William Brunton: 19th Century Neglected — but Influential — Engineer

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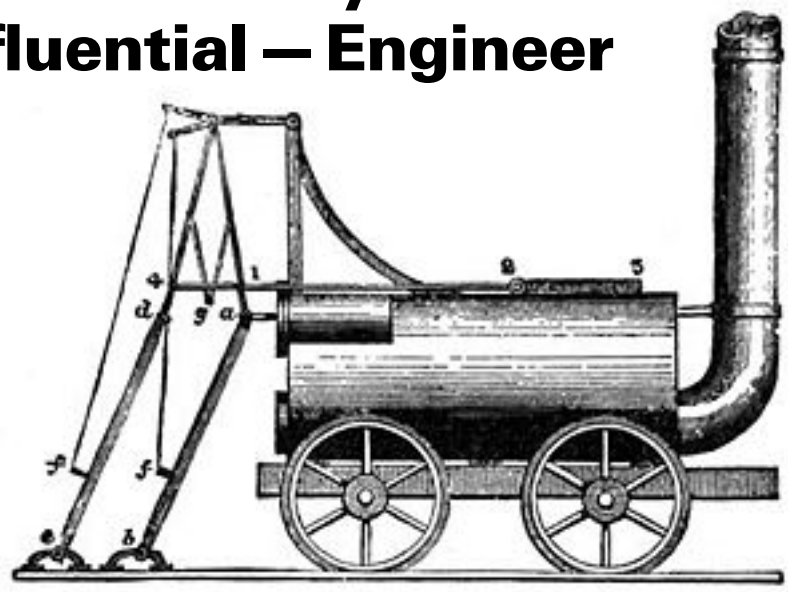

Brunton's Traveller (a.k.a. The Steam Horse), 1813.

Faithful readers of this space know we sometimes like to use Addendum to give relatively unknown 19th Century mechanical engineers/inventors their well-deserved props. Like, for example, William Brunton (1777–1851), who is credited — but generally unknown — with inventing the Steam Horse, also known as the Mechanical Traveler.

As a mechanical engineer his works were varied and important. Many of them were in the adaptation of original and ingenious modes of reducing and manufacturing metals and the improvement of the machinery that connected them.

In 1790 — at age 13 — he commenced work in the fitting shops of the cotton mills at New Lanark. In 1796 he migrated to Birmingham, finding employment at Soho's Boulton & Watt, where he remained until he was made foreman and superintendent of the engine manufactory. Still only twenty-one, he would be sent alone to troubleshoot and solve customer complaints. In 1808 he joined the Butterley Works, where, much like his previous position, he was entrusted with representing his employer on many important missions; in doing so he made the acquaintance of John Rennie, Thomas Telford, and other eminent engineers of the day. In 1815 he returned to Birmingham to become partner/mechanical manager of the Eagle Foundry, where he remained ten years and during which time he designed and executed a great variety of important work. Even more generally unknown is that with the Steam Horse, originally intended to facilitate coal mining, Brunton had sown the seeds for advancing the early technology of what we know today as railroading. Ironically, Steam Horse evokes echoes of what became commonly known midway through the century as the Iron Horse, i.e. — steam locomotive. The Brunton-designed Steam Horse was built in 1813 by the Butterley Company in Derbyshire for use on the company's mining conveyor at Crich. It sported a pair of mechanical legs with feet that gripped the rails at the rear of the engine to push it forward — at about three mph. A second one was built for the Newbottle colliery, which worked with a load up a gradient of 1 in 36 all through the winter of 1814.

Indeed, the Steam Horse was relatively pre-historic in its simplicity and capability. But it served its purpose. Until the Steam Horse, mining companies had long used nearby canals to ferry their ore, equipment, etc. back and forth between mine sites and towns. And, horse-drawn wagons were used to transport loads to the canals. Common wisdom had it that steam engines — too loud and dangerous — were inferior to the horse-drawn wagon model. Two things happened that changed this thinking. One — history tells us the Napoleonic Wars (1799–1815) generated significant price increases for livestock fodder, and two — some "railways" were now being constructed on increasingly steeper — and dangerous — embankments (gradients) within canals.

Initial skepticism over the Steam Horse derived from the general opinion that steel wheels running smoothly on steel rails was fantasy; a lack of sufficient adhesion was typically the reason given. But when in 1813 the Butterley Company was faced with a gradient of 1 in 50 between its Limestone quarry at Crich to the Cromford Canal at Amber Wharf — some 1.25 miles away — Brunton took out a patent for the locomotive. The Butterley locomotive cost a total of £240 (approx $313 U.S.).

The historical record is scanty but it seems that the *Steam Horse* operated successfully for an unknown period. In fact, a larger one with a 9ft boiler rather than the original 5ft, was built for the Newbottle Colliery, in County Durham. This locomotive cost £540 ($705 U.S.) and may have had two cylinders. During 1814 and 1815 it hauled loads up a 1-in-36 gradient at 3 miles per hour (4.8 km/h). But the colliery owners were not impressed. Exceedingly worse — during a demonstration on July 31, 1815, the iron boiler exploded, killing thirteen spectators and injuring several others. The apparent reason for the accident was due to the safety valves being screwed down too tightly, rendering them useless. Thus occurred what is considered to be the first recorded railway disaster.

After this experience Brunton was never again fully engaged in business. He was, however, a member of the Institution of Civil Engineers; but — typically for this neglected engineer — the date of his admission has not been determined.

Brunton died in 1851 at the residence of his son, William Brunton. Preceding him in death was wife of 41 years, Anne. The couple's four surviving sons — all respected engineers — were John, William, J. Dickinson and George. (Source: Wikipedia.)