**The Agricultural Revolution**

As changes were taking place in science, there were new developments in farming. These changes were called the Agricultural Revolution. It sets the stage for the Industrial Revolution.

The Enclosure Movement

* A system of land division used in Great Britain where they fenced off land for individual use. Before this movement, landowners had rented small strips of land to families for farming. Through enclosure, landowners could combine the strips of land and enclose them with fences, hedges, etc., which allowed them to grow one large crop. Now, farmers needed less workers. People will have to relocate to the cities to find jobs. (rural-to-urban migration)

Farming improved due to the Agricultural Revolution!

* Crop rotation – keeps soil fertile and more crops can be grown.
* Seed drill – plant rows of seeds vs scattering seeds.
* Breeding of animals – produces stronger, healthier, larger animals for work and meat.
* These changes in farming create conditions favorable for industry. People move to the cities to work in factories and the demand for manufactured goods increases.

**The Industrial Revolution**

A change in which people began to rely on the use of machinery rather than on animal or human power.

1. **The Textile Industry:**

The Industrial Revolution began in Great Britain in the textile (cloth) industry. Prior to the Industrial revolution, cloth had been made in a domestic system (cottage industry), a system where manufacturing was done in cottage’s by families. The domestic system was not very efficient and it could not meet the demand for cloth.

* **The Flying Shuttle: 1st big breakthrough. Invented by a British man named John Kay. A weaving device that carries thread quickly back and forth across the piece being woven. Now spinners could not keep up with the weavers.**
* **The Spinning Jenny: Machine for spinning that used many spindles. Made it possible for one person to spin many threads at the same time.**
* **The Factory System: People realized that water power was easier than hand power to run machines. In order to do this, they built factories next to large rivers. Now workers were coming to factories to make goods instead of making them in their homes.**
* **The Steam Engine: Invented by James Watt (Scottish). Replaced water power. Now factories could be set up near raw materials.**
* **The Cotton Gin: Invented by Eli Whitney (American). Could clean seeds out of cotton faster than by hand.**

1. **Organizing Production:**

* **Interchangeable Parts: Also produced by Eli Whitney. Made it so parts could fit more than one item.**
* **Automation: Process by which machines do most of the labor rather than people. Introduced by Oliver Evans (American)**
* **The Assembly Line: Developed by Samuel Colt. On an assembly line, each worker adds a part of the product and passes it on until the entire product is finished.**

1. **Iron, Coal, and Steel**

* **A British inventor named Henry Bessemer found a way to remove the impurities of iron to make steel, which was harder and stronger. (called the Bessemer Process)**
* **The Open Hearth Process: Invented by Pierre-Emile Martin of France and William Siemens of England. Used a special kind of furnace to make steel cheaper than the Bessemer Process.**

1. **Transportations:**

* **Transportation had to improve to move raw materials more quickly.**
* **Thomas Telford – Scottish – designed roadbeds so that water could drain off the roads.**
* **John L. McAdam – Scottish – developed the macadam road which was a series of layers of stone.**
* **Rivers became wider and deeper – built canals.**
* **Horses walked beside rivers and pulled barges.**
* **Railroads – steel rails**
* **Time zones were established in the U.S. and all over the world as a result of the railroad.**
* **The Rocket: Invented by George Stephenson. Started the railroad boom**
* **The Steamboat: *Clermont* – invented by Robert Fulton (American). Used for travel along the inland waterways for people and goods.**

**The Industrial Impact on Society**

**The Industrial Revolution brought many changes in people’s lives.**

**Changes in Society**

* **The middle class increases in number and grows very rich.**
* **The middle class also gains political power. Males gain the right to vote and represent Parliament.**
* **An industrial working class is also created. This was made up of peasants who no longer could farm for a living. The working class had a very hard life.**

**How was life hard for the working class?**

1. **Worked 12-16 hours a day, 6 days a week, for LOW wages.**
2. **Fined or beaten if they did not work fast enough.**
3. **Working conditions were difficult, dirty, and dangerous. Many were killed. Machinery was unsafe.**
4. **No job security.**
5. **Children had to work in factories to help support their families instead of attending school or playing.**

**The Growth of Cities**

* **Most people lived in the cities during the Industrial Revolution, which caused overcrowding.**
  + **Many families might live in one house or apartment.**
  + **This created unsanitary conditions.**
  + **They did not have sewers – garbage floated in the streets.**
  + **Water was polluted – diseases and epidemics were common.**
* **These conditions mostly affected the working class. Workers could not form trade unions or vote, so there was nothing they could do about their working or living conditions.**

**REFORM**

* **Started schools, orphanages, and hospitals for poor.**
* **Trade unions were made legal.**
* **10 hour workdays.**
* **Sewer systems and better housing were required.**
* **One window in every room.**
* **Piped-in water supply**

**Life became better for the working class over time.**