

Railway Pioneers

Richard Trevithick

Born in Illogan, Cornwall in 1771, Richard Trevithick was educated at Cambourne School where he often played truant but was a notable wrestler and weight lifter!

He undoubtedly was 'the father of the steam locomotive' but his early work was in stationary steam engines developing the inventions of Thomas Newcomen and James Watt by introducing high-pressure steam to his engines. For this innovation, James Watt declared Trevithick "deserved hanging"!

In 1797, he made a steam engine for the Herland mine and a year later a high-pressure engine for the Cook's Kitchen mine. From 1796 he experimented with model locomotives and by 1801 applied his work to the first steam road carriage to carry passengers. It was called Captain Dick's Puffer but it came to an inglorious end when Trevithick was celebrating his success with friends in a local pub and allowed the boiler to boil dry and it exploded outside!

In 1803, he applied his work to a railway locomotive built at the Coalbrookdale Ironworks in Shropshire. Although it was the world's first railway locomotive, it does not appear to have ever run. In 1804, while employed at the Pen-y-darren Ironworks in South Wales, his second locomotive, New Castle, became the first in the world to be put to practical use hauling iron. Trevithick was the first to divert the steam exhaust through a chimney to increase the boiler draught - unfortunately, he did not think to patent the idea!



Catch me who can

In 1808 his locomotive Catch me who can became a side-show attraction for members of high society in London who soon became bored with an invention that one day would revolutionise transport in Britain and the rest of the world.

Disillusioned Trevithick left for Costa Rica in South America where he made a fortune installing engines in the mines.

He had an influence on George Stephenson's son, Robert, who met Trevithick while touring South America. However Trevithick lost all his money during the Costa Rican riots of the 1820's and returned to Britain penniless to die in poverty at a Dartford Hotel in 1833.

Railway Pioneers

George Stephenson

George Stephenson was born in 1781 at Wylam near Newcastle, the son of a colliery fireman. He received no formal education but went to night school to learn how to read and write as well as grasp the basics of arithmetic.

From these humble beginnings, Stephenson progressed to become one of the foremost railway engineers - the founder of the modern railway system. His only son, Robert, was destined to become one of the leading engineers of the 19th century.

By 1814, George was chief mechanic at the colliery where he built his first locomotive, Blucher, to haul coal wagons out of the mine. Over the next five years he built locomotives for the Killingworth and Hetton Collieries.

In 1822, he was hired to be company engineer to the Stockton to Darlington Railway that was to carry coal and freight to the River Tees at Stockton.

With a load of 500 passengers Stephenson drove his engine No.1 Locomotion along the line on 27 September 1825 and reached a speed of 24 kph (15 mph). It was the first time that passengers, some of whom were carried in the first purpose built passenger coach called Experiment, had been hauled on a public railway.

The following year Stephenson became chief engineer of the Liverpool to Manchester railway. The construction of the 48km (30 mile) long line had to face many physical obstacles including Chat Moss bog and Olive Mount through which a massive cutting was driven.

Stephenson persuaded the directors that steam locomotives were required and it was decided to hold a trial to choose a winning design at Rainhill. Stephenson's Rocket was the winner and he and his son built eight new locomotives for the railway. The world's first inter-city line was opened in September 1830 with the eight brand new locomotives drawing trains carrying 600 guests - George Stephenson was at the controls of one engine named Northumbrian.

He continued to act as advisor to many new railway lines including the Canterbury & Whitstable and Leicester & Swannington. Because of an accident with a horse and cart crossing the Leicester to Swannington line with an engine named Samson, Stephenson designed a steam trumpet for the engine - it was the world's first locomotive whistle!

George Stephenson retired after a severe attack of pleurisy in 1845 to a country estate near Chesterfield where he died in 1848.

Railway Pioneers

Robert Stephenson



Robert Stephenson was born in 1803 at Willington Quay. At the age of three his mother died and George Stephenson, his father, spent his spare time raising money to send Robert to school by mending watches and shoes or cutting cloth to make work suits. His father's efforts enabled Robert to have four years at school in Newcastle and six months at Edinburgh University.

His education enabled Robert to assist his father in his early work on steam locomotives. In 1824, he travelled to South America and in Costa Rica he met the first locomotive pioneer, Richard Trevithick. Benefiting from the old engineer's wisdom, he returned to Newcastle in 1827 to resume control of the locomotive workshops his father established four years earlier.

At the Newcastle workshops, he and his father built the famous Rocket locomotive that was to win the Rainhill trials and lead to the commission of constructing eight new locomotives for the Liverpool & Manchester Railway.

For the construction of the London to Birmingham Railway, Robert Stephenson was appointed chief engineer. During its construction, he gained a reputation independent of his father and eventually he was considered by many as the greatest engineer of the era.

The London & Birmingham Railway was the first main trunk line from London and Robert planned the route to include gentle curves and gradients. This involved major engineering and construction works such as the Watford and Kilsby tunnels, deep cuttings at Tring and Roade and the long viaduct at Wolverton.

Robert continued to enhance his reputation as a locomotive designer and constructor of railway lines both at home and abroad. Some of his most important contributions to engineering were his famous tubular railway bridges that remain as landmarks today: the Britannia Bridge across the Menai Straits on the Chester to Holyhead line; the Conway Bridge with its towers built of stone to blend in with the castle; the High Level Bridge across the River Tyne at Newcastle; the Royal Border Bridge at Berwick; the Victoria Bridge across the St. Lawrence at Montreal; the two bridges across the River Nile at Damietta.

Robert Stephenson became Member of Parliament for Whitby in 1847 and following his death at the early age of 56, his reputation as an expert engineer was recognised with his burial at Westminster Abbey.

Railway Pioneers

George Hudson

George Hudson was not a famous railway engineer but was to achieve fame as the first railway businessman.

He was born in 1800 on a farm near Howsham in Yorkshire and eventually moved to York where he became a linen draper. A legacy of £30,000 enabled him to buy his way into the world of financing railways and his friendship with George Stephenson provided technical expertise to back up his own organisational skills.

By 1837, he was Lord Mayor of York and chairman of a number of companies including the York & North Midland Railway. He extended the Great North of England line from Darlington to Newcastle and secured the right to build the line from Berwick to Edinburgh.

Having become a powerful railway entrepreneur in the north, Hudson became Chairman of the North Midland Railway and in 1844 he amalgamated that line with two others to form the Midland Railway. A year later he became MP for Sunderland, a post he was to hold for 14 years.

George Hudson was one of the prime movers during the years of Railway Mania and by the end of 1848 he controlled 1,450 miles out of the 5,000 miles of railway lines in the UK.

His railway empire stretched from Berwick to London and from Yarmouth to Bristol. In the process he had spent £30 million and made himself one of Britain's first millionaires - no wonder he was informally titled 'The Railway King'.

When the railway boom ended he was accused of embezzling shareholders' money but was never prosecuted. In 1849 he was deposed as Chairman of his companies and after a time in Europe was imprisoned for debt in 1865.

The Railway King had fallen a long way but he still had friends who raised money to help pay his debts - he died in 1871.

Railway Pioneers

Isambard Kingdom Brunel



Isambard Kingdom Brunel was born at Portsmouth in 1806, the son of a French engineer, Marc Brunel, who fled from France in 1793 as a result of the revolution.

Isambard assisted his father from an early age and was resident engineer at the age of 19 on his father's project - the construction of a tunnel beneath the Thames between Rotherhithe and Wapping.

At the age of 27, he was appointed chief engineer of the newly formed Great Western Railway (GWR) with a princely salary for those days of £2,000 per year. The line was the first one to be built to Bristol and was planned to take goods to London. Brunel planned the line and all the bridges and tunnels by travelling the route on horseback and by foot.

The line opened in a remarkably short time on 30 June 1841 when the first passenger train left Bristol and completed the 243 km journey at Paddington in 5.5 hours - the rival stagecoach journey took about 20 hours! The railway was a triumph of Brunel's engineering expertise and included the longest tunnel ever built at that time, the 3.5 km Box Tunnel near Bath.

Brunel decided that the GWR lines would be wider than other railway lines - the battle of the gauges ensued with the GWR's wide gauge eventually losing out to the narrow gauge, advocated by the Stephenson's. In 1892 Brunel went onto build some 2000 km of railway lines, including some in Italy, and many railway bridges of which the most famous is the Royal Albert Bridge that crossed the River Tamar and linked Devon and Cornwall.

Brunel was also famous for building steamships and in order to extend his Great Western Railway line, 'a bit further', he built the Great Western - the first successful steam ship to cross the Atlantic Ocean and the largest wooden paddle steamer in the world at the time of its launch in 1837. Brunel then built the Great Britain, the largest ship to be built of iron and the first ocean liner to be powered by a propeller. His third ship, the Great Eastern, was designed to carry 4,000 people and 6,000 tonnes of cargo but the ship was an expensive failure.

Brunel is probably best known for the striking Clifton Suspension Bridge over the Avon Gorge near Bristol that was built to his design but completed after his death. He died, worn out by overwork and financial worries associated with the construction of the Great Eastern, at the relatively young age of 53 in 1859.