

Development of the modern submarine

[Technology](#), [Development](#)



Advanced Chemistry January 30 2013 The Development of the Modern Submarine Since the invention of the submarine, all water travel and warfare have dramatically changed. A submarine is an underwater vessel that men have transformed since it was first introduced to being a perfect underwater machine that moves like a fish. The first serious proposal for a ship designed to travel underwater was made by the English mathematician William Bourne in 1578. It is rumored that Alexander the Great walked under water in a bell-like shaped device that acted as a submarine.

In 1776 David Bushnell invented a submarine that was nearly totally round in shape and was made of wood propelled by a man turning a crank with a propeller. Nearly 100 years later in 1864 an American invented the H. L. Henley submarine which was operated by nine men turning a long crank to propel it. It was used in the US Civil War. Three years later, the first steam-powered submarine called the *Thetis*, was invented and was used. After all these years submarines were made not really for combat but during and after World War One. Nations began using submarines to attack opponent's ships.

This added to submarines things such as missiles, torpedoes, high-speed propellers and periscopes to assist them to acquire and destroy targets above the sea level. The first working submarine was made in 1620. It was called the *Daedalus* and it was tested by Cornelius Drebbel. The current most advanced submarine is a 1 billion dollar submarine called the *Virginia* class nuclear-powered attack submarine. Submarines have been great at diving to depths that no man can dive to without protective armor and a major question is how this is possible. The answer lies in their structure and build.

They are built following Archimedes' principle and Boyle's law. Submarines are completely enclosed vessels with cylindrical shapes, narrowed ends and two hulls: the inner hull and the outer hull. The inner hull protects the crew from the immense water pressure to the deep parts of the ocean and it insulates the sub from the freezing temperatures because it is very cold deep under water. This hull is called the pressure hull. The outer hull shapes the submarine's body. The ballast tanks, which control the sub's buoyancy, are located between the inner and outer hulls.

The way that ballast tanks work is that they fill up with air from reserve tanks and are able to float. Then to dive they open and are filled with water. Another huge question is how oxygen is produced in submarines way under the water. Modern submarines use what's called an Oxygen Generator. This oxygen generator uses a simple process of electrolysis to separate Hydrogen and Oxygen molecules from distilled water. Using the ocean water it can create endless supplies of O_2 until the generator itself stops working. Binaries are very interesting machines that really have changed water travel and warfare and keep developing every day. http://www.answers.com/Q/How_do_you_make_oxygen_in_submarines

<http://www.manhood.com/consumer-5/nuclear-submarine.html>

<http://www.history.navy.mil/branches/teach/dive/whist.html>

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