The Industrial Revolution of Great Britain

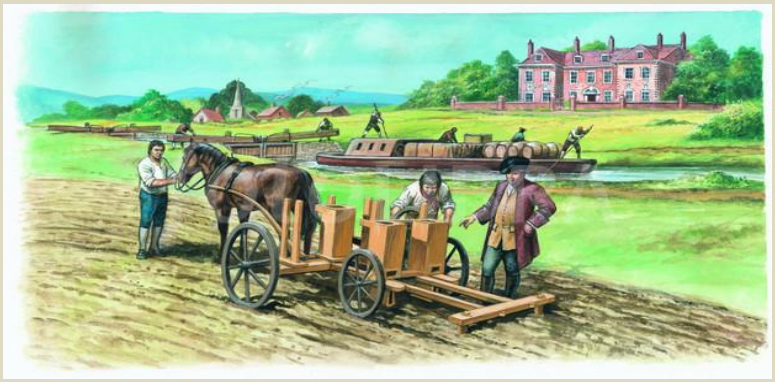
by Gordon Hurst, SKA High School for Girls

It starts with the Agrarian Revolution (The Agricultural Revolution)

In the early 1700's, agricultural inventions created major changes in food production.

Three main people were:
Jethro Tull
Robert Bakewell
Charles, Viscount Townshend

Jethro Tull



- Invented the **horse-drawn seed drill** in 1701 and then the **horse-drawn hoe**
- In 1731 he wrote ***Horse Hoeing Husbandry***
- His inventions were labor saving devices meaning that fewer farm workers were needed to work the fields

Robert Bakewell

He is responsible for **selective-breeding** of sheep, cattle and horses. He bred different sheep for wool and meat, larger and fatter cattle for meat and stronger horses for farm work

Charles “Turnip” Townshend

Year 1

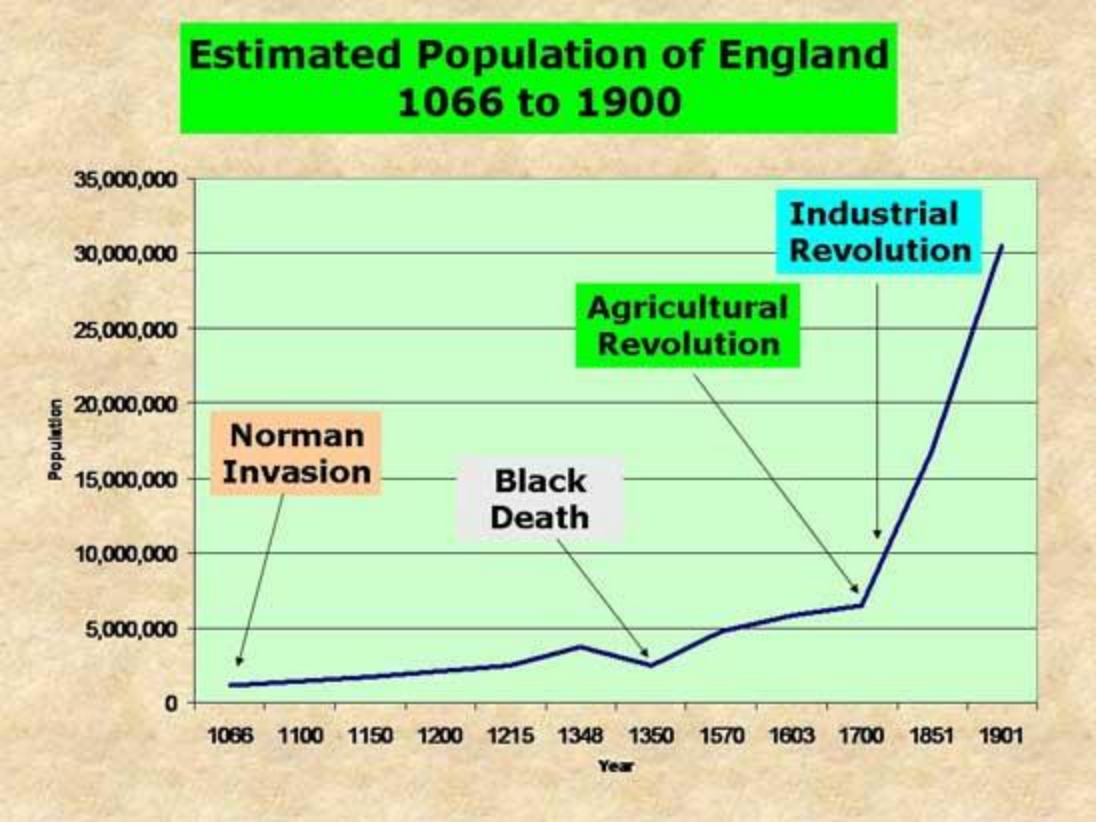
Year 2

Year 3

Year 4

Changed the **crop rotation system**. Legumes added nitrogen to the soil making it more fertile. No longer needed to keep fields fallow. The **four-year** crop rotation now created full field productions and more crops year round

The Population Grows

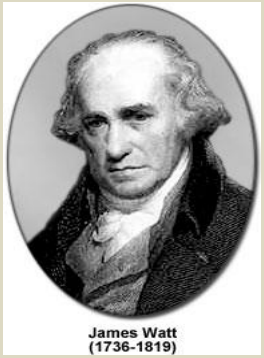


More and better food availability leads to dramatic population growth

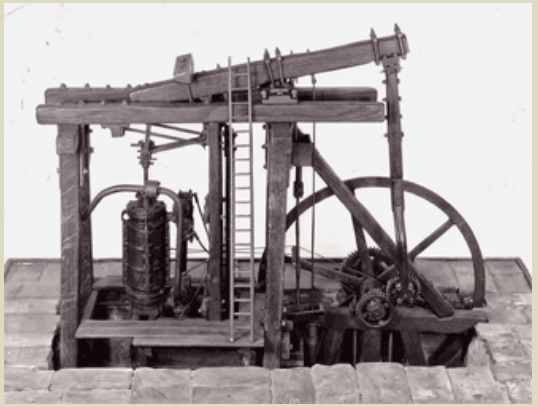
Urbanization Begins

Fewer farm workers were needed due to the new inventions and techniques. Mass migrations to the cities took place.

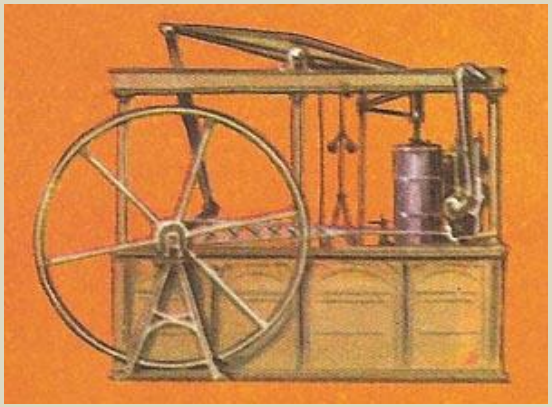
James Watt



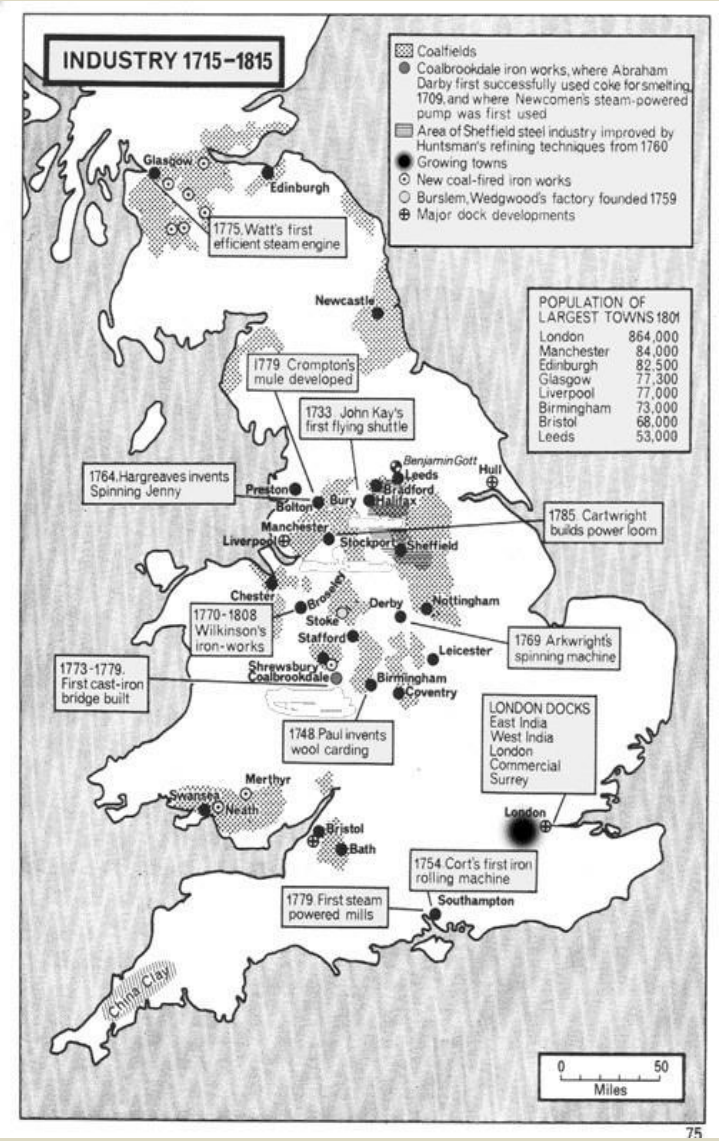
He is one of several men credited for inventing the **Steam Engine**.



This new power source gave rise to the birth of the **Factory System** that changed British industry



England has the Raw Materials

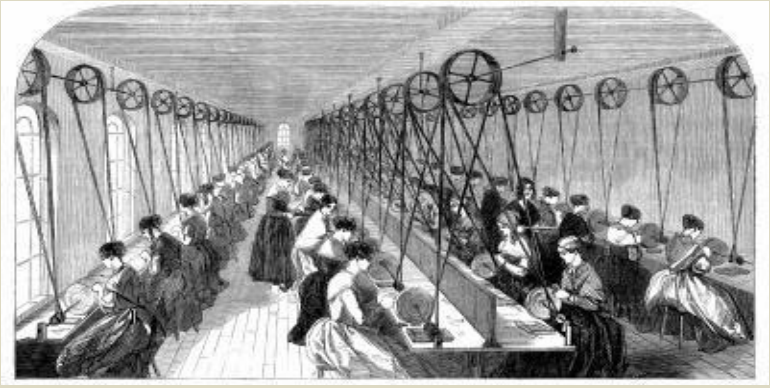


- Abundance of **coal** to power the steam engines
- Plentiful supply of fresh **water** from rivers and streams
- Large deposits of **iron ore** to build the factory machines

The Textile Industry Changes

- Cottage Industries disappear as textile factories are built to mass-produce **fabrics**
- Major improvements are made by new machines that **spin and weave** textiles
- **Urbanization** creates a plentiful labor supply

Cottage Industry

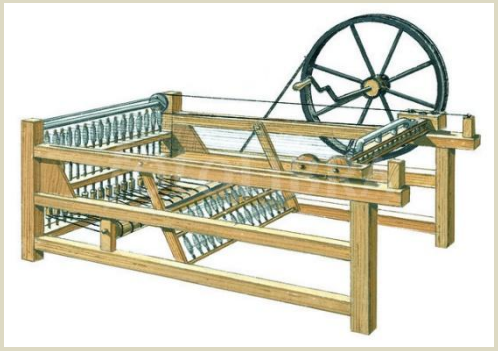


Typical textile factory

Technological Inventions

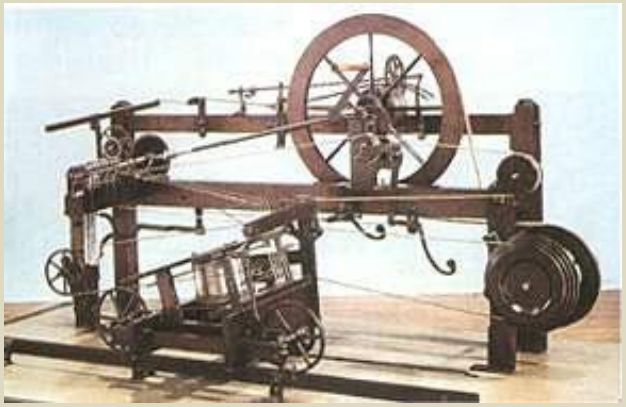
John Kay
The Flying Shuttle
Doubles speed of weaving

James Hargreaves
The Spinning Jenny
Spins 20 threads at once

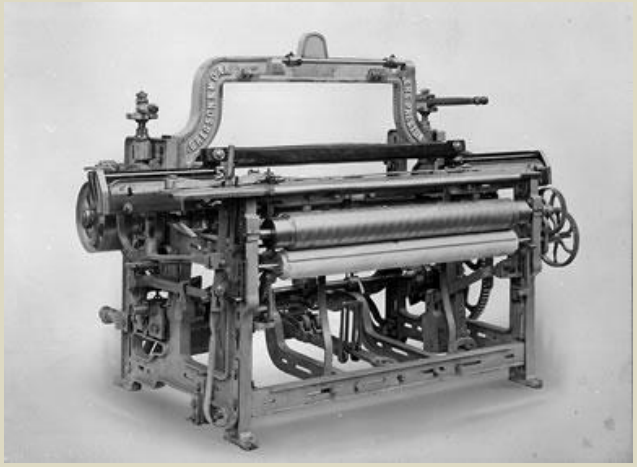


Richard Arkwright
The Water Frame
Uses water power to spin 300 threads at once

Technological Inventions



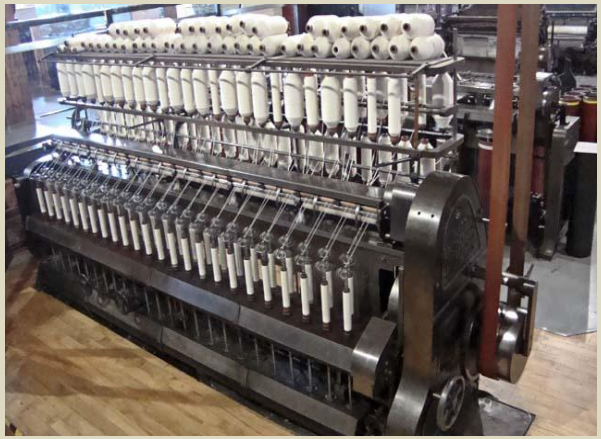
Samuel Crompton
The Spinning Mule
Combines Jenny and Water Frame to spin finer thread



Edmund Cartwright
Power Loom
First time steam power used for weaving

Bigger, Better Machines are Made

Old Version



New Version

- **Technological advancements** lead to more efficient machines
- **The Steam Engine** allows for factories to run all day
- **The supply of cheap labor** provides an abundance of factory workers

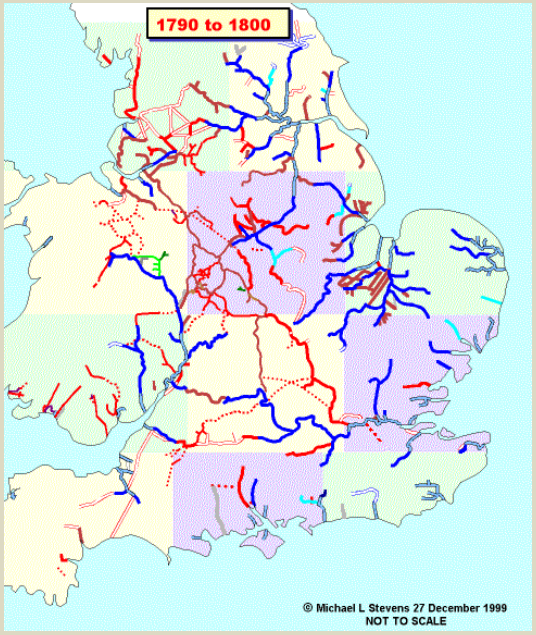
Eli Whitney's Invention

In North America, the **Cotton Gin** is invented. It is a simple hand-driven machine that removes the seeds from the cotton balls. It is a labor-saving invention that causes increased cotton production and the better use of labor in the fields

Factory Towns Emerge

- Life revolves around the factory. It provides for everyone who lives and works there.
- The abundance of cheap labor brings great profits to the factory owners
- British industry thrives

Infrastructure is needed



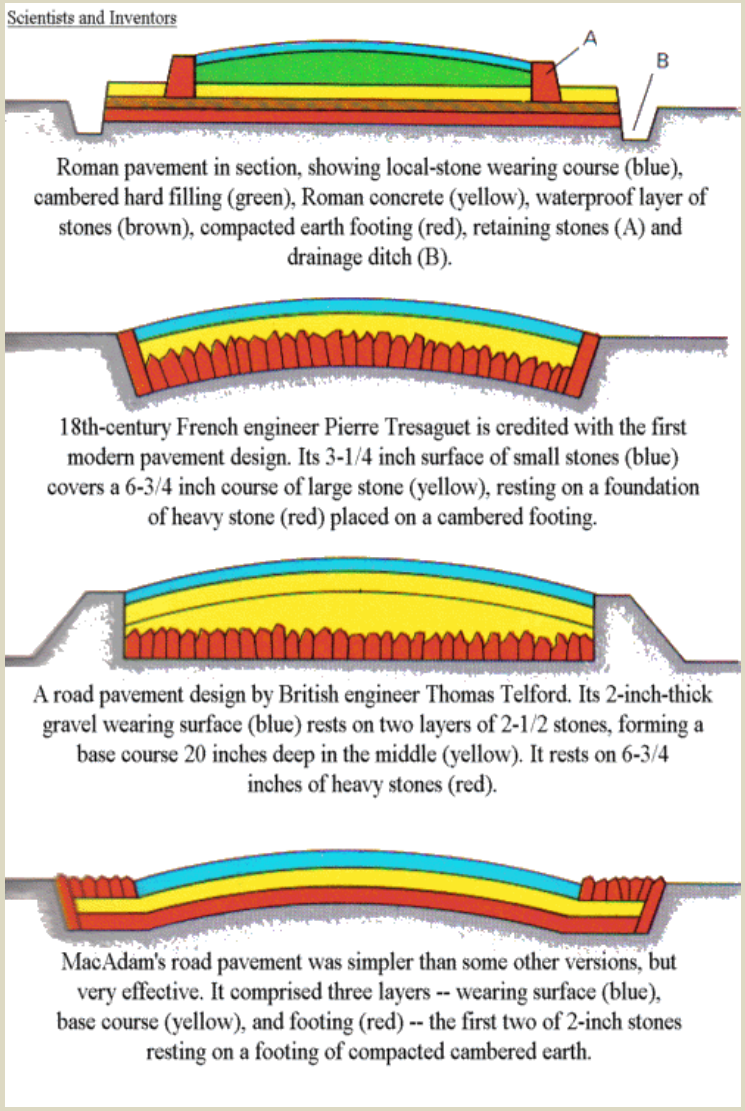
Canals and Waterways

To move the raw materials from the mines to the cities and to carry the finished goods to the ports for export, a **canal system** was built throughout England

Heavier goods can be carried by water than by land

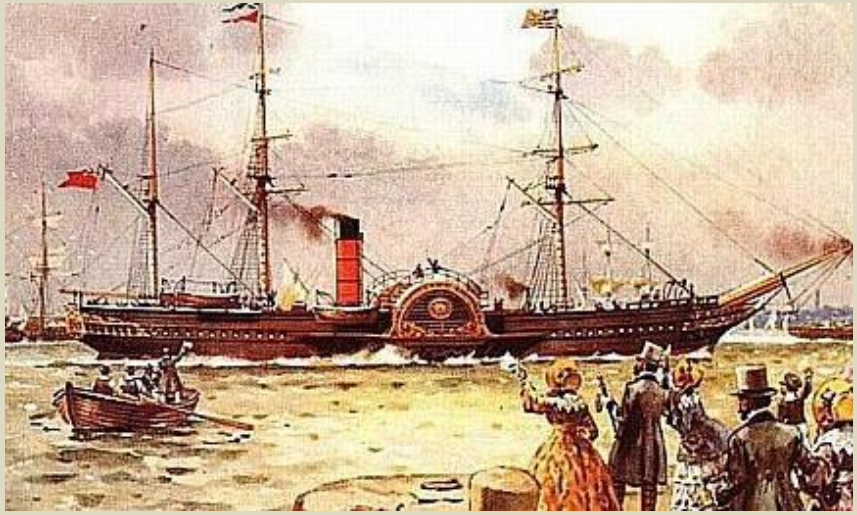
Many cities developed along these **inland waterways**

Roads are built connecting cities



Thomas Telford and John (Tar) McAdam invent new ways to lay roads across the country using local materials in layers and topped with hot tar to create a hard surface

British ports grow for trade



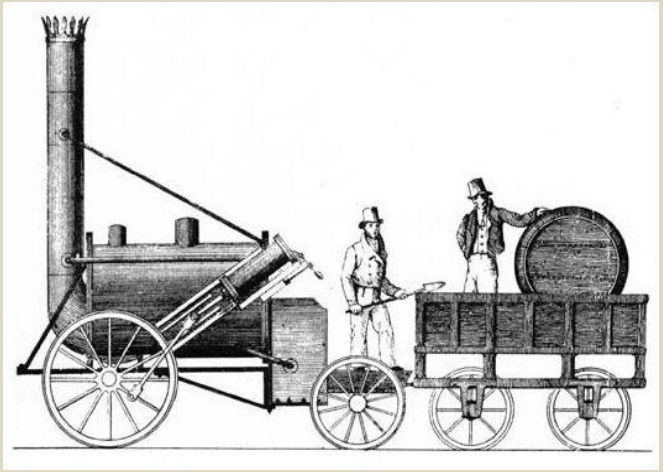
Ports grow due to the import of **cotton** from the Americas and the export of **finished goods** to the colonies

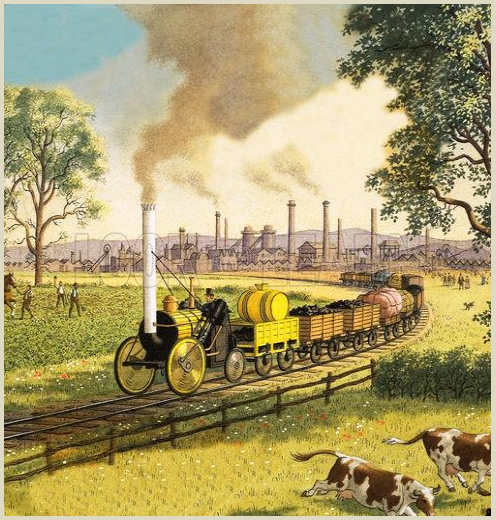
The largest were:-

Liverpool
Bristol
Manchester
London

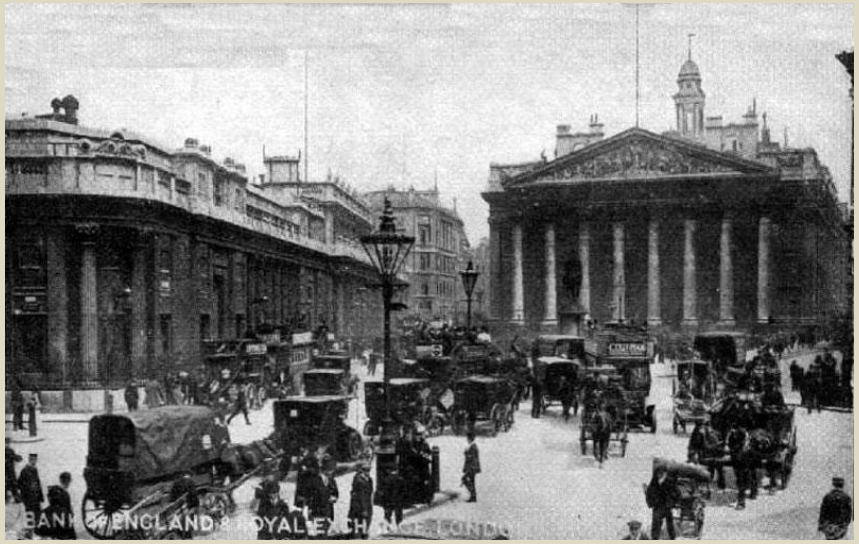
The Steam Engine arrives!

- Robert Stephenson invents the **“rocket”** in 1829 and is used on the Liverpool to Manchester railroad
- Railway networks now connect Britain and the canals are no longer used as the barges are slower than trains.





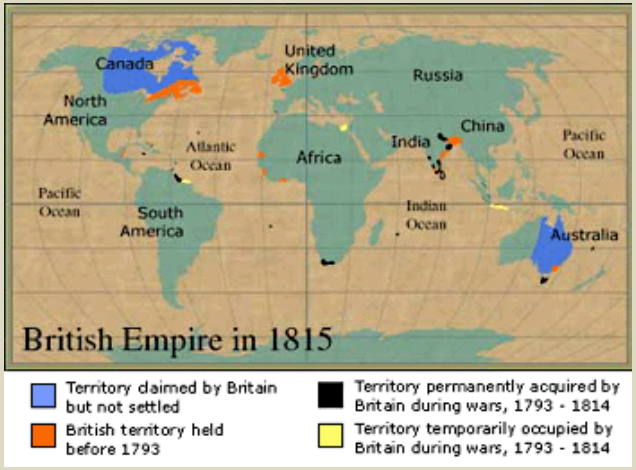
The Bank of England

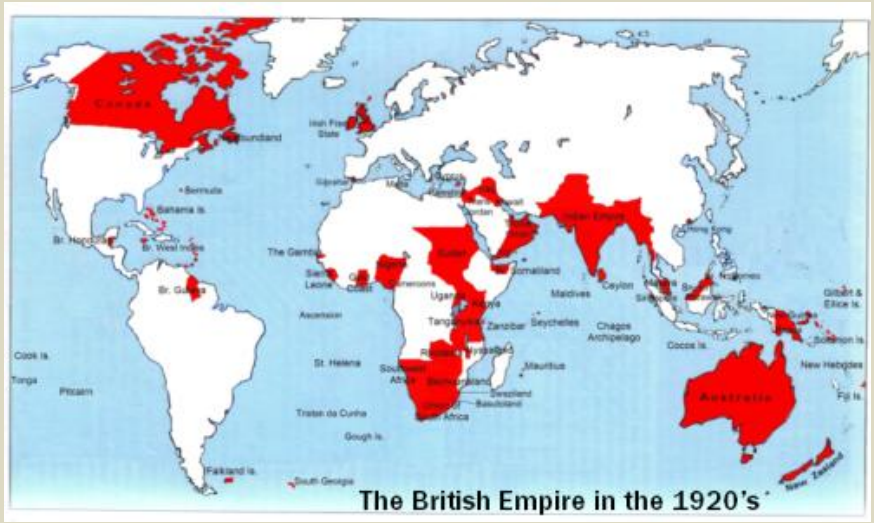


- The British government and the Bank of England encourage manufacturers to produce by supporting them with loans and lowering tariffs on raw cotton and other necessary materials for production
- **A strong bank means a strong economy**

Ready Markets for the Goods

- The British Empire rapidly grows during the Industrial Revolution
- Each territory is a new market for the finished goods
- Each territory is a new source for raw materials needed for industrial growth
- Britain's economy booms!



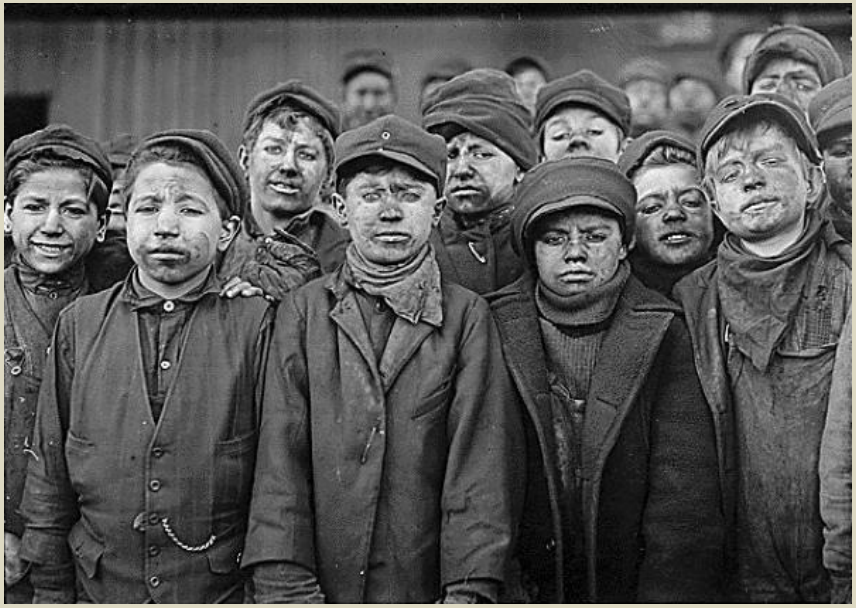


Not All is Good!

- Factory Life is very hard with long hours for both women and children.
- Conditions are very bad
- There are few safety regulations so serious accidents happen
- 14 hour days for very little pay
- If you complain then you are replaced!

So much Child Labor!

- Young children were used in all industries and were exploited in many ways
- Little was done to protect their health and safety
- Mines and factories were unsafe and unfit for any human being



Urban life was very hard

- **Slum areas** developed where the working classes lived, often close to the factory
- Coal fires produced smoke and pollution
- Sanitary conditions were very bad
- Crime, disease and poverty were “the norm”

Inequality of Wealth

The Rich became Richer

The Poor became Poorer

The Middle-Class Emerges

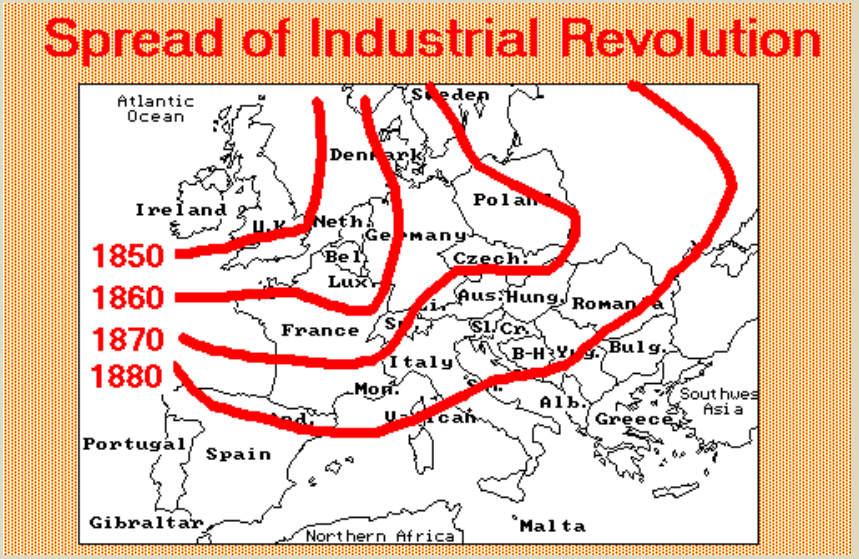
- Shopkeepers, merchants, artisans, craftsmen, tradesmen and other professionals became the **Middle-Class**.
- They reformed many laws for the people of Britain
- They even impacted literature as they told about the way life really was in the cities

Industrialization Spreads

From 1850 onwards other countries had their own Industrial Revolutions:

France
Germany
United States

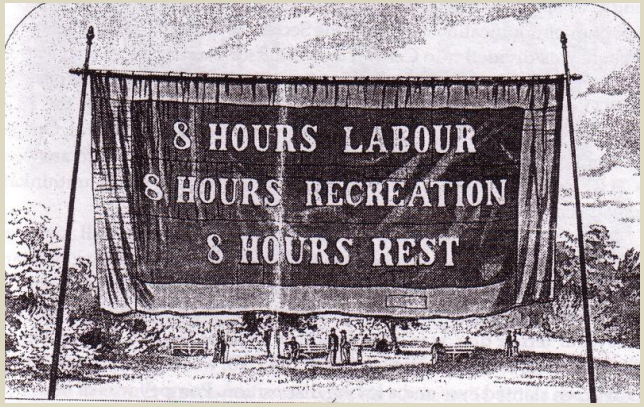
They closely copied the British factory system but improved efficiency due to more modern technology

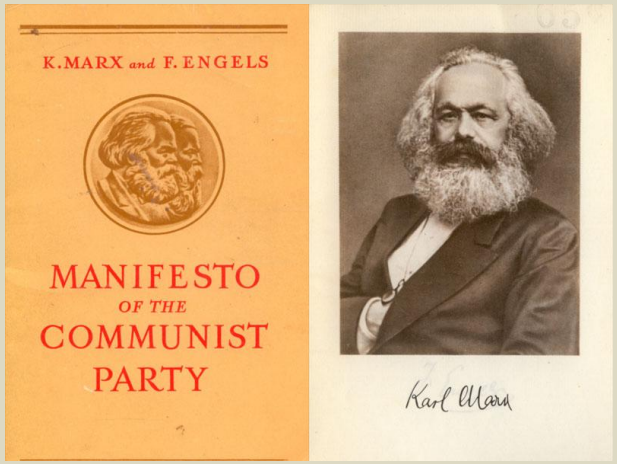


The Inventions Continue

Inventor or Developer	Nation	Invention or Development	Year
Eli Whitney	United States	Interchangeable Parts	1840
Samuel Morse	United States	Telegraph and Morse Code	1840
Elias Howe	United States	Sewing Machine	1844
Henry Bessemer	Great Britain	Steel from Iron Ore	1856
Alexander Graham Bell	United States	Telephone	1876
Thomas Edison	United States	Electric Light Bulb	1879
Gottlieb Daimler	Germany	Automobile	1887
Henry Ford	United States	Mass-produced Automobile	1903
Orville & Wilbur Wright	United States	Airplane	1903

Age of Reforms





The Industrial Revolution leads to economic, social and political reforms:

* **Laissez-Faire economics**

* **Drive to end slavery**

* **Karl Marx writes *The Communist Manifesto***