John Smeaton Encyclopedia Article

John Smeaton

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Contents

John Smeaton Encyclopedia Article.....1

Contents.....2

John Smeaton.....3

John Smeaton

1724-1792

Scottish-English Inventor

John Smeaton's impact on civil engineering in eighteenth-century England was so significant that the Institute of Civil Engineers—of which Smeaton had been a founding member in 1771—changed its name to the Smeatonian Society after his death in 1792. The results of his work, including mills, bridges, and harbors, were to be found throughout the landscape of England during the early industrial era.

Though Smeaton's family was Scottish, they lived in England, where he was born in 1724. His father, an attorney, expected him to follow in the legal profession, but Smeaton had no interest in law. His fascination lay entirely with machines, and he chose to pursue a career in civil engineering.

In 1753 Smeaton was elected to membership in the Royal Society, and two years later was selected to design a new lighthouse near Plymouth, England. For the lighthouse, completed in 1759, Smeaton developed a new variety of limestone-and-clay cement that would set under water.

Also in 1759, Smeaton published a paper on water mills, a principal source of power during the early Industrial Revolution. His paper dealt with the difference between undershot mills, or mills that derived their power from water flowing beneath them, and overshot mills. The latter is more widely known, thanks in part to Smeaton, who showed that an overshot mill is much more efficient than an undershot mill: due to gravity, the power produced is much greater when water flows over a wheel than when it flows under it. These findings won Smeaton the Copley Award in 1759, and he went on to build 43 mills throughout England.

From 1757 on, Smeaton designed a number of canal and bridge projects, and in the 1760s created a water-pressure engine for pumping water. The latter would be replaced a few years later, when James Watt (1736-1819) invented his condensing steam engine. Smeaton also invented a tidal pump, installed at London Bridge in 1767, for supplying water to subscribers, and in 1769 invented a metal boring machine. In building Ramsgate harbor in 1774, Smeaton made several improvements to the existing design of the diving bell, adding an air pump. He spent his remaining years experimenting with steam engines and making improvements to them. He died in 1792 at Austhorpe, Leeds, England.

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