

Industrial revolution

1836-1913

In the 18th century many of those in Great Britain working at home, devoted to setups products. In mid-19th century it all changed. Most of population lived in cities and work in huge factories, on railways or other operations. British inventor pursue new revolutionary machines. Machines are also used for manufacturing iron and steel, they were used for the production of more machines. British inventor Kingdom Brunel (1806-1859) built railways, bridges, tunnels, railway stations and the largest ship ports of the world. New factories were built in the canals and railways to be for them to import raw materials and finished products to unleash. These changes have enabled the four factors: coal mining, channel system, money, and cheap labor force. Carbon be enjoyed for melting iron and steel and to produce steam to drive a new machine . barges loosening the raw materials and finished products to provide traders channel. Profit provide capital for investing. In 1839, James Nasmyth invented the steam hammer, which is used to produce components for the new liners.

New machines have contributed to faster and cheaper production of goods.

Some of the money to be imposed on banks which then lend sized amount industrialists thus emerging capitalist system to raise money to build factories, offices and houses. Towns enlarging quickly, so in some areas or sewers or clean water. Diseases such as cholera are common and kill thousands of people.

Men and women worked more than 13 hours daily.

time introduced bill, shrinking working hours and prohibits the employment of children. **Trade Union have been banned, fought for better wages and conditions for workers.**

Most important years :

1850-1859 railways and canals join City Guides

1868-The Manchester invades British congress of trade unions

1869-end Suez Canal, shorten the journey to India

189-emergence of the working party INDEPENDENT LABOUR PARTY

1900-USA and Germany ahead of GB in steel production

IMPORTANTS

Planning and **construction of railroads** progressed rapidly, without direction or supervision from the states that granted charters to construct them. **Before 1840** most surveys were made for short passenger lines which proved to be financially unprofitable. Because **steam-**

powered railroads had **stiff competition from canal companies**, many partially completed lines were abandoned

James Watt's development of the **steam engine**. Using steam to create energy meant that this new form of powering a machine could be used anywhere. The steam engine is best associated with the invention of **trains** but also was used to power machinery in factories, to power lifts in mines and for many other purposes.

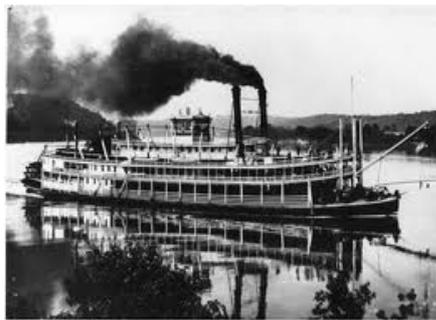
The Locomotive (Train)

In **1801**, **Richard Trevithick** developed a **steam powered carriage** that carried passengers on roads, he developed this idea further than created **the first locomotive to run on rails** (in the first train).

George Stephenson was an engineer and built a **locomotive** in **1814**. he then was appointed chief engineer of the first '**railway**' between Stockton and Darlington and later built the famous '**Rocket**' which ran on the Manchester to Liverpool line which opened in **1830**.

A steamboat

In 1802, **Robert Fulton** contracted with Robert Livingston to construct a **steamboat** for use on the Hudson River; over the next four years, he built prototypes in Europe.



The Last Rail is Laid

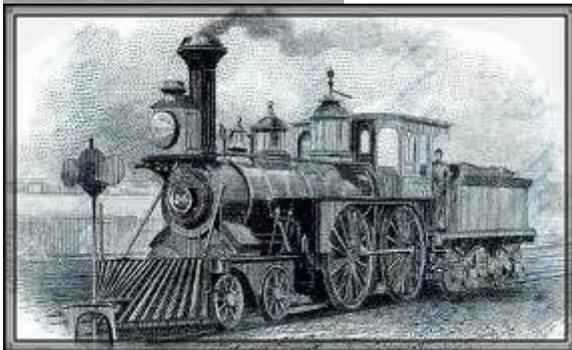


FIG. 35.—The "Rocket," 1825.