#### Chapter Information ~ Ch 11; 43sections; 23 pages

# National and Regional Growth (1800-1844)

Section 1 ~ Early Industry and Invention Pages 60-65 Section 2 ~ Plantations and Slavery Spread Pages 66-75 Section 3 ~ Nationalism and Sectionalism Pages 76-81

The Industrial Revolution Started in Europe New technology helped advance this new era The IR changed the way Americans lived their lives Improved transportation encourage movement west-

The high demand for cotton increased the demand for slaves.

#### **Related Topics**

The War of 1812 The Factory System The Cotton Gin Interchangeable Parts Renewed interest in the Slave Industry

### **Key Connections - 10 Major (Common) Themes**

- 1. How cultures change through the blending of different ethnic groups.
- Taking the land.
- 3. The individual versus the state.
- 4. The quest for equity slavery and it's end, women's suffrage etc.
- Sectionalism.
- Immigration and Americanization.
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- 8. Technology developments and the environment.
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#### Talking Points Introduction

The Industrial Revolution, which took place from the 18th to 19th centuries, was a period during which predominantly agrarian, rural societies in Europe and America became industrial and urban. Prior to the Industrial Revolution, which began in Britain in the late 1700s, manufacturing was often done in people's homes, using hand tools or basic machines. Industrialization marked a shift to powered, special-purpose machinery, factories and mass production. The iron and textile industries, along with the development of the steam engine, played central roles in the Industrial Revolution, which also saw improved systems of transportation, communication and banking. While industrialization brought about an increased volume and variety of manufactured goods and an improved standard of living for some, it also resulted in often grim employment and living conditions for the poor and working classes.

The assembly line was a major symbol of the Industrial Revolution as it signifies individuals running machines to speed up the process of building something. Other major innovations that occurred were making water power more efficient, taking steam power to a new level, and developing all kinds of new tools using machines. Coal became the fuel of choice instead of wood, and machines were powered by the coal.

Many very important technological advancements occurred during the Industrial Revolution. Among those were textile manufacturing, metallurgy, the use of steam power, the creation of machine tools, the development of new chemicals, the creation of cement, the use of gas lighting, the invention of the paper machine, advancements in mining and agriculture, and many others.

#### **Questions to Think About**

Why was it called a revolution if no battles were fought?

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# **Talking Points**

- As new innovations developed the Industrial Revolution sparked advancements in many aspects of society. Better transportation methods were created and better standards of living were achieved.
   Most historians agree that the Industrial Revolution in America was the most important advancement in human history since people domesticated animals.
- 4. II Background of the Industrial Revolution
  The Industrial Revolution (1820-1870) was of great importance to the economic development of the United States. The first Industrial Revolution occurred in Great Britain and Europe during the late eighteenth
  century. It then centered on the United States and Germany.
- 5. The Industrial Revolution itself refers to a change from hand and home production to machine and factory. The first industrial revolution was important for the inventions of spinning and weaving machines operated by water power which was eventually replaced by steam. This helped increase America's growth. However, the industrial revolution truly changed American society and economy into a modern urban-industrial state.
- 6. III Growing Industrialization

The real impetus for America entering the Industrial Revolution was the passage of the Embargo Act of 1807 and the War of 1812. Americans were upset over an incident with the Chesapeake whereby the British opened fire when they were not allowed to search the ship. They also seized four men and hung one for desertion. This resulted in much public outrage and the passage of the Embargo Act which stopped the export of American goods and effectively ended the import of goods from other nations. Eventually, America went to war with Great Britain in 1812. The war made it apparent that America needed a better

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#### **Talking Points**

transportation system and more economic independence. Therefore, manufacturing began to expand.

- 7. Industrialization in America involved three important developments. First, transportation was expanded. Second, electricity was effectively harnessed. Third, improvements were made to industrial processes such as improving the refining process and accelerating production. The government helped protect American manufacturers by passing a protective tariff.
- 8. IV Cotton and Cloth
  - In 1794, Eli Whitney invented the cotton gin which made the separation of cotton seeds from fiber much faster. The South increased its cotton supply sending raw cotton north to be used in the manufacture of cloth. Francis C. Lowell increased the efficiency in the manufacture of cloth by bringing spinning and weaving processes together into one factory. This led to the development of the textile industry throughout New England.
- 9. In 1846, Elias Howe created the sewing machine which revolutionized the manufacture of clothing. All of a sudden, clothing began to be made in factories as opposed to at home.
- 10. The cotton gin is a machine designed to remove cotton from its seeds. The process uses a small screen and pulling hooks to force the cotton through the screen. It was invented by Eli Whitney on March 14, 1794, one of the many inventions that occurred during the American Industrial Revolution. However, earlier versions of the cotton gin had existed since the first century. It was improved over time from a single roller design to a double roller machine.

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# **Talking Points**

V Historical Significance of the Cotton Gin

- 1. The cotton gin made the cotton industry of the south explode. Previous to its invention, separating cotton fibers from its seeds was a labor intensive and unprofitable venture. However, after Eli Whitney unveiled the cotton gin, processing cotton became much easier resulting in greater availability and cheaper cloth. However, the invention also had the by-product of increasing the number of slaves needed to pick the cotton thereby strengthening the arguments for continuing slavery. Cotton as a cash crop became so important that it was known as King Cotton and affected politics up until the Civil War.
- 2. Eli Whitney made very little money off of his invention. Many farmers duplicated his cotton gin without paying royalties. Whitney did not intend to sell the cotton gin. Instead, he planned to make a profit by separating the cotton for farmers. Some believe that the brush part of the cotton gin was suggested by Catherine Greene.
- 3. VI Interchangeable Parts
  Eli Whitney came up with the idea to use interchangeable parts in 1798 to make muskets. If standard parts were made by machine, then they could be assembled at the end much more quickly than before. This became an important part of American industry and the Second Industrial Revolution.
- 4. Interchangeable parts was a revolutionary idea developed by Eli Whitney that meant that for a product, say a gun, was made from parts that were developed in factories and were exactly the same, thus INTER-CHANGEABLE. That meant that if you broke a piece of it, you wouldn't have to buy a whole gun, you could just replace the piece. This was an element of mass production, and a huge part of the Industrial

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# **Talking Points**

Revolution that completely changed how things, (guns, wagons, etc) were made. Suddenly things that took a long time and a skilled man to make were being produced by the hundreds or even thousands.

5. VII From Agriculture to Cities

As industries and factories arose, people moved from farms to cities. This led to other issues including overcrowding and disease. However, advances were made in agriculture too including better machines and cultivators. For example, Cyrus McCormick created the reaper which allowed quicker and cheaper harvesting of grain. John Deere created the first steel plow in 1837 helping speed up farming across the Midwest.

VIII Key Innovations and Inventors of the Industrial Revolution

Technology, arguably the greatest aspect of the Industrial Revolution, can be simplified into a few different innovations and inventors, most inspired by one product. The first product to undergo the "revolution" from the cottage industry to the mechanized age was cotton. Britain, at the time, had a large wool trade. In 1760, the amount of wool exported was almost thirty times that of cotton. Demand for cotton grew with a change in the upper class fashion, and Britain started to allow more cotton production. Soon, not enough cotton could not be made to satisfy the demand. This demand was the inspiration for the following inventions:

John Kay's "flying shuttle"
 John Kay, a mechanic from Lancashire, patented the flying shuttle. Using cords attached to a picking peg, a single weaver, using one hand, could operate the shuttle on the loom. With this invention it took four spinners to keep up with one cotton loom, and ten people to prepare yarn for one weaver. So while spinners were often busy, weavers often waited for yarn. As such, the flying

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shuttle effectively doubled a weaver's production of cloth

- 2. James Hargreaves' "spinning jenny" In 1764, James Hargreaves invented the "spinning jenny," a device which allowed one person to spin many threads at once, further increasing the amount of finished cotton that a worker could produce. By turning a single wheel, one could now spin eight threads at once, a number that was later increased to eighty. The thread, unfortunately, was usually coarse and lacked strength. Despite this shortcoming, over 20 000 of the machines were in use in Britain by 1778.
- 3. Richard Arkwright's "water frame" Also in 1764, Richard Arkwright created the "water frame" to produce yarn faster. The "Spinning-Frame," its earlier name, was too large to be operated by hand. After experimenting with other sources of power, he decided to employ the power of a water wheel, and his machine became known as the water frame (Industrial Revolution: The Industrial Revolution in Great Britain). Rollers produced yarn of the correct thickness, while a set of spindles twisted fibers together. The machine was able to produce a thread far stronger than any other available at the time.
- 4. Samuel Crompton's "Crompton's mule" In 1779, Samuel Crompton combined both the spinning jenny and the water frame to create a machine known as "Crompton's mule," which produced large amounts of fine, strong yarn.
- 5. With the arrival of these inventions, yarn had effectively become industrialized. By 1812, the cost of making cotton yarn had dropped by nine-tenths and the number of workers needed to turn wool

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into yarn had been reduced by four-fifths. The addition of these inventions to the work force moved the stress from the production to the supply of raw cotton. Within just a 35 year period, more than 100,000 power looms with 9,330,000 spindles were put into service in England and Scotland. Britain took advantage of the Americas' available new cotton, using it to help absorb the demand. By 1830, the importation of raw cotton had increased to eight times its past rate and half of Britain's exports were refined cotton. At this point, the demand was high enough to provide inspiration for what is probably the most well-known invention of the Revolution: the steam engine.

- 6. James Watt's "steam engine"
  In 1769, James Watt patented the steam engine and in effect created a new source of power. Early-model steam engines were introduced to drain water and raise coal from the mines, but the crucial development was the use of steam for power (Industrial Revolution: The Industrial Revolution in Great Britain). The first steam engine was actually produced by Thomas Newcomen, but Watt later improved and patented it. The original idea was to put a vertical piston and cylinder at the end of a pump handle and then to put steam in the cylinder and condense it with a spray of cold water. The vacuum created allowed atmospheric pressure to push the piston down, but Watt made it a reciprocating engine, creating the true steam engine.
- 7. Robert Fulton's "steamboat"
  In 1807, Robert Fulton used steam power to create the first steamboat, an invention that would change the way and the speed in which materials could be moved between the colonies of Britain. In the beginning, the ship was more expensive to build and operate than sailing vessels, but the

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# **Talking Points**

steamship had some advantages. It could take off under its own power and it was more steadfast in storms.

8. Stephenson's "steam powered train" Finally, in 1814, Stephenson used the steam engine to create a steam powered train, which would eventually allow increased communication and trade between places before deemed too far. Soon, the steam-powered train had become an icon of success throughout the world. Britain encouraged the building of railroads in other European countries, often with British capital, equipment, and technicians.

From a suitable product comes a mass of inventions that will lead other areas of trade and production towards industrialization. These first innovations have greatly affected the basic elements of the era: agriculture, power, transportation, textiles, and communication.

- IX Communication and the Industrial Revolution
  - 1. With the increased size of the United States, better communication networks became ultra-important. In 1844, Samuel F. B. Morse created the telegraph and by 1860, this network ranged throughout the eastern coast to the Mississippi.
  - X Transportation
     The Cumberland Road, the first national road, was begun in 1811. This eventually became part of the Interstate 40. Further, river transportation was made efficient through the creation of the first steamboat, the Clermont, by Robert Fulton. This was made possible by James Watt's invention of

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the first reliable steam engine.

- 3. The creation of the Erie Canal created a route from the Atlantic Ocean to the Great Lakes thereby helping stimulate the economy of New York and making New York City a great trading center.
- 4. Railroads were of supreme importance to the increase in trade throughout the United States. In fact, by the start of the Civil War, railroads linked the most important Mid-West cities with the Atlantic coast. Railroads further opened the west and connected raw materials to factories and markets. A transcontinental railroad was completed in 1869 at Promontory, Utah.
- 5. With the great advances of the Industrial Revolution, inventors continued to work throughout the rest of the 19th and early 20th century on ways to make life easier while increasing productivity. The foundations set throughout the mid-1800's set the stage for inventions such as the light bulb (Thomas Edison), telephone (Alexander Bell), and the automobile (Karl Benz). Further, Ford's creation of the assembly line which made manufacturing more efficient just helped form America into a modern industrialized nation. The impact of these and other inventions of the time cannot be underestimated.

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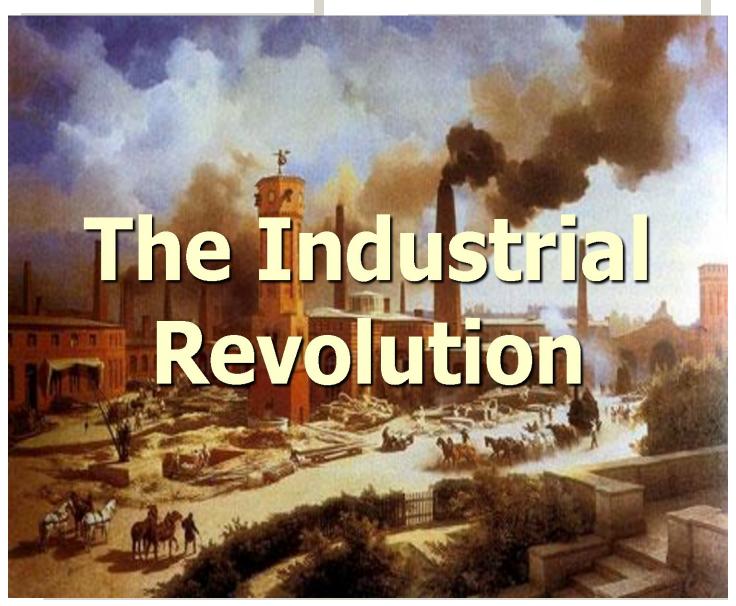
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