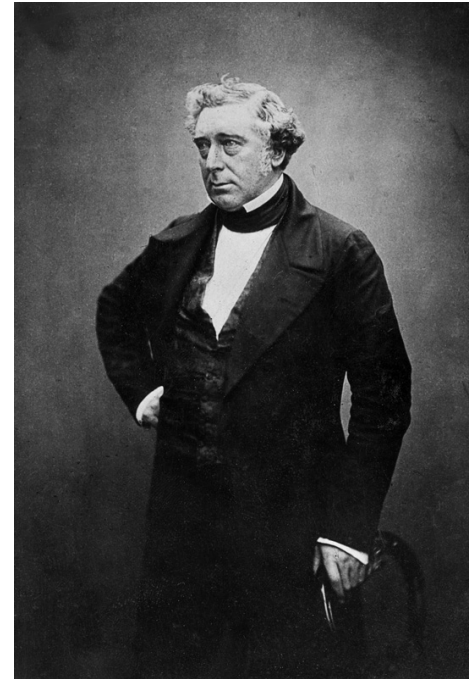


Born in 1803 at Willington Quay, east of Newcastle Upon Tyne, the only son of George Stephenson and his wife, Fanny. At the time, George and Fanny were living in a single room and George was working as a brakesman on a stationary colliery engine. In 1804 the family moved to a cottage in West Moor when George was made brakesman at Killingworth Colliery. In 1805 Fanny gave birth to a daughter who died after a few weeks. The next year Robert's mother died of consumption. George then went and worked in Scotland for a short time, leaving the infant Robert with a local woman. However, George soon returned to West Moor, and his sister Nelly came to live at the cottage to look after Robert.

George had received virtually no formal education and he was determined that his son would have the education that he lacked. George was promoted in 1812 to be an enginewright. His wages were therefore much improved. Robert was sent to a primary school in Longbenton, near Killingworth until the age of eleven. He was then sent to Doctor Bruce's Academy in Percy Street, Newcastle. This was a private institution and Robert would have been studying alongside the children of well-off families. Father and son studied together in the evenings, improving George's understanding of science as well as Robert's. They also built a sundial together, which they placed above the front door of their cottage. The cottage subsequently became known as Dial Cottage. It is preserved today as a monument to them.

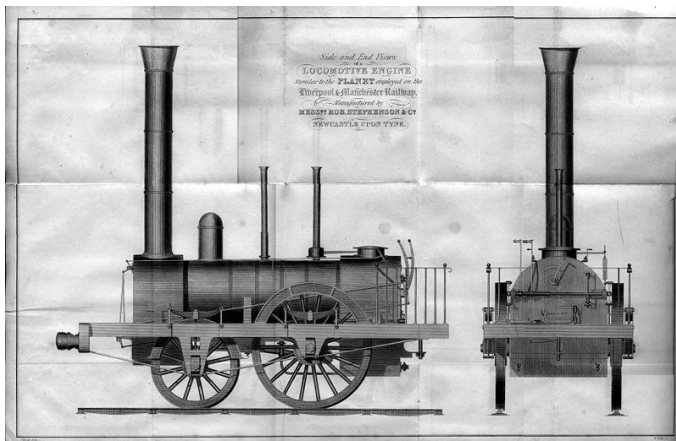


After his education at the Bruce Academy, an apprenticeship to Nicolas Wood, the manager of Killingworth Colliery, and a period at the University of Edinburgh, Robert went to work with his father on his railway projects, the first being the Stockton and Darlington Railway. In 1823, when he was 20, Robert set up a company in partnership with his father, Michael Longridge and Edward Pease to build railway locomotives. The firm, Robert Stephenson and Company, was situated in South Street, off Forth Street in Newcastle. The works, known as the Forth Street Works, were the first locomotive works in the world, and it was here that the locomotives for the Stockton and Darlington Railway were built. The first locomotives produced there were called Locomotion, Hope, Diligence and Black Diamond. The Forth Street works continued to build locomotives until the mid-twentieth century, and the original factory building still exists as the Robert Stephenson Centre. George used Locomotion in 1825 for the opening of the Stockton and Darlington line, which Robert had helped to survey.

In 1824, a year before the Stockton and Darlington line opened, Robert went off to South America for three years, to work as an engineer in the Colombian gold mines. When he returned in 1827, his father was building the Liverpool and Manchester Railway. George was living in Liverpool directing proceedings, so Robert took charge at the Forth Street Works and worked on the development of a locomotive to compete in the forthcoming Rainhill Trials. The result was the Rocket. The Liverpool and Manchester Railway opened in 1830 with a procession of eight trains setting out from Liverpool. George led the parade driving the Northumbrian, Robert drove the Phoenix and Joseph Locke drove the Rocket.

Following its success, the company built locomotives for other newly-established railways, including the Leicester and Swannington Railway. It became necessary to extend the Forth Street Works to accommodate the increased work.

On 17 June 1829, Robert married Frances Sanderson in London. The couple went to live at 5 Greenfield Place, off Westgate Road in Newcastle. Unfortunately in 1842, Robert's wife died. They had no children and Robert never remarried.



In 1830 Robert designed Planet, a much more advanced locomotive than Rocket. Up until then, locomotives had their cylinders placed outside the wheels, as this was the easiest arrangement. It was thought that, placing the cylinders inside the wheels was a more efficient arrangement and this was done on Planet. However there was thought to be an increased risk of broken crank axles. The locomotive, when completed, was found to produce much more power than previous designs.

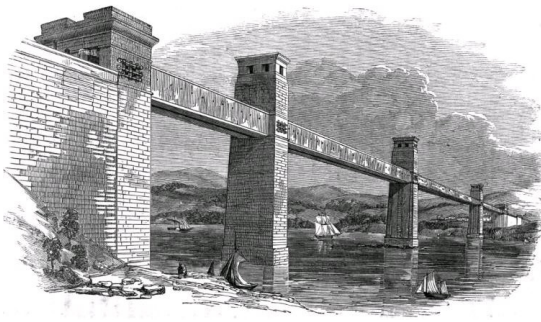
*Planet locomotive engraving by William Miller after J Kindar*

In 1833 Robert was given the post of Chief Engineer for the London and Birmingham Railway, the first main-line railway to enter London, and the initial section of the West Coast Main Line. That same year Robert and Frances moved to London to live. The new line posed a number of difficult civil engineering challenges, most notably Kilsby Tunnel, and was completed in 1838. Stephenson was directly responsible for the tunnel under Primrose Hill, which required excavation by shafts. Early locomotives could not manage the climb from Euston Station to Chalk Farm, requiring Stephenson to devise a system that would draw them up the hill by chains using a steam engine near The Roundhouse. This impressive structure remains in use today as an Arts Centre. The London and Birmingham Railway was completed at an enormous cost of £5.5 million, compared with the cost of £900,000 for the Liverpool and Manchester Railway.

In 1838 he was summoned to Tuscany by Emanuele Fenzi and Pietro Senni to direct the works for the Leopolda railway. The success attained in this first Tuscan experiment in railways led the Russian princes Anatolio Demidoff and Giuseppe Poniatowski to commission Stephenson to construct a railway to Forli, passing through the Muraglione Pass. Although this railway was not built, it was to all effects the first project for what was to become, almost forty years later, the Faentina railway.

Robert Stephenson constructed a number of well-known bridges to carry the new railway lines, following the experience of his father on the Stockton and Darlington line. In 1850 the railway from London to Scotland via Newcastle was completed. This required new bridges for both the Tyne and the Tweed and he designed them both. He designed the High Level Bridge, at Newcastle upon Tyne as a two-deck bridge supported on tall stone columns. Rail traffic was carried on the upper deck and road traffic on the lower deck. Queen Victoria opened the bridge in 1849. Stephenson also designed the Royal Border Bridge over the Tweed for the same line. It was an imposing viaduct of 28 arches and was opened by Queen Victoria in 1850. At last the railway ran all the way from London to Edinburgh.

In the same year Stephenson and William Fairbairn's, Britannia Bridge across the Menai Strait, was opened. This bridge had the novel design of wrought-iron box-section tubes to carry railway line inside them, because a tubular design using wrought-iron gave the greatest strength and flexibility. The Conwy railway bridge between Llandudno Junction and Conwy was built in 1848 using a similar design. The Conwy and Britannia bridges were such a success that Stephenson applied the design to other bridges, two in Egypt, and the 6,588 feet long Victoria Bridge over the St Lawrence River at Montreal in Canada. This was built as one long tube made up of 25 sections. The design was rarely used owing to the cost, and few now remain, the best preserved being the Conwy bridge, which is still used by trains. Other bridges include, Arnside Viaduct in Cumbria, and a joint road and rail bridge in 1850 over the River Nene, at Sutton Bridge in Lincolnshire.



One of Stephenson's few failures was his design of the Dee bridge, which collapsed under a train. Five people were killed. He was heavily criticized for the design, even before the collapse, particularly for the poor choice of materials, which included cast iron. In fact, he had used cast iron for bridge designs before, as had Brunel, but in this case he used longer girders (98 ft) than used previously and their great length contributed to the failure. Stephenson had to give evidence at the inquest and this proved to be a harrowing experience. Fellow engineers such as Joseph Locke and Brunel refused to criticise Stephenson, even though they rarely used cast iron themselves. A large number of similar bridges had to be demolished and rebuilt to safer designs.

He served as Conservative Member of Parliament for Whitby from 1847 until his death. Paradoxically, given his background, he was a right-wing Tory, hostile to free trade, and anxious to avoid change in almost any form. He was a commissioner of the short-lived London Metropolitan Commission of Sewers from 1848. He was President of the Institution of Civil Engineers, for two years from 1855.

Robert's father George died in 1848 aged 67. Robert died on 12 October 1859 at his London home aged 55. Brunel had died one month earlier on 15 September 1859.

Robert was buried in Westminster Abbey next to Thomas Telford. Queen Victoria gave special permission for the cortege to pass through Hyde Park and 3,000 tickets were sold to spectators. In his eulogy, he was called 'the greatest engineer of the present century'. In his will he left nearly £400,000.

Stephenson was well respected by his engineering peers and had a lifetime friendship with Joseph Locke, a rival engineer during his career. In fact, Locke was a pallbearer at his funeral. Another such friendship was with Isambard Kingdom Brunel, who often helped Stephenson on various projects.