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The Last Full Measure: Building the First Submarines - I

Lead: For 400 years service men and women have fought to carve out and defend freedom and the civilization we know as America. This series on *A Moment in Time* is presented by the people of General Dynamics and is devoted to the memory of those warriors, whose sacrifice gave, in the words of Lincoln at Gettysburg, *the last full measure*.

Intro.: *A Moment in Time* with Dan Roberts.

Content: Though there had been attempts to create an underwater craft since as early as the 1500s, the modern submarine did not take shape until the late 19th century and then was designed primarily for military purposes. The design of a submarine is far more complex than a surface vessel. In balance, maneuver, life support and propulsion, a submarine operates in a different environment requiring different construction principles. Attempts to build underwater craft span the modern period. As early as 1578, William Borne, an English writer on naval

matters, proposed an enclosed wooden vessel, rowed underwater. His idea was brought to reality by Dutch inventor, Cornelius van Drebel, in service to King James I of England. His craft operated 12 feet below the surface of the Thames River, was covered with greased leather and propelled by oars extending through tightly bound leather flaps.

During the American Revolution, David Bushnell, a Yale College student, built *Turtle*, shaped like an acorn and propelled by cranks turned by the operator. Attempts to sink a British ship failed because the explosive charge could not be affixed to the hull. Then, in the years before

his successful steamboat, *Clermont*, was deployed on the Hudson, Robert Fulton was trying to build undersea warships for France and Britain. It was not until the American Civil War, however, that serious progress was made, particularly by the Confederacy led by Horace Hunley. A submarine bearing his name actually succeeded in placing a charge on a Union ship in Charleston harbor, but was destroyed in the engagement. Real advance awaited the development of electric propulsion in the 1880s. Next time: Underwater competition. Research assistance by Michael Holt, at the University of Richmond, this is Dan Roberts.

Resources

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