

Editorial

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1. RICHARD TREVITHICK

This month sees the 200th anniversary of the first authenticated trip made by a steam locomotive hauling a load on rails. The event took place at Merthyr Tydfil in South Wales on 21 February 1804 when an engine built by Richard Trevithick hauled ten tons of iron, nine and a half miles along the Penydarren Tramroad from Merthyr to Abercynon. This tramroad had been opened in 1794 as a horsedrawn tramroad conveying iron from ironworks in Merthyr to the Glamorganshire Canal at Abercynon. The journey of the 'Penydarren locomotive' began the age of rail travel. During the journey, which took four hours, about 70 people also climbed onto the five wagons to experience the novel event and hence became the first steam-hauled passengers, albeit non-scheduled! A few weeks later Trevithick is known to have achieved 25 tons with the original engine which was still working some two weeks after the trial run.

There were four ironworks in Merthyr, Cyfarthfa, Dowlais, Penydarren and Plymouth. By 1804, Cyfarthfa on the west side of the valley was the biggest in Britain and possibly the world at the time, producing up to 70 tons of iron a week. Francis Homfrey's Penydarren Ironworks was producing about 50 tons a week. Access to the Glamorganshire canal at Merthyr favoured Cyfarthfa and water supply problems for the upper length compounded the situation. Richard Crawshay of Cyfarthfa had obtained controlling influence in the Canal Company and preference for his goods. The owners of Dowlais, Penydarren and Plymouth Works on the east of the valley constructed the horse-drawn tramroad to a point downstream where the canal was better supplied.

Homfrey and his son Samuel were interested in new technology and had become aware of Trevithick and his work with high-pressure steam and saw the possibilities for them. Trevithick was invited to Penydarren to erect a stationary engine. Trevithick realised that this could be converted into a locomotive by mounting it on a wagon chassis and would not only be faster than horse drawing but able to pull heavier loads. The first trip was made on 21 February 1804. The steam locomotive made at least four journeys on the tramroad but its weight was damaging the short cast iron rails and it was

converted to a stationary engine at the Penydarren Ironworks. However it paved the way to the development of others and the beginning of the age of steam.

Richard Trevithick was born in 1771 in Cornwall and grew up amongst the static pumping engines in the local tin mines. He developed and pioneered the use of 'high pressure' steam and could see the potential for converting the static engines to moving locomotives. He was initially attracted to Coalbrookdale in Shropshire because the area had a reputation for high quality work and willingness to innovate. He revolutionised steam power with his small-cylinder, high-pressure steam engines that could operate at high speeds. In 1802 he arranged the construction there of one of his high-pressure steam engines as a locomotive. There is no evidence that it ever ran due possibly to a serious accident thus the event in Merthyr is seen as the first occasion a steam powered rail locomotive actually pulled a load. Prior to this Trevithick had developed a steam powered road vehicle which had been trialled in Cornwall and was patented in 1802. In the brief period between 1799 and 1808 Trevithick totally changed the breed of steam engines and paved the way for George Stephenson and the age of the railways.

The event is being commemorated in Merthyr between February and September. Details of the programme of events and lectures can be found on the website www.trevithick2004.co.uk

2. TRANSPORT RELATED PAPERS IN OTHER ICE JOURNALS

The subject of transport and transportation is widespread and is often a topic in other journals produced by the Institution. The journal *Civil Engineering* lists all papers in ICE journals but it may be useful to note the following issues planned this year by our companion journals. Please also see Elsewhere in Proceedings at the end of this issue.

Geotechnical Engineering October 2004 The Geotechnics of Transport Infrastructure

Municipal Engineer February 2004 'The Bus Reborn'