William Froude Biography

William Froude

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Biography

Froude was one of the principal players in the field of fluid dynamics. Born in Dartington, England, he was educated at Oxford, where he received a degree in engineering. His first job was as a civil engineer, working for the British railway system. It was not until a few years later that Froude became a naval engineer, and in doing so began the work for which he is best remembered.

Froude's most important work was in determining the amount of force that water exerts on a body passing through it. This was of great concern to the British navy, who wanted to maximize the speed and efficiency of their ships. Froude conducted a great deal of laboratory research before developing *Froude's law*, which is a tool used to determine the amount of force required to pull an object against the retarding wave that is built up in front of it as it travels. By using Froude's law, the British navy was able to tow its ships from one place to another more efficiently.

There were two important devices that were invented during the development of Froude's law: the model study tank and the water brake. In order to simulate conditions on open water, Froude had to create a water environment in his laboratory. The model study tank allowed him to perform his experiments and extrapolate their results to larger bodies of water. The water brake, a type of dynamometer, was actually an offshoot of Froude's research. Primarily used to measure the horsepower of internal combustion engines, the water brake consists of a rotor encased within a water-filled compartment; the engine turns the rotor, and the water resists that turning, slowing it down. The horsepower of any engine can thus be determined by measuring the amount of resistance exerted by the water.