

An overview of George Stephenson and early locomotive development

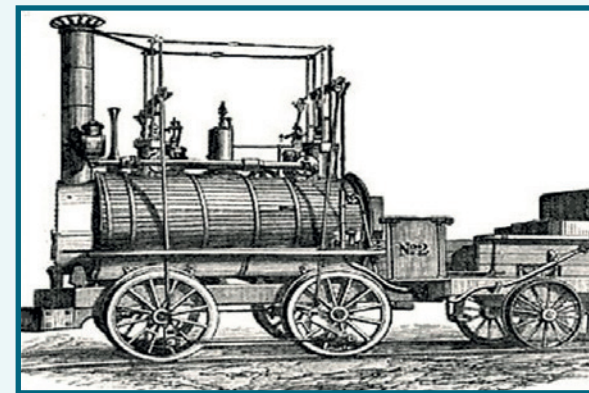
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- **Born:** 1781 near Newcastle.
- His parents were too poor to send him to school.
- When he was 17 he got a job looking after a static steam engine, and even made shoes and mended clocks to earn extra money.
- At 18 he went to night school to learn how to read, write and do arithmetic.
- When a steam engine broke down he told his boss that he could fix it, which he did, and was promoted to become an engine-wright. He later became an expert in steam-driven machinery.
- He became a civil and mechanical engineer (building railways and the steam engines).
- He became known as **The Father of Railways**.
- **Died:** 1848 aged 67 and was buried in Chesterfield.



George Stephenson makes his first travelling steam engine

- In 1814 he designed and built his first travelling steam engine (for his employer) and called it Blucher.
- It could haul 30 tons of coal uphill at 4 mph.
- After building many more engines he then improved the railways so that they could cope with heavier loads.



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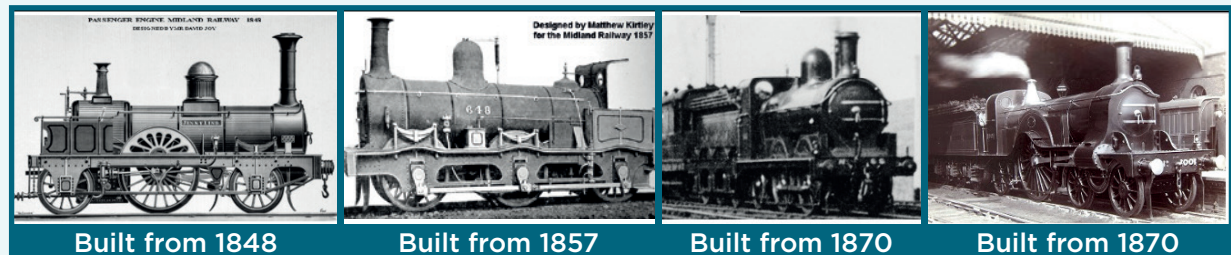
Locomotion

- He surveyed the land for the Stockton to Darlington railway in 1821 and started construction the following year (now with his son, Robert). Opened 1825.
- He also designed the first steam engine to go onto this new railway, called Locomotion.
- The rail gauge was 56.5 inches, which has become the standard gauge across the world.



Rocket

- George was appointed to construct the Liverpool and Manchester Railway.
- In 1829 his engine called Rocket (jointly designed with his son Robert) won a race along the new track which enabled him to build the engines for the new Liverpool and Manchester Railway.
- This meant he now he became famous as both a railway engineer and a locomotive engineer.



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Copy of a letter from Robert Stephenson to John Coke, 15 December 1829

Attg Mr. J. Coke-Steel at Trusley Old Hall, Sutton on the Hill,
Derbyshire, and examining two letters in his family records under
Reference 105/6.

Letter dated and post stamped NEWCASTLE DE 15 1829, addressed to
John Coke Esq., Debdale, Mansfield, Notts. (sealed)

Sir,

During the experiments with the Locomotive Engines on
Liverpool Railway, I made one for the purpose of ascertaining the load
which our engine (the "Rocket") up a plane ascending $\frac{3}{8}$ of an inch to
a yard. - A gross load of $14\frac{1}{2}$ tons was attached to the engine, with which
the ascent $1\frac{1}{2}$ mile in length was surmounted at the speed of 12 miles per hour.

We are now engaged in making four of the same construction
as the "Rocket" but more powerful, for the Liverpool Railway Company.

On the ascents you mention viz. $\frac{1}{4}$ or $\frac{1}{8}$ of an inch per yard
our Engines will move with a gross load of 20 tons.

This must be understood to refer to an edge railway with
carriages constructed in the best manner - we mention this, and it is
important to have the railway and carriages in good order, in order that
Locomotive Engines may operate in the most efficient manner.

The Engines previously constructed to the "Rocket" were made
to employ coal as fuel and varied in price from £500 to £550.

The last improvement was intended to effect the consumption
of coke as fuel, thus avoiding entirely the nuisance of smoke, which has
so long been urged as an objection to the employment of this Class of Engine.
The price is a little increased, say £40.

Smaller Engines would of course cost less but we do not
recommend them, having found that about 8 horse power, is both
convenient and efficient for general purposes.

As the power becomes reduced below eight horses, the advantage
is sensibly diminished. Should you require any further information
on the subject of Locomotive Engines or Railways, we shall be most
happy to give it.

We Remain, Sir,
Your Most Ob. Svnt.

Robt. Stephenson & Co.