A Revolution in Farming

In the 18th century*, farming methods in England changed completely. The experiments of a few enthusiastic landowners led to the invention of new tools, the introduction of new crops and new ways of improving the soil and breeding better animals. Landowners found it easier to introduce improvements if they gave each farmer a block of land, instead of thin strips in different fields as was usual then. These changes, known as the "Agricultural Revolution", later happened in other parts of Europe.

New crops, like turnips and clover are stored in barns, so animals can now be kept and fed over the winter instead of being killed.

Most villagers cannot produce enough food for themselves now that the commons land has been divided up. They have sold their land and now work for other farmers for wages.

Hedges have been planted round the fields.

In this field the farmer grows wheat one year, turnips the next, barley the third year and clover the fourth. This order of growing crops keeps the field fertile. Fields are no longer left unfarmed every third year.

Landowner's house

This farmer owns the land he farms.

This family is leaving to go and work in a town.

Hoeing keeps the crop free of weeds so there will be a bigger harvest.

Writeman's house

Village shop

In this field the farmer grows wheat one year, turnips the next, barley the third year and clover the fourth. This order of growing crops keeps the field fertile. Fields are no longer left unfarmed every third year.

*Between AD1700 and AD1800

New plough cuts deeper furrows.

This cartman has just delivered some goods to the house.

This farmer owns the land he farms.
Machines and Factories

In the first half of the 18th century, most people in Britain still lived and worked in the countryside. Woolen and cotton cloth, produced in the north of England, were the chief manufactured goods. Before 1750 cloth was mainly made by hand in people's homes. But by 1750 it was being made by machines in factories. The new factories employed lots of people and towns grew up around them. These changes in working life have become known as the "Industrial Revolution".

Britain produced a great deal of woollen cloth. In the first half of the 18th century, most of it was made by villagers in their homes and sold to visiting merchants. Then machines like this were invented. They helped spinners and weavers to work much faster. Later they were adapted to be driven by water, and later still by steam.

Coal was no good as its fumes made the iron brittle. Then, Abraham Darby discovered coal could be turned into coke which was pure enough for making iron.

The early factories used water power to make their machines go. Various people experimented with the idea of using steam. Eventually a Scot named James Watt found out how to make steam engines drive the wheels of other machines and these were soon being used in factories.

This is one of Watt's steam engines.

This is an iron works. Iron was needed for making the new machines, but iron-smelting needed charcoal and the wood for making this was in short supply.

Several inventions made mining safer. The safety lamp cut down the danger of explosions. Steam pumps helped prevent flooding and there was also a machine which sucked out stale air.

People had been using coal to heat their homes for a long time, but it had been dug only from shallow mines. Deep mines were too dangerous.

Underground rails made it easier to haul coal to the surface from great depths, but conditions in the mines were still very bad. Small children were used to pull the heavy trucks.

At first, conditions in the factories were very bad. Men, women and children worked very long hours for low wages. Machines had no safety guards and there were bad accidents.

Gradually laws were passed to make the factory owners improve conditions in the factories, make working hours shorter and protect the rights of working people.

Machines were very unpopular with people who had no jobs. Some people even banded together to smash them. One group was called the Luddites after their leader, Ned Ludd.
Where factories were built, new towns quickly grew up to house the factory workers. They were overcrowded and unhealthy places and they caused many problems.

The changes in farming and industry left some people without jobs and desperately poor. To get help they had to go and live in "workhouses". Conditions in the workhouses were very harsh to discourage lazy people from using them. Men and women lived in separate quarters so families were split up. Poor people often preferred to live on the streets.

Several reformers tried to help poor people. Dr Barnardo, showed here, set up children's homes and General Booth started a Christian organization called the Salvation Army.

Many laws were passed during the 19th century to improve people's lives by cleaning up towns, building better houses and setting up schools where all children could go without paying.

Workers began to join together to form trade unions so that they could bargain for better wages and working conditions by threatening to strike. At first the trade unions were illegal but gradually laws were passed which made them legal and gave them the right to picket (stand outside their work places and try to persuade other workers not to go in).

Old age pensions started in 1909. These people are collecting theirs from the post office. In 1911, a law was passed which insured people against sickness and unemployment.

Key dates
- AD1765 Invention of several machines for spinning and weaving cloth
- AD1769 James Watt invented his first steam engine
- AD1812 Outbreaks of smallpox among the Luddites
- AD1824-1825 Trade Unions made legal, but with many restrictions
- AD1832 First of many laws passed to improve working conditions in factories
- AD1834-1835 Education Acts
- AD1867-1870 Reform Acts
- AD1897 Life of Dr Barnardo
- AD1908-1910 First Public Health Act
- AD1919 First Housing Act
- AD1931 Salvation Army founded
- AD1938 Labour Party formed
- AD1940 Old age pension Act
- AD1991 National Insurance Act

*An Act is a law passed by parliament.*
Transport and Travel

The Industrial Revolution brought about immense changes in transport and travel. Some important developments happened first in Britain, others happened first in America and other parts of Europe.

1. In England, companies called Turnpike Trusts were set up. They built and repaired roads and charged people tolls for using them. This is one of the tollgates. Engineers, like Telford and Macadam, found ways of building roads with hard surfaces. New bridges were also built, many of them iron. This is the Clifton Suspension Bridge in England, designed by Brunel, a famous engineer.

2. The first steam locomotive to run on rails was built in England in 1804 by Richard Trevithick. Twenty years later, the first passenger railway was opened and from then on railways became very popular. They were a quick, cheap and safe way of carrying people and goods. As train services improved, it became possible for ordinary people to go on seaside and country holidays. England's roads and canals were neglected.

3. London got its first long stretch of underground railway in 1863. Until 1900, when electric trains came in, the underground trains were steam-powered. The tunnels are still filled with the soot they made.

4. The French Montgolfier brothers were the first people to take off into the air. This was in 1783 in a hot-air balloon. Other balloonists tried using hydrogen.

5. In 1869 the Suez Canal, which links the Mediterranean Sea to the Red Sea, was opened. This canal cut several weeks off the journey from Europe to India. Later, in 1914, another long ship canal was opened. This was the Panama Canal in Central America which joined the Atlantic and Pacific Oceans. Very fast sailing ships called "clippers" were built during the 19th century and used to carry light cargoes such as tea. A completely new kind of ship was also being developed at this time. Those ships were built of iron and had steam-engines. They gradually replaced sailing ships.

6. Many lighthouses were built and a lifeboat service introduced, making sea travel much safer than it had been in the past. Faster and safer sea travel tempted wealthy people to take holidays abroad. In 1903, Thomas Cook ran his first holiday tour to Egypt.

Key dates

- AD1770: Turnpike trusts set up
- AD1804: First steam vehicle to run on rails
- AD1813: First passenger railway opened in the USA
- AD1819: First pedestrian bicycle road
- AD1825: Opening of first underground railway
- AD1858: Paris-Strasbourg railway opened
- AD1866: Gulliver's Dandy
  - made by 4-wheel, motor car.
- AD1903: First powered flight.