Joseph Whitworth Biography

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Biography

Joseph Whitworth brought the practice of machine tool manufacture to new levels of accuracy and precision. He was born in Stockport, Cheshire, England, in 1803, the son of a schoolmaster and Congregational minister. His formal schooling ended when, at the age of 14, Whitworth was apprenticed to his uncle, a Derbyshire cotton-spinner. Fascinated with the mill machinery, Whitworth left Stockport in 1821 and worked for four years in Manchester, England, as a mechanic. In 1825 he moved with his bride to London, and joined Henry Maudslay's workshops. There, he perfected a scraping technique for making true metal plane surfaces. He returned to Manchester in 1833 and set up his own machine shop.

Whitworth soon became interested in precision manufacturing. At the time, each workshop made its own machine parts to its own standards; even screw threads were individual. In 1841 Whitworth proposed a uniform system of screw threads, and by 1860 his specifications were standard throughout Great Britain. He also developed ways to measure close tolerances with unprecedented accuracy, and he designed cutting, shaping, drilling, slotting, turning, and planing machines capable of achieving these very precise measurements. He invented a knitting machine in 1835 and, in 1842, a mechanical street-sweeper. He also promoted the advantages of the decimal system.

At the Great Exhibition of 1851, Whitworth machines were universally recognized for their high quality and precision. When the Crimean War began in 1854, Whitworth became interested in the manufacture of armaments. He performed many experiments on improved rifling and boring, and he developed a method of casting steel under pressure for heavy artillery that minimized metal-weakening air bubbles.

Whitworth's enterprises were highly successful, and he applied his considerable wealth to promoting the training of engineers. He established 30 Whitworth scholarships for university engineering students, and donated large sums to several technical colleges and universities. Whitworth received many honors, including a knighthood in 1869 and admission to the French Legion of Honor. He died in Monte Carlo in 1887 after a long illness.