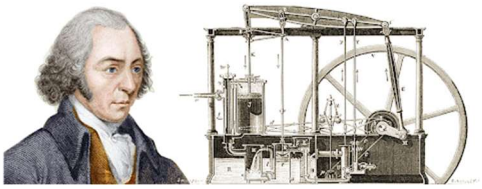
WEEK 20: HISTORY



James Watt & his Steam Engine

Read Chapter 36: "Men and Machines" in the book.

1. How did James Watt's design of the steam engine change the world?

2. How did mechanical weaving looms change the world?

3. Watch the video at https://www.youtube.com/watch?v=prDsSjywWag. What is an "entrepreneur"?

4. The book mentions socialism, but it doesn't provide a good definition. Socialism is when the government owns the businesses. The profits from businesses go to the government, and workers receive their share of the money after the government has taken a percentage for the common good, like schools, health care, and transportation. Socialist countries believe the government can make better decisions than the people. Socialist governments are very powerful and they do not encourage people to be entrepreneurs.

   In the United States, we have capitalism. Individual people can own and operate businesses. They choose how much to make and sell. They choose what to do with the money they earned. Capitalism encourages people to be entrepreneurs.

   Karl Marx wanted people to go from capitalism to socialism and then to communism. Communism is a dictatorship that controls all the businesses in a country. People have few rights, and religion is discouraged. Communist countries have been responsible for the deaths of tens of millions of their citizens by mismanaging resources and not providing them with food.

   Which countries are currently communist? Use the internet to find the answer.

5. The book describes selfish business owners who took advantage of workers, but it doesn't describe the good things that happened during the industrial revolution. Read the article on the following pages. It describes this period of time more accurately.

   List <u>three ways</u> people's lives were improved by the changes during the industrial revolution.

Here's a link to a video of the first steam locomotive: https://www.youtube.com/watch?v=K40XrR67fas

WRITING

Pick an invention or discovery that was made during the 1800s. It can be one of the ones we listed on our time line or a different one. Write a paragraph about it and how it changed the world. Be sure to include the name of the person who made it. Capitalize all proper nouns. Check your spelling. Write legibly.

The Industrial Revolution by Matthew White

The 18th century saw the emergence of the 'Industrial Revolution', the great age of steam, canals and factories that changed the face of the British economy forever.

Early industry

Early 18th century British industries were generally small and unsophisticated. Most textiles for example, were made in small workshops or in the homes of spinners, weavers and dyers. Such small-scale production was also a feature of most other industries, with different regions specializing in different products: metal production in the Midlands, for example, and coal mining in the Northeast.

New techniques and technologies in agriculture paved the wave for change. Increasing amounts of food were produced over the century, ensuring that enough was available to meet the needs of the ever-growing population.

Steam and coal

Industrial development during the early 1700s was initially slow because there were limited sources of power. Textile mills, heavy machinery and the pumping of coal mines all depended heavily on old technologies of power: waterwheels, windmills and horsepower were usually the only sources available.

After James Watt improved the steam engine, however, steam technology began to change the situation dramatically. Steam engines improved rapidly as the century advanced, and were put to greater and greater use. More efficient and powerful engines were employed in coalmines, textile mills and dozens of other heavy industries. By 1800 perhaps 2,000 steam engines were eventually at work in Britain.

New inventions in iron manufacturing, particularly those perfected by the Darby family of Shropshire, allowed for stronger and more durable metals to be produced. The use of steam engines in coalmining also ensured that a cheap and reliable supply of the iron industry's essential raw material was available: coal was now king.

Factories

The spinning of cotton into threads for weaving into cloth had traditionally taken place in the homes of textile workers. In 1769, however, Richard Arkwright patented his 'water frame', that allowed large-scale spinning to take place on just a single machine. This was followed shortly afterwards by James Hargreaves' 'spinning jenny', which further revolutionized the process of cotton spinning.

The weaving process was similarly improved by advances in technology. Edmund Cartwright's power loom, developed in the 1780s, allowed for the mass production of the cheap and light cloth that was desirable both in Britain and around the Empire. Steam technology would produce yet more change. Constant power was now available to drive the dazzling array of industrial machinery in textiles and other industries, which were installed up and down the country.

New factories were the result of all these new technologies. Large industrial buildings usually employed one central source of power to drive a whole network of machines. Richard Arkwright's cotton factories in Nottingham and Cromford, for example, employed nearly 600 people by the 1770s, including many small children, whose nimble hands made light-work of spinning. Other industries flourished under the

factory system. In Birmingham, James Watt and Matthew Boulton established their huge foundry and metal works in Soho, where nearly 1,000 people were employed in the 1770s making buckles, boxes and buttons, as well as the parts for new steam engines.

Transport

The growing demand for coal after 1750 revealed serious problems with Britain's transport system. Though many mines stood close to rivers or the sea, the shipping of coal was slowed down by unpredictable tides and weather. Because of the growing demand for this essential raw material, many mine owners and industrial speculators began financing new networks of canals, in order to link their mines more effectively with the growing centers of population and industry.

The early canals were small but highly beneficial. In 1761, the Duke of Bridgewater opened a canal between his colliery at Worsley and the rapidly growing town of Manchester. Within weeks of the canal's opening the price of coal in Manchester halved. Other canal building schemes were quickly authorized by Parliament, in order to link up an expanding network of rivers and waterways. By 1815, over 2,000 miles of canals were in use in Britain, carrying thousands of tons of raw materials and manufactured goods by horse-drawn barge.

Most roads were in a terrible state early in this period. Many were poorly maintained and even major routes flooded during the winter. Journeys by stagecoach were long and uncomfortable. London in particular suffered badly when wagons and carts were bogged down in poor conditions and were left unable to deliver food to markets. Faced with these difficulties, local authorities applied for 'Turnpike Acts' that allowed for new roads to be constructed, paid for out of tolls placed on passing traffic. New techniques in road construction, developed by pioneering engineers such as John McAdam and Thomas Telford, led to the great 'road boom' of the 1780s.

The improvements achieved by 18th century road builders were breathtaking. By the 1830s the stagecoach journey from London to Edinburgh took just two days, compared to nearly two weeks only half a century before.