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PANNEBAKKER FAMILY NEWS

NEWSLETTER OF THE PANNEBAKKER FAMILY ASSOCIATION

Confederate sub's weapon killed its own crew

Sean Gallagher

The Confederate submarine CSS H. L. Hunley bears the distinction of being the first submarine to ever sink an enemy ship. But the Hunley, a work of state-of-the-art engineering for its time, never returned from that mission on February 17, 1864. Instead, after exploding a "torpedo" below the waterline of the Union sloop-of-war USS Housatonic in Charleston Harbor, the sub was lost at sea.

Just how the sub was lost had been a mystery for over a century. The Hunley would not be found again until it was discovered on the floor of Charleston Bay in 1995. The sub was recovered five years later—largely intact, with the remains of its crew all at their stations. Based on the findings of Clemson University archaeologists who examined and restored the sub, it did not appear any attempt was made by the crew to escape.

Prior theories that the sub had been sunk by shots from the Housatonic were dispelled. Some speculated that the air supply had gone foul, and the crew had suffocated. But theories rapidly shifted when it was discovered exactly how the Hunley delivered its attack against the Housatonic. Now researchers from Duke University have provided historians with some more confidence in the probable reason the Hunley never returned from its mission: the crew was likely killed by the sub's own weapon: what amounted to a bomb on a stick.

There had been previous attempts at using submersibles in combat. During the Revolutionary War, the "Turtle"—a one-man paddle-powered submersible—was used in several unsuccessful attempts to attach explosive charges to British ships in New York Harbor in 1776. But the US largely ignored submarines afterward, despite the work on submarines by American inventor Robert Fulton—much of which is reflected in the Hunley's operation.

The Hunley was a vessel built out of desperation to break the Union blockade of Charleston's port. It was constructed from a wrought iron boiler salvaged from a steamship. Additional metal was used to make it more hydrodynamic, and its rivets were hammered flat to reduce drag. The sub was powered by its crew—most of the eight-man crew sat on a bench and turned the sub's propeller by way of a hand-cranked shaft, while a pilot steered from one of two "conning towers"—essentially access hatches with viewing ports installed at the original boiler's access points. The submarine's "torpedo" was a 160-pound black powder bomb—essentially a metal barrel filled with cannon powder, set off by a contact fuse, attached to a 16-foot spar projecting from the submarine's bow.

The submarine was named for its inventor and builder, Horace Lawson Hunley—a marine engineer who financed its construction and died along with the rest of an eight-man crew during a test run of the submarine in 1863. In a previous accident, when the sub was swamped by the wake of a passing ship, five crewmen died. So the peril of operating the "fish torpedo boat," as it was called, were well established before the fateful night of the attack on the Housatonic.

But the dangers of the torpedo itself were likely not fully recognized. Fulton's concept for submarine attacks was to tow a "carcass" charge well behind the sub until it was set off on contact by a flintlock mechanism. The "Turtle" intended to attach floating mines and then flee. But no attack had ever succeeded, so there was little evidence to establish the safety of the torpedo on the Hunley.

In a recently published paper, Naval Surface Warfare Center biomedical engineer Rachel M. Lance and her colleagues recounted how they recreated (in small-scale) the conditions as the Hunley delivered its torpedo to the Housatonic's hull. Using a scale model of the submarine, dubbed the "CSS Tiny," the researchers performed a series of tests to determine how much of a pressure wave would have been transmitted through the hull of the submarine.

Aside from its ballast tanks, the Hunley was essentially a single-walled iron tube. While she may have been relatively invulnerable to rifle fire, the Hunley would have transmitted any sound or pressure from the water around the sub to the crew within its cramped, 4-foot high interior. Lance, who conducted the research as part of her PhD thesis in biomedical engineering at Duke University, theorized that the pressure of the explosion of the Hunley's torpedo could have caused enough of a shock inside the sub to kill the crew through a combination of "air blast trauma" to their lungs and traumatic brain injuries.

The first tests were conducted at a Duke water reclamation pond, using a shock tube to simulate equivalent forces to that of the explosion. Further tests were conducted with black powder charges to recreate a scaled-down version of the explosion of the Hunley's torpedo, including ones placed to scale where the torpedo would have been relative to the sub. Using instrumentation within the Tiny's hull, Lance and her fellow researchers measured the resulting internal atmospheric pressure waves induced by the blasts.

Lance and her fellow researchers determined that, based on the pressure wave generated by the explosion, the crew of the Hunley likely died from the effects of the blast within their tight confines. "The blast produced likely caused flexion of the ship hull to transmit the blast wave," Lance and her co-authors wrote, "[and] the secondary wave transmitted inside the crew compartment was of sufficient magnitude that the calculated chances of survival were less than 16% for each crew member."

The deaths of the crewmembers would not necessarily have been instantaneous, but the lucky ones would have been unconscious from head trauma after the blast. Any who remained or regained consciousness would have been unable to breathe, as Lance and her colleagues wrote:

Respiratory distress is one of the hallmarks of pulmonary blast injury; even if any crewmen had survived the initial blast they would have likely still been above the injury threshold and would have experienced symptoms such as shortness of breath, hemoptysis, tachypnea, and hypoxia. Therefore, even if some crewmen had survived the initial blast they would have likely been crippled in terms of respiration and physically unable to power the handcrank to move the submarine. If anyone had survived, they may have tried to release the keel ballast weights, set the bilge pumps to pump water, or tried to get out of the hatches, but none of these actions were taken.

The blast would likely not have thrown the crewmembers about, as it was transmitted to them from all directions through the sub's hull. So they collapsed at their stations, concussed unconscious or gasping for breaths they could not take, and then died entombed in their vessel as it slowly sank to the bottom of Charleston Harbor.

The preceding story is dedicated to past President, Ron Mitchell, a ***proud submarine veteran.***

This day is the most popular birthday in the United States

By Linda Lewis Griffith

Is your birthday this week? You're in good company.

More people in the U.S. are born on Sept. 16 than any other day of the year, according to data compiled by Harvard's Amitabh Chandra and published in *The New York Times* in 2006. The least common days are Dec. 25 and Feb. 29.

The most popular birth month is August. Statistics tabulated between 1996 and 2006 by the Centers for Disease Control and Prevention show 9 percent of all births occurred during those 31 days. Next in line came September and July.

I noticed this trend while working on my family's genealogy. A disproportionate number of birthdays across multiple generations were clustered in the late summer and early fall.

CDC statistician Paul Sutton hypothesizes that dropping temperatures in autumn draw folks indoors and into their bedrooms. Nine months later, a late-summer baby arrives on the scene.

This pattern varies slightly throughout the world.

For instance, a study conducted by the University of Occupational and Environmental Health in Kitakyushu, Japan, found that that country experiences two annual peaks in birth rate, one lasting from December to February and the other in August and September. Researchers suggest that the

popularity of springtime marriages and seasonal temperature fluctuations both played a role. The website *Statistics New Zealand* states that the most common birthday in that country is Sept. 30, with the 10 most frequent birthdays all appearing between Sept. 22 and Oct. 1.

Of course, we can't control when we arrive into the world. But there may be more at stake than the season when we blow out our candles. Scientists at Columbia University used an algorithm to uncover correlations between birth month and 55 medical conditions. The study, published June 8, 2015, in *ScienceDaily*, found that people born in May had the lowest risk of disease. Those born in October had the highest.

Specifically, the incidence of asthma was greatest for people born in July and October. Attention deficit hyperactivity disorder was more frequent in children born in New York in November. Babies born in March faced a higher risk of future heart disease, including atrial fibrillation, congestive heart failure and mitral valve disorder.

A previous study using Austrian and Danish patient records found that infants born in March through June had shorter life spans. The results corroborate findings from previous studies.

"The data could help scientists uncover new disease risk factors," said senior study author Nicholas Tatonetti, assistant professor of biomedical informatics at Columbia University Medical Center.

But he added, "It's important not to get overly nervous about these results because even though we found significant associations … the risk related to birth month is relatively minor when compared to more influential variables like diet and exercise."

The takeaway message seems clear. Control what we can. Don't fret about what we can't. And celebrate every birthday that comes our way.

The officers of the Pannebakker Family Association wish to extend condolences to Sandie Miller, our membership director, on the loss of her husband on August 7, 2017.

We also send our thoughts, prayers and best wishes to all those caught in the aftermath of hurricanes Harvey and Irma.

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Pannebakker Family Association

The Pannebakker Family Association is an outgrowth of the family reunion held at Pennypacker Mills, Montgomery County, Pennsylvania on July 2-4, 1999. The reunion celebrated the 300th year wedding anniversary of Hendrick Pannebecker and Eve Umstat, in Germantown, Pennsylvania in the year 1699.
In the words of the Steering Committee of the reunion, "We hope that the 1999 Pfannebecker-Umstat Reunion will lead to the growth of a family association, which will provide a forum for conversation, collection and preservation of information, and a sense of lasting community among the heirs of this rich cultural heritage."