

# The Industrial Revolution

A solid red banner at the top of the page contains the title 'The Industrial Revolution' in white, bold, sans-serif font. Below the banner, a white downward-pointing arrow is centered, pointing towards the main content area.

# Background

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Before the Industrial Revolution, almost all goods were made **by hand** by artisans. Only a small number of products could be made at a time, and the methods they used to make goods improved very slowly.

In the 17th century, the system of manufacturing started to change. Many items, such as clothes, were made through the **domestic system**. In this system, merchants paid people to make products in their own homes. The merchants provided the raw materials to the workers, and then sold the final products to their customers.



# Changes in 18th Century Britain

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In Britain, the first half of the 18th century was a time of **innovation** and **investment**:

- The **scientific revolution** and **Enlightenment** led to scientific advances and new ideas
- The domestic system led merchants to be interested in establishing factories
- Growing **trade**, including the slave trade, meant that British merchants had money to invest
- A **patent** is a government license that gives an inventor the exclusive right to **use or sell their innovation**. Patents made it possible for inventors to make money from their inventions.

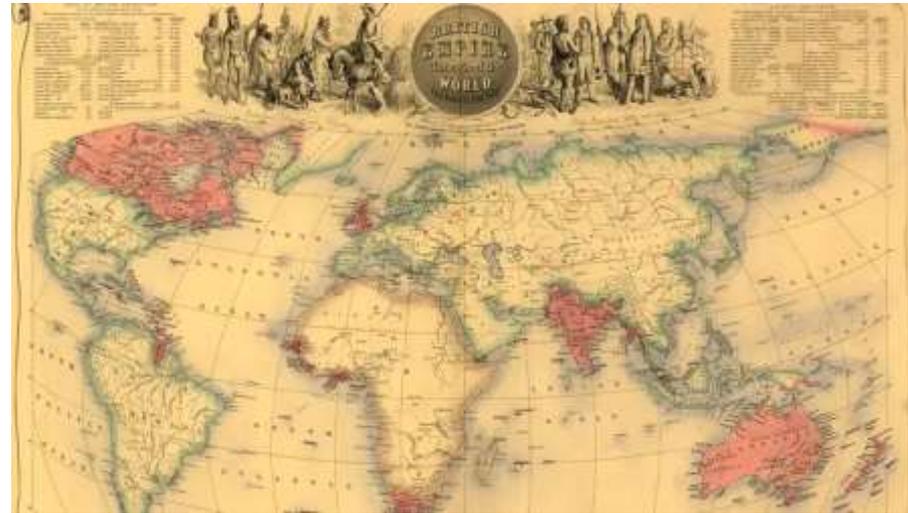


# Changes in 18th Century Britain

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Britain also had other conditions that helped to make the Industrial Revolution possible:

- There were spare (extra) laborers
- Higher agricultural yields meant that the population grew, which **created demand** for more goods
- The British Empire provided raw materials such as cotton from India, allowing **production to increase**



# Industrial Innovations

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**Horse-drawn** railways and canals made it easier to transport heavy goods.

**The flying shuttle** (1733) allowed weavers to make cotton cloth much faster. This increased demand for the yarn (thread) used to make the cloth.

**The Spinning Jenny** (1764) was a hand-powered machine that produced yarn from raw cotton. It was twenty times faster than the traditional spinning wheel.



# Innovations in Farming

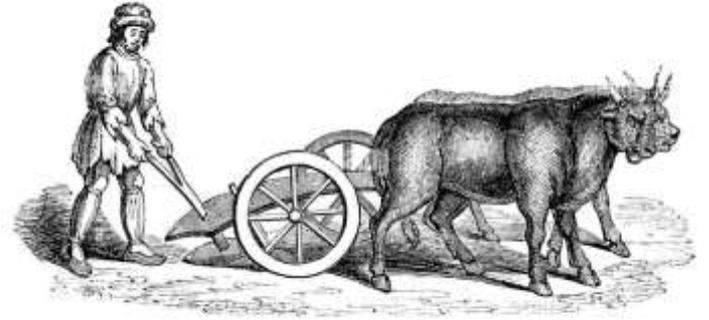
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**Selective breeding** produced animals with better characteristics. For example, the weight of sheep doubled during the 18th century.

Better ploughs required fewer animals to pull them.

Seed drills made it possible to sow seeds more accurately, so fewer seeds were needed.

The Norfolk four-course system was a method of crop rotation that did not leave any land fallow.

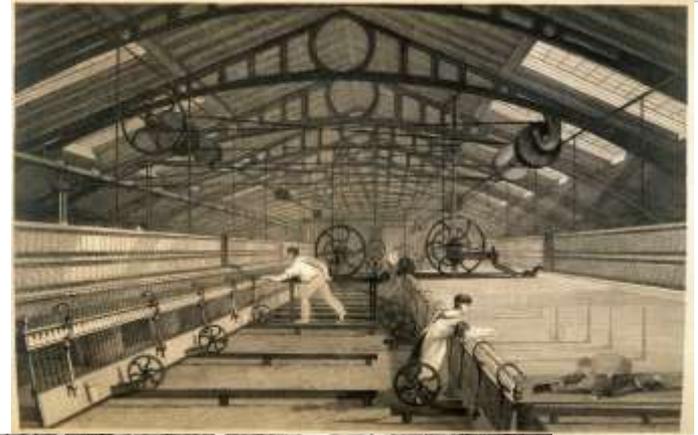


# Factories

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**Factories** were buildings designed and designated to be used for the production of goods. Many factories were built along rivers so they could be powered by a water wheel.

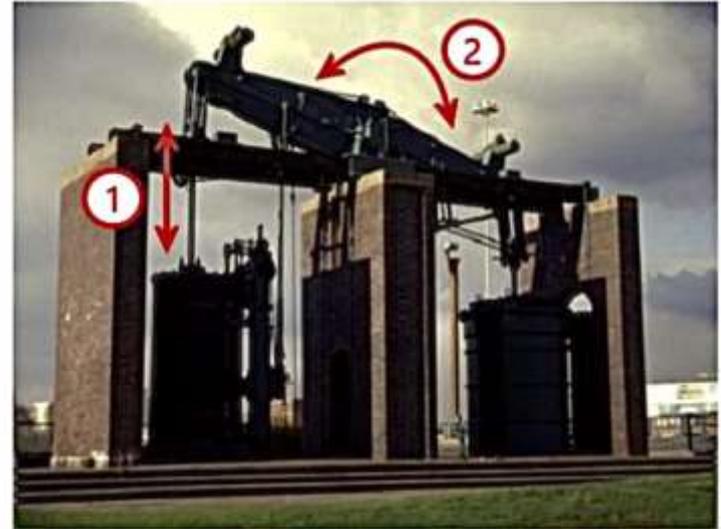
At factories, many people worked together in one place. This allowed for the **division of labor**: each person had a specific task.



# The Start of the Industrial Revolution

In 1712, the **steam engine** was invented. The steam engine is a machine that burns coal to produce steam, which then provided power for a pump.

The steam engine and the pumps were needed to pump water out of coal mines.



How the Newcomen engine was used in mines:

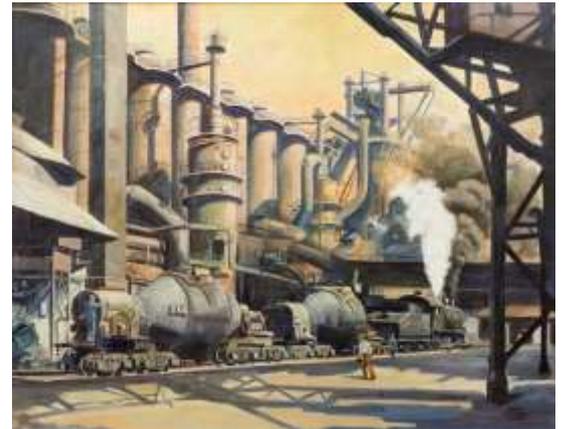
- 1 Coal was burned to produce steam, which pushed up the piston.
- 2 This moved the beam, which produced an up and down motion to pump the water.

# Steam-Powered Machines in Factories

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Early machines in factories were powered by humans, horses or water. However, with improvements, the steam engine could be used instead **to power factories.**

Therefore, machines became bigger and more powerful. This important development is typically considered **the true start of the industrial revolution.**



# A Revolution in Transport

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During the Industrial Revolution, British factories made large quantities of goods. They could send these goods to markets all over the world, but they needed to transport their goods safely and quickly.

This led to **a revolution in transport.**



# A Revolution in Transport

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The first improvements were to roads: tolls (fees) were introduced to pay for **road maintenance**. The owners of coal mines and factories built **canals**. By 1840 there were nearly 4,500 miles of canals in Britain.



● Drifters Hire Bases

# Steamships and Steam Trains

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As steam engines became more efficient, they became smaller and more powerful. This meant they could be used for transport.

In the early 1800s, **steam trains** and **steamships** were first used.

Steam trains specifically made it **easier to transport goods and people** around Britain, and later Europe and America. Trains therefore helped to **transform** the economy and society, and they were the most important development of the transport revolution.



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<https://www.youtube.com/watch?v=xLhNP0qp38Q>