



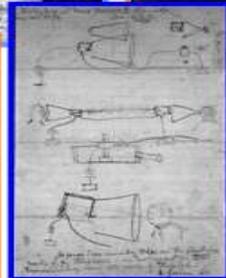
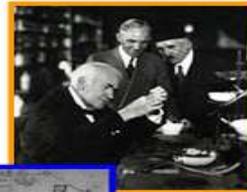
Later Inventions & Big Business

How do
you
land
this
thing!



Development of the Industrial United States: 1876-1914

Understanding Goal:
Technology transforms society.



Investigative Question:

How did industrialization transform American society?

Explore: What examples of industrial development are displayed in the images above?

Connect: How did each of these developments alter early 20th century society?

INDUSTRIALIZATION

	Assess the impact of industrialization on American society.
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INVENTION	DESCRIPTION	INVENTION	DESCRIPTION
Corliss Steam Engine		Telephone	
Bessemer Process		Typewriter	
Electric Light Bulb		Model T Ford	
Phonograph		Assembly Line	
Telegraph		Bicycle	

INVENTION	DESCRIPTION	INVENTION	DESCRIPTION
Department Stores		Advertising	
Mail Order Catalogues		Home Remedies	

Frederick Taylor -



Worker:

Workforce:

Average salary:

Average Workday:

Health Insurance:

Job Injuries:

Industrial Revolution Commercial

NAME _____ DATE _____

GROUP MEMBERS _____

INVENTION _____

- During the Industrial Revolution, several new tools, devices, and ways of doing things were invented or discovered. You work for an advertising company, and they have asked you to come up with a commercial to convince people to buy the invention or use the device.
- You must create a commercial and videotape the commercial for your product. You can work on the commercial by yourself or in a group (no more than four people), and you can choose the invention from the list on the back or from another source. Only one person or group can do each invention so clear your invention with me before you start. The invention **MUST** be from before 1900. Clear your invention with me before you start.
- YOU are responsible for making sure your group members are doing what they are supposed to. Before you decide to work with someone, make sure that they **WILL** get the work done. On the due date excuses about your partner will not be accepted.
- If you do not have a camcorder, schedule a time with me to video the commercial.



Commercial Requirements

• Requirements--The commercial must:

- Include at least one visual of the invention. A picture, model, or something similar. The picture must be of the invention from that time period or close to it. If you choose the plow, do not show a plow from 1990. ***This visual must be large enough to show up on the camera!***
- Include a description of the invention. This should include:
 - The name of the invention
 - Who invented it with a short description of the person
 - What the invention replaced
 - What the invention does
 - How the invention is better than what it replaced
- Have a slogan. A catchy saying to get people to buy it. Like "Got Milk?" or "Make 7-Up Yours." Be as creative as possible. Do not use slogans that already exist and just replace one or two words.
- Be creative. The more pictures, color, and creativity the better. Props and dressing in costume would be two excellent ways to make your commercial more creative.
- DO NOT just list your facts. This is a commercial; you want people to buy the product, not change the channel. This is very important: if your project is not in the form of a commercial, your grade will not be good.
- DO NOT read off of a piece of paper you hold in your hand. Memorize your lines or use cue cards. The better you know the information, the better your grade will be.
- You will also need a written transcript of your commercial telling ALL of the things you will do in the commercial. This includes props you will use, the lines people will say, etc. This must be ready BEFORE you do your commercial.



Invention Examples and Grading Rubric

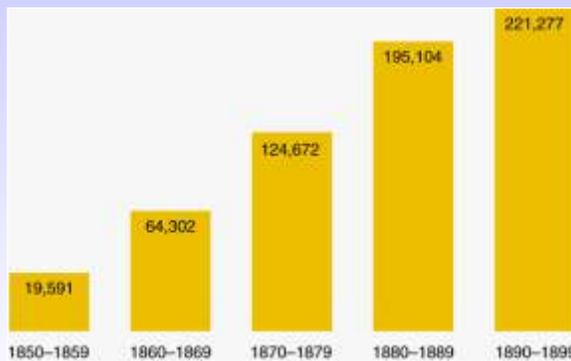
• **Examples of inventions and innovations:**

- Steam engine
- The Bessemer Process
- Reaper
- Cotton gin
- Spinning jenny
- Steamboat
- Telegraph
- Telephone
- Spinning mule
- Pasteurization
- Locomotive
- Gatling gun
- Seed drill
- Smallpox vaccine

•	Grade:			
•	Creativity	30 pts		_____
•	Visual	20 pts		_____
•	Description	30 pts		_____
•	Slogan	5 pts		_____
•	Transcript	15 pts		_____
•				
•	Total	100pts		_____



U. S. Patents Granted

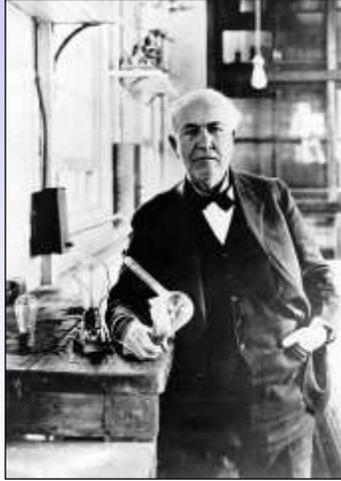


1790s → 276 patents issued.

1990s → 1,119,220 patents issued.



Thomas Alva Edison



"Wizard of Menlo Park"

Thomas Edison's Inventions

- Perfected the light bulb and the use of electricity
- Phonograph
- Moving pictures





The Light Bulb



The Phonograph (1877)



The Ediphone or Dictaphone

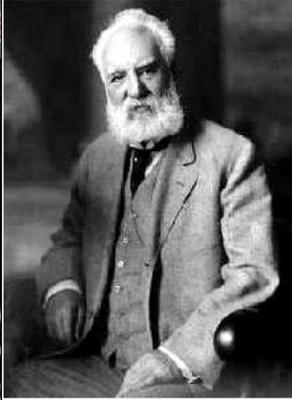


The Motion Picture Camera





Alexander Graham Bell



Telephone (1876)



Alternate Current



George Westinghouse

Alternate Current



Westinghouse Lamp ad

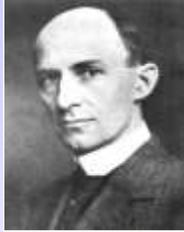
The Wright Brothers

- 1903—Invent the first airplane!





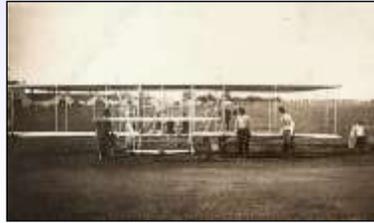
The Airplane



Wilbur Wright



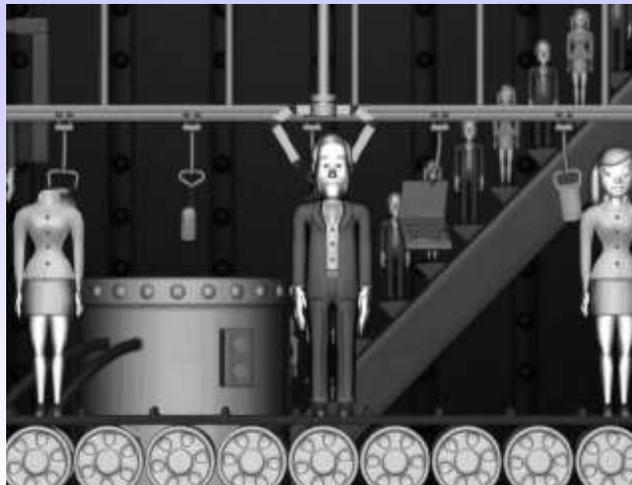
Orville Wright



Kitty Hawk, NC - December 7, 1903



Warm Up!

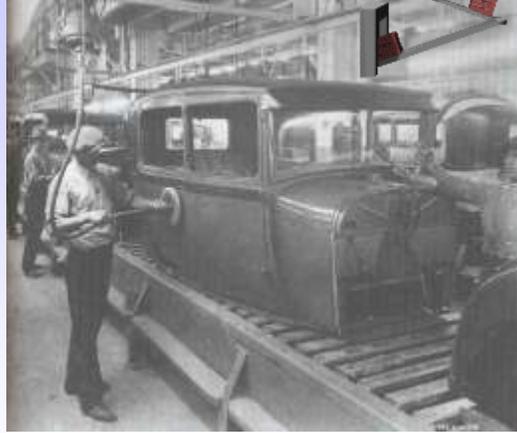


What does this animated clip represent?
 Why are workers be compared to robots with **interchangeable parts**?



The Assembly Line

- Develops during the later phase of the Industrial Revolution.
- Pioneered by **Henry Ford**, maker of the Model T.
- **Assembly line**—An efficient way of building goods that had the product moving past workers (usually on a conveyor belt) who then add **interchangeable parts**—machine parts made to a uniform size so they could be replaced in cars, weapons and other manufactured products
- More mind-numbing, repetitive work!



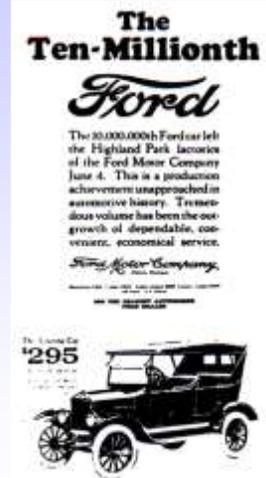
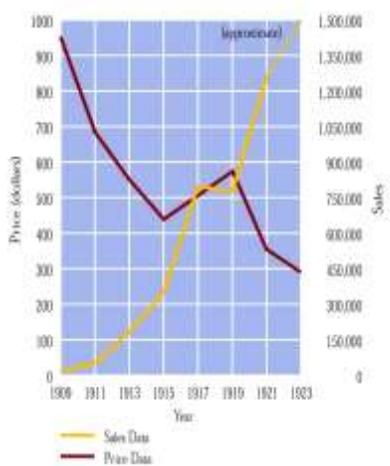
Model T Automobile



Henry Ford

I want to pay my workers so that they can afford my product!

"Model T" Prices & Sales



Chaplin on the Assembly Line



- How is this film a satire about work on the assembly line?



Let's start our own assembly line in the classroom!

- Let me explain how!



Assembly Line Assignment:

- **Directions:** Read "Henry Ford Changes the World, 1908" from eyewitnessstohistory.com. Then, using the detailed descriptions from the readings, draw your own illustration of what the assembly line looked like and how it functioned!

Research and complete a biographical PowerPoint of a famous inventor of the late 19th or early 20th Century!

- Inventor's Name _____
- Dates of Birth/ Date of Death _____
- Describe the inventor's early life and education.

- Describe the inventor's most important work and invention.

- List interesting information about the life of the inventor.

- Draw and color a large illustration of an important invention which your inventor created. Label your illustration, describing how the invention works. Include a caption below your illustration, naming the invention and year it was created.
- Then, draw a second illustration, depicting your ideas for your own invention, following the same requirements as described above.



Possible Resources:

- <http://www.inventorsmuseum.com/>- Museum site
- <http://www.invent.org> -Inventors' hall of fame
- <http://www.princeton.edu>- African-American Inventor's site
- <http://www.si.edu/resource/faq/nmah/invent.htm> the Smithsonian Institution site of American inventors
- <http://www.zoomschool.com/inventors/>-- use 1851-1900 for inventors in that time period





The Incorporation of America

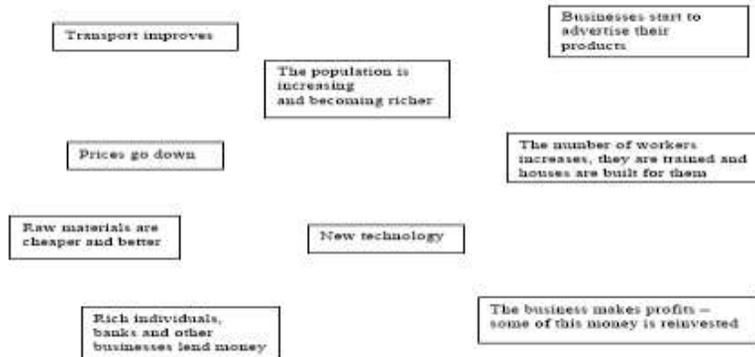
By: Mr. Cegielski



The Growth of Big Business & Entrepreneurs



Why did businesses grow?



Instructions:

1. Write 3 headings in your exercise book: The market grows
Production grows
Investment grows
2. Decide where each of the boxes above belongs and write the words in each box under the correct heading.
3. Choose 3 of the factors above and for each one, explain carefully why it helped businesses to get bigger.

Extension:

1. On the diagram above, try to draw lines between the boxes where you can see a connection. Each time you connect 2 boxes, write neatly along the line to explain why the two boxes are linked.
2. What do you think are the most important reasons why businesses grew in the nineteenth century? Choose 2 of the reasons above and explain why they were so important.



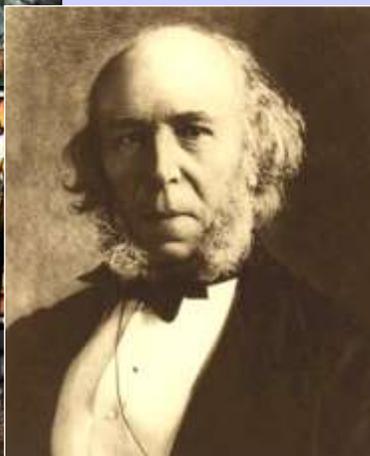
New Business Culture

1. Laissez Faire → the ideology of the Industrial Age.

- Individual as a moral and economic ideal.
- Individuals should compete freely in the marketplace.
- The market was not man-made or invented.
- No room for government in the market!



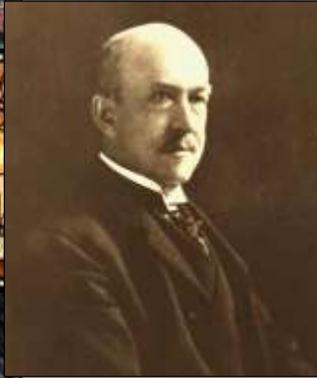
2. Social Darwinism



Herbert Spencer

- ⬆ British economist.
- ⬆ Advocate of *laissez-faire*.
- ⬆ Adapted Darwin's ideas from the "Origin of Species" to humans.
- ⬆ Notion of "Survival of the Fittest."

2. Social Darwinism in America



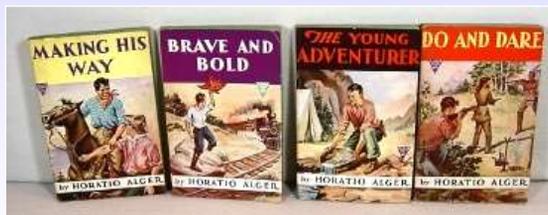
William Graham Sumner
Folkways (1906)

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

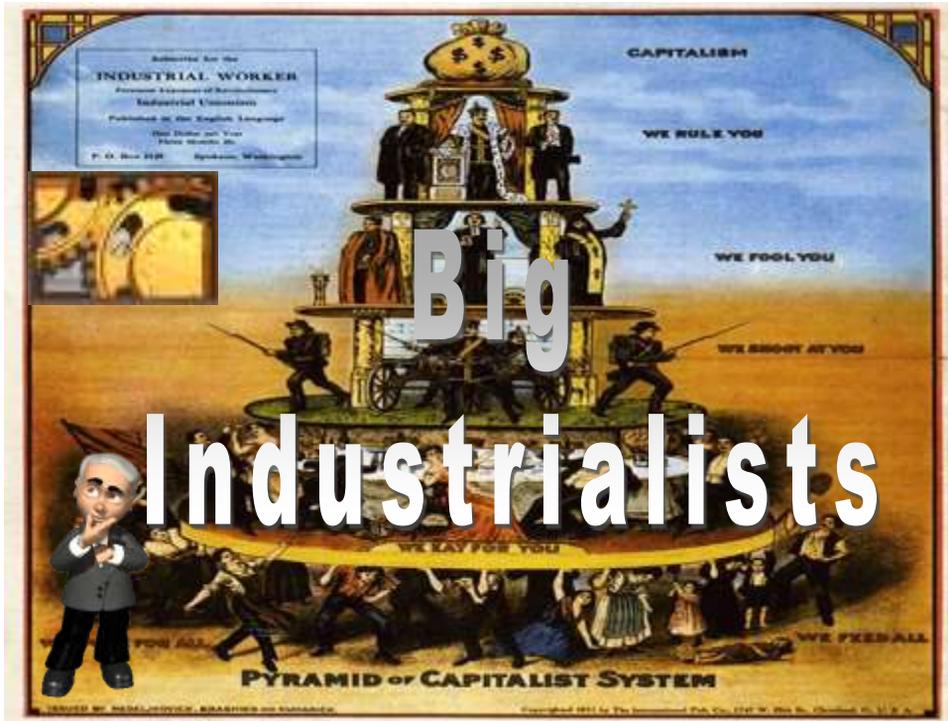
New Business Culture: "The American Dream?"

3. Protestant (Puritan) "Work Ethic"

- Horatio Alger [100+ novels]



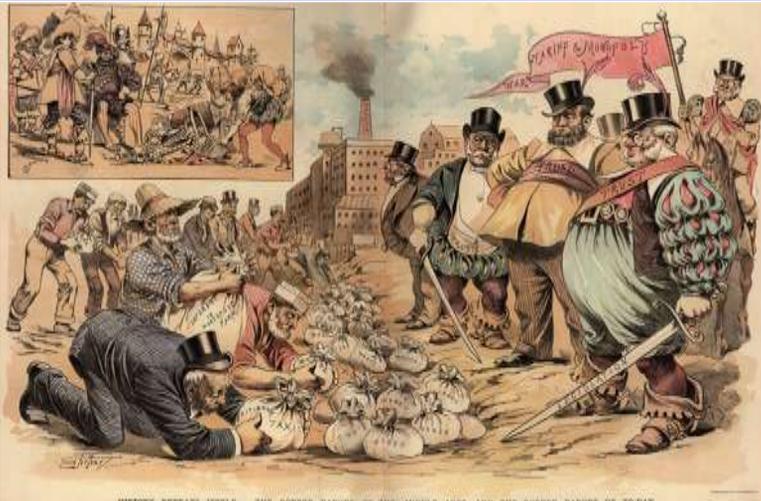
—Is the idea of the "self-made man" a MYTH??



Big Industrialists



The 'Robber Barons' of the Past?



Robber baron is a term that revived in the 19th century in the United States as a reference to businessmen and bankers who dominated their respective industries and amassed huge personal fortunes, typically as a direct result of pursuing various anti-competitive or unfair business practices. The term may now be used in relation to any businessman or banker who is perceived to have used questionable business practices or scams in order to become powerful or wealthy (placing them in power of everything having controlled most business affairs.)



New Type of Business Pool Entities

1887 → **Interstate Commerce Act**
→ **Interstate Commerce Commission** created.

Trust → John D. Rockefeller

- Standard Oil Co.



Rockefeller & Standard Oil Co.



John Davison Rockefeller (July 8, 1839 – May 23, 1937) was an American industrialist and philanthropist. Rockefeller revolutionized the petroleum industry and defined the structure of modern philanthropy. In 1870, he founded the Standard Oil Company and ran it until he officially retired in 1897. Standard Oil was convicted in Federal Court of monopolistic practices and broken up in 1911. Rockefeller spent the last 40 years of his life in retirement. His fortune was mainly used to create the modern systematic approach of targeted philanthropy with foundations that had a major effect on medicine, education, and scientific research.



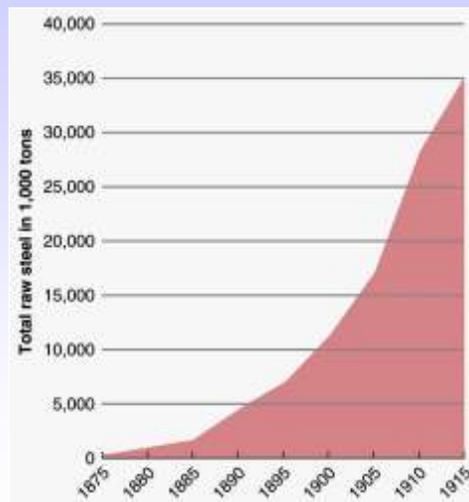
New Type of Business Entities

Trust:

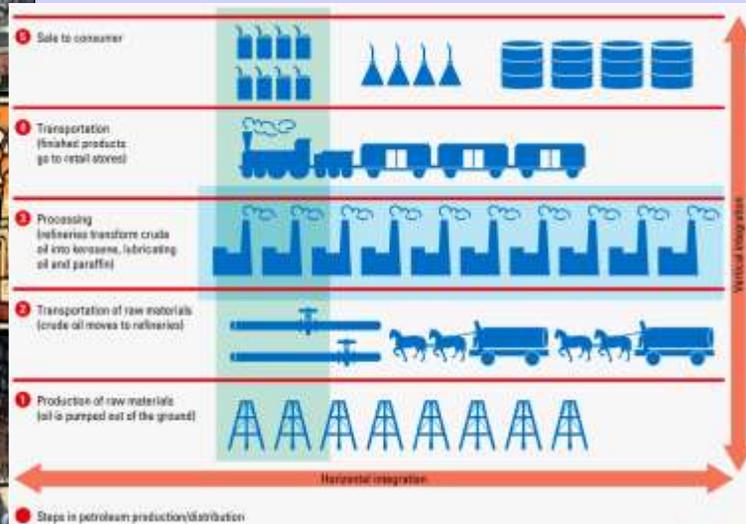
- **Horizontal Integration** → John D. Rockefeller
- **Vertical Integration:**
 - Gustavus Swift → Meat-packing
 - Andrew Carnegie → U. S. Steel



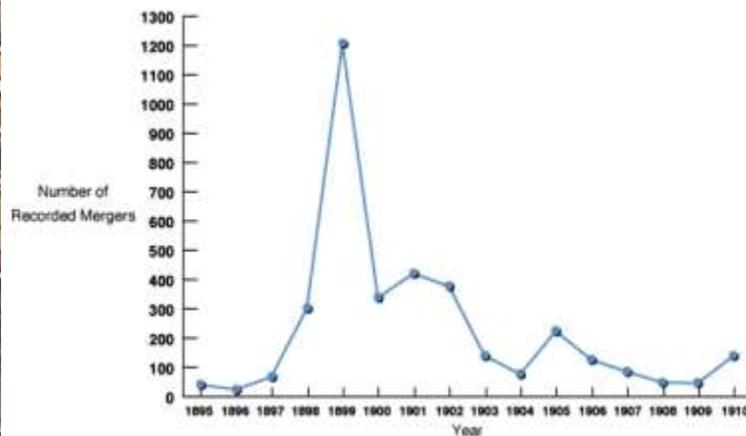
Iron & Steel Production



New Type of Business Entities



U. S. Corporate Mergers



Worksheet: Carnegie, Rockefeller & Types of Integration



Summary:



Summary:



Task: After forming a monopoly, why could that business charge whatever it wanted?

Start Here

Start Here

CASE STUDY: JOHN D. ROCKEFELLER PHILANTHROPIST OR ROBBER BARRON

Directions: Read the following passage. Use the scale on the other side to determine whether John D. Rockefeller was a great industrial pioneer or a "robber baron." In the spaces provided, list as much evidence as you can to support each point of view. After you weigh the evidence, decide which way the scale would tip.



John D. Rockefeller was born in upstate New York. Serious minded and religious, he decided early in his life on a business career. After high school, he studied book-keeping at a small business college in Cleveland, Ohio. In 1859, at the age of 20, he and a friend went into business, trading in grains and meat. The business was successful from the start, thanks to Rockefeller's shrewdness and his attention to detail. He boldly borrowed from banks to expand the business. When the Civil War broke out, the firm was in a position to make large profits selling supplies to the Union army.

By this time, Rockefeller had become interested in the new but booming oil industry. People had long known of areas in western Pennsylvania where oil seeped through the rock and floated on the creeks. A few people bottled and sold the oil as medicine, but otherwise it had no value. In the 1850s, Benjamin Silliman, a chemistry teacher at Yale University, showed that "Pennsylvania rock oil" could be purified and made into usable products, such as kerosene, for lighting lamps.

Silliman's findings showed that oil could be valuable if someone could find a way to get it out of the ground in quantity. In 1859, Edwin L. Drake drilled the first oil well at Titusville, Pennsylvania, and a new industry was born. People flocked to the region to drill for oil. The crude oil was shipped to oil refineries in nearby Cleveland. At an oil refinery,

crude oil is purified and made into usable products.

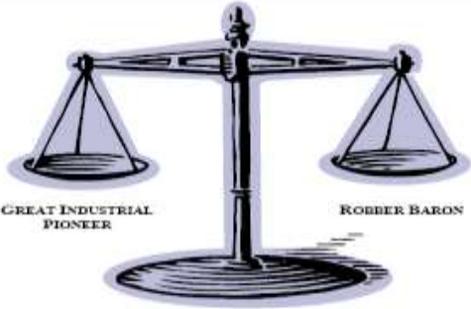
Oil refining was the part of the oil business that John D. Rockefeller entered in 1867, at the age of 27. His was one of perhaps 30 oil refineries that competed with each other in Cleveland.

The entire oil industry - from drilling to refining to distributing the kerosene to customers - was marked by fierce competition. Rockefeller saw that if he could gain control of refining, he could name the price he would pay the drillers for their crude oil. He could also name the price at which he would sell the refined oil back to distributors. In 1870, Rockefeller founded the Standard Oil, with the aim of gaining control of the refining business. Within two years he was able to buy out most of the other oil refineries in Cleveland. A few years later, he gained control of large refineries in New York, Philadelphia, Baltimore, and Pittsburgh.

How did Rockefeller accomplish this? First of all, he was an efficient producer. Like Andrew Carnegie in the steel industry, Rockefeller put profits back into the business to pay for expansion. He used the latest methods and machinery. He saved money by manufacturing his own barrels, building his own warehouses, and buying his own pipelines, which carried oil from the wells to the refineries. These measures enabled him to refine oil more economically.

Rockefeller was also able to ship his oil for less money. As the largest shipper of oil, he forced railroads into secret deals to give him rebates - that is, to pay him back a portion of the freight rates they charged him. In Ohio, Rockefeller could ship oil for only 10 cents a barrel, whereas his competitors had to pay 25 cents. After a time, he demanded that the railroads also give him a share of the freight charges his competitors paid! The railroads had to agree or lose Rockefeller's business.

With these advantages, Rockefeller could sell oil for less than his competitors. He gave other companies a choice: sell out to him at a fair price, or be driven out of business. Standard Oil was quite willing to sell out at a loss for as long as it would take to drive another company out of business. By 1879, Rockefeller had used these methods to attain a monopoly of the oil industry; he had gained control of 90 percent of the oil refining business in the United States.



GREAT INDUSTRIAL PIONEER

ROBBER BARON

1) Based on the above scale, I think Rockefeller should be considered more of a _____

2) Why?



Assess this writing prompt on Robber Barons:

- *The industrialists of the last quarter of the 19th c. were visionaries rather than 'robber barons.'* Assess the validity of this statement.



Which thesis is BEST? Why?

1. Industrialists like JD Rockefeller and A Carnegie did many good things and some bad things, but generally, they helped American become great.
2. Men such as JD Rockefeller and A Carnegie should have shared their money with more people, including their workers.
3. The trusts created by Rockefeller and Carnegie made America competitive internationally, but they exploited their workers and the American public.



New Financial Businessman

The Broker:

- J. Pierpont Morgan



John Pierpont Morgan (April 17, 1837 – March 31, 1913) was an American financier, banker and art collector who dominated corporate finance and industrial consolidation during his time. In 1892 Morgan arranged the merger of Edison General Electric and Thompson-Houston Electric Company to form General Electric. After financing the creation of the Federal Steel Company he merged the Carnegie Steel Company and several other steel and iron businesses to form the United States Steel Corporation in 1901.

Wall Street – 1867 & 1900



The Reorganization of Work

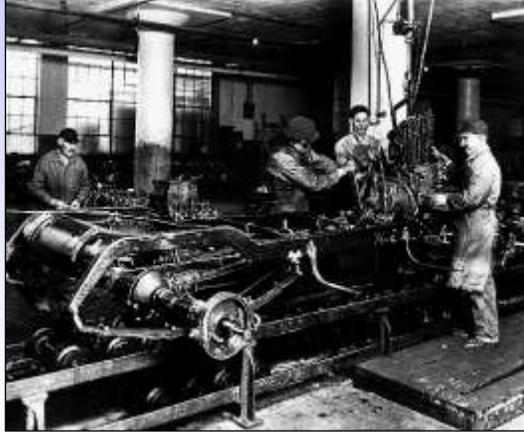
Frederick Winslow Taylor (20 March 1856–21 March 1915), widely known as **F. W. Taylor**, was an American mechanical engineer who sought to improve industrial efficiency. He is regarded as the father of scientific management, and was one of the first management consultants.



Frederick W. Taylor
*The Principles of
Scientific Management*
(1911)

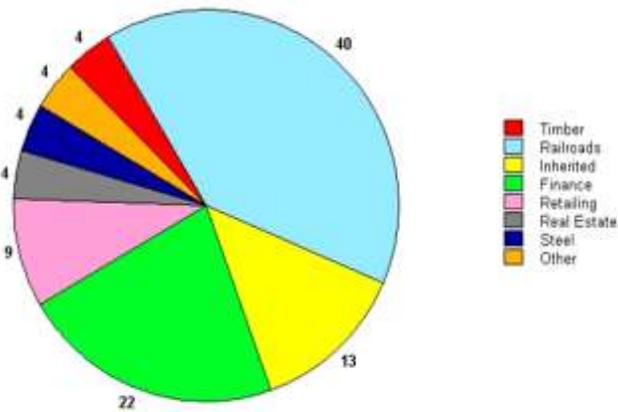


The Reorganization of Work

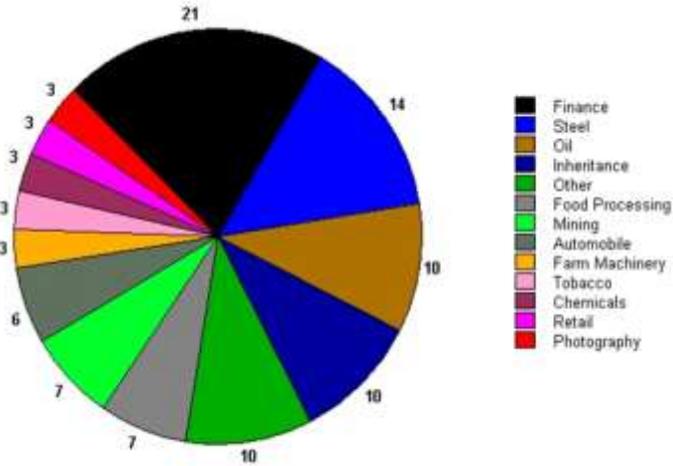


The Assembly Line

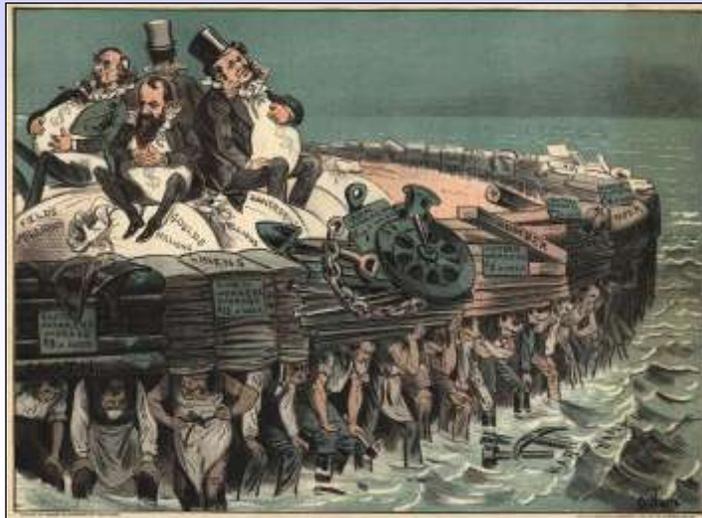
% of Billionaires in 1900



% of Billionaires in 1918

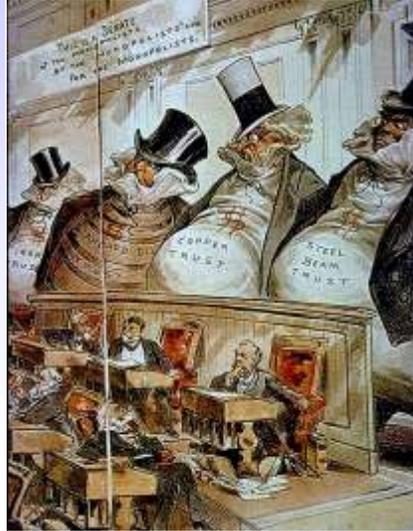


The Protectors of Our Industries

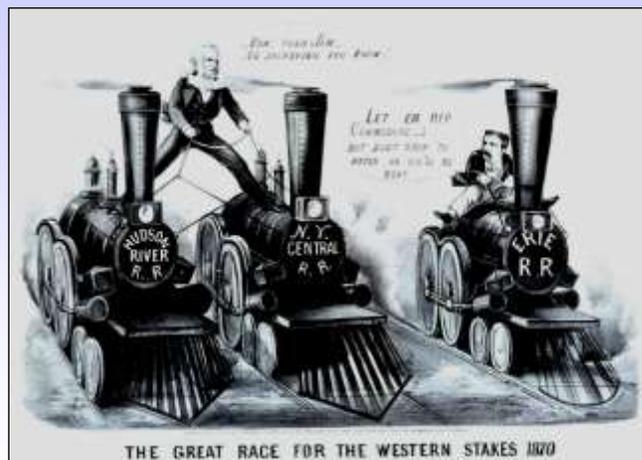




The 'Bosses' of the Senate



Cornelius ["Commodore"] Vanderbilt

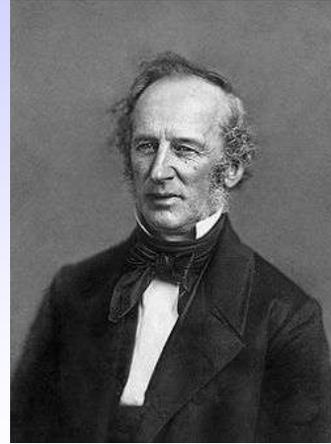


Can't I do what I want with my money?



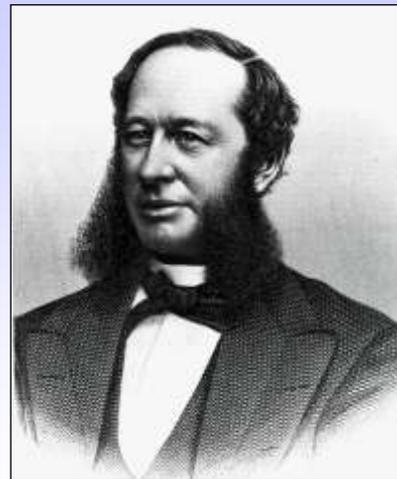
Cornelius ["Commodore"] Vanderbilt

- **Cornelius Vanderbilt** (May 27, 1794 – January 4, 1877), also known as *The Commodore* or *Commodore Vanderbilt*, was an American entrepreneur who built his wealth in shipping and railroads and was the patriarch of the Vanderbilt family.



William Vanderbilt

- § *The public be damned!*
- § *What do I care about the law? H'aint I got the power?*





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



ANDREW CARNEGIE, "THE GOSPEL OF WEALTH" (1889)

Questions:

1. How does Andrew Carnegie justify the contrast between the wealthy and the working poor?
2. According to Carnegie, what is the "proper administration of wealth"?
3. Why would some people criticize Carnegie's proposal?

A new intellectual tenet - Social Darwinism-helped justify the position of wealthy businessmen while simultaneously explaining poverty, misery, and unemployment. Social Darwinists, led by Englishman Herbert Spencer, who coined the phrase "survival of the fittest," broadened the theory of evolution to include all phenomena, especially society. Spencer argued that industrial leaders were products of natural selection: the best prospered while the unfit fell by the wayside. Any attempt to criticize or limit these survivors was contrary to natural law, and those less fortunate were the price modern society had to pay for progress. Andrew Carnegie, who amassed a fortune from the steel industry and was one of the few immigrant "rags to riches" examples of the era, understood that Social Darwinism could weaken democratic ideals. He published "Wealth," excerpted as follows, in the prominent journal, North American Review, in an effort to encourage businessmen to administer their wealth properly. Carnegie set the example and followed his "Gospel of Wealth" until the day he died.



Seminar Notes

All answers should be as specific as possible, and unless otherwise stated, given from the point of view from the author. Full credit will be awarded for direct use of the primary source.

USE DIRECT QUOTES FROM THE PRIMARY MATERIAL.

5.3 The Gospel of Wealth

Andrew Carnegie

A. Chose 3 of the following quotes and explain them in context.

1. "The Socialist or anarchist who seek to overturn present conditions is to be regarded as attacking the foundation upon which civilization itself rests."
2. "Not evil but good come to the race from the accumulation of wealth."
3. "What is the proper mode of administering wealth after the laws upon which civilization is founded have thrown it into the hands of the few."
4. "Why should men leave great fortunes to their children? ... it is not well for the children to be so burdened."
5. "There remains, then, only one mode of using great fortune...."
6. "The man of wealth thus becoming the mere trustee for his poorer brethren, bringing to their service their superior wisdom, experience ... doing for them better than they could do for themselves."



"On Wealth"



Andrew Carnegie

- \$ The Anglo-Saxon race is superior.
- \$ "Gospel of Wealth" (1901).
- \$ Inequality is inevitable and good.
- \$ Wealthy should act as "trustees" for their "poorer brethren."

Regulating the Trusts

1877 → *Munn. v. IL*

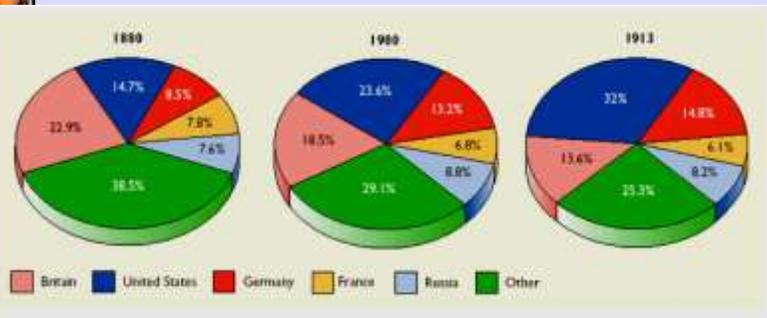
1886 → *Wabash, St. Louis & Pacific Railroad Company v. IL*

1890 → **Sherman Antitrust Act**

- in "restraint of trade"
- "rule of reason" loophole

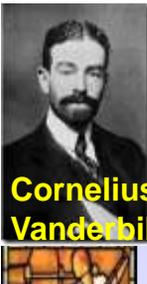
1895 → *US v. E. C. Knight Co.*

Relative Share of World Manufacturing

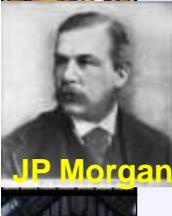




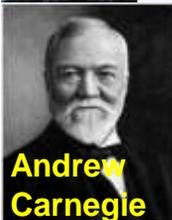
Modern 'Robber Barons'??



Cornelius Vanderbilt



JP Morgan



Andrew Carnegie

Industrialists Assignment:

- During the Industrial Age, Big Businessmen amasses a great deal of wealth and power. You will examine the lives of one of the following:

Andrew Carnegie,
Cornelius Vanderbilt,
JP Morgan
John D. Rockefeller



John D. Rockefeller

- **1) Complete the accompanying research sheet by gathering information from your textbook or the Internet**
- **2) Draw a political cartoon, criticizing this Industrialist in some way. Include a caption underneath.**

Case Study Research Sheet

- **Directions:** Find three resources and research information on your individual to complete the column labeled "data". In the column titled "source" recorded the title of the resource, author, and copyright date. Circle the name of the individual you are studying.
 - Andrew Carnegie, Cornelius Vanderbilt, JP Morgan, John D. Rockefeller
 - **Excellent Place to Start:** http://mason.info/Homepage_files/lt's%20Good%20to%20be%20Rich.htm

	Data	Source
Family Life		
Work History		
Treatment of workers/business associates		
Triumphs (how and doing what was he successful)		
Tribulations (what and how were his difficulties)		
Philanthropic work		

Review:

THE AMERICAN INDUSTRIAL REVOLUTION

 Name _____
 Date _____

Biographies

Directions: Match the biographical information with the letter corresponding to a name from the list at the bottom of the page.

- _____ American civil engineer responsible for much of the railroad construction in the western and southwestern United States during the nineteenth century.
- _____ Naturalist and advocate of U.S. forest conservation who was largely responsible for the establishment of Sequoia and Yosemite National Parks in California.
- _____ Labor organizer and Socialist Party candidate for U.S. president five times between 1900 and 1920.
- _____ Scottish-born American audiologist best known as the inventor of the telephone in 1876.
- _____ U.S. labor leader and first president of the American Federation of Labor.
- _____ Founder of the meat packing firm and innovator of the refrigerated freight car for shipping meat.
- _____ Drilled the first productive oil well in the United States at Titusville, Pennsylvania.
- _____ U.S. industrialist and founder of the Standard Oil Company, which dominated the oil industry and was the first great U.S. business trust.
- _____ American writer best known for her sonnet "The New Colossus," written to the Statue of Liberty.
- _____ English engineer and inventor of the process by which iron ore was efficiently converted to steel.
- _____ American inventor and industrialist who was chiefly responsible for the manufacture of the air brake.
- _____ U.S. iron master who devised a purification process for the manufacture of steel.
- _____ American manufacturer whose introduction of the first Kodak camera helped to promote large-scale amateur photography.
- _____ Writer, explorer, and soldier, who founded the Boone and Crockett Club.
- _____ Scottish-born American industrialist who led the enormous expansion of the American steel industry in the late nineteenth century. He was also one of the most important philanthropists of his era.
- _____ Controversialist, humorous journalist, and critic of American life who commented that Baltimore smelled "like a billion polecats."
- _____ American labor leader who led the Knights of Labor from 1879 to 1893.
- _____ President of the United States, serving from 1885 to 1889 and from 1893 to 1897, who was responsible for groundbreaking forestry legislation.
- _____ U.S. sociologist and proponent of Social Darwinism.
- _____ American inventor responsible for the phonograph, the carbon-button transmitter for the telephone speaker and microphone, the incandescent lamp, and many other inventions.
- _____ American financier and industrialist who organized the United States Steel Corporation.

A. Bell, Alexander Graham	B. Bessemer, Sir Henry	C. Carnegie, Andrew
D. Cleveland, Grover	E. Debs, Eugene	F. Dodge, Grenville
G. Drake, Edwin L.	H. Eastman, George	I. Edison, Thomas Alva
J. Gompers, Samuel	K. Kelly, William	L. Lazarus, Emma
M. Menckon, H.L.	N. Morgan, John Pierpont	O. Muir, John
P. Fowler, Terrence	Q. Rockefeller, John D.	R. Roosevelt, Theodore
S. Sumner, William Graham	T. Swift, Gustavus	U. Westinghouse, George



The Results of Industrialization at the end of the 19c

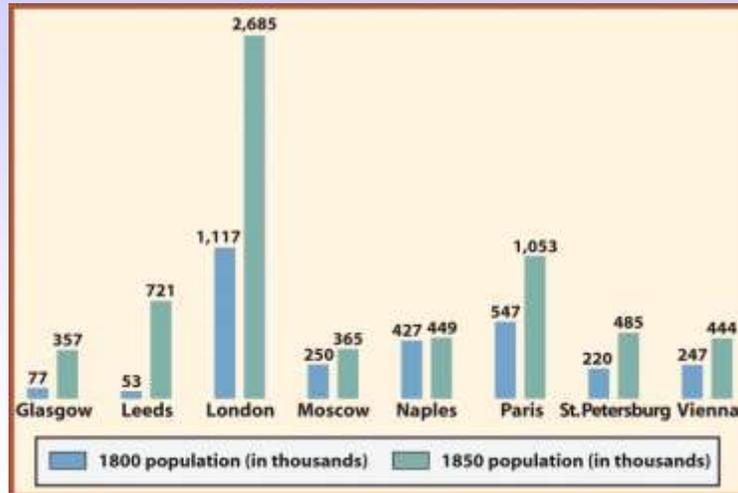


Summary: Consequences of Industrialization

- Division of the Classes
- The Factory System
- Labor Unrest, Unions, and Reform
- Socialism
- Overpopulation
- Urbanization
- Spread of diseases and concern for sanitation
- Pollution
- Spread of industrialization throughout Europe.



Population Boom



Overcrowding





Concern for Disease and Sanitation



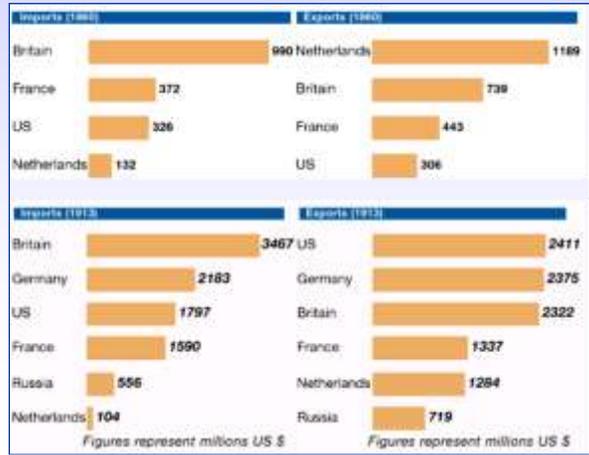
Pollution

Air Pollution – Dust kicked up into air from transportation, and soot from machines that burned coal, made the air dirty and bad to breathe





Shares in World Trade: Leading European Nations



Population, Population, Population: How did it grow?

	1750	1900
Population	 7 Million	 37 Million
People living in Towns	 13%	 87%
Life Expectancy	Men 31 Women 33	Men 45 Women 48
Deaths at Birth	Deaths at Birth 65% Babies Lived 35%	Deaths at Birth 15% Babies Lived 85%

Tasks

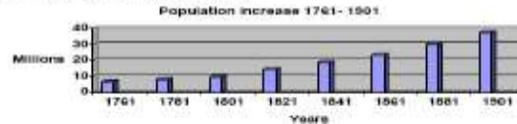
- Using this information, draw a line/bar graph showing:
- The difference in life expectancy of men & women in 1780 & 1900.
 - The difference in the number of deaths at birth & babies that lived in 1750 & 1900.
 - How many more people were living in Britain in 1900 than in 1750?
 - Did life expectancy increase because of better:
 - Hygiene?
 - Living conditions?
 - More jobs?
- Use your knowledge and the info from last lesson to answer these Q's.



National Census

As we have seen, during the 18th & 19th Centuries the population of Britain increased dramatically. From 1801 the government began to take a census (count) of the population very ten years. This gives us accurate figures for the population increase, and we know that by 1900 there were more than six times as many people living in Britain as there had been in 1750.

Historians are uncertain as to why the population increased so dramatically, obviously if more people are born than die the population will increase - The question is WHY?



Possible Reasons

- The average age at which people married dropped from 27 to 20, so families tended to larger.
- If families have more children, there are more people to have children in the future, and so the population keeps increasing.
- Jobs for children became available in the factories.
- There were big improvements in medical, with the introduction of **inoculation** against killer diseases like smallpox.
- Improvements in agriculture and transport made food cheaper and more readily available.

Tasks

Answer these Q's:

1. What is the census and when was the first one?
2. Why is the census useful?
3. By how much did the population increase between 1750 & 1900?
4. List four possible reasons for why the population increased.
5. Which one do you think is the most significant? Why?

Use your knowledge and the info from last lesson to help with these Q's.

Key Vocabulary Review these terms, your packets, and your notes for our upcoming test!

1. Revolution – a period of dramatic changes and new inventions
2. Macadam Roads – a road made of layers of crushed rock that drained well and was sturdy
3. John L. McAdam – Designer/Inventor of the macadam road
4. Child labor – Children, as young as 6, who did physically demanding and/or dangerous work for as long as 12-16 hours a day
5. Railroads – Used to transport raw materials and finished products to cities. Faster and far more effective than horse power.
6. Canals – Used to transport raw materials and finished products to cities, lowered transportation costs.
7. Air Pollution – Dust kicked up into air from transportation, and soot from machines that burned coal, made the air dirty and bad to breathe
8. Black Lung – a respiratory disease caused by breathing coal dust
9. Byssinosis – a respiratory disease caused by breathing in cotton dust.
10. Textile Industry – Businesses that made cloth
11. Spinning Jenny – a machine for spinning thread that uses many spindles
12. Flying Shuttle – a weaving device that carries thread quickly back and forth across the piece being woven
13. John Kay – Invented the flying shuttle in 1733
14. James Hargreaves – Invented the Spinning Jenny in 1765
15. Cotton Gin – machine that removed seeds from unprepared cotton
16. Eli Whitney – Invented the Cotton Gin in 1790
17. Automation – process in which machines replace people
18. Tenants – people who live and work on the land of someone else

19. Industrialization – moving from agriculture to machinery based society
20. Tenements – houses in a row that had low standards of quality
21. Interchangeable parts – machine parts made to a uniform size so they could be replaced easily
22. Factory town – towns that grew in response to the need for workers in factories. People moved from the country to earn more money.
23. Trade Unions – Groups that support the rights of workers
24. Internal combustion engine – engine that provides power through a controlled internal explosion
25. Patent – a legal document giving the an inventor the right to sell and make an item
26. Trademark – a symbol (word, picture, etc.) that identifies the maker of a product.
27. Luddites – Named after Ned Ludd, this is a group of people who violently opposed industrialization.
28. Assembly line – an efficient way of building goods, that had the product move past the workers, who would then add parts. Each worker only worked on a small part of product.
29. Steam Engine – Expanding steam forced the pistons of this machine to create work.
30. James Watt – Inventor of the steam engine in 1765
31. Puddling – process that makes purer iron by stirring air into mixture as it is prepared, which burns off impurities.
32. Iron ore – rocks in which iron can be found
33. Coke – Iron ore that has been baked. This will burn better and make higher quality iron.
34. Henry Cort – Inventor of puddling process
35. Bessemer process – Injecting cool air into molten iron allowed steel to be produced much faster.
36. Henry Bessemer – Created Bessemer process in 1850
37. Steel – A mixture of iron and carbon that is stronger, lighter, more flexible, and more rust resistant than pure iron.
38. Natural Resources – Any material made by nature that is used by man to accomplish a task.

POST-TEST



Multiple Choice	
Directions: Fill in the blank by choosing from the choices provided.	
1. The _____ was the first textile machines of the Industrial Revolution. a) cotton gin b) water frame c) internal combustion engine d) power forge	6. The typical number of hours in a textile factory work-week in the U.S.A. in the 1870s was _____. a) 40 b) 50 c) 60 d) 70
2. _____ brought English textile machinery designs to the U.S.A. a) Eli Whitney b) Samuel Slater c) John Adams d) Thomas Jefferson	7. _____ was not improved by the use of steam engines in the 19th century. a) Transportation b) Farming c) Air quality d) Manufacturing
Blackline Master #2, Post-Test	
Multiple Choice	
3. An example of a cottage ir a) power loom b) building steam eng c) making interchange d) hand weaving	_____ was a source of linen fiber used the Industrial Revolution. a) Cotton plants b) Silk worms c) Sheep d) Flax plants
4. The approximate decade ti began was the _____. a) 1840s b) 1830s c) 1810s d) 1760s	_____ did not increase after the al Revolution. a) Factories b) Production of goods c) Population of rural areas d) Environmental pollution
5. _____ is the country where the Industrial Revolution began. a) Russia b) England c) Spain d) Germany	10. The region of _____, in the U.S.A, was where industrialization was first concentrat- ed. a) the Southern States b) the Pacific Northwest c) New England d) California
Essay Question	
Compare and contrast life before and after the Industrial Revolution. Include at least five examples in your discussion. You may use the back of this sheet or a separate piece of paper to complete your answer.	



Bibliographic Sources

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