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## **Background to the Rainhill Trials and the Liverpool & Manchester Railway**

The rapid industrialisation of the late eighteenth and early nineteenth centuries in North West England brought a period of major expansion to the region.

Liverpool and Manchester became two giants of the age. Liverpool's growth was based on the tremendous rise in international trade from its port, whilst that of Manchester was due to its role as commercial centre for the engineering, and especially the textile industries, of adjacent towns such as Bolton, Bury, Leigh and Wigan.

Both had experienced tremendous population growth. By 1830, Liverpool's population was approaching 200,000 (cf. approx. 20,000 in 1760) whilst that of Manchester and Salford exceeded that number.

Liverpool and Manchester depended upon each other for their economic prosperity. Raw cotton and other materials were imported and finished manufactured goods from the industrial towns around Manchester were exported via the Liverpool docks. But there was one major problem – existing transport links were poor and if prosperity was to continue to rise, transport had to be speeded up.

To improve matters, a group of prominent businessmen from both cities formed a company and sought Parliamentary permission to build a railway line from Liverpool to Manchester. After initial opposition from canal owners and landowners had been overcome, powers to construct the line were granted in 1826 and the Directors of the company lost no time in sanctioning the initial civil engineering works. Thoughts turned almost immediately to the best method of working trains on the railway.

The Liverpool & Manchester was conceived as a double track main line, linking the two main cities, with regular passenger and freight services working to a timetable.

Opinions were sharply divided as to how this might be achieved so three options were considered:

- To use steam locomotives
- To use horses
- To use a series of stationary winding engines

The Company's Chief Engineer, George Stephenson, a pioneer in the development of steam traction, favoured steam locomotives, but the Directors were not entirely convinced of their suitability. A decision was taken, therefore, to hold a series of trials to determine who could design and build a locomotive capable of hauling the type of train envisaged.

By the summer of 1829, the line was substantially complete and the section through Rainhill was chosen as the location for the trials. Rainhill was selected because the railway at this point was flat and straight and offered good conditions for the trials to be undertaken.

The Directors of the Company offered a prize of £500 to the designer of the locomotive that complied with a set of rules aimed at demonstrating the suitability of the type to haul trains on the Railway.

The main conditions were:

- The locomotive was required to haul a load, three times its own weight, for a distance of 70 miles at not less than 10 mph
- The locomotive should consume its own smoke
- The locomotive should not weigh more than four tons (if carried on four wheels) or six tons (if carried on six)
- The locomotive should use steam at not more than 50 lbs/square inch, but the boiler must be tested to three times that figure
- The locomotive should be carried on springs and have two safety valves
- The locomotive should not cost more than £550 to build

The trials were held over an eight-day period, commencing 6 October 1829. Between twelve and fifteen thousand people attended, including more prominent engineers and scientists drawn from the United Kingdom, Europe and America. A great carnival atmosphere provided background to an event, which was given prominent press coverage.

The initial five entrants were quickly reduced to three:

- “Rocket”, entered by George & Robert Stephenson
- “Sane Pareil” entered by Timothy Hackworth
- “Novelty” entered by Messrs. Braithwaite & Ericsson

At the conclusion of the trials, “Rocket” was declared the outright winner and the prize duly awarded to the Stephensons. The way was then open for the railway to be completed and the design concept of the Stephenson locomotive to be developed and refined during the next 130 years.

The success of the “Rocket” at Rainhill has enormous implications for the communications worldwide. Primarily, it introduced the concept of speed (fast travel) into people’s lives. It led to the developments of railway systems throughout the United Kingdom, Europe and America and the wider world.