

The Hunley

Michael Thompson

The history of the submarine is a long and punctuated one, occurring and recurring in fits and starts. Almost from the beginning of civilization, creative thinkers have dreamed about underwater vessels.

Although Aristotle described a submersible chamber that Alexander's sailors used in 332 B.C. in the siege of Tyros, and there is evidence that the ancient Chinese developed a primitive submarine in 200 B.C., little progress was made in the following 2,000 years.

There were a few bright moments. A Dutchman named Cornelis Drebbel built a leather-covered wooden submarine in 1620 and maneuvered under the Thames River, and in 1776 a Yale student, David Bushnell, built the *Turtle*, an egg-shaped one-man submarine that tried, but failed, to attach a mine to the British flagship HMS Eagle in New York Harbor.

In 1798 Robert Fulton built the *Nautilus*, a four-man twenty-four-foot-long submarine that could stay down for hours. The government refused to support Fulton's project, and he abandoned it.

There were American attempts to build submersibles in the War of 1812.

Fifty-two years later, in 1850, the Germans built the *Sea Devil* submarine, which held a crew of fourteen men, and made over 130 dives.

Still, there had been no successful military submarine, no sinking of an enemy ship.

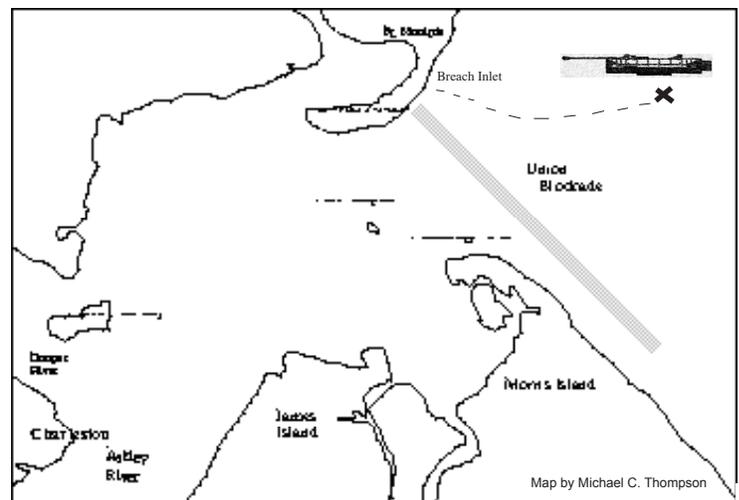
In 1862 the Civil War still stormed across the American landscape, the Industrial Revolution was generating weapons of unprecedented destructive power, and the Confederacy was beginning to show signs of desperation. A thirty-nine-year-old attorney, sugar planter, and former state legislator, Horace Lawson Hunley, now the Deputy Collector of Customs for New Orleans, decided to back his cause by funding the construction of a secret weapon, a submersible attack boat capable of attacking and sinking enemy warships underwater. The South had no surface navy capable of challenging the North at sea, and a submarine was the only hope.

Horace Hunley worked with James McClintock and Baxter Watson to build the prototype *Pioneer*, which they successfully tested in Louisiana's Lake Ponchartrain—sinking two rafts, a small schooner, and a barge—but which had to be scuttled in a canal when the Union forces took New Orleans.

Flag Officer Farragut's engineers found the *Pioneer*, hoisted it from the bottom of the canal, and lowered it onto a levee for study. Unable to fathom its import, they left it behind, and it rusted on the levee for the rest of the war. In 1868 it was sold for forty-three dollars, and probably cut up for scrap.

Escaping with their blueprints to Mobile, Alabama, the men built a second submarine, the *American Diver*, at the Parks and Lyons machine shop, but in February of 1863 the *Diver* sank in rough water off Fort Morgan as it was being towed to a new location to attack the Federal fleet. It has never been salvaged.

Undaunted, Hunley and his team built their third submarine, later to be named the *H.L. Hunley*, out of a steam boiler. The hull was 3/8 inch thick. Thirty-nine feet long, a little over four feet high and a little less than four feet wide, the *Hunley* weighed over seven tons, held a crew of nine, including a pilot, and could reach a speed of four knots. It had a 4,000 pound iron keel riveted to the bottom, to keep the boat upright at all



times. On top of the submarine, there were two raised hatches with thick glass portholes, and a snorkel box that sent up stopcocked air tubes four feet. The cast iron hatchcovers weighed 145 pounds each, and were sealed by watertight rubber gaskets.

The boat propeller was turned by hand crank, with four men working at a time—not the ideal condition. Quarters were cramped, and turning the crank was brutally difficult, possible only for the strongest men. One of the designers, McClintock, wrote that “There was much time and money lost in efforts to build an electromagnetic engine for propelling the boat...” and in the end, the electric motor concept had to be aban-

doned.

The Hunley had ballast tanks fore and aft that could be filled to let the boat sink, or hand-pumped to let the boat surface. On the side, there were diving planes like fins, and at the rear, there was a propeller and rudder assembly that let the pilot maneuver the sub toward its target. Originally, the sub had been designed to tow a bomb on a long line; the sub would dive under the enemy ship and drag the bomb into it. Now, projecting from the lower bow of the sub, on a seventeen-foot iron rod, was a 135-pound spar torpedo, with ninety pounds of explosives in it. A barbed point extended from the front of the torpedo, and the Hunley would ram the torpedo point directly into the enemy ship's hull, then back off and pull a cord to detonate the bomb from a distance.

Inside the submerged boat, light came from a single candle.

Initial trials proved the *Hunley* seaworthy. It maneuvered well, dove and surfaced, and destroyed test ships: "I saw them explode a vessel as an experiment," wrote George Gift, who helped to raise the boat back out of the water for transport.

Ready for action by August of 1863, the *H.L. Hunley* was shipped on two railroad flatcars to Charleston, South Carolina, where the Union navy held the city in a strangling blockade. Citizens of Charleston could see the masts of the Union warships shutting off their harbor. The guns of the warships pounded Fort Sumter, now held by Confederate troops. General P.G.T. Beauregard, who commanded Charleston, liked unconventional weapons, and ordered the *Hunley* to attack; the crew hesitated, and Beauregard replaced them with untrained volunteers, who attempted to train with the *Hunley* off Fort Johnson in Charleston harbor. One of the crewmen, Lieutenant Charles Hasker, sat at the lead cranksman's position, directly behind the pilot, Lieutenant Payne. Hasker wrote that on one drill:

Lieutenant Payne, who had charge, got fouled in the manhole by the hawser and in trying to clear himself got his foot on the lever which controlled the fins. He had just previously given the order to go ahead. The boat made a dive with the manholes

open and filled rapidly. Payne got out the forward hole and two others out of the aft hole. Six of us went down with the boat. I had to get over the bar which connected the fins and through the column of water which was rapidly filling the boat. The manhole plate came down on my back; but I worked my way out until my left leg was caught by the plate, pressing the calf of my leg in two. Held in this manner, I was carried to the bottom in forty-two feet of water. When the boat touched bottom I felt the pressure relax. Stooping down, I took hold of the manhole plate, drew out my wounded limb, and swam to the surface. Five men were drowned on this occasion.



Confederate engineers salvaged the boat, but the bodies of the crew had swollen underwater, and an undertaker, paid five dollars for each body, had to dismember them to remove them through the hatches. Buried in oversized coffins, one on top of the other, in a sailors' cemetery, their graves were lost when their headstones

were removed through a clerical error, and would not be rediscovered until 1999, when they were located under the Citadel's Johnson Hagood Stadium. Archeologists used ground-penetrating radar and World War II-era aerial photos of the cemetery to find the graves after state senator Glenn McConnell found references to "men of the torpedo boat" in old cemetery records.

After the disaster, the *Hunley* was given new command under engineering officer Lieutenant George Dixon, a veteran who had taken a bloody leg wound at the battle of Shiloh, and had missed being killed by a second Yankee Minie ball only because it struck a twenty-dollar gold coin that he had in his pocket—a memento from his fiancée in Mobile, Queenie Bennett. Now, he carried Queenie's bent coin everywhere, all the time. Dixon began practicing diving maneuvers with his new crew.

On October 15, 1863, Dixon was absent, and Horace Hunley himself piloted the boat out into the harbor. Attempting to dive beneath the *C.S.S. Indian Chief*, it submerged and never returned to the surface. Hunley had accidentally flooded the forward ballast tank, and

the submarine had plunged to the bottom, sticking its bow in the mud. All aboard drowned or asphyxiated. This time, it took engineers a month to raise the seven-ton submarine to the surface. General Beauregard wrote that:

...the spectacle was indescribably ghastly; the unfortunate men were contorted into all kinds of horrible attitudes; some clutching candles, evidently endeavoring to force open the manholes; others lying in the bottom grappled together, and the blackened faces of all presented the expression of their despair and agony.

The citizens of Charleston buried the submariners in Magnolia Cemetery. Previously called by many the *Fishboat*, the submarine was now rechristened the *H.L. Hunley*.

Calling the *Hunley* a “peripatetic coffin,” General Beauregard canceled further plans to use it. “I can have nothing more to do with that boat,” he said, “It’s more dangerous to those who use it than the enemy.” Lieutenant Dixon, however, persuaded Beauregard that the problem was not the boat but the inexperience of the crew; with practice, he claimed, the *Hunley* could attack Union warships. Beauregard agreed to give the boat one more chance:

Lieutenant Dixon, a brave and determined man, having returned to Charleston, applied to me for authority to use it against the Federal steam sloop-of-war *Housatonic*, a powerful new vessel, carrying eleven guns of the largest calibre, which lay at the time in the north channel opposite Breach Inlet, materially obstructing the passage of our blockade-runners in and out.

Beauregard told Dixon that he could try again, on the condition that the new crew was told bluntly that the service was “desperately hazardous.”

Dixon recruited a new crew, moved operations to Battery Marshall on Sullivan’s Island, and the boat was once again launched on a series of night training maneuvers. On some training runs through the dark

ocean, they surfaced so close to Union warships that they could hear the sailors singing.

On the blockade ships, there were rumors of a Confederate secret weapon, an “infernal machine” that lookouts should watch for.

Several months later, on the cold night of February 17, 1864, the *Hunley* crew climbed quietly into the boat. It was 7:00 p.m., and they pushed away from the Breach Inlet dock, headed for the largest ship in the Union blockade, the *U.S.S. Housatonic*—a 207-foot, 1,240-ton warship, four miles from shore. Silently, the submarine glided out of the moonlit harbor. Commander Dixon and the men of Battery Marshall had arranged a special blue-lamp signal that would indicate victory,

letting the battery troops light fires that would direct the *Hunley* back to port after the attack.

Nearly two hours later, at 8:45 p.m., officer John Crosby on the deck of the Union warship *Housatonic* thought he saw a porpoise in the water, but looking again, he felt the hair rise on his neck. A machine, the

likes of which he had never seen before, was tearing through the water, straight for his ship. Glimmers of light came through tiny portholes, like glowing eyes in the darkness. Crosby ordered the crew to slip the chain and back the engine. The alarm sounded. Sailors were able to get a few shots off, and then the *Hunley* rammed the *Housatonic*, jamming its spar torpedo into the warship’s wooden hull, and then withdrawing. The ship’s commanding officer, Captain Pickering, came on deck crying, “Go faster astern!” But in a few seconds, a tremendous explosion shattered the night, and in three minutes the burning *Housatonic* went down, the first ship in history to be sunk by submarine. Five crewmen drowned.

Four miles away, on moonlit Battery Marshall, men looked out to sea, saw the explosion tear the *Housatonic* apart, and saw the pale blue light of the *Hunley* as it turned and headed back to its berth. It was 9:30 p.m. They burned their fires and shone their lights through the night, to guide the submarine home, but the *Hunley* never arrived.

Four years later, Jules Verne would write *20,000 Leagues Under the Sea*.



For 130 years—thirteen decades—the *Hunley* lay at the bottom of the sea off Charleston harbor. From the beginning, there was intense curiosity about the sub’s mysterious fate. Where was the boat, and what had happened? Searches were made, and abandoned, and made again. P.T. Barnum offered a \$100,000 reward for the sub’s discovery. Theories of the *Hunley*’s fate proliferated: it had stuck to the *Housatonic* and gone down with her; it had been damaged by the explosion shock wave and had sunk; a Union sailor had shot a

Cussler asked. “No,” they said, “we found it.” Cussler would gain no profit from the discovery; he gave the coordinates of the wreck to the U.S. Navy.

Resting on its starboard side at a 45-degree angle, partially covered by silt and sand, and encrusted with shells and ferrous oxide corrosion, the *Hunley* was still in one piece. Amazingly well preserved, it was called *pristine*. The find was called the “maritime discovery of the century.”

Somewhere within would be the final remains of men who accepted an assignment, after being told that it was desperately hazardous.

Before excavation had begun, Mark Ragan, who had written *The Hunley: Submarines, Sacrifice & Success in the Civil War*, dove down to the site, and was able to peer through a view port into the interior of the boat. Light filtered down from the surface and bounced off of his helmet, and he had an eerie feeling about the men still inside the *Hunley*: “I knew,” he said, “that everybody I knew from all the

research... were about a foot away.” After the dive, he said that the sub was more sleek and more advanced than he had ever imagined: “The bow has almost a razor-like texture. It slopes back very gradually. It is more streamlined than I originally thought.”

A National Park Resources Submerged Cultural Resources team surveyed the wreck, and determined that the *Hunley* could be raised—a silt-filled iron boat weighing eight tons. Cussler pledged another \$50,000 to the effort to raise the *Hunley*; “My wife and my accountant think I belong in a rubber room,” he said.

Support for the salvage came from many sources. The federal government offered over \$2,000,000, and the state of South Carolina contributed \$4,000,000. \$10,000,000 had to be raised privately. Analysis and preparation for recovery would be a combined effort of NUMA, the Naval Historical Center’s Underwater Archaeology team, the National Park Service, the South Carolina Institute of Archaeology and Anthropology, the National Geographic Society and other organizations.

On August 8, 2000, a crane aboard the *Clarissa B* salvage ship began lifting an enormous harness, and the *Hunley* submarine broke the surface of the sea for the first time in over 136 years. Crowds cheered from surrounding ship and shore as the boat was lowered onto a barge and returned through Charleston harbor



hole in the front hatch porthole; it had foundered in the rougher seas that developed during the night.

No one knew. Somewhere, at the bottom of the sea, the *Hunley* lay with all its crew.

The harbor was dredged in the late 1800s, and many feared that the wreck of the *Hunley* was buried forever. Searches continued, nonetheless.

Finally, on May 3, 1995, after a fourteen-year search, divers of the nonprofit National Underwater and Marine Agency (NUMA) team, led by popular author Clive Cussler, located the *Hunley*, intact, in thirty feet of water, off the shore of Sullivan’s Island, not far from the wreck of the *Housatonic*. The NUMA team, which has discovered over 60 shipwrecks, had methodically searched 1159 miles of grid lines to find the boat. Finally, they found a magnetic anomaly in an area—seaward of the *Housatonic*—where they did not believe the *Hunley* to be. The NUMA divers—Ralph Wilbanks, Wes Hall, and Ralph Pecorelli—had to probe down through the sand to see what was causing the magnetism from underneath. They began to brush sand and silt away. Gradually, out of the sea floor, the sharp bow of the submarine emerged. Phoning Cussler—who had put \$130,000 of book royalties into the search—at 4:00 in the morning, his team said they weren’t going to look for the *Hunley* anymore. “Are you giving up,”

to the Warren Lasch Conservation Center, where it was placed in a special fifty-foot tank of fresh water, and where scientists will treat the hull with chemical and electrolytic processes for eight years.

As of this writing, the project directors have not yet opened the *Hunley*. They are studying options, trying to find the least destructive and intrusive way of excavating the sub's interior. The hatches can be opened, but they are only sixteen inches wide—wide enough for Civil War sailors to squeeze through, but not wide enough for today's better-nourished investigators.

It is assumed that the interior, like the exterior, is in remarkably undisturbed condition, and that the remains of the *Hunley* crew are present and intact. Deep silt and sand fill the interior now, and few details can be seen through the small portholes. Paul Mardikian, the project's senior conservator, believes the crew may still be sitting at their posts, with their skeletons held together by their heavy winter uniforms. The oxygen content of the water has been low, and scientists believe there may even be hair and skin in the remains.

Inside, scientists expect to find letters, photographs, shoes, tools, uniforms. They expect to find the mercury depth gauge, and the bullet-bent coin that Queenie Bennett gave to George Dixon.

For now they are x-raying the submarine, scanning its dimensions with laser beams, and considering the benefits of microscopic fiber-optic cameras.

The benefits of the project, however, do not have to wait for the exploration of the *Hunley*'s interior. Already there have been discoveries that have changed our knowledge of the *Hunley*. One long-debated question has been answered: did the torpedo spar attach to the top of the bow or to the bottom of the bow? It attached to the bottom of the bow with a sling-shot shaped hinge—moveable—in contrast to the most common previous models and drawings, which showed the spar fixed and extending from the bow's top. Previously, the spar was thought to have been made of wood, but it has been recovered, and is made of iron. It also appears that the interior of the sub may have been painted white, a feature that in retrospect we see depicted on the famous Conrad Chapman painting, but that was not grasped until now. To our surprise, there is a skylight on the front hatch; it has never been reported or included in any drawings. There are unanticipated viewing ports in the front conning tower. The ship's rivets were thought to protrude from the boat's hull, but instead they were skillfully shaped and recessed to give the hull a smooth hydrodynamic finish and prevent drag.

The *Hunley* is also more streamlined and beautiful than anyone expected, and more cramped inside. It has trim tabs on the side that stabilized the sub against rocking as the crew cranked, and these trim tabs have never been reported or depicted in any artwork.

In time, the hull will be opened, and the remains of the crew will be recovered and honorably interred with their colleagues from previous *Hunley* disasters. The artifacts will be collected and catalogued, and every inch of the boat will be studied for clues to what happened. The boat will be protected from further oxidation, restored, and moved to a new \$11,000,000 wing of the venerable Charleston Museum, over 200 years old.

It seems certain that the crew of the *Hunley*, before they died, knew they had succeeded in sinking the *Housatonic*. Certainly they heard the blast of the torpedo, and must have filled their close iron quarters with cheers, even as their own deaths were moments away. Their victory established for all time the reality of submarine warfare, creating fear among the Union blockade ships, causing modifications to blockade strategies, forcing ships to be ready to get underway at all times, forcing ships to deploy further offshore, necessitating greater security measures, and intensifying intelligence and submarine development efforts.

It would be over fifty years before a submarine would again sink an enemy warship, but in 1864 the crew of the *Hunley* had already done it, in spite of the technical difficulties, and in spite of the desperate hazard of serving in a ship that had already sunk twice. They must, knowing the history of the boat, have experienced fear, but as *Hunley* Commission Chairman Glenn McConnell has said:

Fear was just an element they put aside. They focused on breaking the blockade, their duty, as they saw it, to the state, and that's all that mattered to them.

Ⓞ