

Henry Maudslay - Engineer

**Resume of a talk given to the Newcomen Society (Manchester Branch)
and the
Manchester Association of Engineers
at the Museum of Science & Industry, Manchester on 29 January 2008**

Presented by Richard Henry Maudslay CBE FEng.

Richard Maudslay, who is a great, great grandson of Henry Maudslay and also an engineer himself, began his talk by outlining Henry Maudslay's family background.

Henry was born on 22 August 1771 at Woolwich, the son of Henry Maudsley, a storekeeper at Woolwich Dockyard (spelling was later changed to –ay by his son on his marriage certificate and this spelling has remained for his descendents).

Henry started work filling cartridges at the Arsenal then transferred to the carpenters shop then the smithy where he showed great aptitude for all forms of metalwork. In 1789 he was recruited by Joseph Bramah to manufacture his patent lock. In 1791, Henry married Sarah Tindale, Bramah's housekeeper. Aged 26, following a dispute with Bramah about pay, he left and set up his own engineering business off Oxford Street.

He soon designed the slide rest then the screw-cutting lathe. Famously he used an early version of this lathe to cut a 5ft screw, 2in diameter with 50 threads per inch. The nut which engaged with this screw was 12in long and contained 600 threads. His love of accuracy and his ability to turn out accurate work enabled him to seek more exact methods of measurement. This led to his invention of the micrometer – nicknamed by him the “Lord Chancellor” as it was the ultimate arbiter of disputes.

Mark Brunel came to England in 1799 determined to create machinery for block manufacture for pulley blocks used on naval sailing ships. He turned to Henry Maudslay to acquire the necessary mechanical skills to enable him to realise his vision. This led to the world's first manufacturing production line. There were 44 machines in all, requiring only one tenth of the previous manpower.

Henry Maudslay's business developed many other types of machinery including calico-printing equipment and machinery for the Royal Mint. He also patented “Maudslay's Table Engine” in which the movement of the piston in a vertical cylinder mounted on a table was communicated by a return connecting rod to the crankshaft carried in bearings beneath the table.

Maudslay was prominent in the manufacture of Time Balls. These were used to set ship's chronometers for the determination of longitude. They were installed in locations which were visible from ships in harbour. The ball was raised to the top of a tower and released usually at 1pm – not at noon (except in the USA) because sailors were too busy with Meridian observations. More than 200 Time Balls were established around the world. They became obsolete in 1932 when time signals became available by radio.

Time Balls manufactured by Maudslay's business included: 1833: Greenwich Royal Observatory, (first used October-November 1833, probably the first of its kind), 1852: South Foreland Light-house, Deal (dismantled 1927), 1853: Edinburgh, 1855: Sydney, NSW and 1873: Cape of Good Hope.

As the years went by, Maudslay's business expanded and new premises were needed. The business first moved to Margaret Street then to Lambeth in 1810, taking over premises of a disused riding school, where Lambeth North underground station is now.

Increasingly, Maudslay became interested in marine steam engines. In 1815 the Richmond, 112 tons, was fitted with Maudslay propulsion machinery giving 42 HP. By 1818 the business was making 120 HP engines. The London Engineer, commissioned in 1818 for services between London and Margate had two vertical cylinders, 36" diameter x 40" stroke, driving the paddle shaft. Steam was produced by three copper boilers at 5 psi. The paddles were 12' 6" diameter and 6' 6" wide making 28 rpm.

Henry Maudslay was renowned for his Maxims, which remain pertinent to this day. Two of the most memorable are:

"First get a clear notion of what you plan to accomplish, and then in all probability you will succeed in doing it."

"Keep a sharp lookout upon your materials; get rid of every pound of material you can do without; put to yourself the question 'what business has it to be there?', avoid complexities, and make everything as simple as possible."

He was much admired by his workforce. One of his workmen paid him the following tribute:

"It was a pleasure to see him handle a tool of any sort, but he was quite splendid with an 18-inch file".

Henry and Sarah had seven children. He died of a severe chill on 15 February 1831 after visiting a sick friend in Boulogne. A panel from his tomb reads: *A zealous promoter of arts and sciences. Eminently distinguished as an engineer for mathematical accuracy and beauty of construction; as a man for industry and perseverance; and as a friend for a kind and benevolent heart.*

Of his sons, four worked in the family firm: Thomas Henry as commercial manager, William as representative in France (but he died young at 23), John who became a partner in the firm and Joseph who had a particular interest in marine engineering. Joseph had some notable achievements: he registered 22 patents, including oscillating engines, the Siamese engine (twin vertical cylinders) and the annular engine (double piston-rods), he pioneered the feathering propeller and he was a founder member of the Institution of Naval Architects.

Walter Henry, Joseph's son, was actively involved in the firm. He became Managing Director when the firm was registered as a limited company in 1889. Then, following the demise of Maudslay, Sons and Field at the very end of the 19th century, Walter founded the Maudslay Motor Company. Walter's brothers included: Alfred the renowned Mayan archaeologist, Athol

(grandfather of the author of this paper) an amateur inventor and Herbert the inventor of the Spinaker sail, named after his yacht The Sphinx (Sphinx acre). Engineers in the next generation included: Reginald who founded the Standard Motor Company and Cyril who was Chairman of Birmingham Aluminium Casting Company and director of several other engineering businesses.

The Maudslay Society was founded in 1942 by various engineers who had received their early training with Maudslay Sons & Field at the end of the 1890's. They formed the Society to *perpetuate and preserve the memory and work of Henry Maudslay and his associates and successors*. The Society now funds a postgraduate engineering fellowship, the Maudslay Scholarship, with Pembroke College, Cambridge.

Richard H Maudslay ©

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