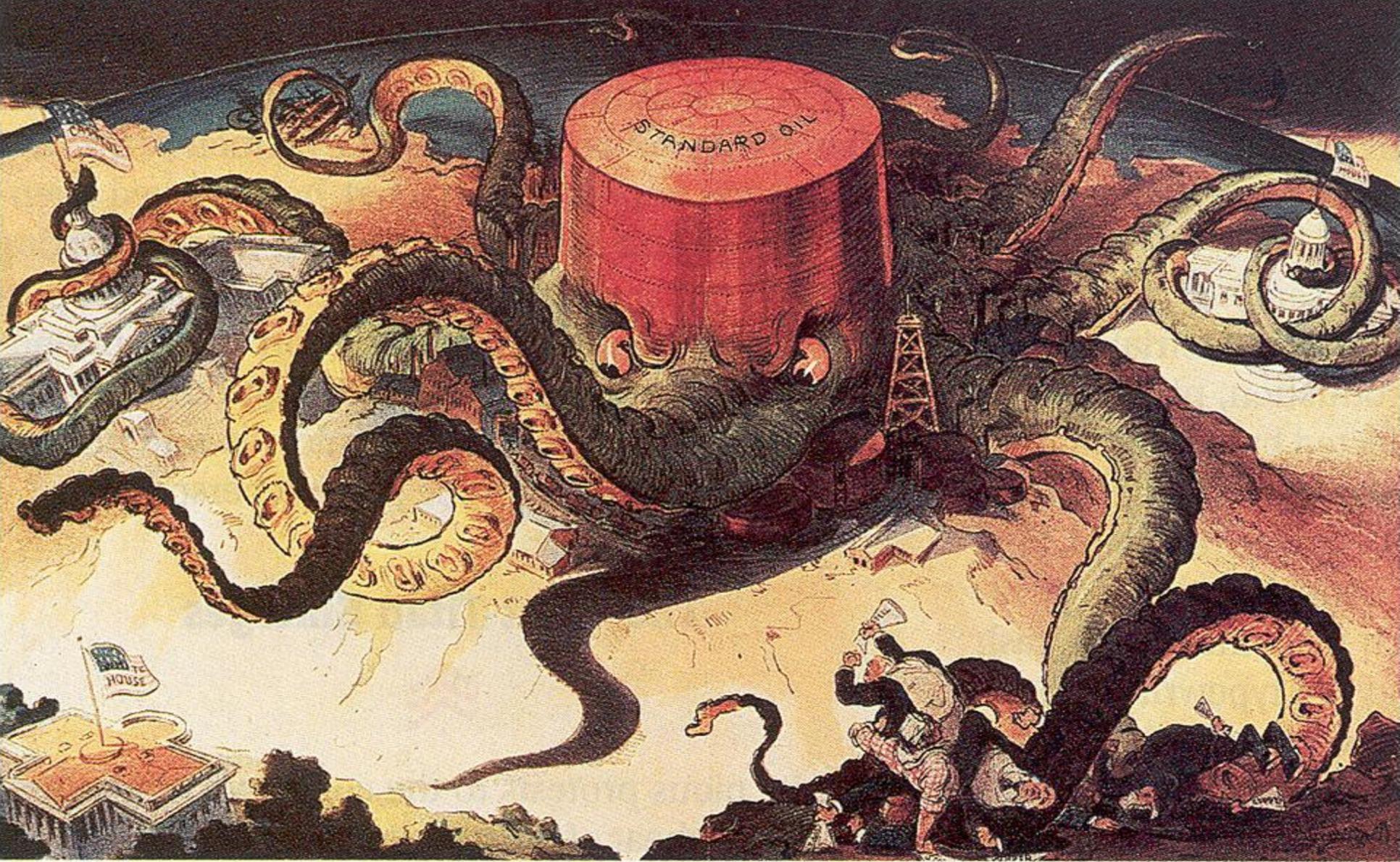
# JOHN ROCKEFELLER



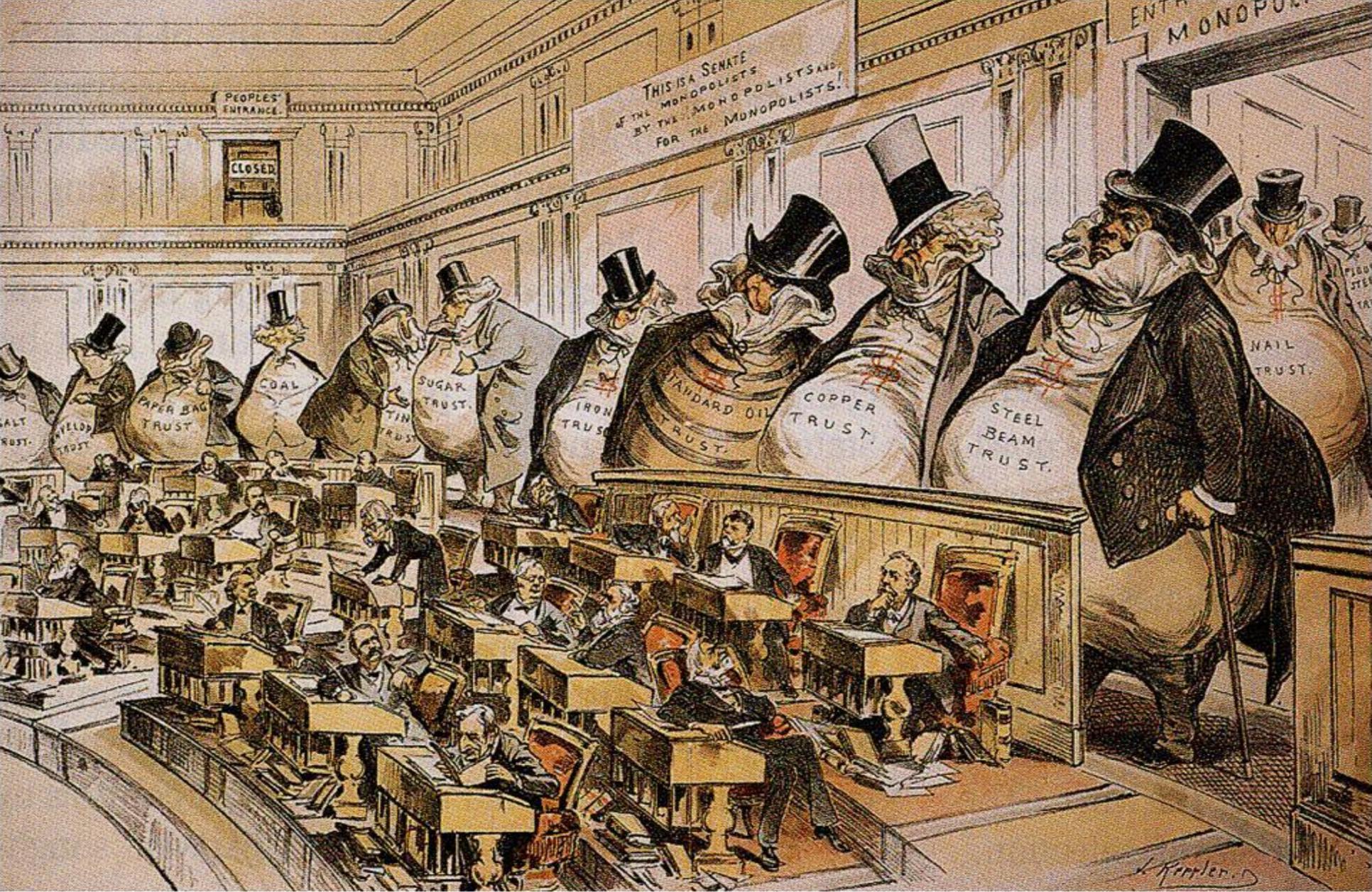
- Controlled the railroad by forcing them to pay him rebates because of the volume of business he gave them.
- Was called "Rock a Fellow" by many
- Ruthless business man: "Pay no man a profit"



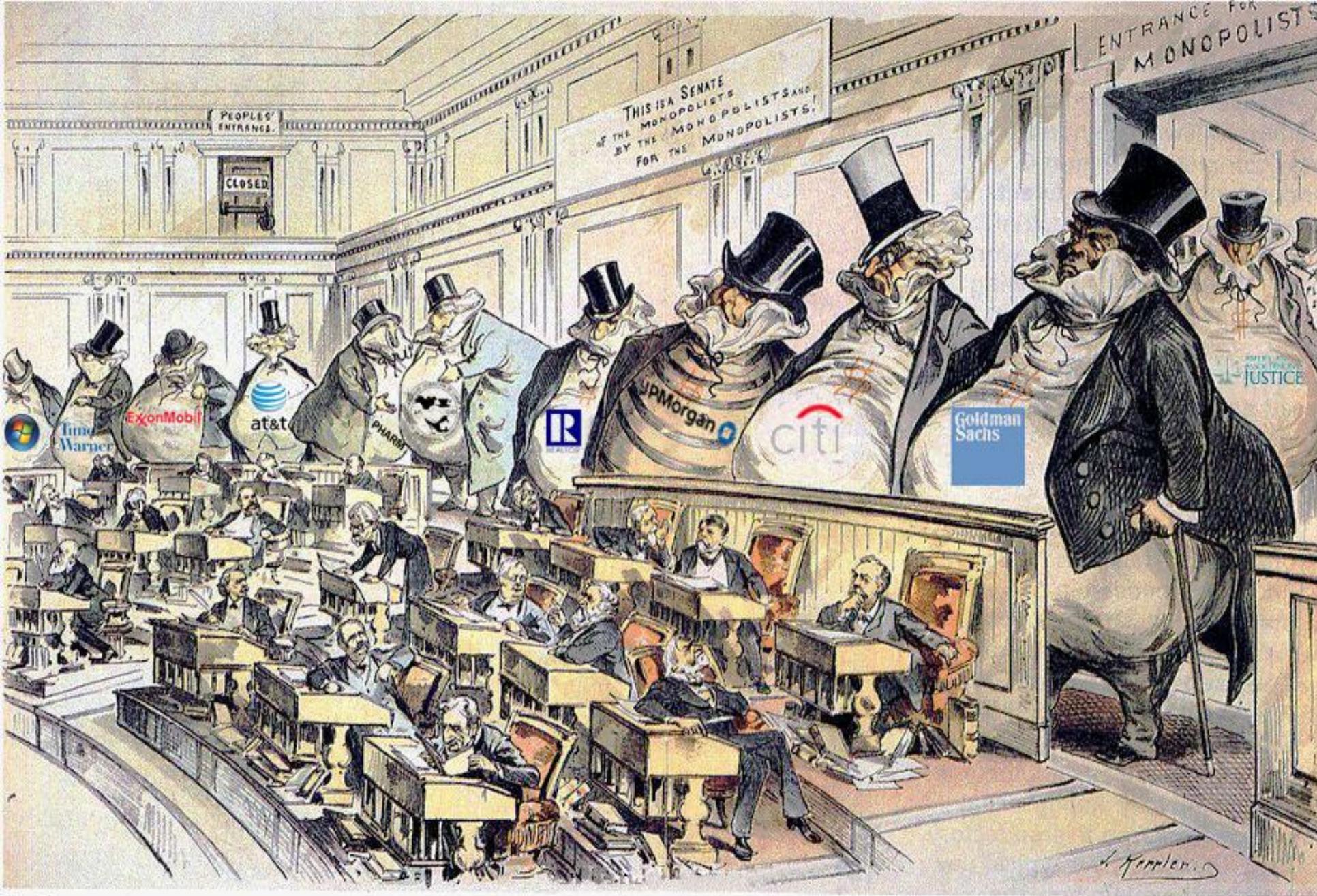
Rockefeller was so wealthy, he dictated to the U.S. Government to protect big business---- ***laissez faire***



**Rockerfeller would be hated by many because he had too much control over the oil industry and the government as viewed by the common man---  
-Some believed he was corrupt because he took away the right to compete---  
--free enterprise**



**Big business, monopolies controlled Congress through bribery. This is corruption**



**What about Today?**



HISTORY REPEATS ITSELF. — THE ROBBER BARONS OF THE MIDDLE AGES, AND THE ROBBER BARONS OF TO-DAY.

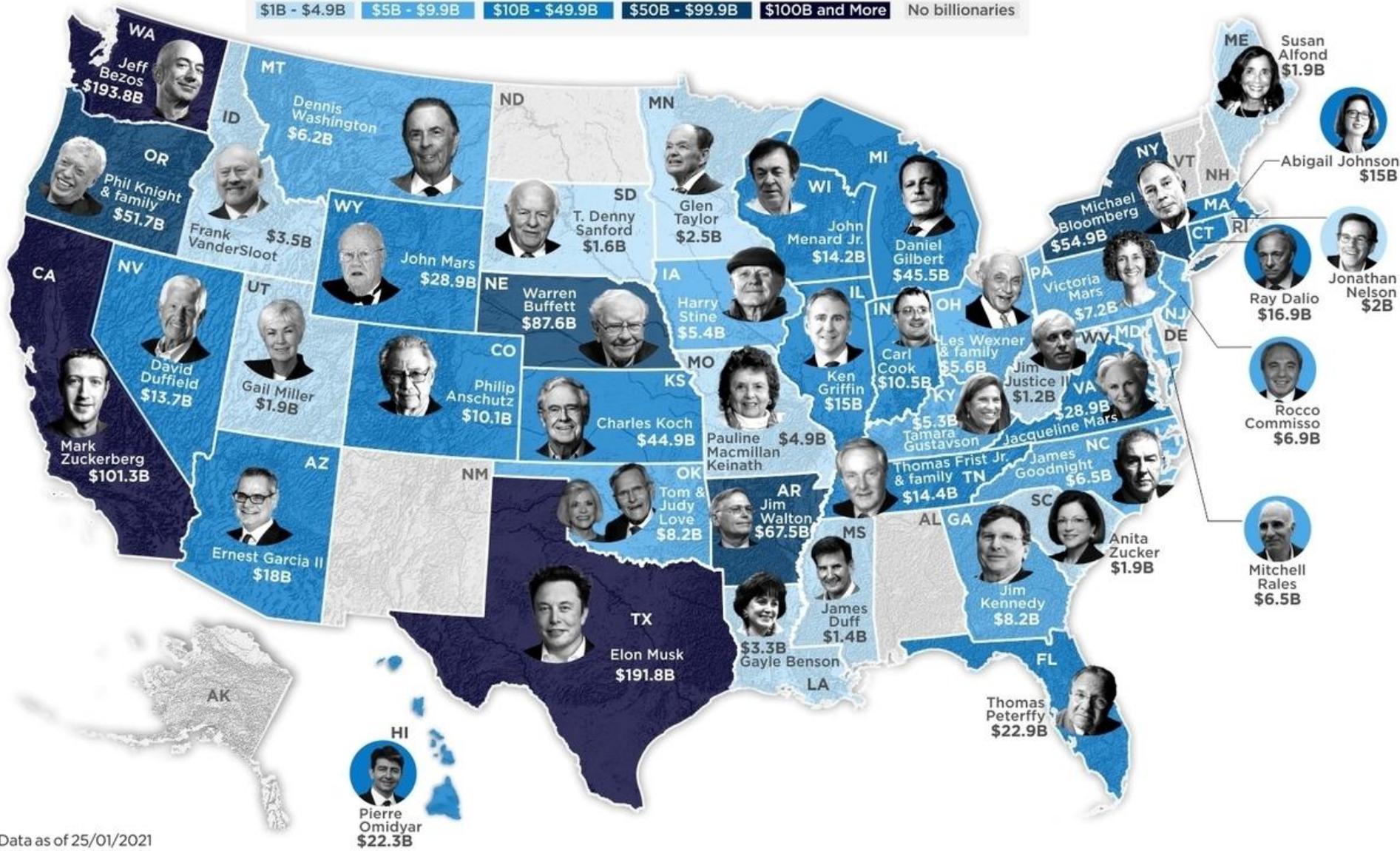
COPYRIGHT 1885

**“History repeats itself----The Robber Barons of the Middle Ages and the Robber Barons of Today....”**



# Richest Billionaire in Every State in 2021

Estimated Net Worth (\$)



Data as of 25/01/2021

Article & Sources:  
<https://howmuch.net/articles/richest-billionaire-in-every-state-2021>  
 Forbes - <https://www.forbes.com>

# THE RICHEST FAMILIES in AMERICA

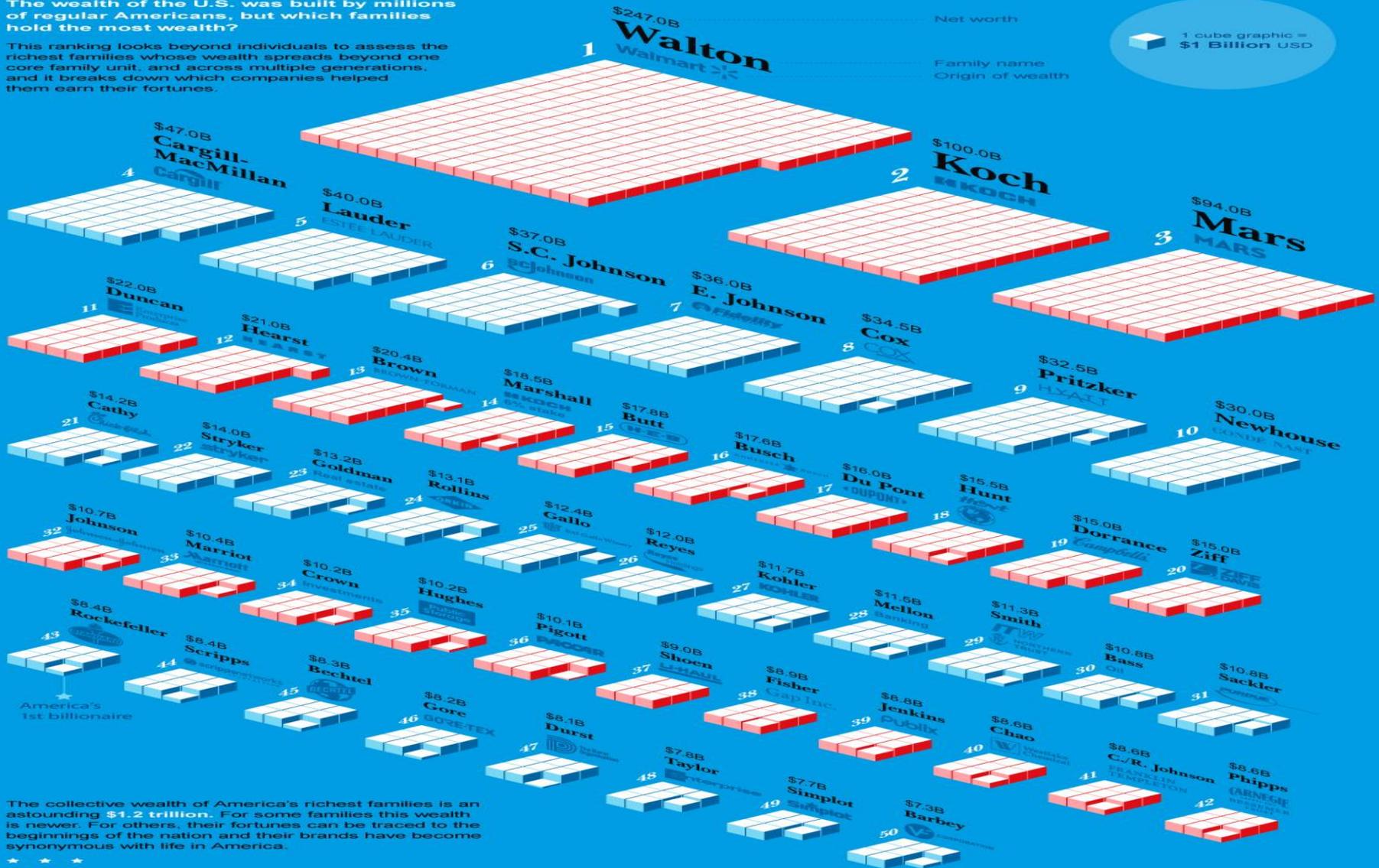
The wealth of the U.S. was built by millions of regular Americans, but which families hold the most wealth?

This ranking looks beyond individuals to assess the richest families whose wealth spreads beyond one core family unit, and across multiple generations, and it breaks down which companies helped them earn their fortunes.

Net worth

Family name  
Origin of wealth

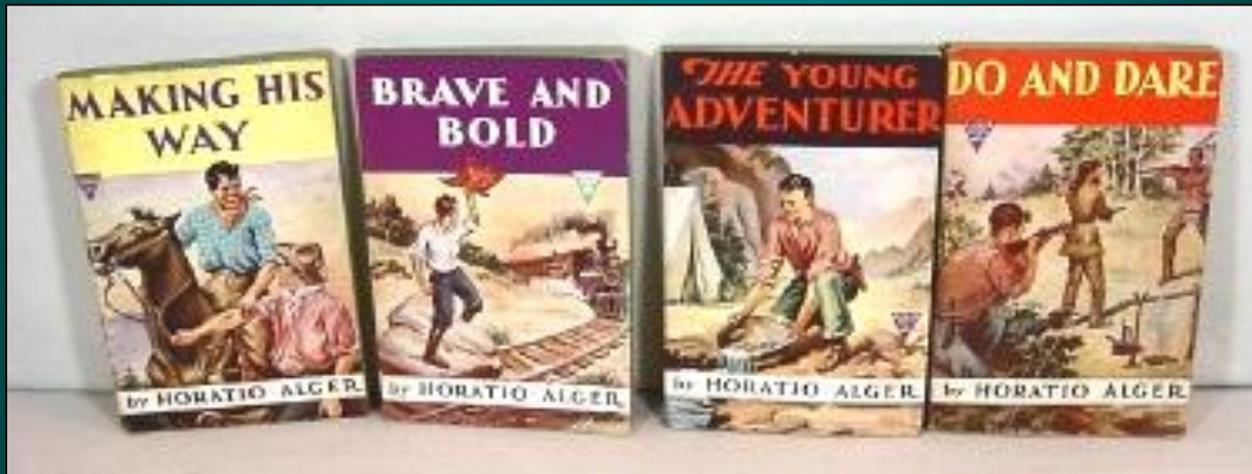
1 cube graphic = \$1 Billion USD



The collective wealth of America's richest families is an astounding **\$1.2 trillion**. For some families this wealth is newer. For others, their fortunes can be traced to the beginnings of the nation and their brands have become synonymous with life in America.

# New Business Culture: “The American Dream?”

3. Protestant (Puritan) “Work Ethic”
  - \* Horatio Alger [100+ novels]



Is the idea of the “self-made man” a MYTH??

# Rags to Riches?

## The exception, not the rule!

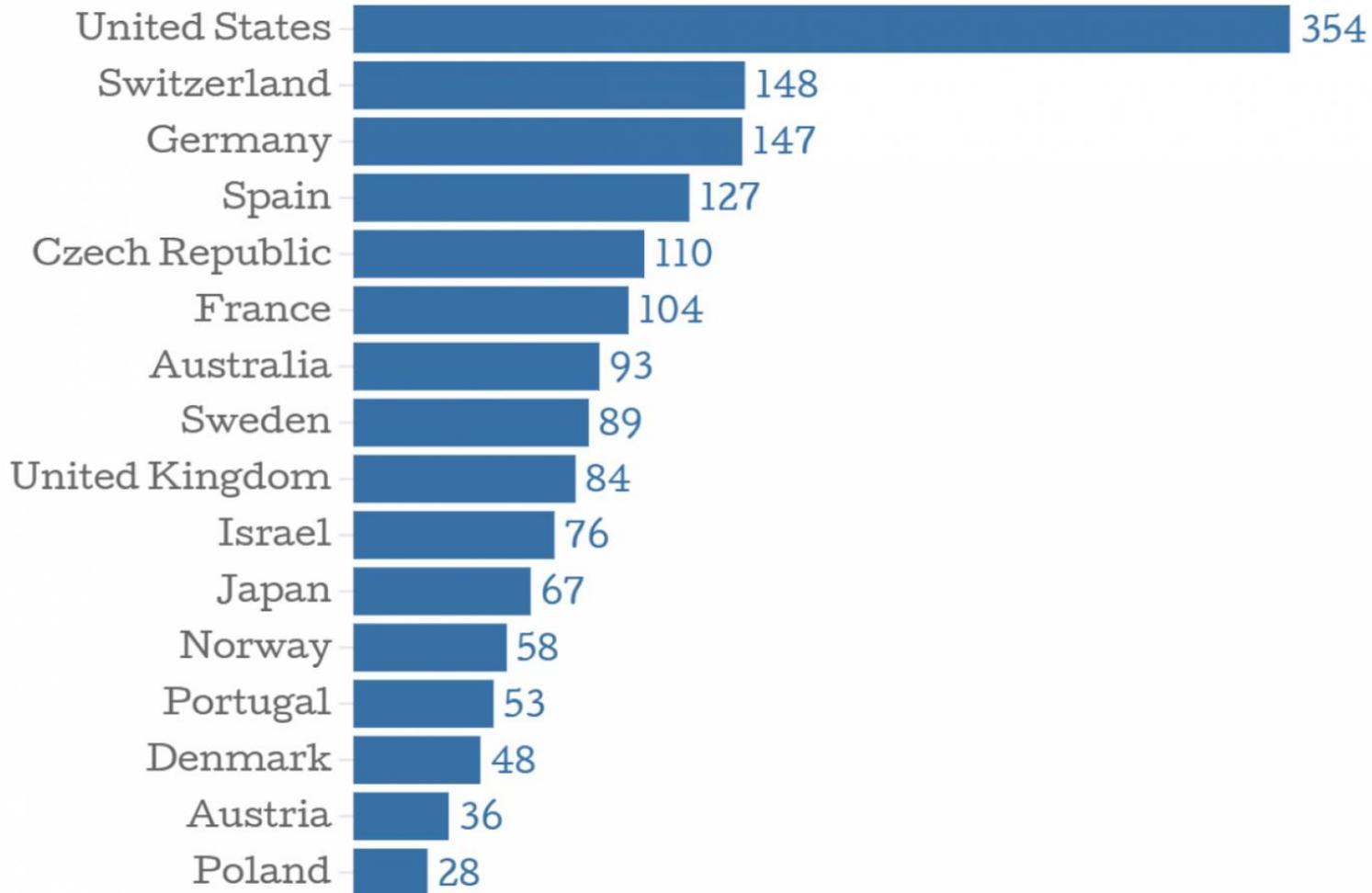
- 95% of executives & financiers in the US around 1900 came from upper class backgrounds
- Fewer than 3% started as poor immigrants or farm children
- 2% of US Industrialists came from working-class origins
- By 1910, the top 1% control 1/3 (33%) of all personal income.
- Huge differences in the proportion of wealth eventually leads to conflict in the Gilded Age

# How are trends these days?

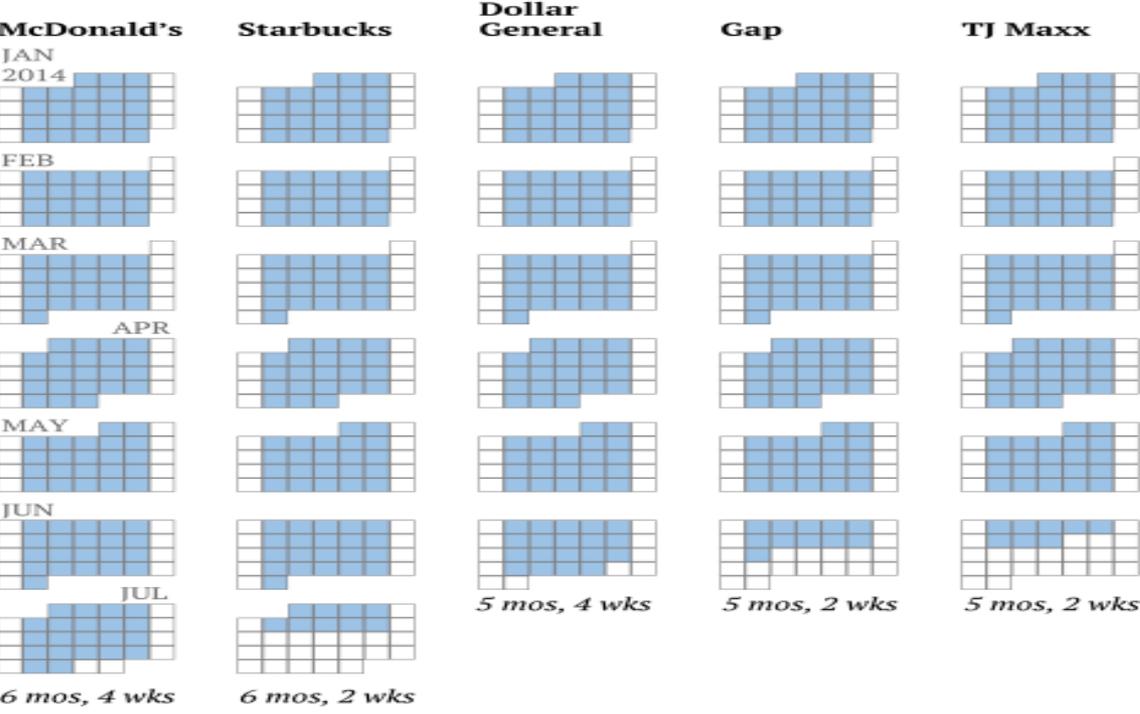
- The trend of the 2<sup>nd</sup> half of the 20<sup>th</sup> century was towards a greater middle class (more opportunities for success and shared growth) but has receded drastically since the 1980s.
- In 2014, the average CEO made 350 times more income than the average US worker
- It was 24:1 in the 1960s!!!!!!!!!!!!
- We will talk more about the prosperity and decline of the mid-to-late 1900s much later
- Today, only 4% of those born in the lower 20% income make it to the top 20% of the income range

## It pays to be a CEO in the U.S.

The ratio between CEO and average worker pay



How long a typical worker will have to work to earn what her company's CEO makes in a single hour assuming no holidays or overtime



Quartz | Ritchie King  
Data: Glassdoor

<http://qz.com/156522/how-many-months-it-takes-an-average-worker-to-earn-what-the-ceo-makes-in-an-hour/>

# 14th AMENDMENT

## Rights of Citizens

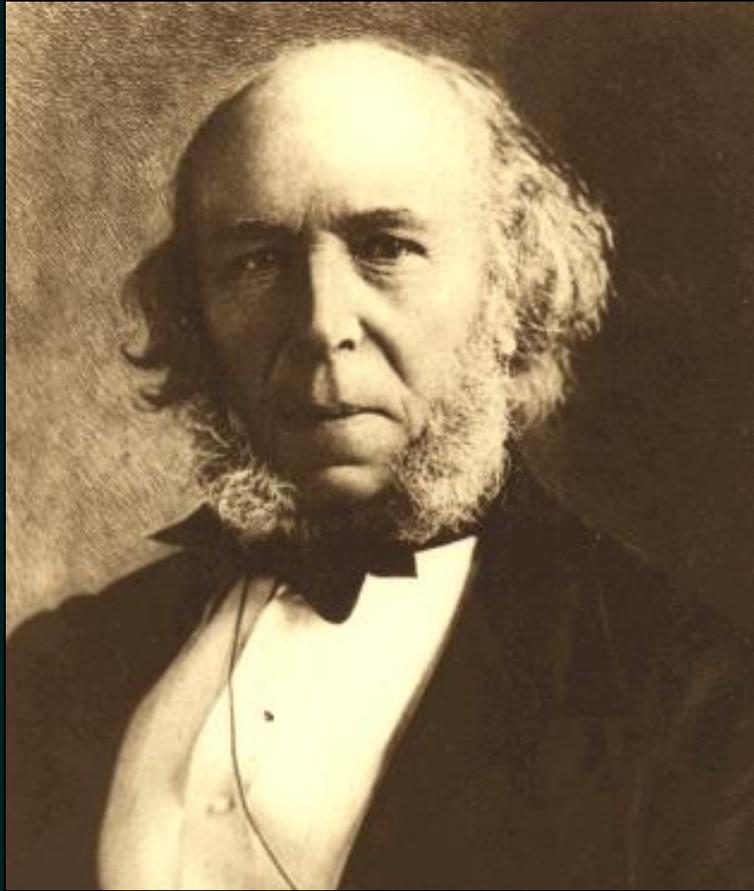
“All persons born in the U.S. are citizens of this country and the state they reside in. No state shall make or enforce any law which deprives any person of life, liberty, or property, without due process of law, nor deny to any person within its jurisdiction the equal protection of the laws.”

*Industrialists would use the 14th Amendment as a way to defend a corporation from the Sherman Anti-Trust Act.*



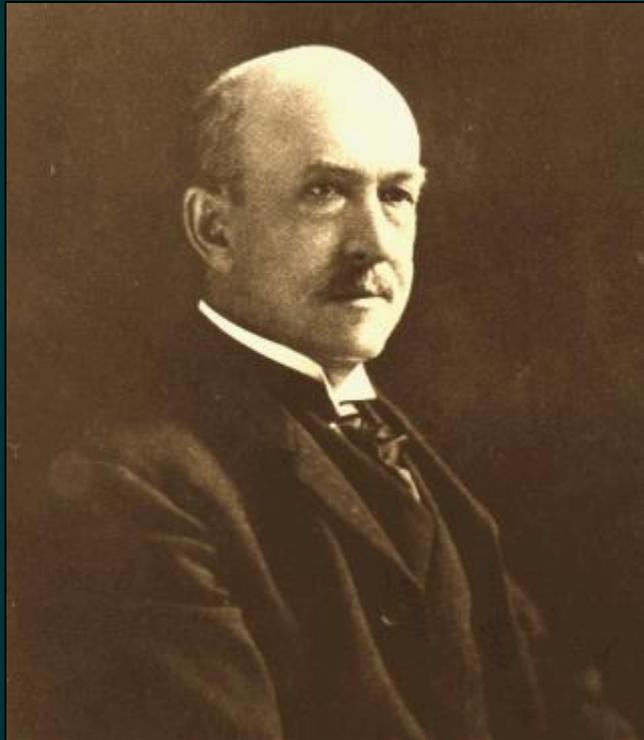
- Evolutionary proponents:
  - Spencer and Sumner likened to Charles Darwin who stressed adaptation of organisms
  - Based more on:
    - **British laissez-faire economists David Ricardo and Thomas Malthus**
      - **Spencer, not Darwin, coined phrase “survival of the fittest”**
      - **“The millionaires are a product of natural selection”—Sumner**

# Social Darwinism



- British economist, Herbert Spencer.
- Advocate of *laissez-faire*.
- Adapted Darwin's ideas from the "Origin of Species" to humans.
- Belief that there was a natural upper class and lower class.
- "Survival of the fittest"

## 2. Social Darwinism in America



William Graham Sumner  
*Folkways* (1906)

- \$ Individuals must have absolute freedom to struggle, succeed or fail.
- \$ Therefore, state intervention to reward society and the economy is futile!

# **Social Darwinism**

*Belief that in the economic world the strongest companies will survive*

*“The growth of a large business is merely a survival of the fittest.”*

***J. Rockefeller***

# Social Darwinism

- Social Darwinists believed that companies struggled for survival in the economic world and the government should not tamper with this natural process.
- The fittest business leaders would survive and would improve society.
- Belief that hard work and wealth showed God's approval and those that were poor were lazy and naturally a lower class.

# SOCIAL DARWINISM

1. All living things have always competed for survival. Survival of the fittest.

2. All living things have evolved over millions of years as a result of genetic changes.

3. Some plants and animals developed traits that helped them survive.

1. Every human activity individuals compete for success.

2. The unfit or incompetent lose and the strong or competent win.

3. These winners make up a natural upper class.

4. Hard worked paid off, and lazy were inferior.



## 22-13 THE GOSPEL OF WEALTH (SLIDE 3 OF 4)

- Self-justification by wealthy involved contempt for poor:
  - Russell Conwell became rich by delivering lecture “Acres of Diamonds” thousands of times
  - Plutocracy took its stand on Constitution:
    - Clause that gave Congress sole jurisdiction over interstate commerce a godsend to monopolists
    - Giant trusts also sought refuge behind Fourteenth Amendment

## 22-13 THE GOSPEL OF WEALTH (SLIDE 4 OF 4)

- Courts ingeniously interpreted a corporation to be a legal “person”
- Therefore it cannot be deprived of its property by a state without “due process of law” (see Amendment XIV, para, 1 in Appendix)
- Giant industrialists incorporated in “easy states,” like N.J., where restrictions on big business mild or nonexistent

# 22-14 GOVERNMENT TACKLES THE TRUST EVIL (SLIDE 1 OF 3)

- Masses of people began to mobilize against monopoly:
  - First tried to control trusts through state legislatures
  - After failure, forced to appeal to Congress:
    - **Sherman Anti-Trust Act (1890):**
      - Forbade combinations in restraint of trade, without any distinction between “good” trusts and “bad” trusts
      - Bigness, not badness, was sin

## 22-14 GOVERNMENT TACKLES THE TRUST EVIL (SLIDE 2 OF 3)

- Law proved ineffective, largely because contained legal loopholes
- Effective in one respect: contrary to original intent, used to curb labor unions or labor combinations deemed to be restraining trade
- Prosecution of trusts under Sherman Act (1890) neither vigorous nor successful
- More trusts formed in 1890s than during any other period
- Only after 1914 were paper jaws added to Sherman Act

# 22-14 GOVERNMENT TACKLES THE TRUST EVIL (SLIDE 3 OF 3)

- Still iron grip of monopolistic corporations threatened
- New principles written into law by Sherman Anti-Trust Act as well as by Interstate Commerce Act
  - Private greed should be subordinated to public need

# 22-15 THE SOUTH IN THE AGE OF INDUSTRY (SLIDE 1 OF 5)

- Economic conditions of South:
  - 1900: South produced smaller percentage of U.S. manufactured goods than it had before Civil War
    - Plantation system degenerated into pattern of absentee landownership
    - White and black sharecroppers tilled soil for share of crop
    - Or became tenants, in bondage to landlords who controlled needed credit and supplies

# 22-15 THE SOUTH IN THE AGE OF INDUSTRY (SLIDE 2 OF 5)

- Southern agriculture:
  - Boosted when machine-made cigarettes replaced roll-your-own variety, and consumption increased
- James Buchanan Duke:
  - Used new technology to mass-produce “coffin nails”
  - 1890: absorbed main competitors into American Tobacco Company
  - Showed such generosity to Trinity College, Durham, N.C., that trustees changed it to Duke University

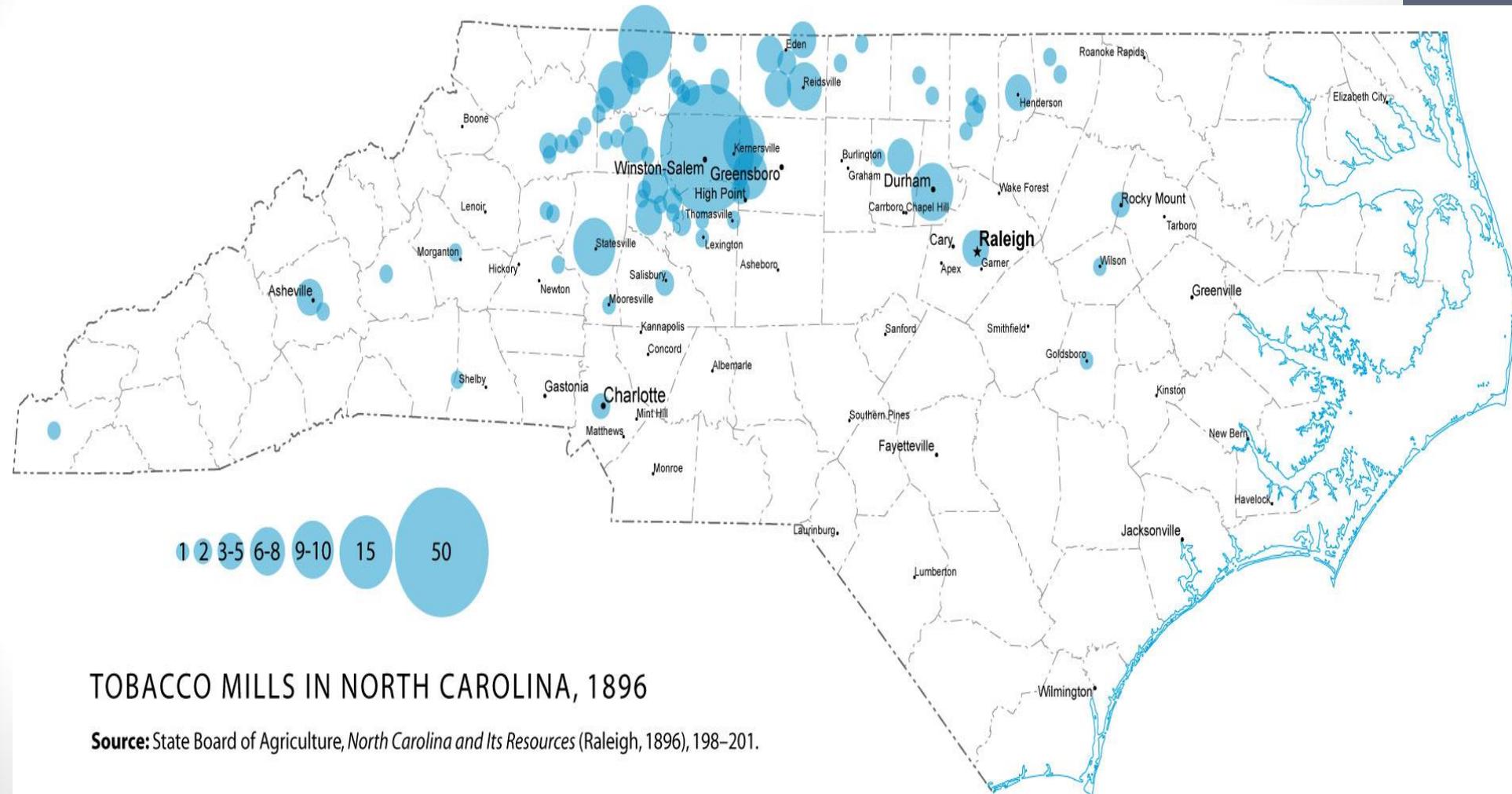
# In NC

## RJ Reynolds in the New South

- Son of wealthy plantation owner (tobacco farmer)
- Traveled to Winston to start business due to railroad location
- Invented the packaged cigarette (wrapped by hand before)
- Became wealthiest man in NC during his lifetime
- Owned 121 buildings in Winston-Salem
- His contributions led to many creations in W-S (Reynolda House, Reynolds Building, WSSU, Wake Forrester being moved, etc, etc.)
- Put W-S on the map!!!



# NC Tobacco Mills in NC



# In NC: The Duke Family

George Washington Duke started the business

- Started his business in Durham, NC (American Tobacco Co.)
- Marketed pre-rolled cigarettes
- Moved Trinity College to Durham (name changed to Duke)
- Business later controlled by son: J.B. Duke
- J.B. helped grow the business further
- Duke starts diversifying into electric... a company later known as Duke Energy



The Granger Collection, NYC



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# 22-15 THE SOUTH IN THE AGE OF INDUSTRY (SLIDE 3 OF 5)

- South remained overwhelmingly rural
- **“New South” booster Henry W. Grady:**
  - **Editor of *Atlanta Constitution***
  - **Exhorted ex-Confederates to become “Georgia Yankees” and outplay North at commerce and industry**
- **Obstacles in path of southern industrialization:**
  - **Regional rate-setting systems imposed by northern-dominated railroad interests**

Making the Virginia Twist, 1887 (gouache on paper) / Durkin, John (fl. 1887) / VIRGINIA HISTORICAL SOCIETY / Virginia Historical Society, Richmond, Virginia, USA / Bridgeman Images



# 22-15 THE SOUTH IN THE AGE OF INDUSTRY (SLIDE 4 OF 5)

- Railroads gave preferential rates to manufactured goods moving southward from North
- In opposite direction they discriminated in favor of southern raw materials
- Net effect—kept South in servitude to Northeast
- E.g.,—“Pittsburgh plus” pricing system in steel industry
- In manufacturing cotton textiles, South fared better (see Figure 22.2 and Figure 22.3)
- Textile mills proved to be mixed blessing to economically blighted South
- Cheap labor was South’s major attraction for investors
- Keeping labor cheap became almost a religion among southern industrialists

SPINDLES IN NEW ENGLAND  
(by thousands)

SPINDLES IN COTTON STATES  
(by thousands)

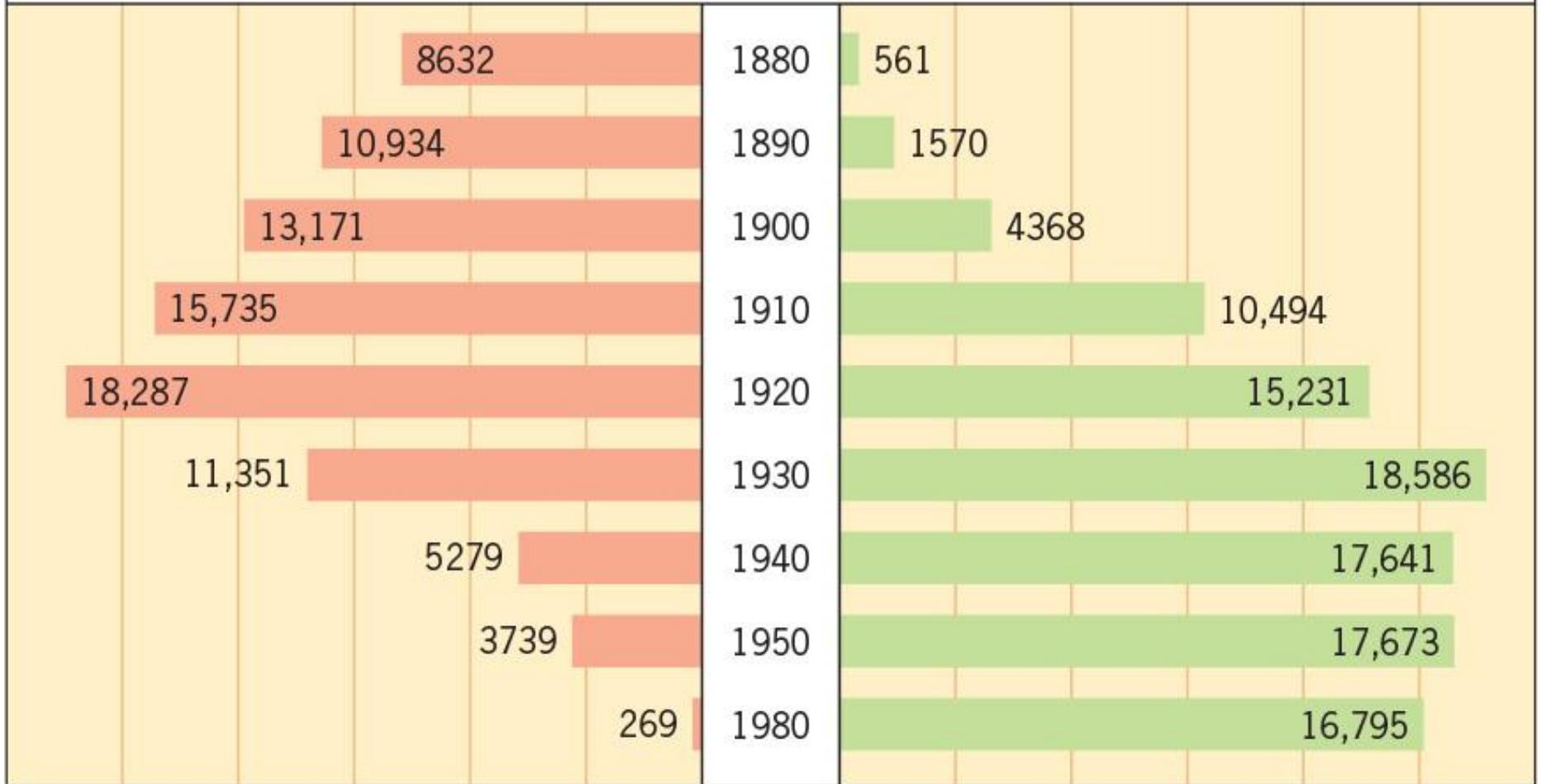


Figure 22-2 p512

# World cotton production, 1903 (Bales of approx. 500 lbs, in thousands)

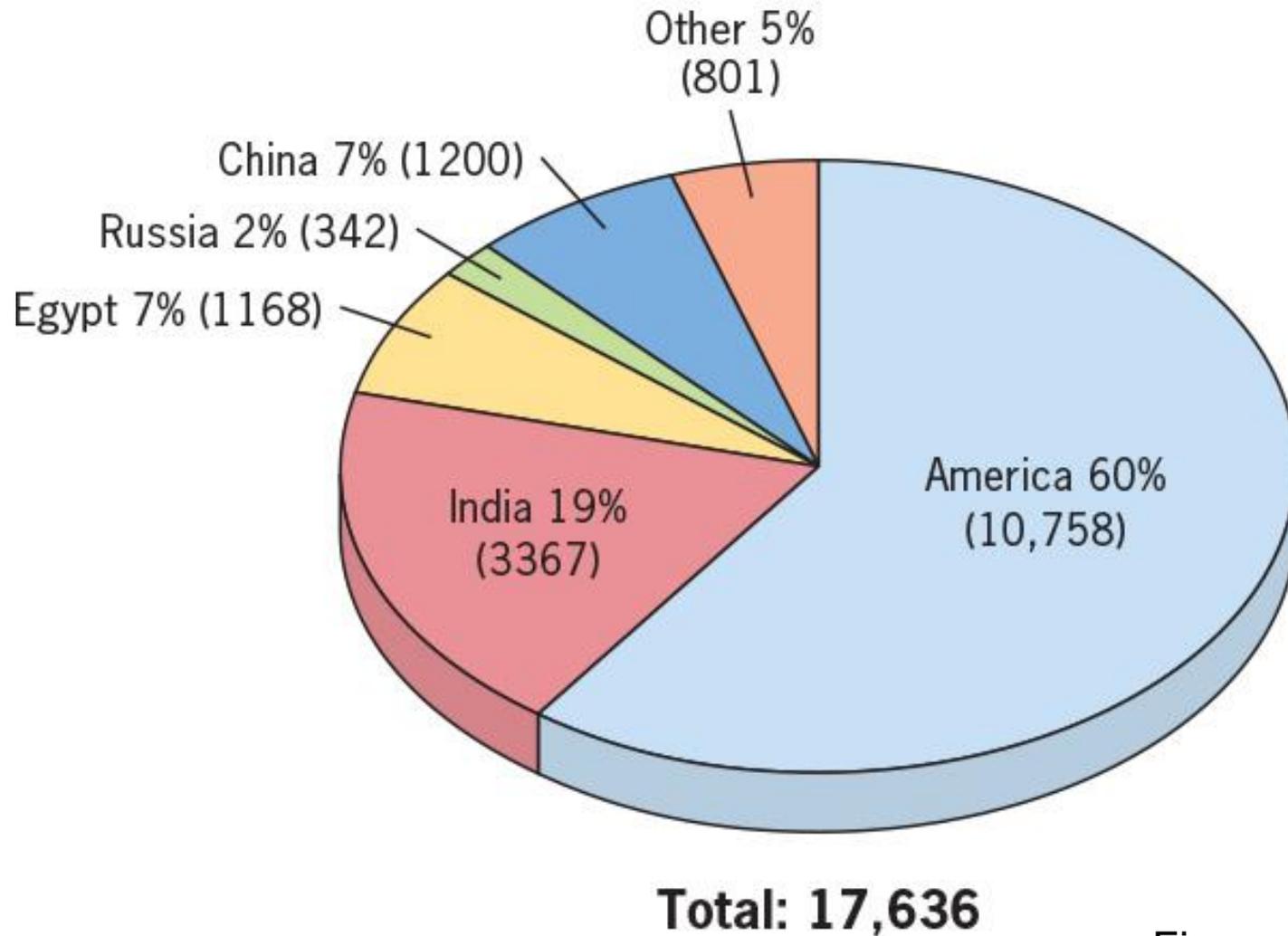


Figure 22-3 p512

## 22-15 THE SOUTH IN THE AGE OF INDUSTRY (SLIDE 5 OF 5)

- Mills took root in chronically depressed Piedmont region of southern Appalachia
- White rural southerners sought employment in company mill towns:
  - **Entire families—“hillbillies” or “lintheads”—worked from dawn to dusk**
  - Paid half the rate of northern counterparts
  - Often received compensation in form of credit at company store, to which they were habitually in debt
  - Many saw employment in mills as salvation for destitute farm families

# 22-16 THE IMPACT OF THE NEW INDUSTRIAL REVOLUTION ON AMERICA (SLIDE 1 OF 5)

- Economic miracles:
  - Standards of living rose sharply
  - U.S. workers enjoyed more physical comforts than in other industrial nations
  - Cities mushroomed as factories demanded more labor and more immigrants arrived seeking jobs (see Map 22.2)
  - Federal authority now committed to decades of corporation curbing and “trust-busting”
  - Very concept of time revolutionized:
    - Not by clock of nature but by factory whistle



Map 22-2 p513



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## 22-16 THE IMPACT OF THE NEW INDUSTRIAL REVOLUTION ON AMERICA (SLIDE 2 OF 5)

- Most affected group was women
  - Propelled into industry by new inventions, they discovered new economic and social opportunities
  - “Gibson Girl” created by Charles Dana Gibson showed independent and athletic “new woman”
  - Most women workers toiled neither for independence nor for glamour, but out of economic necessity
  - Faced long hours and dangerous conditions as did their mates and brothers
  - Earned less, as wages for “women’s jobs” usually set below those for men’s jobs

## 22-16 THE IMPACT OF THE NEW INDUSTRIAL REVOLUTION ON AMERICA (SLIDE 3 OF 5)

- Machine age accentuated class division:
  - “Industrial buccaneers” flaunted bloated fortunes
  - Spouses displayed glittering diamonds
  - Such extravagances evoked bitter criticism
  - Some of it was envy
  - Much arose from socialists and other radicals, some recent European immigrants
  - Oligarchy of money demonstrated by fact that in 1900 about 10% of people owned 90% of nation’s wealth

## 22-16 THE IMPACT OF THE NEW INDUSTRIAL REVOLUTION ON AMERICA (SLIDE 4 OF 5)

- A nation of farmers and independent producers became a nation of wage-earners:
  - In 1860, half of all workers self-employed
  - By 1900, two of every three working Americans depended on wage
  - With dependence on wages came vulnerability to swings of economy and whims of employer
  - Fear of unemployment constant
  - Reformers struggled to introduce a measure of security—job and wage protection, provision for temporary unemployment—into lives of workers

## 22-16 THE IMPACT OF THE NEW INDUSTRIAL REVOLUTION ON AMERICA (SLIDE 5 OF 5)

- Strong pressures for increased foreign trade developed:
  - Factories saturated domestic market
  - International trade became cheaper, faster, and easier
  - Flag follows trade, and empire tends to follow flag—a lesson America would soon learn



Golfing Foursome, c. 1900 (gouache and w/c on board), Granville-Smith, Walter (1870–1938)/© American Illustrators Gallery, NYC/[www.asapworldwide.com](http://www.asapworldwide.com/)/The Bridgeman Art Library

# 22-17 IN UNIONS THERE IS STRENGTH (SLIDE 1 OF 4)

- Workers did not share proportionately with employers
  - Workers became mere lever-puller in giant mechanism:
    - Individual originality and creativity stifled
    - Less value placed on manual labor
    - Now factory hands employed by corporation –depersonalized, bodiless, soulless and often conscienceless
    - Directors not know individual workers, and in fairness to stockholders, not inclined to engage in large-scale private philanthropy

# 22-17 IN UNIONS THERE IS STRENGTH (SLIDE 2 OF 4)

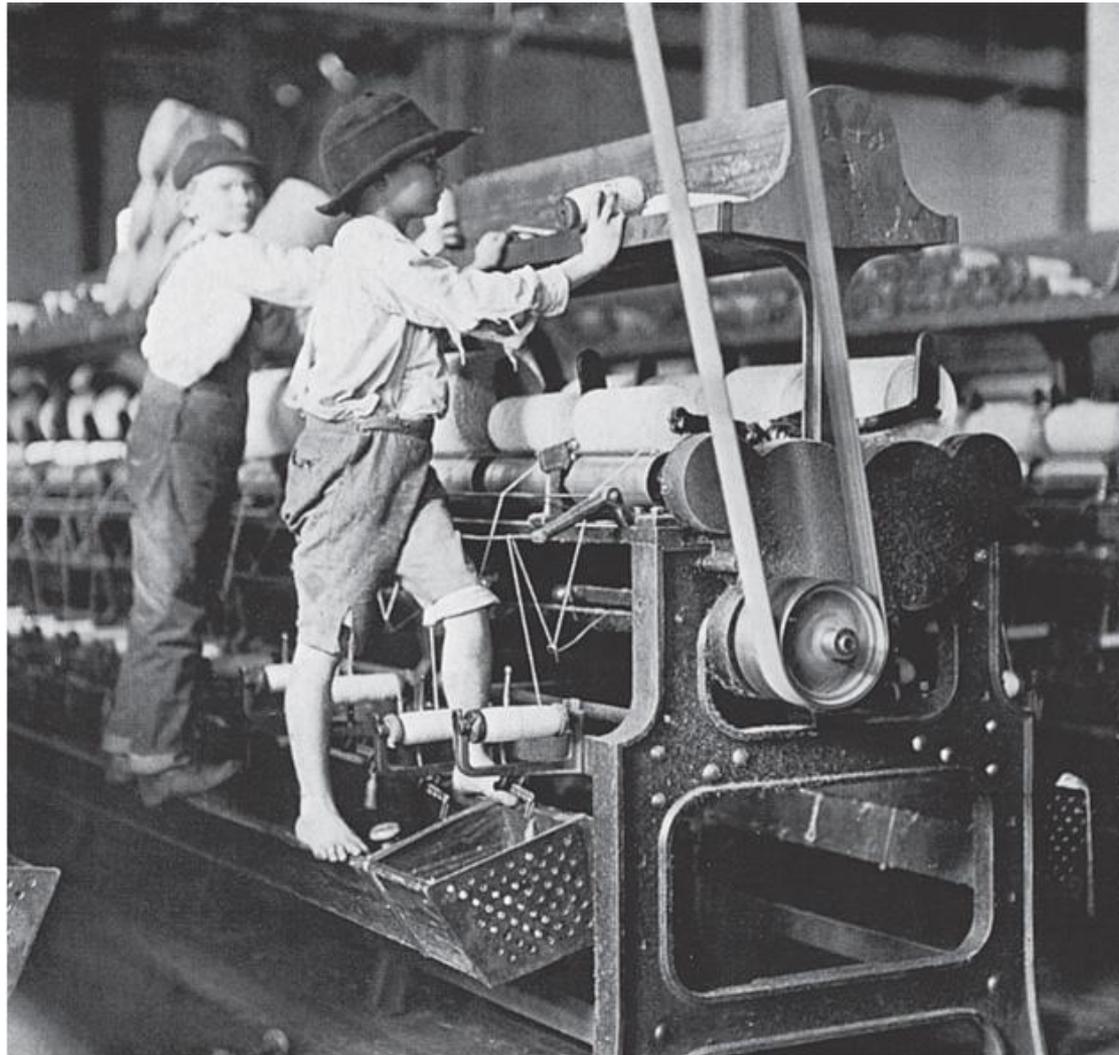
- New machines displaced employees:
  - In long run, more jobs created
  - Glutted market severely handicapped wage earners
  - Individual workers powerless to battle single-handedly giant corporations:
    - Corporation could dispense with individual worker much more easily than worker could dispense with corporation
    - Employers could pool vast wealth through thousands of stockholders
    - Retain high-priced lawyers
    - Buy up local press



Library of Congress Prints and Photographs Division [LC-DIG-nclc-01133]

# 22-17 IN UNIONS THERE IS STRENGTH (SLIDE 3 OF 4)

- Put pressure on politicians
- Import strikebreakers (“scabs”)
- Employ thugs to beat up labor organizers
- Corporations had other weapons:
  - Call on federal courts to issue injunctions ordering strikers to cease striking
  - If defiance and disorder ensued, company could request state and federal authorities send in troops
  - Employers could lock doors against rebellious workers—a “lockout”—and starve workers into submission
  - Compel workers to sign “ironclad oaths” or “yellow-dog contacts”—solemn agreements not to join labor union



Library of Congress Prints and Photographs Division [LC-USZ6-1222]

# 22-17 IN UNIONS THERE IS STRENGTH (SLIDE 4 OF 4)

- Put names of agitators on “black list” and circulate it among fellow employers
- Often workers sank into perpetual debt to company stores
- Middle class, annoyed by strikes, grew deaf to outcry of workers:
  - Strikes seemed foreign and socialistic; hence unpatriotic
  - Big business might combine into trusts to raise prices, but workers must not combine into unions to raise wages

- Labor unions boosted by Civil War:
  - Lost of human life drained labor supply
  - Mounting cost of living provided incentive to unionize
  - By 1872 several hundred thousand workers had organized
  - 32 national unions, representing such crafts as bricklayers, typesetters, and shoemakers



German Historical Museum/akg-images

- **National Labor Union:**
  - Organized in 1866, represented giant bootstride by workers
  - One of first national-scale unions to form:
    - Aimed to unify workers across locales and trades to challenge ever more powerful employers
    - Lasted six years and attracted impressive total of some 600,000 members:
      - Including skilled, unskilled, and farmers
      - Excluded Chinese; made only nominal efforts to include women and blacks

## 22-18 LABOR LIMPS ALONG (SLIDE 3 OF 6)

- Colored National Labor Union:
  - Their support for Republican Party and persistent racism of white unionists prevented two national unions from working together
- National Labor Union called for:
  - Arbitration of industrial disputes
  - Eight-hour workday
  - Won latter for government workers
  - Union crippled by depression of 1870s

- **Knights of Labor:**
  - Seized torch dropped by National Labor Union:
    - Officially known as Noble and Holy Order of the Knights of Labor
    - Began in 1869 as secret society, with private ritual, passwords, and special handshake
    - Secrecy, which continued until 1881, forestalled reprisals by employers
    - Sought to include all workers in “one big union”
      - Skilled and unskilled, whites and blacks, men and women

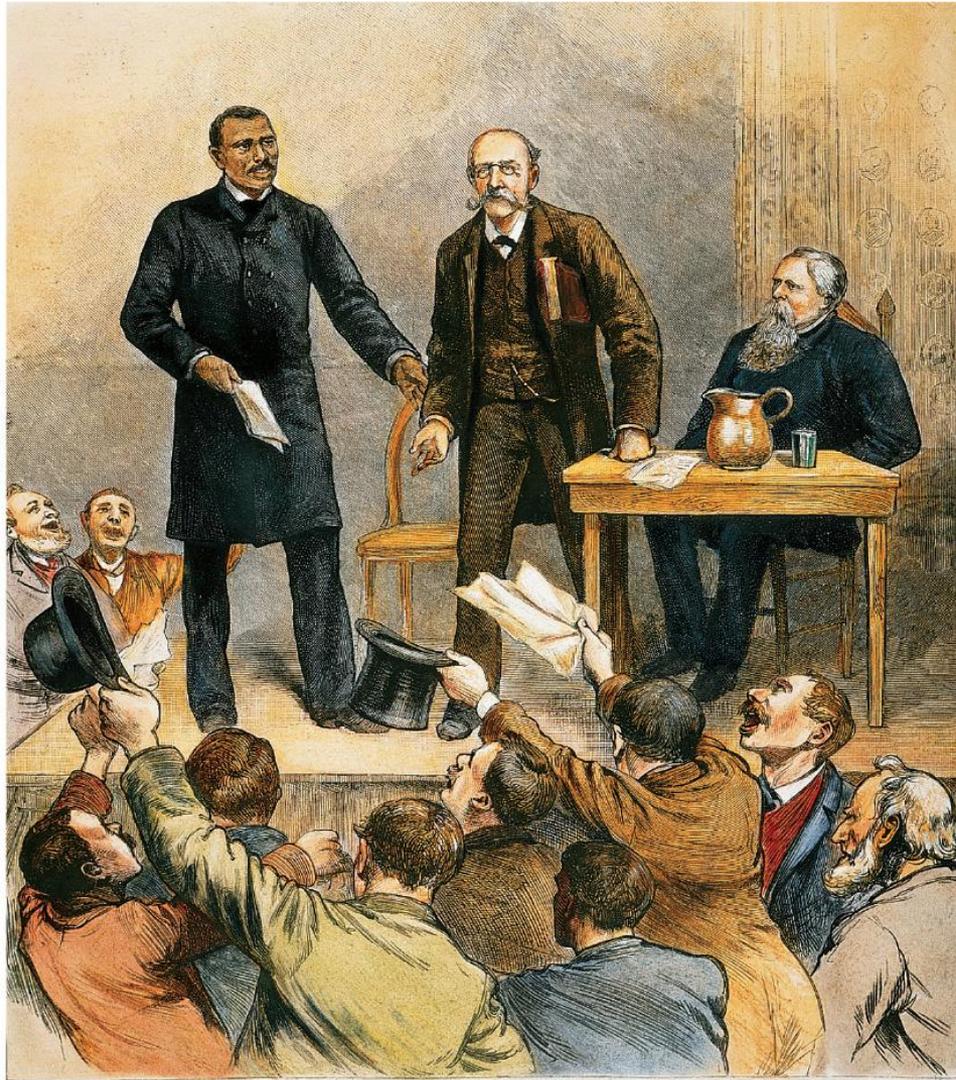
## 22-18 LABOR LIMPS ALONG (SLIDE 5 OF 6)

- Sought only to bar “Nonproducers:”
  - Liquor dealers, professional gamblers, lawyers, bankers, and stockbrokers
- Refused to enter politics
- Campaigned for economic and social reform:
  - Producers’ cooperatives
  - Codes for safety and health
  - Frowned on industrial warfare while fostered industrial arbitration
  - Waged determined campaign for eight-hour day

## 22-18 LABOR LIMPS ALONG (SLIDE 6 OF 6)

- Under leadership of Terence V. Powderly:
  - Won a number of strikes for eight-hour day
  - After Knights staged successful strike against Jay Gould's Wabash Railroad in 1885:
    - Membership mushroomed to about three quarters of a million





The Granger Collection, NYC



Bettmann/Corbis

# 22-19 UNHORSEING THE KNIGHTS OF LABOR (SLIDE 1 OF 4)

- Got involved in number of May Day strikes, 1886
  - About half failed
  - Focal point was Chicago with 80,000 Knights
- **Haymarket Square** episode:
  - Labor disorders had broken out
  - On May 4, 1886, police advanced on meeting called to protest alleged brutalities by authorities
  - Suddenly a bomb thrown, killing or injuring several dozen people, including police
  - Hysteria swept Chicago:
    - Eight anarchists arrested because preached incendiary ideas; charged with conspiracy

# 22-19 UNHORSEING THE KNIGHTS OF LABOR (SLIDE 2 OF 4)

- Five sentenced to death
- Other three were given stiff prison terms
- Agitation for clemency mounted
- John Altgeld elected governor in 1892:
  - After Altgeld studied Haymarket case exhaustively, he pardoned three survivors
  - Violent abuse showered on Altgeld by conservatives
  - Praised by those who thought men innocent
  - Altgeld defeated for reelection

# 22-19 UNHORSEING THE KNIGHTS OF LABOR (SLIDE 3 OF 4)

- Haymarket Square bomb helped blow props from under Knights:
  - Had been associated with anarchists
  - Their strikes met with scant success
- Another fatal handicap of Knights was inclusion of skilled and unskilled workers:
  - Unskilled labor could be easily replaced by “Scabs”
  - Craft unionists couldn’t be replaced so readily
    - Hence they enjoyed better bargaining position

## 22-19 UNHORSEING THE KNIGHTS OF LABOR (SLIDE 4 OF 4)

- Skilled workers sought refuge in American Federation of Labor:
  - A federation of exclusively skilled craft unions
- Desertion of skilled craft unionists dealt Knights body blow:
  - By 1890s, down to only 100,000 members who gradually fused with other protest groups

- **Elitist American Federation of Labor: 1886**
  - Largely brainchild of Samuel Gompers
  - Had been a cigar maker
  - Elected president of AF of L every year except one from 1886 to 1924
  - American *Federation* of Labor was—a federation:
    - An association of self-governing national unions
      - Each independent, with AF of L unifying overall strategy
      - No individual laborer could join central organization



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- Gompers adopted down-to-earth approach:
  - Soft-pedaled attempts to engineer sweeping social reform
  - Bitter foe of socialism, he shunned politics for economic strategies and goals
  - Had no quarrel with capitalism:
    - Demanded fairer share for labor
    - All he wanted, he said, was “more”
  - Promoted what he called “pure and simple” unionism:
    - Better wages, hours, and working conditions

## 22-20 THE AF OF L TO THE FORE (SLIDE 3 OF 6)

- One of his major goals was “trade agreement” authorizing **closed shop**—or all-union labor
- Chief weapons were walkout and boycott
- AF of L established on solid, but narrow ground:
  - Fell short of representing all workers
  - Composed of skilled craftsmen—carpenters, bricklayers:
    - Left unskilled laborers, including women and blacks, to fend for themselves

## 22-20 THE AF OF L TO THE FORE (SLIDE 4 OF 6)

- Weathered panic of 1893
- By 1900, a membership of 500,000
- Critics referred to it, with questionable accuracy, as “the labor trust”
- Labor conditions:
  - Labor disorders continued, more than 23,000 strikes 1881–1900
  - Disturbances involved 6,610,000 workers, with total loss to employers and employees of \$450 million
  - Strikers lost about half of strikes; won or compromised remainder

- Gravest weakness of organized labor was it embraced only small minority of all working-people—about 3% in 1900
- Attitude toward labor changing:
  - Public conceding right of workers to organize:
    - To bargain collectively and to strike
  - Labor Day made a holiday by Congress in 1894
  - A few industrialists saw wisdom of bargaining with unions to avoid strikes
  - Vast majority of employers continued to fight organized labor

## 22-20 THE AGE OF L TO THE FORE (SLIDE 6 OF 6)

- Nothing handed to unions on a silver platter
- Still some time before labor gained position of relative equality with capital
- If age of big business had dawned, age of big labor still some distance over horizon